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Overt and covert customer data collection in online personalized advertising: The role of user emotions

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ABSTRACT

Due to its immense popularity amongst marketing practitioners, online personalized advertising is increasingly becoming the subject of academic research. Although advertisers need to collect a large amount of customer information to develop customized online adverts, the effect of how this information is collected on advert effectiveness has been surprisingly understudied. Equally overlooked is the interplay between consumer's emotions and the process of consumer data collection. Two studies were conducted with the aim of closing these important gaps in the literature. Our findings revealed that overt user data collection techniques produced more favourable cognitive, attitudinal and behavioral responses than covert techniques. Moreover, consistent with the self-validation hypothesis, our data revealed that the effects of these data collection techniques can be enhanced (e.g., via happiness and pride), attenuated (e.g., via sadness), or even eliminated (e.g., via guilt), depending on the emotion experienced by the consumer while viewing an advert.

1. Introduction

Adverts with messages tailored to consumers' individual preferences and needs based on their previous behaviors have long been considered more effective than generic messages. Given the advances in online communication and data mining techniques, the process of creating personalized adverts based on some aspect of the target audience has become relatively easy and inexpensive (Teeny et al., 2021). One tactic often used by marketers to personalize an advertisement is based on establishing similarity between a persuasive message and its recipient; a technique first proposed by Aristotle in his work "Rhetoric". More than a thousand years later, a vast number of studies have shown that matching some aspect of the communication (i.e., advertisement) to some aspect of the recipient (i.e., the consumer) is still one of the most reliable and effective ways to produce attitudinal and behavioral changes (Constantiou, Leher, and Hess, 2014; Magrizos et al., 2021; Szmigin et al., 2020). Given the increasingly easy and inexpensive ways that businesses are able to access consumers' public and personal information, creating these matched appeals has become an especially attractive marketing tactic.

Personalized advertising, defined as advertising that incorporates information about the individual consumer, such as demographic data, personally identifying information (e.g., name, location, and job), and shopping-related information (e.g., purchasing habits or history and brand preference), is not a new development. However, in recent years, empirical interest in this phenomena has seen a resurgence due to the explosive growth of personalized online advertising driven by insights into various aspects of the consumer (Bang and Wojdynski, 2016; De Keyzer, Dens, and De Pelsmacker, 2015; Winter, Maslowska, and Vos, 2021).

Online personalized advertising is often positioned as a win–win scenario because marketers can more accurately target customers, while users receive more relevant adverts. For example, a user who searches for a stroller will receive more online adverts for baby gear while browsing unrelated websites. The same user is also more likely to receive unsolicited email promotions due to software that keeps track of users' browsing behavior and past product selection (Bang and Wojdynski, 2016). Research has also shown that personalized adverts can benefit

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marketers through enhancing a user's visual attention to the content of an advert (Pfiffelmann, Dens, and Soulez, 2020). Enhanced visual attention has been linked to higher click-through rates (Tucker, 2014), decreased advert avoidance (Baek and Morimoto, 2012), and greater purchase intentions as well as actual purchasing behavior toward the recommended products (Kagan and Bekkerman, 2018; Howard and Kerin, 2004). Despite the apparent advantages of personalized advertising, a more nuanced picture of its efficacy is painted when various boundary conditions are taken into consideration. For example, several studies have suggested that the success of personalized adverts may depend on privacy concerns (Tucker, 2014), personalization justification (White et al., 2008), and advert skepticism (Baek and Morimoto, 2012). Supporting these data, a recent survey found that while 72% of Millennials said they would like to see more ads that are personalized to their interests and activities, only 40% were willing to provide more information in order to receive targeted advertising (Westcott et al., 2021).

From an advertising practitioners' perspective, effective personalized advertising requires monitoring individual consumers and the collection of a significant amount of information (Zhu and Kanjanamekanant, 2021). This information can easily be accessed via the digital landscape as it is shared both intentionally and unintentionally. On the one hand, intentionally shared content, such as interactions on social media and user generated content (UGC), is increasing due to users' willingness to share information with each other and with brands and organizations with whom they interact (Naeem and Ozuem, 2021). On the other hand, content can be unintentionally created when a company records the amount of time users spend on a website and user navigation patterns (Tajvidi et al., 2018). In fact, monitoring even unintentional UGC has become far easier for advertisers thanks to new methods of data collection as well as improvements in data mining and analysis techniques (e.g., search engine analytics device tracking, User Experience monitoring; Banerjee, 2019).

Regardless of whether consumers generate online content intentionally or unintentionally, firms must choose between engaging in covert data collection (i.e., collecting consumers' information without their knowledge) or overt data collection (i.e., explicitly making consumers aware that their data are being gathered; Sundar and Marathe, 2010). Covert data collection techniques rely on tracking consumers' online behavior, such as browsing history, click-through rates, search histories, device fingerprints, social media generated content, and video consumption data, without consumers' explicit knowledge and consent regarding how their data may be used in the future. In contrast, overt data collection techniques rely on trust-building marketing strategies whereby consumers are informed regarding how their data may be used prior to its collection (Sundar and Marathe 2010). For example, The Guardian's website clearly informs readers about the potential use of their personal data (cookies) through an information box that appears in the header when the reader accesses the website (www.theguardian.com).

Current research has examined consumers' responses to the delivery of personalized advertisements without "accounting for the information collection process needed to personalize services or consumers' reactions" (Aguirre et al., 2015, p.34). We argue that the collection process offers important insights into the 'personalization paradox' whereby consumers benefit from personalized recommendations and tailored user experiences, but often respond negatively to personalization due to concerns over the risk of the embedment of personal information in online advertising (Chen et al., 2019). An extensive number of studies have reported mixed or inconclusive findings regarding the effectiveness of overt and covert data mining techniques and personalization in general. While earlier research suggested that covert personalization increases privacy concerns (Sundar and Marathe, 2010; Xu et al., 2011), more recent studies failed to find differences between covert and overt personalization (Chen and Sundar, 2018). Our study, therefore, responds to recent calls made for "research to examine the difference between covert and overt personalization further" (Keyzer, Dens and Pelsmacker, 2021, p.16).

In the present research, we investigated the cognitive responses that are produced in response to personalized adverts and explored how consumers' incidental emotions interacted with cognitive responses to impact consumer attitudes and behaviors. Attempting to close an important gap in the literature, we aimed to further explain the varied and contradicting evidence of personalized advert effectiveness, while providing an alternative explanation for the mixed success of online personalized adverts based on emotional validation. Although early lines of research have suggested that consumers' emotions have a direct effect on the effectiveness of an advertisement in general and personalized adverts in particular (Blasco-Arcas, Hernandez-Ortega, and Jimenez-Martinez, 2016), many studies have reported inconclusive or even contradictory findings (e.g., Hess et al., 2020).

Apart from the contradictory findings regarding the effects of the very same emotions on purchasing intentions and consumption, a rather limited number of studies have examined the interplay between emotions and personalization strategies using overt vs. covert data collection processes. The few studies that have examined this subject from an affective perspective (e.g., Aguirre et al., 2015) did not focus on specific emotions. We argue, therefore, that a more nuanced approach is needed to understand the effects of users' emotions on the effectiveness of personalized advertising, especially in the online environment. With that in mind, the present research integrated theoretical arguments from previous work in marketing and social psychology to address the previously identified gaps in the literature by examining a) the role of data collection strategies on the success of personalized online advertising, and b) the impact of users' emotions on the effectiveness of online personalized advertising.

2. Literature review and hypotheses development

2.1. Personalization in online advertising

The extensive - and exponentially increasing, use of social media has provided marketers with the means to target current and potential customers through different online platforms (Blasco-Arcas, Hernandez-Ortega, and Jimenez-Martinez, 2014; De Keyzer et al., 2015). One area of particular interest to marketers is the utilization of personalized adverts based on specific customer demographics (Li, 2016). Recent advances in digital and online communication technologies have presented marketers with new forms of relatively inexpensive and easy demographic and location data collection opportunities. The ease that accompanies data collection, and the abundance of gathered personal data, has given rise to marketing initiatives to personalize and deliver adverts online, thus promoting purchases from shops specific to the location of the consumer (Unni and Harmon, 2007). With the increasing popularity of the new generation of GPS-enabled means of online communication, advanced UGC analysis tools, and User Experience monitoring practices, marketers can utilize these emerging technologies to deliver personalized adverts based on consumers' personal information, UGC, geographical location and online navigation history.

