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Enhancing Consumer Engagement in an Online Brand Community via User Reputation Signals: A Multi-Method Analysis

Generating and maintaining consumers' engagement in online brand communities is critical for marketing managers to enhance relationships and gain customer loyalty. In this research, we investigate how the type of signal used to indicate user reputation can enhance (or diminish) consumers' community engagement. Specifically, we explore differences in perceptions of points (i.e., point accrual systems), labels (i.e., descriptive, hierarchical identification systems), and badges (i.e., descriptive, horizontally-ordered identification systems). We argue that reputation signals vary in the degree to which they can provide role clarity—the presence of user roles that deliver information about expected behaviors within a group. Across several studies, including a natural experiment using panel data, a survey of community members, and two controlled experiments, we show that signals that evoke a positive social role have the ability to drive greater engagement (i.e., creating discussions, posting comments, and future engagement intentions) than signals that do not provide role clarity. The effect is moderated by user tenure, such that new consumers' engagement is particularly influenced by signal type. These findings have important implications for marketers as they use reputation signals as a strategic tool when managing online communities.

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Many brands host online communities where consumers discuss products or services, share tips, provide solutions, and connect with peers. Engagement in online brand communities is an important part of the consumer's post-purchase consumption journey, as brand relationships and loyalty are built online in this digital era (Hagel and Armstrong 2007; Bhattacharya and Sen 2003). While consumers benefit from product knowledge and consumer connections (McAlexander and Schouten 1998), online brand communities also provide value to marketers by engendering brand trust, commitment, customer retention, purchase behavior, and new product adoption and success (Adjei, Noble, and Noble 2010; Brodie, Ilic, Juric, and Hollebeek 2013; Dholakia, Bagozzi, and Pearo 2004; Gruner, Homburg, and Lukas 2014; Thompson and Sinha 2008). In an effort to grow and maintain consumer engagement, the design of online brand communities and personalization of the individual's online experience is an emerging area of research in the marketing literature (Chung, Wedel, and Rust 2016; Fombelle, Bone, and Lemon 2016).

A key component of online community design is the way in which members are rewarded for their community engagement via a user reputation signal, an indicator of an online participant's past behavior or lack thereof (Ba 2001). Yet, the marketing literature has paid little attention to how brands should reward users for their community engagement and, more specifically, how the manner in which communities signal user reputation influences consumer behavior. In this research, we explore individuals' perceptions of the most common and popular reputation signals. Specifically, we contrast how points (i.e., point accrual systems), labels (i.e., descriptive, hierarchical identification systems), and badges (i.e., descriptive, horizontally-

ordered identification systems) impact consumer engagement in online brand communities and uncover the characteristics that distinguish each signal type.

The current work extends existing research on online brand communities, user status and reputation, and marketing strategies to enhance consumer engagement online. First, our work adds to recent theory development by Harmeling and colleagues (2017) who suggest that successful customer engagement depends on the brand's ability to leverage online tools and design an appropriate participation platform for consumers. We complement this work by empirically testing the impact of one such tool—reputation signals. Second, given the already extensive research on the outcomes of consumer engagement in online communities discussed above (e.g., trust, commitment, customer retention), we fill a gap by investigating reputation signals an important antecedent to these positive marketing outcomes, as well as the social value they can offer. Finally, prior exploration of reputation signals has been primarly focused on the use of signals as information (e.g., disreputable dealers on eBay; Resnick and Zeckhauser 2002), a source of motivation (Hertel, Niedner, and Herrmann 2003; Lakhani and Wolf 2005), or as a way to drive organizational commitment (e.g., loyalty programs; Drèze and Nunes 2009; Kumar and Shah 2004). Our research extends this stream to address how reputation signals can be used to connect consumers to one another within a brand community and thereby enhance user engagement.

Using sociological and social psychological theories, we show that reputation signals have important differences that directly impact marketing strategy. Specifically, we demonstrate that reputation signals differ in terms of the role clarity (i.e., whether one can perceive the existence of a social role one would play in the community) and position clarity (i.e., information about one's relative standing in the community hierarchy compared to others) they offer. We

find that role clarity, in particular, is an unexplored and critical antecedent that impacts consumers' willingness to participate in the community and their connection to the community (e.g., feeling welcomed, attached, and close to other community members).

Across four studies, we conduct a series of empirical tests that extend research on reputation signaling in online brand communities and managerially-effective social categorization. First, we show that the type of reputation signal matters. Labels and badges, both of which can convey the social role one would play in the community, positively impact engagement and connectedness to the community to a greater degree than points, where consumers' reputation is signaled along an infinite numerical continuum. Second, we show that the theoretical difference that helps to explain the superiority of labels and badges is their ability to communicate role clarity, and we empirically demonstrate role clarity's importance over position clarity when it comes to encouraging user engagement. We also rule out other signal characteristics such as the difference between words and numbers and assignment of categories as alternative explanations to our identified effects. Third, we identify the user's tenure in the community as a key factor that moderates the positive effect of signals on consumer engagement. Specifically, we show that, when connectedness is already satiated and a need for role clarity is attenuated (as it is with long-term users who have been acclimated to and socialized in the community), the positive impact of social-role signals is mitigated.

In the following section, we begin by reviewing the literature on online brand communities and reputation signals. Next, we develop a theoretical model and propose a series of hypotheses that examine the advantage of reputation signals that convey a social role versus those that do not, as well as the influence of each signal on four key variables: consumer engagement, connectedness to the community, perceptions of role clarity, and position clarity.

Then, we report four studies to test the hypotheses, including a natural experiment using field data. We conclude by discussing the theoretical and managerial implications of this work and propose several promising avenues for future research.

Theoretical background and hypotheses

Consumer engagement in online communities

Online brand communities are an important part of the consumers' post-purchase experience, whether the purpose is to support a new product launch (Gruner et al. 2014) or enable social interactions (Cova and Pace 2006), and are a tool used by marketing managers to facilitate brand relationships and long-term loyalty (Heehyoung, Olfman, Islang, Joon, and Kyungtae 2008; McWilliam 2000; Stokburger-Sauer 2010). In an online community, it is vital for its members to trust the population that will be providing advice and/or social support (Dellarocas 2003; Resnick, Kuwabara, Zeckhauser, and Friedman 2000). The use of reputation signals is one way to help consumers understand the community and its contributors (Dellarocas, Fan, and Wood 2003).

Reputation signals in online communities

In the absence of directly observable behavior, reputation signals indicate a user's prior behavior in the online community by displaying some feature perceivable by others (Ba 2001; Donath 2007; see Table 1 for a summary of the literature on reputation signals). The purpose of reputation signals is to provide community members with a social incentive to participate (Shen, Hu, and Ulmer 2015), display one's standing in the community (Lampel and Bhalla 2007; Wasko and Faraj 2005), and engender trust and cooperation when face-to-face interactions are

absent (Ba 2001; Bolton, Katok, and Ockenfels 2004). There is large variance in how communities signal user reputation and reward user contributions (Dellarocas 2010), as reputation signals can take a variety of forms (Nambisan and Baron 2007).

Table 1. Review of the Literature on Reputation Signals.

Authors	Year	Context	Research Type	Primary Findings
Reputation Signals in Loyalty Programs				
Kumar and Shah	2004	Loyalty programs	Conceptual	A two-tier reward system is proposed as a way to build loyalty and profitability
Drèze and Nunes	2009	Airline loyalty program	Empirical	Number and size of tiers in a loyalty program influences perceptions of status/reputation; low status individuals prefer multi-tier hierarchies
Reputation Signals in Open-Source Communities				
Hertel, Niedner, and Herrmann	2003	Open-source software community	Empirical	Motivations to contribute to the community range from identification with the community to monetary rewards and reputation benefits
Lakhani and Wolf	2005	Open-source software community	Empirical	Users in an open-source software community have a desire to enhance their reputation, which increases likelihood of participation
Reputation Signals in Transactional Online Communities				
Dellarocas, Fan, and Wood	2003	eBay	Empirical	Participation in reputation systems (i.e., providing feedback) is explained by altruism, self-interest, and reciprocation
Sun, Fang, and Lim	2012	Transactional virtual community	Empirical	Competition-based reward systems (i.e., monetary rewards) influence participation
Shen, Hu, and Ulmer	2015	Amazon and Barnes & Noble reviews	Empirical	Community members are motivated to participate to enhance their social reputation within a ranking system and make financial gains
Purpose of Reputation Signals				
Resnick, Kuwabara, Zeckhauser, and Friedman	2000	Online auction sites	Conceptual	Reputation systems foster trust among strangers, allowing past interactions to inform others about future behavior in order to create a safer community
Bolton, Katok, and Ockenfels	2004	Experimental symmetric game	Empirical	Information about past behavior increases cooperation, suggesting that reputation mechanisms facilitate a willingness to cooperate
Wasko and Faraj	2005	Online legal community	Empirical	Individuals are motivated to participate in online communities to enhance their reputation
Lampel and Bhalla	2007	TripAdvisor, Amazon and IMDB online communities	Empirical	Lending information is driven by status/reputation seeking, which also enhances the competitive aspect of reputation attainment and ego incentives
Ma and Agarwal	2007	Emotional support, interest communities	Empirical	Identity verification via reputation systems (i.e., allowing users to rate each other to indicate trustworthiness) enhances community satisfaction
Nambisan and Baron	2007	Microsoft & IBM online forums	Empirical	Participants have a moral responsibility to help others, but also are motivated by personal gains of enhanced reputation
Reputation System Design				
Resnick and Zeckhauser	2002	eBay	Empirical	Quantitative reputation signals (i.e., feedback scores) predict future performance and are influenced by reciprocity
Farzan, DiMicco, Millen, Dugan, Geyer, and Brownholtz	2008	Online community of IBM employees	Empirical	Rewarding user participation via a point-based incentive system motivated consumers to contribute more content to the community; both points and status levels are motivating
Chen, Harper, Konstan, and Li	2010	MovieLens online community	Empirical	When consumers receive numerical information about others, they are more likely to contribute to the community, an effect which is particularly strong for less involved users
Dellarocas	2010	Online reputation system design	Conceptual	Provides suggestions for implementation of reputation systems as an incentive for positive participation
Goes, Guo, and Lin	2014	Online Q&A community	Empirical	Incentive-based reputation systems (e.g., points) motivate consumers in the short-term and when they are close to goal thresholds

Three of the most common types of reputation signals (Dellarocas 2010) are points (i.e., point accrual systems), labels (i.e., descriptive, hierarchical identification systems), and badges (i.e., descriptive, horizontally-ordered identification systems). Points, labels, and badges reflect the member's contribution to the community, but are presented in different ways (Farzan, DiMicco, Brownholtz, Dugan, Geyer, and Millen 2008) and exhibit different characteristics. Some communities utilize multiple signals together to present user reputation, however we focus on the distinction between these common types of signals rather than the interactive effect in an effort to parse apart consumers' reactions to each.

Points are numerical displays of the quantity and/or quality of consumers' contributions to the community. For example, new members of the community gain points as they contribute new content to the community (i.e., discussions or comments) or if their content is Liked or rated as Helpful. Points have the ability to convey the user's perception of his or her position in the ordered community hierarchy relative to others, which we term position clarity.

Labels, on the other hand, are descriptive categories that specify one's place within a social system and have the ability to convey symbolic meaning (Kinch 1967; Owens and Sutton 1999; Sluckin and Smith 1977). A new member of a community is granted a label as he or she joins and is endowed a new label as the quantity and/or quality of contributions to the community increase. Within labels, there are various forms, from straightforward and simple (such as the Apple Support Community's Level 1, Level 2, Level 3) to more descriptive (such as New Member, Contributor, Trusted Contributor, and Caterpillar Employee in the CAT equipment online community) to complex (such as the 23 labels featured in the AT&T Support Community including Voyager, Tutor, Curator, Historian, Guru, and Sage). Like points, labels

also have the ability to communicate position clarity via an ordered, ranked hierarchy, and more importantly, labels have the power to convey one's social role in a community.

Badges are reputation signals that highlight a user's specific skills (e.g., Adobe Photoshop badge) or accomplishments (e.g., 100 Comments badge; Kwon, Halavais, and Havener 2015). Like labels, badges separate users into distinct categories within the social system, but importantly, those distinctions exist across a horizontal playing field and are absent of position clarity (i.e., information about one's relative standing in the community hierarchy). In this paper, we show that a key theoretical dimension on which reputation signals differ that can affect user engagement is the ability of labels and badges to symbolically communicate the consumer's social role in the community (Hogg and Abrams 1993; Mead 1934).

Reputation signals, role clarity, and consumer engagement

While reputation signals can differ in certain ways (e.g., use of words vs. numbers as signals, signals that provide category assignment vs. none; we test these differences later), we hypothesize that the ability of labels and badges to convey role clarity within the online brand community context is a differentiating factor that leads to positive managerial outcomes such as community engagement.

