

The Secrecy Effect: Secret Consumption Increases Women's Product Evaluations and Choice

MARIA A. RODAS
DEBORAH ROEDDER JOHN

Advertisers often depict their products being consumed in a social setting, but they also depict people secretly consuming their products. Will consumers like a product more if they are prompted to consume it in secret? We report eight studies, where women consumed and evaluated products such as cookies, chocolate, and apple chips. Women in secret consumption conditions were instructed to imagine eating the food in secret, instructed to hide the food from others while consuming it, or shown an advertisement encouraging eating the food in secret. These secret consumption prompts resulted in more positive product evaluations and increased product choice, compared to evaluations in non-secret conditions. We identify pre-occupation and attitude polarization as the primary drivers for these outcomes. When women consume a product in secret, they become preoccupied with the product, as thoughts about the product continually pop into mind. Increased thinking leads to attitude polarization, where evaluations for products they like become even more positive. Finally, we also identify moderators of these secrecy effects.

Keywords: secret consumption, product evaluation, attitude polarization, product choice

Much of the advertising we see depicts people enjoying the consumption of a product in the company of other people. Recently, however, advertisers are also beginning to depict people consuming products in secret. For example, Breyer's advertises its line of gelato by showing a couple waiting for their children to go to bed so they can keep their gelato consumption a secret. King's Hawaiian's advertises its dinner rolls through a humorous ad showing a man keeping his consumption of dinner rolls secret by

hiding them in a hidden wall cabinet. Galaxy chocolate, a brand of chocolate from the UK, explicitly encourages people to eat their chocolate in secret, with copy such as "I'm your little treat. Hide me. Don't tell anyone."

This development raises an interesting question: is it possible that consumers like a product more if they are prompted to think about consuming it in secret? To date, researchers have not examined secret consumption and whether it might trigger more positive product evaluations and greater product choice. We explore this topic in a series of eight studies, where we asked women to consume different products, with or without a prompt to think about their consumption as secret. We used several methods to prompt secret consumption, by showing women an advertisement that encouraged eating the food item in secret, instructing women to imagine eating the food item in secret, and instructing women to hide the food item from others while eating. After they consumed the product, we asked women to evaluate it and compared these evaluations to ones obtained from women who consumed the same product without a secret consumption prompt.

Maria A. Rodas (maria.rodas@marshall.usc.edu) is an assistant professor in marketing, Marshall School of Business, University of Southern California, Los Angeles, CA 90089. Deborah Roedder John (djohn@umn.edu) is the Curtis L. Carlson Chair in marketing, Carlson School of Management, University of Minnesota, Minneapolis, MN 55455. Please address correspondence to Maria A. Rodas. Supplementary materials are included in the web appendix accompanying the online version of the article.

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Across studies, we found that prompting women to think about consuming products in secret affected their product evaluations. Specifically, prompting secret consumption led to more favorable product evaluations, which we refer to as the “secrecy effect.” Products that are generally well liked, such as chocolate and cookies, were even more positively evaluated when the product was consumed with a secret consumption prompt. Further, prompting secret consumption affected women’s consumption behavior, resulting in increased product choice.

We look to theories of secrecy (Lane and Wegner 1995) and attitude polarization (Tesser 1978) to explain this novel effect. In brief, when people are prompted to think about their consumption as secret, they become preoccupied with thoughts about the product they have consumed. Thoughts about the product continue to pop into mind, resulting in increased thinking about the product. This increased thinking leads to a polarization of product evaluations, which is more positive for generally well-liked food products.

To our knowledge, this research is the first to examine how secret consumption can increase product evaluation and choice. Secret consumption is a prevalent phenomenon. In a study we conducted, 60% of women and 44% of men reported having engaged in secret consumption. Among women, secret consumption is most common for food categories (e.g., ice cream, chocolate). Among men, secret consumption spans a number of product categories, such as alcohol, drugs, video games, and food (see [web appendix](#) for details). Overall, these numbers indicate that secret consumption is a familiar experience for many consumers, particularly women. For this reason, we focus our investigation on female consumers, and examine secret consumption in the food category, which is the most common context for their secret consumption experiences.

Across eight studies, we show that secret consumption among women is consequential and the effects are robust. The secrecy effect emerges for different product categories, manipulations for secret consumption, motivations for secret consumption, and consumption contexts (private vs. public). We also show that the secrecy effect has behavioral consequences, affecting women’s purchase intent and choice. Finally, we show that the secrecy effect emerges in lab settings, field settings, and with women at all stages of life from 18 to 65 years of age.

Our findings also contribute to basic research on the effects of secrecy. Much of this research focuses on the negative effects of keeping secrets on psychological and physical well-being (Kelly 2002). Relatively few studies show a positive effect of secrecy, and these tend to focus on secrecy and interpersonal attraction (Olson, Barefoot, and Strickland 1976; Wegner, Lane, and Dimitri 1994). Our research shows the positive effects of secrecy outside the area of interpersonal attraction and, further, provides more detail regarding the process whereby secret consumption has evaluative consequences.

Our article proceeds as follows. First, we describe the conceptual underpinnings of the research and present our predictions regarding secret consumption. Next, we present eight studies with women that test these predictions. Finally, we discuss conceptual and managerial implications of our work, and suggest several avenues for future research on secret consumption.

CONCEPTUAL BACKGROUND

Secrecy is defined as an act of deception by omission, with the objective of preventing another person from knowing something (Lane and Wegner 1995; Wegner et al. 1994). Secrecy is a very common phenomenon (Kelly 2002), and large-scale studies have shown that almost everyone has a secret or an experience that they have never shared with anyone (Rimé et al. 1992; Vangelisti 1994). Examples from the psychological literature include sexual secrets (e.g., sexual partners and practices), secrets about romantic relationships (e.g., secret affairs and secret crushes; Lane and Wegner 1994), and family secrets (e.g., finances, abuse; Kelly and McKillop 1996; Kelly et al. 2001; Vangelisti and Caughlin 1997).

The focus of our interest in secrecy is the consumption domain. We define secret consumption as consumption of a product with the intent of hiding the consumption from others. It is important to note that secret consumption is not the same as private consumption. Secret consumption involves an intention to hide one’s consumption from others, whereas private consumption can occur simply because one happens to be alone at the time. Further, although secret consumption often takes place in private, it can also occur in public settings. For example, someone could secretly consume alcohol at their workplace by pouring it into a dark-colored water bottle and drinking from the water bottle with fellow workers nearby.

Secrecy Leads to Preoccupation

Regardless of the type of secret involved, keeping secrets requires expending cognitive resources to avoid revealing it to others (Lane and Wegner 1995; Pennebaker 1989, 1990; Wegner 1992; Wegner et al. 1994). In fact, it is the process of expending cognitive and emotional resources to keep information from other people that is a defining characteristic of secrecy, not the type or nature of the secret (Kelly 2002).

Lane and Wegner (1995) describe such a process in their Preoccupation Model of Secrecy. The model describes a system of cognitive processes set in motion as one tries to avoid revealing a secret, which results in obsessive thinking about the secret or what the authors refer to as “preoccupation.” They describe preoccupation as developing in the following way. First, to keep a secret, people

engage in thought suppression, which is the active avoidance or inhibition of thoughts related to the secret. People try to hold back thoughts related to the secret as a way to inhibit any type of expression (words, gestures, emotions) that could reveal the secret (Wegner et al. 1994). Second, thought suppression causes thought intrusion, making more accessible the thoughts the person is trying to suppress. Ironically, suppressing a thought ends up backfiring as thoughts about the secret pop back into consciousness. Third, as thoughts about the secret become intrusive, individuals renew their efforts to suppress these thoughts to avoid slipping up and revealing the secret. The second and third steps of suppression and intrusion cycle back and forth, resulting in a preoccupation with thoughts related to the secret.

Empirical support for this model emerges from two lines of research. The first step of the model states that secrecy causes thought suppression. Wegner and Lane (1995) provide evidence of this link, showing that research participants instructed to keep a word secret reported significantly higher levels of suppression of that word, and secrecy and levels of thought suppression were significantly correlated. The next step in the model is that thought suppression causes intrusive thoughts about the secret. This paradoxical effect has been shown numerous times, including a now famous demonstration that asking people to suppress thoughts about a “white bear” resulted in people reporting that they couldn’t stop thinking about it (Wegner et al. 1987). Later work has corroborated this finding, showing that people asked to keep a secret from an experimenter had the secret information more accessible (Lane and Wegner 1995), and that suppressed thoughts can be even more accessible in consciousness than a thought one is trying to focus on for the moment (Wegner and Erber 1992).

