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Everybody Loves It, You've Got to Love It Too! The Downside of Receiving More (and More) Positive Word of Mouth

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Report Summary

There are many positive outcomes for marketers who successfully cultivate positive word of mouth (PWOM) about their products. In contrast, this research investigates whether there is a downside to PWOM. Specifically, the authors explore whether consumers can get too much PWOM. This question is important given the recent proliferation of WOM channels and the ever-increasing volume of WOM to which consumers are exposed.

David Alexander and Sarah Moore propose (and find) that as consumers receive more and more PWOM for a new product they have adopted, they feel increasing pressure to perform as competently with the product as those who recommended it to them. This pressure to perform elicits negative emotion (e.g., anxiety) about learning to use the new product, which undermines consumers' use of and experiences with the product.

Alexander and Moore conduct two longitudinal field studies on consumers adopting new products and three experiments that manipulate the volume of PWOM participants received. These studies test whether receiving more and more PWOM increases the pressure consumers feel to perform and explores the consequences of feeling such pressure.

The results show that greater volumes of PWOM increase pressure to perform. In turn, pressure to perform increases the negative emotion consumers feel about their initial new product experiences. Ultimately, consumers who feel more negative emotion have lower intended and actual product use, are more dissatisfied with the product, find the product to be harder to use than expected, experience more negative surprises during product use, and are more likely to spread negative word of mouth (NWOM).

In sum, this research uncovers an important downside of PWOM: for consumers adopting a new product, hearing too much PWOM can elicit negative emotion. This negative emotion affects usage intentions and carries over to affect post-purchase use as well as usage experiences. These findings suggest that focusing only on consumers' post-purchase use of a new product provides an incomplete picture of their product experiences and the potential success of new products. Instead, the results show that PWOM can elicit negative emotion in new product adopters, which carries over to undermine their use of and experiences with the product.

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Introduction

Many consumers learn about new products through word of mouth (WOM) from friends, colleagues, and acquaintances—and more recently, from online reviews and other websites. This spreading of WOM is a fundamental process in the marketplace (Katz and Lazarsfeld 1955). Positive WOM (PWOM) improves consumer attitudes (Bone 1995), reduces perceived risk (Murray 1991), and encourages product trial and adoption (Arndt 1967; Sheth 1971), while negative WOM (NWOM) does the opposite. These positive and negative effects of WOM have attendant consequences for firm sales and profits (Chevalier and Mayzlin 2006; Dellarocas, Zhang, and Awad 2007). In general, then, PWOM has positive outcomes for consumers and firms, and is a key element in marketplace success—particularly for the adoption and diffusion of new products (Godes et al. 2005; Keller and Fay 2012; Reichheld 2003; Sernovitz 2009).

Recent work, however, raises questions about some potentially ironic effects of WOM. For example, Moore (2012) finds that consumers who use explaining language when spreading PWOM about their positive experiences have lower evaluations of these experiences and are less likely to repeat them. Spreading NWOM, on the other hand, may actually increase sales for products with low awareness (Berger, Sorenson, & Rasmussen, 2010). We extend this work by exploring whether there are any ironic effects of PWOM on consumers who hear it.

Apple provides one example of a potential downside of PWOM in the context of new product adoption and diffusion. While Apple has cultivated a great deal of PWOM for the iPhone, which has surely played a part in its success, in the face of this buzz, some of its customers appear nervous about their ability to be successful iPhone users. In an article titled, "I Hate My iPhone" (Heffernan 2009), Heffernan explains that her enthusiasm for her new iPhone ended once she was responsible for mastering the intricacies of its use. The negative emotion associated with this responsibility, for her, resulted in Apple's "vaunted user friendliness [being] exposed … as bossiness and insincerity" (Heffernan 2009). Heffernan's experience illustrates a major challenge for marketers of new technologies and other complex new products that require consumer learning during initial use. Specifically, learning to use such products can elicit strong positive as well as negative emotions from consumers, and these feelings have consequences for consumers' experiences with and their use of new products (Mick and Fournier 1998).

With this challenge in mind, we provide a novel exploration of the role that PWOM might play for consumers who are adopting new technology products. WOM is a key driver of

new product diffusion (Czepiel 1974; Mahajan, Muller, and Bass 1990) and consumers might be particularly susceptible to any potential negative or ironic consequences of PWOM in this context, given the risk and uncertainty surrounding new products (Herzenstein, Posavac, and Brakus 2007). Here, we examine whether negative emotion can arise when consumers receive PWOM about a product they are adopting, and explore when and how negative emotion might undermine consumers' initial experiences with the product.

Specifically, we propose (and find) that as consumers receive more and more PWOM for a product they have adopted, they feel increasing pressure to perform as competently with this product as those who recommended it to them. This pressure to perform elicits negative emotion such as anxiety, which undermines consumers' use of and experiences with the recommended product. In other words, we find that it is possible for consumers to hear too much PWOM. Below, we outline our hypotheses about when volume of PWOM might elicit negative emotion and what the consequences of these emotions might be. We then present two field studies and three experimental studies supporting our predictions.

New Products, Negative Emotion, and Positive Word of Mouth

Imagine a consumer who hears repeatedly that the latest tech gadget is the best, most useful yet. Given this endorsement, they decide to buy it—PWOM has successfully influenced the consumer's purchase decision. When they get their new technology product, the PWOM the consumer has received elicits positive emotion and makes them excited about the product's possibilities (Howard and Gengler 2001; Söderlund and Rosengren 2007; Sweeney, Soutar, and Mazzarol 2008). At the same time, however, we suggest that the more PWOM about the product this consumer hears, the more likely they are to feel negative emotion (e.g., anxiety) about learning to use it. Prior work shows that such product-related negative emotion can negatively affect adopters who are learning to use new products (Anderson and Ortinau 1988; Golder and Tellis 1998; Shih and Venkatesh 2004; Wood and Moreau 2006). We build on this research to provide a comprehensive examination of 1) why PWOM elicits negative emotion, 2) when it might do so, and 3) the consequences of doing so.

First, we suggest that PWOM may elicit negative emotion because it can be perceived as social pressure to perform—that is, as pressure to use the adopted product as competently as the recommenders can. Failure to successfully use the product would risk negative judgments from

the recommenders, which would threaten the self (Berger and Heath 2008; Cialdini, Kallgren, and Reno 1991; Schultz et al. 2007). The social and self threats exerted by this pressure to perform should elicit negative emotions such as anxiety (Baumeister and Tice 1990; Berthoz, Armony, Blair, and Dolan 2002; Cooper, Kelly, and Weaver 2008).

Second, we conjecture that volume of PWOM received is a key variable that will determine when PWOM has negative effects. We focus on volume of PWOM because consumers can now access online WOM from millions of other consumers (Berger 2014) and because volume is an important characteristic of WOM (Basuroy, Chatterjee, and Ravid 2003; Khare, Labreque, and Asare 2011). Specifically, we predict that increasing volumes of PWOM (i.e., receiving PWOM from more individuals) will increase the pressure consumers feel to perform (Gerard, Wilhelmy, and Conolley 1968; Latané and Wolf 1981). In turn, this should increase the negative emotion evoked by initially learning to use their new product.

Third, we propose that the emotions evoked by PWOM about learning to use new products will have critical downstream effects. Prior research indicates that the positive and negative emotions associated with product learning and use are important because they inform adopters about whether they are successfully achieving new product competence (Bagozzi, Gopinath, and Nyer 1999; Luce, Bettman, and Payne 2001). We expect emotions to influence adopters' intended and actual product use, expected product satisfaction, and usage experiences. We assess both the variety and the rate of consumers' intended and actual product use (Shih and Venkatesh 2004). Variety of use refers to the different ways a product is used and rate of use refers to the amount of time a product is used during a certain period. We predict that the more positive emotion consumers feel (e.g., excitement), the more likely they are to adopt enthusiastic usage strategies that maximize their variety and rate of product use, and the more satisfied they will be with the product and their experiences with it. Conversely, the more negative emotion consumers feel (e.g., anxiety), the more likely they are to adopt conservative usage strategies that limit their variety and rate of product use, and the less satisfied they will be with the product and their experiences with it.