Role clarity involves the presence of roles that provide individuals with information about one's place within the social system (Kahn, Wolfe, Quinn, Snoek, and Rosenthal 1964; Oakes, Turner, and Haslam 1991). According to role theory and the theory of symbolic interactionism (Kinch 1967; Solomon 1983), role clarity limits ambiguity around how consumers perceive themselves and others within the social system. Roles not only serve an informational function, but also a social function (Kahn et al. 1964; Solomon 1983). As one is assigned to a

role, he/she is provided with socioemotional clarity, which evokes a higher level of comfort in the social system, allowing the ability to facilitate connections with others (Grand and Carron 1982; Kahn et al. 1964; Leary and Tangney 2003). When a consumer is provided with a role via a label such as Newbie, they not only join their fellow Newbies but are provided with a predefined social function that allows them to become part of the community's social structure. Importantly, the social role must be framed and *perceived* in a positive manner, such that the valence of the reputation signal is a boundary condition of the proposed theory (see Study 2 for an empirical test).

As roles become clear in a group setting, it increases the likelihood that individuals will have stable, positive relationships with others (Bolton 1981; Callero 1985; Mead 1934). Feelings of role clarity create group cohesion and facilitate the sense that individuals are united around a central goal (i.e., the community; Carron, Brawley, and Widmeyer 1998). Additionally, work in sociology has found that when individuals are assigned interrelated but complementary roles in a group, this fosters stronger group attachment (Burke and Stets 1999). Recognizing the differences between group members and their places within the social structure via labels or badges can therefore foster a community atmosphere (Hewstone 1996; Tajfel 1981; Turner 1982; van Knippenberg 1984), allowing consumers to feel welcomed and accepted via the role-driven category (Ashforth and Mael 1989; Hornsey and Hogg 2000). Thus, we propose that as the role clarity of the reputation signal increases, so does one's connectedness to the community. We hypothesize a serial mediation model ($X \rightarrow M1 \rightarrow M2 \rightarrow Y$) to explain the positive impact of reputation signal type (X) on consumer engagement (Y), such that role clarity (M1) and connectedness to the community (M2) are sequential mediators and are both featured in our causal model as psychological mechanisms underlying the main effect.

In sum, we hypothesize that role clarity is an important antecedent to one feeling connected to a community. When role clarity is present as a feature of the reputation signal, individuals will feel more attached to and welcomed by the community. Following from research by Rashid and colleagues (2006) which suggests that individuals engage more with an online community (i.e., post written contributions such as comments) when they understand the intrinsic value of one's participative effort and feel more connected, we expect that when the reputation signal evokes a social role, individuals will be more likely to engage with the community.

H1: Consumer engagement is greater when the reputation signal features a social role (i.e., labels or badges) than when it does not (i.e., points).

H2: The effect of reputation signal type (i.e., social role vs. no social role) on consumer engagement is sequentially mediated by role clarity and feelings of connectedness.

The moderating role of user tenure

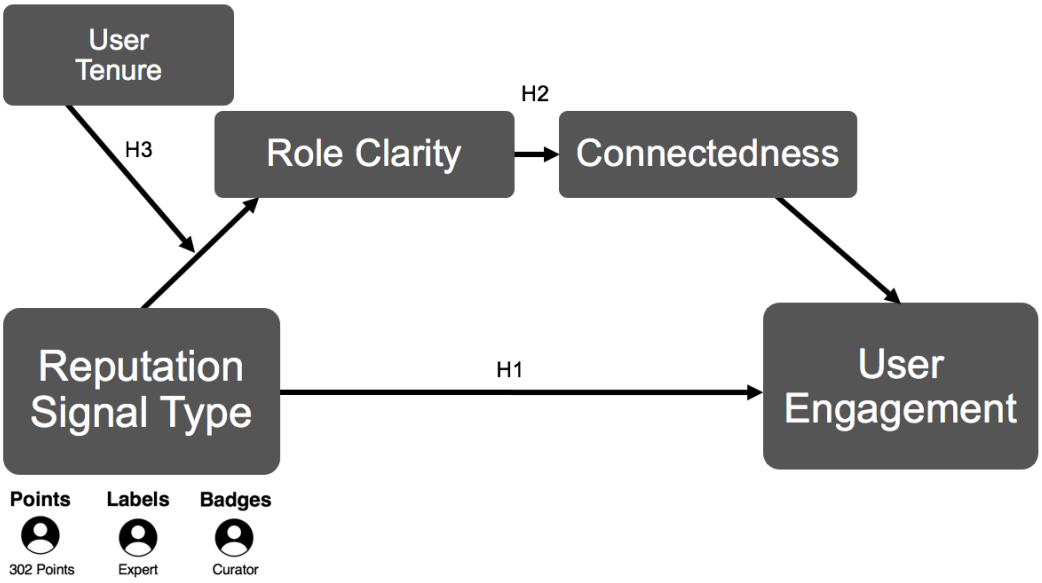
When a signal has the ability to facilitate one's perception of greater role clarity, consequently, one also feels a greater sense of connectedness with members in the community. However, the extent to which consumers rely on such signals as a cue to understand one's role and feel connected varies as membership duration (i.e., user tenure) increases. According to Kozinets' (1999) model of the developmental progression of members in an online community, it takes time for new users to understand the social structure of the community and to become connected.

Reputation signals with high role clarity serve the purpose of quickly endowing new consumers with a role in the community and thus generate greater feelings of connectedness to the community, which will influence greater consumer engagement, as discussed above. Prior

research has shown that when newcomers feel attached to the community, they are more likely to increase their visit frequency than old-timers (Ren, Harper, Drenner, Terveen, Kiesler, Riedl, and Kraut 2012). By contrast, existing community members have progressed in their tenure such that they no longer require information about roles and the social structure (Kozinets 1999). A meta-analytic study by Bauer and colleagues (2007) on role clarity within organizations showed that role clarity becomes less important over time as certainty is achieved and employees become embedded as a method of managing turnover (Allen 2006). We suggest that as the user's tenure in the community increases, one's need for role clarity is satiated and reputation signals that communicate a social role are no longer necessary to connect long-term members to the community. The full theoretical framework is presented in Figure 1.

H3: As the user's tenure in the community increases, the positive effect of a reputation signal that communicates a social role on consumer engagement is mitigated.

Figure 1. Theoretical Framework



Overview of studies

The next sections report the results of four studies that utilize different methods (i.e., panel data analysis, survey, and experiments) to test our predictions. By observing a natural experiment with an online brand community of T-Mobile users, Study 1 uses panel data to demonstrate that when a community changed their reputation signal from points to labels, consumer engagement increased (H1). Study 2 tests the impact of different label types on user's engagement intentions, varying the degree of role clarity to find further support for this construct as a key theoretical difference between types of reputation signals. We also empirically test the mediation model, showing via serial mediation that role clarity and connectedness act as sequential mediators of the relationship between reputation signal and engagement (H2). Study 3, a survey of online community members using a randomized experimental design, examines the role of the user's tenure in the community by measuring engagement intentions of existing users across the tenure spectrum (H3). Finally, Study 4 introduces badges, a signal type that provides role clarity but not position clarity, to provide additional support for role clarity as a crucial factor in our model. This study also further tests user tenure as a moderator, revealing again that role clarity is particularly impactful when it comes to users new to the community. While each study includes its own limitations that are associated with the individual method, the four studies complement one another to test our prediction in various contexts (i.e., telecommunications service, cellphone product) and with varied subject populations.

Study 1: natural experiment

Data and methodology

The data for Study 1 consist of a panel of user-level engagement behaviors (i.e., discussions started and comments posted) of 5,840 consumers in the T-Mobile Support

Community (https://support.t-mobile.com/community/ community/). T-Mobile changed its method of signaling user reputation for all members of their online brand community, which created a natural experiment. This study analyzes the differences in consumer engagement behaviors before and after the reputation signal change.

Prior to the change, the T-Mobile Support Community used points to display user reputation. Points were displayed under the consumer's name, which was associated with all of the discussion posts the consumer started or commented on in the community.[1] On a single day, T-Mobile converted all consumers from points-based reputation signals to label-based reputation signals. The change occurred immediately, and there was no transition period. Points were converted to one of twelve labels that separated into three primary label subcategories: Newbie, Citizen, Super Citizen. These label subcategories also corresponded to a number (1 = Newbie, 2 = Citizen, 3 = Super Citizen), which was displayed below the consumer's photo that was associated with all discussions or comments made by the user to the community. See Appendix A for before and after screenshots of the reputation signal change.

To determine if the change impacted actual engagement-related behaviors in the community, we gathered user-level data for members who had created an account by scraping the data from the public website (i.e., we extracted large amounts of user and discussion content and input it into Excel using programming software). Users must register for an account on the website in order to post a new discussion, comment on an existing discussion, "Like" a discussion or comment, etc. As we developed the dataset, we made sure to exclude any employee accounts. The dataset in total included data from 5,840 users and featured over 3,900 discussions and over 27,000 comments in the focal year.

[1] In a small percentage of cases, the highest performing community members were also provided with a "Pillar" icon that indicated their high status in the community.

Our analysis focused on changes in user-level behavior (i.e., number of discussions started and number of comments posted) three months before and three months after the reputation signal change. To address the potential confound of natural community growth, we also gathered additional data from the same website during the same time period in a following year. We employed a difference-in-differences analysis to determine whether the increase in discussions and comments was present only in the data where the reputation signal change occurred (i.e., the focal year), or in both the focal year and the control year of data.

To test our hypothesis, we conducted panel regression and fit the discussion and comment data to a negative binomial distribution as a way to remedy issues with over-dispersion caused by standard deviations greater than the means for discussions and comments, such that the expected value for the dependent variable can be determined from the model by the formula $E(Y_{it}|X_i) = \exp(\beta X_i)$. All analysis that follows accounts for this non-linear distribution. Details on the model specification are included in the Web Appendix.

Results

User-level engagement behaviors To test H1, we analyzed the main effect of reputation signal type on the number of discussions started and comments posted using all users. Using a reputation signal change indicator variable, we found that when the community changed their reputation signal to labels, consumers in aggregate started more discussions ($\beta = .44$, $t = 11.78$, $p < .001$) and posted more comments than when points were used ($\beta = .54$, $t = 12.55$, $p < .001$). These results provide support for our hypothesis that labels positively impact engagement behaviors to a greater degree than points.

Accounting for seasonality and time effects In an attempt to rule out the contention that the

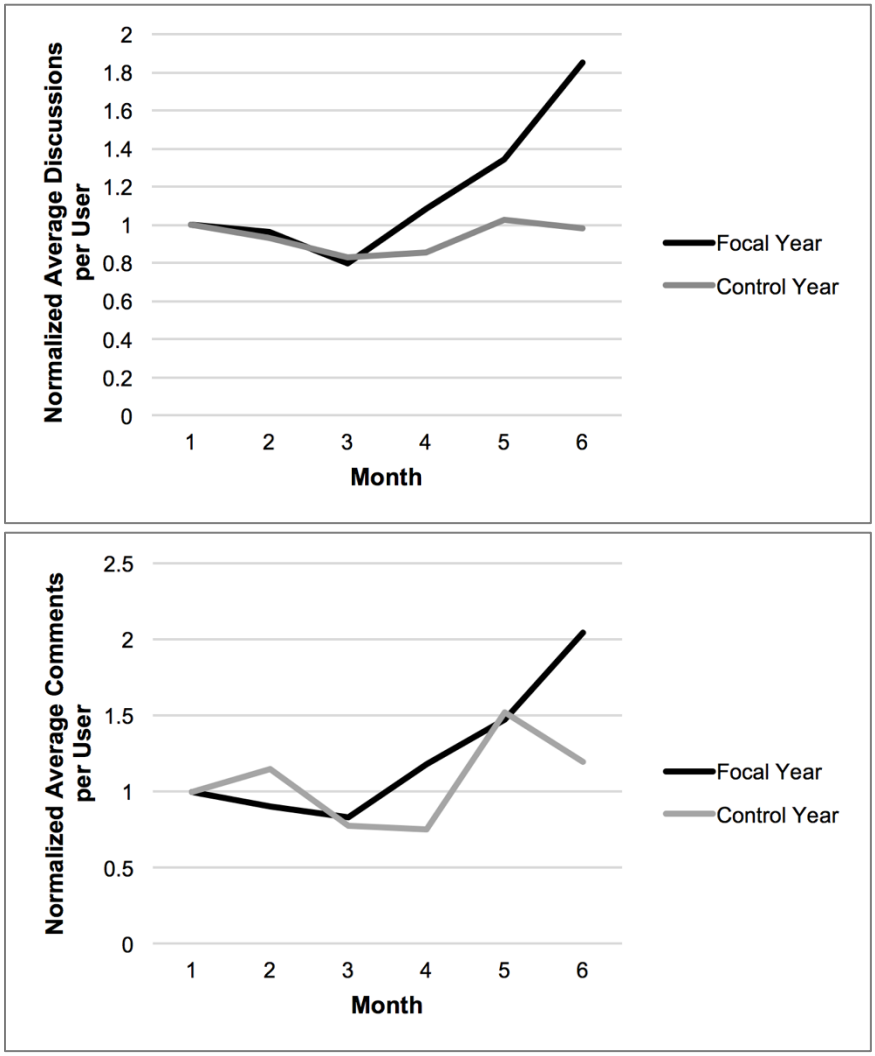
increase in discussions and comments was typical of this time of year in the community, we compared the focal year data to data from the following year (i.e., control). Regression analysis revealed a Signal Type x Year interaction for both discussions (β = .40, t = 6.96, p < .01) and comments (β = .37, t = 4.13, p < .01, see Table 2), indicating that a significant increase in discussions and comments occurred in the focal year, but not the control year. Interestingly, discussion and comments in the control year increased in comparison to the focal year, suggesting that the change from points to labels had a long-term and sustaining positive impact on the community, despite an overall decrease in members. A comparison of the focal year to the control year is plotted in Figure 2, where the values are normalized to the first month of the focal year to facilitate a more accurate comparison.

