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Explicating the ‘like’ on Facebook brand pages: The effect of intensity of Facebook use, number of overall ‘likes’, and number of friends’ ‘likes’ on consumers’ brand outcomes

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This study examined the relationship between the number of overall ‘likes’ and friends’ ‘likes’ on Facebook brand pages in influencing consumers’ brand attitude, brand trust, brand involvement, and purchase intention, drawing upon theoretical concepts including diffusion of innovations, social capital theory, strength of weak ties, sociometric versus perceptual popularity, and prior research in online impression formation. Results of a 2×2 experiment revealed significant main effects of number of overall ‘likes’ and friends’ ‘likes’ on key dependent measures. A significant interaction effect was also found between overall ‘likes’ and friends’ ‘likes’. Additionally, intensity of Facebook use also mediated the relationships between number of overall ‘likes’ and friends’ ‘likes’ with brand attitude, brand trust, and purchase intention.

Keywords: social media; Facebook brand pages; online impression formation; brand attitude; popularity; intensity of Facebook use

Introduction

Social media sites are becoming increasingly popular among Internet users, not only to connect with friends and acquaintances, but also to interact with brands and products. They are interactive by nature, enabling members to create personal profiles, articulate friendship connections, post comments, upload user-generated content, and publicly display their relationships and affinities to other members (Boyd and Ellison 2007; Chu and Kim 2011; Smith, Fischer, and Yongjian 2012). Facebook, one of the most popular social networking sites (SNSs), has over 1.15 billion users worldwide, hosts over 15 million brand pages as of December 2013, and has become a major part of brands’ online marketing campaigns. However, despite the availability of Facebook analytics, simply measuring the number of ‘likes’ may not accurately assess consumers’ brand engagement, as brands often struggle to maintain consumer interest once they are ‘liked’, with approximately 70% of Facebook brand pages being inactive, and 85.3% of brands ignoring consumer conversations (Ryan and Jones 2012). Additionally, there are nuances associated with meanings behind ‘likes’, including different degrees of ‘liking’, and whether people judge the value of ‘likes’ based on their relationships to others (e.g. friends, acquaintances, or strangers) who ‘like’ a brand. This study attempts to explicate the meaning behind Facebook ‘likes’ by examining the psychological process linking consumers’ perceptions of overall ‘likes’ and friends’ ‘likes’ on Facebook brand pages to brand outcomes.

The ability for members to ‘like’ brand pages is a defining feature of Facebook. When a Facebook member likes a brand page, it shows up as a number under the brand’s

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cover photo (Figure 1). Facebook aggregates the number of: (1) total ‘likes’ on a brand page, (2) people ‘talking about’ the brand page (i.e. people who have interacted with the page), and (3) the member’s friends who also ‘like’ the brand page. These quantitative displays are indicative of how popular the brand is, as the brand’s posts and updates will appear on the news feeds of all its followers. When a brand page has more ‘likes’, conventional wisdom states that it is more successful. The Facebook brand pages with the most ‘likes’, as of December 2013 on socialbakers.com, include Coca-Cola (72 million ‘likes’), Red Bull (40 million ‘likes’), Converse (37 million ‘likes’), and Starbucks (35 million ‘likes’). Even though these numbers may not translate directly to fulfilling brands’ sales figures, they remain a simple and effective key performance indicator by which brands can gauge how well their Facebook pages are doing, including how many members see brand updates, as a form of return on investment (Li and Bernoff 2011). This study examined how the number of ‘likes’ and the number of friends’ ‘likes’



Figure 1. Manipulation stimuli (number of overall ‘likes’ and number of friends’ ‘likes’). Notes: Top (left): Facebook brand page with high total likes and high friends’ likes. Top (right): Facebook brand page with high total likes and low friends’ likes. Bottom (left): Facebook brand page with low total likes and high friends’ likes. Bottom (right): Facebook brand page with low total likes and low friends’ likes.

influence consumers' perceptions of a brand page and related brand outcomes. To this end, an experiment that manipulated these system-generated profile elements on a Facebook brand page was designed and conducted, drawing on diffusion of innovations (Rogers 2003), sociometric versus peer-perceived popularity (Parkhurst and Hopmeyer 1988), social capital theory (SCT; Putnam 2000; Williams 2006), strength of weak ties (Granovetter 1983), and prior research in online impression formation (Walther and Parks 2002).

Literature review

Sociometric and peer-perceived popularity are two constructs assessing popularity in offline contexts (Parkhurst and Hopmeyer 1988). Sociometric popularity is a quantitative measure of how popular a person is, based on how many friends he or she has in his or her social circle. Peer-perceived (perceptual) popularity refers to particular members of a social group whose opinions are highly valued by their peers. Perceptually popular individuals set trends within their social groups, and this ability corresponds to opinion leadership in Katz and Lazarsfeld's (1970) two-step flow of communication. Similarly, Rogers' (2003) diffusion of innovations theory highlights the importance of 'adopters' that help accelerate the spread of new innovations. Any new innovation to be adopted originates from outside a community, passes through gatekeepers, followed by opinion leaders, and finally to community members themselves (Rogers 2003). Perceptually popular individuals are opinion leaders because they are perceived to be highly valued in their social groups and have the ability to set trends.

