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Spillover Effects in Seeded Word-of-Mouth Marketing Campaigns

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Abstract. Seeded marketing campaigns (SMCs) involve firms sending products to selected customers and encouraging them to spread word of mouth (WOM). Prior research has examined certain aspects of this increasingly popular form of marketing communication, such as seeding strategies and their efficacy. Building on prior research, this study investigates the effects of SMCs that extend beyond the generation of WOM for a campaign's focal product by considering how seeding can affect WOM spillover effects at the brand and category levels. The authors introduce a framework of SMC-related spillover effects, and empirically estimate these with a unique data set covering 390 SMCs for products from 192 different cosmetics brands. Multiple spillover effects are found, suggesting that while SMCs can be used primarily to stimulate WOM for a focal product, marketers must also account for brand- and category-level WOM spillover effects. Specifically, seeding increases conversations about that product among nonseed consumers, and, interestingly, decreases WOM about other products from the same brand and about competitors' products in the same category as the focal product. These findings indicate that marketers can use SMCs to focus online WOM on a particular product by drawing consumers away from talking about other related, but off-topic, products.

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1. Introduction

Consumer-to-consumer word-of-mouth (WOM) communications are widely believed to have a powerful influence on consumer behavior. Previous studies have shown that WOM shapes consumer expectations and preusage attitudes (Anderson 2003a, Herr et al. 1991), affects choice and purchase decisions across a variety of product categories (Arndt 1967, Berger and Schwartz 2011, Chevalier and Mayzlin 2006, Godes and Mayzlin 2004, Whyte 1954), changes postusage perceptions of products (Bone 1995), and improves customer acquisition, retention, and sales (Kumar et al. 2010, Lamberton and Stephen 2016, Libai et al. 2010, Sonnier et al. 2011, Stephen 2016, Stephen and Galak 2012, Trusov et al. 2009, Villanueva et al. 2008). Furthermore, with the increasingly widespread use of social media, including online discussion forums and online review platforms, firms have taken a greater interest in finding ways to generate and leverage consumer-to-consumer WOM to help achieve their marketing objectives.

This paper considers a popular approach firms use to generate product-related WOM: *seeded marketing campaigns* (SMCs). Sometimes called a buzz, influencer,

sampling or viral marketing campaign, a typical SMC involves a firm seeding a focal product with selected consumers (e.g., by sending them samples) and asking those consumers to generate WOM about that product. Although WOM can take many forms and thus occur in many contexts, it is increasingly common for firms to ask seeded consumers to generate WOM about the focal product in the form of posts in online forums or on social media websites, or as reviews on retail websites. SMCs are popular among firms of all sizes. For example, a recent industry study by the American Marketing Association and the Word of Mouth Marketing Association reports that one-third of marketers have run or plan to run campaigns in which samples are seeded with consumers, and three-quarters have used or plan to use consumers to start spreading WOM (WOMMA 2014). This form of firm-encouraged, consumer-to-consumer WOM has been referred to as amplified WOM and is distinct from organic WOM, which occurs naturally without direct firm involvement (Libai et al. 2010).

Prior research on amplified WOM marketing programs in general and, more specifically, SMCs

predominantly focuses on questions related to brand characteristics (i.e., What brands are more likely to generate WOM or information sharing?), target characteristics (i.e., Whom should firms select as seeds?), incentives (i.e., How can seeds be implicitly and explicitly encouraged?), and marketing outcomes (i.e., What types of consumer behaviors are influenced?). For example, Lovett et al. (2013) study talked-about brands and connect their characteristics to social, emotional, and functional WOM drivers in off-line and online settings. Hinz et al. (2011) examine various strategies for selecting seeds and find that the best are often consumers with high levels of social connectivity. Godes and Mayzlin (2009) find that the most loyal existing customers might not be ideal seeds because their friends (to whom they would transmit WOM) are also likely to be customers. Libai et al. (2013) show how WOM outcomes combine acceleration and expansion components to generate value. Last, a rich literature studies incentive mechanisms for generating WOM-based customer referrals (e.g., Bialogorsky et al. 2001, Kornish and Li 2010, Ryu and Feick 2007, Stephen and Lehmann 2016), and Schmitt et al. (2011) examine the value of customers acquired through WOM referral programs.

Despite the rich literature on WOM marketing and SMC-related topics, prior research tends to focus on the immediate effects of SMCs on WOM transmissions for a campaign's focal product, or how best to design an SMC (e.g., selecting "optimal" seeds). Critically, the broader consequences of running an SMC have received scant attention. Given that it is well established that WOM about a focal product can be triggered or amplified by seeded conversations, it is conceivable that WOM on products related to but different from a focal product might also be affected by firms' seeding actions. In other words, seeding a focal product might trigger certain spillover effects. For example, an SMC for Chanel lipstick in which seed consumers receive a sample product and post reviews about it in an online community might affect the amount of WOM generated in that community about *other* Chanel products (i.e., spillover effects with respect to WOM about the same brand's products in other categories) and/or about competing products (i.e., spillover effects with respect to WOM about other brands' products in the same category). In addition to brand- and category-related spillover effects, WOM about a focal product among consumers in one segment could spill over to affect WOM among consumers in other segments. For example, although an SMC for Chanel lipstick might target specialist or expert cosmetics users (and select seeds from this segment), WOM generated by members of this segment could also influence WOM among consumers in other

segments, such as more generalist or novice cosmetics users.

Although seeding has gained recognition as a key marketing communication tool, research on the types of WOM spillovers described here is limited. Two streams of prior research do, however, suggest in general that WOM spillovers (e.g., brand and category spillovers) are possible. First, diffusion research considers models with cross- and within-brand influence on new product diffusion processes (Libai et al. 2009), WOM externalities (Peres and Van den Bulte 2014), and indirect effects on brand-level diffusion due to category-level sales (Krishnan et al. 2012). Second, qualitative research by Kozinets et al. (2010) finds that firm-initiated attempts to generate WOM in online communities by targeting prominent bloggers can also affect online conversations among the general population. This suggests that WOM among one consumer segment can spill over into other consumer segments (e.g., from "expert" bloggers to the general population). Taken together, these streams of research suggest qualitatively and theoretically that WOM spillovers from SMCs exist.

Building on these findings, here we examine how SMCs trigger a comprehensive set of WOM spillover effects with respect to a focal product, products from the same brand but in different categories, and competing products from different brands in the same category. The latter two spillover effects represent indirect, probably unintended, and potentially unfavorable consequences of a firm's decision to use an SMC for a focal product. We consider two research questions: (1) What types of WOM spillover effects are triggered by seeding? (2) What is the nature of these effects (positive or negative) and how large are they? To address these questions, we empirically identify multiple spillover effects using a unique data set of 390 SMCs for products across 192 different cosmetics brands. This research fills an important gap in the literature on SMCs and WOM by highlighting and examining the possibility that conversations triggered by seeding a focal product can affect conversations about related but different products from the same brand as the focal product or competitors. Despite their potential importance, to our knowledge such effects have not been studied in prior SMC-related research.

2. Types of Word of Mouth Spillover Effects

Before presenting our conceptual framework, we introduce a typology of WOM spillover effects that could be triggered by firms' SMC-initiating seeding actions. For purposes of this typology and the subsequent conceptual framework, we distinguish between two types of WOM based on the consumer source: seed and non-seed. Seed WOM is generated by a campaign's seed

consumers, i.e., those who are typically sent product samples, and expected to initiate conversations by reviewing them. Nonseed WOM is generated by all other consumers, i.e., those who are not selected as seeds.

The distinction between seed and nonseed WOM is important because we define WOM spillover effects as the positive or negative influence of seed WOM about an SMC's focal product on nonseed WOM about the focal product, the corresponding brand or other products or brands in the category.¹ As this definition suggests, we consider three types of WOM spillover effects that can arise from an SMC for a focal product:

1. *Focal product spillovers*. Change in the amount of WOM generated by nonseed consumers about the focal product. For example, in an SMC for Chanel lipstick, a focal product spillover would be a change in the amount of nonseed WOM about Chanel lipstick;

2. *Brand spillovers*. Change in the amount of WOM generated by nonseed consumers about products from the same brand as the focal product, but not about the focal product, i.e., WOM is "within brand" and "across category." For example, in an SMC for Chanel lipstick, a brand spillover would be a change in the amount of nonseed WOM about nonlipstick Chanel products, such as Chanel nail polish;

3. *Category spillovers*. Change in the amount of WOM generated by nonseed consumers about products from the same category as the focal product, but not about the focal product or its brand, i.e., WOM is "within category" and "across brand." For example, in an SMC for Chanel lipstick, a category spillover would be a change in the amount of nonseed WOM about non-Chanel products in the lipstick category, such as Revlon lipstick.