Table 2. Panel Analysis on the Interaction between Reputation Signal Type and Timeframe (Focal Year vs. Control Year) on Discussions and Comments.

	Discussions	Comments
Focal Year, N=5840		
Points (*Before Period*)	0.089	0.586
Labels (*After Period*)	0.138	1.007
Control Year, N=2439		
Same Months as *Before Period*	0.162	1.357
Same Months as *After Period*	0.168	1.613
Difference-in-Differences	0.043	0.165
Parameter Estimates		
Signal Type	**0.037** (0.046)	**0.173**** (0.075)
Year	**-0.597***** (0.042)	**-0.841***** (0.063)
Signal Type x Year	**0.401***** (0.058)	**0.369**** (0.089)
Model R^2	0.00812	0.00452

Standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

Figure 2. Discussions and Comments Before and After Reputation Signal Change Across Focal Year and Control Year.



Discussion

This natural experiment suggests that labels drive real consumer engagement behaviors to a greater degree than points, providing initial support for H1. While we compared the focal year to a control year to account for seasonality or time effects, a limitation of this study was that we could not control for other factors that we were not aware of, such as other aesthetic website changes, marketing campaigns, or industry announcements in the popular press. However, we also tested the language valence of discussion and comment content using Aylien

(https://aylien.com/) sentiment analysis software and found that the sentiment was no more positive when labels were used versus points (on a scale of -1 negative to 1 positive, M_{Points} = .31, vs. M_{Labels} = .34, $t(7350) = -1.34$, $p = .18$), providing additional support for our findings. Still, we are careful to point out that this study is an initial test of H1 and does not provide direct causal evidence, which we address by conducting the subsequent studies we report. Another limitation was that both points and labels in this community included numeric features (i.e., the icon "1" corresponded to the Newbie title that appeared on a pop-up screen, see Appendix A for details), although the label was dominant and salient in the after period.

To provide a more controlled test of H1 and to deepen the theoretical contribution of our research, we conducted Study 2. In this study, we incorporated additional reputation signal types that vary in role clarity to begin to rule out alternative explanations for the difference between reputation signals, thus transitioning from the managerial operationalization (i.e., points vs. labels) to the theoretical importance (i.e., no social role vs. social role) of our conceptualization.

Study 2: comparison of reputation signal types

Study 2 compares points, labels that feature a social role (i.e., Newbie, Expert, Master), labels that do not feature a social role but convey position clarity through category assignment (i.e., Bronze, Silver, Gold), and negative labels that communicate a social role (i.e., Follower, Servant, Dictator). This study tests role clarity as a necessary condition for the observed positive effect, and extends our findings to show the nature of the roles (e.g., positive or negative valenced labels) as a potential boundary condition.

We also attempt to rule out the following alternatives to role clarity as theoretical explanations for the superiority of labels seen in Study 1. First, one could suggest that the

difference between points and labels is due to the difference between numbers and words. If so, then any label scheme, including those that do not convey a social role, will influence engagement intentions to a greater degree than points. Second, another alternative is that points offer no category assignment, while labels do. Thus, if this theory is true, any labels (with or without role clarity) would again be superior to points in driving engagement intentions.

Method

Study 2 adopts a 4-condition (Reputation Signal Type: No Social Role (Points) vs. Social Role Labels (Newbie/Expert/Master) vs. No Social Role Labels (Bronze/Silver/Gold) vs. Negative Social Role Labels (Follower/Servant/Dictator)) between-subjects design. The study was administered via an online survey, and participants were recruited via Amazon Mechanical Turk. A total of 200 U.S. adults (age range = 21-61, M_{Age} = 35.19, 53% male) completed the survey in exchange for a small payment. A three-page description of the community and its reputation procedure was presented to participants, followed by a survey.

In the *no social role points* condition, participants were told that the community used points to represent each user's reputation. They viewed examples of users with 0 points, 500 points, and 1,000 points. Finally, they were told that they would receive a point whenever their discussion or comment was Liked or rated as Helpful. In the *social role labels* (Newbie/Expert/Master) condition, participants were told that the community uses labels to represent each user's reputation. They viewed examples of users with the labels Newbie, Expert, and Master, and they were told that they would receive a point whenever their discussion or comment was Liked or rated as Helpful, which would be converted to a label. The *no social role labels* (Bronze/Silver/Gold) condition and the *negative social role labels* condition mirrored the

Newbie/Expert/Master condition, except that participants viewed examples of users with the labels Bronze, Silver, and Gold and the labels Follower, Servant, and Dictator, respectively.

After viewing the information about the community's reputation signaling procedure, participants were asked to rate their intentions to engage (i.e., participate, comment, discuss) with the community, their perceptions of role clarity and position clarity, and feelings of connectedness to the community. Engagement intentions were measured using five items adapted from online participation scales from Zhou (2011) and Chung, Namkee, Hua, Fulk, and McLaughlin (2010), which were averaged to form the engagement intentions index (α = .98). Role clarity was measured and averaged from four items (α = .89) we developed by closely following the definitions of Kahn et al. (1964) and Oakes et al. (1991). Feelings of connectedness to the community were measured using a combination of two original items that tapped into one feeling welcomed and attached to the community, as well as an item from the network analysis literature regarding emotional closeness within a network (α = .94; Cornwell, Schumm, Laumann, and Graber 2009). The primary measurement items were pilot tested and factor analyzed prior to the full study to test for discriminant and convergent validity (see Appendix B). While not central to our conceptual model, we also measured position clarity using two original items (r = .79, i.e., "My position in this community is clear" and "My position in this community is unambiguous") to empirically contrast role clarity and position clarity as important dimensions of reputation signals.

Results

Engagement intentions A one-way ANOVA on engagement intentions revealed a significant difference between the groups ($F(3,196) = 5.72$, $p = .001$, $\eta^2 = .081$). When the community used

labels that communicate a social role (Newbie/Expert/Master) to signal user reputation, participants were more likely to have a desire to engage with the community than when points were used (M_{Newbie} = 5.25 vs. M_{Points} = 4.63, t(196) = -2.05, p = .042), when negative labels were used (M_{Newbie} = 5.25 vs. $M_{Negative}$ = 4.00, t(196) = 4.14, p < .001), and when Bronze/Silver/Gold labels were used (M_{Newbie} = 5.25 vs. M_{Bronze} = 4.64, t(196) = 2.01 p = .046). Additionally, we found no difference between points and labels without a social role (i.e., Bronze/Silver/Gold) on engagement intentions (M_{Points} = 4.63 vs. M_{Bronze} = 4.64, t < 1), but negative labels were perceived as less engaging than points (M_{Points} = 4.63 vs. $M_{Negative}$ = 4.00, t(196) = 2.09, p = .038).

Role clarity A one-way ANOVA revealed a significant difference on role clarity (F(3,196) = 4.98, p = .002, η^2 = .071). When the community used labels featuring a social role (Newbie/Expert/Master), participants felt more like they had a role in the community than when points were presented (M_{Newbie} = 5.21 vs. M_{Points} = 4.44, t(196) = -2.83, p = .005). Additionally, Newbie/Expert/Master labels were perceived as greater in role clarity than the other label types, Bronze/Silver/Gold or Follower/Servant/Dictator (M_{Newbie} = 5.21 vs. M_{Bronze} = 4.48, t(196) = 2.69, p = .008; M_{Newbie} = 5.21 vs. $M_{Negative}$ = 4.22, t(196) = 3.62, p < .001). Points and Bronze/Silver/Gold labels did not differ on role clarity (M_{Points} = 4.44 vs. M_{Bronze} = 4.48, t < 1), nor did points and Follower/Servant/Dictator (M_{Points} = 4.44 vs. $M_{Negative}$ = 4.22, t < 1). Interestingly, we found that negative labels did not evoke perceptions of high role clarity, perhaps due to dissonance created by the less than positive descriptors.

Position Clarity A one-way ANOVA revealed a null effect of position clarity (F(3,196) = .54,

$p = .66$, $\eta^2 = .008$), such that all conditions were perceived to communicate similarly regarding the hierarchical nature of the community ($M_{Points} = 4.35$ vs. $M_{Newbie} = 4.55$ vs. $M_{Bronze} = 4.31$ vs. $M_{Negative} = 4.61$).

Connectedness to the Community A one-way ANOVA revealed a significant difference on connectedness to the community ($F(3,196) = 6.68$, $p < .001$, $\eta^2 = .093$), mirroring the pattern for role clarity. As predicted, when the reputation signal featured a positive social role, participants felt greater connectedness to the community than when it did not, whether the signal conveyed a negative social role ($M_{Newbie} = 4.81$ vs. $M_{Negative} = 3.44$, $t(196) = 4.41$, $p < .001$), featured position clarity but no role clarity ($M_{Newbie} = 4.81$ vs. $M_{Bronze} = 4.29$, $t(196) = 1.70$, $p = .091$), or communicated no role via a quantitative system ($M_{Newbie} = 4.81$ vs. $M_{Points} = 4.07$, $t(196) = -2.41$, $p = .017$).

Mediation Next, we tested role clarity and connectedness to the community as sequential mediators of the effect of reputation signal type on engagement intentions using Hayes' (2018) PROCESS model 6 with 10,000 bootstrapped samples. As predicted, the serial mediation was significant (i.e., the 95% confidence interval did not include zero) when comparing signals that communicate a social role to those that do not and when comparing positive social-role labels to negative social-role labels. Role clarity and connectedness to the community sequentially mediated the relationship between reputation signal type and engagement intentions in all proposed comparisons (i.e., points vs. social-role labels: a × b = .21, 95% CI: .057, .40; negative labels vs. social-role labels: a × b = -.34, 95% CI: -.57, -.15, no-social-role labels vs. social-role labels: a × b = -.14, 95% CI: -.25, -.039).

Discussion

This study shows, like Study 1, that labels have the ability to convey greater role clarity than points, and as such, motivate consumers to engage with the community. We demonstrate that role clarity is a necessary condition for labels to be a more successful reputation signal than points from a community engagement standpoint. By comparing labels that feature a social role to those that do not, we reveal that it is not the fact that labels are described in words nor simple categorization that impacts their positive effect, but rather the fact that labels can describe one's social role in the community. Additionally, results indicate that framing reputation signals with positive social roles (e.g., Newbie/Expert/Master), rather than assigning negative social roles (i.e., Follower/Servant/ Dictator), is critical to generating positive engagement intentions. Therefore, we highlight valence of the reputation signal as a boundary condition of our theory. We also provide evidence for the proposed serial mediation model, showing that role clarity influences feelings of connectedness, which in turn, increase user engagement, supporting H2.

Study 3: survey of community members & the moderating role of user tenure

Method

In Study 3, we surveyed members of an online sports community called HuddlePass as part of a company-sponsored satisfaction survey. The community, which featured articles, discussions, and commentary about college football, was created in August 2013. No existing reputation system was in place prior to or at the time of the experiment, which allowed us to randomly assign consumers to conditions that featured a social role (i.e., labels) or did not (i.e., points). We were interested in how this assignment and the user's tenure in the community factored into one's engagement intentions in a real-world setting.

The brand sent an email to 4,001 registered users with a link to the survey, encouraging them to participate by offering a drawing of two $100 Amazon gift certificates. Out of the total user list, 224 completed some component of the study (5.6% response rate, which is a rate typical of consumer satisfaction surveys distributed by companies; American Consumer Satisfaction Index 2015). We removed any responses that were employees of the company (n = 8). We also removed incomplete responses (n = 46)[2], leaving 170 participants who completed the full survey. Therefore, 170 responses are considered in the following analysis (4.3% response rate, M_{Age} = 39.79, age range = 19-72, 84.7% male).

The first part of the survey included a number of questions of interest to the brand. Of primary interest for this study was a question related to the user's timeline of membership or tenure in the community: "When did you join HuddlePass?" (answers ranging from August 2013 to March 2014).

The second part of the survey included the reputation signal type manipulation, followed by items related to engagement intentions, role clarity, and connectedness to the community. An introductory page told participants that the company is considering incorporating a reputation system into the website. Next, participants were presented with the reputation signal manipulation, which was executed similarly to Study 2 and randomly assigned.