Prior research on impression formation in computer-mediated contexts has demonstrated that people make judgments about others based solely on information that is readily available online, due to the lack of nonverbal cues facilitating the impression formation process like in face-to-face interactions (Walther and Parks 2002). Facebook profile pages lend themselves to the attribution of salient characteristics and personality traits to profile owners, whether they are accurate or not, because each profile contains information (e.g. photos, comments, videos, likes) that serve as clues to the person behind the profile. Walther et al. (2008) found that when observing Facebook profiles, people used information left by friends of the profile owner (e.g. wall postings and friends' physical attractiveness) in their judgments of the profile owner. Wall postings by friends suggesting positive social behavior prompted observers to rate the profile owner as being more socially attractive, and having physically attractive friends appear on the Facebook profile also resulted in higher physical attractiveness ratings for the profile owner. Tong et al. (2008) found that the number of Facebook friends one has influences others' perceptions of his or her social attractiveness and extraversion. Specifically, a curvilinear relationship was found, in which as the number of friends increased, profile owners were seen as more socially attractive and extraverted, but when the number of friends was too high, ratings of social attractiveness and extraversion decreased (Tong et al. 2008). Based on this research, the current study argues that when observing Facebook brand pages, due to the filtering-out of nonverbal cues present in offline communication, people use readily available information from the brand pages to make judgments about the brands (Walther and Parks 2002). These judgments then impact users' perceptions of the advertised brands.

SCT is also used in this study as a way to conceptualize how the number of 'likes' on Facebook brand pages can influence consumers' feelings toward advertised brands. Social capital is a measure of one's social relationships, which facilitate opportunities for gaining

social resources to be traded upon in a way similar to financial capital (Putnam 2000; Williams 2006). There are two main types of social capital: bridging and bonding. Bridging social capital involves loose, informal ties that spread new ideas and information, while bonding social capital refers to close relationships with strong trust and emotional bonds. Granovetter's (1983) strength of weak ties, similarly, defines weak ties as being heterogeneous, diverse relationships that expand the breadth of one's social circle, enabling the acquisition of new innovations. Strong ties, meanwhile, are homogeneous relationships that have depth, facilitating trust and support. Both bridging (weak ties) and bonding (strong ties) social capital are important because the former acts as bridges for the renewal of informational resources, whereas the latter provides social cohesion and togetherness.

SNSs allow people to connect with new acquaintances, as well as with close friends and family online, and therefore can lead to the formation and maintenance of both bridging and bonding social capital (Ellison, Steinfield, and Lampe 2007; Phua and Jin 2012; Zywicki and Danowski 2008). Studies on branding have found that social tie strength and trust, interpersonal and informational influence on SNSs can increase consumers' engagement in electronic word-of-mouth (eWoM) behaviors (Chu and Kim 2011), and that brand engagement behaviors can be motivated by people's intrinsic motivations to belong to online communities (Lee, Kim, and Kim 2011).

Because bridging social capital comprises weak ties formed through connecting with diverse others from disparate backgrounds and geographical areas (Putnam 2000; Williams 2006), it can be argued that the number of overall 'likes' on a Facebook brand page is a numerical representation of the number of weak ties that the brand has on the site. As such, as a consumer views the brand page and perceives the overall number of 'likes' to be high, it can be inferred that the brand page, and by extension, the brand itself has established high online bridging social capital. Similarly, the number of friends' 'likes' on a Facebook brand page can be a numerical representation of the number of strong ties the brand has on the site, and thus it may be inferred by the consumer that a brand page with a high number of friends' 'likes' has established high online bonding social capital. Following on prior online impression formation research conducted on Facebook personal profiles (e.g. Tong et al. 2008; Walther et al. 2008), we propose that there would be an attributing effect of brand characteristics onto Facebook brand pages based on the number of overall 'likes' and friends' 'likes'. Specifically, for brands with Facebook pages that have a high number of overall 'likes' and friends' 'likes', consumers would have higher brand trust, brand loyalty, brand involvement, brand attitude, and purchase intention.

- H1: There is a significant relationship between the number of overall 'likes' on a Facebook brand page and (a) brand attitude, (b) brand trust, (c) brand involvement, and (d) purchase intention.
- H2: There is a significant relationship between the number of friends' 'likes' on a Facebook brand page and (a) brand attitude, (b) brand trust, (c) brand involvement, and (d) purchase intention.

Similarly, based on prior research on sociometric versus peer-perceived popularity (e.g. Parkhurst and Hopmeyer 1988), we propose that Facebook brand pages with a high number of overall 'likes' can be seen as being sociometrically popular. That is, there are high numbers of inbound connections on the site, most of which are other members not directly connected to the person observing the Facebook brand page. Conversely, brand pages with a high number of friends' 'likes' can be seen as being perceptually popular

because many of the consumer's own friends are the Facebook members who directly connect with these brand pages. Perceptually, popular brand pages may elicit stronger social attractiveness and trust than sociometrically popular brand pages. At the same time, one's friends who already 'like' a Facebook brand page can be construed as being trusted opinion leaders helping to spread an innovation (Katz and Lazarsfeld 1970; Rogers 2003). We propose that the number of friends' 'likes' on Facebook brand pages will interact with the number of overall 'likes' to influence brand preferences.

H3: There is an interaction effect between the number of overall 'likes' and the number of friends' 'likes', whereby having both high overall 'likes' and high friends' 'likes' has an additive effect and results in the highest (a) brand attitude, (b) brand trust, (c) brand involvement, and (d) purchase intention, compared to pairwise combinations that include low overall 'likes' or low friends' 'likes'.

Also, in previous research examining online impression formation, intensity of Facebook usage has been associated with greater on-site political activity and 'liking' of candidates' pages (Vitak et al. 2011), displays of romantic relationship statuses (Papp, Danielewicz, and Cayemberg 2012), and linking of the self to brand pages (Honisch and Strack 2012). More frequent and intensive Facebook users are more likely to self-disclose their social lives, tastes and lifestyles on the site (Wang 2013), and as a result, publicly associate with brand pages as a means for self-verification and identity formation (Chu and Kim 2011; Honisch and Strack 2012). Due to these reasons, we propose that intensity of Facebook use would mediate the relationships between the number of overall 'likes'/friends' 'likes' on brand pages, and brand outcomes (brand attitude, brand trust, brand involvement, and purchase intention).