These spillover effects can be positive or negative. *Positive* spillover effects in our framework are such that an increase in seed WOM about a focal product results in an increased amount of nonseed WOM about the focal product, other-category products from the same brand or same-category products from different brands for focal product, brand, and category spillovers, respectively. Conversely, *negative* spillover effects occur if increased seed WOM about a focal product results in decreased amounts of nonseed WOM of these types.

Furthermore, each of these WOM spillover effects can occur in or between consumer segments. In-segment spillovers occur among consumers who are in the same segment as the seed consumers. Between-segment spillovers are those in which consumers in a different segment to the seeds are influenced, leading to changes in the amounts of WOM they generate. For example, if a firm selects seed consumers who are heavy category users (as is often the case), in-segment spillover effects would involve a change (positive or negative) in the amount of nonseed WOM by

consumers who are also heavy users of products in that category. Conversely, between-segment spillover effects would involve a change in the amount of nonseed WOM by consumers who are not heavy users in that category.

For purposes of our empirical analysis, we consider a setting with two segments, which we refer to as specialists (e.g., experts, heavy users, early adopters) and generalists (i.e., everyone else). Firms usually select seeds from a specialist segment (WOMMA 2005),² and this is also the case in our empirical setting.³ Thus, in-segment spillovers are those where seed WOM affects nonseed WOM among specialists; between-segment spillovers are those where seed WOM affects nonseed WOM among generalists. Note that, in the case of between-segment spillovers, it is plausible that the effect of seed WOM on nonseed WOM will be indirect, in the sense that seed WOM may first influence nonseed WOM among specialists (in-segment), which will then influence nonseed WOM among generalists (between-segment), consistent with two-step flows of communications (Katz and Lazarsfeld 1955) and cross-segment diffusion (e.g., Rogers 1995, Van den Bulte and Joshi 2007). While our conceptualization in Section 3 primarily focuses on focal product, brand, and category spillover effects in general and does not specifically distinguish between in- and between-segment effects, for completeness and because our data allow for it, we incorporate these effects in the empirical analysis.

3. Conceptual Framework

3.1. Focal Product Spillover Effect

Marketers have long recognized that consumers often share and spread product-related information over social ties (e.g., see Van den Bulte and Wuyts 2007 and Hinz et al. 2011 for reviews of social contagion and seed/viral marketing). We expect that when seed consumers spread focal product WOM, the nonseed consumers exposed to this information will become more likely to generate nonseed WOM about the focal product; this is a positive focal product spillover effect. For the most part, this is a primary goal of an SMC, i.e., the seeds influencing nonseeds to generate WOM (or "buzz") about the focal product.

This positive focal product spillover effect is expected to occur for a number of related reasons. First, nonseed consumers may be prompted to talk about the focal product because the seed WOM piques their interest, and nonseeds use their own WOM to discuss what is essentially a new and uncertain product⁴ so that they can obtain additional information to resolve their uncertainty. This effect is not specific to SMCs and is likely to follow any firm-initiated communication about a new product. Second, consistent with Watts and Dodds (2007), nonseeds exposed to seed WOM about a focal product may be susceptible to influence

and thus made more likely to generate WOM themselves. Third, when exposed to seed WOM about a focal product, nonseeds (particularly specialists) might feel a need to contribute their own opinions to the burgeoning conversation for self-presentation or self-enhancement reasons, such as signaling expertise or reputation (e.g., Wojnicki and Godes 2008). Finally, the notion that seed WOM on a particular topic (in this case, the focal product) will result in more nonseed WOM on the same topic is consistent with the two-step flow of communications model (Katz and Lazarsfeld 1955), as well as research on two-stage diffusion models where new product adoptions spread from innovators to imitators (Rogers 1995, Van den Bulte and Joshi 2007). Stated formally:

Hypothesis 1 (H1). *Seed WOM about an SMC's focal product will lead to increased nonseed WOM about the focal product (i.e., positive focal product spillover effect).*

3.2. Brand and Category Spillover Effects

The potential for marketing activity for a focal product to affect consumers' attitudes and actions related to other products from the same brand as the focal product (i.e., brand spillover effects) and products under different brands from the same category as the focal product (i.e., category spillover effects) is generally supported by prior research, although typically in contexts unrelated to WOM or SMCs. For example, Balachander and Ghose (2003) find reciprocal spillover effects from brand extensions, Libai et al. (2009) identify significant cross-brand adoption effects, and Lewis and Nguyen (2015) find that online display advertisements affect online search activity for competitors' brands. The literature on umbrella branding strategies also considers spillover effects. For instance, Erdem and Sun (2002) empirically show how changes in such marketing-mix instruments as advertising, coupon availability, and in-store promotions for a focal product affect consumer choice for the focal product and for products under the same brand but in a different category (i.e., a brand spillover effect). Spillover effects are also important in the brand alliance literature. Simonin and Ruth (1998), for example, show that when two brands form an alliance, consumers' prealliance attitudes toward one brand are positively related to consumers' postalliance attitudes toward that brand and the other brand.

Research on marketing spillover effects across various non-WOM contexts tends to find positive spillover effects such that a marketing-related action (e.g., placing advertisements, reducing a price or forming an alliance) has an effect in the same direction on a focal product and associated products. For instance, a positive (brand) spillover effect along the lines of those described by Erdem and Sun (2002) would be where traditional advertising for Colgate toothpaste

lifts sales for Colgate toothpaste and Colgate mouthwash (i.e., same brand but different category). Similarly, in the context of online advertising, Lewis and Nguyen (2015) find positive (category) spillover effects where, for example, display ads for Samsung tablets increase search volume for that product and Apple iPads. Positive (category) spillover effects of advertising on sales have also been identified in the contexts of apparel advertising through direct mail (Anderson and Simester 2013) and restaurant advertising with online ads (Sahni 2016). Positive (brand) spillover effects are also found in the context of celebrity endorsements. For example, Garthwaite (2014) shows book endorsements by Oprah Winfrey lead to higher sales for endorsed titles and nonendorsed titles by the same author. Finally, another example of a positive (category) spillover effect, although with unfavorable outcomes, is the "perverse halo effect" identified by Borah and Tellis (2016, p. 2) where negative consumer sentiment toward an automotive brand due to a product recall increases negative sentiment toward other automotive brands in the same category (e.g., a recall for Toyota minivans can increase negative sentiment toward Toyota and Honda minivans).

An explanation for positive spillover effects of this nature is that firms' marketing efforts for a specific topic or focal product can cue consumers to think about associated but broader concepts related to non-focal products that are from the same brand but in a different category, or in the same category but from a different brand. In other words, thinking about a focal product could trigger thoughts about higher-level concepts (brand, category), which in turn open up the possibility of thinking about other products (Berger and Schwartz 2011). This mechanism is consistent with Construal Level Theory (Liberman and Trope 1998, Trope et al. 2007, Trope and Liberman 2010; see also Dhar and Kim 2007, Fiedler 2007). In line with this theory, a positive spillover effect could occur if consumers, in response to exposure to a stimulus, adopt an abstract and broad perspective (higher-level construal). When prompted by marketing actions about a focal product, consumers could expand their thoughts to encompass brand- or category-level concepts.

On the other hand, the opposite is also possible, i.e., negative spillover effects. This could occur if consumers, in response to exposure to a stimulus about a focal product, adopt a concrete and narrow perspective (lower-level construal). That is, when prompted by marketing actions or other consumers' WOM for a focal product they may concentrate on specific aspects of the focal product, such as particular product-specific attributes or functionalities. Adoption of such a concrete and narrow perspective may then suppress the retrieval of thoughts related to more abstract brand- and category-level concepts that might have

otherwise occurred (Kardes et al. 2006). If this is the case, we should see negative brand and/or category spillover effects. In other words, activation of narrower, concrete mental representations of a focal product could suppress retrieval of broader, abstract representations of related, but not focal, products. This mechanism has been extensively examined in prior literature on memory and cognitive processing, and is related to work explaining how the activation of one set of thoughts can inhibit the activation of related, competing thoughts (e.g., Anderson and Bjork 1994, Anderson and Bell 2001, Anderson 2003b).

We posit that SMCs can trigger *negative* brand and category spillover effects. This is because we expect that seeds, when writing about the focal product, will adopt a lower-level construal of the focal product (and thus be less likely to adopt a higher-level construal). This, in turn, will affect the nature of the WOM generated by nonseeds by making them also more likely to concentrate more on the focal product. In other words, if seed WOM reflects a lower level, more concrete representation of the focal product will “frame the conversation” and make it more likely for nonseeds to follow the specific level of representation that favors the focal product and suppress retrieval of broader thoughts that could lead to WOM about other products from the same brand or same category.