Despite the evidence provided by certain research findings regarding the efficacy of personalized adverts, many advertisers and consumers are still rather skeptical about the (mis)use of their personal data. The overarching impeding factor is privacy-related user acceptance issues. The potential intrusion of privacy becomes an important concern for users who receive personalized adverts (Tucker, 2014). Several studies have demonstrated that the use of personalized adverts has resulted in increased negative attitudinal and behavioral outcomes towards advertised products when the advert personalization is based on the use of consumers' personal data without their explicit consent (Aguirre et al., 2015; Xu et al., 2011). Thus, it is important to understand how consumers respond to personalized adverts in terms of both their recognition and understanding of this double-edged sword.

On the one hand, consumers may place value on receiving personalized adverts, generating favorable cognitive responses, and galvanizing their attitudes and purchase intentions when information is intentionally provided (overt personalization). Previous research has shown that this type of personalization, collectively known as *overt information collection* strategies (i.e., when consumers know their data are being collected for a specific purpose), has exhibited greater value for firms (Sundar and Marathe, 2010).

On the other hand, *covert information collection* strategies occur when firms collect data without consumers' awareness, often by unobtrusively gathering information while the consumer browses the Internet (Montgomery and Smith, 2009). While this strategy helps a firm acquire data in a relatively easy and inexpensive manner, this form of data collection raises privacy-related concerns and consumer demands for more openness and transparency (Turow et al., 2008). When personalization is based on information provided without the consumers' awareness of the personalization process, and even more importantly without consumers providing consent for their data to be used (covert personalization), privacy concerns about disclosing personal information may indeed reverse the positive effect of personalization, leading to a decrease in the overall advert effectiveness (Aguirre et al., 2015; Xu et al., 2011). This negative effect may become even more significant when users do not know how their data will be used. As Hayes et al. (2021) note, users feel vulnerable when they realize that their personal information is used by advertisers to send them personalized messages, or is being passed to third parties without their awareness. This discussion indicates that certain types of personalization strategies (overt personalization) might lead to positive cognitive responses toward the advertised products, while others (covert personalization) might have the opposite effect, leading to more negative responses.

2.2. Personalization and cognitive responses

The effectiveness of an advert hinges on consumers' cognitive responses towards the advert (e.g., Briñol, Petty, and Tormala, 2004). Cognitive responses refer to the thoughts generated by consumers in response to adverts and other types of persuasive messages, and have long been viewed as critical determinants of consumers' attitudes and behavior in general. Considerable research has revealed that, in many cases, thoughts are an important determinant of the effectiveness of a persuasive proposal (e.g., Briñol and Petty, 2021; Cacioppo & Petty, 1981; Greenwald 1968a; Wagner and Petty, 2021). Thus, research has extensively employed thought-listing measures as a means of assessing consumers' cognitive responses to adverts and persuasive proposals (e.g., Briñol, Petty, and Tormala, 2004; Stavraki et al., 2021; Teeny, Briñol and Petty, 2017). In line with multi-process models of persuasion, such as the Heuristic-Systematic Model (HSM; Chaiken, Liberman, and Eagly, 1989) and the Elaboration Likelihood Model (ELM; Petty and Cacioppo, 1986a, 1986b; Petty, Wegener and Fabrigar, 1997), the cognitive response approach argues that attitudinal and behavioral change depends primarily on cognitive response favorability generated by consumers. Several previous studies have shown that cognitive responses often determine both short (e.g., Brock 1967; Greenwald 1968b; Petty, Ostrom, and Brock, 1981) and long-term acceptance of and advertisement's proposal (e.g., Chattopadhyay and Alba 1988).

In our research, and in line with previous findings regarding the effects of thoughts on attitudinal and behavioral outcomes, both in the domains of social psychology and consumer behavior (Briñol and Petty, 2021; Stavraki et al., 2021; Briñol, Petty, and Tormala, 2004), we hypothesized that cognitive responses are the underlying element driving both attitudinal (e.g., evaluations of a brand's products) as well as behavioral responses (e.g., purchase intentions towards a brand's products). Thus, when brand related thoughts generated in response to an advert (e.g., cognitive responses) are primarily favorable, this produces more favorable evaluations of the brand and increases purchase intentions towards products associated with the relevant brand. However, when cognitive responses are primarily unfavorable, this will likely result in less favorable evaluations of the brand and decreased purchase intentions.

On the basis of previous research, we hypothesized the following:

Hypothesis 1: Personalized adverts will generate more favorable responses (cognitive, attitudinal, behavioural) compared to non-personalized adverts.

Further, we hypothesized that when exposed to a personalized advert based on overt data mining techniques, consumers will generate relatively favorable cognitive responses towards the advertised brand, since privacy concerns are minimized with overt personalization. On the other hand, when consumers are exposed to a personalized advert based on covert personalization data mining techniques, we expected them to generate relatively unfavorable cognitive responses towards the product due to increased privacy concerns, as suggested by the negative attitudinal and behavioral responses towards advertised products in several previous studies when privacy concerns were increased (Aguirre et al., 2015; Simola, et al., 2013; Van Doorn and Hoekstra, 2013).

Hypothesis 2: Personalization based on covert data collection will generate less favorable responses (cognitive, attitudinal, behavioural) than personalization based on overt data collection.

2.3. Confidence in cognitive responses

In addition to the favorability of cognitive responses, another antecedent of attitudes is 'thought confidence'. Specifically, previous research has shown that the confidence with which people hold their thoughts plays an important role in attitudinal and behavioral change (e.g., Briñol, Petty, and Tormala, 2004; Santos & Rivera, 2015). Confidence in one's thoughts can be viewed as a determinant of the perceived utility or diagnosticity of one's cognitive responses. Prior research indicates that greater confidence in one's cognitive responses increases the perceived validity of those cognitive responses, thus enhancing the likelihood that they will lead to attitudinal and behavioral changes. These findings are in line with the self-validation hypothesis, which posits that thought confidence is an important determinant of the extent to which thoughts predict attitudes and behavior (Briñol, Petty, and Falces 2002; Petty et al., 2002; Requero et al., 2020).

According to the self-validation framework, any variable that increases confidence in thoughts is likely to increase reliance on previously generated cognitive responses as determinants of attitudinal and behavioral change due to increased perceived validity (Briñol et al., 2018; Stavraki et al., 2021). Increased confidence in positive cognitive responses is expected to result in more favorable attitudes and increased purchase intentions, whereas increased confidence in negative cognitive responses is expected to result in less favorable attitudes and decreased purchase intentions. On the other hand, any variable that instills doubt in thoughts is likely to decrease reliance on those cognitive responses in determining attitudes and subsequent purchase intentions. Thus, increasing doubt in positive cognitive responses is likely to result in less favorable attitudes, whereas increasing doubt in negative cognitive responses is expected to result in more favorable attitudes (Briñol et al., 2018).

In the present study, we argued for the importance of examining the role of confidence on cognitive responses as a determinant of advert personalization effectiveness. Extending the work of Petty et al. (2002) and Briñol et al. (2004), we examined the possibility that emotional states, constructs extensively used both in consumer behavior literature (Blasco-Arcas et al., 2016; Han, Lerner, and Keltner, 2007) and persuasion literature (Stavraki et al., 2021), can influence the *meta*-cognitive dimensions of attitudinal and behavioral change by determining the amount of confidence consumers have in their cognitive responses towards products promoted in personalized adverts.

2.4. (Meta)Cognitive emotional validation of cognitive responses

Several lines of research based on appraisal theories have demonstrated that, whereas some emotions are associated with relatively pleasant experiences (e.g., happiness, awe, surprise, pride), other emotions are linked to relatively unpleasant states (e.g., anger, sadness, fear, guilt) (Ellsworth and Smith, 1988; Moors et al., 2013). At the same time, emotions can also be categorized according to whether they are associated with feelings of increased confidence or doubt.

Based on this multi-appraisal perspective of emotions, happiness is associated with increased confidence, whereas sadness is associated with decreased confidence (e.g., Briñol et al., 2007). Briñol et al. (2007) showed that when people were made to feel happy after reporting their cognitive responses, they used their thoughts more than when they were induced to feel sadness. That is, happiness can lead to more thought reliance than sadness when the emotion follows thought generation. This is because compared to sadness, happiness instills a greater sense of security and stability, changing the underlying cognitive mechanisms by which people assess and evaluate momentarily available information (e.g., Bodenhausen et al., 1994). Similar conclusions can be derived about other emotions, such as pride, which is associated with greater confidence and certainty (Ellsworth and Smith, 1988; So et al., 2015) compared to guilt, which is characterized by feeling weak, uncertain and doubtful (Roseman, Spindel, and Jose; 1990). It is reasonable to assume, therefore, that emotions can be differentiated beyond their positive and negative valence, and that cognitive concomitants of emotions may have important consequences for the effectiveness of adverts.