Preoccupation and Attitude Polarization

The Preoccupation Model of Secrecy describes a process whereby people experience thoughts about the secret continually popping into mind, which results in increased thinking about the secret. Applying this finding to our research context, we would expect to see that consuming a product in secret would lead to preoccupation, with increased thinking about a product they have been encouraged to consume in secret.

Could preoccupied thinking about a secret have evaluative consequences? For example, if someone is keeping a secret about an upcoming promotion, will they feel prouder or happier as they become preoccupied with the secret? Or, if someone is keeping a secret about an engagement ring they will be giving to their girlfriend, will they begin to like the ring more as they become preoccupied with the secret? Or, if someone is keeping a romantic relationship secret, will they feel more attracted to their relationship

partner as they become more preoccupied with the secret affair?

Our answer to these questions is yes. We reason that because preoccupation with a secret increases thoughts about the object of the secret, one’s attitude about the object of the secret is also likely to change. In particular, we propose that increased thoughts that occur with preoccupation will result in a polarization of attitudes about the object of the secret. For example, in our research context, we predict that preoccupation would result in more positive product evaluations for liked products, but more negative product evaluations for disliked products.

Support for our prediction comes from an area of attitude research examining the effects of mere thought and attitude polarization. The central tenet of this line of research is that merely thinking about an attitude object can generate attitude change (Eagly and Chaiken 1993; Tesser 1978). In one of the earliest studies of this phenomenon (Sadler and Tesser 1973), research participants listened to an audiotape of a fellow student describing himself, worded to make him seem either likeable or unlikeable. After listening to the audiotape, participants were asked to either think about the fellow student or complete an irrelevant distraction task before rating the student. Compared to participants in the distraction condition, those instructed to think about the student gave him more favorable ratings if he was likeable, but more negative ratings if he was unlikeable. Thus, increased thinking about the fellow student resulted in more extreme attitudes. Follow-up studies directly manipulating the amount of time people are given to think about an attitude object/topic corroborate this finding. Increased thinking about an attitude object/topic results in attitude polarization (Tesser 1978; Tesser and Conlee 1975; Tesser and Cowan 1977; Tesser and Leone 1977).

The finding that increased thoughts about an object/topic leads to more extreme attitudes provides a strong foundation for our view that preoccupied thinking should lead to attitude polarization. As described earlier, secrecy triggers preoccupation with the object/topic of the secret. Preoccupation involves thoughts about the secret popping back into mind, increasing the thinking that takes place regarding the object/topic of the secret. Per research on attitude polarization, increased thinking leads to more extreme attitudes or evaluations of the object/topic of the secret. Thus, we can represent the causal chain as follows: secrecy → preoccupation (increased thoughts) → attitude polarization.

Secret Consumption, Preoccupation, and Product Evaluation

We turn now to our predictions regarding the effects of secret consumption. First, we predict that prompting consumers to secretly consume a product will lead to more

extreme product evaluations, which we refer to as the “secrecy effect.” Consistent with attitude polarization research, increased thinking that occurs as a result of preoccupation with a secretly consumed product should lead to more positive product evaluations for products consumers like, and more negative product evaluations for products consumers dislike. In this article, we focus our attention on positive polarization effects given that secret consumption is a much more realistic consumption context for products that consumers like (e.g., chocolate, cookies) than products that many consumers dislike (e.g., beets, kale).

Second, we predict that the secrecy effect will be mediated by preoccupation with the secretly consumed product. Prior research demonstrates that attempting to keep a secret results in people becoming preoccupied with the secret, with thoughts about the secret popping back into mind over and over. Thus, preoccupation involves an increase in thoughts about the object or topic of the secret, which leads to more extreme product evaluations as noted above.

Finally, we also make predictions about two moderators of the secrecy effect: distraction and need for cognition. Both factors have been shown to affect the extent to which attitude polarization occurs. According to our theorizing, which incorporates attitude polarization, both factors should therefore influence the extent to which product evaluations become more extreme when products are consumed in secret versus non-secret conditions. Thus, by selecting these moderators for examination, we seek to understand the boundary conditions of the secrecy effect, as well as provide further process evidence for why the secrecy effect occurs.

First, we examine distraction during consumption, and predict that distraction will dampen the secrecy effect. We reason that distraction can interrupt the preoccupation process, which drives the effect of secret consumption on product evaluation. During secret consumption, people begin to suppress thoughts about the secretly consumed product, which sets the preoccupation process in motion. Distractions interrupt this process, with a concomitant reduction in preoccupation and positive product evaluations for a liked product. This outcome is also consistent with findings from attitude research that attitude polarization is less likely to occur under conditions of distraction (Sadler and Tesser 1973; Tesser 1978). Further, consistent with our theorizing, we predict that the interaction effect between distraction (present vs. absent) and consumption setting (secret vs. non-secret) will be mediated by preoccupation with the secretly consumed product.

Second, we examine need for cognition (NFC) as a moderator. We predict that the secrecy effect will be stronger for individuals with a high NFC than those with a low NFC. People with high NFC engage in more effortful cognitive activity (Cacioppo and Petty 1982), which suggests they are more likely to engage in preoccupied thinking when prompted to engage in secret consumption. Because

high NFC individuals engage in more thought, their product evaluations should be more positive (for a liked product) than evaluations for low NFC individuals. This prediction is also consistent with attitude research showing that individuals high in NFC exhibit greater attitude polarization than individuals low in NFC (Lassiter and Apple 1998; Lassiter, Apple, and Slaw 1996). And, consistent with our prior theorizing, we predict that the interaction effect between NFC and consumption setting (secret vs. non-secret) will be mediated by preoccupation with the secretly consumed product.

OVERVIEW OF EMPIRICAL STUDIES

We examine our predictions in eight studies, where women were assigned to a secret or non-secret consumption condition, and then asked to consume and evaluate a familiar food item (cookies, chocolate, apple chips). Across studies, we examine different product categories, different manipulations for secret consumption, different motivations for secret consumption, and different consumption contexts (private vs. public). We incorporate different response measures (product evaluation, purchase intent, choice), as well as measures of preoccupation that are important for understanding the process underlying the secrecy effect.

Studies 1–5 demonstrate the scope and robustness of the secrecy effect. In studies 1–3, we show the secrecy effect by asking women to imagine eating a food item (chocolate, cookies, baked apple chips) in secret; women in the non-secret condition did not receive this instruction. Women exhibited more favorable product evaluations (study 1 and 3) and greater product choice (study 2) in the secret consumption condition. Study 4 extended these findings to a more marketing-relevant context. We asked women to read a print ad for a brand of cookies. One ad encouraged eating the cookies in secret, while a second ad made no mention of secret consumption. Once again, women evaluated the product more favorably and chose more of the product for future consumption in the secret (vs. non-secret) consumption condition.

In study 5, we expanded our secrecy manipulations to include different motivations for secret consumption. Women were asked to imagine they were eating chocolate in secret, eating in secret to avoid being judged by others, or eating in secret to avoid having to share with others. We found that all three secrecy conditions resulted in more positive product evaluations (vs. the non-secret condition), suggesting that the secrecy effect is robust across different motivations for secret consumption.

Studies 6–8 examine the secrecy effect further. Study 6 provides evidence for the process responsible for the secrecy effect, showing that preoccupation mediates the secrecy effect. We also find that the secrecy effect emerges

for both public and private consumption contexts. The final two studies examine moderators of the secrecy effect and provide further process evidence. In study 7, we find that the secrecy effect disappears when people are distracted during consumption. Distraction interrupts the preoccupation process, which dampens the secrecy effect. In study 8, we find that the secrecy effect can vary across individuals, and in particular, is stronger for people higher in NFC, who show a higher level of preoccupied thinking when consuming a product in secret.

STUDY 1: THE EFFECT OF SECRECY ON PRODUCT EVALUATIONS

Method

Sample. Seventy-seven female undergraduate students enrolled in business classes at a large American university ($M_{\text{age}} = 20.25$, $SD_{\text{age}} = 1.56$) took part in the study for course credit. In the recruiting process, potential participants were informed that they would be consuming a food item, and were instructed to sign up for a different study if they had food allergies or any other issues affecting their food consumption.