We expect seeds in SMCs to adopt lower-level construals of focal products for three related reasons. First, a key characteristic of most SMCs is that firms encourage (or in some cases require) seed consumers to write detailed reviews. This should increase the tendency for seeds to focus more on concrete aspects of the product and trial experience and hence to talk more about what a focal product can be used for, how to use it, how it works, what features it has, what to expect after use, and how well it works, i.e., considerations about functionality and feasibility, rather than about desirability. These types of thoughts have been shown to reflect lower-level construals (Dhar and Kim 2007, Liberman and Trope 1998).

Second, the detailed firsthand experience with a focal product that seeds are expected to describe in a typical SMC encourages seed consumers to have close and frequent physical access to a focal product, thus shortening the “sensory distance” between seeds and the focal product and fostering lower-level construals (Kardes et al. 2006, Trope and Liberman 2003).

Finally, seed WOM is typically structured in a very specific narrative format, where a seed consumer uses words and images to describe the sequence of obtaining a product sample, unwrapping it, inspecting it, using it, and examining consequences (e.g., explaining how well it works). This format of exposition is also likely to be consistent with lower-level construals.

In sum, seed WOM of this nature should suppress retrieval of broader thoughts that could lead nonseeds to talk about other products from the same brand or category, and will therefore drive negative brand and/or category spillover effects. Stated formally:

Hypothesis 2 (H2). *Seed WOM about an SMC’s focal product will decrease nonseed WOM about other products from the same brand as the focal product.*

Hypothesis 3 (H3). *Seed WOM about an SMC’s focal product will decrease nonseed WOM about products from other brands in the same category as the focal product.*

If these hypothesized effects are the result of the aforementioned mechanism, the effects should be stronger when seeds can more easily relate their experiences in a functional sense because this more readily lends itself to lower-level construals that focus on attributes, functionality, and performance. However, not all products can be discussed or talked about in such concrete terms. Some product use experiences when described to others are easy to express in general, holistic terms but hard to formulate more concretely. For example, it might be relatively easy for a consumer to describe a perfume in abstract, more hedonic terms (e.g., “I loved the scent, and it made me feel great”), but much harder to communicate the product in more concrete terms (e.g., “The scent had notes of lavender and fresh-cut grass, with a hint of coconut”). On the other hand, it should be fairly easy for consumers to describe a product such as a skin cream for reducing acne blemishes in specific, concrete, functional terms (e.g., “After using the cream twice a day for a week I had noticeably fewer blemishes on my face and less redness”). Moore (2015) provides evidence for this difference in the types of explanations offered by consumers when writing product reviews for different product types. She shows that utilitarian products are more often explained through actions and choices (i.e., lower-level construals are more likely because of specific functionality and feasibility considerations), whereas hedonic products are more often explained through reactions and feelings (i.e., higher-level construals are more likely because of holistic desirability considerations).

Thus, if negative brand and category spillover effects occur for the reasons explained above, we should expect negative spillover effects to be stronger when the focal product is of a more utilitarian nature because it can be more easily represented in terms of attributes, functionality, and performance. This, in turn, makes it more likely that it will be construed by seeds (and, subsequently, by nonseeds) at a lower level. Stated formally:

Hypothesis 4 (H4). *Negative (a) brand and (b) category spillover effects will be stronger for products that are more utilitarian in nature.*

4. Data

4.1. Overview

We now turn to empirically testing our hypotheses using a large and unique consumer WOM data set from one of the largest Internet portal sites in South Korea, *Naver*, which has almost 80% market share in South Korea (*Economist*, *The* 2014). Although *Naver* has many features (including South Korea's most popular search engine), the feature we focus on is the discussion forums and, within that, the product-related forums in which consumers share product-related opinions and reviews. Similar to English-language portals that host online forums (e.g., Yahoo), *Naver's* forums have tree-like (or threaded) discussion structures such that discussions on related topics are grouped together. Specifically, in the product-related discussion forums, forums are organized around broad product types.

Our data set covers product-related discussion forums for cosmetics products. We chose this industry as our focus for several reasons. First, in *Naver*, cosmetics are one of the most prominent product types in terms of product-related discussion forum activity and, significantly, firm-initiated SMCs. Second, it is generally common for firms to use SMCs with product sampling to promote cosmetics products. Third, the South Korean cosmetics industry is large (2012 sales of 1.3 trillion Won, or approximately US\$1 billion) and growing at a 7.7% compound annual rate (Euromonitor 2013). Fourth, the cosmetics industry has features that allow us to identify the brand and category spillover effects of interest because it has many brands that offer products across multiple categories (e.g., lipstick, nail polish, basic skin care). Finally, consumers are more likely to search for product reviews for cosmetics due to high levels of product diversity and the fact that cosmetic products are experience goods.

In addition to the standard hierarchical organization of product-related conversations, a unique feature of *Naver's* forums, which we exploit to separately identify spillover effects for specialist and generalist consumer segments, is that cosmetics product-focused forums are divided into two types. The first, called "Online Café," is a members-only forum for specialist consumers. Independent community administrators (who are not employees of *Naver*) regulate membership and require members to demonstrate high levels of engagement through active participation in discussions. For example, in one of the "Online Café" forums in our data set, members must write at least 20 product-related posts and submit at least three product reviews per month to retain their membership. Membership confers posting rights in members-only forums (i.e., nonmembers of Online Café forums can read but not write posts) and, significantly, makes one eligible to be

selected as a seed in firm-initiated SMCs for cosmetics products. Thus, all members of product-related discussion forums of this type are considered specialists. The second type of forum, called "Knowledge In," has no membership requirements and allows anyone to write posts. Consumers posting on this forum are considered generalists. These consumers can read posts by specialists in the Online Café forums but not write posts; they can only write posts in their own Knowledge In forums.

4.2. Seeded Marketing Campaigns for Cosmetics Products on Naver

Firms use only the specialist forums (i.e., Online Café) for seeding products with specialists. This means that a consumer must be a specialist to be selected as a seed in a campaign. The standard SMC procedure followed by all firms on this platform is as follows.

1. The firm initiates an SMC by sending a campaign request to a forum's community administrator, who is an independent "super member" of the forum. The request includes a description of the product, the number of seeds to be recruited (the average number is approximately 25 per SMC), a timeline for physical delivery of the samples to seeds, and a timeline for when seeds are expected to post product opinions and reviews (i.e., seed WOM) on the campaign's specialist forum.

2. The community administrator posts an announcement on the specialist forum that invites members to apply to be a seed for a particular campaign.

3. Seeds are selected randomly⁵ from the applicant pool, and samples are shipped.

4. Seeds receive samples and are asked⁶ to test the products and post reviews in the designated SMC section of the forum, typically in 2–3 weeks. Seeds' reviews tend to be thorough and often include detailed opinions, descriptions of their experiences with the product, "before and after" photos (e.g., before and after a skincare treatment), and details on how products can be used.

Following our typology of spillover effects in Section 2, a review posted by a seed in a specialist forum is considered an instance of focal product seed WOM. Once seeds begin to post their reviews and opinions, this may affect nonseed WOM-generation activity among specialists and generalists. The following actions correspond to the spillover effects described earlier:

- *Focal product nonseed WOM by specialists.* Other, nonseed specialists may contribute posts to the conversation in their own board (seeds' reviews are in a separate board). These can include reviews, recommendations, videos, and photos.

- *Focal product nonseed WOM by generalists.* Nonmembers of the specialist forum cannot post in the

specialist forum, although, significantly, they can read posts in the specialist forum. Nonmembers can, however, post in corresponding product-related boards in the generalist forum. Thus, they can be exposed to focal product seed and nonseed WOM by specialists (acquiring information from and being influenced by specialists) and then disseminate this information, as well as their own opinions, in the relevant product-related discussions in the generalist forum.

- *Same-brand and same-category nonseed WOM by specialists and generalists.* Nonseed WOM that does not mention the focal product but mentions the same brand (but products in different categories) or the same category (but competing brands) can occur as posts in specialist or generalist forums.

