
Social Comparison in Social Media: A Look at Facebook and Twitter

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Abstract

Recent attention has focused on the tendency for social media, namely Facebook and its News Feed, to promote unfavorable social comparisons, or envy. We extend this work in a survey that looks at three main questions. First, are people who exhibit lower well-being more vulnerable to unfavorable social comparisons in social media? Second, how do Facebook and Twitter differ in their tendencies to promote unfavorable social comparisons? And third, what structural factors in each platform might explain differences? We find substantial evidence that, indeed,

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low well-being individuals are more vulnerable to unfavorable social comparisons in social media and that across the board, users are more prone to envy on Facebook than Twitter. Finally, we find suggestive evidence that greater references to the self on Facebook and a larger presence of public figures and organizations on Twitter help account for the difference.

Author Keywords

Social comparison; envy; Facebook; Twitter; wellbeing; happiness; life satisfaction; depression; comparison orientation; News Feed; passive consumption; differential effects; reference groups; survey.

ACM Classification Keywords

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

Introduction

Social comparison is the basic human tendency to feel good or bad about ourselves based on how we compare to others. Since Festinger's seminal work on the phenomenon in the 1950s [6], the psychological consequences of social comparison have been demonstrated through a range of methods, including neuroscience research on momentary rewards in the brain [5] and in socioeconomic surveys on longer-term

life satisfaction [10]. In fact, social comparison is often posited as the solution to the “Easterlin Paradox,” which finds that societies do not get happier as they become richer. This paradox happens because, as Layard and others have shown in a number of studies, individuals do not get *relatively* richer as the economy grows; they only become richer in absolute terms. Surprisingly but consistently, social comparison removes the benefit to our satisfaction with life that we might otherwise receive from a rise in income [10].

If indeed social comparison strongly influences our momentary and long-term happiness, we might look with some concern on contexts that promote unfavorable social comparisons. In this study, we examine social media’s potential as such a context, specifically the feeds that bring updates and announcements from our friends directly to us. Given the prevalence of social media use today, a greater understanding of this dynamic is needed.

Related work

A large body of recent work has focused on the broader question of how social media impacts our happiness and well-being. Burke’s work, for example, finds that while increases in directed communication with others on Facebook are associated over time with increases in a number of well-being indicators, increases in passive activities such as browsing the News Feed are not [2].

Concern with these feeds of friend activity stems from the tendency of individuals to pay careful attention to how they present themselves in public settings [8], including social media. Self-censorship at the status update box is common [3], with available evidence suggesting a bias toward positive disclosures [11].

If a positivity bias thus exists in our feeds, there’s reason to suspect that unfavorable social comparisons are common. If our feeds serve us a one-sided view of beach vacations, marriage proposals and promotions at work, there’s a possibility that browsing these feeds leads to lower self-evaluations and lower well-being. In a recent study, Krasnova et. al find that frequency of passive observation of friends on Facebook is associated with lower life satisfaction, mediated by unfavorable social comparison, or envy [9].

Method

We build on this recent attention to social comparison and well-being by bringing survey evidence to bear on three limitations of this work. First, we examine the possibility of differential effects, namely that social media users with lower well-being and greater tendency to compare have more negative reactions to feeds of friend activities. Second, we broaden this literature’s exclusive focus on Facebook to include a comparison with Twitter, helping to illuminate how general or specific to Facebook unfavorable social comparisons are. Third, anticipating differences, we look at potential structural causes such as the presence of reference groups most likely to trigger comparisons and the degree to which friends talk about themselves versus talk about others or the world on each platform.

We collected 700 responses through an anonymous U.S. survey on Mechanical Turk over four days at the beginning of September in 2013. Previous research has demonstrated Mechanical Turk’s suitability as a convenience sample for social science research of this kind [1]. From this pool of responses, we selected 265 who use both Facebook and Twitter at least once a month. We did this to reduce selection bias. Finally, we