Procedure. Upon arrival at the lab, participants were seated at an individual workstation located in a small room or behind a privacy screen. They were told that the study involved receiving their input to help develop an advertising campaign for a new brand of chocolate. For this purpose, participants were informed that they would be eating a piece of the new chocolate, and would be asked for their evaluation afterward. Participants were assigned to eat the chocolate in either a secret or non-secret condition. In the secret condition, participants were asked to imagine that they were eating the chocolate in secret; in the non-secret condition, participants did not receive the secrecy instruction and were asked to eat the chocolate without further instruction. All participants were asked to spend 1 minute eating the chocolate.

For both conditions, individually wrapped pieces of chocolate were placed on the desk, and participants were asked to eat one piece. After participants ate the chocolate, they were instructed to fill out a survey, which included the main evaluation measure for the chocolate. The survey concluded with several demographic questions, as well as a question asking for thoughts about the purpose of the study. None of the participants correctly guessed the purpose of the study. Finally, participants were debriefed and dismissed.

Stimuli. We used a real brand of high-end Italian chocolate, Amedei, which was unfamiliar to our participants ($M = 1.30$, $SD = .97$, 1 = very unfamiliar to 7 = very familiar scale). We purchased small pieces of this chocolate,

which were individually wrapped in foil packaging containing the Amedei name (see appendix).

Product Evaluation Measure. Participants were asked to evaluate the Amedei chocolate (bad/good, dislike/like, unfavorable/favorable, unappealing/appealing, undesirable/desirable) using a seven-point scale (higher numbers indicating more positive evaluation). Ratings for the five criteria were averaged to create a product evaluation measure ($\alpha = .90$).

Results and Discussion

We analyzed product evaluations using an ANOVA with condition (secret, non-secret) as a fixed factor. As predicted, participants in the secret condition had more favorable evaluations of the Amedei chocolate than participants in the non-secret condition ($M = 6.27$ vs. 5.86 , $F(1, 75) = 5.27$, $p = .025$, $\eta_{\text{partial}}^2 = .07$). Thus, women encouraged to imagine themselves eating the chocolate in secret evaluated the chocolate more favorably than participants consuming the same chocolate without the secrecy prompt.

In the next study, we incorporated a behavioral measure into the procedure to examine whether the secrecy effect would extend to behavior as well as product evaluation. We also move our data collection setting outside the lab to provide access to a broader population and a more realistic consumption setting, a large state fair in the United States that draws over a million and a half visitors each year. Many exhibits at the state fair revolve around food, and tasting new food items is one of the favorite activities for visitors.

STUDY 2: THE EFFECT OF SECRECY ON BEHAVIOR

Method

The study was conducted at a state fair inside a small building maintained for university researchers to collect data from visitors to the fair. Our research space included: (1) two small booths against a wall that included a chair and small table, and (2) a larger table with four chairs in front of the booths. A small poster with the name of the study, participant eligibility, and short description was placed on an easel in front of the space to gain interest from visitors to the research building.

Sample. Ninety-three women attending the state fair were recruited to participate in the study. Recruitment took place both outside and inside the research facility as fair-goers walked by. Women 18–65 years of age without food allergies were invited to participate in the study, and were told that we were interested in their opinions about new food products they would eat and then evaluate. The

incentive was an opportunity to enter a raffle for one of six \$50 Visa cards.

Stimuli. The product was a hypothetical brand of miniature oatmeal cookies, Amedei. The actual cookies we used were sourced from a specialty retailer. This cookie was chosen because it had a pleasant, but not overwhelmingly delicious, taste. Two of these miniature cookies were enclosed in a small bag, with a professional-looking sticker on the front showing the Amedei brand logo (see appendix).

Procedure. Participants in the secret condition were seated at a booth, which included a chair and a small table. On the small table was a clipboard with a paper survey, a pen, a small 1-minute hourglass, and two packets of the Amedei cookies. Participants were asked to sit and read the instructions on the first page of the survey, which asked them to imagine they were eating the cookies in secret. They were instructed to eat *only one* packet of cookies, and to spend at least 1 minute doing so, keeping track of the time using the 1-minute hourglass. Participants in the non-secret condition were seated at a table outside the booths and were given the same set of materials and cookies. Participants were asked to eat *only one* packet of the cookies, and to spend at least 1 minute doing so, keeping track of the time using the 1-minute hourglass. They received no further instructions.

After eating the cookies, participants in both conditions completed a paper survey with a set of questions consistent with the cover story. The survey included questions about cookies in general (How much do you like cookies in general? Do you think cookies would taste better eating them at home/at a picnic/in secret/as a snack/after a meal?) and specific questions about their experience eating the Amedei cookies (I could really smell the cookies; I could really taste the flavors; I could really feel the texture of the cookies). This was followed by a set of filler questions (asking about movie preferences) and demographic questions. A final question asked for their thoughts about the purpose of the study. None of the participants correctly guessed the purpose of the study.

Once they had finished the survey, participants were instructed to leave the area they were seated in and find the research assistant to be entered in the raffle. We then recorded whether participants had chosen to take the remaining packet of cookies with them as they left the area. Recall that participants received two packets of cookies, and were specifically told to eat only one packet of cookies. Thus, one packet of cookies was untouched and could be taken by participants if they liked the cookies. No oral or written instructions were given regarding this remaining packet of cookies. Thus, the decision about whether to take the remaining packet of cookies was not prompted, and was an unobtrusive measure of behavior.

Results and Discussion

Although the key dependent variable for this study is the behavioral measure, we analyzed responses to the survey questions to confirm that women had similar responses across the two experimental groups, and that the survey questions did not elicit different thoughts across these groups. Analyzing survey responses using an ANOVA with condition (secret, non-secret) as a fixed factor, we found no differences between the secret versus non-secret condition (all $ps > .05$, see [web appendix](#) for details).

For the main analysis, we coded women's behavior as 0 (did not take the cookies) or 1 (took the cookies). As predicted, more participants in the secret condition took the remaining cookies with them (84.8%) than participants in the non-secret condition (66.0%, $\chi^2(1) = 4.52, p = .03$). Thus, women encouraged to imagine eating the cookies in secret were more likely to take the remaining packet of cookies than women who did not receive the secrecy prompt.

In the next study, we use the same experimental design and procedure as study 1 to examine the effects of prompting secret consumption on product evaluations for a healthy product (baked apple chips). We predicted that the secrecy effect would also emerge in this case, thus ruling out the possibility that the secrecy effect is driven by the indulgent or guilty-pleasure nature of the stimuli (chocolate, cookies) used in the two previous studies.

STUDY 3: THE SECRECY EFFECT AND HEALTHY FOOD

Method

Sample. Seventy-three female undergraduate students enrolled in business classes at a large American university ($M_{\text{age}} = 19.93, SD_{\text{age}} = .95$) took part in the study for course credit compensation. In the recruiting process, potential participants were informed that they would consume a food item, and were instructed to sign up for a different study if they had food allergies or any other issues affecting their food consumption.

Procedure and Stimulus. The design and procedure of the study were identical to study 1, with women assigned to eat baked apple chips in either a secret or non-secret condition. Baked apple chips are perceived by women as good for you ($M = 5.27, SD = 1.00$, seven-point scale) and acceptable in terms of taste ($M = 4.93, SD = 1.65$, seven-point scale). We purchased baked apple chips in bulk and packaged several chips in individual pouches for distribution (see appendix).

After eating the baked apple chips, participants in both conditions completed a survey, including items for evaluating the apple chips, several demographic questions, as well as a question asking for thoughts about the purpose of the

study. Two of the participants correctly guessed the purpose of the study, as well as the hypotheses, and were thus removed.

Measures. Participants evaluated the apple chips using the same items described in study 1 (five items rated on a seven-point scale; $\alpha = .98$).

Results and Discussion

We analyzed product evaluations using an ANOVA with condition (secret, non-secret) as a fixed factor. As predicted, participants in the secret condition had more favorable evaluations of the baked apple chips than participants in the non-secret condition ($M = 5.34$ vs. 4.61 , $F(1, 69) = 5.34$, $p = .02$, $\eta_{\text{partial}}^2 = .07$). Thus, women encouraged to imagine themselves eating the apple chips in secret evaluated them more favorably than participants consuming the same apple chips without the secrecy prompt.

Our results replicate findings from previous studies, which demonstrated the secrecy effect with an indulgent product. This convergence in findings shows the robustness of the secrecy effect, ruling out the possible alternative explanation that the secrecy effect is driven by the consumption of indulgent products or guilty pleasures.