Participants were then asked to provide ratings of their participation intentions (3 items, α = .78), feelings of connectedness to the community (2 items, r = .76), and perceptions of role clarity (2 items, r = .74) if the company were to incorporate the reputation system that was described. We utilized a subset of items from Study 2 and adapted them to the context. All items

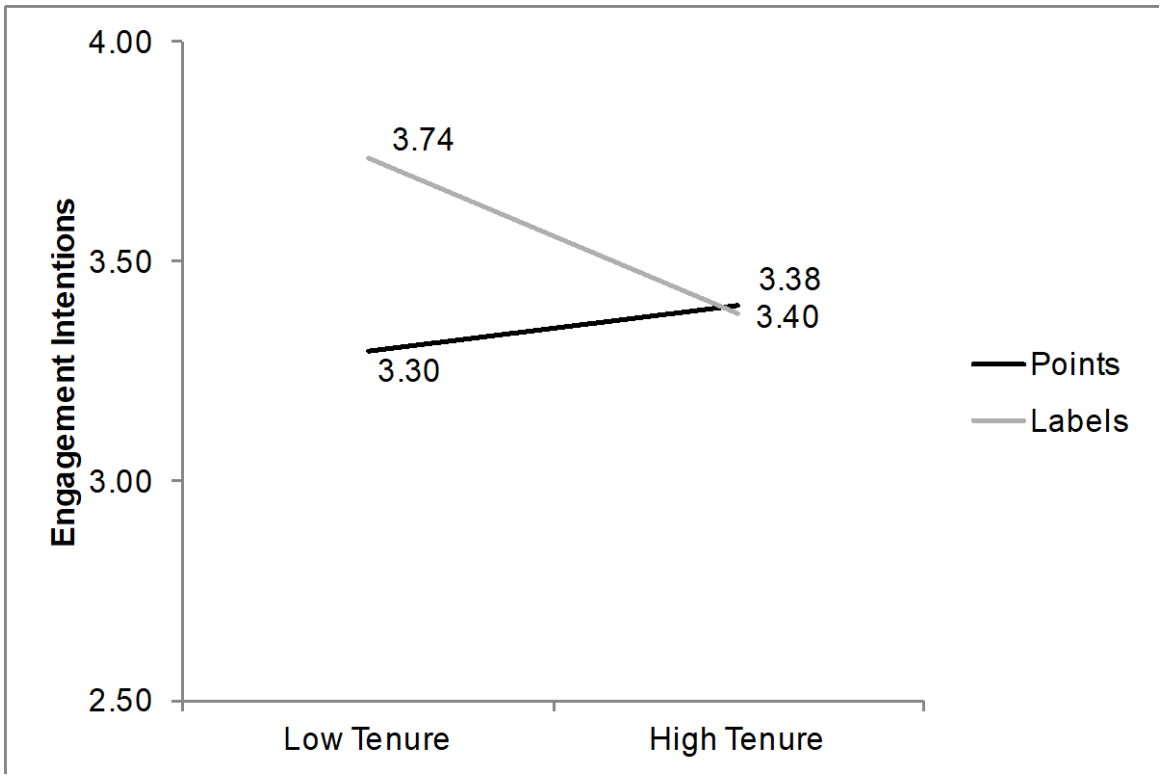
[2] We compared the dataset with incompletes to the dataset of completes to ensure that the distribution of members along the user tenure variable was similar and that there was no apparent selection bias. The distribution proved to be very similar with frequencies within 1-2%. We also compared early responders to late responders and found no significant difference in responses.

were measured on a 1 = strongly disagree, 5 = strongly agree scale. User tenure was conceptualized as the number of months elapsed from the user's join date (1 = August 2013, 8 = March 2014, average = 2.09, SD = 1.49). The following analysis adopts a 2 Reputation Signal Type x User Tenure analysis, with reputation signal type as the between-subjects variable and user tenure as a continuous measure.

Results

Engagement intentions A significant two-way interaction (Reputation Signal Type x User Tenure) emerged for the measure of engagement intentions (β = -.175, t = -2.15, p = .033, R^2 = .044), as well as a main effect of signal type (β = 1.38, t = 2.40, p = .018). Next, we plotted the graphs at one standard deviation above and below the mean for user tenure, such that one standard deviation below the mean indicated a participant that had joined HuddlePass more recently and one standard deviation above the mean indicated a longer-term user. We found that participants in the social role condition (i.e., labels) were more likely to report intentions to continue engaging with the HuddlePass community than participants in the no social role condition (i.e., points), but only for users that were not members of the community for a long time (i.e., at -1 standard deviation on user tenure; M_{Points} = 3.30 vs. M_{Labels} = 3.74, β = .43, t = 2.15, p = .03, see Figure 3). For users that were members for a longer period of time (i.e., at +1 standard deviation on user tenure), no difference was observed between reputation signal types (M_{Points} = 3.40 vs. M_{Labels} = 3.38, β = -.02, t = -.09, $p > .05$).

Figure 3. Engagement Intentions as a Function of Reputation Signal Type and User Tenure.



Finally, we conducted floodlight analysis, a technique that shines a light on the full range of the independent variable to show where the simple effect is significant and where it is not in a moderated regression analysis (Spiller, Fitzsimmons, Lynch, and McClelland 2013). The border between these regions is called the Johnson-Neyman point. To determine the Johnson-Neyman point, we used Hayes' (2083) PROCESS macro for SPSS. We found that the region of significance shifts at 2.46 (or approximately two-and-a-half months into the users' membership in the community), suggesting that the preference for signals that feature a social role occurs very early in the consumers' interaction with the community.

Connectedness to the community A significant two-way interaction (Reputation Signal Type x User Tenure) emerged for the measure of connectedness to the community (β = -.189, t = -2.37,

p = .019, R^2 = .063), as well as a main effect of user tenure (β = .26, t = -2.29, p = .023). We found that feelings of connectedness were greater for new community members when the reputation signal featured a social role (i.e., at -1 standard deviation on user tenure; M_{Points} = 3.15 vs. M_{Labels} = 3.69, β = .54, t = 3.83, p < .001).

By contrast, more seasoned members (i.e., at +1 standard deviation on user tenure) did not differ on their feelings of connectedness whether user reputation featured a social role or not (M_{Points} = 3.34 vs. M_{Labels} = 3.39, β = .06, t = 1.77, p > .05). Floodlight analysis as described above showed that the effect of reputation signal type on connectedness to the community moved from significant to non-significant at a tenure of 1.50 (or approximately one-and-a-half months after the participant joined the HuddlePass community). We found no main effect of reputation signal type on connectedness, perhaps due to user tenure being skewed toward more seasoned members.

Role clarity A significant main effect of reputation signal type on role clarity supported our theorizing, such that participants who were exposed to the social role signal (i.e., labels) reported greater role clarity than those who were not (i.e., points) (M_{Points} = 3.13 vs. M_{Labels} = 3.43, β = .19, t = 2.66, p = .010). No other significant effects emerged.

Mediation First, we tested the moderated mediation model with user tenure as the moderator, connectedness to the community as the mediator, reputation signal type as the predictor, and engagement intentions as the outcome using the PROCESS macro (Hayes 2018, model 8 for moderated mediation) and 10,000 bootstrapped samples. We predicted that the mediation would be significant (i.e., the 95% confidence interval would not include zero) for new members, but

not for members with a longer tenure in the community (i.e., the 95% confidence interval would include zero). Analysis confirmed that the indirect effect of reputation signal type on engagement intentions was significant through connectedness to the community for new users (i.e., at -1 standard deviation on user tenure; a × b = .37, 95% CI: .14, .61), but not for long-term users (i.e., at +1 standard deviation on user tenure; a × b = .059, 95% CI: -.14. .24).

Next, we tested the serial mediation model using the same procedure as Study 2. As predicted, the indirect effect of reputation signal type on engagement intentions was significant through role clarity and connectedness to the community as sequential mediators (a × b = .08, 95% CI: .02, .15). Additional results for the mediation tests and path models are included in the Web Appendix.

Discussion

In Study 3, we demonstrated that existing community members who were new to the community were more likely to engage with HuddlePass if it adopted a reputation signal that featured a social role (i.e., labels), supporting the moderating effect of user tenure and H3. These new community members (i.e., those who had been involved in the community for just 1-2 months) also reported greater connectedness to the community when social role signals were suggested, while this signal type generated greater perceptions of role clarity for both new and longer-term members. We also replicated the serial mediation demonstrated in Study 2 using real consumers, further confirming the critical function that role clarity plays in the implementation of reputation signals.

While in this study we measured user tenure, the next study manipulates user tenure to provide additional confidence in its moderating effect. We also utilitze the next study to find

further support for our theoretical argument regarding the difference between types of reputation signal and to rule out some important alternative explanations. First, we integrate badges into the design—which have role clarity but no position clarity—and show that role clarity alone is a sufficient reputation signal characteristic to generate a positive impact on consumer engagement. Second, our theory is predicated upon the idea that social categorization in this context does not produce the negative outcomes sometimes seen in related group and community-based research (Bales 1973; Tajfel 1981; Archibald 1976; Lee and Ofshe 1981). Therefore, we aim to empirically confirm that participants do not perceive such category assignment negatively. Third, we seek to rule out four alternative psychological constructs that could explain the difference between how users perceive types of reputation signals: desire to pursue status (i.e., labels may be simply more motivating than points), expertise perception (i.e., labels may evoke thoughts of greater community expertise), desire to express one's "new-ness" (i.e., labels may better allow users to express their inexperience in the community), and attitude toward the signal (i.e., labels may simply be more appealing in general).

Study 4: controlled experiement & the moderating role of user tenure

Method

Study 4 adopts a 3 Reputation Signal Type (No Social Role (Points) vs. Social Role with Position Clarity (Labels) vs. Social Role with No Position Clarity (Badges)) x 2 User Tenure (Low vs. High) between-subjects design.

This survey experiment was administered via the Amazon Mechanical Turk platform. A total of 300 adults (age range = 20-71, M_{Age} = 35.51, 50.9% male) completed the experiment in exchange for a $1 payment. We removed eleven respondents who said that they had difficulty

understanding the experiment, for a total of 289 participants used in the analysis. As the stimuli for this study, we created three versions of a realistic online brand community website corresponding to our three reputation signal conditions. The website was designed to mirror the Apple Support Community (https://support.apple.com). Content included actual discussion posts and comments scraped from Apple's iPhone forum. We focused on making the stimuli realistic and engaging to increase external validity.

At the beginning of the experiment, we told participants that we partnered with a popular brand that is in the process of redesigning its reputation system. Then, we asked participants to spend some time browsing the website. Upon entering the website, the homepage provided participants with a general description of the community's procedure for awarding reputation signals. Then, participants clicked a link to view the content of the website, which included a selection of discussion posts on the topic of "Using the iPhone". Participants spent an average of 3.07 minutes on the community website. See the Web Appendix for screenshots of the stimuli.

The reputation signal manipulation was executed in two ways: 1) in the description of the reputation system on the homepage, and 2) throughout the discussion and comment content. In the *no social role points* condition, on the homepage, participants were told that as they participate in the community, they earn points, and they viewed examples of members with 500 points and 1,000 points. As they viewed discussion content, the other members of the website who posted discussions and answered comments had points beneath their usernames. In the *social role labels* condition, on the homepage, participants were told that as they participate in the community, they earn a label, and they viewed examples of community members with Expert and Master labels. As they viewed discussion content, the other members of the website who posted discussions and answered comments had the label Newbie, Expert, or Master beneath

their usernames. In the *social role badges* condition, on the homepage, participants were told that as they participate in the community, they earn a badge, and they viewed examples of members with iMail and iCloud badges. As they viewed discussion content, the other members of the website who posted discussions and answered comments had the badge iOS, iMail, or iCloud beneath their usernames.

The user tenure manipulation was executed before participants entered the website experience. In the *low tenure condition*, participants were told that they were new to the community. In the *high tenure condition*, participants were told that they had been a member of the community for a long time.

After viewing the website, participants completed a survey about their experience. Our primary constructs included engagement intentions (α = .98), perceptions of role clarity (α = .88), and feelings of connectedness to the community (α = .96), using the same measurement items as Study 2. As discussed previously, we also measured secondary constructs related to our theoretical argument (i.e., position clarity and negative impact of social categorization) and psychological variables we aimed to rule out as alternative explanations (desire to pursue status, expertise perception, desire to express one's "new-ness", and attitude toward the signal. Items within each construct were presented in random order. A full list of secondary items is included in the Web Appendix.