H4: Intensity of Facebook use will mediate the relationships between number of overall 'likes'/friends' 'likes' and (a) brand attitude, (b) brand trust, (c) brand involvement, and (d) purchase intention.

Method

An experiment with a 2 (high overall 'likes' vs. low overall 'likes') \times 2 (high friends' 'likes' vs. low friends' 'likes') between-subjects, full-factorial design was conducted, in which the effect of the overall number of 'likes' and friends' 'likes' on consumers' perceptions of the brand's credibility, trustworthiness, involvement, and purchase intentions were assessed.

Brand pre-test

To select the brand to be used in the experiment, a pre-test was conducted among undergraduates at a major university in the Southeast United States. A total of 88 participants were given a list of the top 20 most 'liked' Facebook brand pages (generated from the website socialbakers.com, which provides real-time updates on social media pages), and asked to rank their liking of each brand (from 1 to 20). The Top 20 Facebook brand pages and their pre-test ratings are shown in Table 1. The brand with the median rating, Converse, was used in the final experimental stimuli, with participants randomly assigned to each of the four experimental conditions, to control for potentially confounding effects of preexisting brand attitudes.

Table 1. Facebook brand pages used in the brand pre-test.

Facebook brand page ranked by number of 'likes'	Facebook brand page ranked by study participants
Coca-Cola	Coca-Cola
Red Bull	Starbucks
Converse	McDonald's
Starbucks	Target
Playstation	Subway
Oreo	Pringles
Walmart	iTunes
iTunes	Victoria's Secret
McDonald's	Oreo
Blackberry	Converse
Skype	Walmart
Pringles	Playstation
Skittles	Red Bull
Samsung Mobile USA	Skittles
Subway	Samsung Mobile USA
Monster Energy	Monster Energy
Victoria's Secret	Xbox
Intel	Intel
Xbox	Skype
Target	Blackberry

Sample

A new group of participants for the main experiment was recruited from undergraduates at the major university in the Southeast United States, and received extra credit for participation ($N = 109$, male $n = 21$). Ninety-six individuals (88.1%) were Caucasian, three (2.8%) Asian/Asian-American, seven (6.4%) African-American/Black, four (3.7%) Hispanic/Latino-American, and three (2.8%) other. Thirty-seven (33.9%) had an annual household income of \$20,000 or below, 1 (0.9%) between \$20,001 and \$40,000, 5 (4.6%) between \$40,001 and \$60,000, 11 (10.1%) between \$60,001 and \$80,000, 13 (11.9%) between \$80,001 and \$100,000, and 42 (38.5%) over \$100,000. For year in school, 13 (11.9%) were sophomores, 38 (34.9%) were juniors, and 58 (53.2%) were seniors. Average age of participants was 20.8 years ($SD = 1.2$).

Experimental stimuli

Four Facebook brand pages were created, corresponding to one of four experimental conditions [high overall 'likes/high friends' 'likes', high overall 'likes'/low friends' 'likes', low overall 'likes'/high friends' 'likes', and low overall 'likes'/low friends' 'likes']. Four screen shots of Converse's Facebook page were digitally manipulated using Adobe Photoshop (Figure 1). We incorporated actual numbers from the Converse Facebook page at the time the experiment was conducted, with high number of overall 'likes' represented by 47,801,273 'likes' and 1, 207,803 'people talking about this'. Low number of overall 'likes' was represented by 1273 'likes' and 803 'people talking about this', respectively the last four and three digits of the actual numbers. High number of friends' 'likes' was represented by 128 friends' 'likes', whereas low number of friends' 'likes' was represented by 2 friends' 'likes'. These numbers were chosen so as to simulate the 'high' and 'low' experimental conditions.

Procedure

The experiment was conducted using an online questionnaire, whereby participants were randomly assigned to one of the four experimental conditions, and asked to view the corresponding experimental stimulus, which was a screenshot of the Converse Facebook page (Figure 1). They were instructed to carefully note the brand, number of overall 'likes', and number of friends' 'likes' on the page. They then completed a series of questions assessing their brand attitude, brand trust, brand involvement, purchase intention, and intensity of Facebook use.

Measures.

Intensity of Facebook use

Intensity of Facebook use was measured by six attitudinal items from Ellison, Steinfield, and Lampe (2007) Facebook Intensity Scale, which assesses the degree to which members are emotionally connected to Facebook, and integrate Facebook into their daily activities, using seven-point Likert-type scales, ranging from 1 'Strongly disagree' to 7 'Strongly agree'. Items were: 'Facebook is part of my daily activity', 'I am proud to tell others that I use Facebook', 'Facebook has become part of my daily routine', 'I feel out of touch if I have not logged in to Facebook for awhile', 'I feel like I am part of the Facebook community', and 'I will be sorry if Facebook shuts down'. An additional two open-ended items asked participants for the number of friends they have on Facebook, and the number of hours they spent on Facebook per day. The six attitudinal items were averaged to create a scale of Facebook use (Cronbach's $\alpha = 0.83$).

Brand attitude

Brand attitude was assessed using six items from Bruner (1998), which asked participants to indicate on seven-point semantic differential scales (ranging from 1 to 7) how they felt about the brand advertised in the Facebook brand page ('unappealing/appealing', 'unpleasant/pleasant', 'boring/interesting', 'dislike/like', 'negative/positive', 'bad/good'). The six items were averaged to create a brand attitude scale (Cronbach's $\alpha = 0.96$).