4.3. Data Collection

Online WOM data. Our data comes from *Naver's* cosmetics forums and covers a 46-month period (February 2008 to November 2011).⁷ The data were collected as follows. First, we obtained a list of all products that were focal products in SMCs in the three largest specialist cosmetics forums (Online Café). Second, we associated brand names and category names with each product. Third, we collected all focal product seed and nonseed WOM corresponding to these SMCs in the specialist forums. Fourth, we collected all focal product nonseed WOM corresponding to these SMCs in the generalist forums. Fifth, for the same time periods as the SMCs, we collected all posts in specialist and generalist communities that mentioned a focal product's brand or category (i.e., same-brand and same-category nonseed WOM by specialists and generalists). We also obtained data (for use as control variables) on some characteristics of the seeds' reviews (numbers of images, numbers of words), and whether the seed was designated as a "top reviewer" (indicated by a publicly observable icon beside their name; top reviewers are the top-10% most active reviewers). Note that we excluded products that had seed WOM but no nonseed WOM, as well as products that were promoted with more than one SMC at the same time (resultant nonseed WOM in that case cannot be attributed to a single SMC).⁸

Our data set consists of the SMC-related seed and nonseed WOM for 390 cosmetic products from 192 different brands across 11 separate cosmetics product categories (e.g., nail polish, toner, face mask, lipstick). For each of the 390 campaigns, our data is weekly and starts in the week in which the first focal product seed WOM is observed ($t = 0$) and continues until no more seed or nonseed WOM posts are observed for the focal product in any of the forums (or, at the latest, the end of the data-collection period). The mean number of weeks per campaign is 75.47 (SD = 39.68, min. = 12, max. = 159).

Controls for other potential drivers of WOM activity.

An alternative explanation for WOM-based effects is that nonseed WOM occurs not due to seed WOM but instead as a result of other marketer actions that we do not observe. For example, traditional/off-line advertising could affect online WOM. Also, more generally, the topicality or prominence of a given product could also affect the generation of WOM through a nonsocial mechanism. To control for these possibilities, we obtained data from other sources that tracked weekly advertising activity and topicality.

First, to control for advertising, we obtained weekly advertising spending data from Nielsen South Korea. For each campaign, they report the amount of money (in Korean Won) spent separately on TV and print advertising per week.⁹ They also provided weekly TV and print advertising spending at the brand and category levels. Thus, we have six weekly advertising spending variables that we use to control for the possibility that advertising for the focal product, or at the brand or category levels, influences WOM activity. Note that in addition to advertising spending, Nielsen reports advertising volume data, i.e., the number of advertisements of each type placed per week. For product, brand, and category levels of advertising, volume and spending variables were highly positively correlated. We use spending data in our analysis; the results did not differ when volume data was used instead.

Second, topicality or cultural prominence might affect WOM about a product. While it is not possible to measure this directly, we use Internet search activity as a proxy. The search activity for a given product should be positively correlated with how topical or culturally prominent it is at a given point in time. In other words, if something is topical, people should be more likely to search for it on the Internet than something that is less topical (particularly in a country such as South Korea that has extremely high levels of Internet use). We obtained weekly Internet search trends data from *Naver*¹⁰ for all combinations of brand and category keywords (e.g., Chanel AND lipstick) corresponding to each of the products in the SMCs in our data set.

4.4. Variables

For each of the 390 products promoted through an SMC, we have weekly data capturing seed and nonseed WOM for the focal product, products from the same brand in different categories, and products from different brands in the same category. The main variables used in our analysis are defined in Table 1; control variables are defined in Table 2.

Note that the indicator variable *Utilitarian* (Table 1), which we use as a moderating variable to test H4, was determined by examining the category of product in each SMC and classifying it as more utilitarian (*Utilitarian* = 1) or not (*Utilitarian* = 0). Even though cosmetics and beauty products could, in general, be thought

Table 1. Main Variables Used in the Analysis

Variable	Definition
Antecedent	
<i>FocalSeedSpecialist_{jt}</i>	The number of posts about the focal product in campaign <i>j</i> in week <i>t</i> by seeds in specialist forums; i.e., focal product seed WOM.
Moderator (for testing H4)	
<i>Utilitarian_j</i>	Equal to 1 if the focal product in campaign <i>j</i> is more utilitarian in nature. Otherwise equal to 0.
Outcomes	
<i>FocalNonseedSpecialist_{jt}</i>	The number of posts about the focal product in campaign <i>j</i> in week <i>t</i> by nonseeds in specialist forums; i.e., focal product nonseed WOM by specialists.
<i>FocalNonseedGeneralist_{jt}</i>	The number of posts about the focal product in campaign <i>j</i> in week <i>t</i> by nonseeds in generalist forums; i.e., focal product nonseed WOM by generalists.
<i>BrandNonseedSpecialist_{jt}</i>	The number of posts about the same-brand, different-category products related to campaign <i>j</i> mentioned in week <i>t</i> in specialist forums; i.e., same-brand nonseed WOM by specialists.
<i>BrandNonseedGeneralist_{jt}</i>	The number of posts about the same-brand, different-category products related to campaign <i>j</i> mentioned in week <i>t</i> in generalist forums; i.e., same-brand nonseed WOM by generalists.
<i>CategoryNonseedSpecialist_{jt}</i>	The number of posts about the different-brand, same-category products related to campaign <i>j</i> mentioned in week <i>t</i> in specialist forums; i.e., same-category nonseed WOM by specialists.
<i>CategoryNonseedGeneralist_{jt}</i>	The number of posts about the different-brand, same-category products related to campaign <i>j</i> mentioned in week <i>t</i> in generalist forums; i.e., same-category nonseed WOM by generalists.

of as hedonic given that they appeal to beauty ideals, in reality some of these products are perceived as more utilitarian because they can deliver a variety of “functional” benefits to consumers. Many cosmetics products such as skincare creams or anti-aging

ointments promise primarily functional benefits to consumers. Products that neither promise nor deliver particular functional benefits and are purely “cosmetic,” such as many makeup products (e.g., lipstick), are more hedonic in nature. In our case, the products

Table 2. Control Variables Used in the Analysis

Variable	Definition
Other seed WOM activity	
<i>BrandSeedSpecialist_{jt}</i>	The number of same-brand products related to campaign <i>j</i> mentioned in week <i>t</i> in specialist forums by seeds; i.e., SMC activity for other products from the same brand.
<i>CategorySeedSpecialist_{jt}</i>	The number of same-category products related to campaign <i>j</i> mentioned in week <i>t</i> in specialist forums by seeds; i.e., SMC activity for other products in the same category.
Advertising spending	
<i>FocalTVSpend_{jt}</i>	Amount of money spent on TV advertising for the product featured in campaign <i>j</i> in week <i>t</i> .
<i>FocalPrintSpend_{jt}</i>	Amount of money spent on print advertising for the product featured in campaign <i>j</i> in week <i>t</i> .
<i>BrandTVSpend_{jt}</i>	Amount of money spent on TV advertising for the brand featured in campaign <i>j</i> in week <i>t</i> (excluding for the focal product).
<i>BrandPrintSpend_{jt}</i>	Amount of money spent on print advertising for the brand featured in campaign <i>j</i> in week <i>t</i> (excluding for the focal product).
<i>CategoryTVSpend_{jt}</i>	Amount of money spent on TV advertising for the category featured in campaign <i>j</i> in week <i>t</i> (excluding for the focal product).
<i>CategoryPrintSpend_{jt}</i>	Amount of money spent on print advertising for the category featured in campaign <i>j</i> in week <i>t</i> (excluding for the focal product).
Prominence/General interest	
<i>SearchTrends_{jt}</i>	Relative size of search trend volume (based on <i>Naver</i>) for combination of brand and category, corresponding to product being seeded in campaign <i>j</i> in week <i>t</i> .
Review and seed characteristics	
<i>AvgWords_{jt}</i>	The average number of words per seed WOM post for campaign <i>j</i> in week <i>t</i> .
<i>AvgImages_{jt}</i>	The average number of images per seed WOM post for campaign <i>j</i> in week <i>t</i> .
<i>TopReviewer_{jt}</i>	The number of seed WOM posts for campaign <i>j</i> in week <i>t</i> posted by seeds that are designated as “top” reviewers.
Competing SMCs in the category	
<i>CategorySMC1_{jt}</i>	Equal to 1 if there were other SMCs running in the category one week before week <i>t</i> . Otherwise equal to 0.
<i>CategorySMC2_{jt}</i>	Equal to 1 if there were other SMCs running in the category two weeks before week <i>t</i> . Otherwise equal to 0.
<i>CategorySMC3_{jt}</i>	Equal to 1 if there were other SMCs running in the category three weeks before week <i>t</i> . Otherwise equal to 0.

in our data set that we determined to be of a more utilitarian nature were from the following categories:¹¹ face masks, skin creams/essences/toners, hand/body creams, cleaners, functional products, hair treatments, tooth products, and male-oriented products. The other categories, in which the products were classified as of a more hedonic nature, were the following: face makeup, color makeup, lipstick, and perfume.