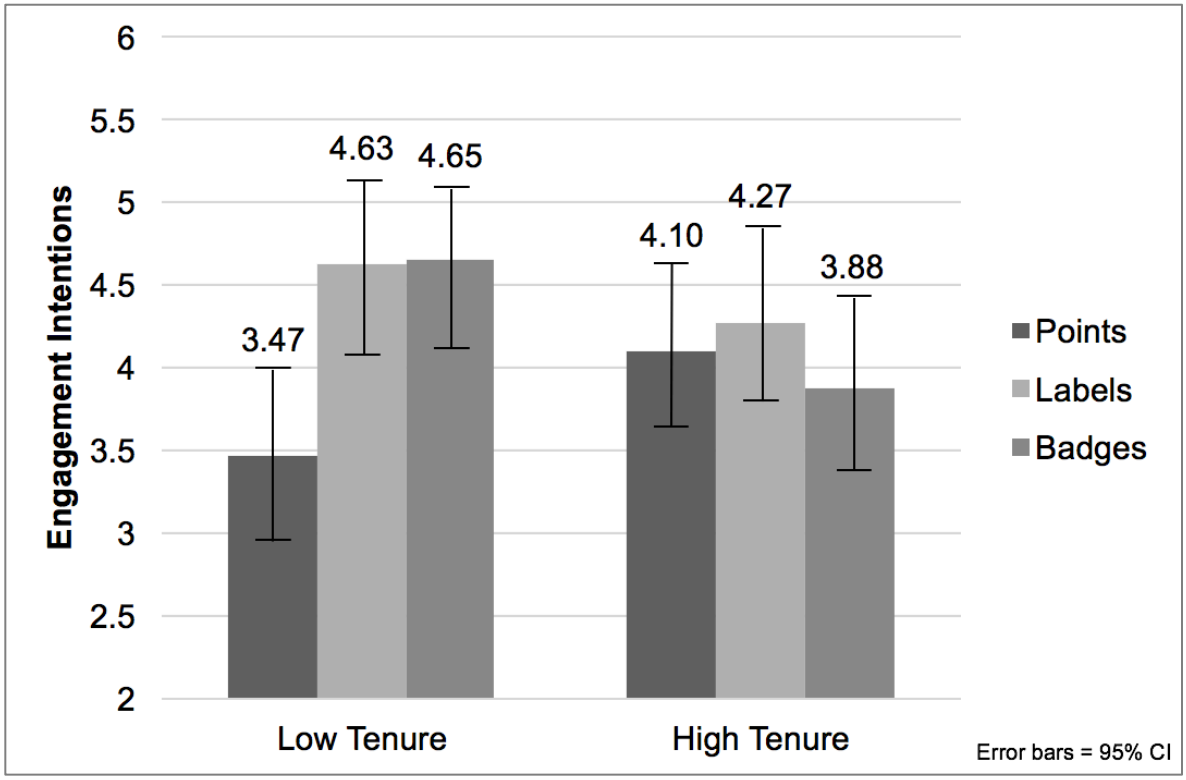
Results

Manipulation check A chi-square test of difference ($\chi^2(4) = 454.70$, $p < .001$) indicated that 92% of respondents correctly identified the reputation signal condition (i.e., Points, Labels (Newbie, Expert, Master), or Badges (iOS Badge, iMail Badge, iCloud Badge)) when asked,

"What type of reputation signal was used in the community?", confirming the reputation signal type manipulation. We also confirmed the user tenure manipulation (i.e., new to the community = Low Tenure, or had been a member for a long time = High Tenure), as a chi-square test of difference ($\chi^2(1) = 258.09$, $p < .001$), indicated that 97% of participants correctly selected the proper tenure condition.

Engagement intentions A 3 Reputation Signal Type x 2 User Tenure ANOVA on engagement intentions revealed a significant interaction ($F(2,283) = 3.69$, $p = .026$, $\eta^2 = .025$, see Figure 4) and a significant main effect of reputation signal type ($F(2,283) = 3.31$, $p = .038$, $\eta^2 = .025$). First, in alignment with our prediction, the main effect revealed that engagement intentions were greater for both signals that convey a social role; labels ($M_{Points} = 3.78$ vs. $M_{Labels} = 4.44$, $t(286) = -2.47$, $p = .014$) and badges ($M_{Points} = 3.78$ vs. $M_{Badges} = 4.27$, $t(286) = -1.81$, $p = .071$) generated greater engagement intentions when compared to points. Next, we analyzed the interactive effect by conducting planned contrasts within the low and high tenure conditions. When participants were told that they were new to the community, engagement intentions were greater when a signal with a social role and position clarity ($M_{Points} = 3.47$ vs. $M_{Labels} = 4.63$, $F(1,283) = 9.46$, $p = .002$) or a social role with no position clarity ($M_{Points} = 3.47$ vs. $M_{Badges} = 4.65$, $F(1,283) = 10.00$, $p = .002$) was used as opposed to points. We also found no difference between labels and badges on engagement intentions for low tenure users ($M_{Labels} = 4.63$ vs. $M_{Badges} = 4.65$, $F(1,283) = .003$, $p = .96$). However, when comparing engagement intentions of high tenure users, we found no difference between reputation signal types ($M_{Points} = 4.10$ vs. $M_{Labels} = 4.27$, $F(1,283) = .65$, $p = .66$; $M_{Points} = 4.10$ vs. $M_{Badges} = 3.88$, $F(1,283) = .34$, $p = .56$).

Figure 4. Engagement Intentions as a Function of Reputation Signal Type and User Tenure.



Role clarity We found only a significant main effect of reputation signal type on role clarity ($F(2,283) = 3.67$, $p = .027$, $\eta^2 = .025$), such that participants who viewed the community that used points as reputation signals experienced less role clarity than those in the labels ($M_{Points} = 3.50$ vs. $M_{Labels} = 4.10$, $t(286) = -2.63$, $p = .009$) or badges ($M_{Points} = 3.31$ vs. $M_{Badges} = 3.94$, $t(286) = -1.92$, $p = .055$) conditions. No other significant effects emerged. See Appendix C for a plot of the means.

Connectedness to the community A 3x2 ANOVA on connectedness to the community revealed a significant interaction ($F(2,283) = 3.24$, $p = .041$, $\eta^2 = .022$) and a significant main effect of reputation signal type ($F(2,283) = 3.12$, $p = .046$, $\eta^2 = .022$, $M_{Points} = 3.31$ vs. $M_{Labels} = 3.91$ vs. $M_{Badges} = 3.77$). Patterns follow the results for engagement intentions. Planned contrasts

revealed that when participants were new to the community, they felt more connected when labels were used to indicate user reputation when compared to points (M_{Points} = 2.94 vs. M_{Labels} = 4.08, $F(1,283) = 10.40$, $p = .001$). A similar difference was found when comparing badges and points on feelings of connectedness for new users (M_{Points} = 2.94 vs. M_{Badges} = 3.95, $F(1,283)$ = 8.29, $p = .004$). We found no difference in connectedness for new users when comparing labels and badges (M_{Labels} = 4.08 vs. M_{Badges} = 3.95, $F(1,283) = .14$, $p = .71$). However, high tenure participants reported no difference between their feelings of connectedness to the community whether points, labels, or badges were used (M_{Points} = 3.69 vs. M_{Labels} = 3.74, $F(1,283) = .19$, p = .66, M_{Points} = 3.69 vs. M_{Badges} = 3.59, $F(1,283) = .087$, $p = .77$). See Appendix C for a plot of the means.

Mediation We conducted moderated serial mediation analysis using Hayes' (2018) PROCESS macro (10,000 bootstrapped samples, model 83) with user tenure as the moderator, role clarity and connectedness to the community as sequential mediators, reputation signal type as the predictor, and engagement intentions as the outcome. We found an indirect effect of reputation signals on engagement intentions to be significant through role clarity and connectedness to the community for participants new to the community (a × b = .20, 95% CI: .05, .38), but not for high tenure members (a × b = -.0042, 95% CI: -.17, .15). Additional results for the mediation tests and path models are included in the Web Appendix.

Alternative explanations As discussed earlier, we tested a series of alternative explanations for the differences seen between the reputation signal type conditions: position clarity, negative social categorization, status pursuance, expertise perceptions, desire to express one's "newness"

to the community, and attitude toward the reputation signal. First, we found a significant main effect of reputation signal type on perceptions of position clarity ($F(2,283) = 6.53$, $p = .002$), aligning with our prediction that points and labels exhibit an equivalent level of position clarity ($M_{Points} = 4.13$ vs. $M_{Labels} = 4.03$, $t(286) = .47$, $p = .64$), but badges offer less position clarity than labels ($M_{Badges} = 3.38$ vs. $M_{Labels} = 4.03$, $t(286) = 2.87$, $p = .004$) or points ($M_{Badges} = 3.38$ vs. $M_{Points} = 4.13$, $t(286) = 3.33$, $p = .001$). However, position clarity did not interact with user tenure nor did it act as a mediator between reputation signal type and engagement intentions.

Regarding the other alternative psychological explanations, we found no significant main effects, interactions, or mediation results for these constructs except for a main effect of user tenure on expertise perceptions, such that participants who were told that they had been a member for a long time perceived the community to have greater expertise than participants who were told that they were new to the community ($M_{High} = 5.34$ vs. $M_{Low} = 4.99$). However, we found no impact of reputation signal type on expertise perceptions. See the Web Appendix for graphs of means for each alternative. These results provide additional support for the importance of role clarity as a key theoretical difference in consumers' perceptions of reputation signals.

Discussion

Study 4 accomplished three goals. First, we showed that when a signal that communicates a social role (i.e., labels or badges) was used in an online community, participants were more likely to engage with the community than if points, a signal that cannot evoke a social role, were used, further supporting H1. We demonstrated that labels and badges exhibit greater role clarity than points, while labels and points can communicate position clarity to a greater degree than badges. These results suggest that role clarity and position clarity are distinct

constructs and that it is role clarity that impacts consumer engagement in the community context. Second, we show empirically that role clarity and feelings of connectedness to the community indirectly (and sequentially) influence user engagement intentions, providing support for our causal model and H2. Third, we show a consistent moderating role of user tenure, now across two studies. This has important managerial implications, as depending on the proportion of new or long-term members, the use of social role-evoking reputation signals may be more or less advantageous. We discuss this further in the next section.

General discussion

This research presents four studies that explore consumers' reactions to different types of reputation signals in online brand communities. First, via a dataset of user contributions in the T-Mobile Support Community, we show that consumers initiate more discussions and post more comments when the reputation signal evokes a social role (i.e., labels) versus when the signal does not (i.e., points). Second, evidence from experimental studies supports our causal model that explains why social-role signals are more effective at motivating consumers' desire to engage with the community. Using a theoretical background in sociology and social psychology, we find that role clarity and connectedness are the psychological constructs that underlie the effect of reputation signals on consumer engagement. Third, we demonstrate that the positive effect of social-role signals is particularly impactful for new members, using both a controlled experiment and a survey of existing community members. Finally, we show that badges, a reputation signal which has role clarity but no position clarity, are as effective as labels and more effective than points at enhancing engagement intentions. In doing so, we further demonstrate the importance of role clarity and distinguish it from position clarity as a key theoretical

characteristic of successful reputation signals.

Theoretical implications

From a theoretical perspective, we directly address Dholakia and colleagues' (2004) concluding thought in their seminal paper on user engagement in online communities (p. 260):

> *On the whole, we know relatively little about the importance of different information elements of a participant's reputation or other identifying information, and when or how such measures are used by participants to make interaction decisions within the virtual community.*

We fill this gap by investigating common types of reputation signals in online communities and by comparing the degree to which each stimulates feelings of connectedness and consumer engagement. We show that in certain cases, reputation signals that communicate a social role are particularly effective at generating feelings of connectedness, as well as community engagement. We shed new light on role clarity as a necessary condition for the advantage of certain reputation signals over others. Our research shows that reputation signals have important and significant social value, and this social value has a direct relationship with consumer engagement. Specifically, this research contributes new knowledge by demonstrating the relationship between connectedness and role clarity and by highlighting the degree to which role clarity can enhance the meaning of social categories.

Moreover, we contribute to the literature on the importance of a user's tenure in the community as a moderating factor of consumers' willingness to engage in an online community (Kozinets 1999; Ren et al. 2012). We show that long-term members are satiated in terms of their desire for role information, such that reputation signals do not have an effect on their community engagement. However, for new community members, signals that evoke a social role can provide the information necessary to navigate the community as well as offer connectedness more

effectively than signals that do not.

At the same time, this research makes a theoretical contribution by extending both the marketing and social psychology literatures on social categorization. To our knowledge, we are the first to compare different methods of categorization and empirically test the impact of such methods on individuals' engagement in a group setting. We find evidence for social categorization as a positive reputation mechanism for existing and prospective community members when compared to numeric, quantitative signals (i.e., points). Importantly, we find that the categorization must provide meaningful, non-negative role information. We echo recent findings by Fombelle and colleagues (2016) who also find evidence for the positive impact of social categorization in the context of idea generation in online communities (e.g., My Starbucks Idea), while providing additional nuance into the value of role clarity as a necessary condition in the online brand community context.

Managerial implications

From a managerial perspective, this work highlights the importance of considering reputation signals as a strategic consumer engagement tool when building and maintaining an online brand community. Our research suggests that, when it comes to reputation signals, choosing one that can evoke a social role is important, particularly for new community members. These insights have implications for community managers as they have the ability to personalize the online consumer experience and change the way that user reputation is emphasized or de-emphasized (Chen et al. 2010; Chung et al. 2016). For example, our research suggests that signals with role clarity should be highlighted for new members (via community messaging, welcome emails, etc.), but can become less salient as membership duration increases.