This line of research, apart from advancing current research regarding personalized advertising, also aimed to extend the level of contribution to the field of emotions and persuasion by examining two new emotions that can potentially serve a self-validating role, namely pride and guilt. While previous research has identified the self-validating role of happiness, sadness, anger, surprise and awe (Briñol et al., 2007; 2018; Stavraki et al., 2021), no attention has been paid to the emotions of pride and guilt. Thus, this experimental work aimed to fill a two-fold research gap by identifying the self-validating effects of two new emotions in a persuasion context, while assessing to what extent the very same emotions can influence the effectiveness of personalized adverts.

Investigating the effects of emotions on consumers behavior, the Elaboration Likelihood Model posits that changes in consumers attitudes and purchasing intentions can occur through relatively thoughtful (i.e., "high elaboration") or relatively non-thoughtful (i.e., "low elaboration") processes depending on the extent to which consumers are motivated and able to carefully consider the merits of an advertisement. Most important for the present research, the ELM provides a theoretical framework that informs when emotions take one role or the other on information processing. For instance, when elaboration is not constrained to be high or low, emotions influence the extent of thinking about the merits of the advertisement. When elaboration is constrained to be low, emotions influence consumers' attitudes and behavior by serving as simple cues, guiding change in accord with the valence of the emotion. When elaboration is constrained to be high, emotions can serve as arguments in favor of a product in an advertisement if those emotions are relevant to the contextual environment or can bias the thoughts generated in response to the advert. Moreover, based on the self-validation paradigm, and relevant to the formation of our studies hypotheses, if elaboration is high and emotions are introduced after consumers exposure to the advert, emotions can lead people to reappraise the validity of their cognitive responses towards the advert. Specifically, emotions may lead consumers to feel more or less confident about their cognitive responses. This latter mechanism is the focus of the present research.

Applying the self-validation framework to an advertising context, we hypothesized that confidence derived from one's emotional state can become associated with cognitive responses, either validating or invalidating them (Briñol et al., 2007; Briñol & Petty, 2021; Petty & Cacioppo, 1983). This leads to the prediction that if cognitive responses towards a product are favorable, then happiness (as opposed to sadness) and pride (as opposed to guilt) will facilitate confidence in those responses, leading to increased effectiveness of an advert. On the other hand, if cognitive responses are unfavorable, then happiness (as opposed to sadness) and pride (as opposed to guilt) will facilitate confidence in those negative responses, leading to decreased overall effectiveness of the advert. We therefore posited the following hypotheses:

Hypothesis 3: The effects of advert type on attitudes and purchase intentions will be greater for participants in the happiness condition compared to participants in the sadness condition (H3a), and in the pride condition compared to participants in the guilt condition (H3b).

Yet another way of analyzing the influence of thought validation on attitude change is to test the relationship between cognitive response favorability and attitudes as a function of validation through emotions. In line with the thought validation hypothesis (see Petty et al., 2002), we expected that the more individuals perceived their thoughts as valid, the stronger the relationship would be between cognitive response favorability and attitudes. Therefore:

Hypothesis 4: Cognitive response favorability will interact with emotions to predict both attitudes towards the product and behavioural intentions, such that cognitive response favorability (when included as a continuous predictor) will better predict attitudes and behavioural intentions for participants in the happiness versus sadness condition (H4a), and in the pride versus guilt condition (H4b). Thus, the main effect of cognitive response favorability on attitudes and behavioural intentions will be moderated as a function of the emotion made salient.

3. Methodology

3.1. Overview of the present research

The goal of the present research was to assess the effects of different advert personalization techniques on cognitive responses, emotions, and behavior when the emotional state experienced by a consumer follows the generation of cognitive responses.

3.2. Study 1

Study 1 was designed to provide an initial examination of the interplay between advert personalization and consumer emotions through a self-validation lens. Initially, all participants received an advert presenting either a snack of their choice (personalized condition) or another snack (non-personalized condition). They were then asked to list their thoughts about the snack brand. Next, participants' emotional state was manipulated by asking them to give a detailed description of a personal experience in which they felt happy or sad. Following the emotion induction, participants reported their attitudes and their buying intention towards products of the advertised brand. We hypothesized that exposure to the personalized advert would yield more positive attitudes and increased purchase intentions than the non-personalized advert. Moreover, for participants in the personalized (vs. non-personalized advert) condition, this pattern should produce more positive attitudes and higher purchase intentions for those in the happiness versus sadness condition.

3.2.1. Participants and design

An a priori power analysis was performed using G*Power (Faul et al., 2009), which assumed a small to medium value for the predicted key interaction (i.e., hypothesis 3) effect size (Cohen's $f = 0.22$; see Horcajo et al., 2020; Requero et al., 2020). Results of this analysis suggested that the desired sample size for a two-tailed test ($\alpha = 0.05$) with 0.80 power was $N = 165$. Our final sample ($N = 139$) was slightly below that estimate. One hundred thirty-nine undergraduate marketing students at Athens University of Economics and Business (61% female) participated

in the study as partial fulfillment for the requirements of a marketing course. Sufficient data were collected to be able to detect a moderately sized effect. Participants were randomly assigned to the cells of a 2 (Advert type: personalized vs. non-personalized) × 2 (emotion: happiness vs. sadness) between-subjects factorial design.

3.2.2. Procedure

Upon arrival at the lab, participants were seated at individual computer stations and were presented with all materials via Qualtrics software. All participants were told that they were going to participate in two different research projects. Specifically, participants were told that in the first project, Athens University of Economics and Business was considering the possibility of changing the restaurant facilities and menu. Participants were then asked to indicate the type of snacks they would like to see included on the new menu. Given that students typically spend many hours per day attending courses in the university and often purchased snacks and meals from the university restaurant, this topic was directly relevant to our participants. We used a topic of high personal relevance to motivate participants to thoughtfully process the information (Petty et al., 2002).

All participants originally received a question asking them to indicate if they preferred salty over sweet snacks. Next, participants received either an advert personalized to their preferences (i.e., an advertisement with a picture of sandwiches for participants who preferred salty snacks, or an advert including a picture of donuts for participants who preferred sweet snacks) or a non-personalized advert (i.e., an advertisement with a picture of sandwiches for participants who preferred sweet snacks, or an advert with a picture of donuts for participants who preferred salty snacks). Both types of products were offered by the same brand. Following the advert type induction, participants were asked to write down their cognitive responses regarding the brand associated with the snack proposed by the advert. All participants were given 5 min to write up to 10 cognitive responses about the brand of the products presented in the advert.

Next, participants were told that they would also be participating in a different study about prototypical reactions to certain types of situations. This is where the manipulation of emotion was introduced. Participants received instructions to recall and describe either a happy or a sad recent personal experience. Following this, participants were asked to indicate their attitudes and purchase intentions toward the advertised snacks' brand. Finally, participants completed the emotion manipulation checks and several ancillary questions, then were debriefed, thanked, and dismissed.

3.2.3. Independent variables

Advert Type. Personalization manipulation levels were adapted from previous research examining the effectiveness of advert personalization on consumers' consumption behavior (Bang and Wojdynski, 2016). Specifically, in our first study, we addressed personalization through taste. The concept of taste is a cornerstone of personalization research (Ho & Lim, 2018; Johar et al. 2014). In a study of food consumption, the authors demonstrated that taste captures a general, malleable inclination based on cognitive processes (Gronow, 1997). Taste-matching aims to offer a product to meet an individual's aesthetic taste (Benlian 2015). Participants in the personalized condition received a message about the snack they chose, whereas participants in the non-personalized condition received a message about the snack they did not choose. This manipulation was used to vary participants' thought direction, such that the personalized ad should lead participants to generate mostly favorable thoughts, and the non-personalized ad should lead them to generate mostly unfavourable thoughts. We expected this differentiated pattern in participants' thought direction given that the non-personalized ad condition involved a mismatch (Teeny et al., 2021).