Study Overview

We explore the effect of increasing volumes of PWOM on new product adopters across five studies using field and lab settings; our conceptual model is displayed in Figure 1 (see

Figure 1, following References). To summarize, first, we expect that increasing volumes of PWOM will have a negative effect on consumers' product satisfaction and usage experiences, as well as on their intended and actual product use. Second, we propose that volume of PWOM will exert these effects indirectly, because of pressure to perform and negative emotion. That is, greater volumes of PWOM will increase felt pressure to perform, which will increase negative emotion, which in turn, will affect consumers' experiences with and use of the product.

Study 1 looks at the effect volume of PWOM on positive and negative emotion, as well as on intended and actual product use, in a survey of actual consumers adopting various new technology products. Studies 2 through 4 are experiments that manipulate the volume of PWOM received about different technology products that participants envision adopting and learning to use. These studies explore how volume of PWOM impacts emotions, product use, and satisfaction, and test whether the downstream effects of volume of PWOM are driven by negative emotion and pressure to perform. Study 5 is a second field study using a sample of actual consumers. This study conceptually replicates Study 1 and tests pressure to perform and negative emotion as the mechanisms via which volume of PWOM affects new product adopters. Finally, in addition to exploring the effect of PWOM on product use and satisfaction, Study 5 examines other aspects of adopters' usage experiences (e.g., negative usage surprises).

Study 1: Longitudinal Consumer Survey

Study 1 uses a sample of real consumers in the process of adopting a new technology product. This study tests our basic proposition that receiving increasing volumes of PWOM will increase adopters' negative emotions about learning to use their new product, and will therefore decrease their intended and actual new product use.

Design and methods

Participants. Participants were recruited from the CBS Television City online panel in 2004 as part of another project. We identified consumers who planned to acquire one of 21 communications or entertainment products for the first time (see Table 1, following References). Eligible consumers intended to buy one of the 21 products in the next two months and agreed to be surveyed at three points in time: a week before acquisition (Wave 1), one to two weeks after acquisition (Wave 2), and six weeks after acquisition (Wave 3). Here, we report portions of the

data from Wave 1 and Wave 2. Participants were paid $20 for agreeing to participate in the study plus $5 for each subsequently completed survey, with a $15 bonus for completing all three surveys.

The analyses below utilize responses from the final sample of 299 participants who completed both the Wave 1 and Wave 2 surveys (49% male, mean age 36, ranging from 13 to 69).[1] These participants did not differ significantly from the participants in Wave 1 who did not complete the Wave 2 survey.

Wave 1 and Wave 2 surveys. Once participants identified a product (Table 1) they expected to acquire in the next week, they completed the Wave 1 survey. First, participants provided a brief description of how they would use of the product in the first week it was available to them. Participants then reported on their intended use of the product in the first week it was available to them by answering three questions (Shih and Venkatesh 2004):

- How many hours do you expect to spend using Product X in the first week after you have it available to you in your home? (___ hours)
- On how many separate occasions do you expect to use Product X in the first week after you have it available to you? (___ occasions)
- What percent of the available functions or features of Product X do you expect to use at least once in the first week after you have it available to you? (___ percent)

Next, on 5-point scales (1 = strongly disagree, 5 = strongly agree), participants reported on PWOM volume (2 items: "I heard many people talking about how Product X has many advantages and benefits", "I heard many people talking about how Product X has many advantages and benefits"; α = 0.70; Moldovan, Goldenberg, and Chattopadhyay 2011), positive emotion ("I am eager and excited to use Product X"), negative emotion ("I am anxious and worried about whether I will be able to figure out how to use this product"; Elliot & Harackiewicz, 1996), and benefit uncertainty (2 items: "I feel quite certain of the benefits I expect to get from my new product, Product X", "I can easily evaluate whether the benefits of acquiring and using Product X outweigh the costs in money, time, and hassle"; reverse-coded; α = 0.79; Alexander, Lynch, and Wang 2008).

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[1] More details on participant recruitment, attrition, and final sample sizes across studies are available from the authors.

In Wave 2, participants were first asked whether they had acquired the new product, and if so, when. Participants who had acquired the product and had it available to use for 7 to 21 days were then asked to complete the Wave 2 survey. Participants then reported their actual usage during the first week the product was available to them using the intention items from the Wave 1 survey. Finally, participants answered some questions for a related research project and were thanked for their participation.

Results

In Study 1, our objective was to test whether increasing volumes of PWOM would directly affect adopters' emotions about learning to use their new product, and whether these emotions, in turn, would affect intended and actual product use. To isolate the effects of PWOM volume on emotions, we controlled for benefit uncertainty in our analysis, as benefit uncertainty (i.e., difficulty of use) can influence emotions (Wood and Moreau 2006).

Effects of PWOM volume on emotions. We first tested whether volume of PWOM affected participants' emotions. We used volume of PWOM, benefit uncertainty, and their interaction to predict negative ($F(3, 295) = 10.73$, $p < 0.01$) and positive emotions ($F(3, 295) = 52.36$, $p < 0.01$). As expected, volume of PWOM increased both negative (b = 0.20, $t(295) = 3.05$, $p < 0.01$) and positive emotions (b = 0.26, $t(295) = 5.99$, $p < 0.01$). Benefit uncertainty decreased positive (b = -0.25, $t(295) = -9.02$, $p < 0.01$) and increased negative emotion (b = 0.22, $t(295) = 5.23$, $p < 0.01$). No other effects were significant.

Effects of negative emotion on product use. Next, we examined whether negative emotion decreased intended and actual product use.[2] We tested the effect of negative emotion on intended product use, controlling for benefit uncertainty and positive emotion ($F(3, 291) = 5.91$, $p < .001$). As expected, negative emotion lowered intended product use (b = -0.25, $t(291) = -2.14$, $p = 0.03$). Benefit uncertainty also lowered intended product use (b = -0.22, $t(291) = -2.18$, $p = 0.03$); positive emotion had no significant effect ($p > 0.52$).

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[2] We developed a formative index of product use that combines rate of use and variety of use (Shih and Venkatesh 2004). To make product use comparable across the 21 technology products in our dataset, we clustered products based on usage patterns for each usage item. We performed separate cluster analyses for each usage item for each survey wave (6 analyses total) and assigned products to the cluster that best represented usage patterns for that product for a given item for a given survey wave. We then z-scored responses for each item by cluster and summed these standardized items to create our usage index.

We then tested the effect of negative emotion on actual product use, controlling for intended product use, positive emotion, and benefit uncertainty ($F(4, 287) = 30.84$, $p < 0.01$). Also as expected, negative emotion lowered actual product use (b = -0.27, $t(287) = -2.43$, $p < 0.02$). Intended product use had a positive effect on actual product use (b = 0.54, $t(287) = 10.00$, $p < 0.01$), while positive emotion ($p > 0.95$) and benefit uncertainty ($p > 0.79$) did not affect actual product use.

Effect of PWOM volume on product use via negative emotion. Finally, we performed mediation tests to examine whether the effects of PWOM volume on intended and actual product use occurred as a result of negative emotion. In both analyses, we controlled for benefit uncertainty and the interaction of benefit uncertainty with volume of PWOM.

We first tested whether volume of PWOM affected intended product use through negative emotion. As expected, volume of PWOM had a significant and negative indirect effect on intended product use via its effect on negative emotion (CI: -0.15 – -0.01; $p < 0.05$; Hayes 2013; model 4, 5000 bootstrap samples).

We then tested whether volume of PWOM affected actual product use through negative emotion and intended product use (sequential mediation). As expected, volume of PWOM had a significant and negative indirect effect on actual product use via negative emotion and intended product use (CI: -0.08 – -0.01; $p < 0.05$; Hayes 2013; model 6; 5000 bootstrap samples).

Discussion

Study 1 tested our basic proposition that receiving increasing volumes of PWOM could negatively affect consumers. Working with actual consumers before and after they acquired a new technology product, we confirmed that the volume of PWOM consumers receive increased their positive and negative emotions about learning to use a new product. That is, the more PWOM adopters heard about their new product, the more excited *and* the more anxious they felt about using that product. As expected, this PWOM-elicited negative emotion lowered adopters' intended and actual use of their new product.