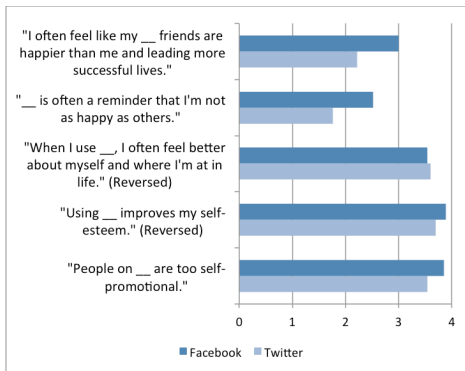


Figure 1. Five social comparison measures for social media. These agreement statements range from 0-6 and from "Strongly Disagree" to "Strongly Agree." A score of 3 corresponds to "Neither Disagree Nor Agree." Agreement differences for the first two statements are significant ($p < .0001$), as is the difference for the last statement ($p < .001$). These differences are retained or strengthened when controlling for usage and friend count. In the case of the third statement, these controls reverse the difference seen here and cause it to become significant ($p < .001$).

removed 15 responses that failed basic attentiveness checks, leaving us with 240 for the present analysis.

Subjects completed five brief sections of questions. The first section includes three validated indices: Ed Diener's satisfaction with life scale [4], the Center for Epidemiologic Studies depression scale [12], and the Iowa-Netherlands Comparison Orientation Measure¹, a measure of tendency to make social comparisons [7]. Sections two, three and four survey respondents on aspects of their Facebook and Twitter use, if applicable. We randomize whether respondents answer questions about Facebook or Twitter first in each section, and care was taken to ensure question wordings were exactly parallel between the two platforms. In section two, subjects are asked how often they use both platforms on a 12-point scale. Then respondents are asked about the frequency with which they feel in better and worse moods after using each platform. Section three asks respondents about the extent to which people on each platform refer to and talk about themselves versus the news or the world around them, asking for rough percentage estimates. It then asks 5 agreement questions related to social comparison in social media developed from the literature, such as "Facebook/Twitter is often a reminder that I'm not as happy as others" and "Using Facebook/Twitter improves my self-esteem" (reversed). Section four asks what percentage of their relationships are with reference groups such as "peers," and non-reference groups such as "public figures, celebrities or organizations," and further asks how frequently certain

¹ Although Krasnova et al. find that people substantially underreport envy [9], the validation of this measure did not find underreporting because, as the authors note, they use neutral terminology, rather than "envy." We do similarly.

other potential reference groups, such as college friends and colleagues, appear in their feeds. Finally, section five asks about their number of friends and followers, and demographic questions.

Hypotheses

We expected to find a moderate negative correlation between satisfaction with life and depression, and low but significant correlations between these and comparison orientation, given their already-established relationships in the literature. In particular, social comparison theory suggests people who are depressed are more likely to compare themselves with others given the uncertainty of self that depression entails [7].

With ample comparison opportunities and a positivity bias, we should expect to find that people with lower well-being feel more challenged by their Facebook and Twitter feeds. Thus, we should see significant correlations between our well-being measures (life satisfaction and depression) and the 5 specific social comparison indicators; with, for example, people who are depressed agreeing more that social media is "often a reminder that I'm not as happy as others." We should also see that people higher in comparison orientation are more likely to agree with our 5 social comparison indicators. And though it's a more general measure influenced by many things, we also predict that we'll see differential mood effects for Facebook and Twitter use, with people lower in well-being and higher in comparison orientation reporting feeling worse more often after using these platforms. We also explore relationships between the 5 social comparison indicators and the presence of reference/non-reference groups as well as the degree to which posts are self-referential versus other-referential.

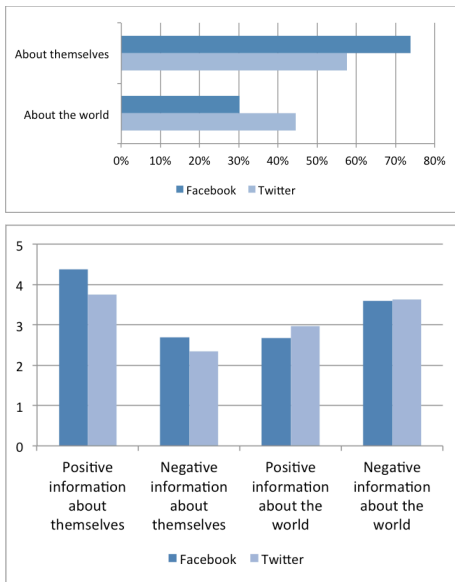


Figure 2. Self-reference versus world-reference in social media. Users see a greater degree of self-reference in their friends' Facebook updates and a greater degree of reference to the world or to others in the updates they receive on Twitter (above, measured as a percentage of updates they see). Below, the frequency with which users see positive or negative updates is measured on a 0-6 scale, with higher numbers indicating greater frequency.

