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## Like or dislike? Adolescents' responses to personalized social network site advertising

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### ABSTRACT

Increasingly, personal data posted by users of social network sites (SNSs) can be used to personalize advertising. The present study investigates how adolescents respond to personalized ads in terms of attitude toward the ad, brand engagement and intention to forward, and whether privacy concerns moderate their responses. According to pretest results, a medium level of personalization was expected to be optimal in terms of advertising effectiveness. A within-subjects experiment involving 40 participants aged 14–18 years was performed. Three conditions of personalized advertising were designed with, respectively, low, medium, and high levels of personalization. The study found that the highest personalization condition generated the most positive response and that privacy concerns did not moderate the effects of personalization. The privacy paradox is discussed as an alternative explanation, along with other implications of the results.

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Personalization; social network site; privacy; privacy paradox; adolescence

## Introduction

Social network sites (SNSs) have permeated adolescents' lives. More than eight of 10 teenagers in the US and the EU have personal pages on at least one SNS (Duggan and Smith 2013; EU Kids Online 2014). These online communication venues offer adolescents specific opportunities that match important developments they experience in their personal life. Adolescence, roughly defined as the second decade of an individual's life span marking the transition between childhood and adulthood, is characterized by important physical (i.e., puberty), cognitive, and emotional developments (Lerner and Steinberg 2009). Moreover, adolescents develop a broader range of social relationships. In this context, SNSs play an important role. Adolescents create profiles on SNSs to keep up-to-date with social contacts and expand their social circles (Steijn 2014; Stutzman, Gross, and Acquisti 2012). Young people can easily develop their profile page, by adding pictures and other personal information and engage in self-narratives (Walrave, Heirman, and Van Gool 2013). In fact, SNSs revolve around self-disclosure. In general, the act of self-disclosure plays a major role in the

emergence and maintenance of social relationships (Christofides, Muise, and Desmarais 2009; Liu et al. 2014). Through disclosing personal details toward a person or a group, adolescents get to know each other and a bond of trust can be formed (Joinson and Paine 2007).

On SNSs, self-disclosure is done through sharing of personal information, including demographics, opinions, hobbies, and other preferences and activities on personal profiles and in status updates (Christofides, Muise, and Desmarais 2009; Livingstone, Ólafsson, and Staksrud 2011). However, in addition to revealing this information to their chosen audience (i.e., connected friends), adolescents are sharing these details with third parties, such as SNS providers and brands (Stutzman, Gross, and Acquisti 2012). Research indicates that compared to adults (aged 20–60), adolescents (10- to 17-year-olds) are freer in disclosing personal data for marketing purposes (Turow and Nir 2003) and that teenagers (10- to 19-year-olds) disclose more personal information on their Facebook profile than adults (aged 20–65) (Walrave, Vanwesenbeeck, and Heirman 2012).

Marketers and SNS service providers use these disclosures to target prospects more efficiently and to customize offers according to individual consumer profiles (Pallis, Zeinalipour-Yazti, and Dikaiakos 2011). Customization on SNSs can consist of two distinctive, but complementary, strategies. First, personalization of the message, by including references to the consumer's identity (e.g., including the person's name) in the message content. Second, tailoring of the message, by adapting the offer to match the receiver's preferences (Masłowska 2013). By integrating aspects of the consumer's self in SNS advertising, marketers and advertisers try to make messages more relevant for users.

As adolescents are highly engaged users of SNSs, they may form an important target group for brands applying (personalized) SNS advertising (Cauberghe et al. 2012). In particular, as present adolescents, being part of the so-called Generation Z (individuals born between 1990 and 2000) are more difficult to reach via traditional mass media in comparison with older age groups (Okazaki and Taylor 2013). Brands could profit from young people's intense activity on social media.