5. Empirical Model

To test our hypotheses, we are interested in how *FocalSeedSpecialist_{jt}*, which tracks the number of posts about the focal product in SMC *j* in week *t* by seeds, affects each of the six outcome variables that measure the amount of WOM generated by nonseed consumers. Specifically, for testing H1 about focal product spillover effects, we estimate how *FocalSeedSpecialist_{jt}* affects the amount of nonseed WOM generated about the focal product (*FocalNonseedSpecialist_{jt}*, *FocalNonseedGeneralist_{jt}*), expecting positive effects. For testing H2 about brand spillover effects, we estimate how *FocalSeedSpecialist_{jt}* affects the amount of nonseed WOM generated about other products from the same brand as the focal product (*BrandNonseedSpecialist_{jt}*, *BrandNonseedGeneralist_{jt}*), expecting negative effects. For testing H3 about category spillover effects, we estimate how *FocalSeedSpecialist_{jt}* affects the amount of nonseed WOM generated about other products from different brands but in the same category as the focal product (*CategoryNonseedSpecialist_{jt}*, *CategoryNonseedGeneralist_{jt}*), expecting negative effects. Finally, for testing H4, we expect *Utilitarian_j* to interact with *FocalSeedSpecialist_{jt}* such that the expected effects in H2 and H3 occur only when the focal product is of a more utilitarian nature (*Utilitarian_j* = 1).

Additionally, although not a focus of our conceptualization, we allow for a number of other variables to be influenced by seeding activity and the other variables in this system. The following 10 variables track seed WOM for the focal product, seed WOM for other products from the same brand as the focal product in campaign *j*, seed WOM for other products from the same category as the focal product in campaign *j*, and the advertising spending variables: *FocalSeedSpecialist_{jt}*, *BrandSeedSpecialist_{jt}*, *CategorySeedSpecialist_{jt}*, *SearchTrends_{jt}*, *FocalTVSpend_{jt}*, *FocalPrintSpend_{jt}*, *BrandTVSpend_{jt}*, *BrandPrintSpend_{jt}*, *CategoryTVSpend_{jt}*, and *CategoryPrintSpend_{jt}*.

Thus, in total we have 16 outcome variables that we treat as multivariate dependent variables for modeling purposes (i.e., each is treated as an endogenous outcome). Thus, for testing our hypotheses we use a 16-equation multivariate model (one equation for each of the six endogenous outcome variables and one for

each of the 10 endogenous control variables) to estimate the hypothesized WOM spillover effects. Specifically, we log-transformed each variable (after adding one to avoid logarithms of zero) and estimated a multivariate dynamic model with campaign fixed effects to account for unobserved campaign-level heterogeneity. The multivariate specification (i.e., an endogenous system of equations) was used to allow for interdependencies between the 16 outcome variables through correlated errors. In each equation, each outcome was regressed on a one-week lag of itself, one-week lags of each of the other outcomes, and each of the exogenous control variables. For campaign *j* and week *t* the model is as follows:

$$\log(Y_{jt} + 1) = A + \Lambda \log(Y_{j,t-1} + 1) + BX_{jt} + \Gamma M_{j,t-1} + u_j + e_{jt}, \quad (1)$$

$$Y_{jt} \in \{FocalSeedSpecialist_{jt}, FocalNonseedSpecialist_{jt}, FocalNonseedGeneralist_{jt}, BrandNonseedSpecialist_{jt}, BrandNonseedGeneralist_{jt}, CategoryNonseedSpecialist_{jt}, CategoryNonseedGeneralist_{jt}, BrandSeedSpecialist_{jt}, CategorySeedSpecialist_{jt}, SearchTrends_{jt}, FocalTVSpend_{jt}, FocalPrintSpend_{jt}, BrandTVSpend_{jt}, BrandPrintSpend_{jt}, CategoryTVSpend_{jt}, CategoryPrintSpend_{jt}\},$$

$$X_{jt} = \{AvgWords_{jt}, AvgImages_{jt}, TopReviewer_{jt}, CategorySMC1_{jt}, CategorySMC2_{jt}, CategorySMC3_{jt}\}, \quad (2)$$

where: (1) *A* is an intercept vector, (2) *Λ* is the matrix of effects of the lagged endogenous variables on the endogenous variables in *Y_{jt}*, (3) *B* is the matrix of effects of the exogenous control variables on the endogenous variables in *Y_{jt}*, (4) *Γ* is the matrix of effects for the interaction *M_{j,t-1}*, (5) *u_j* are campaign fixed effects, and (6) *e_{jt}* ~ *N*(0, *Σ*) where *Σ* is a full unrestricted covariance matrix.¹²

6. Results

6.1. Descriptive Statistics

Our results are based on 28,654 weekly observations for 390 SMCs for cosmetic products from 192 different brands, representing 11 categories. Descriptive statistics and correlations are reported in Tables 3–5. Per SMC, the average number of posts generated by seeds was 69.20 (median = 55, SD = 52.18, min. = 5, max. = 280). Generally, across campaigns, seeds' posting activities in any week, on average, however, were

Table 3. Descriptive Statistics per Campaign

	Mean	Median	St. dev.	Min.	Max.
Endogenous variables					
<i>FocalNonseedSpecialist_{jt}</i>	73.33	11.0	220.17	0	2,340
<i>FocalNonseedGeneralist_{jt}</i>	28.39	0	165.04	0	2,272
<i>BrandNonseedSpecialist_{jt}</i>	54.44	16.5	86.69	0	490
<i>BrandNonseedGeneralist_{jt}</i>	17.88	0	45.19	0	294
<i>CategoryNonseedSpecialist_{jt}</i>	1,759.68	1,391.0	1,419.32	0	10,458
<i>CategoryNonseedGeneralist_{jt}</i>	564.79	384.0	479.60	0	3,406
<i>FocalSeedSpecialist_{jt}</i>	69.20	55.0	52.18	5	280
<i>BrandSeedSpecialist_{jt}</i>	23.27	5.0	41.23	0	227
<i>CategorySeedSpecialist_{jt}</i>	405.17	330.0	336.75	0	1,679
<i>SearchTrends_{jt}</i>	6.40	0	22.92	0	182.64
<i>FocalTVSpend_{jt}</i>	99,234.23	0	1,529,553.26	0	30,022,941
<i>FocalPrintSpend_{jt}</i>	31,209.41	0	252,985.44	0	4,358,316
<i>BrandTVSpend_{jt}</i>	546,981.74	0	3,891,735.71	0	63,364,679
<i>BrandPrintSpend_{jt}</i>	437,786.46	0	1,604,884.78	0	19,158,026
<i>CategoryTVSpend_{jt}</i>	77,865,207.44	52,384,018	74,759,803.14	0	261,007,283
<i>CategoryPrintSpend_{jt}</i>	51,106,308.42	26,484,131	57,328,116.22	0	205,134,403
Control variables					
<i>AvgWords_{jt}</i>	13.29	8.88	12.82	1.29	73.75
<i>AvgImages_{jt}</i>	0.72	0.45	0.73	0.01	4.87
<i>TopReviewer_{jt}</i>	6.25	4.0	16.59	0	189

low ($M = 0.94$, median = 0, $SD = 7.321$, min. = 0, max. = 273). Not surprisingly, the first few weeks of an SMC typically produced the most WOM activity from seeds. For example, in the first four weeks of a campaign, the seeds posted an average of 49.67 posts ($SD = 38.43$, min. = 0, max. = 281, median = 40). Moreover, in the typical campaign, 16% of the total number of seeds' posts for a campaign occurred in the first two weeks, and 95% of the total seeds' posts occurred within six weeks.

Nonseed WOM was generally more prevalent than seed WOM, as expected. Posts about the focal product by nonseeds in specialist forums (*FocalNonseedSpecialist*) ranged from 0 to 2,340 posts ($M = 73.33$, $SD = 220.17$, median = 11), and from 0 to 2,272 ($M = 28.39$, $SD = 165.04$, median = 0) in generalist forums (*FocalNonseedGeneralist*). Also, nonseed WOM posts were generated at a slower rate than seeds' posts. For example, for the average campaign, only 7% of the total number of nonseed WOM posts (across specialist and generalist forums) occurred in the first two weeks of the campaign (versus 16% for seed WOM), and only 26% occurred by the end of the sixth week (versus 95% for seed WOM). This is consistent with our general prediction that WOM by seeds triggers nonseed WOM activity.