In the next study, we demonstrate the secrecy effect using a different way to prompt secret consumption, which is more relevant for a marketing context. We designed a print advertisement that prompted consumers to eat the advertised product in secret. Women viewed this ad (secret ad) or an alternative ad for the product that did not mention secret consumption (non-secret ad), and were then asked to eat the product and evaluate it. We also added two additional measures (purchase intent, choice) to further assess behavioral responses. Findings for these behavioral measures, as well as the product evaluation measure, indicated more positive response for the advertised product when participants viewed the secret (vs. non-secret) ad.

STUDY 4: THE SECRECY EFFECT VIA ADVERTISING

Method

Sample. Sixty-eight female undergraduate students enrolled in business classes at a large American university ($M_{\text{age}} = 19.94$, $SD_{\text{age}} = .88$) took part in the study for course credit. In recruiting, potential participants were informed that they would consume a food item, and were instructed to sign up for a different study if they had food allergies or any other issues affecting their food consumption.

Procedure. When they arrived at the lab, participants were told that the study involved receiving their input to help develop an advertising campaign for a brand of

chocolate chip cookies, and as part of the process, we were interested in understanding their attitudes toward the cookie. Participants were told they would be eating a cookie, and would be asked for their evaluation afterward. Next, participants were assigned to the secret or non-secret ad condition, and were asked to carefully review the ad. Participants were then asked to eat the chocolate chip cookie, which was individually wrapped in a foil pouch and placed on their desks, while viewing the ad again. After participants consumed the cookie, they were instructed to fill out a survey, which included the evaluation measure for the cookie. Also included, at the end of the survey, was a question asking for thoughts about the purpose of the study. None of the participants correctly guessed the purpose of the study.

Stimuli. We used a hypothetical brand of cookies named Galaxy, which we confirmed to be a brand unfamiliar to our participants ($M = 1.47$, $1 = \text{very unfamiliar to } 7 = \text{very familiar scale}$). We distributed the Galaxy cookies to participants in a foil pouch, with each pouch containing one generic chocolate chip cookie purchased from a supermarket (see appendix).

We created two mock-up ads for Galaxy cookies (see appendix). For the secret ad, we used stock photography of a woman eating a chocolate chip cookie, who encouraged readers to secretly consume the cookies by placing her index finger on her lips, with this ad copy: "Shhh...enjoy! Secretly yours, Galaxy." In the non-secret ad, we used a picture of the same woman simply eating a chocolate chip cookie, with this ad copy: "Mmmm...enjoy! Sincerely yours, Galaxy." These ads were pretested with women ($n = 46$), who read either the secret or non-secret ad, and then rated it on several criteria (difficult/easy to read, difficult/easy to understand, unrealistic/realistic) on a seven-point scale (higher numbers indicate more positive evaluation). Results showed the ads were similar in terms of readability ($M_{\text{secret}} = 6.11$ vs. $M_{\text{non-secret}} = 5.58$, $F(1, 44) = 1.49$, $p = .23$), ease of understanding ($M_{\text{secret}} = 5.96$ vs. $M_{\text{non-secret}} = 5.79$, $F(1, 44) = .16$, $p = .69$), and realism ($M_{\text{secret}} = 5.59$ vs. $M_{\text{non-secret}} = 6.16$, $F(1, 44) = .90$, $p = .35$).

Measures. Participants were asked to evaluate the Galaxy chocolate chip cookie using the same items described in prior studies. Ratings for the five criteria were averaged ($\alpha = .95$) to create a product evaluation measure. Next, we asked participants how likely they would be to purchase Galaxy cookies if they saw them at the store ($1 = \text{not at all likely}$, $9 = \text{very likely}$). After completing a set of filler questions to provide a buffer between the evaluation and purchase intention measures, we asked participants to make a choice. We told participants they would be entered into a raffle to receive a small gift basket, with assorted candy and snacks, to thank them for participating. They were asked to indicate how many Galaxy cookies

(0 to 6) they would like to have in the basket if their name was selected.

Results

Product Evaluation. We analyzed product evaluations using an ANOVA with condition (secret ad, non-secret ad) as a fixed factor. As predicted, participants in the secret ad condition had more favorable evaluations of the Galaxy cookie than those in the non-secret ad condition ($M = 5.30$ vs. 4.69 , $F(1, 66) = 5.01$, $p = .03$, $\eta_{\text{partial}}^2 = .07$).

Purchase Intent. We conducted a similar ANOVA with likelihood of purchase as the dependent measure and condition (secret ad, non-secret ad) as a fixed factor. Participants viewing the secret ad were more likely to purchase the Galaxy cookies than participants viewing the non-secret ad ($M = 4.45$ vs. 3.23 , $F(1, 66) = 6.23$, $p = .02$, $\eta_{\text{partial}}^2 = .09$).

Choice. We conducted a similar ANOVA with choice (0 to 6 cookies) as the dependent measure and condition (secret ad, non-secret ad) as a fixed factor. Participants in the secret ad condition chose to have more Galaxy cookies in their gift basket than participants in the non-secret ad condition ($M = 4.36$ vs. 3.06 , $F(1, 66) = 6.43$, $p = .01$, $\eta_{\text{partial}}^2 = .09$).

Discussion

Our results show that prompting secret consumption via advertising elicited a more favorable response to the advertised product—more favorable product evaluations, higher intent to purchase, and increased choice of the product. Further, the results show that the secrecy effect can be obtained via product advertising, using a rather subtle manipulation, which represents a realistic way for marketers to prompt secret consumption of food products.

In the next study, we explore whether the secrecy effect is robust across different motivations for secret consumption. As before, we asked women to imagine eating chocolate in secret (secret condition) or without this instruction (non-secret condition). We added two secret conditions that specified a motivation for secret consumption: to avoid being judged by others *and* to avoid having to share with others. We find more favorable product evaluations for all secrecy conditions, regardless of what type of motivation was mentioned.

STUDY 5: MOTIVATION AND THE SECRECY EFFECT

Method

The study was conducted at the state fair research facility described earlier in study 2. We were provided with a small space (8 feet \times 10 feet) for conducting our study. A

small poster with the name of the study, participant eligibility, and short description was placed on an easel in front of the space to gain interest from visitors to the research building.

Sample. Two hundred eleven women ($M_{\text{age}} = 39.49$, $SD_{\text{age}} = 16.96$) attending the state fair were recruited and qualified to participate in the study. Recruitment took place both outside and inside the research facility as fairgoers walked by. Women 18–65 years of age without food allergies or food issues were invited to participate, and were told that we were interested in their opinions about food products they would eat and then evaluate. Participants received a string backpack with the logo of the university as an incentive to participate.

Procedure and Stimulus. Upon agreeing to participate, participants were told we were interested in their opinions about a brand of chocolate. They were seated at a table and given a clipboard with a paper survey, a pen, and a small bar of unbranded milk chocolate in a plain foil pouch (see appendix). Participants were asked to read the first page of the survey, which relayed instructions for one of the four conditions they had been randomly assigned to: non-secret, secret/no motivation, secret/no sharing, and secret/no judgment. In all conditions, participants were instructed to eat a piece of chocolate, taking at least 1 minute to do so. In the non-secret condition, participants received no further instructions. In the secret/no motivation condition, participants were asked to imagine eating the chocolate in secret, without any further information about the motivation for doing so. In the secret/no sharing condition, participants were asked to imagine eating the chocolate in secret because they don't want to share it with anyone else. In the secret/no judgment condition, participants were asked to imagine eating the chocolate in secret because they don't want anyone to give them grief about eating it.

After eating the chocolate, participants completed a survey, which included items for evaluating the chocolate described in previous studies (five items rated on a seven-point scale; $\alpha = .96$). A question asking for thoughts about the purpose of the study was included at the end of the survey. Six participants correctly guessed our main hypothesis (e.g., "if secret treats taste better"), and thus were removed from the data set.

Secret Consumption Motivations. We selected two motives for the new secret consumption manipulations based on two surveys (see [web appendix](#) for survey details). The first survey explored reasons why people engage in secret consumption. Participants ($n = 51$) were asked to imagine that they ate a piece of chocolate in secret, and were then asked to describe this episode, including why they ate the chocolate in secret. An independent coder categorized the responses, resulting in four types of motivations for secret consumption (most to least popular):

to not share it (“didn’t want to share with co-workers”), to not be judged (“eating it in secret appeals to me since those in my life at work or family would criticize me about my weight issues”), to escape/to have a moment alone (“In need of a pleasant treat, I hide away in my room to sneak a piece of Amedei chocolate”), and to feel less guilty (“I’d be eating it in secret because it’s probably too early for eating candy but I want to, anyway”).