Although it is often assumed that adolescents are capable of identifying persuasive intentions (John 1999), research has established that early adolescents around the age of 12 do not yet have a similar level of understanding of advertisers' intentions as young adults (18- to 30-year-olds) (Rozendaal, Buijzen, and Valkenburg 2010). Therefore, it can be assumed that the process of learning to identify these persuasive intentions further develops during adolescence. Moreover, as persuasion knowledge is still evolving, adolescents may be more influenced by personalized advertising than older target groups (Friestad and Wright 1994). Finally, most research to date investigates children's processing and responses to online advertising (e.g., Ali et al. 2009; Mallinckrodt and Mizerski 2007; Panic, Cauberghe, and De Pelsmacker 2013; Rozendaal et al. 2013; Waiguny, Nelson, and Terlutter 2014; Wollslager 2009). Only scarce research focuses on teenagers' responses to online advertising (Gidlöf, Holmberg, and Sandberg 2012; Vanwesenbeeck, Walrave, and Ponnet 2016), while teenagers are heavy social media users and an important target audience for advertisers. Few studies investigated adolescents' entrusting of personal data to businesses in online marketing contexts (e.g., Heirman, Walrave, and Ponnet 2013; Heirman et al. 2013; Walrave and Heirman 2013; Youn 2009). What is more, research to date focuses on the impact of online personalized ads on adults (e.g., Aguirre et al. 2015; Bleier and Eisenbeiss 2015). It is therefore relevant to study the effects of personalized advertising on adolescents, in order to gain insight into

young consumers' susceptibility for this type of advertising. These insights could also inspire initiatives for educating children and adolescents about these novel forms of advertising.

Furthermore, both professional and academic literature (e.g., Hanna, Rohm, and Crittenden 2011; Kaplan and Haenlein 2010) indicate social media marketing efforts are particularly valuable as a tool for increasing brand engagement. Brand engagement can be defined as 'a psychological process that models the underlying mechanisms by which customer loyalty forms for new customers of a service brand as well as the mechanisms by which loyalty may be maintained for repeat purchase customers of a service brand' (Bowden 2009, 65). Among adults, higher levels of personalization in SNS advertising have already been found to increase brand engagement and brand attitudes (Antheunis and van Noort 2011; De Keyser, Dens, and De Pelsmacker 2015; Kalyanaraman and Sundar 2006; Malheiros 2014; Maślowska 2013; Tucker 2011; Tucker 2014). Still, research among children and adolescents is lacking. Moreover, literature describes the intention to forward ads as particularly important in online marketing, sparking e-Word-of-Mouth (eWOM) (Huang, Chen, and Wang 2012; Van Noort, Antheunis, and van Reijmersdal 2012). These findings have generated a lively debate among scholars and policymakers regarding the collection and use of personal data, especially of children and adolescents, for interactive advertising (Cai and Zhao 2010; Montgomery 2011; Youn 2005). It is therefore relevant to investigate how adolescents, who are highly active on social media, respond to personalized SNS advertising. With regard to research on advertising personalization in general, privacy concerns of SNS users related to the sharing of personal information are a recurring topic (Tucker 2014; Utz and Krämer 2009). These concerns can play a significant role in users' responses to personalized SNS advertising. High levels of personalization in advertising may become too intrusive (van Doorn and Hoekstra 2013; Yu and Cude 2009), especially for highly privacy-concerned individuals. Privacy concerns may therefore diminish SNS users' response to personalized advertising messages, as research has demonstrated that the tolerance of personalized communications might be reduced by privacy concerns (Wathieu and Friedman 2009).

Based on the above, the present study focuses on the following two questions: Does increasing personalization in SNS advertising targeted at adolescents lead to an increase in advertising effectiveness? Are the effects of personalized advertising on adolescents curbed by their privacy concerns? To examine these questions, we focus on attitude toward the ad, brand engagement, and intention to forward the ad as important determinants of advertising effectiveness (van Noort, Antheunis, and Verlegh 2014).

The current study intends to provide three main contributions to the literature on personalized SNS advertising effectiveness. First, the study aims at extending the knowledge about how young consumers respond to personalized advertising on SNS, as adolescents are intensively using SNSs and are therefore often confronted with (personalized) advertising. Second, as adolescents are still under-aged Internet users, they should be approached with appropriate prudence by advertisers. Yet, research on young people's responses to personalized advertising is lacking (Gidlöf, Holmberg, and Sandberg 2012; O'Donnell and Cramer 2015; Vanwesenbeeck, Walrave, and Ponnet 2016). Therefore, the current study can give first insights into adolescents' susceptibility for this type of advertising. Third, the current study uses an experimental research design, using authentic personal information, in order to capture the effects of personalization on an SNS ad's effectiveness. This approach results in higher ecological validity compared to traditional survey-based studies into SNS advertising effectiveness.