These are important results for marketers because they show that—ironically—PWOM can negatively affect consumers' initial experiences with a new product. We find that adopters' anticipation about using a new product is a mix of excitement and anxiety, and that greater volumes of PWOM increase the amount of anxiety-based negative emotions in this mix. The

negative emotion that is elicited by PWOM decreases adopters' intentions to use the new product, as well as their actual new product use. Thus, marketers who want to ensure that consumers' new product experiences are positive must account for the potential downside of trying to maximize the spread of PWOM about these products.

While Study 1 showed that there is a downside of PWOM for new product adopters, it did not explore whether the effect of PWOM on negative emotion is driven by pressure to perform, as hypothesized. Thus, in Studies 2-4, we manipulate volume of PWOM received using product adoption scenarios for different new products and test how volume of PWOM affects performance pressure, negative emotion, intended product use, and expected satisfaction.

Studies 2-4: Manipulating Volume of PWOM

Studies 2-4 use participants from Amazon's Mechanical Turk (MTurk) to experimentally test our framework. We had two objectives in conducting these studies. First, we wanted to test whether increasing volumes of PWOM would influence negative emotion via its effect on pressure to perform. Second, we wanted to explore the downstream effects of volume of PWOM on expected product satisfaction and intended product use, and test whether these effects were also explained by pressure to perform and negative emotion.

Design and methods

Participants. One thousand one hundred forty-four individuals were recruited from MTurk and offered $1.00 for participating in a survey. Participants first completed a pre-screen survey that allowed us to identify individuals with a basic interest in the products used in the different studies: a smartphone game (Study 2), a photo-sharing app (Study 3), and a 3D printer for use in the kitchen (Study 4). Participants were assigned to a study they qualified for, based on their pre-screen responses. If participants qualified for multiple studies, they were randomly assigned to one of those studies. Of the 1,144 participants, 922 qualified for at least one study. Of these 922 individuals, only participants who provided complete responses to the studies and those who passed our attention check were retained, resulting in final samples of 277 in Study 2, 276 in Study 3, and 273 in Study 4. After completing their respective survey, participants were thanked for their participation and arrangements were made for their payment through MTurk.

Measures. Studies 2-4 used similar designs and measured the same constructs. In all studies, participants read about a situation where they received PWOM about a product. They were then asked to imagine acquiring the product and preparing to use it.

In each study, volume of PWOM was manipulated by condition. The base or control level of volume of PWOM (coded as 0) had participants receiving PWOM from a favorite blogger. The low volume of PWOM (coded as 1) had participants receiving PWOM in a face-to-face conversation with a close friend. The high volume of PWOM (coded as 2) had participants receiving PWOM in a face-to-face conversation with a group of close friends; this condition also mentioned that participants had received related PWOM in the weeks prior to that conversation. More details on the manipulations are provided in each study and in the appendices. After reading the scenario in each study, participants responded to the measures described below.

To measure *Pressure to Perform*, participants rated their agreement with the statement: "I would feel pressure to [play the game/use the app/use the printer] as well as [the blogger/my friend/my friends do/does]," using a 7-point scale from Strongly Disagree to Strongly Agree.

To measure *Positive and Negative Emotion,* participants imagined how they would feel using the product for the first time. Emotions were measured on a 7-point scale from "Won't feel at all" to "Will feel a lot" (Positive emotions: eager, engaged, enthusiastic, excited, fascinated, happy; all α's > 0.91; Negative emotions: afraid, anxious, nervous, worried; all α's > 0.86).

To measure *Expected Satisfaction,* participants rated how satisfied they would be with the new product on a 7-point scale, from "Very Dissatisfied" to "Very satisfied".

To measure *Intended Use*, as in Study 1, participants reported the percentage of features they expected to use in the new product (0-100), the number of times they intended to use the product (0-30), and the number of hours they expected to use the product (0-30) in the first week they had it. In addition, we measured how much time (in hours; 0-30) participants expected to spend reading the instructions for the product in the first week they had it.

Study 2: Smartphone Game

Scenario and measures. In Study 2, participants (N = 277) were asked to imagine that they were taking a break over lunch when they received PWOM about an "addictive" new smartphone game. This PWOM came from a blogger, a close friend, or a few close friends, depending on condition. For scenario wording, see Appendix 1.

In the pre-screen survey, participants reported how often they played video games on their smartphone or tablet (9-point scale anchored from "Once a year or less" to "More than once a day"), how much they enjoyed playing video games, and how expert they were at playing video games (5-point scales anchored "Strongly Disagree" to "Strongly Agree"). We controlled for each of these participant differences in our analyses.

PWOM volume, pressure to perform, and emotions. First, we tested whether increasing volumes of PWOM would influence pressure to perform, while controlling for participant differences ($F(4, 271) = 4.08$, $p < 0.01$). As predicted, increasing volume of PWOM increased pressure to perform (b = 0.40, $t(271) = 3.11$, $p < 0.01$). Video game expertise also had a significant positive effect on pressure to perform (b = 0.22, $t(271) = 2.52$, $p = 0.01$).

Second, we tested whether pressure to perform would affect negative ($F(4, 271) = 7.49$, $p < 0.01$) and positive emotions ($F(4, 271) = 6.23$, $p < 0.01$), while controlling for participant differences. As expected, increasing pressure to perform significantly increased negative emotion (b = 0.24, $t(271) = 5.40$, $p < 0.01$). Interestingly, pressure to perform also increased positive emotion (b = 0.08, $t(271) = 2.03$, $p = 0.04$), perhaps because it reflects the excitement participants feel in the face of a greater challenge. Participants who played video games regularly also showed higher positive emotion (b = 0.09, $t(271) = 2.86$, $p < 0.01$).

Finally, we tested whether volume of PWOM had an indirect effect on negative emotion through pressure to perform (Figure 1). As predicted, controlling for participant differences, volume of PWOM increased negative emotion via its effect on pressure to perform (CI: 0.03 – 0.19; $p < 0.05$; Hayes 2013; model 4, 5000 bootstrap samples).

Effects of PWOM volume on product satisfaction. We next explored how volume of PWOM influenced participant's expected satisfaction with the product, and tested whether it exerted these effects via pressure to perform and negative emotion.

We used negative emotion to predict expected satisfaction with the product, while controlling for positive emotion and participant differences ($F(5, 271) = 32.57$, $p < 0.01$). As might be expected, negative (b = -0.15, $t(271) = -3.98$, $p < 0.01$) and positive (b = 0.47, $t(271) = 10.42$, $p < 0.01$) emotions had significant and opposite effects on expected satisfaction.

We then tested whether volume of PWOM affected expected satisfaction through pressure to perform and negative emotion (sequential mediation; Figure 1), while controlling for

participant differences (Hayes 2013; model 6, 5000 bootstrap samples). As expected, volume of PWOM had a negative, indirect effect on expected satisfaction (CI: -0.04 – -0.004; $p < .05$).

Effects of PWOM volume on product use. We also explored the effects of volume of PWOM and negative emotion on intended product use: overall use, feature use, time spent using, usage occasions, and time spent with the instructions.

Negative emotion did not predict intended overall use ($p > 0.28$) or usage occasions ($p > 0.18$), though it had a marginal effect on intended feature use (b = -2.03, $t(271) = -1.82$, $p < 0.07$) and a significant effect on time spent using the video game (b = 0.72, $t(271) = 2.78$, $p < 0.01$). As participants felt more negative emotion, they intended to spend more time playing the video game but exploring less of the game's features. Participants also intended to spend more time reading the instructions/cheat sheets for the game (b = 0.58, $t(271) = 3.21$, $p < 0.01$). In other words, negative emotion made consumers more conservative in their product use. As might be expected, positive emotion had significant positive effects across our intended usage measures, except for time spent reading instructions.

We then tested whether volume of PWOM affected intended product use through its effects on pressure to perform and negative emotion (Figure 1), controlling for participant differences (Hayes 2013; model 6, 5000 bootstrap samples). We found no significant effects for overall intended use or usage occasions. However, via pressure to perform and negative emotion, volume of PWOM had a significant, indirect effect on feature use (CI: -0.61 – -0.02; $p < .05$), time spent using the game (CI: 0.02 – 0.20; $p < .05$), and time spent reading instructions (CI: 0.01 – 0.15; $p < .05$).