Brand trust

Brand trust was assessed using four items from Chaudhuri and Holbrook (2001) ('I trust this brand', 'I rely on this brand', 'This is an honest brand', and 'This brand is safe') on seven-point Likert-type scales, ranging from 1 'Strongly disagree' to 7 'Strongly agree', and averaged to create a brand trust scale (Cronbach's $\alpha = 0.84$).

Brand involvement

Brand involvement was assessed using 10 items from Zaichkowsky's (1994) revised personal involvement inventory ('unimportant/important', 'boring/interesting', 'irrelevant/ relevant', 'unexciting/exciting', 'means nothing/ means a lot to me', 'unappealing/appealing', 'mundane/fascinating', 'worthless/ valuable', 'uninvolving/involving', 'not needed/needed') on seven-point semantic differential scales, ranging from 1 to 7, and averaged to create a brand involvement scale (Cronbach's $\alpha = 0.95$).

Purchase intention

Brand purchase intention was assessed using four items from Baker and Churchill (1977) on seven-point Likert-type scales ranging from 1 'Strongly disagree' to 7 'Strongly agree'. The items were: 'I would like to try this brand', 'I would buy other products of this brand', 'I would buy this brand if I happen to see it in the store', and 'I would actively seek out this brand in the store in order to purchase it' (Cronbach's $\alpha = 0.92$).

Results

Manipulation check

Participants were asked to identify the numbers corresponding to the overall 'likes', 'people talking about this', and friends' 'likes' on the Facebook brand page. They were then asked to identify whether the overall 'likes'/'people talking about this', and friends' 'likes', was high or low. All participants correctly identified the numbers for each type of 'like' as well as whether the 'likes' were high or low, confirming that the manipulation check was successful. Of the 54 participants assigned to the high overall 'likes' conditions, 54 (100%) answered 'high' when asked whether the number overall 'likes' was high or low. The same result was achieved with the low overall 'likes' conditions. Of the 55 participants assigned to high friends' 'likes' conditions, 55 (100%) answered 'high' when asked whether the number of friends' 'likes' was high or low. The same result was achieved with the low friends' 'likes' conditions.

Internet and Facebook usage

Average time spent on the Internet per day was 4.9 hours ($SD = 1.6$), while average time spent on Facebook per day was 1.7 hours ($SD = 1.3$). For the main device used for accessing Facebook, six (5.5%) used desktops, 54 (49.5%) used laptops, 49 (45.0%) used mobile phones, and 0 (0.0%) used tablets. Average time as a Facebook member was 5.5 years. Average number of posts per day was 2.7; average number of 'likes' added per day was 5; average number of comments added per day was 3; average number of multimedia (videos, pictures, links) posted per day was 2; average number of friends connections was 585; and average number of brands 'liked' was 25. For frequency of visits to 'liked' brand pages, 46 (42.2%) replied 'less than once a day', 39 (35.8%) replied 'once a day', 18 (16.5%) replied '2–3 times per day', four (3.7%) replied '4–5 times per day', one (0.9%) replied '6–7 times per day', one (0.9%) replied '8–9 times per day', and 0 (0.0%) replied '10 times or more per day'.

Brand attitude

A two-way ANOVA was used to examine brand attitude by overall 'likes' and friends' 'likes' with overall likes (high vs. low) and friends' likes (high vs. low) as independent variables and brand attitude as the dependent variable. There was a statistically significant main effect for overall 'likes' [$F(1,105) = 4.94, p < 0.05$, partial $\eta^2 = 0.05$]. Mean brand attitude was 5.04 ($SD = 0.93$) when overall 'likes' was low, compared to 5.26 ($SD = 1.37$) when overall 'likes' was high, supporting H1a. A significant main effect for friends' 'likes' was also obtained [$F(1,105) = 100.1, p < 0.001$, partial $\eta^2 = 0.49$]. Mean brand attitude was 4.36 ($SD = 0.75$) when friends' 'likes' was low, compared to 5.95 ($SD = 0.97$) when friends' 'likes' was high, supporting H2a. Additionally, a statistically significant interaction effect was found [$F(1,105) = 4.75, p < 0.05$, partial $\eta^2 = 0.04$] between overall 'likes' and friends' 'likes' for brand attitude. Mean brand attitude was 6.33 ($SD = 1.12$) for high

overall 'likes'/high friends' 'likes', 5.62 (SD = 0.93) for low overall 'likes'/high friends' 'likes', 4.37 (SD = 0.81) for high overall 'likes'/low friends' 'likes', and 4.36 (SD = 0.70) for low overall 'likes'/low friends' 'likes'. Tukey's Honest Significant Difference (HSD) post hoc tests revealed that brand attitude for high overall 'likes'/high friends' 'likes' was significantly higher than the other three conditions, supporting H3a (Figure 2). When friends' 'likes' was low, there was no significant difference in brand attitude between the high overall 'likes' and low overall 'likes' conditions. Conversely, when friends' 'likes' was high, even a low number of overall 'likes' led to a significantly more favorable brand attitude than when friends' 'likes' was low and overall 'likes' was high.