Finally, early in our analysis, we compare average responses for Facebook and Twitter, expecting to find that, given its design and platform maturity, Facebook promotes more unfavorable social comparisons than Twitter; it has a greater presence of reference groups, while Twitter has a greater presence of non-reference groups; and that people exhibit a greater degree of self-reference in their updates on Facebook. Unfortunately, an analysis of demographics and most interactions is out of scope of this preliminary report.

Results

Our 240 survey respondents represent a broad spectrum of life satisfaction (mean = 20.80 out of 35, $sd = 7.58$), depression (mean = 9.15 out of 30, $sd = 11.39$) and comparison orientation (mean = 50.59 out of 77, $sd = 11.39$) levels, and a diverse range of demographics. For example, about 52% of our sample is female with a median age of 29, and median annual household income is \$40,000. Our median respondent has 200 friends on Facebook and uses the site about once a day, while on Twitter she follows 65 people, has 30 followers and uses the site 2-3 times per week.

Bivariate relationships between life satisfaction and depression ($r = -.64$, $p < .0001$) and each of these with comparison orientation ($r = -.22$, $p < .001$ and $r = .23$, $p < .001$, respectively) align with expectations. Demographic variables do so as well, with income and marriage associated with higher well-being, for example. Only age relates to comparison orientation (negatively). Small correlations are seen in some cases between these indices and usage and friend counts.

Digging into the main substance of our preliminary analysis, Figure 1 shows the differences between the

two platforms in average agreement with the 5 indicators for social comparison in social media. Average responses fall between "slightly disagree" and "slightly agree" with more agreement for Facebook. Respondents are more likely to agree that "I often feel like my Facebook friends are happier than me and leading more successful lives" and "Facebook is often a reminder that I'm not as happy as others" (p -values are $< .0001$ in both cases, all t -tests two-tailed). Respondents are also more likely to agree that "People on Facebook are too self-promotional" ($p < .01$). Differences for "When I use Facebook/Twitter, I often feel better about myself and where I'm at in life" (reversed) and "Using Facebook/Twitter improves my self-esteem" (reversed) are not significant.

Significant differences between Facebook and Twitter for the first two statements are retained with controls for usage and friend count in regressions grouping Facebook and Twitter responses for each subject, using clustered robust standard errors². In a similar regression, the difference between Facebook and Twitter on "too self-promotional" increases by 72% as does its significance ($p < .001$). The difference for "improves my self-esteem" (reversed) jumps as well, and becomes significant (at $p < .001$). "Feel better about myself" (reversed) remains insignificant.

Figure 2 shows how Facebook and Twitter differ in the degree to which people refer to themselves versus the world, as well as how often people share positive

² In these and similar regressions we use the average of followers and number followed on Twitter for consistency with the single Facebook friends variable. A rough analysis showed that followers and number followed on Twitter behave similarly in relation to the indicators in question.

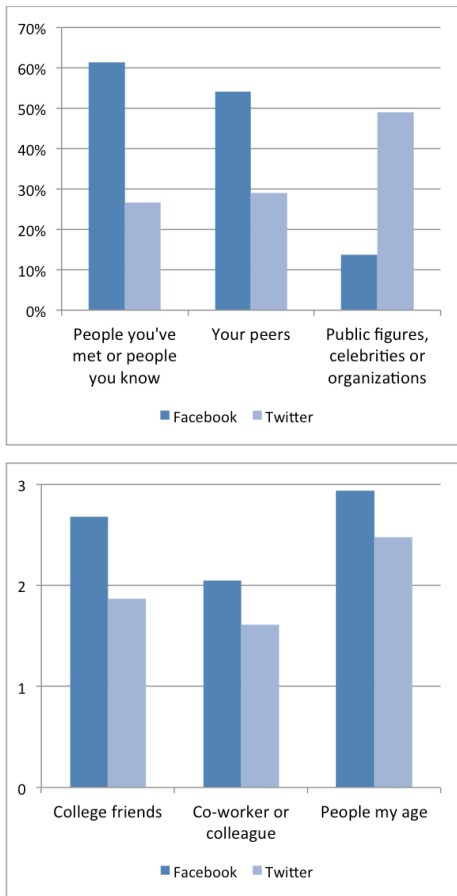


Figure 3. Reference and non-reference groups on Facebook and Twitter. Users have more relationships with reference groups (e.g. peers, colleagues) on Facebook, but have more relationships with non-reference groups (e.g. public figures) on Twitter.

versus negative information about themselves and the world. In line with expectations, respondents report more self-reference from friends on Facebook and greater world-reference on Twitter (p-values < .0001). Friends share more positive and negative information about themselves on Facebook (p-values < .001) and more positive (but not negative) information about the world on Twitter (p < .001). These patterns are retained with controls for usage and friend count.