Study 3: Photo-Sharing App

Scenario and measures. Study 3 is a conceptual replication of Study 2 using a different new product—a photo-sharing app. Study 3 began with a paragraph which described photography as a technique for personal expression and discussed the role of social media and photo-sharing apps in allowing such expression. Depending on randomly assigned condition, participants ($N = 276$) then read a scenario in which they received PWOM about a new photo-sharing app from a blogger, a close friend, or one of their best friends who reinforced PWOM they had received numerous times over the last couple of weeks. For scenario wording, see Appendix 2.

In the pre-screen survey, we measured participants' level of enjoyment of and expertise in photography (5-point scales, Strongly Disagree to Strongly Agree). We controlled for both of these participant differences in our analyses.

PWOM volume, pressure to perform, and emotions. We first tested whether volume of PWOM increased pressure to perform, while controlling for participant differences ($F(3, 272) = 4.36$, $p < 0.01$). As expected, increasing volumes of PWOM increased pressure to perform (b = 0.46, $t(272) = 3.11$, $p < 0.01$).

Second, we tested whether pressure to perform influenced participants' emotions. Controlling for participant differences, we used pressure to perform to predict negative ($F(3, 272) = 13.02$, $p < 0.01$) and positive emotions ($F(3, 272) = 11.41$, $p < 0.01$). As expected, increasing pressure to perform significantly increased negative emotion (b = 0.23, $t(272) = 5.78$, $p < 0.01$). Unlike in Study 2, pressure to perform did not affect positive emotion (b = 0.05, $t(272) = 1.48$, $p > 0.13$). Participants who enjoyed taking and sharing photos showed higher positive emotion (b = 0.48, $t(272) = 5.19$, $p < 0.01$).

Finally, we tested whether volume of PWOM affected negative emotion through its effects on pressure to perform (Figure 1). As expected, controlling for participant differences, volume of PWOM indirectly increased negative emotion via its effect on pressure to perform (CI: 0.04 – 0.20; $p < 0.05$; Hayes 2013; model 4, 5000 bootstrap samples).

Effects of PWOM volume on product satisfaction. Next, we explored how volume of PWOM affected participants' expected satisfaction with the product, and whether these effects were driven by pressure to perform and negative emotion.

We first tested whether negative emotion predicted expected satisfaction, controlling for positive emotion and participant differences ($F(4, 271) = 46.41$, $p < 0.01$). As in Study 2, both negative (b = -0.09, $t(271) = -2.66$ $p < 0.01$) and positive (b = 0.47, $t(271) = 11.65$, $p < 0.01$) emotions significantly predicted expected satisfaction with the product.

We then tested whether volume of PWOM influenced expected satisfaction through pressure to perform and negative emotion (Figure 1), controlling for participant differences (Hayes 2013; model 6, 5000 bootstrap samples). As expected, volume of PWOM indirectly lowered expected satisfaction (CI: -0.03 – -0.002; $p < .05$).

Effects of PWOM volume on product use. We tested whether negative emotion predicted intended product use, controlling for positive emotion and participant differences. Negative

emotion did not predict intended overall use, time spent using the app, or usage occasions (ps > 0.41). As in Study 2, negative emotion had a marginal effect on expected feature use (b = -2.03, t(271) = -2.00, p < 0.09) and a significant effect on time reading the instructions (b = 0.53, t(271) = 2.19, p < 0.03). Again, positive emotion had significant positive effects across our intended usage measures, except for time spent reading the instructions.

We then tested whether volume of PWOM influenced intended usage through pressure to perform and negative emotion (Figure 1), controlling for participant differences (Hayes 2013; model 6, 5000 bootstrap samples). Unlike in Study 2, we did not find an indirect effect of volume of PWOM on any of our measures.

Study 4: 3D Printer

Scenario and measures. Study 4 is a conceptual replication of Studies 2 and 3 using a really-new product—a 3D printer for the kitchen. Participants (N = 278) first read a paragraph describing 3D printers and how they can be used for baking. Next, they read a scenario in which they receive PWOM about a 3D printer from a blogger, a friend, or a friend who is reinforcing PWOM they have received over the previous few weeks. For scenario wording, see Appendix 3.

In the pre-screen survey, we measured differences in participants' level of enjoyment of and expertise in baking (5-point scales, Strongly Disagree to Strongly Agree). We controlled for each of these participant differences in our analyses.

PWOM volume, pressure to perform, and emotions. As in prior studies, we first tested whether volume of PWOM would increase pressure to perform, controlling for participant differences (F(3, 269) = 7.16, p < 0.01). As expected, increasing volumes of PWOM increased pressure to perform (b = 0.63, t(269) = 3.11, p < 0.01).

Second, we tested whether pressure to perform predicted negative (F(3, 269) = 9.85, p < 0.01) and positive emotions (F(3, 269) = 7.77, p < 0.01), controlling for participant differences. As expected, increasing pressure to perform increased negative emotion (b = 0.24, t(269) = 5.78, p < 0.01) but did not affect positive emotion (b = 0.05 t(269) = 1.27, p > 0.20). Participants who enjoyed baking showed higher positive emotion (b = 0.52, t(269) = 4.65, p < 0.01).

Finally, we tested whether volume of PWOM exerted its effect on negative emotion through pressure to perform. As expected, controlling for participant differences, volume of

PWOM indirectly increased negative emotion via pressure to perform (CI: 0.07 – 0.25; $p < 0.05$; Hayes 2013; model 4, 5000 bootstrap samples).

Effects of PWOM volume on product satisfaction. Next, we explored whether volume of PWOM decreased participant's expected satisfaction with the product, and whether it did so via pressure to perform and negative emotion.

We first tested whether negative emotion predicted expected satisfaction with the product, controlling for positive emotion and participant differences ($F(4,268) = 62.69$, $p < 0.01$). As in Studies 2 and 3, negative (b = -0.14, $t(268) = -3.86$ $p < 0.01$) and positive (b = 0.73, $t(268) = 15.34$, $p < 0.01$) emotions had significant and opposite effects on expected satisfaction.

We then tested whether volume of PWOM affected expected satisfaction through pressure to perform and negative emotion, controlling for participant differences (Hayes 2013; model 6, 5000 bootstrap samples). As expected, volume of PWOM indirectly lowered expected satisfaction (CI: -0.05 – -0.004; $p < .05$).

Effects of PWOM volume on product use. As in Studies 2 and 3, we next tested whether negative emotion predicted each of our intended usage measures, controlling for positive emotion and participant differences. Negative emotion did not significantly predict intended overall use, time spent using the app, usage occasions, or time reading the instructions ($ps > 0.10$). Negative emotion did have a significant effect on intended feature use (b = -2.39, $t(268) = -2.31$, $p < 0.03$). Again, positive emotion had significant positive effects across our intended usage measures, including time spent reading the instructions.

Finally, we tested whether volume of PWOM affected intended usage through pressure to perform and negative emotion, while controlling for participant differences (Hayes 2013; model 6, 5000 bootstrap samples). We did not find an indirect effect of volume of PWOM on time spent using the product, usage occasions, or time spent reading the instructions. Volume of PWOM did have significant, negative indirect effects on intended overall usage (CI: -0.08 – -0.0004) and feature use (CI: -1.02 – -0.09).

Discussion

These experiments provide further evidence that receiving increasing volumes of PWOM can have negative effects on consumers' initial experiences with the new products they acquire. Across three studies, we manipulated volume of PWOM received and used adoption scenarios

for different products. We found consistent evidence that increasing volumes of PWOM increase consumers' negative emotion by increasing pressure to perform. We also found that consumers' expected satisfaction with the product decreased as negative emotion increased. Further, across studies, we found a pattern of results similar to Study 1, where negative emotion affected intended product use, both overall (Studies 2 and 4) and in terms of time spent reading instructions (Studies 3 and 4). That is, together, volume of PWOM, pressure to perform, and negative emotion can lead to more conservative product use. This is important because exploration during initial product use leads to insights that create positive emotion and increase future intended use (Lakshmanan and Krishnan 2011). More broadly, these results are significant because they identify negative effects of PWOM that originate when consumers form intentions to purchase new products, and which carry over to affect consumer experiences and product use after adoption.