We contribute to recent research on the importance of personalizing the online consumer experience (i.e., mobile news on social media; Chung et al. 2016), providing further evidence that dynamically changing the interface by user type and providing personalized content in regard to reputation is a valuable effort. The current research suggests that messages about reputation should be tailored across the user life cycle, such that signal type is particuarly impactful for new users.

Additionally, we show that the meaning of the descriptive category is more important than hierarchy for engaging community members. Marketing strategy should then focus on integrating reputation labels that communicate role clarity, rather than creating traditional, vertical hierarchies that lack important role and socialization information. For example, the simple label structure in the Apple Support Community (Level 1, Level 2, Level 3, etc.) could be re-examined in favor of a scheme that more clearly communicates the behaviors required of each user category.

Limitations and future research

Although this research yields valuable insights, it is also subject to certain limitations. We focused our attention on online brand communities due to the lack of research on reputation signals in this area, but future research could explore additional community types and the relative presence and importance of different reputation signal types. Additionally, while the natural experiment with T-Mobile showed the positive effect that occurred when the reputation signal was changed from points to labels, we were limited in terms of also showing a comparative case (i.e., labels to points). It would also be valuable to compare multiple reputation signals used concurrently to individual usage.

Future research could further explore the boundary conditions associated with the positive effect of reputation signals that communicate a social role. In our operationalization, we incorporated three descriptive ranks (e.g., Newbie, Expert, Master) in our stimuli in the experimental studies. Additional research should explore the optimal number of descriptive categories, as well as the distance between them. Does the distance to the next rank impact one's perception of the reputation signal? For example, if a consumer is close to the next tier, perhaps their social motives are diminished, competitive and individualistic motives are more salient, and the positive community impact could be compromised. Additional research should also explore the match between participant's belief about what his or her role should be and what is actually conferred by the community. We hypothesize, based on our findings, that when there is a mismatch (e.g., a real-life expert user joins the community and is conferred a Newbie label), the positive impact of a recognition system would be mitigated as expertise in the outside world facilitates role clarity and thus has a reduced need to be socialized in the community from a functional standpoint. Additionally, we found, across Studies 3 and 4, that long-term users are not affected by reputation signal type. While not empirically tested, perhaps high tenure users focus more on the content of the community rather than the signal type or may prefer different characteristics in a reputation signal, such as indication of progression (e.g., Citizen to Super Citizen). This is a particularly important area of future research, as maintaining engagement is critical to a community's success (Tsai and Bagozzi 2014).

How are reputation signals perceived in different situational contexts? For example, are points perceived more favorably in a competitive context such as online gaming, where an individual's success supersedes group goals? A comparison between situations in which the individual is prioritized over the social network would be a worthwhile effort. Additionally,

viewing our findings within a lens of special situations such as corporate crises could provide additional theoretical and managerial depth. As connectedness within the community at large is tested (e.g., National Football League protests), could a social role signal within an associated online sports community serve to repair social relations?

Relatedly, how do reputation signals affect lurkers—consumers that observe community content but do not actively participate—who are estimated to be between 50 to 90 percent of a community's users (Bishop 2007; Zhang and Storck 2001)? Can reputation signals influence lurkers to become active participants? Furthermore, can different reputation signals encourage different types of consumer engagement? While this research explores consumer engagement as a broad construct, additional research could address more fine-grained community outcomes (i.e., type of contribution, content quality, etc.). How long does the positive effect of social roles on engagement last? Given that role clarity is an underlying psychological mechanism for the effect, could such signals make Newbies stay Newbies longer? For example, if Newbies know that little is expected of them in their role as a Newbie, perhaps a boost in engagement is a short-term outcome, suggesting a need for longitudinal studies examining effects over time. In addition, our studies compare points, labels, and badges, so future research should also address situations in which no reputation information may be preferred.

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Print Appendix

Appendix A

T-Mobile Support Community: Before and After Reputation Signal Type Change

Before **After**

Appendix B

Factor Analysis

We conducted a pilot study to verify the survey instrument validity. The sample included 100 U.S. participants on Amazon Mechanical Turk (M_{Age} = 34.06, age range = 21-60, 54% male). A factor analysis using Principle Axis Factoring and Varimax rotation indicated that the 12 total items loaded onto three factors, explaining 85.29% of the variance. Within each construct, the primary loadings were all above .7 and no secondary loadings were above .48, providing support for discriminant validity of the constructs. The factor loading matrix for the final solution is presented below.

	Engagement Intentions	Role Clarity	Connectedness to the Community
I would participate in this community.	**.74**	.38	.40
I would communicate with other users in this community.	**.80**	.36	.33
I would visit this community.	**.84**	.31	.28
I would contribute to this community.	**.72**	.36	.46
How likely are you to participate in this community?	**.85**	.30	.28
People have roles in this community.	.27	**.77**	.24
I feel like I have a role in this community.	.36	**.84**	.32
My role in this community is clear.	.29	**.88**	.30
I would play a part in this community.	.44	**.74**	.31
I feel attached to this community.	.34	.34	**.79**
I feel welcomed by this community.	.48	.30	**.74**
How close do you feel is your relationship with this community?	.33	.37	**.70**

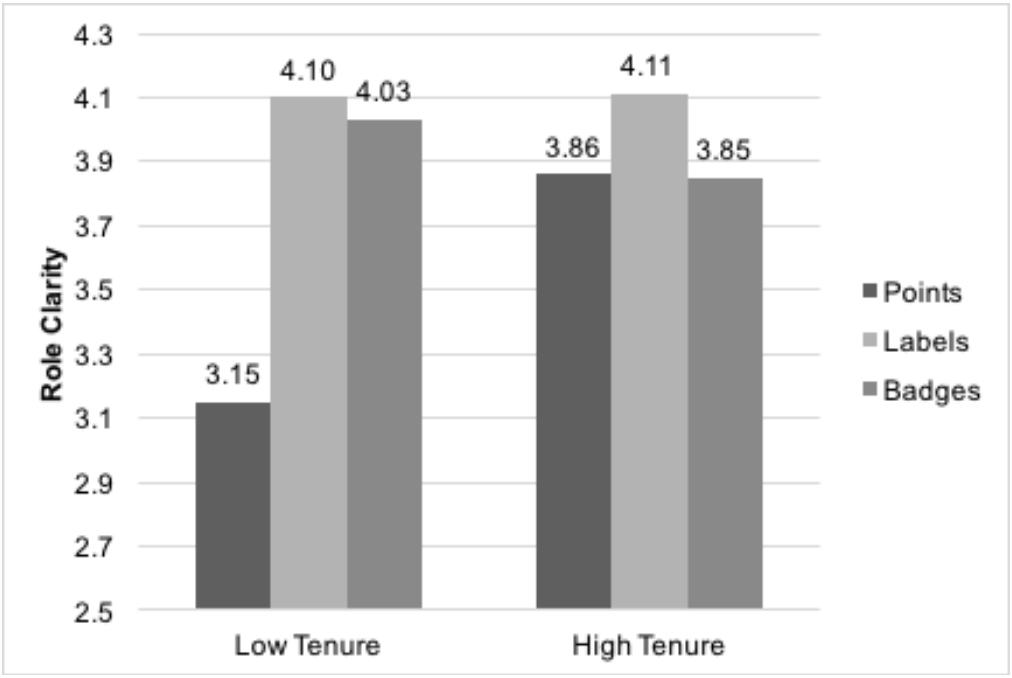
Additionally, the Cronbach's alpha scores from the pretest indicated that the construct scales are internally consistent and reliable.

Construct	α
Engagement Intentions	.96
Role Clarity	.88
Connectedness to the Community	.91

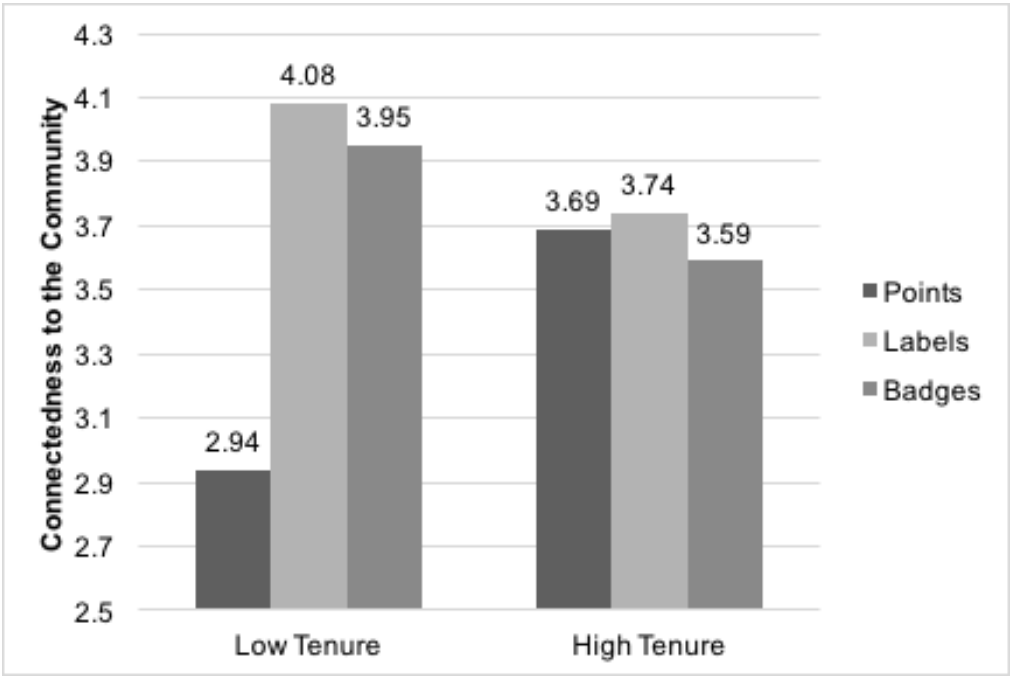
Appendix C

Study 4 Figures

Role Clarity as a Function of Reputation Signal Type and User Tenure.



Connectedness to the Community as a Function of Reputation Signal Type and User Tenure.



Web Appendix

Appendix A

Study 1 Model Specification

Reputation signal type x year interaction model specification

$$Y_{it} = \beta_0 + \beta_{ST}X_{ST,it} + \beta_{YR}X_{YR,it} + \beta_{INT}X_{YR,it}X_{ST,it} + u_{it}$$

Y_{it}	Dependent variable (Discussions or Comments)
β_0	Intercept
$\beta_{ST}X_{ST,it}$	Reputation Signal Type Change Indicator
$\beta_{UT}X_{UT,it}$	Year (2013 = test vs. control)
$\beta_{INT}X_{UT,it}X_{ST,it}$	Signal Type x Year Interaction
u_{it}	Error term

where ‘i’ is the user index and ‘t’ is the month of data collection.

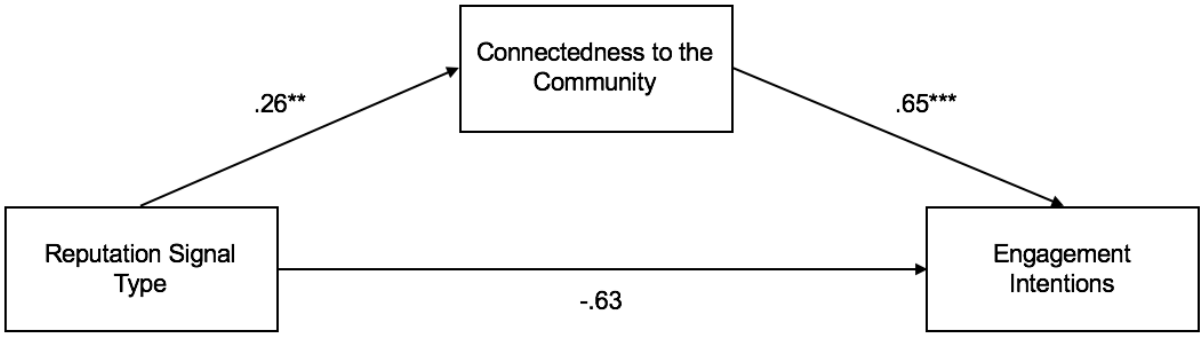
Appendix B

Study 3 Mediation Results

Moderated mediation Using 100,000 bootstrapped samples, model 8, and a 95% bias corrected confidence interval, we identified engagement intentions as the outcome and reputation signal type as the predictor. Connectedness to the community was added as a mediator between the effect of reputation signal type on engagement intentions. User tenure was added as a moderator.

↓ User Tenure
H3: Reputation Signal Type → Connectedness to the Community → Engagement

Path coefficients and confidence intervals are included below, indicating a significant indirect effect when comparing reputation signals that do not communicate a social role (i.e., points) to one that does (i.e., labels) for new users, but not users with a longer tenure in the community.