We conducted a second survey with a larger sample of women ($n = 161$) to select which motivations to include in the study. Participants were first asked if they ever ate things in secret, and then were asked why they eat in secret. They were given a list of the motivations revealed in the first study, and an “other” option. Of the 74% participants who admitted eating in secret, the top two reasons were not to be judged (“to eat in peace, without anyone giving you grief about it”) and to not share it (“to have it all to yourself”). We selected these reasons for secret consumption to incorporate into the experimental conditions.

Results

We analyzed product evaluations using an ANOVA with condition (non-secret, secret/no motivation, secret/no share, secret/no judgment) as a fixed factor. The results yielded a significant main effect of secrecy, $F(3, 201) = 2.60$, $p = .05$, $\eta_{\text{partial}}^2 = .04$. Participants in each secret condition had more positive evaluations of the chocolate than participants in the non-secret condition. Specifically, product evaluations were more positive for the secret/no motivation versus non-secret condition ($M = 6.00$ vs. 5.44 , $p = .01$), more positive for the secret/no share versus non-secret condition ($M = 5.88$ vs. 5.44 , $p = .05$), and more positive for the secret/no judgment versus non-secret condition ($M = 5.93$ vs. 5.44 , $p = .03$). Further, there were no significant differences in evaluations across the three secret conditions (all p s $> .50$).

Discussion

Our findings provide evidence of the robustness of the secrecy effect. Specifically, we find that regardless of the motivation underlying the secret consumption, the secrecy effect emerges. Further, we find that the strength of the secrecy effect is similar regardless of whether *or* what type of motivation is specified in the secret consumption prompt.

Collectively, the five studies reported thus far demonstrate the secrecy effect across types of products, ways of prompting secret consumption, different motivations, and different response measures. In the next study, we examine the process that underlies these effects, providing evidence that the effect of secret consumption on product evaluation is due to preoccupation. Earlier, we identified preoccupation (thoughts about the consumed product continuing to

pop into mind) as the mechanism responsible for why secret consumption affects product evaluations. In study 6, we incorporate a measure of preoccupation and show that it mediates the relationship between secret consumption and product evaluations.

Finally, we examine the extent to which the secrecy effect emerges in both public and private consumption contexts. In our prior studies, participants consumed the focal product in a variety of public and private contexts. In study 6, we directly examine whether secrecy effects are larger in a public versus private context in a 2 (secret vs. non-secret consumption) \times 2 (public vs. private consumption) design. As expected, we find that the secrecy factor is responsible for driving product evaluations, which does not vary for public versus private contexts.

STUDY 6: THE MEDIATING ROLE OF PREOCCUPATION

Method

The study was conducted at the state fair research facility described earlier. Our space was designed to include: (1) two small booths against a wall (surrounded by privacy curtains) that included a chair and small table, and (2) a larger table (with four chairs) in front of the booths. A small poster with the name of the study, participant eligibility, and a short description was placed on an easel in front of the space to gain interest from visitors to the research building.

Sample. Two hundred ninety-four women attending the state fair were recruited to participate in the study. Recruitment took place both outside and inside the research facility as fairgoers walked by. Women 18–65 years of age without food allergies were invited to participate in the study, and were told that we were interested in their opinions about new food products they would eat and then evaluate. All participants received a string backpack with the logo of the university as an incentive to participate.

Stimuli. The product was a hypothetical brand of miniature oatmeal cookies, Amedei. The actual cookies used were sourced from a specialty retailer, and were chosen because they had a pleasant, but not overwhelmingly delicious, taste. Two cookies were enclosed in a small bag, with a professional-looking sticker on the front showing the Amedei brand logo (see appendix).

Procedure. Upon agreeing to participate in the study, women were assigned to go into one of the booths surrounded by privacy curtains (for the private conditions) or sit at the table (for the public conditions). Participants were told that they were being seated based on space availability to reduce suspicion about the purpose of the study. Participants in the private conditions entered one of the booths, which included a chair and a small table. On the

small table was a clipboard with a paper survey, a pen, and one packet of the Amedei cookies. They were asked to sit down and read instructions on the first page of the survey. In the secret/private condition, participants were asked to imagine they were eating the cookies in secret. They were instructed to eat one of the cookies in the bag, and to spend at least 1 minute doing so. Participants in the non-secret/private condition were also asked to eat one of the cookies in the bag, and to spend at least 1 minute doing so. However, they received no further instructions.

Participants in the public conditions were seated at a larger table outside the booths, adjacent to a walking path for fairgoers walking through the building. They were given the same materials and cookies as the ones placed in the booths. Participants in the secret/public condition were told that we were studying different kinds of food, and were asked to try to keep their consumption of the cookies secret from others seated at the table to avoid biasing other people's responses. They were instructed to eat one of the cookies, spending at least 1 minute doing so. Participants in the non-secret/public condition were instructed to eat one of the cookies in the bag for at least 1 minute, without further instructions.

After eating the cookies, participants in all four conditions completed a paper survey attached to the clipboard. The survey included the items for evaluating the cookies, followed by filler questions, and a measure of preoccupation (thoughts popping into mind about the cookies). A question asking for thoughts about the purpose of the study was included at the end of the survey. None of the participants correctly guessed the purpose of the study.

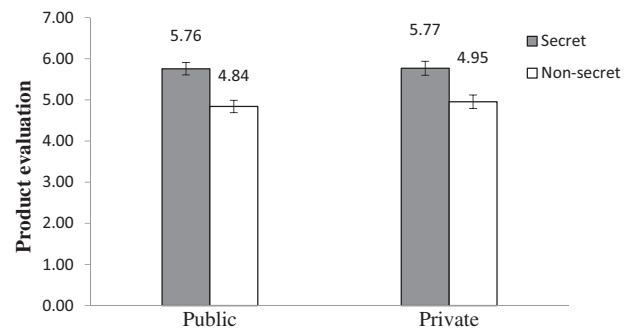
Measures. Participants evaluated the cookies using the same items described in previous studies (five items rated on a seven-point scale; $\alpha = .97$). Later in the survey, after completing several filler questions, participants responded to four statements about the extent to which thoughts about the Amedei cookies kept popping into their minds, including: "I'm still thinking about the Amedei cookies I ate" and "I'm wondering when I'll be able to eat the remaining Amedei cookies." Participants responded on a 1 (strongly disagree) to 9 (strongly agree) scale, and responses to the four items were averaged to form a preoccupation measure ($\alpha = .92$).

Results

Product Evaluation. Product evaluations were analyzed in a 2 (secrecy: secret vs. non-secret) \times 2 (setting: public vs. private) ANOVA. The results yielded a significant main effect of secrecy, $F(1, 290) = 29.46, p < .001, \eta_{\text{partial}}^2 = .09$. The main effect of setting ($F(1, 290) = .16, p = .69$) and the two-way interaction between setting and secrecy ($F(1, 290) = .10, p = .75$) were not significant. As predicted, participants prompted to consume the cookies in secret (either in a public or private setting) rated them

FIGURE 1

EFFECT OF SECRECY ON PRODUCT EVALUATION BY PUBLIC VERSUS PRIVATE SETTING



more favorably than participants who consumed the cookies in the non-secret conditions ($M = 5.76$ vs. 4.90 , respectively; see figure 1 for all means).

Preoccupation. The preoccupation measure was analyzed in a 2 (secrecy: secret vs. non-secret) \times 2 (setting: public vs. private) ANOVA. The results yielded a significant main effect of secrecy, $F(1, 290) = 11.50, p = .001, \eta_{\text{partial}}^2 = .04$. The main effect of setting ($F(1, 290) = .82, p = .37$) and the two-way interaction between setting and secrecy ($F(1, 290) = 1.95, p = .16$) were not significant. As predicted, participants who were prompted to think about and engage in secret consumption (in a public or private setting) were more likely to keep thinking about the cookies after some time had passed than participants who consumed the cookies in the non-secret conditions ($M = 5.76$ vs. 4.95 , respectively).