Study 5: Longitudinal Consumer Survey

Our previous studies showed that increasing volumes of PWOM led consumers to feel pressure to perform with a new product, and thus to feel negative emotion, which undermined their intended and actual product use, as well as their expected satisfaction. Study 5 is a conceptual replication of Study 1. We engage a sample of real consumers adopting a new technology product to explore the relationships between PWOM volume, pressure to perform, and negative emotion. We also explore additional consequences of PWOM-elicited negative emotion; in addition to measuring intended and actual product use, we assess various negative usage experiences: dissatisfaction, disconfirmation of expectations, negative usage surprises, and intentions to spread NWOM.

Design and methods

Participants. Participants were recruited from a Qualtrics LLC-provided online panel. We identified consumers who intended to acquire one of 19 technology products for the first

time in the next 1-2 weeks (see Table 2, following References, for a list).[3] Eligible consumers agreed to be surveyed prior to acquisition (Wave 1) and one week after acquisition (Wave 2).

For analyses below that require only data from Wave 1, we used the 505 total responses from Wave 1 participants (36% male, mean age 36, ranging from 18 to 70). For the analyses requiring longitudinal data across Waves 1 and 2, we used responses from the 140 participants who completed both surveys (39% male, mean age 34, ranging from 18 to 69). Our measures of emotions, performance pressure, volume of PWOM, and product newness perceptions did not differ significantly between participants in Wave 1 who did versus did not complete the Wave 2 survey. However, participants who responded to the Wave 2 survey did score higher on the early adopter scale than those who did not (b = 0.36; $t = 2.26$, $p = 0.02$).

Wave 1 survey. Once participants identified a product they expected to acquire in the next 1-2 weeks, they were asked to complete the Wave 1 survey. First, participants provided a brief description of how they were going to use the product in the first week it was available to them. Participants then reported on:

a) *Positive Emotion* when using their new product (7-point scales; eager, engaged, enthusiastic, excited, fascinated, happy [α = 0.86]).

b) *Negative Emotion* when using their new product (7-point scales; afraid, anxious, apprehensive, hesitant, nervous, worried [α = 0.86]).

c) *Intended Product Use* in the first week the product was available, using the items from Study 1 (hours used: 0 to 60; separate occasions: 0 to 60; percent of features used: 0 to 100). We also asked participants how many hours and minutes they would spend reading the instructions for the product in the first week it was available to them (0 to 60).[4]

d) *Pressure to Perform* (1-7 scales; 3 items: "I would feel pressure to use the [product] as well as my friends do", "I'd put pressure on myself to use the [product] as well as everyone else does", "I would feel pressure to be as successful with the [product] as my friends are"; α = 0.85).

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[3] Participants qualified even if they had acquired a different product category option previously. Thus, for example, a participant who currently owned an Android-based smartphone qualified for the study if they were acquiring an iPhone but not if they were acquiring another Android-based smartphone.

[4] As in Study 1, to make product use comparable across the 19 technology products in our dataset, we clustered products by product category based on usage patterns for each usage item. We performed separate cluster analyses for each usage and instructions item for each survey wave and assigned products to the cluster that best represented usage patterns for that product's product category for a given item for a given survey wave. We then z-scored responses for each item by cluster. We summed these standardized usage items to create our overall usage index.

e) *Volume of PWOM* (2 items from Study 1; α = 0.74).

f) *Being an early adopter* (participant difference measure, 2 items: "In general, I am the first in my circle of friends to adopt an innovative product that no one has heard of before", "I like to be the first person to get new tech gadgets as soon as they come out"; α = 0.84)

g) *Perceived newness* (participant difference measure; 4 item formative index: "I feel quite certain of the benefits I expect to get from my new product, the [product] (reverse coded)", "I can easily evaluate whether the benefits of acquiring and using the [product] outweigh the costs in money, time, and hassle (reverse coded)", "I'll have to change my behavior significantly to get the full benefit of the [product]", "Using the [product] will allow me to do things that I can't easily do now"; Alexander, Lynch, and Wang 2008).

Participants then provided demographic information and were told that we would contact them 1-2 weeks after they expected to have their new product available for use.

Wave 2 survey. In Wave 2, participants were first asked whether they had acquired the new product, and if so, how long they had been using it. Participants who had been using the product for at least 1 week completed the Wave 2 survey. Participants who had not yet acquired the product were asked if they still intended to get the product, when they expected to have it, and when they expected to use it. These participants, along with those who had the product but had not yet used it for at least a week, were sent a second Wave 2 invitation as appropriate.

In the Wave 2 survey, participants reported on:

a) *Actual Product Use* during the first week the product was available, using the same items as in the Wave 1 survey, as well as the time spent reading the user instructions.

b) *Product Dissatisfaction* (7-point scales; disappointed, dissatisfied, frustrated, indifferent, unhappy [α = 0.85]).

c) *Negative Usage Surprises* (7-point scales; 3 items: "When I was learning and using my [product] in the first week I had it, I was amazed by how much it couldn't do", "When I was learning and using my [product] in the first week I had it, I was shocked by how hard it was to make it do what I wanted", "I was surprised by all of the things my [product] couldn't do" [α = 0.80]).

d) *Disconfirmation of Expectations* (7-point scales, 2 items: "It was frustrating trying to use the [product] to do what I wanted", "The [product] was harder to use than I expected" [α = 0.75]).

e) *Intentions to spread NWOM* (7-point scales; 2 items: "I will warn my friends not to waste their time or money on a [product]", "I will tell my friends about how ordinary and disappointing the [product] is" [α = 0.89]).

Results

In Study 5, our objective was to conceptually replicate Study 1 while exploring the relationships between volume of PWOM, pressure to perform, and negative emotion. We also aimed to test how these constructs affected subsequent product use and usage experiences.

PWOM volume, performance pressure, and emotions. We first tested whether volume of PWOM would increase pressure to perform, controlling for participant differences in perceptions of product newness and in being an early adopter ($F(3, 501) = 25.03$, $p < 0.01$). As expected, volume of PWOM increased pressure to perform (b = 0.21, $t(501) = 3.54$, $p < .01$). Both perceived newness (b = 0.18, $t(501) = 7.06$, $p < .01$) and being an early adopter (b = .12, $t(501) = 2.68$, $p < .01$) also increased pressure to perform.

Second, we tested whether pressure to perform predicted negative ($F(3, 501) = 10.76$, $p < .01$) and positive emotions ($F(3, 501) = 24.96$, $p < .01$), controlling for participant differences. As expected, increasing pressure to perform increased negative emotion (b = 0.18, $t(501) = 5.78$, $p < 0.01$). Perceived newness also increased negative emotion (b = 0.09, $t(501) = 4.76$, $p < 0.01$). Positive emotion was positively affected by pressure to perform (b = 0.06, $t(501) = 2.41$, $p < 0.02$) and being an early adopter (b = 0.08, $t(501) = 3.59$, $p < 0.01$), but negatively affected by perceived newness (b = -0.06, $t(501) = -4.03$, $p < 0.01$).

Finally, we tested whether volume of PWOM exerted its effects indirectly. Controlling for participant differences, we found that volume of PWOM affected negative emotion via pressure to perform (CI: 0.01 – 0.07; $p < 0.05$; Hayes 2013; model 4, 5000 bootstrap samples).

Effects of PWOM volume on intended product use. Next, we explored the effects of volume of PWOM on intended product use through pressure to perform and negative emotion.

First, we tested whether negative emotion affected intended product use, controlling for positive emotion and participant differences. Negative emotion increased expected time spent reading user instructions (b = 0.11, $t(500) = 3.08$, $p < .01$) but did not affect overall intended usage or any of the intended usage measures (ps > .37). Positive emotion increased overall intended usage (b = 0.31, $t(500) = 2.63$, $p < .01$), time using the product (b = 0.31, $t(500) = 3.26$,

$p < .01$), and usage occasions (b = 0.11, $t(500) = 2.13$, $p = .03$), but did not have a significant effect on percentage of features used or time spent reading user instructions (ps > .14).