Emotion. To manipulate participants' emotional state, we employed an induction method commonly used in the emotion and persuasion literature (Fetterman and Robinson, 2013; Briñol et al., 2007). Participants were asked to provide a vivid and detailed written report of either a happy or a sad past event, ostensibly as part of a research project on prototypical reactions to certain types of situations.

3.2.4. Dependent measures

Cognitive Responses Favorability: In order to assess cognitive response favorability, an independent judge, unaware of the experimental conditions, coded each of the cognitive responses provided by the participants using a 3-point scale (-1 = *unfavorable*, 0 = *neutral*, 1 = *favorable*¸ see Cacioppo et al., 1981; Petty and Cacioppo, 1986a, 1986b; for a description and discussion of the "thought listing" technique).[1] An index of cognitive response favorability was created using the following formula: Thought Favorability = (Number of favorable thoughts – Number of unfavorable thoughts)/(Number of favorable thoughts + Number of unfavorable thoughts). That is, for each participant, we first subtracted the total number of negative responses from the total number of positive responses. This score was then divided by the total number of advert-related thoughts (Cacioppo and Petty, 1981; Horcajo et al., 2020; Stavraki et al., 2021).

***Attitudes*:** In order to assess advert effectiveness, participants were asked to indicate their attitudes toward the brand's products using a series of three seven-point semantic differential scales (i.e., *bad-good, against-in favor, like-dislike*) on which they rated the advertised product. Ratings for these items were highly intercorrelated (α = 0.80), thus were averaged to form one overall attitude index. These specific items have been extensively used in research on emotion and attitudinal change (Briñol et al., 2007; Briñol et al., 2018; Stavraki et al., 2021) due to their broad nature, thus serving as an efficient measure to assess attitudes toward a multitude of topics.

Purchase intentions: We used a four-item, seven-point semantic differential scale previously validated and used in literature on consumer behavior (Chandran and Morwitz, 2005) to create a purchase intent index, for example, "how likely are you to buy the brand's products on offer?" (1 = "highly unlikely" to 7 = "highly likely"), Ratings on these items were highly intercorrelated (α = 0.86).

Emotion manipulation checks: In order to assess the effectiveness of the emotion manipulation, participants completed a manipulation check at the end of the study. Specifically, participants were asked to indicate the degree of happiness and sadness they experienced while doing the study using a seven-point (1 = "not at all" to 7 = "very much") Likert-type scale. These measures have been previously used and validated as an effective way to assess participants' emotional state (Stavraki et al., 2021).

3.2.5. Results

Cognitive Responses Favorability: Consistent with our expectations (H1), a 2 (Advert Type: Personalized vs. non-Personalized) × 2 (Emotion: Happiness vs. Sadness) analysis of variance (ANOVA) on cognitive responses revealed that participants' cognitive responses were more favorable toward the advertised brand's products after receiving the personalized advert, in both the happiness (M = 0.74, SD = 0.33) and sadness conditions (M = 0.71, SD = 0.44), rather than the non-personalized one in both the happiness (M = -0.02, SD = 0.47) and sadness conditions (M = 0.21, SD = 0.57), $F(1, 135) = 65.56$, $p < .001$, $\eta^2_p = .33$). No further effects reached significance ($ps > 0.10$).

Attitudes: Consistent with hypothesis (H1), an ANOVA on attitudes revealed a main effect of advert type, ($F(1, 135) = 55.83$, $p < .001$, $\eta^2_p = .29$), such that participants' attitudes were more favorable toward the advertised brand's products after receiving the personalized advert (M = 5.22, SD = 0.92) than the non-personalized advert (M = 4.04, SD = 0.96). More critical to our primary hypothesis (H3a), the predicted two-way interaction between advert type and emotion was significant, $F(1, 135) = 8.51$, $p = .004$, $\eta^2_p = .06$.

[1] The percentage of neutral thoughts is 10.1% in this study.

This interaction revealed that the effect of advert type on attitudes was greater for participants in the happiness than sadness condition. That is, the happy participants, those who received the personalized advert, reported significantly more favorable attitudes toward the advertised brand's products ($M = 5.37$, $SD = 0.91$) compared to those who received the non-personalized one ($M = 3.74$, $SD = 0.92$, $F(1, 135) = 55.60$, $p < .001$, $\eta^2_p = .29$). For participants in the sadness condition, attitudes towards the advertised brand's products were also more favorable after receiving the personalized ($M = 5.03$, $SD = 0.91$) rather the non-personalized advert ($M = 4.31$, SD = 0.92, $F(1, 135) = 10.01$, $p = .002$, $\eta^2_p = .07$), although, as indicated by the significant Advert Type × Emotion interaction this difference was significantly reduced (See Fig. 1).

Cognitive Response Favorability – Attitudes correspondence: Consistent with the self-validation prediction, we hypothesized (H4a) that participants in the happiness condition would use their cognitive responses more than participants in the sadness condition when forming attitudes, because the increased confidence that accompanies happiness (compared to decreased confidence that accompanies sadness) would be attributed to their cognitive responses in response to the advert, thus increasing their perceived validity. This means that the favorability of the cognitive responses generated towards the advertised brand's products would have a greater impact on attitudes for individuals feeling happy rather than sad. A commonly employed way to examine cognitive responses' use is to examine the correlation between cognitive response favorability and attitudes (Briñol et al., 2018; Stavraki et al., 2021). Specifically, the more people are relying on their cognitive responses, the larger the correlation should be between cognitive response favorability and attitudes. Thus, we examined the cognitive response favorability-attitude relationship across the predicted emotional validation and invalidation conditions. Put simply, we expected emotions to moderate the effects of cognitive response favorability on attitudes.

To test the hypothesized moderation, we conducted a bias corrected bootstrapping procedure with 10,000 bootstrap resamples using Hayes process macro (Model 1; Preacher and Hayes, 2004; Shrout and Bolger, 2002). In this analysis, Cognitive Response Favorability was the independent variable, Attitudes toward the advertised brand's products was the dependent variable, and Emotions was the moderating variable. As predicted, regressing Attitudes towards the advertised brand's products onto Cognitive Response Favorability, Emotions, and their interaction term, revealed a significant main effect of Cognitive Response Favorability on Attitudes towards the advertised brand's products ($B = 1.189$, $t(136) = 8.496$, $p < .001$, 95% CI: 0.912, 1.465), indicating that Cognitive Response Favorability was associated with attitude favorability. Moreover, and crucial to one of our hypothesis (H4), a significant interaction between Cognitive Response Favorability and Emotions was obtained ($B = 0.633$, $t(135) = 4.893$, $p < .001$, 95% CI: 0.377, 0.889). In line with H4a, this pattern of results revealed that Cognitive Response Favorability was more predictive of attitudes towards the advertised brand's products for participants in the happiness condition ($B = 1.814$, $t(135) = 9.937$, $p < .001$, 95% CI: 1.454, 2.174), compared to those in the sadness condition ($B = 0.548$, $t(135) = 2.973$, $p = .004$, 95% CI: 0.183, 0.912). There was no main effect of Emotions ($p = .60$).

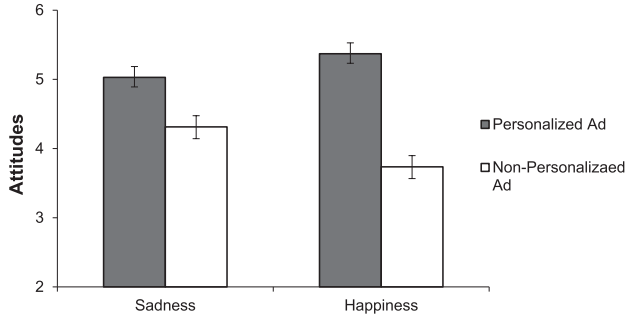

Fig. 1. Study 1. Attitudes towards brand's products as a function of Advert Type and Emotion.

Purchase intentions: Similar to the attitudinal analysis, responses to the purchase intention scales were scored so that higher values represented higher purchasing intention towards the advertised brand's products. Consistent with our hypothesis (H1), a 2 (Advert Type: Personalized vs. Non-Personalized) × 2 (Emotion: Happiness vs. Sadness) ANOVA on purchase intentions revealed a main effect for advert type, such that participants reported greater purchase intentions toward the advertised brand's products after receiving the personalized advert ($M = 4.81$, $SD = 1.07$) than the non-personalized advert ($M = 3.37$, $SD = 1.22$, $F(1, 135) = 58.08$, $p < .001$, $\eta^2_p = .30$). More critical to our primary hypothesis (H3a), the predicted two-way interaction between advert type and emotion was significant, $F(1, 135) = 6.07$, $p = .015$, $\eta^2_p = .04$.