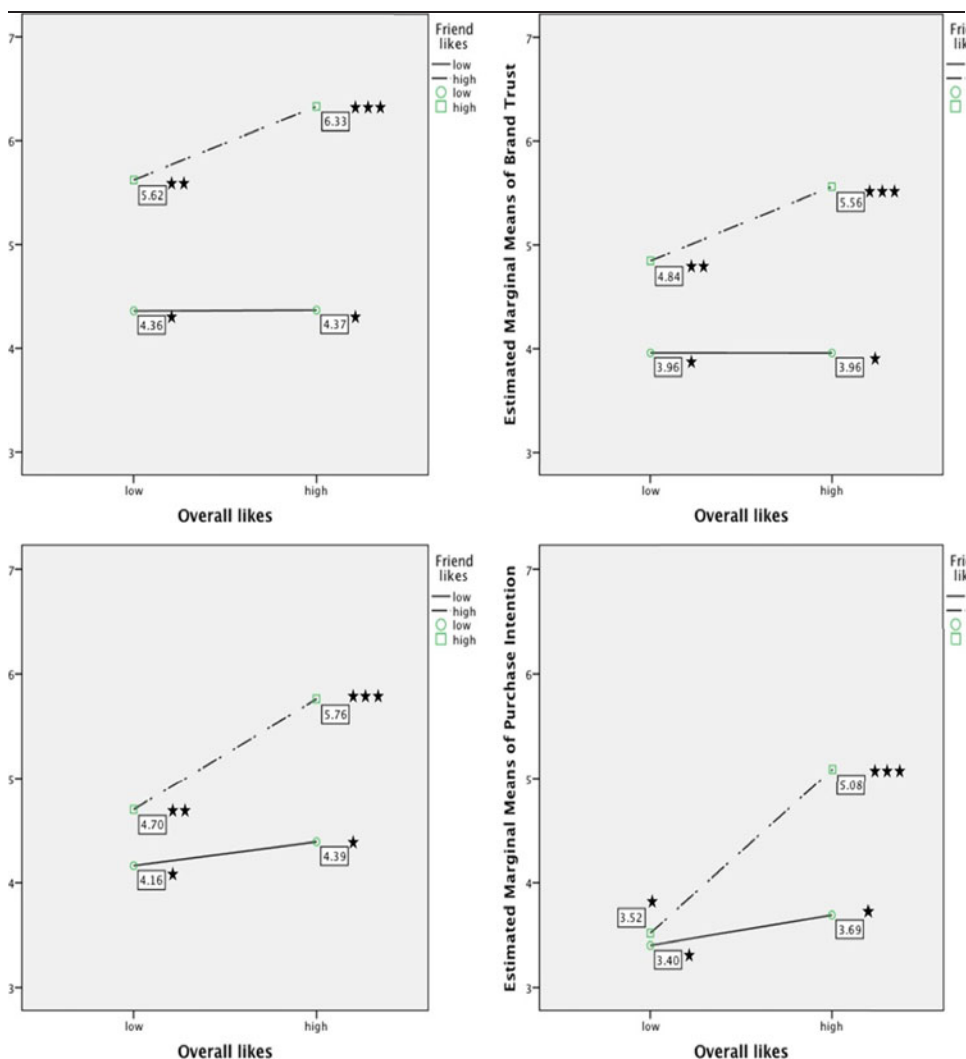


Figure 2. ANOVA graphs depicting relationships between number of overall likes and number of friends likes on key dependent measures. Notes: Top (left): Estimated marginal means of brand attitude. Top (right): Estimated marginal means of brand trust. Bottom (left): Estimated marginal means of brand involvement. Bottom (right): Estimated marginal means of purchase intention. Within each graph, identical superscripts symbolize no significant differences between means; while different superscripts symbolize significant differences between means.

Brand trust

A two-way ANOVA was conducted to examine brand trust by overall 'likes' and friends' 'likes'. A statistically significant main effect was found for overall likes [$F(1,105) = 5.17$, $p < 0.05$, partial $\eta^2 = 0.05$]. Mean brand trust was 4.44 (SD = 0.97) when overall 'likes' was low and 4.69 (SD = 1.11) when overall 'likes' was high, supporting H1b. Similarly, a statistically significant main effect was found for friends' 'likes' [$F(1,105) = 62.8$, $p < 0.001$, partial $\eta^2 = 0.37$]. Mean brand trust score was 3.96 (SD = 0.75) when friends' 'likes' was low, and 5.18 (SD = 0.93) when friends' 'likes' was high, supporting H2b. A statistically significant interaction effect was found between overall 'likes' and friends' 'likes' for brand trust [$F(1,105) = 5.22$, $p < 0.05$, partial $\eta^2 = 0.05$]. Mean brand trust was 5.56 (SD = 0.75) for high overall 'likes'/high friends' 'likes', 4.84 (SD = 0.76) for low overall 'likes'/high friends' 'likes', 3.96 (SD = 0.78) for high overall 'likes'/low friends' 'likes', and 3.96 (SD = 0.74) for low overall 'likes'/low friends' 'likes'. Tukey's HSD post hoc tests revealed that brand trust for high overall 'likes'/high friends' 'likes' was significantly higher than the other three conditions, supporting H3b (Figure 2). When friends' 'likes' was low, there was no significant difference in brand trust between the high overall 'likes' and low overall 'likes' conditions. Conversely, when friends' 'likes' was high, even a low number of overall 'likes' led to significantly greater brand trust than when friends' 'likes' was low and overall 'likes' was high.