## Theoretical background

### *Personalization*

The personalization of marketing communication is defined as 'creating persuasive messages that refer to aspects of a person's self' (Masłowska, Smit, and van den Putte 2011). In personalized SNS advertising, marketers use information available on user profiles and social networks to personalize their SNS campaigns. In some cases, the profile owner's first name and profile picture are used, as are the names and pictures of the profile owner's friends (Antheunis and van Noort 2011). For example, a campaign for a salty snack of Kraftfood Netherlands BV (TUC) (Kraft Foods Netherlands 2016) offered SNS users a chance to win a personal concert by a musician. The game environment was a realistic living room with three photo frames standing next to a piano. The frames contained the profile pictures of the SNS user's friends. In other recent campaigns, SNS users could play brand games, earning points and comparing them to the scores of friends within their social networks who also played the game (i.e., also referred to as social games) (Laros 2010). These are a few examples of how various kinds of personal information from user profiles are being integrated into SNS campaigns.

Personalization has a long tradition in marketing communication, particularly in direct marketing. For example, in direct mail and email marketing, not only the content of a message is adapted to individual characteristics of the targeted consumer, but also references to personal information (e.g., first and last name) are included (Masłowska, Smit, and van den Putte 2011; Postma and Brokke 2001; White et al. 2008; Yu and Cude 2009). On SNSs, however, marketers can use even more types of personal information, given that users share a variety of information (e.g., pictures, interests, education, and information on friends), in addition to their names and addresses (Karahasanović et al. 2009). This allows SNS advertising campaigns to be more highly personalized than is possible in traditional direct and email marketing.

### *Effects of personalization*

Previous studies show that personalization has positive effects on brand and campaign responses (Bauer and Lasinger 2014; Kim and Sundar 2012). Positive persuasive effects were found as well in classical banner advertising (Tam and Ho 2005) and email newsletters (Masłowska, Smit, and van den Putte 2011). For example, one experimental study compared results from two versions (generic and personalized) of a commercial email newsletter. Although personalization was limited to the recipient's first name in the message, it positively affected the respondents' evaluation of the message (Masłowska, Smit, and van den Putte 2011). Another study reports that consumer attitudes and behaviors regarding mobile advertising are positively influenced by message personalization. More specifically, in addition to evaluating a personalized mobile coupon more positively, consumers were more willing to redeem it (Xu, Liao, and Li 2008).

In summary, collecting personal data from consumers and personalizing promotional messages based on these data enables marketers to reach potential customers in ways that are more personally relevant, thus improving their responses to particular campaigns (Xu, Liao, and Li 2008). Still, in previous studies (e.g., Howard and Kerin 2004; Masłowska, Smit, and van den Putte 2011; Postma and Brokke 2001) investigating the impact of personalization in traditional direct mail and online marketing, the manipulation of personalization in the

message was based on low levels of personalization. The rise of SNSs obviously allows personalization to go far beyond common practices, thereby justifying research on the effects of varying degrees of personalization on consumer responses.

### ***Optimal level of personalization in SNS advertising***

Personalized advertising is believed to evoke central message processing, as consumers perceive personalized ads as more self-relevant (Cho and Cheon 2004). According to information-processing models, consumers are motivated to elaborate on relevant messages, resulting in increased attention and elaboration, favorable thoughts, and strong attitudes (Petty and Cacioppo 1986). Empirical studies (e.g., Kalyanaram and Sundar 2006) provide support for this mechanism. This perspective suggests a linear relationship between personalization and SNS ad responses, with increased personalization in SNS advertising increasing self-relevance, thereby evoking more favorable responses (e.g., more positive attitudes toward ads and brands).

On the other hand, personalization might also raise skepticism toward advertising, thus negatively affecting advertising responses. According to the persuasion knowledge model (Friestad and Wright 1994), awareness of persuasion attempts triggers persuasion knowledge in consumers, which may diminish persuasion effects (Obermiller and Spangenberg 1998; White et al. 2008). White et al. (2008) report increased resistance to personalization in emails when personal information of higher distinctiveness is used, unless such usage is explicitly justified. Moreover, consumers' privacy concerns may increase this negative reaction. This can lead to reactance, namely an individual's motivational state toward regaining control, aiming to reestablish free behavior that has been threatened (Brehm 1966). In the context of personalized advertising, this could mean resisting a message that is found coercive by behaving the opposite way than the one intended by its sender (Tucker 2014).

Given that the use of personalized data is not justified in SNS advertising, higher levels of personalization based on profile data are likely to be perceived as more intrusive and therefore be processed more critically and lead to reactance. This assumption is supported by van Doorn and Hoekstra (2013) who demonstrated that personalization in online advertisements increases feelings of intrusiveness.