Mediation Analysis. To assess whether preoccupation with the consumed product mediated the effect of secrecy on product evaluation, we conducted a mediation analysis using the preoccupation measure as the mediator. Given previous results, which yielded no significant effect for setting (public vs. private), we collapsed the data across this condition. Following Zhao, Lynch, and Chen (2010), we used Preacher and Hayes's (2008) method of calculating standard errors and 95% confidence intervals. This method uses 5,000 bootstrapped samples to estimate the bias-corrected and accelerated confidence intervals. As predicted, results showed that increased preoccupation in the secret (vs. non-secret) condition mediated more favorable product evaluations (mediated effect = $.36, SE = .11, 95\% CI = .17$ to $.61$).

Discussion

Our findings provide evidence of the process driving the secrecy effect. Specifically, women prompted to engage in secret consumption were more likely to be preoccupied

with the consumed product than women who consumed the same product without a secrecy prompt. And, as expected, preoccupation with a secretly consumed product led to more positive product evaluations. Results from our 2 (secrecy: secret vs. non-secret) \times 2 (setting: public vs. private) design also confirm that secrecy prompts are driving the effects on product evaluations, as opposed to the public versus private setting where consumption takes place. Thus, although secret consumption is often thought of as being enacted in private, where people may feel less self-conscious or less guilty, our findings show that the secrecy effect emerges in both public and private settings.

One additional finding of interest is that the two secret conditions, secret/private and secret/public, were similar in terms of their positive effect on product evaluations ($M = 5.77$ vs. 5.76 , respectively, $F(1, 143) = .01$; $p = .95$). Recall that in the secret/private condition, women were asked to imagine consuming the cookies in secret, while in the secret/public condition, women were asked to actively engage in secret consumption to hide the cookies from others. The fact that both manipulations elicited similar product evaluations suggests that women who were asked to imagine eating the cookies in secret were just as involved in secret consumption as women who were explicitly instructed to engage in secret consumption to hide their consumption of cookies from others.

In the next study, we gather further process evidence by examining distraction during consumption as a moderator of the secrecy effect. We use a procedure similar to our prior studies, and ask women to consume a product (cookie). However, we also incorporate a distraction task while participants are consuming the food product. We predict, and find, that for participants in the secret condition, distraction interrupts the normal process of preoccupation, and in doing so, eliminates the secrecy effect. The more positive product evaluations in secret conditions seen in prior studies disappear when participants are distracted. Further, we find that preoccupation mediates the interaction effect between secret consumption (secret vs. non-secret) and distraction (present vs. absent) on product evaluation.

STUDY 7: UNDERMINING THE SECRECY EFFECT WITH DISTRACTION

Method

Sample. One hundred seventy-seven women attending the state fair were recruited to participate using the same procedure described in prior studies, with participants being offered an incentive to enter a raffle for one of six \$50 Visa cards. The product was Amedei cookies, and participants were randomly assigned to one of four conditions in a 2 (consumption setting: secret vs. non-secret) \times 2 (distraction: distraction vs. no distraction) design.

Procedure. As before, the physical space for the study was designed to include: (1) two small booths against a wall (surrounded by privacy curtains) that included a chair and small table, and (2) a larger table (with four chairs) in front of the booths. Women who agreed to participate in the study were assigned to either the secret condition (seated in a booth) or the non-secret condition (seated at the table). Participants were told they were being seated based on space availability in order to reduce suspicion about the purpose of the study.

Participants in the secret/no-distraction condition entered a booth, which included a chair and a small table. On the small table was a clipboard with a paper survey, a pen, a small 1-minute hourglass, and two packets of the Amedei cookies. They were asked to sit down and read instructions on the first page of the survey, which asked them to imagine they were eating the cookies in secret. They were instructed to eat *only one* packet of cookies, and to spend at least 1 minute doing so, keeping track of the time using the 1-minute hourglass. Participants in the non-secret/no-distraction condition were seated at a larger table outside the booths, and were given the same materials and cookies as ones placed in the booths. Participants were asked to eat *only one* packet of the cookies, and to spend at least 1 minute doing so, keeping track of the time using the 1-minute hourglass. They received no further instructions.

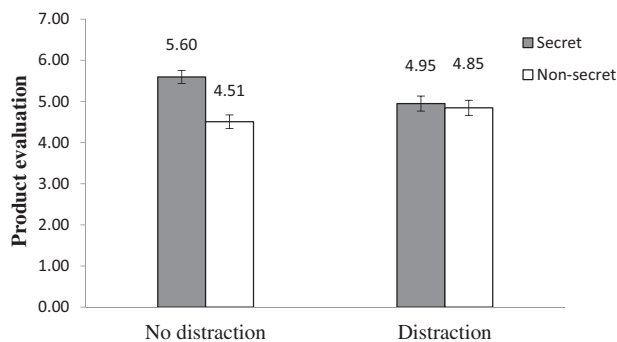
Instructions for participants in the secret/distraction and the non-secret/distraction conditions were similar to the non-distraction conditions, except participants were given a 15-second (instead of 1-minute) hourglass to keep track of the time spent eating the cookies. Participants were told to flip the hourglass over four times (instead of just once) in order to spend the next minute eating the cookies in one of the packets. They were asked to write an “X” on the paper survey each time they flipped the hourglass to keep track. The need to pay attention to the hourglass—flipping it over each time the sand flowed through the hourglass *and* keeping track by writing an “X” each time the hourglass was flipped—was intended to disrupt the beginning of the preoccupation process that would normally have emerged during secret consumption.

After eating the cookies, participants completed a paper survey, which included the evaluation measure for the cookies, several filler tasks, and a measure of preoccupation. After answering some final demographic questions, participants were asked if they had any thoughts about the objective of the study. None of the participants guessed the purpose of the study, and there were also no mentions of the different seating areas (booths vs. table) for the study.

Measures. Participants evaluated the Amedei cookies using the same five-item measure ($\alpha = .95$). We included a second measure, asking participants how likely they would be to purchase Amedei cookies if they saw them in the store on a 1 (not likely at all) to 7 (very likely) scale. After

FIGURE 2

EFFECT OF SECRECY ON PRODUCT EVALUATION BY DISTRACTION CONDITION



completing several filler tasks, participants responded to four statements measuring their preoccupation with the Amedei cookies ($\alpha = .90$; same items as prior studies).

Results

Product Evaluation. Results from a 2 (secrecy: secret vs. non-secret) \times 2 (distraction: distraction vs. no distraction) ANOVA revealed a significant main effect for secrecy ($F(1, 173) = 11.92, p < .001, \eta_{\text{partial}}^2 = .06$), and importantly, a significant secrecy \times distraction interaction effect ($F(1, 173) = 8.17, p = .01, \eta_{\text{partial}}^2 = .05$; see figure 2). Planned contrasts revealed that in the no-distraction condition, participants encouraged to eat the cookies in secret had more positive evaluations of the Amedei cookies than participants in the non-secret condition ($M = 5.60$ vs. $4.51, t(173) = 4.75, p < .001$), replicating past findings. However, the secrecy effect disappeared in the distraction condition, with participants in the secret and non-secret conditions evaluating the cookies in a similar way ($M = 4.95$ vs. $4.85, t(173) = .40, p = .69$). Further, for participants encouraged to eat the cookies in secret, product evaluations were more positive in the no-distraction versus distraction condition ($M = 5.60$ vs. $4.95, t(173) = 2.67, p = .01$).

Purchase Intent. We conducted a similar 2×2 ANOVA with the intent to purchase measure. The results mimicked those found for the product evaluation measure. Specifically, the analysis indicated a significant main effect for secrecy ($F(1, 173) = 4.31, p = .04, \eta_{\text{partial}}^2 = .02$), and a significant secrecy \times distraction interaction effect ($F(1, 173) = 7.62, p = .01, \eta_{\text{partial}}^2 = .04$). Planned contrasts revealed that in the no-distraction condition, participants in the secret condition were more willing to purchase the Amedei cookies than those in the non-secret condition ($M = 4.39$ vs. $3.13, t(173) = 3.64, p < .001$). However, the secrecy effect disappeared in the distraction condition, where participants in the secret and non-secret conditions

were similarly willing to purchase the cookies ($M = 3.33$ vs. $3.51, t(173) = .46, p = .69$). Further, among participants in the secret condition, willingness to purchase the cookies was more favorable in the no-distraction versus distraction condition ($M = 4.39$ vs. $3.33, t(173) = 2.88, p = .005$).