Brand involvement

A two-way ANOVA was conducted to examine brand involvement by overall 'likes' and friends' 'likes'. A statistically significant main effect was found for overall likes [$F(1,105) = 16.8$, $p < 0.001$, partial $\eta^2 = 0.138$], supporting H1c. Mean brand involvement was 4.45 (SD = 0.83) when overall 'likes' was low, and 5.01 (SD = 1.08) when overall 'likes' was high. A statistically significant main effect was also found for friends' 'likes' [$F(1,105) = 36.84$, $p < 0.001$, partial $\eta^2 = 0.26$], supporting H2c. Mean brand involvement was 4.29 (SD = 0.71) when friends' 'likes' was low, and 5.19 (SD = 1.05) when friends' 'likes' was high. A statistically significant interaction effect was also found between overall 'likes' and friends' 'likes' for brand involvement [$F(1,105) = 6.96$, $p < 0.05$, partial $\eta^2 = 0.062$]. Mean brand involvement was 5.76 (SD = 0.97) for high overall 'likes'/high friends' 'likes', 4.70 (SD = 0.70) for low overall 'likes'/high friends' 'likes', 4.39 (SD = 0.73) for high overall 'likes'/low friends' 'likes', and 4.16 (SD = 0.69) for low overall 'likes'/low friends' 'likes'. Tukey's HSD post hoc tests revealed that brand involvement for high overall 'likes'/high friends' 'likes' was significantly higher than the other three conditions supporting H3c (Figure 2). When friends' 'likes' was low, there was no significant difference in brand involvement between the high overall 'likes' and low overall 'likes' conditions. Conversely, when friends' 'likes' was high, even a low number of overall 'likes' led to significantly higher brand involvement than when friends' 'likes' was low and overall 'likes' was high.

Purchase intention

A two-way ANOVA was conducted to examine purchase intention by overall 'likes' and friends' 'likes'. A statistically significant main effect was found for overall likes [$F(1,105) = 28.31$, $p < 0.001$, partial $\eta^2 = 0.212$], supporting H1d. Mean purchase intention was 3.46 (SD = 0.84) when overall 'likes' was low, and 4.32 (SD = 1.18) when overall 'likes' was high. A statistically significant main effect was also found for friends'

'likes' [$F(1,105) = 18.66, p < 0.001$, partial $\eta^2 = 0.151$], supporting H2d. Mean purchase intention was 3.08 (SD = 0.81) when friends' 'likes' was low, and 5.61 (SD = 1.08) when friends' 'likes' was high. A statistically significant interaction effect was found between overall 'likes' and friends' 'likes' for purchase intention [$F(1,105) = 6.89, p < 0.05$, partial $\eta^2 = 0.061$]. Mean purchase intention was 5.08 (SD = 0.95) for high overall 'likes'/high friends' 'likes', 3.52 (SD = 0.91) for low overall 'likes'/high friends' 'likes', 3.69 (SD = 0.79) for high overall 'likes'/low friends' 'likes', and 3.40 (SD = 0.76) for low overall 'likes'/low friends' 'likes'. Tukey's HSD post hoc tests revealed that purchase intention for high overall 'likes'/high friends' 'likes' was significantly higher than the other three conditions, supporting H3d (Figure 2). When friends' 'likes' was low, there was no significant difference in purchase intention between the high overall 'likes' and low overall 'likes' conditions. Purchase intention also did not differ significantly between the low overall 'likes'/high friends' 'likes', high overall 'likes'/low friends' 'likes', and low overall 'likes'/low friends' 'likes' conditions.

Intensity of Facebook use as a mediator

Brand attitude

We used Preacher and Hayes' (2008) SPSS mediation macro, across 10,000 bootstrap samples, to test whether intensity of Facebook use mediated between the number of overall 'likes'/friends' 'likes' and brand attitude. The experimental condition was re-coded as dummy variables, with high overall 'likes'/high friends' 'likes' entered as the IV, and low overall 'likes'/high friends' 'likes', high overall 'likes'/low friends' 'likes', and low overall 'likes'/low friends' 'likes' entered as covariates. The total effect ('c' path) between 'likes' and brand attitude was significant ($\beta = 0.44, t(107) = 4.54, p < 0.001$); the effect between 'likes' and intensity of Facebook use ('a' path) was significant ($\beta = 0.80, t(107) = 10.13, p < 0.001$), and the effect between Facebook use and brand attitude ('b' path) was significant ($\beta = 0.34, t(107) = 3.05, p < 0.01$). However, the direct effect ('c-prime' path) of 'likes' on brand attitude, controlling for intensity of Facebook use, was non-significant ($\beta = 0.16, t(106) = 1.23, p = 0.22$). As such, intensity of Facebook use mediated between the number of overall 'likes'/friends' 'likes' and brand attitude, supporting H4a. An estimate of the indirect effect using the Sobel test (test statistic = 0.28, SE = 0.10, $Z = 2.90, p < 0.05$), as well as the bootstrap results at the 95% confidence interval [SE = 0.92, CI = 0.099 (lower), 0.457 (upper)], also indicated brand attitude mediated this relationship.

Brand trust

To test whether intensity of Facebook use mediated between overall 'likes'/friends' 'likes' and brand trust, we conducted Preacher and Hayes' (2008) mediation analysis, across 10,000 bootstrap samples. The total effect ('c' path) between 'likes' and brand trust was significant ($\beta = 0.37, t(107) = 4.30, p < 0.001$), the effect between 'likes' and intensity of Facebook use ('a' path) was significant ($\beta = 0.80, t(107) = 10.13, p < 0.001$), and the effect between intensity of Facebook use and brand trust ('b' path) was significant ($\beta = 0.48, t(107) = 5.07, p < 0.001$). However, the direct effect ('c-prime' path) of 'likes' on brand trust, controlling for intensity of Facebook use, was non-significant ($\beta = -0.02, t(106) = -0.14, p = 0.89$). As such, intensity of Facebook use mediated between the number of overall 'likes'/friends' 'likes' and brand trust, supporting H4b. An estimate of the indirect effect using the Sobel test (test statistic = 0.384, SE = 0.06,

$Z = 4.52$, $p < 0.001$), and the bootstrap results at the 95% confidence interval [SE = 0.076, CI = 0.244 (lower), 0.539 (upper)], also indicated brand trust mediated this relationship.