Age is an important factor in the persuasion process. People of different ages respond to advertising differently. As children age, they mature cognitively, thus becoming progressively better able to recognize and understand the persuasive intent of advertising (John 1999), as well as the persuasive tactics of advertisers (Boush, Friestad, and Rose 1994; Rozendaal, Buijzen, and Valkenburg 2011). Studies have shown that adolescents are capable of demonstrating persuasion knowledge and subsequent critical evaluation of advertising (Boush, Friestad, and Rose 1994). Still, adolescents' persuasion knowledge evolves as they age. A study comparing children's and adults' persuasion knowledge of commercials observed that while most children (8–12 years) reached an adult level of advertising *recognition*, they still did not have an adult-like *understanding* of its selling and persuasive intent (Rozendaal, Buijzen, and Valkenburg 2010). Consequently, adolescents may differ in their understanding of commercial messages, including personalization tactics that are used. However, different levels of personalization in SNS advertising might impact adolescents' persuasion knowledge differently. More particularly, high levels of personalization in SNS advertising might trigger adolescents' persuasion knowledge. In highly personalized SNS advertising, the persuasive

intent might be more apparent than in moderately personalized ads, with the latter ads producing more favorable responses. Our first hypothesis is therefore:

*H1: The effectiveness of SNS advertising is greater at medium levels of personalization, as compared to low and high levels: Attitude toward the ad (H1a), brand engagement (H1b), and intention to forward the ad (H1c) are higher for SNS ads including a medium level of personalization, as compared to low and high levels.*

### ***Personalization effects and online privacy concern***

Although personalization can enhance several brand and campaign responses, these effects might be moderated by person-related factors, such as privacy concerns (Malheiros 2014; van Noort, Antheunis, and Verlegh 2014). Privacy can be defined as a 'selective control of access to the self or to one's group' (Altman 1976, p. 8). This concept of personal data control is also central in Westin's often-cited conceptualization of informational privacy as 'the claim of individuals, groups or institutions to determine for themselves when, how, and to what extent information about them is communicated to others' (Westin 1970, p. 7). According to Westin (1970), people desire a balance between openness and closeness. This is also the case in the SNSs context, where users balance between withholding and sharing personal information (Utz and Krämer 2009). In the context of personalized advertising, therefore, privacy could be seen as a dialectic process of balancing the user's experienced and desired levels of privacy (Altman 1976; Tufekci 2007). More specifically, users disclose personal data largely in order to use social-networking services, deepen existing relationships, and start new relationships (Raynes-Goldie 2012; Zhao, Grasmuck, and Martin 2008). They balance privacy concerns with these self-presentation and other goals when sharing personal information with others (Utz and Krämer 2009). Privacy concerns could therefore moderate the effects of personalization. Users who are highly concerned about privacy might be skeptical about having their personal data used in personalized SNS advertising. Just as it was found that among adolescents, a higher level of privacy concern leads to negative feedback and the adoption of coping strategies to protect their privacy from e-marketers (Grant 2005; Youn 2009). We therefore propose that the effect of personalization is moderated by such concerns, with the positive effects of (medium levels of) personalization being less prevalent for users who are more concerned about privacy. Our second hypothesis is thus:

*H2: Online privacy concern moderates the impact of personalization on advertising effectiveness, with higher levels of online privacy concern weakening the effects of personalization.*

## **Method**

### ***Stimulus material***

To test our hypotheses, we first selected a brand that could be used in a personalized SNS ad. We sought a brand that would be perceived as relevant to our target population, but that was new enough so that the results would not be distorted by existing brand or ad perceptions. We therefore chose Coca-Cola Plus (i.e., Coca-Cola enriched with vitamins and minerals), which is not available in the country in which this study took place. We also elaborated a list of personal data that could be used by marketers for personalization of the ad and that vary, in the opinion of our target population, in terms of privacy concern.

## Pretest

We conducted a pretest to assess the selected brand and the privacy sensitivity of the personal data. The pretest was conducted among 98 adolescents (age 14–18,  $M = 15.7$ ,  $SD = 1.32$ , 50 girls). Respondents received a list of 14 categories of personal data that could be used for commercial purposes on Facebook. Using a five-point Likert scale (from ‘definitely’ to ‘definitely not’), they indicated the extent to which they would allow Coca-Cola to use their Facebook data for advertising purposes (Table 1).

The results indicate that respondents were more negative concerning the use of contact details (such as their home address, cell phone number, and email address) in an advertising message, followed by a picture from their Facebook photo album, status updates, and relationship updates. Conversely, young people were more positively inclined toward the use of information concerning their gender, first name, birth date, interests, and school.