Second, we tested whether volume of PWOM affected intended use through pressure to perform and negative emotion, controlling for participant differences (Hayes 2013; model 6, 5000 bootstrap samples). Volume of PWOM had a positive indirect effect on intended time spent reading instructions via pressure to perform and negative emotion (CI: 0.0002 – 0.01), but did not affect overall intended usage or any of the other intended usage measures.

Effects of PWOM volume on actual product use. We next explored the effect of volume of PWOM on actual product use through pressure to perform and negative emotion.

First, we tested whether negative emotion predicted actual use, controlling for intended use, positive emotion, and participant differences. Neither positive nor negative emotions had a significant effect on actual use (ps > .58). Intended product use was a significant predictor of actual use (b = 0.44, $t(5.37)$, $p < .01$). Similar results were obtained when we tested each usage item separately (intentions: ps < .01; negative emotions: ps > .19).

Second, we tested whether volume of PWOM affected actual use through pressure to perform and negative emotion (Hayes 2013; model 6, 5000 bootstrap samples). The two-step pathway was not significant. Further, volume of PWOM did not affect actual product use through negative emotion, though it did so through pressure to perform (CI: -0.20 – -0.003).

Finally, we conducted similar mediation analyses on each usage item separately. Volume of PWOM did not affect these usage measures through pressure to perform and negative emotion together. However, as with actual use, volume of PWOM had a negative indirect effect on hours spent using the product (CI: -0.09 – -0.002), number of usage occasions (CI: -0.09 – -0.002), and hours spent reading user instructions (CI: -0.10 – -0.003) via pressure to perform alone.

Effects of PWOM volume on usage experiences. Last, we explored the effects of volume of PWOM on negative usage experiences (dissatisfaction, negative surprises, expectation disconfirmation, and spreading NWOM) through pressure to perform and negative emotion.

First, we tested whether negative emotion predicted dissatisfaction ($F(4, 135) = 9.04$, $p < 0.01$), negative usage surprises ($F(4,135) = 5.75$, $p < 0.01$), disconfirmation of use expectations ($F(4, 135) = 5.83$, $p < 0.01$), and intentions to spread NWOM ($F(4, 135) = 6.72$, $p < 0.01$) while controlling for positive emotion and participant differences. As expected, negative emotion increased dissatisfaction with initial product experiences (b = 0.18, $t(135) = 2.60$, $p = 0.01$),

negative surprises during product use (b = 0.35, $t(135)$ = 3.27, p < 0.01), perceptions that the product was harder to use than expected (b = 0.33, $t(135)$ = 3.42, p < 0.01), and intentions to spread NWOM about the product (b = 0.24, $t(135)$ = 2.46, p < 0.02). As might be expected, positive emotion reduced these negative usage experiences.

Second, we tested whether volume of PWOM affected each of these usage experiences through pressure to perform and negative emotion, while controlling for participant differences (Hayes 2013; model 6, 5000 bootstrap samples). As expected, volume of PWOM indirectly increased dissatisfaction with initial product experiences (CI: 0.0001 – 0.03; p < .05), negative usage surprises (CI: 0.0001 – 0.05; p < .05), perceptions that the product was harder to use than expected (CI: 0.0001 – 0.04; p < .05), and intentions to spread NWOM (CI: 0.00 – 0.04; p = .05), via its effect on pressure to perform and negative emotion.

Discussion

Study 5 provided a conceptual replication of Study 1 and confirmed our basic proposition that receiving increasing volumes of PWOM can have negative effects on consumers and their initial product experiences. Working with actual consumers who were about to acquire a new product, we saw that volume of PWOM affected consumers' product experiences by increasing the pressure they felt to perform with the product. This pressure to perform increased the negative emotion consumers felt as they prepared to learn and use a new product.

Perhaps most important to marketers, this study offered additional evidence that customer experiences prior to acquiring a product carry over into initial product use. The negative emotion that consumers felt after receiving PWOM negatively affected their experiences with the new product in the form of higher dissatisfaction, negative usage surprises, disconfirmation of expectations, and increased intentions to spread NWOM about the product.

General Discussion

This paper asks whether consumers can receive too much PWOM about a new product. Five studies employing longitudinal consumer surveys and controlled experiments show that they can (see Table 3, following References, for a summary of results across studies).

In Study 1, using a longitudinal survey of consumers who were about to acquire a new technology product, we found that receiving greater volumes of PWOM increased consumers' negative emotion, which lowered consumers' intended and actual product use.

In Studies 2-4, we manipulated volume of PWOM to explore its effects on negative emotion via pressure to perform. Across a variety of new technology products, we found that greater volumes of PWOM increased pressure to perform, which in turn increased negative emotion about using the product. Ultimately, volume of PWOM, pressure to perform, and negative emotion combined to undermine consumers' new product experiences in the form of decreased product satisfaction and decreased usage intentions.

Study 5 allowed us to conceptually replicate Study 1, using consumers acquiring new technology products. Again, we found that the volume of PWOM consumers received increased the pressure they felt to perform with a new product, which in turn increased negative emotion. Finally, as in Study 1, volume of PWOM undermined consumers' new product experiences via its effects on pressure to perform and negative emotion.

Implications. These findings are important for consumer researchers and marketing practitioners. For researchers, these results broaden our understanding of how PWOM affects consumers. Rather than eliciting only positive emotion (e.g., Howard and Gengler 2001), we find that greater volumes of PWOM can also elicit negative emotion about using the recommended product. PWOM elicits negative emotion through exerting pressure to perform—specifically, pressure to develop the same level of competence as those recommending the product. In turn, pressure to perform and negative emotion affect consumers' intended product use, as well as their actual product use and experiences after purchase. While prior research has shown the effect of product use on emotions (e.g., Wood and Moreau 2006), we find that adopters' emotions can be affected by PWOM, with consequences that carry over into post-purchase product use.

For marketing practitioners, these results offer important insights into how the volume of PWOM affects consumers. While PWOM can increase consumers' likelihood of purchasing a product, we show that increasing volumes of PWOM can undermine consumers' experiences and success with a product after purchase. The current research confirms that a truer understanding of new product diffusion comes from examining post-adoption use processes (e.g., Shih and Venkatesh 2004). Indeed, we find not just that PWOM affects consumers' negative emotion, but

that these pre-adoption experiences carry over and influence post-adoption use experiences. Consumers who hear greater volumes of PWOM feel more pressure to perform as well as others with the product and so experience greater negative emotion after forming a purchase intention. When adopters then use their new product, they are more dissatisfied, feel the product is harder to use than expected, experience more negative surprises during use, and are more likely to spread NWOM about the product. Given these results, marketers should assess and manage consumers' PWOM-related experiences before, during, and after purchase. Our results suggest that consumers' PWOM experiences prior to purchase (or trial)—specifically, the emotions that result from receiving greater volumes of PWOM—drive their intended and actual product use, as well as their perceptions of their usage experiences. Simply focusing on consumers' post-purchase use of a new product does not provide a complete picture of their product experiences or the potential success of a new product.

Future research. To help manage the downside of PWOM, future research should explore boundary conditions of these effects, in addition to the volume of PWOM. What individual, product, and social factors drive consumers to feel pressure to perform and experience negative emotion as a result of receiving PWOM? Adopters' or recommenders' product expertise might play a role, as might the decision-making stage that consumers are in (i.e., pre- vs. post-adoption). Social variables such as who delivers the PWOM (i.e., friends vs. acquaintances) or how the PWOM is delivered (i.e., face-to-face, online) might also exacerbate or attenuate the potential negative effects of PWOM.