Low Tenure: Reputation Signal Type → Connectedness to the Community → Engagement
β = .37, se = .12, 95% CI: .14, .61

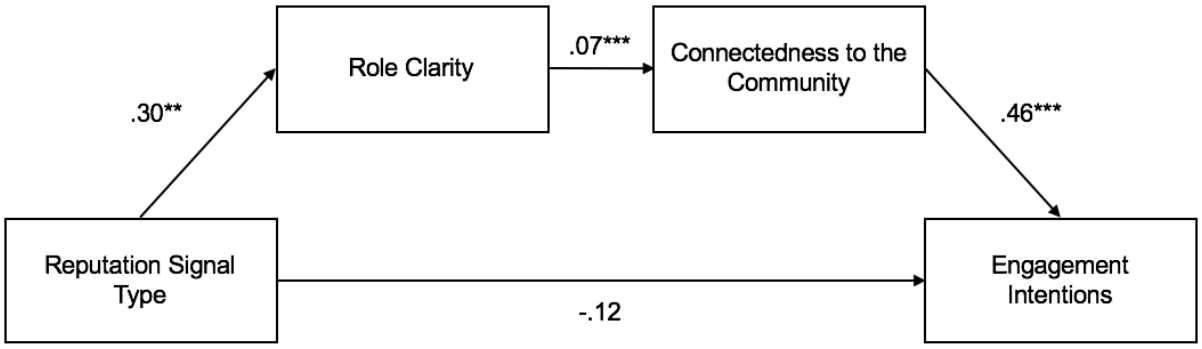
High Tenure: Reputation Signal Type → Connectedness to the Community → Engagement
β = .059, se = .09, 95% CI: .-.14, .24

Mediation results above for low tenure users

Serial mediation Using 100,000 bootstrapped samples, model 6, and a 95% bias corrected confidence interval, we identified engagement intentions as the outcome and reputation signal type as the predictor. Role clarity and connectedness to the community were added as sequential mediators between the effect of reputation signal type on engagement intentions, such that they are linked in a causal chain with role clarity impacting feelings of connectedness, then feelings of connectedness impacting engagement intentions.

H2: Reputation Signal Type → Role Clarity → Connectedness to the Community → Engagement

Path coefficients and confidence intervals are included below, indicating a significant indirect effect when comparing points and labels.



Reputation Signal Type → Role Clarity → Connectedness to the Community → Engagement
β = .076, se = .03, 95% CI: .02, .15

Appendix C

Study 4 Stimuli

Points Condition

iPhone Support Communities

It's fun to be part of the world's largest community of Apple fans. You're in the right place to learn about and enjoy your Apple products. You do amazing things with them every day — so why not have fun and help others while you're at it!

Make your mark, get the points

There are lots of benefits to being active in the community.
As you participate, you earn points.

Make your mark, get the points

There are lots of benefits to being active in the community.
As you participate, you earn points.

When you create an account, **you earn 5 points.** By answering questions and starting new discussions, you earn more points. You earn points by having your answers Liked or rated as Helpful.

For example,

Username
500 points

Username
1,000 points

Labels Condition

iPhone Support Communities

It's fun to be part of the world's largest community of Apple fans. You're in the right place to learn about and enjoy your Apple products. You do amazing things with them every day — so why not have fun and help others while you're at it!

Make your mark and level-up

There are lots of benefits to being active in the community.
As you participate, you earn labels.

Make your mark and level-up

There are lots of benefits to being active in the community.
As you participate, you earn labels.

When you create an account, you are given a Newbie label. By answering questions and starting new discussions, you earn a new label. You can transition to a new label by having your answers Liked or rated as Helpful.

For example,

Username
Expert

Username
Master

Badges Condition

iPhone Support Communities

It's fun to be part of the world's largest community of Apple fans. You're in the right place to learn about and enjoy your Apple products. You do amazing things with them every day — so why not have fun and help others while you're at it!

Make your mark, earn a badge

There are lots of benefits to being active in the community.
As you participate, you earn a badge.

Make your mark, earn a badge

There are lots of benefits to being active in the community.
As you participate, you earn a badge.

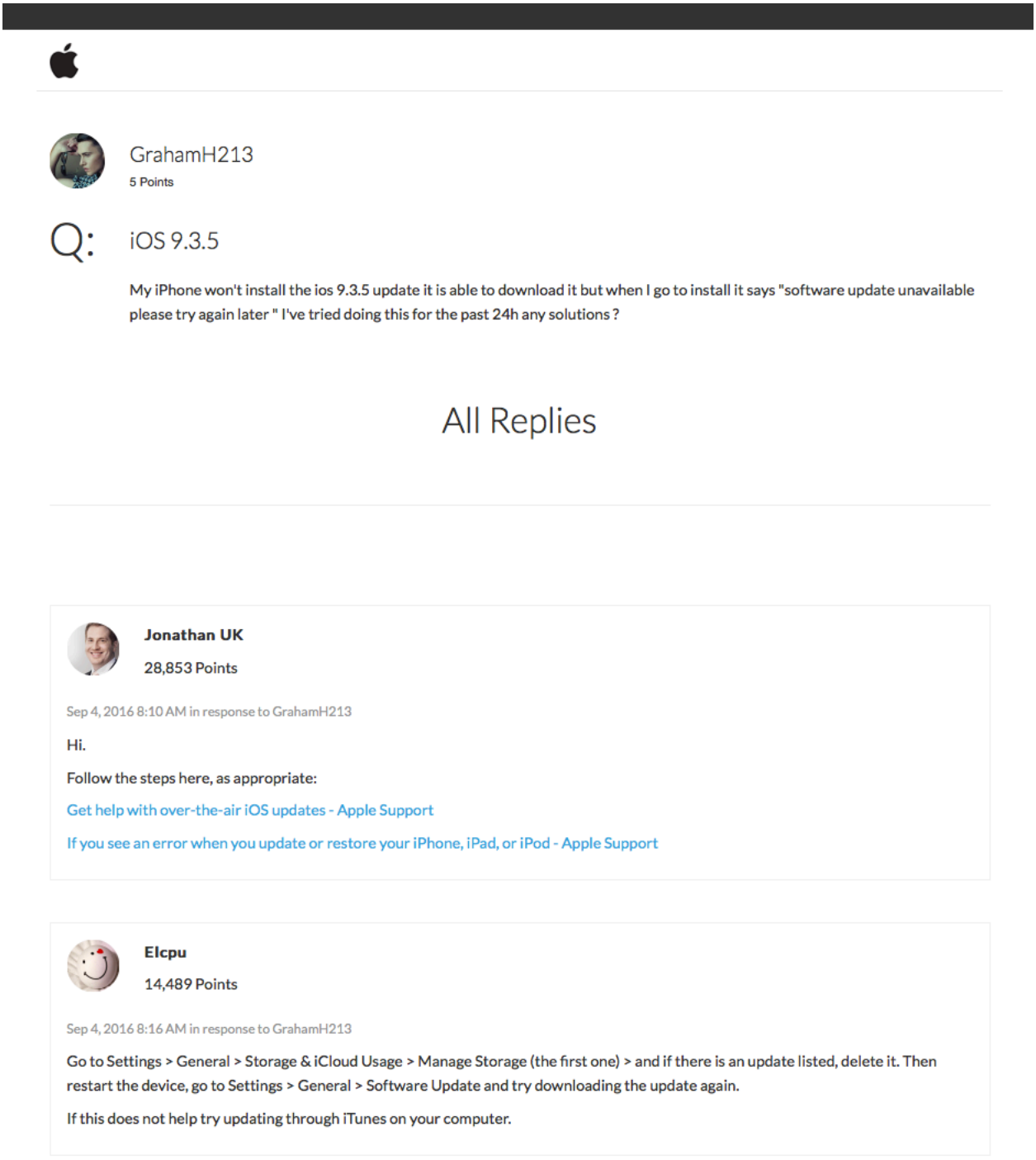
When you create an account, you are given a badge depending on the way you contribute to the community. For example, if you know about iMail on the iPhone, you can earn an **iMail badge**. You can earn a new badge as you build new specialties.

For example,

Username
iMail Badge

Username
iCloud Badge

Sample Discussion Page (Points Condition Example)



GrahamH213
5 Points

Q: iOS 9.3.5

My iPhone won't install the ios 9.3.5 update it is able to download it but when I go to install it says "software update unavailable please try again later " I've tried doing this for the past 24h any solutions ?

All Replies

Jonathan UK
28,853 Points

Sep 4, 2016 8:10 AM in response to GrahamH213

Hi.

Follow the steps here, as appropriate:

Get help with over-the-air iOS updates - Apple Support

If you see an error when you update or restore your iPhone, iPad, or iPod - Apple Support

Elcpu
14,489 Points

Sep 4, 2016 8:16 AM in response to GrahamH213

Go to Settings > General > Storage & iCloud Usage > Manage Storage (the first one) > and if there is an update listed, delete it. Then restart the device, go to Settings > General > Software Update and try downloading the update again.

If this does not help try updating through iTunes on your computer.

Appendix D

Study 4 Secondary Construct Measurement Items

Position Clarity (2 items, r = .83)

1. My position in this community is clear.
2. My position in this community is unambiguous.

Negative Social Categorization (3 items, α = .92)

1. I can see who is above me and who is below me in this community.
2. I can tell who is inferior and who is superior in this community.
3. There is a clear pecking order in this community.

Status Pursuance (3 items, α = .98)

1. I would make an effort to pursue a higher rank in this community.
2. I am interested in earning status in this community.
3. I want to gain more status in this community.

Expertise Perceptions (4 items, α = .94)

The members of this community seem…

1. Competent
2. Capable
3. Skilled
4. To have expertise

Desire to Express "Newness" (3 items, α = .75)

1. I can communicate that I am new in this community.
2. It's ok to be a new member of this community.
3. I would feel a sense of freedom as a new member of this community.

Attitude toward the Reputation Signal (3 items, α = .97)

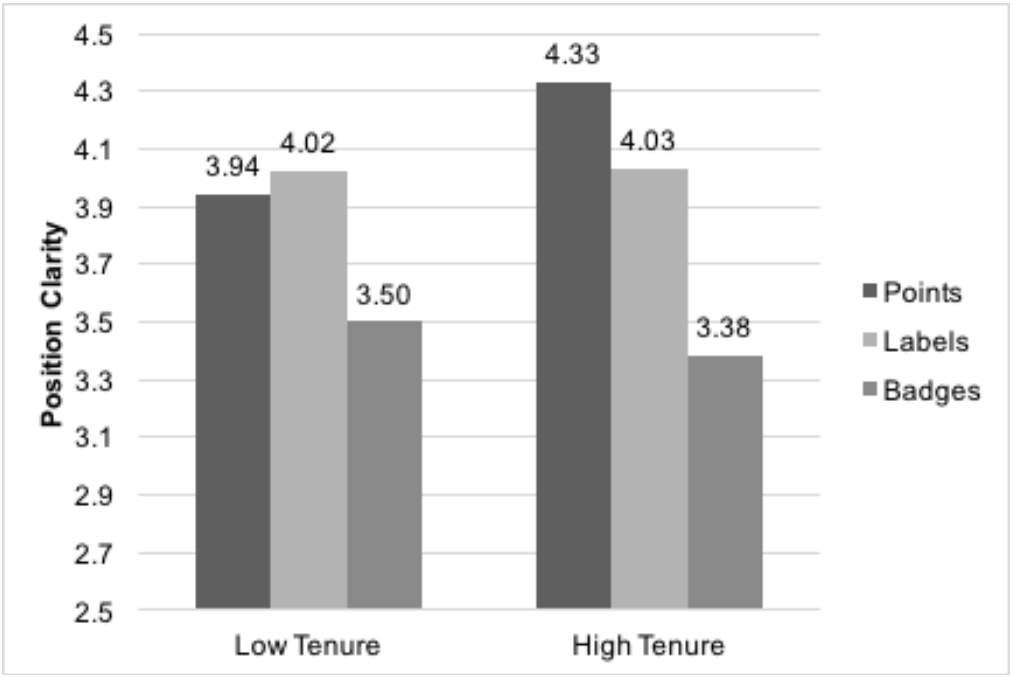
What is your attitude toward the reputation signal that was used?