We used the pretest results to design three conditions. The low personalization condition included only one category of personal data (first name). The medium personalization condition included five categories (first name, gender, date of birth, interests, and profile picture), and the high personalization condition included nine (first name, gender, date of birth, interests, surname, address, email address, album picture, and status update). This high personalization condition included personal information respondents assessed negatively for its use in a marketing context, such as their status updates and their personal address.

Respondents in the pretest also indicated the relevance of Coca-Cola Plus to them, responding to 6 items along a seven-point semantic-differential scale (e.g., ‘bad/good,’ based on Aaker and Williams (1998), Cronbach’s  $\alpha = .88$ ). Results showed sufficient relevance ( $M = 5.02$ ,  $SD = 3.21$ ), with no differences according to age ( $F < 1$ , NS) or gender ( $t < .13$ , NS).

## Participants and procedure

In all, 40 older adolescents, aged 14–18 ( $M = 16.0$ ,  $SD = 1.43$ , 20 girls), participated in our main study, which followed a counterbalanced within-subjects experimental design. The experiment was conducted within-subjects for practical reasons, since personalized ads had to be made for each respondent individually. Participants were selected through direct

**Table 1.** Pretest results for personal data categories.

	<i>t</i>	<i>p</i> -value (2-tailed)	Mean	SD
First name	−7.714	<.001	2.041	1.224
Surname	0.636	0.526	3.093	1.437
Gender	−15.237	<.001	1.531	0.955
Address	27.264	<.001	4.656	0.595
Email address	12.129	<.001	4.260	1.018
Cell phone number	21.646	<.001	4.615	0.731
Profile picture	1.872	0.064	3.258	1.356
Album picture	6.424	<.001	3.796	1.227
Date of birth	−3.647	<.001	2.546	1.225
Friends	0.080	0.936	3.010	1.269
Interests	−3.162	0.002	2.604	1.227
Status updates	5.752	<.001	3.701	1.200
Relationship updates	4.872	<.001	3.608	1.229
School information	−2.775	0.007	2.592	1.456

Note: *T*-test results are one-sample *t*-test scores with the neutral middle point (3) of the scale as a reference point. Significant positive *t*-scores indicate negative evaluations for the use of this category for marketing purposes.



contacts with people from a youth organization. Due to practical and ethical considerations, young adolescents were not selected for the experiment. Facebook requires that an individual is at least 13 years old to create an account. The adolescent age range in the present study was therefore limited to 14- to 18-year-olds.

Participants were invited individually by email to join a Facebook group created for the study. This allowed access to the personal data included in the online profile of the participants. Their personal data were used to design three personalized advertising messages for each participant, corresponding to the three levels of personalization (as established in the pretest). Respondents were subsequently invited through a personal Facebook message to participate in a 15-min survey (set up in Qualtrics). As a cover story, the invitation and introduction of the survey told respondents they were going to assess a new Facebook advertising campaign for Coca-Cola Plus.

The three personalized advertisements were presented in random order in separate videos displaying a fictitious Facebook page for Coca-Cola Plus. Although the video was not interactive, it showed how the ad would be displayed to Facebook users in an interactive way, including page scrolling, mouse movements, and webpage loading times. Moreover, showing the participants a video instead of giving them free access to a SNS page including the personalized ad, standardized their exposure to the ad. Screenshots of the ad are provided in Appendix A. Participants were instructed to imagine that they had encountered these advertisements on their own Facebook page. After each video, participants completed a brief questionnaire assessing the outcome variables (i.e., attitude, brand engagement, intention to forward). After viewing the three ads, respondents also provided information about their gender, age, and privacy concern.

## **Measures**

### ***Attitude toward the ad***

Seven items (e.g., 'The ad was interesting') (Aaker and Williams 1998), measured along a seven-point Likert scale (ranging from 'totally disagree' to 'totally agree'), were used to assess respondents' attitude toward the ad. Cronbach's alpha in three subsequent phases was as follows:  $\alpha = .89, .85, .88$ .

### ***Brand engagement***

Brand engagement was measured using Zaichkowsky's (1985) reduced 5 item brand-involvement scale (e.g., 'The brand is unimportant/important'). These items were assessed along a seven-point semantic-differential scale (Cronbach's  $\alpha = .92, .92, .89$ ).

