

# Anonymity in Social Media: Effects of Content Controversiality and Social Endorsement on Sharing Behavior

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## Abstract

The amount of information shared via social media is rapidly increasing amid growing concerns over online privacy. This study investigates the effect of controversiality and social endorsement of media content on sharing behavior when choosing between sharing publicly or anonymously. Anonymous sharing is found to be a popular choice (59% of shares), especially for controversial content which is 3.2x more likely to be shared anonymously. Social endorsement was not found to affect sharing behavior, except for sports-related content. Implications for social media interface design are discussed.

## Introduction

The amount of information shared via social media is rapidly increasing. For instance, the number of U.S. Internet users who have re-shared pictures online rose by 20% to 42% between 2012 and 2013 (Pew Research Center 2013b). All major websites and operating systems have adopted features to simplify and encourage information sharing on various social media platforms. At the same time, there are growing concerns over online privacy and the handling of sensitive social media data. There exists a fundamental trade-off between the utility that can be derived from social media and individual privacy. This “privacy dilemma” (Brandtzæg, Lüders, and Skjetne 2010) has challenged researchers to develop interface designs that reconcile people’s desire to share information with concerns over privacy. The present study explores a way of addressing the dilemma by providing users with the choice to sharing content anonymously on a case-by-case basis.

A substantial body of literature has shown how the state of anonymity impacts online behavior (e.g., Bernstein et al. 2011; Postmes et al. 1998). Since many social networking sites do not allow users to share information anonymously, it raises an important set of research questions around effects on information sharing behavior in the presence of the option to share anonymously.<sup>1</sup> This study investigates the influence of two ubiquitous features of social media content, namely its controversiality and level of social endorsement, on people’s sharing behavior when choosing between

sharing publicly or anonymously. The majority of research on anonymity investigates how the state of anonymity affects behavior (exceptions include work on privacy patterns by Ahern et al. 2007, and related work on self-censorship by Das et al. 2013 and Sleeper et al. 2013). In contrast, the present study investigates how content properties affect the choice of anonymity in sharing, thereby reversing the classic direction of analysis.

## The Dilemma of Content Sharing and Privacy

Social media platforms are built around the merits of information sharing. The experience of consuming the same media content produces a sense of bonding and affinity within the social network (Nardi 2005) and the frequent exchange of information builds common ground between users and supports relationship maintenance. At the same time, social media users manage self-images and enact a desired self by selectively circulating information. Prior research suggests that people share information to receive attention and enhance their reputation and popularity among an audience (Ames and Naaman 2007; Lee and Ma 2012).

However, these social desires are frequently accompanied by concerns over privacy. Every interaction on social media is witnessed by an audience that tends to be larger than people expect (Bernstein et al. 2013). In 2013, 13% of American Internet users reported posting content online had caused trouble in their relationships (Pew Research Center 2013a). Some users try to reduce their digital footprints, for instance by posting information without revealing their identity, because they feel as if under surveillance by their own social network (Ahern et al. 2007; Brandtzæg, Lüders, and Skjetne 2010). Users were found to engage in strategic self-censorship in content sharing to protect their privacy by adhering to social norms (Das and Kramer 2013; Sleeper et al. 2013).

A fundamental trade-off arises between the utility that can be derived from social media and the concern over privacy, which has led researchers to call for interface designs that “simultaneously ensure privacy and promote content sharing and sociability” (Brandtzæg, Lüders, and Skjetne 2010, p. 1007). While an option for sharing content anonymously might satisfy people’s needs for privacy without hindering

<sup>1</sup>Implications for pseudonymous sharing are addressed below.

their online social behavior, it could simultaneously incur a social cost.

### Public and Anonymous Sharing

Content shared on social media inevitably conveys personal interests and judgements and the decision to self-disclose evokes a variety of social psychological considerations. Acts of self-disclosure were found to activate the neural region associated with primary rewarding experiences, which is also activated when consuming food or engaging in sexual intercourse (Tamir and Mitchell 2012). This finding is consistent with self-reported emotions by content-sharers which are primarily positive (e.g. Goh et al. 2009). Thus, we would expect anonymous sharing to occur less frequently than sharing with personal identification because sharing anonymously could be a less rewarding experience.

An opposing view on the social psychological reasons of content sharing is altruism. Research has shown that people with altruistic motivations share information to benefit others without anticipating anything in return (Ho and Dempsey 2010). The altruistic view of motivations suggests that anonymous relative to public sharing occurs more frequently among people with altruistic sharing motivations (Wodzicki et al. 2011). This conflicts with the prediction based on the evidence that sharing publicly is psychologically more rewarding. Hence, we pose the following research question:

**RQ1:** Is content more likely to be shared anonymously or publicly?

### Anonymity and Social Norms

Social psychological research has long established that the state of anonymity strongly influences people's behavior. The most notable work has been carried out by Phillip Zimbardo (1969). In a series of experiments, he found a tendency towards greater aggression and violence when people were anonymous than when they were identifiable by name tags. The observed aggressive behavior reflected people's anti-social tendencies which were commonly suppressed to conform with social norms. Yet, in anonymous situations where people felt less constrained by social norms, they exhibited more aggressive, violent, and even inhuman behaviors. Anonymity in online social interaction was found to induce similar anti-normative behavior. For example, Bernstein et al. (2011) found content posted on an anonymous image-board website to be frequently offensive. Accordingly, we would expect controversial content, containing crude, violent, sexual, or otherwise inappropriate images, to be shared anonymously more than publicly provided the user is willing to share it.