6.2. Focal Product, Brand, and Category Spillover Effects

We begin by testing H1–H3. For this, we estimated the model described above but excluding the moderating effect of *Utilitarian_j* (i.e., $\Gamma = 0$ in Equation (1)). The fit statistics were $-2LL = 521,674$, $AIC = 522,682$, and

$BIC = 526,846$. Two alternative models were estimated, using different combinations of control variables. One model did not include controls for other SMC activities in the category, i.e., no *CategorySMC1*, *CategorySMC2* or *CategorySMC3* effects ($-2LL = 560,998$; $AIC = 561,911$; $BIC = 565,691$). Another model had additional controls measuring the amounts of nonseed WOM for focal product, brand, and category broken down into specialist and generalist sources that had occurred before each SMC ($-2LL = 521,634$; $AIC = 522,834$; $BIC = 527,792$). Because the main model fit better than either alternative, the results reported next are based on it.

Parameter estimates for the full model of spillover effects are reported in Tables 6–8. These tables cover the six outcome variables. Parameter estimates for other endogenous variables are reported in the Web Appendix (Tables WA1–6), as is the error correlation matrix (Table WA7).

For the focal product spillover effects (Table 6), the effect of seed WOM on nonseed focal product WOM among specialists was positive and significant (0.041, $SE = 0.004$, $p < 0.001$). The effect of seed WOM on nonseed focal product WOM among generalists was also positive and significant (0.005, $SE = 0.003$, $p = 0.046$). These results indicate positive focal product spillover effects and thus support H1. We also find significant indirect paths whereby nonseed focal product WOM among specialists positively affects nonseed focal product WOM among generalists (0.015, $SE = 0.003$, $p < 0.001$) and vice versa (0.050, $SE = 0.007$, $p < 0.001$).

For the brand spillover effects (Table 7), the effect of seed WOM on nonseed WOM about other

Table 4. Correlations Between Endogenous Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. FocalNonseedSpecialist															
2. FocalNonseedGeneralist	0.323														
3. BrandNonseedSpecialist	0.105	-0.014													
4. BrandNonseedGeneralist	0.070	0.033	0.376												
5. CategoryNonseedSpecialist	0.011	-0.013	0.125	0.013											
6. CategoryNonseedGeneralist	0.008	-0.005	0.086	0.045	0.675										
7. FocalSeedSpecialist	0.107	0.043	0.001	0.002	-0.013	-0.005									
8. BrandSeedSpecialist	-0.093	-0.045	0.098	0.054	0.082	0.007	-0.027								
9. CategorySeedSpecialist	-0.097	-0.035	-0.026	-0.070	0.485	0.217	-0.028	0.199							
10. SearchTrends	0.264	0.091	0.147	0.172	0.058	0.055	0.020	-0.089	-0.146						
11. FocalTVSpend	0.051	0.006	0.022	0.037	0.018	-0.008	0.013	-0.025	0.063	0.201					
12. FocalPrintSpend	0.065	0.007	0.007	0.017	0.006	-0.004	0.007	-0.019	0.019	0.082	0.272				
13. BrandTVSpend	0.097	0.029	0.036	0.073	0.039	0.035	-0.007	-0.057	-0.001	0.255	0.221	0.078			
14. BrandPrintSpend	0.104	0.015	0.067	0.045	0.025	0.008	0.002	-0.059	-0.009	0.163	0.151	0.194	0.339		
15. CategoryTVSpend	-0.093	-0.005	-0.054	-0.010	0.119	0.127	-0.010	0.108	0.454	-0.133	0.025	0.009	0.003	-0.023	
16. CategoryPrintSpend	-0.050	-0.012	-0.014	-0.025	0.085	-0.038	-0.005	0.075	0.251	-0.063	0.030	0.071	-0.003	0.117	0.300

Table 5. Variance Inflation Factors (VIFs) and Correlations Between One-Week Lagged and Current-Week Endogenous Variables

	VIF	Lag 1	Lag 2	Lag 3	Lag 4	Lag 5	Lag 6	Lag 7	Lag 8	Lag 9	Lag 10	Lag 11	Lag 12	Lag 13	Lag 14	Lag 15	Lag 16
1. FocalNonseedSpecialist	1.23	0.776	0.318	0.095	0.067	0.005	0.006	0.100	-0.094	-0.097	0.257	0.050	0.074	0.097	0.113	-0.091	-0.049
2. FocalNonseedGeneralist	1.12	0.317	0.914	-0.013	0.030	-0.013	-0.008	0.045	-0.044	-0.036	0.088	0.006	0.010	0.028	0.012	-0.008	-0.014
3. BrandNonseedSpecialist	1.22	0.093	-0.014	0.723	0.356	0.106	0.075	0.003	0.094	-0.027	0.146	0.023	0.009	0.036	0.075	-0.050	-0.021
4. BrandNonseedGeneralist	1.20	0.068	0.028	0.370	0.679	0.012	0.022	-0.001	0.042	-0.070	0.174	0.037	0.010	0.072	0.039	-0.008	-0.020
5. CategoryNonseedSpecialist	2.56	0.010	-0.011	0.106	0.012	0.876	0.650	-0.012	0.078	0.475	0.058	0.018	0.008	0.038	0.022	0.118	0.061
6. CategoryNonseedGeneralist	2.00	0.008	-0.007	0.081	0.024	0.658	0.745	-0.007	0.005	0.211	0.055	-0.008	-0.006	0.035	0.008	0.127	-0.066
7. FocalSeedSpecialist	1.01	0.097	0.033	0.007	0.002	-0.009	-0.011	0.179	-0.027	-0.029	0.020	0.014	0.014	-0.006	0.000	-0.009	-0.005
8. BrandSeedSpecialist	1.07	-0.091	-0.044	0.099	0.056	0.083	0.007	-0.023	0.946	0.196	-0.089	-0.024	-0.018	-0.056	-0.056	0.104	0.072
9. CategorySeedSpecialist	1.86	-0.095	-0.033	-0.025	-0.069	0.473	0.212	-0.028	0.196	0.970	-0.145	0.063	0.019	-0.003	-0.011	0.447	0.231
10. SearchTrends	1.25	0.258	0.090	0.147	0.172	0.058	0.057	0.018	-0.089	-0.147	0.938	0.201	0.090	0.256	0.166	-0.133	-0.062
11. FocalTVSpend	1.16	0.050	0.005	0.023	0.036	0.019	-0.008	0.014	-0.025	0.063	0.200	0.923	0.275	0.202	0.110	0.022	0.025
12. FocalPrintSpend	1.11	0.068	0.010	0.009	0.012	0.008	-0.001	0.017	-0.019	0.022	0.078	0.241	0.106	0.081	0.033	0.011	-0.007
13. BrandTVSpend	1.21	0.093	0.027	0.036	0.071	0.038	0.036	-0.006	-0.057	-0.003	0.258	0.232	0.056	0.917	0.305	0.003	-0.006
14. BrandPrintSpend	1.19	0.116	0.014	0.071	0.045	0.026	0.021	0.002	-0.061	-0.008	0.165	0.152	0.031	0.324	0.143	-0.018	-0.040
15. CategoryTVSpend	1.40	-0.092	-0.002	-0.056	-0.011	0.115	0.126	-0.010	0.110	0.449	-0.131	0.028	0.010	-0.002	-0.023	0.963	0.295
16. CategoryPrintSpend	1.16	-0.044	-0.006	-0.030	-0.012	0.078	-0.011	-0.003	0.076	0.250	-0.064	0.029	-0.008	-0.001	-0.041	0.329	0.013

Table 6. Focal Product Spillover Effects

	<i>FocalNonseedSpecialist</i>			<i>FocalNonseedGeneralist</i>		
	Est.	SE	<i>p</i>	Est.	SE	<i>p</i>
<i>Intercept</i>	−0.005	0.007	0.536	−0.004	0.004	0.247
<i>FocalSeedSpecialist</i>	0.041	0.004	0.000***	0.005	0.003	0.046**
<i>FocalNonseedSpecialist</i>	0.272	0.003	0.000***	0.015	0.003	0.000***
<i>FocalNonseedGeneralist</i>	0.050	0.007	0.000***	0.284	0.002	0.000***
<i>BrandNonseedSpecialist</i>	0.005	0.007	0.417	0.000	0.005	0.934
<i>BrandNonseedGeneralist</i>	−0.002	0.011	0.837	0.009	0.005	0.076*
<i>CategoryNonseedSpecialist</i>	0.000	0.008	0.964	0.000	0.005	0.999
<i>CategoryNonseedGeneralist</i>	−0.011	0.005	0.025**	0.002	0.003	0.464
<i>BrandSeedSpecialist</i>	−0.004	0.010	0.716	0.008	0.008	0.279
<i>CategorySeedSpecialist</i>	0.013	0.006	0.037**	0.002	0.004	0.524
<i>SearchTrends</i>	0.053	0.005	0.000***	0.020	0.003	0.000***
<i>FocalTVSpend</i>	0.006	0.002	0.012**	−0.002	0.002	0.313
<i>FocalPrintSpend</i>	0.012	0.002	0.000***	0.000	0.001	0.755
<i>BrandTVSpend</i>	0.000	0.001	0.665	0.000	0.001	0.557
<i>BrandPrintSpend</i>	0.002	0.001	0.026**	0.001	0.000	0.030**
<i>CategoryTVSpend</i>	0.003	0.001	0.001***	0.000	0.001	0.646
<i>CategoryPrintSpend</i>	0.000	0.001	0.694	0.000	0.000	0.205
<i>AvgWords</i>	0.000	0.000	0.048**	0.000	0.000	0.658
<i>AvgImages</i>	0.003	0.002	0.116	0.000	0.002	0.829
<i>TopReviewer</i>	0.001	0.003	0.833	0.002	0.002	0.307
<i>CategorySMC1</i>	0.005	0.013	0.699	−0.008	0.008	0.279
<i>CategorySMC2</i>	−0.009	0.015	0.532	0.029	0.009	0.002***
<i>CategorySMC3</i>	0.006	0.012	0.621	−0.016	0.007	0.020**