This interaction revealed that the effect of advert type on purchase intentions was greater for participants induced to feel happiness than those induced with sadness. That is, for participants in the happiness condition, those who received the personalized advert reported significantly greater purchase intentions toward the advertised brand's products ($M = 4.88$, $SD = 1.08$) compared to those who received the non-personalized one ($M = 2.99$, $SD = 1.10$, $F(1, 135) = 52.38$, $p < .001$, $\eta^2_p = .28$). For participants in the sadness condition, purchase intentions towards the proposed snack were also more favorable after receiving the personalized ($M = 4.74$, $SD = 1.08$) than the non-personalized advert ($M = 3.75$, $SD = 1.20$), $F(1,135) = 12.92$, $p < .001$, $\eta^2_p = .09$, although as indicated by the significant Advert Type × Emotion Interaction, this difference was significantly reduced (See Fig. 2).

Cognitive Response Favorability – Purchase intentions correspondence: As predicted, regressing Purchase intentions onto Cognitive Response Favorability, Emotions, and their interaction term, revealed a significant main effect of Cognitive Response Favorability on Purchase Intention towards the advertised brand's products ($B = 1.262$, $t(136) = 7.016$, $p < .001$, 95% CI: 0.906, 1.617), indicating that Cognitive Response Favorability was associated with increased purchasing intentions. Moreover, the hypothesized interaction between Cognitive Response Favorability and Emotions was obtained (H4a), ($B = 0.558$, $t(135) = 3.208$, $p = .002$, 95% CI: 0.214, 0.902). Decomposition of the interaction revealed that Cognitive Response Favorability was more predictive of purchasing intentions for participants in the happiness condition ($B = 1.813$, $t(135) = 7.414$, $p < .001$, 95% CI: 1.329, 2.297), compared to those in the sadness condition ($B = 0.697$, $t(135) = 2.813$, $p = .006$, 95% CI: 0.207, 1.186). There was no main effect of Emotions ($p = .59$).

Emotion manipulation checks: To assess the effectiveness of our emotional inductions, we submitted each of the emotion manipulation check items to a 2 (Advert Type: Personalized vs. non-Personalized) × 2 (Emotion: Happiness vs. Sadness) ANAOVA. Participants in the happiness condition reported significantly more happiness ($M = 4.71$, $SD = 1.29$) than participants in the sadness condition ($M = 4.05$, $SD = 1.25$, $F(1, 135) = 8.10$, $p = .005$, $\eta^2_p = .06$). Moreover, an unexpected effect emerged for the effect of personalized advert on the happiness manipulation check, such that participants who received the personalized advert reported greater experienced happiness ($M = 4.93$, $SD = 1.15$) than those who received the non-personalized one ($M = 4.38$, $SD = 1.43$), although the effect did not reach significance ($F(1, 135) = 3.64$, $p = .060$, $\eta^2_p = .03$). No significant interaction emerged ($p = .51$). For the sadness manipulation control check, we obtained the hypothesized pattern of results, such that participants in the sadness condition reported a significantly greater experience of sadness ($M = 5.06$, $SD = 1.70$) than those in the happiness condition ($M = 1.84$, $SD = 1.41$, $F(1, 135) = 140.89$, $p < .001$, $\eta^2_p = .51$). No other significant main or interaction effects emerged ($ps > 0.21$). This analysis confirmed the success of our emotion induction.

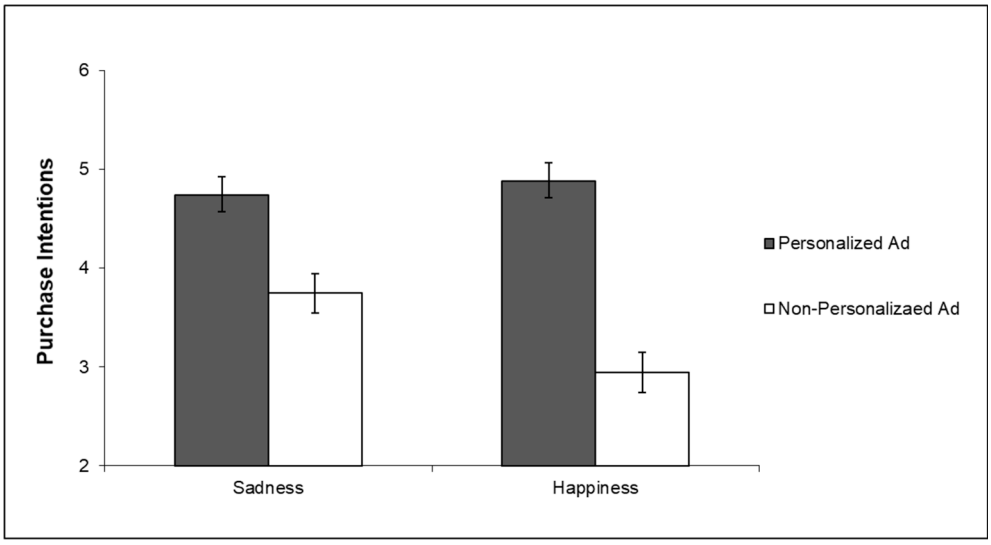

Fig. 2. Study 1. Purchase intentions towards brand's products as a function of Advert Type and Emotion.

3.3. Study 2

The second study was designed as a conceptual replication of Study 1, and aimed to both replicate and extend our results to new emotions (pride and guilt), while also addressing the controversial findings obtained in previous research by identifying conditions in which advert personalization may lead to unfavorable cognitive responses, thus reducing overall advert effectiveness. Moreover, in this study we aimed to identify conditions in which new emotions, when experienced in a *meta*-cognitive context, can enhance, neutralize or even make the effects of different types of personalized adverts on consumers' attitudes and behavior disappear, by (in)validating cognitive responses. Similar to Study 1, advert type and specifically the type of data mining technique used for advert personalization, was expected to affect the degree of cognitive response favorability experienced, and the post-experienced emotion was expected to affect the confidence of cognitive responses. We predicted that emotion would interact with the cognitive response favorability resulting from the personalized (overt vs. covert) advert, influencing participants' overall attitude and buying intention towards the brand's products.

3.3.1. Participants and design

One hundred twenty-six participants were recruited via Amazon's Mechanical Turk website (www.mturk.com). Each participant was compensated $2.20 USD for their time (41% female; $M_{age} = 36.87$ years, $SD = 10.17$). Participants were randomly assigned to the cells of a 2 (Advert Type: Overt vs. Covert Information Collection) × 2 (Emotion: Pride vs. Guilt) between-subjects factorial design. In order to calculate sample size, we conducted a power analysis using G*Power (Faul et al., 2007). Based on the two-way interaction effect observed in Study 1 ($\eta^2_p = .06$), we anticipated that the desired sample size for a two-tailed test ($\alpha = 0.05$) of this interaction with 0.80 power was $N = 125$. Nine participants were excluded from the total sample because they failed to follow instructions or provide valid responses on the dependent measures.

3.3.2. Procedure

All participants were first informed that they were going to participate in two different research projects, then were asked to build an online shopper profile by filling out a form that included their demographic characteristics. After reporting their personal information, participants completed an unrelated filler task, followed by the introduction of the advert. Half of the participants received a personalized advert based on overt data collection, whereas the other half received the same personalized advert based on covert data collection. Similar to Study 1, participants were then given five minutes to write up to ten cognitive responses about the product presented in the advert. As part of the second research project, the manipulation of emotion was introduced. Participants received instructions to recall and describe a recent episode in which they experienced pride or guilt. After completing both inductions, participants were asked to indicate their attitudes and buying intention toward the advertised brands' products, as well as their confidence in their cognitive responses. Finally, participants completed the emotion manipulation checks, together with other control measures.

3.3.3. Independent variables

Advert Type: Participants viewed adverts for beverages, ostensibly to assess consumer attitudes and purchase intentions towards a new brand. Next, participants were asked to build an online shopper profile. To complete their profile, participants were asked to provide information such as their name and location, demographics that were used for ad personalization in our study. All participants received a personalized advert based on either an overt or covert data mining technique. The operationalization of personalization was adapted from similar lines of research (Aguirre et al., 2015; Bang & Wojdynski, 2016; Kim, Barasz, & John 2019). Specifically, participants in the overt personalization condition were further informed: "In order to provide targeted online adverts for you, marketers can rely on [the information that you have given them voluntarily]" (versus [information about the world's overall beverage consumption] in the covert personalization condition; Kim, Barasz, & John 2019).