**H1:** Controversial content is more likely to be shared anonymously than uncontroversial content.

Social media users increasingly rely on others to find relevant, high-quality content in the vast amounts of available information. However, reliance on collaborative filtering systems has been found to affect individuals' content choices. Users reportedly feel influenced by their peers' choices and are more likely to conform with the majority decision in content sharing (Brandtzæg, Lüders, and Skjetne

2010). Deindividuation theory also suggests that being part of a crowd enhances the sense of anonymity and diffuses the perceived responsibility for negative behavior, which can exacerbate aggressive behavior (Zimbardo 1969). Taken together, these findings suggest that social endorsement could moderate the effect of content controversiality on the decision to share anonymously instead of publicly. Accordingly, we formulate the following hypothesis:

**H2:** The extent to which controversial content is more likely to be shared anonymously than uncontroversial content depends on its level of social endorsement.

## Methods

### Experimental Design

An online experiment with a 2 (content controversiality)  $\times$  2 (social endorsement) mixed factorial design was conducted. A convenience sample of 152 undergraduate students enrolled at a U.S. university were recruited for this study and received course credit in return. One person was subsequently excluded from the analysis for not having a Facebook account. Participants watched controversial (with sexual, violent, crude, or socially inappropriate scenes) and uncontroversial video clips (within-subjects factor) with a social endorsement cue in the form of a Facebook Shares counter that either showed a low (<100) or high (>1,000) number of Shares (between-subjects factor). The video clips were grouped into three categories: Movie, Humor, and Sports. Participants watched twelve video clips in total: two uncontroversial and two controversial video clips in each category presented in random order.

### Procedure and Measures

The duration of video clips varied from 30 to 150 seconds. After watching each video clip, participants indicated their intention for sharing the video clip on Facebook among the three response options: "*I would share it publicly*", "*I would share it anonymously*", or "*I would not share this content*". The option to not share was provided to avoid noise in the sharing response when participants would rather not share a video clip at all rather than sharing it anonymously. A tutorial page illustrated how their sharing decision would be reflected on Facebook. This was done to let the scenario seem more realistic and provide participants with a mental model for what it would mean to share anonymously. The tutorial showed example screenshots with explanations. The tutorial for anonymous sharing read: "*I would share it anonymously means this video would be added to a 'trending videos' feed that any of your Facebook friends can view. It will not be attached directly to your name. It will be presented along with an aggregate number of shares.*"

After watching the video clip and choosing how to share it, if at all, participants were asked to rate the controversiality and other properties of the video clip (e.g., enjoyableness) on 10-point Likert scales. Participants were also asked whether they have seen the video clip before, because prior exposure is expected to account for some variance in sharing decisions.

## Results

As the object of investigation is anonymous versus public sharing behavior, all data points of unshared video clips were excluded in the analysis. Removing all participant-video clip pairs that were not shared reduced the set of 1812 (151 participants by 12 videos) pairs to 726 which were retained for analysis. The following results are therefore conditional on people's willingness to share.<sup>1</sup>

In order to test the controversiality manipulation, we compared self-reported controversiality ratings between the two conditions. Video clips in the controversial condition were rated as more controversial (mean = 5.65, SD = 3.02) than those in the uncontroversial condition (mean = 3.78, SD = 2.24). The difference in reported controversiality between conditions was large and significant,  $t(692) = 9.2, p < 0.001$ , Cohen's  $d = 0.67$ . Moreover, video clips in the controversial condition were also rated as significantly more offensive,  $t(642) = 13, p < 0.001, d = 0.95$ .

The controversiality rating was expected to remain constant between social endorsement conditions to provide a clean manipulation. This condition was satisfied, as no significant difference between social endorsement conditions could be detected,  $t(724) = 0.4, p = 0.7$ .

We investigate our first research question about the relative frequency of public and anonymous sharing by comparing the relative amounts of sharing overall (for each video clip-participant pair) and between participants. Overall, 59% of video clips were shared anonymously, which is close to the average of participants' proportion of anonymously shared video clips, 63%, for those who shared more than one video.

In a preliminary analysis of correlations between self-reported variables and the decision to share anonymously, content familiarity was found to be strongly associated with the decision to share publicly rather than anonymously,  $r = 0.30$ . Content familiarity was thus included as a binary covariate in the following statistical models.

Figure 1 illustrates the proportion of anonymous shares in each of the four conditions with bootstrapped standard errors. Two trends are clearly visible: First, controversial content is shared anonymously more often than uncontroversial content. Second, unfamiliar content is shared anonymously considerably more often than familiar content.