1. Positive
2. Good
3. Favorable

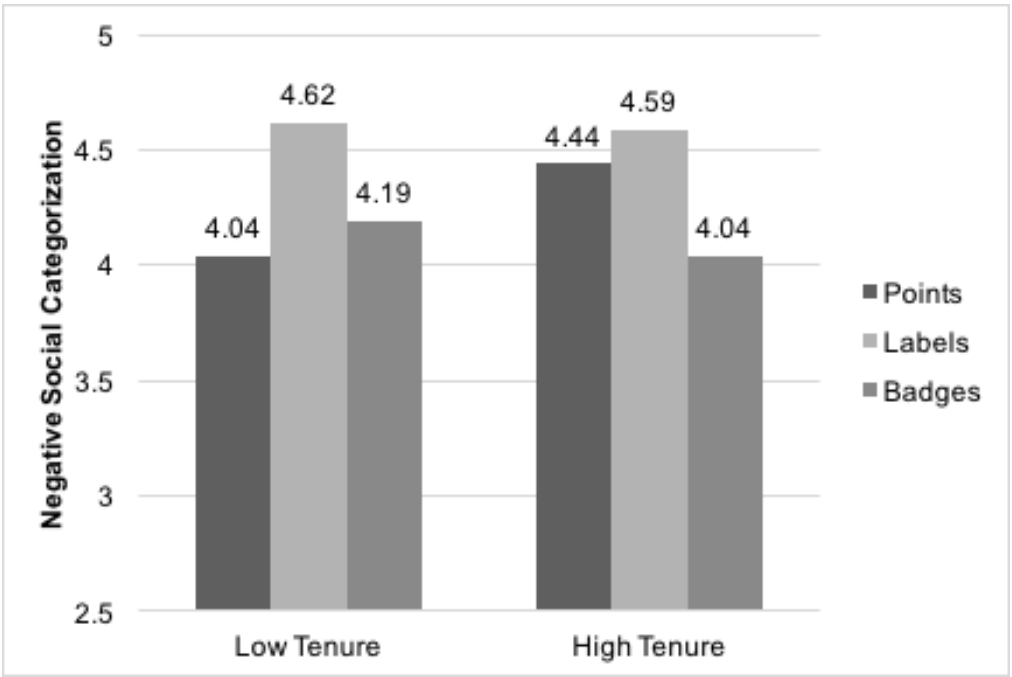
Appendix E

Study 4 Figures

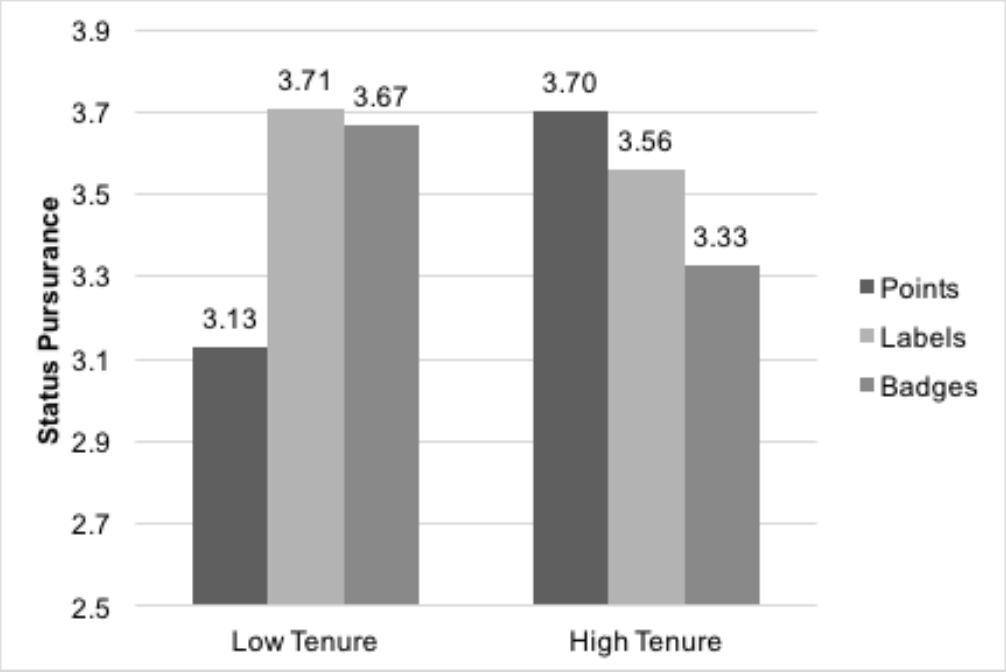
Position Clarity as a Function of Reputation Signal Type and User Tenure.



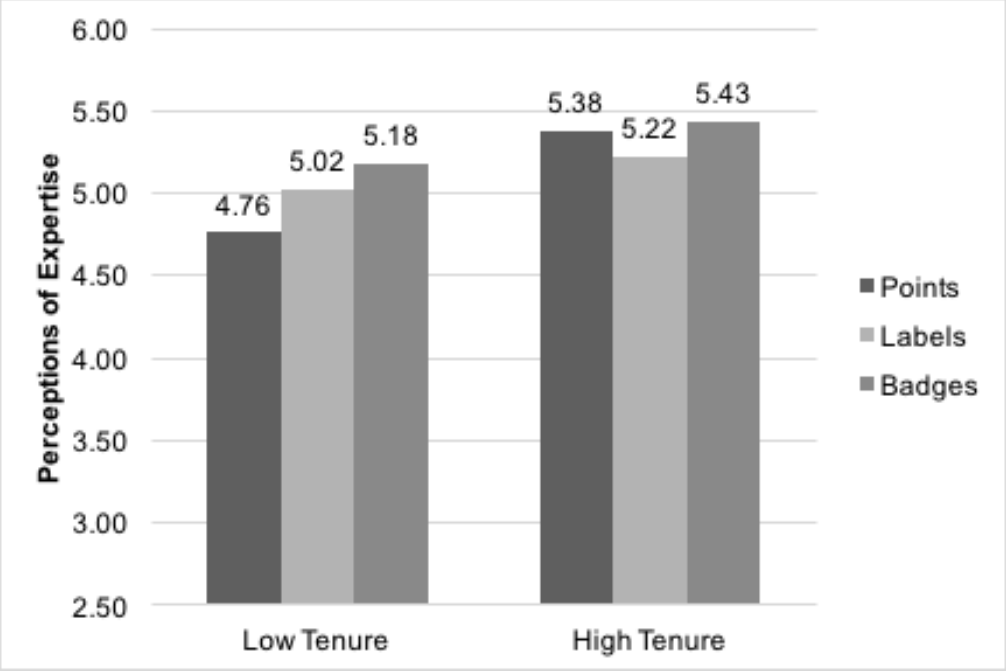
Negative Social Categorization as a Function of Reputation Signal Type and User Tenure.



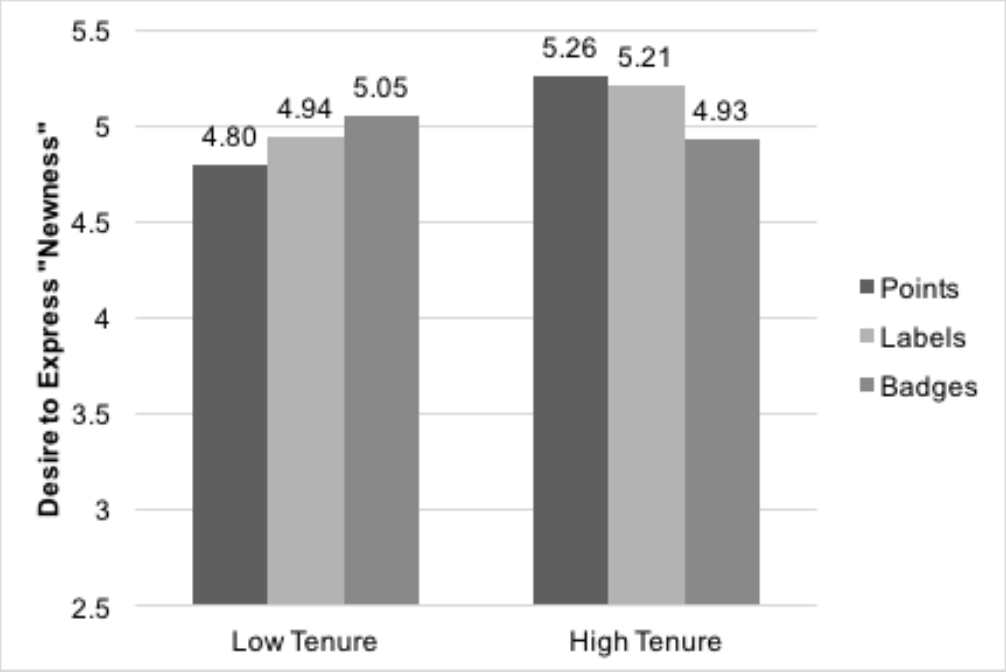
Status Pursuance as a Function of Reputation Signal Type and User Tenure.



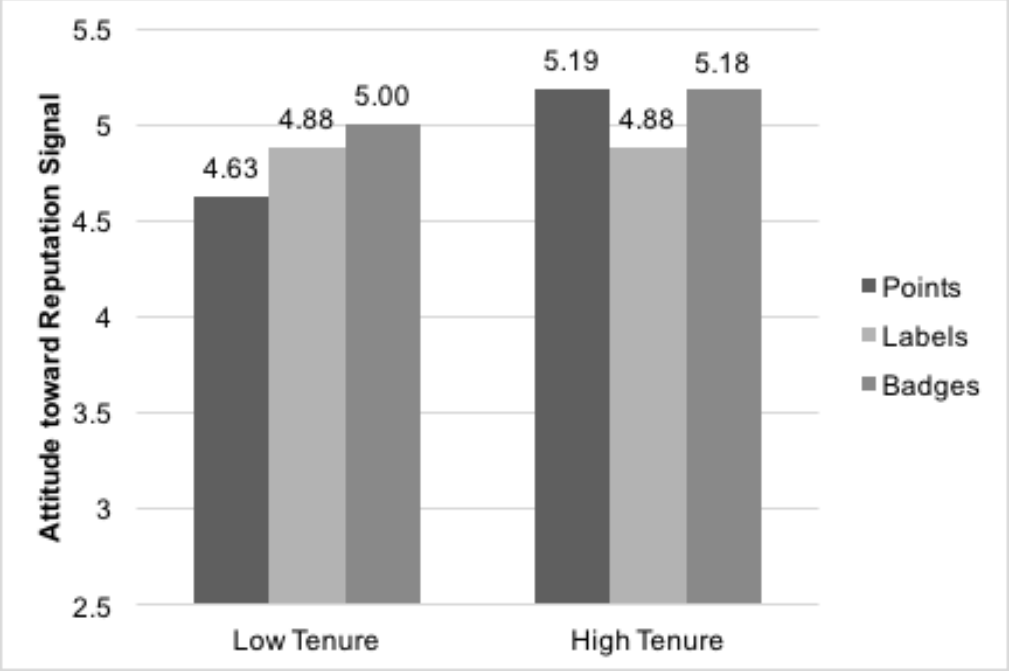
Perceptions of Expertise as a Function of Reputation Signal Type and User Tenure.



Desire to Express “Newness” as a Function of Reputation Signal Type and User Tenure.



Attitude Toward Reputation Signal as a Function of Reputation Signal Type and User Tenure.

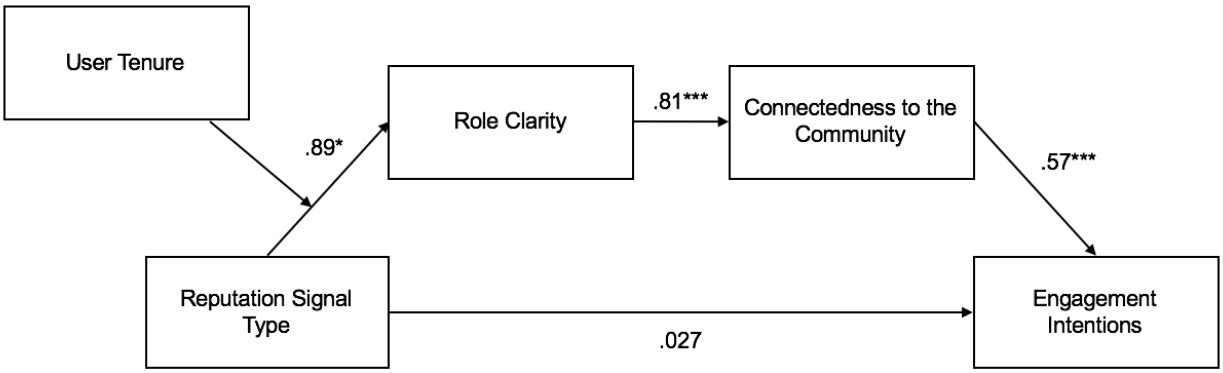


Appendix F

Study 4 Mediation Results

We carried out mediation tests using Hayes' (2018) PROCESS module for SPSS. We tested the moderated serial mediation test using 100,000 bootstrapped samples, model 83, and a 95% bias corrected confidence interval. We identified engagement intentions as the outcome and reputation signal type as the predictor. Role clarity and connectedness to the community were added as sequential mediators between the effect of reputation signal type on engagement intentions. User Tenure was added as a moderator.

Path coefficients and confidence intervals are included below, indicating a significant indirect effect when comparing reputation signals that do not communicate a social role (i.e., points) to one that does (i.e., labels) for new users, but not users with a longer tenure in the community.



Low Tenure: Reputation Signal Type → Role Clarity → Connectedness to the Community → Engagement
β = .20, se = .083, 95% CI: 05, .38

High Tenure: Reputation Signal Type → Role Clarity → Connectedness to the Community → Engagement
β = -.0042, se = .079, 95% CI: -.17, .15