Brand involvement

To test whether intensity of Facebook use mediated between overall 'likes'/friends' 'likes' and brand involvement, Preacher and Hayes' (2008) mediation analysis, across 10,000 bootstrap samples, was conducted. The total effect ('c' path) between 'likes' and brand involvement was significant ($\beta = 0.44$, $t(107) = 5.52$, $p < 0.001$); the effect between 'likes' and intensity of Facebook use ('a' path) was significant ($\beta = 0.80$, $t(107) = 10.13$, $p < 0.001$), but the effect between intensity of Facebook use and brand involvement ('b' path) was non-significant ($\beta = 0.12$, $t(107) = 3.09$, $p = 0.22$). The direct effect ('c-prime' path) of 'likes' on brand involvement, controlling for Facebook use, was significant ($\beta = 0.34$, $t(106) = 3.09$, $p < 0.01$). An estimate of the indirect effect using the Sobel test was non-significant (test statistic = 0.10, SE = 0.08, $Z = 1.22$, $p = 0.22$), along with the bootstrap results at the 95% confidence interval [SE = 0.074, CI = -0.044 (lower), 0.247 (upper)]; hence, H4c was not supported.

Purchase intention

Likewise, Preacher and Hayes' (2008) mediation analysis was used to test whether intensity of Facebook use mediated between overall 'likes'/friends' 'likes' and purchase intention, across 10,000 bootstrap samples. The total effect ('c' path) between 'likes' and purchase intention was significant ($\beta = 0.51$, $t(107) = 6.02$, $p < 0.001$); the effect between 'likes' and intensity of Facebook use ('a' path) was significant ($\beta = 0.80$, $t(107) = 10.13$, $p < 0.001$), and the effect between intensity of Facebook use and purchase intention ('b' path) was significant ($\beta = 0.24$, $t(107) = 2.36$, $p < 0.05$). The direct effect ('c-prime' path) of 'likes' on purchase intention, controlling for intensity of Facebook use, was also significant ($\beta = 0.32$, $t(106) = 2.75$, $p < 0.01$). The indirect effect using the Sobel test (test statistic = 0.19, SE = 0.09, $Z = 2.28$, $p < 0.05$), and the bootstrap results at the 95% confidence interval [SE = 0.10, CI = 0.018 (lower), 0.385 (upper)], indicated purchase intention partially mediated this relationship. Holding intensity of Facebook use constant, β for the effect of 'likes' on purchase intention decreased from 0.51 to 0.32. Hence, H4d was partially supported.

Discussion

This study examined how the number of overall 'likes', friends' 'likes', and intensity of Facebook use jointly influence consumers' brand outcomes. Results show that there is a significant relationship between the number of overall 'likes' on Facebook brand pages and consumers' attitude towards (H1a) and involvement with the brand (H1c), feelings of trust (H1b), and purchase intention (H1d). When overall 'likes' is high, consumers are more likely to also have more positive brand attitude, higher brand involvement and brand trust, and purchase intention, than when overall 'likes' is low. Similarly, the number of friends' 'likes' on Facebook brand pages also elicits a positive response from consumers with regards to the brand-related dependent measures. When the number of friends' 'likes' is high, consumers have significantly more positive brand attitude (H2a) and brand trust (H2b), greater brand involvement (H2c), and purchase intention (H2d). These findings

suggest that when viewing Facebook brand pages in the absence of other online social cues, consumers use system-generated, numerical aggregates of sociometric and perceptual popularity (overall 'likes' and friends' 'likes' respectively) to form an initial impression of the brand, thus supporting earlier studies that suggest individuals judge Facebook profiles based on the number of friends one has, the physical attractiveness of these friends, and the comments these friends make on the profile owner's wall (Tong et al. 2008; Walther et al. 2008). We believe that similar attribution processes occur on Facebook brand pages, with consumers forming impressions toward advertised brands on Facebook pages and judging brands' popularity among others based on the available information.

A major finding of this study is that there is an interaction effect between the number of overall 'likes' and friends' 'likes' in influencing consumers' brand attitude (H3a), brand trust (H3b), involvement (H3c), and purchase intention (H3d). When the number of friends' 'likes' is low, the number of overall 'likes' does not have a significant influence on brand attitude, brand trust, brand involvement, and purchase intention. However, when the number of friends' 'likes' is high, there is an additive effect of high overall 'likes', i.e. when overall 'likes' and friends' 'likes' are both high, brand attitude, brand trust, brand involvement, and purchase intention are significantly greater than when only friends' 'likes' is high. When the number of friends' 'likes' is high, brand attitude, brand trust, and brand involvement are significantly higher even when the number of overall 'likes' is low. Therefore, a high number of friends' 'likes' alone is enough to significantly improve brand attitude, brand trust, and brand involvement, but an additionally high number of overall 'likes' helps boost these effects significantly. Purchase intention however did not differ significantly between the low overall 'likes'/high friends' 'likes', low overall 'likes'/low friends' 'likes', and high overall 'likes'/low friends' 'likes' conditions. A possible explanation is that Facebook brand pages are more effective for building long-term brand equity, than for increasing short-term purchase behavior (Percy and Rosenbaum-Elliott 2012).