Notes. Explanatory variables are lagged (except *AvgWords*, *AvgImages*, *TopReviewer*, *CategorySMC1/2/3*). $N = 28,654$ over 390 campaigns featuring 192 brands and 11 product categories.

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

products from the same brand as the focal product was negative and significant for generalists (-0.007 , $SE = 0.003$, $p = 0.012$), and negative but not significant for specialists (-0.004 , $SE = 0.004$, $p = 0.366$). There was a positive and significant effect of *BrandNonseedGeneralist* on *BrandNonseedSpecialist* (0.040 , $SE = 0.006$, $p < 0.001$), however, which means that seed WOM indirectly triggered a negative brand spillover effect for specialists even though the direct effect was not significant. These results are consistent with H2.

For the category spillover effects (Table 8), the effect of seed WOM on nonseed WOM about other products from different brands was negative and significant for specialists (-0.012 , $SE = 0.004$, $p = 0.003$), and negative but not significant for generalists (-0.010 , $SE = 0.006$, $p = 0.138$). There was a positive and significant effect of *CategoryNonseedSpecialist* on *CategoryNonseedGeneralist* (0.137 , $SE = 0.008$, $p < 0.001$), however, which means that seed WOM indirectly triggered a negative category spillover effect for generalists even though the direct effect was not significant. These results are consistent with H3.

6.3. Process Evidence: Moderation by *Utilitarian*

Finally, we test H4, which hypothesizes that the negative brand and category spillover effects reported above occur when an SMC's focal product is more utilitarian in nature. To test this we added the effect of

Utilitarian and its interaction with *FocalSeedSpecialist* to the model (i.e., Γ in Equation (1) was not fixed to 0).

The results supported H4(a) and H4(b). For brand spillovers, as reported above, the direct negative brand spillover effect was found for generalists but not for specialists, so we focus on *BrandNonseedGeneralist* here. The interaction between *FocalSeedSpecialist* and *Utilitarian* had a negative and significant effect on *BrandNonseedGeneralist* (interaction = -0.011 , $SE = 0.004$, $p = 0.014$). In terms of simple effects, this brand spillover effect was negative and significant only when the product was more utilitarian in nature (simple effect = -0.011 , $SE = 0.003$, $p = 0.001$).¹³ For category spillovers, as reported above, the direct negative category spillover effect was found for specialists but not for generalists, so we focus on *CategoryNonseedSpecialist* here. The interaction between *FocalSeedSpecialist* and *Utilitarian* had a negative and significant effect on *CategoryNonseedSpecialist* (interaction = -0.023 , $SE = 0.008$, $p = 0.006$). In terms of simple effects, this category spillover was negative and significant only when the product was more utilitarian in nature (simple effect = -0.020 , $SE = 0.004$, $p < 0.001$).¹⁴

7. Discussion and Conclusion

Seeding and related approaches such as influencer marketing and social referral programs have become

Table 7. Brand Spillover Effects

	<i>BrandNonseedSpecialist</i>			<i>BrandNonseedGeneralist</i>		
	Est.	SE	<i>p</i>	Est.	SE	<i>p</i>
<i>Intercept</i>	−0.002	0.007	0.804	−0.005	0.004	0.278
<i>FocalSeedSpecialist</i>	−0.004	0.004	0.366	−0.007	0.003	0.012**
<i>FocalNonseedSpecialist</i>	0.008	0.005	0.097*	−0.001	0.003	0.748
<i>FocalNonseedGeneralist</i>	−0.002	0.008	0.777	0.012	0.004	0.001***
<i>BrandNonseedSpecialist</i>	0.189	0.004	0.000***	0.030	0.003	0.000***
<i>BrandNonseedGeneralist</i>	0.040	0.006	0.000***	0.133	0.003	0.000***
<i>CategoryNonseedSpecialist</i>	0.010	0.006	0.118	0.001	0.004	0.726
<i>CategoryNonseedGeneralist</i>	0.000	0.004	0.916	0.000	0.002	0.938
<i>BrandSeedSpecialist</i>	0.052	0.006	0.000***	0.003	0.004	0.510
<i>CategorySeedSpecialist</i>	−0.001	0.005	0.914	−0.007	0.003	0.020**
<i>SearchTrends</i>	0.011	0.005	0.023**	0.007	0.003	0.021**
<i>FocalTVSpend</i>	−0.001	0.004	0.818	−0.001	0.005	0.790
<i>FocalPrintSpend</i>	0.002	0.002	0.464	0.003	0.001	0.013**
<i>BrandTVSpend</i>	−0.003	0.001	0.013**	−0.003	0.001	0.000***
<i>BrandPrintSpend</i>	0.002	0.001	0.003***	0.001	0.000	0.157
<i>CategoryTVSpend</i>	0.001	0.001	0.070*	0.001	0.001	0.154
<i>CategoryPrintSpend</i>	−0.001	0.000	0.029**	−0.001	0.000	0.003***
<i>AvgWords</i>	0.000	0.000	0.626	0.000	0.000	0.177
<i>AvgImages</i>	0.001	0.002	0.778	0.000	0.002	0.750
<i>TopReviewer</i>	0.000	0.004	0.923	0.000	0.004	0.981
<i>CategorySMC1</i>	0.001	0.013	0.919	0.009	0.008	0.229
<i>CategorySMC2</i>	−0.013	0.016	0.425	0.000	0.009	0.999
<i>CategorySMC3</i>	0.014	0.013	0.260	−0.004	0.007	0.562

Notes. Explanatory variables are lagged (except *AvgWords*, *AvgImages*, *TopReviewer*, *CategorySMC1/2/3*). *N* = 28,654 over 390 campaigns featuring 192 brands and 11 product categories.

p* < 0.10; *p* < 0.05; ****p* < 0.01.

Table 8. Category Spillover Effects

	<i>CategoryNonseedSpecialist</i>			<i>CategoryNonseedGeneralist</i>		
	Est.	SE	<i>p</i>	Est.	SE	<i>p</i>
<i>Intercept</i>	0.011	0.008	0.201	−0.083	0.013	0.000***
<i>FocalSeedSpecialist</i>	−0.012	0.004	0.003***	−0.010	0.006	0.138
<i>FocalNonseedSpecialist</i>	0.001	0.005	0.880	−0.012	0.008	0.131
<i>FocalNonseedGeneralist</i>	−0.010	0.008	0.198	−0.002	0.014	0.910
<i>BrandNonseedSpecialist</i>	−0.014	0.006	0.014**	0.006	0.009	0.549
<i>BrandNonseedGeneralist</i>	0.000	0.009	0.978	−0.008	0.015	0.594
<i>CategoryNonseedSpecialist</i>	0.314	0.004	0.000***	0.137	0.008	0.000***
<i>CategoryNonseedGeneralist</i>	0.044	0.003	0.000***	0.344	0.005	0.000***
<i>BrandSeedSpecialist</i>	0.019	0.008	0.019**	0.011	0.013	0.368
<i>CategorySeedSpecialist</i>	0.151	0.005	0.000***	0.052	0.008	0.000***
<i>SearchTrends</i>	0.007	0.006	0.207	−0.007	0.010	0.492
<i>FocalTVSpend</i>	−0.006	0.002	0.008***	−0.009	0.005	0.094*
<i>FocalPrintSpend</i>	0.000	0.002	0.983	0.000	0.004	0.949
<i>BrandTVSpend</i>	0.001	0.001	0.608	−0.002	0.002	0.165
<i>BrandPrintSpend</i>	−0.001	0.001	0.107	−0.002	0.001	0.218
<i>CategoryTVSpend</i>	0.004	0.001	0.000***	−0.003	0.001	0.000***
<i>CategoryPrintSpend</i>	0.001	0.000	0.101	−0.001	0.001	0.185
<i>AvgWords</i>	0.000	0.000	0.347	0.000	0.000	0.725
<i>AvgImages</i>	0.001	0.002	0.689	0.001	0.004	0.855
<i>TopReviewer</i>	0.001	0.003	0.869	0.001	0.007	0.934
<i>CategorySMC1</i>	−0.052	0.012	0.000***	0.062	0.020	0.002***
<i>CategorySMC2</i>	−0.049	0.014	0.001***	0.004	0.026	0.873
<i>CategorySMC3</i>	0.092	0.011	0.000***	0.026	0.021	0.205