Figure 3 also shows the extent to which reference and non-reference groups are present. People have a greater percentage of relationships with “peers” on Facebook and a greater percentage of relationships with “public figures, celebrities or organizations” on Twitter (p-values < .0001). They also see reference groups such as college friends and colleagues more frequently in their feeds on Facebook (p-values < .001). These patterns are again retained with controls for usage and friend count, though the difference for colleagues drops in size and significance (p < .05).

We find substantial evidence to support another main set of hypotheses: that people lower in life satisfaction and higher in depression are more likely to agree with our 5 specific social comparison indicators. Using depression as an example, these regressions take the form of $Indicator = B0 + B1*Depression + B2*Twitter + B3*Twitter*Depression + Usage + Friends$ using clustered robust standard errors. These regressions allow us to see both the differential effects for depression and life satisfaction as a whole (B1) as well as whether there are differences in slope between these relationships for Facebook and Twitter (B3).

People who are lower in life satisfaction and higher in depression are significantly more likely to agree with the first three statements across both platforms, “friends are happier,” “reminder I’m not as happy,” and “feel better about myself” (reversed), with p-values < .001. A similar but less significant pattern is found for “self-esteem.” Though on average respondents slightly agree that people on Facebook and Twitter are “too self-promotional,” we do not see correlations with well-being here. Similar differential effects are found with regard to comparison orientation on the first two indicators, “friends are happier” and “reminder I’m not as happy” (p-values < .001) but not the others³. In general, these relationships are substantial (e.g. a 1-SD increase in depression results in a 1.7-point increase in agreement with “friends are happier”).

Do Facebook and Twitter differ in the extent to which lower well-being individuals agree with our 5 social comparison indicators? Yes, for 3 of 5 indicators. Facebook exhibits the steeper slope in each case, with p = .001 or less with respect to life satisfaction, and p = .03 or less with respect to depression. No slope differences are seen for comparison orientation.

We also see that, as a general measure, people higher in depression are more likely to report feeling worse after using both platforms (p < .001 and .01 for Facebook and Twitter, respectively); similarly, people lower in life satisfaction report feeling worse as well (p < .001 and .05, respectively). No relationship between comparison orientation and mood is found, however.

³ Are these results for lower well-being individuals simply an artifact of the mood congruency of memory? This is a risk, but we were unable to find correlations between well-being and the extent of negative information recall, indicating a low risk here.

Using similar regressions, we find weak but suggestive positive relationships between 3 of our 5 social comparison indicators and the degree to which people are self-referential (p -values $< .05$). A higher percentage of references to the community/world is negatively associated with 2 of our 5 indicators ($p < .05$) and marginally with a third. Looking at the balance between positive and negative references to the self and to the world, negative self-references decrease agreement with “too self-promotional” ($p < .01$), and sharing positive information about the world significantly improves “self-esteem” ($p < .005$).

Finally, we find no significant evidence that a higher presence of reference groups such as peers, college friends and colleagues results in greater agreement with our 5 social comparison indicators. We do find, however, that a higher presence of “public figures, celebrities or organizations” reduces agreement with “feel better about myself” (reversed), suggesting weakly that non-reference groups reduce unfavorable social comparisons ($p < .05$).

Discussion and Future Work

In this work, we find substantial evidence that low well-being individuals are more vulnerable to unfavorable social comparisons in social media and that across the board, users are more prone to envy on Facebook than Twitter. Finally, we find weak but suggestive evidence that greater references to the self on Facebook and a larger presence of public figures and organizations on Twitter help account for the difference.

In future work, we plan to analyze a greater number of variable interactions, particularly with regard to demographics, and to improve our social comparison

indicators by including a separate measure of neutral comparison. We also intend to repeat the survey to see if our findings hold and to refine our measures of the structural differences between Facebook and Twitter.

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