Mediation Analysis. Using moderated mediation analysis, we examined whether preoccupation about the consumed product mediated the effect of the distraction \times secrecy interaction on product evaluation (Hayes 2018; Zhao et al. 2010). The independent variable was secrecy (non-secret = 0, secret = 1), the moderator was distraction (no distraction = 0, distraction = 1), the mediator was the preoccupation measure, and the dependent variable was product evaluation. The bootstrapping analysis (5,000 resamples) showed that preoccupation mediated the effect of the two-way interaction on product evaluation. The mean indirect effect excluded zero ($a \times b = -.6, SE = .23, 95\% \text{ CI} = -1.09 \text{ to } -.19$). We obtained similar results running the same moderated mediation analysis with willingness to purchase as the dependent variable ($a \times b = -1.08, SE = .40, 95\% \text{ CI} = -1.94 \text{ to } -.38$). These results provide further evidence of the process driving the secrecy effect, namely that when people are encouraged to consume products in secret, they engage in preoccupied thinking about the product, which polarizes their evaluation of the product. If they are distracted while consuming the product, their preoccupation process is disrupted, which eliminates the effect of secret consumption on product evaluations.

Discussion

Our findings also provide further evidence for the process responsible for the secrecy effect. In the prior study (study 6), we measured preoccupation and showed that it mediated the relationship between secret consumption and product evaluations. In the current study, we provide process evidence by manipulating a moderator variable (distraction) that is conceptually related to the process (preoccupation), and then show that the effect (product evaluation) relies on the level of the moderator variable (Spencer, Zanna, and Fong 2005). Specifically, when we disrupted the preoccupation process by distracting people during secret consumption, we found that preoccupation with the product diminished, along with the more favorable product evaluations. Further, results of a mediation analysis showed that preoccupation mediated the presence or absence of the secrecy effect, which was caused by the absence or presence of distraction in the secret consumption conditions.

In the final study, we explore another potential moderator of the secrecy effect. We examine an individual difference factor, need for cognition, which intensifies the preoccupation process and increases attitude polarization. Because these effects are responsible for the secrecy effect, as argued earlier, we predict that the secrecy effect will be

greater for individuals with a high (vs. low) need for cognition.

STUDY 8: NEED FOR COGNITION AS A MODERATOR

Method

Sample and Stimuli. One hundred nineteen women attending the state fair were recruited to participate in the study, using the same recruitment process described earlier. The product was Amedei cookies, the same brand of miniature oatmeal cookies used in study 7.

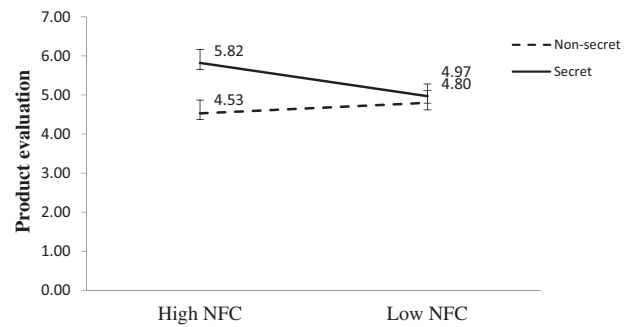
Procedure. The procedure was identical to the non-distraction conditions in study 7. Participants in the secret condition were seated inside a booth and were asked to eat one packet of the cookies, imagining they were eating them in secret. They were asked to spend at least 1 minute eating the cookies, keeping track of the time using the 1-minute hourglass. Participants in the non-secret condition were seated at a larger table outside the booths and were asked to eat one packet of the cookies. They were also asked to spend at least 1 minute eating the cookies, keeping track of the time using the 1-minute hourglass, but received no further instructions.

After eating the cookies, participants in both conditions completed a paper survey attached to the clipboard. The survey included the items for evaluating the cookies, followed by filler questions, a measure of preoccupation (thoughts popping into mind about the cookies), additional filler questions, the NFC scale, demographic questions, and a final question asking for thoughts about the objective of the study. Two (out of 119) participants guessed that the purpose of the study was to see if different environments influenced liking of the cookies; however, they did not guess the study’s hypothesis about secret versus non-secret consumption. At the study conclusion, participants were debriefed, given an opportunity to fill out raffle tickets for the gift cards, and thanked and dismissed.

Measures. Participants evaluated the Amedei cookies using the same five-item scale ($\alpha = .95$) described in previous studies. Later in the survey, participants responded to four statements about the extent to which thoughts about the Amedei cookies kept popping into their minds (same measure described in previous studies). Responses to the four items were averaged to form a preoccupation measure ($\alpha = .90$).

Participants also completed a short version of the NFC scale, which contained three items (e.g., “I would rather do something that requires little thought than something that is sure to challenge my thinking abilities”) that participants responded to on a -4 (strongly disagree) to 4 (strongly agree) scale (adapted from Cacioppo and Petty 1982). Responses to these items were averaged to form an NFC measure ($\alpha = .77$).

FIGURE 3
EFFECT OF SECRECY ON PRODUCT EVALUATION MODERATED BY NEED FOR COGNITION



Results and Discussion

Product Evaluation. We conducted a multiple regression analysis to test our prediction that the secrecy effect would be stronger for high NFC versus low NFC participants. That is, the difference in product evaluations for participants in the secret versus non-secret conditions would be greater for high NFC (vs. low NFC) participants. We regressed product evaluation onto the NFC score (continuous variable), condition (secret = 1, non-secret = -1), and their interaction. As predicted, the interaction between condition and NFC was significant, $\beta = .15$, $SE = .07$, $t(115) = 2.33$, $p = .02$, as shown in figure 3. To explore this interaction in more detail, we tested simple slopes at values one standard deviation above and below the mean of NFC (Aiken and West 1991; Cohen and Cohen 1983). We found a significant positive relationship between condition (secret = 1, non-secret = -1) and product evaluation for high NFC participants (+1SD; $\beta = .64$, $SE = .17$, $t(115) = 3.84$, $p = .002$), but not for low NFC participants (-1SD; $\beta = .09$, $SE = .15$, $t(115) = .58$, $p = .56$). As expected, the secrecy effect is stronger for people with high NFC, who have a tendency to engage in more effortful cognitive activity.

Mediation Analysis. Using moderated mediation analysis, we examined whether preoccupation about the consumed product mediated the effect of the NFC \times secrecy interaction on product evaluation (Hayes 2018; Zhao et al. 2010). The independent variable was condition (secret = 1; non-secret = -1), the moderator was NFC (continuous variable), the mediator was the preoccupation measure, and the dependent variable was product evaluation. The bootstrapping analysis (5,000 resamples) showed that preoccupation mediated the effect of the two-way interaction on product evaluation. The mean indirect effect excluded zero ($a \times b = .05$, $SE = .02$, 95% CI = .01 to .11). These results provide further evidence that prompting consumers to consume a product in secret results in preoccupation with the

product, especially for high NFC individuals, which then increases product evaluations.

Thus, we find that NFC moderates the effect of secrecy on product evaluations. Prompting women to engage in secret consumption resulted in more positive product evaluations, but this effect was observed primarily for women with a higher (vs. lower) NFC. Further, we found that preoccupation with the consumed product mediates the effects of the $NFC \times$ secrecy interaction on product evaluation, which is further evidence of the mediating role that preoccupation plays in driving the secrecy effect.

GENERAL DISCUSSION

Does prompting secret consumption affect product evaluations and choice? Across eight studies, we show that prompting women to think about or engage in secret consumption results in more favorable product evaluations. Well-liked products, such as chocolate and cookies, were evaluated even more positively. This effect was observed across different methods of prompting secret consumption: instructing women to imagine consuming the product in secret, exposing women to an ad encouraging secret consumption, and instructing women to actively engage in secret consumption by hiding the product from others. Further, the effects of secret consumption were replicated across different product categories (cookies, chocolate, baked apple chips), motivations for secret consumption (avoid sharing, avoid being judged), consumption contexts (public vs. private), response measures (product evaluations, purchase intent, choice), and research settings (lab, field).

We also identify the reason why secret consumption increases product evaluations. Our results show that thinking about and consuming a product in secret leads people to become preoccupied with the product, as thoughts about the product continue to pop into mind after its consumption. These increased thoughts result in more extreme (positive) product evaluations, consistent with theory and research in attitude polarization. We show support for this explanation in several ways. First, we find that preoccupation mediates the effect of secret consumption on product evaluations. Second, we find that variables that moderate the secrecy effect, such as need for cognition and distraction, exert their influence through the degree of preoccupation with the secretly consumed product.