Notes. Explanatory variables are lagged (except *AvgWords*, *AvgImages*, *TopReviewer*, *CategorySMC1/2/3*). *N* = 28,654 over 390 brands and 11 product categories.

p* < 0.10; *p* < 0.05; ****p* < 0.01.

increasingly popular among marketers and continue to be the focus of a growing stream of literature. However, while prior research focuses mainly on aspects related to SMC design, optimal seed selection, and whether SMCs produce positive results with respect to WOM generation and sales of a focal or featured product, to our knowledge the literature has not considered some of the broader consequences of firm-initiated seeded marketing programs. The goal of our research here was to take a first step in this direction by introducing and empirically testing a set of brand- and category-related WOM spillover effects in the context of SMCs conducted in online settings. Generally, our findings indicate that SMC-triggered WOM by seed consumers can spur a variety of spillover effects at the focal product, brand, and category levels. Moreover, these spillover effects vary in size, with focal product spillovers being the largest and brand spillovers being the smallest. Consistent with our conceptualization, we found that SMCs generate more nonseed WOM about a focal product, and can also *reduce* WOM about related products at the brand and category levels.

The negative brand and category spillover effects are counterintuitive given that much of the prior literature on spillovers in other marketing contexts finds positive effects. The fact that we find negative, instead of positive, brand and category spillover effects in the SMC context underscores the more general point that SMCs, which rely on WOM generated by seed consumers, are different from other, more traditional forms of marketing communication. More specifically, our findings suggest that seeding focal products with specialist consumers and encouraging them to generate WOM can serve an additional purpose for marketers in terms of helping nonseed consumers focus on the focal product when generating their own WOM. In other words, in line with our theory and empirical evidence, SMCs can make consumers, seeds and nonseeds, more inclined to construe focal products more concretely and thus suppress broader thoughts that might have otherwise led to brand- and/or category-level WOM.

While traditional advertising literature typically considers positive brand spillovers as beneficial for the firm (e.g., when advertising one product also lifts awareness for other products under the same brand), the negative WOM brand spillover effects that we identified might not mean bad news for marketers. Firms may value the ability of SMCs to help nonseed consumers concentrate on the focal product and reduce buzz about other products under the same brand in a variety of market settings. For example, this could help a firm when it launches a new product and wants attention to be focused on that product and not other products in the brand portfolio. It may also be helpful when there is a substantial variation in product quality or appeal across products under the same brand and a

firm does not want negative brand associations to contaminate WOM and consumers' perceptions about a focal product in an SMC. Finally, marketers may simply not want to have to "compete" against themselves for WOM when running an SMC for a particular product in their lineup; negative brand spillover effects suggest that this is unlikely to be the case (particularly for generalist consumers).

The presence of negative category spillovers is important from a competitive standpoint. It suggests that firms could benefit from SMCs not only through the positive effect on WOM for the own focal product but also through the negative effect on WOM for competitors' products in the same category as the focal product. Taken a step further, this implies that firms could strategically deploy SMCs to mitigate WOM for competitors' products in the same category.¹⁵ Similar to the case of brand spillovers, negative category spillover effects may also make firms using SMCs better or worse off depending on the market environment. For example, when capturing higher market share is important for a firm's success, a negative effect on competitors' WOM is beneficial; however, firms with dominant market positions that are primarily interested in growing the overall market size would not find such an effect to be a beneficial externality of running an SMC.

We also identified the importance of product type for the relative strengths of brand and category negative spillover effects. This helps firms to determine for which products SMCs can be deployed to take advantage of the spillover effects in various contexts outlined above. For example, companies looking to reduce WOM for competitors' brands should rely on SMCs for products that are more utilitarian, rather than more hedonic. Firms can also influence the spillover effects by suggesting that seed consumers use more specific terms for describing the focal product if they want to benefit from negative brand and/or category spillover effects. Conversely, if they wish to prevent such effects, they can promote the use of more general, abstract WOM generated by seeds.

Our study is not without limitations. First, our data does not account for WOM valence (only volume). This is because reliable sentiment analysis algorithms are not available for the Korean language, and manually scoring post sentiment is infeasible given the large number of posts. However, this is only worrisome if there is substantial variation in valence across forum posts and campaigns. To assess the likelihood of this, we randomly sampled 30 campaigns (out of 390) and had a native Korean speaker manually read the collected posts and judge their valence. The native speaker found most of the posts were positive: Opinions judged as "mostly negative" accounted for a mere 1.3% of total WOM volume in the sample (which covered specialist and generalist forums); opinions judged

as “mixed” were 4.3% and 1.3% of WOM volume in the specialist and generalist forums, respectively. Thus, our findings are based on predominantly positive seed and nonseed WOM (similar to the online community data in Stephen and Galak 2012). Nevertheless, it would be interesting for future research to test our WOM spillover typology in contexts where WOM valence exhibits greater variance. Second, our study is limited to the cosmetics industry. Although this is a large industry and features many distinct categories, it would be interesting to examine different industries and learn how the identified spillover effects might vary. Such an analysis could extend recent work on different types of products in viral/WOM marketing contexts (e.g., Lovett et al. 2013, Schulze et al. 2014). Finally, due to the nature of our data, we could not consider consumer- or network-related factors beyond specialist or generalist membership.

In conclusion, this research addresses an important aspect of online WOM campaigns that has received scant attention in the extant literature, i.e., the broader consequences of SMCs in terms of spillover effects. Our findings not only uncover the presence of WOM spillover effects as consequences of SMCs but also underscore the importance of taking these into account when planning SMCs and assessing the value of such programs. We hope this study spurs additional research on this and related topics.

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Endnotes

¹Seed and nonseed WOM in this context is WOM activity that is directly or indirectly triggered by the SMC. So-called “organic” WOM that is not a consequence of SMC-related actions by firms can coexist. Although not theoretically the focus of this research, we do attempt to empirically control for this.

²Firms typically seed with specialists (e.g., advocates, enthusiasts, experts, influentials, innovators or mavens) because they believe that specialists are more intrinsically motivated to participate in SMCs by generating WOM, more credible, and more receptive to extrinsic motivators (i.e., incentives) such as free product samples.

³In our setting seeds must be specialists, and nonseeds can be specialists or generalists.

⁴Most focal products in SMCs tend to be new and experience goods (e.g., new books, video games, cosmetics), hence they are likely to be associated with higher levels of uncertainty.

⁵Administrators randomly select seeds; they make small adjustments to ensure that seed opportunities are available approximately equally for all (active) members over time.

⁶While seeds have the option of not complying (i.e., not posting reviews), they are likely to comply because noncompliance can disqualify them from being a seed in the future.

⁷These forums are typically very large in terms of membership. For example, our data focuses on the largest three “Online Café” forums for cosmetics; the average number of members is 153,761.

⁸Sixty-six products from 37 brands were excluded on this basis. These products came from a variety of brands and categories, distributed across categories similarly to the 390 included products.

⁹Only TV and print data were available. TV and print were the largest advertising media in Korea at the time of data collection (e.g., according to the Korean Broadcast Advertising Corporation, in 2011, combined TV and print spending was over 64% of total ad spending).

¹⁰Naver was more popular than Google in South Korea at the time of data collection. Also, Naver search “trends” data are similar to Google Trends data for the United States and other countries.

¹¹These product categories correspond to product classification from the Naver forums.

¹²Our model is quite similar to other kinds of simultaneous/multi-equation models in marketing, e.g., VAR.

¹³The corresponding simple effect for when *Utilitarian* = 0 was 0.000, SE = 0.004, and *p* = 0.978.

¹⁴The corresponding simple effect for when *Utilitarian* = 0 was 0.003, SE = 0.008, and *p* = 0.667.

¹⁵This is in contrast with previous findings on positive category spillovers in other domains of marketing communications, such as advertising (e.g., Lewis and Nguyen 2015, Sahni 2016).

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