Emotion: Similar to Study 1, the participants' emotional state was manipulated by asking them to write about past personal episodes related to pride or guilt, a common emotional induction method (Dorfman, Eyal, and Bereby-Meyer, 2014).

3.3.4. Dependent measures

Cognitive Responses Favorability: Similar to Study 1, an independent judge coded cognitive response favorability using the same three-point scale (-1 = *unfavorable*, 0 = *neutral*, 1 = *favorable*), from which an index of cognitive response favorability was created for each participant.[2]

Cognitive Responses Confidence: In Study 1, and in line with

[2] The percentage of neutral thoughts in this study was 11.1%.

previous lines of research examining the role of emotions on thought validation effects, our results suggested that emotions validated participants' previously generated cognitive responses (Briñol et al., 2007; Briñol et al., 2018: Stavraki et al., 2021). In order to directly examine if emotions affected confidence attributed to cognitive responses, in this second study, after the emotion induction task and before measuring attitudes and purchasing intentions toward the proposed brand's products, participants were asked to think back to the cognitive responses that they listed and to rate their overall confidence in those cognitive responses. Confidence was rated on a seven-point semantic differential scale anchored at 1 (*not at all confident*) and 7 (*extremely confident*). This way of assessing confidence in cognitive responses has been previously used and validated in several studies that have examined the effects of emotions on cognitive and *meta*-cognitive processes (Briñol et al., 2007; Briñol et al., 2018; Stavraki et al., 2021).

Attitudes: Similar to Study 1, participants' attitudes towards the products advertised by the brand were assessed using a series of three, seven-point semantic differential scales (i.e., *bad–good, against-in favor, like-dislike*). Ratings were highly intercorrelated ($\alpha = 0.92$), thus were averaged to form one overall attitude index. Higher scores reflected more positive attitudes.

Purchase Intentions: To assess purchase intentions, we used the same four-items as Study 1 to create a purchase intent index (Chandran and Morwitz, 2005). Ratings on these items were highly intercorrelated ($\alpha = 0.94$). Higher scores reflected greater purchase intentions.

Emotion Manipulation Check: Similar to study 1, assessment of the effectiveness of our emotion manipulation was undertaken by asking participants to indicate the degree of pride and guilt they experienced using a seven-point (1 = *Not at all*, 7 = *Very much*) Likert scale.

3.3.5. Results

Dependent Measures

Cognitive Responses Favorability: Consistent with our expectations (H2), the 2 (Advert Type: Overt vs. Covert information collection) × 2 (Emotion: Pride vs. Guilt) ANOVA on cognitive responses revealed that participants' cognitive responses were more favorable toward the advertised brand's products after receiving the personalized advert based on overt information collection both in pride ($M = 0.78$, $SD = 0.32$) and guilt ($M = 0.47$, $SD = 0.47$) conditions than the personalized advert based on covert information collection in both pride ($M = -0.23$, $SD = 0.56$) and guilt $M = -0.20$, $SD = 0.62$) conditions , $F(1, 122) = 77.95$, $p < .001$, $\eta^2_p = .39$). There were no other significant main or interaction effects ($ps > 0.08$).[3]

Cognitive Responses Confidence: In line with the self-validation hypothesis, a 2 Advert Type (Overt vs. Covert information Collection) × 2 Emotion (Pride vs Guilt) ANOVA on confidence attributed to cognitive responses revealed only a significant main effect of the emotion manipulation $F(1, 121) = 10.05$, $p = .002$, $\eta^2_p = .080$. Participants in the pride condition reported significantly more confidence in their cognitive responses ($M = 5.96$, $SD = 0.97$) compared to participants in the guilt condition ($M = 4.99$, $SD = 1.76$). No other significant effects emerged ($ps > 0.34$). This analysis indicates that participants induced to feel pride (an emotion associated with increased confidence) attributed this confidence to their cognitive responses, that in turn were perceived as more valid, compared to participants induced to feel guilt (an emotion associated with decreased confidence).

Attitudes: Consistent with our hypotheses (H2), the 2 (Advert Type : Overt vs. Covert Information Collection) × 2 (Emotion: Pride vs. Guilt) ANOVA on attitudes revealed a main effect for the type of personalized advert, such that participants' attitudes were more favorable toward the advertised brand's products after receiving the personalized advert based on overt information collection ($M = 5.74$, $SD = 1.02$) than the personalized advert based on covert information collection ($M = 4.81$, $SD = 1.74$, $F(1, 122) = 27.70$, $p < .001$, $\eta^2_p = .19$).

As expected, the main effect of emotional manipulation on the attitudinal dependent measure was not significant ($p > .10$). More critical to our primary hypothesis (H3b), the predicted two-way interaction between personalized advert and emotional manipulation was significant ($F(1, 122) = 29.16$, $p < .001$, $\eta^2_p = .19$).

This interaction revealed that the effect of cognitive responses, as a result of the type of advert personalization on attitudes, was greater for participants in the pride than in the guilt condition. That is, for participants in the pride conditions, those who received the personalized advert based on overt information collection, reported significantly more favorable attitudes toward the advertised brand's products ($M = 6.18$, $SD = 0.71$) compared to those who received the personalized

[3] ***Advert intrusiveness:*** We expect intrusiveness to be influenced by the type of personalization of the targeted advert. Following White et al. (2008), we apply the concept of intrusiveness, such that the type of data collection method used for advert personalization determines the degree to which the personal information identifies or characterizes its recipient with or without being explicitly informed about the use of their personal information. Harvesting and adding information such as location and names to an advert greatly increases its distinctiveness, and, in cases where consumers are unaware of the use of their personal information, also its intrusiveness which affects cognitive and behavioral responses to online adverts. In order to assess an advert's perceived intrusiveness, we used a ten item scale previously validated and used to examine the level of advert intrusiveness underlying favorable and unfavorable cognitive responses to adverts (Van Doorn and Hoesktra, 2013). Adapted versions of this scale have been used in different studies to investigate the effects of advert intrusiveness on consumers' responses towards the advert (Edwards, Li, and Lee; 2002; Li, Edwards, and Lee, 2002). All items were answered using a seven-point scale, with response categories from 'strongly disagree' to 'strongly agree'. Ratings on these items were highly intercorrelated ($\alpha = 0.98$), so they were averaged to form one overall advert intrusiveness index.We hypothesized that advert intrusiveness would significantly differ depending on the type of advert personalization. To test our hypothesis, we submitted our Advert Intrusiveness index to a 2 (Advert Type: Overt vs. Covert information collection) × 2 (Emotion: Pride vs. Guilt) ANOVA. In line with our hypothesis, participants in the covert information collection reported significantly more perceived advert intrusiveness ($M = 4.00$, $SD = 1.88$) compared to participants in the overt information collection ($M = 3.32$, $SD = 2.03$, $F(1, 121) = 5.81$, $p = .017$, $\eta^2_p = .05$). No other significant main or interaction effects emerged ($ps > 0.10$).

advert based on covert information collection ($M = 3.65$, $SD = 1.66$, $F(1, 122) = 46.73$, $p < .001$, $\eta^2_p = .28$). For participants in the guilt conditions, the difference was not significant. Specifically, participants' attitudes towards the advertised brand's products were more favorable after receiving the personalized advert based on covert information collection ($M = 5.33$, $SD = 1.53$) than the personalized advert based on overt information collection ($M = 5.29$, $SD = 1.10$), although this difference was not significant, $F(1, 122) = 0.012$, $p = .914$, $\eta^2_p < .001$ (See Fig. 3).

Cognitive Responses Favorability – Attitudes Correspondence: We expected (H4b) that participants in the pride condition would use their cognitive responses more than participants in the guilt condition when forming attitudes. This means that the favorability of the cognitive responses generated towards the advertised brand's products would have a greater impact on attitudes for individuals feeling proud rather than guilty. Put simply, as in study 1, we expected emotions to moderate the effects of cognitive response favorability on attitudes.