Understanding Secret Consumption

Despite the prevalence of secret consumption, little is known about how notions of secrecy influence aspects of the consumer experience. One of our most important findings is that imagining or engaging in secret consumption triggers a preoccupation with the consumed product, which results in increased thoughts about the product and more favorable product evaluations. In our research, we

examined product evaluation, purchase intent, and choice. However, other consequences are possible. For example, perhaps product evaluations formed during secret consumption are more accessible and more resistant to change because they are connected to increased thoughts.

Another significant finding is that the effects of secrecy occur when consumption takes place in public as well as in private. Much secret consumption takes place in private, due to the ease of hiding consumption from others in this setting. This is consistent with lay notions of secret consumption, where people hide their food consumption by eating late at night or behind a locked door when no one is around. However, secret consumption can also take place in public, and our findings show that it has a similar effect as secret consumption in private. Our research untangles secrecy from privacy and shows that secret consumption is different in nature than consuming something alone or in private, which has been studied in prior work (Ratner and Hamilton 2015; Ratner and Kahn 2002). Secret consumption is undertaken with the intent to hide one's consumption, and it is this intent that drives the secrecy effects we observed.

Further, we find that there are many ways to prompt consumers to think about and engage in secret consumption. We found a similar pattern of effects when we prompted consumers to think about their consumption as secret versus instructing consumers to actively engage in secret consumption by hiding a product from others. Thus, it appears that merely suggesting secrecy can result in preoccupied thinking and differences in product evaluations. Our studies were designed for a relatively short time gap between the consumption experience and preoccupation measures, and it is possible that the effects of these prompts might be stronger over a longer time delay or that the effect is relatively short-lived.

Managerial Implications

Firms are now incorporating the idea of secret consumption into their advertising. Earlier, we identified a number of recent examples, including advertisements for Breyer's gelato, King's Hawaiian's dinner rolls, and Galaxy chocolate. Secrecy is also being used for advertising taglines, such as "Dove body wash has a secret," and in brand names, such as Häagen-Dazs's "Secret Sensations" ice cream products.

What are the implications of our research findings for firms that are using notions of secrecy in their marketing strategies? We find that prompting the idea of secret consumption results in more favorable product evaluations and greater product choice. This suggests that firms can benefit from encouraging secret consumption in advertising and product naming (e.g., Secret Sensations ice cream) for many categories of products that are generally well liked by consumers, such as chocolate and cookies. Our findings also suggest that these strategies could be used to promote more liking and choice of healthier foods, such as baked apple chips and raisins.

Further, we believe that secrecy effects may be even stronger if consumers engage in recurring episodes of secret consumption, prompted by advertising and other marketing materials. Recurring episodes of secret consumption could develop into a deeper relationship with the product or brand, culminating in what Fournier (1998) refers to as a “secret affair.” Although our research does not address longitudinal issues, there is evidence from secrecy research that the effect of secrecy on attraction is most evident in the early stages of interpersonal relationships (Foster, Foster, and Campbell 2010). We speculate that if people begin using a product while prompted to engage in secret consumption, it is more likely that it will fuel a stronger emotional bond and a stronger relationship with the brand, perhaps culminating in a secret affair. As we have seen, framing the consumption of a generally liked product as secret causes one to become preoccupied with the product, and reoccurring positive thoughts about the product would appear to be conducive to building a stronger bond and relationship. This may not occur, however, if people have been using a product for some time before the idea of secret consumption is introduced into advertising and marketing materials.

Future Research

Given the prevalence of secret consumption, and the novel effects we have reported, further research is warranted to examine several issues outside the scope of our research. One direction is to extend the study of secret consumption to men. Considering that the study of secret consumption is new to consumer behavior, we focused our attention on the most prevalent setting for this phenomenon—women and secret food consumption. Men also engage in secret consumption, but it is less prevalent and occurs across a variety of product categories (e.g., video games, magazines, food), whereas food is the dominant category for women.

A second way to expand the scope of our research would be to examine how prompting secret consumption would affect product evaluations for product categories that are not generally well liked by consumers. The impetus for our research was based on companies prompting secret consumption for categories such as chocolate and ice cream. It is unlikely that consumers would secretly consume product categories that are not well liked, such as beets or kale, and it is unlikely that companies selling these products would try to prompt secret consumption in their advertising and promotion. However, our conceptual model incorporating attitude polarization would predict that prompting secret consumption of a disliked product would result in more negative product evaluations. We conducted a study with women who disliked dark chocolate, and asked them to consume a bitter form of this chocolate (85% cacao) in a secret versus non-secret condition. Consistent with our model, we found that women who were prompted to consume the dark chocolate in secret rated it less favorably than those who

consumed it in a non-secret condition ($M = 1.69$ vs. 2.40 , $F(1, 80) = 8.34$, $p = .01$; see [web appendix](#) for full details).

Third, future research might explore self-motivated secret consumption, where consumers might secretly consume a product to avoid being embarrassed or negatively judged by others, to avoid being arrested for drug or alcohol possession, or just to savor a positive experience. Our research question was motivated by advertisers who are prompting secret consumption in their ads, and not on individual consumers making decisions to engage in secret consumption of their own volition. Examining self-motivated consumption would offer a further opportunity to consider motivations that consumers have for secretly consuming products, and how these motivations may interact with the process of preoccupation and attitude polarization. Perhaps these motivational and emotional triggers for secret consumption might intensify the process of preoccupation, and therefore, intensify the effects of secrecy on product evaluations.

Investigations in this vein might also address secret consumption experiences that could be harmful to consumers, such as binge eating, gambling, and drug use. Our research focus was on ordinary consumption experiences without any apparent harm to consumers. However, as we mentioned previously, secret consumption can be associated with negative or harmful experiences. We speculate that these secret consumption experiences would also result in increased preoccupation with the secretly consumed product, and perhaps, might be more intense than the benign consumption contexts we studied. However, it is possible that the downstream consequences of this preoccupation may be different due to the motivations and emotions involved in addictive behaviors.

Finally, future research might undertake a fuller examination of the cognitions and emotions that consumers experience during secret consumption. In terms of cognition, we focused on preoccupied thinking due to its importance in prior research on secrecy, but perhaps other thoughts and beliefs are involved. In particular, it may be interesting to examine the lay beliefs that consumers have about secret consumption, which could affect their thinking. For example: Do consumers believe that food tastes better when it is eaten in secret? Does encouraging consumers to consume food in secret lead to beliefs that the food item is more exciting, unique, special, or scarce? We have posed these questions to women in several of our studies, and have not found evidence that these beliefs contribute to the secrecy effect (see [web appendix](#) for details). Similarly, we have measured several emotions (guilt) and psychological states (arousal states, self-consciousness) in studies, and have not found them to contribute to the effect that secret consumption has on product evaluations (see [web appendix](#) for details). However, these efforts are just a beginning, and more attention is warranted to gain a broader understanding of how secret consumption affects consumers.

DATA COLLECTION INFORMATION

The data for study 1 were collected by the first author at University of Minnesota in spring 2015. The data for study 2 were collected by the first author and three research assistants under the supervision of the first author at the Minnesota State Fair in summer 2015. The data for study 3 were collected by the first author and one research assistant under the supervision of the first author at the University of Minnesota in spring 2018. The data for study 4 were collected by the first author at the University of Minnesota in fall 2018. The data for study 5 were collected by the first author and one research assistant under the supervision of the first author at the Minnesota State Fair in summer 2018. The data for study 6 were collected by the first author and one research assistant under the supervision of the first author at the Minnesota State Fair in summer 2017. The data for studies 7 and 8 were collected by the first author and three research assistants under the supervision of the first author at the Minnesota State Fair in summer 2015. These data were discussed and analyzed jointly by both authors.

APPENDIX

PRODUCTS USED ACROSS STUDIES

Study 1
Amedei chocolate



Studies 2, 6, 7, and 8
Amedei cookies



Study 3
Baked apple chips



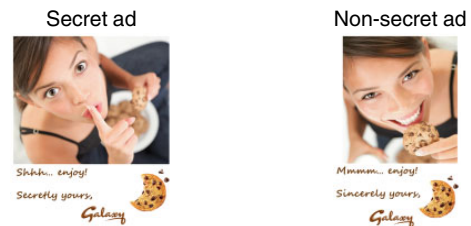
Study 4
Galaxy cookies



Study 5
Milk chocolate



ADS USED IN STUDY 4: GALAXY COOKIE



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