The first observation supports hypothesis H1, namely that controversial content is more likely to be shared anonymously than uncontroversial content. A logistic mixed-effects model is used to account for the interdependence of observations in this unbalanced within-subjects design. The binary sharing response is predicted by content controversiality, social endorsement level, the interaction of controversiality and social endorsement, and content familiarity. All predictor variables in the model are binary. The fitted model coefficients of controversiality ( $z = 4.3, p < 0.001$ )

<sup>1</sup>The propensity to share was not significantly affected by content controversiality (46% uncontroversial, 49% controversial,  $\chi^2_1 = 1.2, p = 0.3$ ) or social endorsement (47% with and without endorsement,  $\chi^2_1 < 0.1, p = 0.8$ ). Unfamiliar content was shared less frequently (43% compared to 62%,  $\chi^2_1 = 32, p < 0.001$ ).

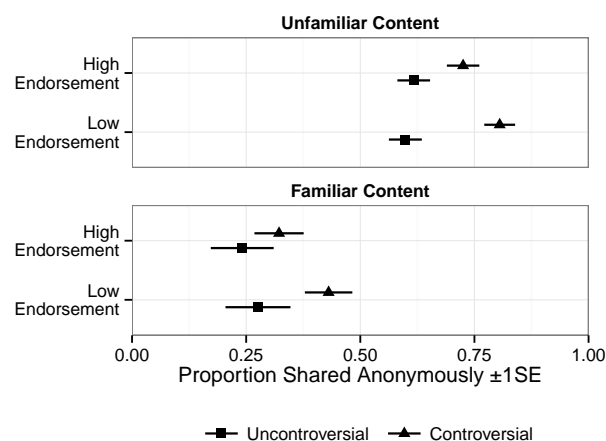


Figure 1: Proportion of anonymous shares by condition with bootstrapped standard errors showing main effects for content controversiality and familiarity.

and familiarity ( $z = 9.1, p < 0.001$ ) are highly significant. Controversial relative to uncontroversial video clips are 3.2 (95% C.I. = [2.1, 4.9]) times more likely to be shared anonymously. And unfamiliar content is 8.6 (95% C.I. = [5.4, 13.7]) times more likely to be shared anonymously than familiar content.

While there is very strong support for hypothesis H1, hypothesis H2 is not supported. The coefficient on the interaction between controversiality and social endorsement is not significant,  $z = 1.2, p = 0.23$ . In other words, there appears to be no compounding effect of social endorsement and controversiality of content on the rate of anonymous sharing in general.

However, a closer analysis of differences between content categories reveals somewhat different sharing behavior for sports-related content. Although the main effects of content controversiality and familiarity remain significant, the former is only just significant with 95% confidence,  $z = 1.96, p = 0.05$ . The controversiality endorsement interaction is significant and has the opposite direction as the controversiality main effect,  $z = 2.1, p = 0.03$ . Therefore, hypothesis H2 is supported for sports-related content, where controversiality increases the likelihood of sharing anonymously unless in the presence of high social endorsement, in which case the effect of controversiality is counteracted,  $z = 1.1, p = 0.26$ .

## Discussion

This study investigated the influence of content controversiality and social endorsement on information-sharing behavior. The majority of shared content (59%) was shared anonymously as opposed to publicly. The familiarity of social media content was found to have a strong impact on sharing behavior, such that unfamiliar content is much more likely to be shared anonymously than already familiar con-

tent. One possible explanation for this effect is that content familiarity is interpreted as a sign of social approval. Moreover, consistent with previous work on anonymity, controversial content was more likely to be shared anonymously than uncontroversial content. These findings lend support to an explanation based on deindividuation, such that anonymous sharing may have provided a secure channel of expressing less socially appropriate tendencies without potentially damaging one's self-image or social relationships.

There was only partial support for the hypothesized compounding effect of social endorsement and content controversy; social endorsement had no significant effect on sharing behavior except for sports-related content. For sports videoclips, higher social endorsement actually counteracted the effect of controversy. Instead of further relaxing the standards of social appropriateness, others' endorsement seemingly legitimizes public sharing in this case.

These findings could also extend to the case of pseudonymous sharing, where a user name is chosen to be unidentifiable. This form of sharing occurs frequently on social media and may be considered a form of anonymous sharing. However, a critical difference between these two forms of sharing lies in the psychological power of self-identifying with one's pseudonym which is not possible under complete anonymity.

This investigation of sharing behavior is limited by perceived realism of the content sharing scenario and the type of social media content that was shared, namely videoclips. Moreover, this study cannot uncover the underlying motivations that led to the decision to share anonymously rather than publicly. Future research on anonymous sharing should investigate how the audience that content is shared with influences sharing and what motivations are associated with anonymous sharing.

## Conclusion

The study's findings indicate that people would use the option to share anonymously extensively and strategically in response to content properties, and potentially social cues. This sheds some light on how information sharing in social media would be affected by providing the option to share anonymously. Providing this option on popular social media interfaces could encourage participation from those who fear over their privacy, but it would also communicate a normative message about the changing role of identity and identification in the online public sphere.

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