As predicted, regressing Attitudes towards the advertised brand's products onto Cognitive Response Favorability, Emotions, and their interaction term, revealed a significant main effect of Cognitive Response Favorability on Attitudes ($B = 1.359$, $t(123) = 8.202$, $p < .001$, 95% CI: 1.031, 1.686), indicating that Cognitive Response Favorability was associated with attitude favorability. Moreover, and crucial to hypothesis (H3b), the interaction between Cognitive Response Favorability and Emotions was significant ($B = 0.746$, $t(122) = 4.796$, $p < .001$, 95% CI: 0.438, 1.054). Consistent with the self-validation approach and as hypothesized, this pattern of results revealed that Cognitive Response Favorability was more predictive of participants' attitudes towards the advertised brand's products when placed in the pride ($B = 2.250$, $t(122) = 9.358$, $p < .001$, 95% CI: 1.773, 2.725), than in the guilt condition ($B = 0.758$, $t(122) = 3.839$, $p = .002$, 95% CI: 0.367, 1.774). Finally, an unexpected main effect of Emotions was obtained ($B = -0.231$, $t(123) = -2.071$, $p = .040$, 95% CI: −0.452, −0.010), indicating that attitudes were more favorable in the guilt than in the pride condition.

Purchase Intentions: Consistent with our hypothesis (H2), a 2 (Advert Type: Overt vs. Covert Information Collection) × 2 (Emotion: Pride vs. Guilt) ANOVA on purchase intentions revealed a main effect for the type of personalized advert, such that participants reported greater purchase intentions toward the advertised brand's products after receiving the personalized advert based on overt information collection ($M = 5.59$, $SD = 1.25$) than the personalized advert based on covert information collection ($M = 4.78$, $SD = 1.83$, $F(1, 122) = 14.68$, $p < .001$, $\eta^2_p = .11$). As expected, the main effect of emotional manipulation on the behavioral dependent measure was not significant ($p = .78$). However, more critical to our primary hypothesis (H3b), the predicted two-way interaction between personalized advert and emotional manipulation was significant ($F(1, 122) = 17.41$, $p < .001$, $\eta^2_p = .13$).

This interaction revealed that the effect of personalized advert type on purchase intentions was greater for participants induced to feel pride than those induced to feel guilt. That is, for participants in the pride condition, those who received the personalized advert based on overt information collection reported significantly greater purchase intention toward the advertised brand's products ($M = 6.12$, $SD = 0.72$) compared to those who received the personalized advert based on covert information collection ($M = 3.93$, $SD = 1.91$) $F(1, 122) = 26.33$, $p < .001$, $\eta^2_p = .18$). However, for participants in the guilt condition, the difference in purchase intention was not significant. Specifically, although participants' purchase intention towards the advertised brand's products was greater after receiving the personalized advert based on covert information collection ($M = 5.15$, $SD = 1.69$) than the personalized advert based on overt information collection ($M = 5.05$, $SD = 1.46$), this difference was not significant, $F(1, 122) = 0.074$, $p = .785$, $\eta^2_p = .001$ (See Fig. 4).

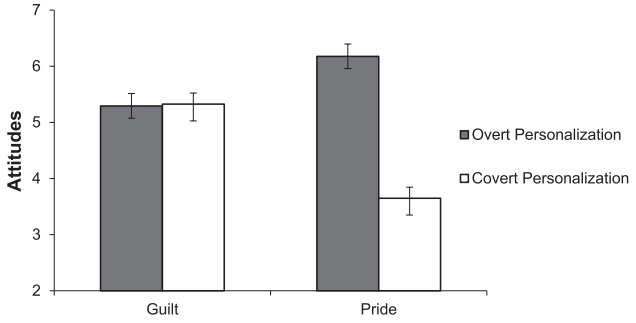

Fig. 3. Study 2. Attitudes towards brand's products as a function of Advert Type and Emotion.

Cognitive Response Favorability – Purchase Intentions Correspondence: Similar to the Cognitive Response Favorability-Attitude correspondence analysis, we hypothesized (H4b) that participants' purchase intentions would be affected to a greater extent by their cognitive responses towards the advertised brand's products when placed in the pride condition than in the guilt condition.

The same analysis was conducted but in this case with Cognitive Response Favorability as the independent variable, Purchase Intentions towards the advertised brand's products as the dependent variable, and Emotions as the moderating variable. As predicted, regressing Purchase Intentions onto Cognitive Response Favorability, Emotions, and their interaction term, revealed a significant main effect of Cognitive Response Favorability on Purchase Intention towards the advertised brand's products ($B = 1.366$, $t(123) = 7.369$, $p < .001$, 95% CI: 0.999, 1.733), indicating that higher Cognitive Response Favorability (more favourable cognitive responses) was associated with increased purchasing intentions. Moreover, the hypothesized interaction between Cognitive Response Favorability and Emotions was obtained ($B = 0.550$, $t(122) = 3.005$, $p = .003$, 95% CI: 0.188, 0.913). Untangling this interaction revealed that Cognitive Response Favorability was more predictive of purchasing intentions for participants in the pride condition ($B = 2.024$, $t(122) = 7.149$, $p < .001$, 95% CI: 1.463, 2.584), than in the guilt condition ($B = 0.923$, $t(122) = 3.971$, $p < .001$, 95% CI: 0.463, 1.383). No main effect of Emotions emerged ($p = .43$).

Emotion Manipulation Check: To assess the effectiveness of our emotional manipulation, we submitted each of the emotion manipulation check items to a 2 (Advert Type: Overt vs. Covert Information Collection) × 2 (Emotion: Pride vs. Guilt) ANOVA. Participants in the pride condition reported significantly more pride ($M = 5.38$, $SD = 1.26$) than participants in the guilt condition ($M = 3.95$, $SD = 1.80$), $F(1, 121) = 20.19$, $p < .001$, $\eta^2_p = .14$. No other significant main or interaction effects emerged ($ps > 0.29$). For the guilt manipulation control check, we obtained the hypothesized pattern of results, such that participants placed in the guilt condition reported significantly more guilt ($M = 5.15$, $SD = 1.33$) than participants in the pride condition ($M = 3.50$, $SD = 2.37$), $F(1, 135) = 20.17$, $p < .001$, $\eta^2_p = .14$. No other significant main or interaction effects emerged ($ps > 0.32$). This analysis confirmed that our manipulation of emotion was successful.

4. Discussion and conclusions

4.1. Theoretical contributions

While the vast amount of free and easily leverageable UGC embedded in adverts with or without consumers' awareness has given rise to relatively inexpensive advert personalization opportunities, the objective of this research was to go beyond the well-established notion that 'personalized advertising is effective'. We demonstrated circumstances in which data mining techniques and incidental factors, such as emotions, can attenuate this effect or even make it disappear. Using a multidisciplinary approach that combined marketing research on personalized advertising (Aguirre et al., 2015) and theories of

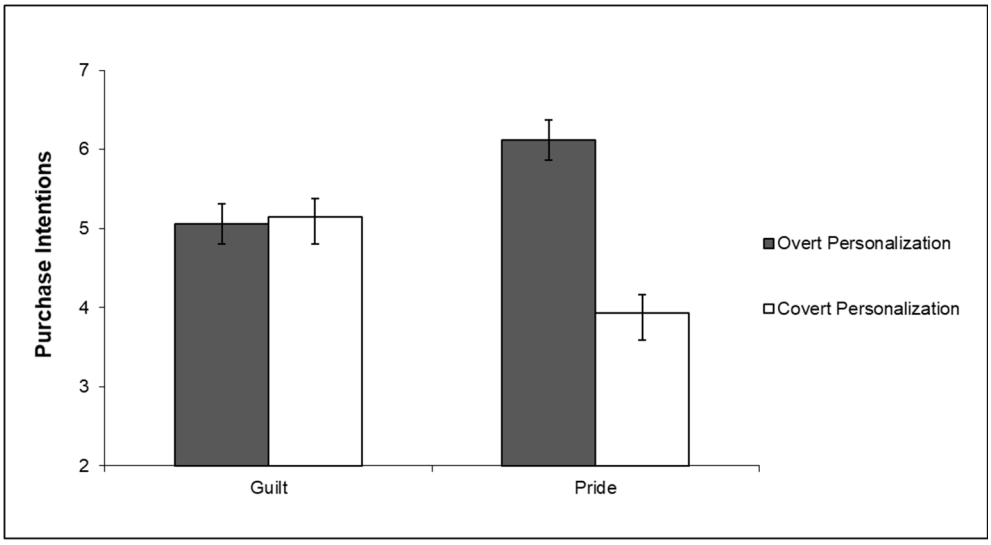

Fig. 4. Study 2. Purchase intentions towards brand's products as a function of Advert Type and Emotion.

metacognitive emotional validation (Briñol et al., 2007; 2018) as our main theoretical lenses, we designed and carried out two studies to explore the effects of different data mining techniques and the levels of perceived intrusiveness associated with these techniques on consumers' responses, as well as examining the interplay of those responses with incidental emotions.