Overall, the significance of the interaction effect between number of overall 'likes' and friends' 'likes' for the dependent measures in this study suggests that friends' 'likes' have a stronger influence on consumers' judgments of Facebook brand pages than overall 'likes'. As previously discussed, overall 'likes' can be considered a sociometric measure of popularity (Parkhurst and Hopmeyer 1988) because it aggregates the number of inbound links to the Facebook brand page. Friends' 'likes', meanwhile, is a perceptual measure of popularity, representing online peers whose opinions consumers on Facebook would consider as being more credible and highly valued. When more of our actual 'friends' on the site endorses (i.e. 'like') a Facebook brand page, we are also more likely to have a more positive impression of the brand since we value our friends' opinions more than endorsements (i.e. 'likes') by the general Facebook member population. This finding also supports Katz and Lazarsfeld's (1970) two-step flow of communication, whereby opinion leaders, or in this case, our Facebook friends who 'like' various brand pages on the site, pass on information within their social groups, due to their opinions being deemed more credible and trustworthy.

Another contribution of this study is that intensity of Facebook use mediates the relationships between the number of overall 'likes'/friends' 'likes' and three of the dependent measures: brand attitude (H4a), brand trust (H4b), and purchase intention (H4d), but not on brand involvement (H4c). Controlling for intensity of Facebook use, the number of overall 'likes'/friends' 'likes' on the Facebook brand page no longer has a direct effect on brand attitude and trust, and a reduced effect on purchase intention. In

other words, intensity of Facebook use is the real reason behind why consumers' rated the Facebook brand pages more highly on these brand outcomes. The more a person uses Facebook, incorporating it as part of his or her daily routine, feel like part of the Facebook community, and feel out of touch if he or she has not logged in for awhile, the more likely he or she is to have a positive impression of brands advertised on Facebook brand pages, regardless of the overall 'likes'/friends' 'likes' the pages have. It is also possible that only those using Facebook heavily can correctly interpret the 'likes' figures displayed on brand pages, and pay attention to these figures, thereby accounting for more positive impressions of advertised brands. Our finding suggests that Facebook brand pages are likely to have a more positive effect on regular and more frequent users of Facebook with regards to brand attitude, brand trust, and purchase intention. As for brand involvement, it is possible that the number of overall 'likes'/friends' 'likes' would be enough to influence Facebook users to either 'like' or not 'like' a page, thus becoming more/less involved with the brand, without intensity of Facebook use having a direct influence.

There are some limitations to this study, which offer implications for future research. First, only one brand (Converse) was examined, even though we pre-tested the top 20 Facebook brand pages to make this selection. There may be different implications for brands on Facebook based on product category (e.g. low vs. high involvement, experiential vs. utilitarian, etc.). We also did not statistically control for potential confounding effects of prior attitudes toward Converse, even though we randomly assigned participants to one of four experimental conditions. Future research should examine a wider variety of product types, and statistically control for prior attitudes towards brands. Second, the 2×2 experiment merely manipulated overall 'likes' and friends' 'likes' as 'high' or 'low'. It is possible that there may be a curvilinear relationship between the number of 'likes' and brand outcomes, so future research should test for this effect. Third, we did not account for different types of friends' 'likes', e.g. close friends, acquaintances, etc., so future research should test how different categories of friends' 'likes' influence brand outcomes. Fourth, the way that consumers engage with Facebook 'likes' is multi-faceted and should not be limited to numerical representations of high or low. Future research should explicate further the meanings inherent in 'liking' a Facebook brand page, and its implications for long-term brand engagement among consumers. Also, the number of friends' 'likes' in the experimental stimuli was not indicative of participants' actual number of friends who 'like' the Converse brand page because they merely viewed screenshots, rather than actually logging in to their Facebook accounts. Future research should have participants view Facebook brand pages using their actual Facebook accounts, so as to increase ecological validity. Additionally, despite conducting a pre-test to choose the brand for our experiment, as well as randomization of participants to one of four experimental conditions, causal relationships among variables may not have been adequately established in the study. Future research should aim to improve causality inferences. Fifth, there were large differences in the numbers of high and low overall 'likes' and friends' 'likes' in the four experimental conditions. It is possible that consumer brand outcomes may be different if other numbers were assigned to each of the four conditions. Future research should take this into consideration.

Conclusion

Applying theoretical concepts based on online impression management (Walther and Parks 2002), sociometric versus perceptual popularity (Parkhurst and Hopmeyer 1988), SCT (Putnam 2000; Williams 2006), and diffusion of innovations (Rogers 2003), this study found that overall 'likes' and friends' 'likes' work concurrently to influence

consumers' judgments of Facebook brand pages, and their brand preferences. Friends' 'likes' has a greater impact on brand judgments than overall 'likes', as they represent brand endorsements from people who are perceptually popular, that is whose opinions are considered more important, and for whom consumers have greater trust and strong bonds than with the typical Facebook user. Intensity of Facebook use also mediates between overall 'likes' and friends' 'likes' on brand attitude, brand trust, and purchase intention. The more one uses and values Facebook, the more likely he or she is to have more positive impressions of Facebook brand pages.

This study's findings have wide ranging practical implications for digital marketing communications. First, rather than simply using numerical numbers of 'likes', 'follows', 'pins', etc., as a measure for their marketing success on social media sites, marketers should find ways to reach opinion leaders who wield influence among their social networks, those with strong bridging and bonding social capital, as well as the perceptually popular among Facebook users, who will in turn help spread positive eWoM about their brands. Second, marketers should maximize consumer engagement on Facebook through regular posts and relevant updates on brand pages, and encourage commenting and sharing of these content by Facebook users, so as to increase the likelihood of these branded content appearing in their friends' newsfeeds, and facilitate reciprocal 'liking' of the brand pages. Third, marketers should continue to include Facebook and other social media platforms as part of their digital marketing strategy, because social media users are highly engaged with brand on the sites, exhibiting strong brand preferences as a result of 'liking' brand pages and following brand content. By harnessing the power of the Facebook 'like', marketers can help brands to carry on meaningful conversations with their consumers, thereby building long-term brand relationships.

Note

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