Future research could also explore other factors driving pre-purchase emotions and could test how these emotions carry through to purchase and post-purchase behavior. While we explored the effects of emotions on the purchase and use of new technology products, we would expect to see similar effects in other product categories that require customers to develop competence in order to gain the benefits of a product. For example, consumers trying out a new, exotic restaurant should feel more pressure to have a positive experience as they hear more and more PWOM about the restaurant from their friends. This pressure should elicit negative emotion; as suggested by some of our current studies, this could lead to more conservative food choices, which may decrease consumers' opportunity to maximize the novel and exciting experience the exotic restaurant presents.
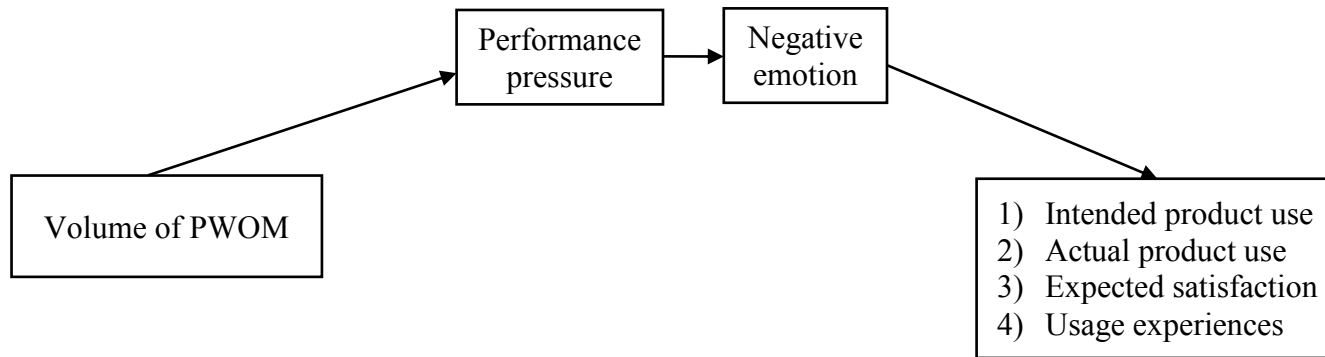
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Figure 1. Conceptual model.

Table 1. New Communications and Entertainment Products Used in Study 1 (circa 2004)

- Blogging (web logging)
- Broadband Internet (cable modem or DSL)
- Cell Phone with Internet Access
- Cell Phone with Picture Capability
- Cell Phone with Text Messaging
- Cell Phone with Walkie-Talkie feature (e.g., Nextel)
- Digital Cable
- Digital Still Camera
- Digital Video Recorder (TiVo or Replay TV) or similar service integrated into cable TV or satellite (e.g., DIRECTV, Dish Network, TimeWarner Cable)
- DVD By Mail Service (e.g., Netflix, Walmart.com)
- DVD Player
- DVD Recorder
- Flat Screen (Plasma or LCD) TV
- High Definition TV (HDTV) and HDTV Tuner
- Home Computer with Microsoft Media Center
- Home Theatre with Surround Sound (Dolby)
- New Video Games (e.g., Doom III, Halo 2, Grand Theft Auto: San Andreas, Metroid Prime 2, etc.)
- On-Demand Digital Cable Services (e.g., HBO On Demand, Showtime On Demand)
- Personal Digital Assistant (standard PDA/Pocket PC without wireless internet)
- Products to detect and remove Internet "Spyware" (advertising supported software such as Gator) or block popup ads (e.g., Pest Patrol, Google Popup Blocker)
- Streaming TV (programs streamed to your computer)

Table 2. New Technology Products Used in Study 5 (circa 2016)

• Smartwatch (e.g., Apple Watch) • iPhone smartphone • Android smartphone (e.g., Samsung Galaxy) • Streaming TV console (e.g., Roku, AppleTV, Fire TV) • Wireless Speakers w/Virtual Assistant (e.g., Amazon's Echo w/Alexa) • iPad tablet computer • Microsoft Surface tablet computer • Amazon Fire tablet computer • Android tablet computer (e.g., Samsung Galaxy Tab)	• Apple iPod Touch MP3 player • Windows laptop computer • MacBook laptop computer • Windows desktop computer • Apple Mac desktop computer • Activity monitor (e.g., Fitbit, Jawbone, Garmin) • Smart Home Device (e.g., Nest Learning Thermostat) • 3D Printer (e.g., MakerBot) • Pocket Projector (e.g., Sony CL1, Brookstone Pocket Projector Pro) • New Video Games (e.g., Hitman, Street Fighter V, Dark Souls III, DOOM)

Table 3. Summary of Findings.

	Study 1	Study 2	Study 3	Study 4	Study 5
Intended Product Use					
hours spent using	✓	✓	x	x	x
usage occasions	✓	x	x	x	x
% of features used	✓	✓	x	✓	x
time spent reading instructions	—	✓	x	x	✓
overall measure	✓	x	x	✓	x
Actual product use					
hours spent using	✓	—	—	—	✓*
usage occasions	✓	—	—	—	✓*
% of features used	✓	—	—	—	x
time spent reading instructions	—	—	—	—	✓*
overall measure	✓	—	—	—	✓*
Expected Satisfaction	—	✓	✓	✓	—
Usage experiences					
dissatisfaction	—	—	—	—	✓
negative usage surprises	—	—	—	—	✓
disconfirmed expectations	—	—	—	—	✓
intentions to spread NWOM	—	—	—	—	✓

Note: a checkmark indicates that volume of PWOM had an indirect effect on an outcome measure via negative emotion and pressure to perform. An "x" indicates no significant indirect effect was found. A dash indicates that an outcome was not measured.

*In Study 5, the indirect effect of volume of WOM on actual product use and individual usage items occurred only via pressure to perform.

Appendix 1: Study 2 Smart Phone Game Scenario

Base Volume of PWOM Condition:

Imagine you are taking a break over lunch and enjoying the fact that you finally have time to catch up on the postings of a favorite blogger.

This week the blogger is raving about a new smartphone game they've downloaded: "This game is so addicting! It's incredibly complex so you have to be at the top of your game. It's all about understanding the physics of the game when you are forming your strategy. Get it wrong and you're dead—and it's really easy to end up dead."

"Getting it right," the blogger writes, "feels fantastic—and you end up making a mint. It's kind of diabolical that when you share your scores they always share how many times you've died. I'm a master now so my count is pretty low—but I've got friends who should be embarrassed."

The blogger talks about other aspects of the gaming experience as well as some other things going on in their life, and ends the post encouraging everyone to download the game: "Enjoy your week and get this game! And share your scores with me—if you dare."

Low PWOM Volume Condition:

Imagine you are taking a break over lunch and enjoying the fact that you finally have time to relax.

One of your close friends comes over to rave about a new smartphone game they've downloaded: "This game is so addicting! It's incredibly complex so you have to be at the top of your game. It's all about understanding the physics of the game when you are forming your strategy. Get it wrong and you're dead—and it's really easy to end up dead."

"Getting it right," your friend says, "feels fantastic—and you end up making a mint. It's kind of diabolical that when you share your scores they always share how many times you've died. I'm a master now so my count is pretty low—but some of my other friends should be embarrassed."

You and your friend talk about other things going on in your lives, and your conversation ends with your friend encouraging you to download the game: "Enjoy your week and get this game! And share your scores with me—if you dare."

High PWOM Volume Condition:

Imagine you are taking a break over lunch and enjoying the fact that you finally have time to relax.

A few of your close friends come over to rave about a new smartphone game they've downloaded. You're not surprised, since you have been hearing about the game for the past couple of weeks from what seems like everyone and their mother—at least a dozen people

have mentioned it to you directly, and you've heard several other conversations about it in passing.

One of your friends says: "This game is so addicting! It's incredibly complex so you have to be at the top of your game. It's all about understanding the physics of the game when you are forming your strategy. Get it wrong and you're dead—and it's really easy to end up dead," the friend concludes, "easier for some than others," they say, pointing to one of your other friends.

"Getting it right," says another friend, "feels fantastic—and you end up making a mint. It's kind of diabolical that when you share your scores they always share how many times you've died. We're all masters now so our counts are pretty low—but some of our other friends should be embarrassed."

You and your friends talk about other things going on in your lives, and your conversation ends with your friends encouraging you to download the game: "Enjoy your week and get this game! And share your scores with all of us—if you dare."

Appendix 2: Study 3 Photo-Sharing App Scenario

Introductory paragraph
> **Bringing Design and Creativity to Smartphone Photography**
> Photography has long been a technique for personal expression. Combined with social media, individuals are able to present themselves in creative, multi-faceted ways. Indeed, social networks have become accessible by almost all digital devices including computers, mobile phones, tablet devices, and wearable technology such as Google Glass and the Apple Watch. But the massive number of opportunities for shares and likes is a distraction from the creative process. Sites like Instagram give you tools for making your photos quirky, but none give you a full set of tools for enhancing your design skills and your creativity. New photo sharing apps are finally filling that gap.