In Study 1, and in line with previous studies (Maslowska, Smit, and van den Putte, 2016), our findings suggest that personalized online adverts based on explicit overt and voluntary data evoke more favorable responses than non-personalized adverts. This positive effect of advert personalization was significantly enhanced when consumers experienced an emotion characterized by increased pleasantness and confidence (e.g., happiness) after they received the personalized advert, but reduced when consumers experienced sadness, an emotion associated with unpleasantness and doubt. Personalized adverts evoked favorable cognitive responses. When these were followed by happiness, the effects of personalized adverts on consumers' product evaluation and purchasing intentions were enhanced. The opposite was the case for the emotion associated with decreased confidence and pleasantness. That is, sadness attenuated the effect of cognitive responses on product evaluations and purchasing intentions by invalidating cognitive responses, thus leading to less favorable product evaluations and weaker purchase intentions. Our research replicated previous findings regarding the effects of emotional validation on attitudinal outcomes (Briñol et al., 2007; 2018; Stavraki et al., 2021) and expanded these effects on behavior-related outcomes in a consumer's decision-making framework, suggesting that emotional validation may affect consumer behavior.

Moving beyond the replication of previous studies regarding the role of emotional influences in the context of UGC and closer to a data mining techniques investigation, a second theoretical contribution pertains to our findings on the relative effectiveness of user data collection methods. To the best our knowledge, Study 2 is the first empirical study that has examined the moderating role of cognitive response favorability derived from data collection techniques on the effectiveness of personalized adverts, thus bridging previous contradictory findings about personalized advert effectiveness (Aguirre et al., 2015; Tucker, 2014). Our findings suggest that overt strategies of collecting user data for advert personalization purposes (e.g., using GDPR compliance forms and informing consumers about the potential use of their data) evoked favorable responses. Moreover, and crucial to the contribution of the present research, covert data collection practices for personalization purposes, outside of consumers' awareness (e.g., observing navigation patterns and using GPS location tracking systems), elicited privacy concerns and negative cognitive responses, as explained by the increased advert intrusiveness that participants experienced (Tucker, 2014).

Further, we examined the concomitants of two newly examined emotions in the context of emotional validation: pride and guilt. Experienced pride, an emotion associated with pleasantness and confidence, polarized the effects of personalization on product evaluation and purchase intentions. When personalization is based on overt information gathering techniques and favorable cognitive responses are generated, pride validated these cognitive responses, leading to more favorable product evaluations and increased purchasing intentions. On the other hand, when personalization was based on covert information gathering techniques, which generated negative cognitive reactions, pride validated these unfavorable cognitive responses, thus leading to more unfavorable product evaluations and decreased purchasing intentions. Interestingly, the emotion of guilt invalidated consumer cognitive responses, leading to equally favorable attitudes and non-significantly different purchasing intentions after being exposed to personalized adverts based on both overt and covert tactics. According to our findings, the emotion of guilt (and probably other emotions sharing similar unpleasant and doubtful post-experience effects, such as sadness), should be identified and used responsibly in an advertising context, since it can alleviate the negative effects of privacy concerns and the potential advert intrusiveness experienced by consumers derived from covert data mining techniques.

4.2. *Managerial implications*

Our work's findings have important implications for advertisers and marketing managers interested in applying a personalized online advertising approach to consumers. As advert personalization through UX monitoring, UGC mining, search engine analytics tracking, and other contemporary techniques has evolved into a relatively easy and inexpensive marketing technique (Banerjee, 2019), practitioners often collect and analyze personal information about users. Previous research has identified ethical risks associated with personalized adverts, such as the exploitation and objectification of consumers, or a "chilling effect" whereby consumers, "are discouraged from conducting internet searches, making purchases, or using specific consumer services because of personalized advertising applications" (Finn and Wadhwa, 2014, p.26). Our study suggests that informed and ethical advertising is crucial, and that marketing practitioners should always take into consideration privacy rights and ethical issues (e.g., who owns and who

controls consumer data, when does personalization become intrusive, GDPR, etc.), and importantly, only try to engage in overt data collection processes by asking consumers for all relevant information needed. Netflix, for example, gives its viewers the opportunity to directly update their preferences, resulting in a less invasive practice, which can also lead to better recommendations.

When this approach is not possible or practical, covert strategies need to be used in moderation. Our research's findings provide new evidence that such techniques should be used cautiously and responsibly so that negative, unwanted, personalization effects are avoided. Specifically, personalized advert effectiveness is directly related to the transparency of data mining techniques and a genuine commitment to disclose how users' information has been collected and is being used. Amazon's product recommendations, for example, are made based on previous purchase and viewing history – a statement that is shown explicitly and conspicuously throughout its website without alienating consumers (John et al., 2018). Further, when ad personalization is likely to be perceived by consumers as useful or needed, this could minimize feelings of intrusion and privacy concerns (Bleier and Eisenbeiss, 2015). Advertisers, therefore, need to provide an explicit justification for using consumers' data usage. Users respond more favourably to personalized ads when the personalization is justified by the brand (e.g., an offer valid only to people in a specific area; White et al., 2008).

Another set of implications from our study stems from the role emotions play on the effectiveness of personalized adverts. Apart from the avoidance of covert data mining techniques, our results revealed that incidental factors such as emotions may enhance or attenuate the effects of advert personalization. In order to achieve efficiency optimization, marketers should focus on eliciting pleasant emotions, such as happiness and pride, in consumers characterized by increased confidence. Advertisers may, therefore, try to make consumers feel happy and proud after the personalized message is presented (e.g., by adding relevant cues and stimulus). Similarly, companies could use sentiment analysis and UGC monitoring tools to identify those market segments with greater acceptance of advertising cues that elicit positive or negative emotions after the display of the main advert message (Mingione, Cristofaro, and Mondi, 2020). Finally, our findings suggest a threat to consumers and a potential opportunity for the irresponsible use of data. When negative emotions such as guilt are elicited following an advert, concerns for users' privacy and protests against personalized adverts from covert data collection seem to be neutralized. It is up to regulators, therefore, to ensure that consumers' data are collected fairly, lawfully, and for explicit and legitimate purposes.

4.3. Limitations and suggestions for future research

Although the findings of the current research provide an extension to previous work on self-validation processes in consumer behavior, they should be qualified by some limitations which offer opportunities for future research. Firstly, while this study advances our understanding on the interplay between personalized messages and users' emotions, our focus has been on the emotions elicited after the personalization of the message. Future research could consider how previously held emotions (e.g., by identifying and quantifying feelings or emotional states expressed in users' tweets; Mingione, Cristofaro, and Mondi, 2020), or experience in work related contexts (Bajo et al., 2021), affect the effectiveness of personalized adverts through message elaboration processes instead of cognitive response validation.

Another important limitation concerns the methodology used in both studies. While experimental methodology is extensively used for obtaining accurate behavioral results, our studies are conducted in a relatively sterilized and isolated environment. It would be interesting to see the extent to which the emotional validating effects of personalized adverts can be replicated in a more naturalistic environment, as in the case of a field experiment where consumers' interaction is quantified by actual monetary exchanges, while also being influenced from environmental cues. Future studies could address these issues by replicating and expanding our findings in different emerging contexts, such as virtual reality (Martínez-Navarro, Bigné, Guixeres, Alcañiz, and Torrecilla, 2019), and using different samples and methods.

Finally, the present research relied on a convenience sample of college students (prime consumers of snacks) in study 1. Although the key effect was obtained whether students (study 1) or mturkers (study 2) were used as participants, suggesting that this effect is not critically dependent upon the type of sample, future studies could add to the literature on this topic by replicating this effect using a more diverse sample regarding sociodemographic variables, as well as other types of populations (Peterson & Merunka, 2014).

CRediT authorship contribution statement

Lamprinakos Grigorios: . **Solon Magrizos:** Conceptualization, Writing – original draft, Writing – review & editing. **Ioannis Kostopoulos:** Writing – review & editing, Conceptualization, Data curation. **Dimitrios Drossos:** Funding acquisition. **David Santos:** Writing – review & editing, Writing – review & editing, Formal analysis.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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