Base Volume of PWOM Condition:
> Imagine that while you are hanging out one weekend, you come across a post on one of your favorite blogs raving about a new photo sharing app.
>
> The blogger, who is a bit of a photography guru, writes: "This app has been 5 years in the making and it's definitely worth the wait. It embraces the philosophy of communication through photography. It provides tools that enhance the elements of composition, adjust light and color, and deliver photos with the look and feel that's best for different social media sites and devices. It's photography as fine art for people who recognize what their photography says about them."
>
> The blogger also discusses the implications of having so much power available in a photo sharing app: "Of course, providing so many tools that simplify so much of the creative process can backfire. If you don't fully understand each element in the process so you can make the right choices within the different tools, you can share photos that look like something a 5-year old produced. I've been using it enough to master it and have shared my best photos ever."
>
> The blogger includes a number of photos that were produced with the app that blow you away. You never realized just how talented the blogger was.
>
> The blogger ends with: "Anyone who enjoys photography has to get this app. You HAVE to get it and then show us your photo chops!"

Low PWOM Volume Condition:
> Imagine that while you are hanging out one weekend, one of your close friends comes over and starts raving about a new photo sharing app.
>
> Your friend, who is a bit of a photography guru, says: "This app has been 5 years in the making and it's definitely worth the wait. It embraces the philosophy of communication through photography. It provides tools that enhance the elements of composition, adjust light and color, and deliver photos with the look and feel that's best for different social media sites and devices. It's photography as fine art for people like me who recognize what

their photography says about them."

Your friend also discusses the implications of having so much power available in a photo sharing app: "Of course, providing so many tools that simplify so much of the creative process can backfire. If you don't fully understand each element in the process so you can make the right choices within the different tools, you can share photos that look like something a 5-year old produced. I've been using it enough to master it though and have shared my best photos ever."

Your friend shows you a number of photos that were produced with the app that blow you away. You never realized just how talented your friend was.

Finally, your friend encourages you to get the app: "Anyone who enjoys photography has to get it. You HAVE to get it and then show me your photo chops!"

High PWOM Volume Condition:

Imagine that while you were hanging out one weekend, one of your best friends comes over and starts raving about a new photo sharing app. This is like the 60th time someone has told you about the app in the last couple of weeks. Everyone says how much they are blown away by it.

Your friend, who is a bit of a photography guru, says: "This app has been 5 years in the making and it's definitely worth the wait. It embraces the philosophy of communication through photography. It provides tools that enhance the elements of composition, adjust light and color, and deliver photos with the look and feel that's best for different social media sites and devices. It's photography as fine art for people like me who recognize what their photography says about them."

Your friend also discusses the implications of having so much power available in a photo sharing app: "Of course, providing so many tools that simplify so much of the creative process can backfire. If you don't fully understand each element in the process so you can make the right choices within the different tools, you can share photos that look like something a 5-year old produced. I've been using it enough to master it though and have shared my best photos ever."

You find it interesting that so many people talking about the app have said essentially the same thing—that it's hard to get started but they are all masters now.

Your friend shows you a number of photos that were produced with the app that blow you away. You've had the same reaction when some of your other friends showed you what they had produced. You never realized just how talented they all were.

Your friend encourages you to get the app: "Anyone who enjoys photography has to get it. You HAVE to get it and then show me and all our friends your photo chops!"

Appendix 3: Study 4 3D Printer Scenario

Introductory paragraph

3D Printing Arrives in the Kitchen

3D printing promises to revolutionize how we think about buying products for the home. Rather than buying finished products, we buy product designs, customize them to fit our style, and then "print" them at home. The technology behind 3D printing has advanced rapidly, greatly enhancing what can be created at home while reducing costs to make home printing quite affordable. Home printing has moved from producing simple, plastic toys to making stylish jewelry, and now offers delicious food—particularly desserts. The new pastry extruders turn 3D printers into sophisticated pastry shops for the home. Create fancy chocolates, Napoleons and baklava, and even apple strudel with no fuss in your kitchen.

Base Volume of PWOM Condition:

Imagine that you are relaxing before you head out to a dinner party being thrown by one of your friends. You are scrolling through a number of blog posts talking about new tools for the kitchen. You stop when you see a post about 3D printers in the kitchen.

The blogger gushes: "This is absolutely nirvana for everyone making desserts in their kitchen. This new countertop 3D printer includes a pastry extruder that has turned me into the Michelangelo of treats. I've made Big Ben out of chocolate, painted the Sistine Chapel on my cookies, and done some incredible layered pastries! I'm going to try using ice cream next." The blogger has posted a short video showing the 3D printer and the painted cookies; you watch the video to see how the printer works, and notice that the finished cookies do look amazing.

The blogger also discusses the technical aspects of the printer and gushes about how affordable this new kitchen tool really is: "I really think that if you are serious about creating masterpieces in the kitchen, this new 3D printer is a must have, although using the 3D printer and creating your treats is not the easiest thing you will ever do in the kitchen. The whole process is quite complex if you are new to it and I'm guessing you could produce some pretty embarrassing monsters with it. I started slowly but it didn't take me long to become a master. When you get started, the only thing you absolutely have to do (since you can't invite me over) is post photos of your creations and then be ready to share your designs."

Low PWOM Volume Condition:

Imagine that you are relaxing at a dinner prepared by one of your friends when you and the other dinner guests are called into the kitchen to see your friend's latest tool for the kitchen—a 3D printer.

Your friend gushes: "This is absolutely nirvana for everyone making desserts in their kitchen. This new countertop 3D printer includes a pastry extruder that has turned me into the Michelangelo of treats. I've made Big Ben out of chocolate, painted the Sistine Chapel on my cookies, and done some incredible layered pastries! "I'm going to try using ice cream next," your friend says.

You watch to see how the printer works, and notice that the finished cookies do look amazing. Your friend also points out some of the technical aspects of the printer and gushes about how affordable this new kitchen tool really is.

Your friend turns to you and says: "I really think that if you are serious about creating masterpieces in the kitchen, this new 3D printer is a must have, even though using the 3D printer and creating your treats is not the easiest thing you will ever do in the kitchen. The whole process is quite complex if you are new to it and I'm guessing you could produce some pretty embarrassing monsters with it. I started slowly but it didn't take me long to become a master."

Your friend encourages you by saying: "You really need to try this. When you get started, the only thing you absolutely have to do is invite us over and wow us! Oh, and then be ready to share your designs."

High PWOM Volume Condition:

Imagine that you are relaxing at a dinner party hosted by one of your friends when you and the other dinner guests are called into the kitchen to see your friend's latest tool for the kitchen—a 3D printer. You're not surprised, since you have been hearing about 3D printers for the past couple of weeks from what seems like everyone and their mother—at least a dozen people have mentioned them to you directly, and you've heard several other conversations about them in passing.

Your friend gushes: "This is absolutely nirvana for everyone making desserts in their kitchen. This new countertop 3D printer includes a pastry extruder that has turned me into the Michelangelo of treats. I've made Big Ben out of chocolate, painted the Sistine Chapel on my cookies, and done some incredible layered pastries! I'm going to try using ice cream next," your friend says.

You watch to see how the printer works, and notice that the finished cookies do look amazing. Your friend also points out some of the technical aspects of the printer and gushes about how affordable this new kitchen tool really is.

Your friend turns to you and says: "I really think that if you are serious about creating masterpieces in the kitchen, this new 3D printer is a must have, even though using the 3D printer and creating your treats is not the easiest thing you will ever do in the kitchen. The whole process is quite complex if you are new to it and I'm guessing you could produce some pretty embarrassing monsters with it. I started slowly but it didn't take me long to become a master."

Several of the other dinner guests who have used 3D printers talk about the success they have had too. Your friend encourages you by saying: "You really need to try this. When you get started, the only thing you absolutely have to do is invite us all over and wow us! Oh, and then be ready to share your designs."