### ***Intention to forward the ad***

We measured this variable according to 3 items (e.g., 'I would like to forward this ad to others') (Huang, Chen, and Wang 2012) rated along a seven-point Likert scale (ranging from 'totally disagree' to 'totally agree';  $\alpha = .85, .90, .90$ ).

### ***Privacy concern***

Concerns about online privacy were assessed with eight statements based on Milne and Culnan (2004) (e.g., 'It usually bothers me when companies ask me for personal information') measured along a seven-point Likert scale (ranging from 'totally disagree' to 'totally agree';  $\alpha = .77$ ) (see Appendix B).




## Results

To test our hypotheses, we performed three repeated-measures ANOVAs, each with one of the advertising effectiveness variables (attitude toward the ad, brand engagement, intention to forward) as within factor. For a between-subjects factor, we used privacy concern (based on a median split (Lacobucci et al. 2015) (Median = 5.75)) to compose two groups: low ( $N = 19$ ) and high ( $N = 21$ ). The results revealed significant effects of personalization level (all  $F$ 's  $> 3.4$ , all  $p$ 's  $< .039$ ) for all three advertising effectiveness variables. Subsequent LSD *post hoc* tests for each dependent variable indicated that attitude toward the ad was significantly more positive for the high personalization ad ( $M_{\text{high}} = 4.97$ ,  $p = .009$ ) and the medium personalization ad ( $M_{\text{medium}} = 4.82$ ,  $p = .023$ ), as compared to the low personalization ad ( $M_{\text{low}} = 4.48$ ). For brand engagement, there was only a significant difference ( $p = .011$ ) between the low personalization ad ( $M_{\text{low}} = 3.84$ ) and the high personalization ad ( $M_{\text{high}} = 4.21$ ). For intention to forward the ad, LSD *post hoc* tests revealed a significant difference between the high and the low personalization conditions ( $M_{\text{high}} = 4.33$  vs.  $M_{\text{low}} = 3.73$ ,  $p = .004$ ) and between the high and the medium personalization conditions ( $M_{\text{high}} = 4.33$  vs.  $M_{\text{medium}} = 3.98$ ,  $p = .031$ ).

For all three dependent variables, the high personalization ad was clearly preferred to the low personalization ad. Contrary to our expectations, the medium personalization ad was not the most effective one. In terms of attitude toward the ad, this ad was less effective than the high personalization ad. In other words, results did not show an 'optimal' level of personalization. Malheiros (2014) described the optimal level of personalization as the amount of personalization that maximizes the effectiveness of advertising, under the condition that users' privacy and comfort is still respected. He labeled this balanced position as the 'sweet-spot of personalization'. No sweet spot of personalization could be found in which higher levels of personalization would hamper effectiveness due to increased levels of discomfort or feelings of privacy intrusion. The first hypotheses (H1a, H1b, H1c) were thus not supported (Table 2).

In contrast to H2, repeated-measures ANOVA results revealed no significant between-subjects or moderating effects of privacy concern on any of the variables (all  $F$ 's  $< 0.58$ , all  $p$ 's  $> .45$ ). The interaction effects with personalization were also not significant (all  $F$ 's  $< 0.72$ , all  $p$ 's  $> .36$ ).

**Table 2.** Overview results.

	Trend line	Low personalization	Medium personalization	High personalization
Attitude toward the ad		4.48 <sup>b,c</sup>	4.82 <sup>a</sup>	4.97 <sup>a</sup>
Brand engagement		3.84 <sup>c</sup>	3.99	4.21 <sup>a</sup>
Intention to forward		3.73 <sup>c</sup>	3.98 <sup>c</sup>	4.33 <sup>a,b</sup>

<sup>a</sup>Significant difference from the low personalization condition.

<sup>b</sup>Significant difference from the medium personalization condition.

<sup>c</sup>Significant difference from the high personalization condition.

Mean scores are reported, results are explained in more detail in the article text. All variables were measured on 7-point scales.

All  $F$ -test significance levels:  $p < .05$ .

## Discussion

This study tested for an optimal level of personalization regarding advertising effectiveness among adolescents. It also examined whether privacy concern moderates the effects of personalization. It provides more insight into the effects of personalized advertising among the under-researched age group of adolescents. Moreover, the experiment-based results, high in ecological validity, provide a strong addition to the existing literature on personalized advertising in general. Our results are consistent with previous studies, which report a positive relationship between personalization and brand engagement (Antheunis and van Noort 2011; Chu 2011). Although we hypothesized the medium personalization condition as an optimal level, advertising effectiveness was highest in the high personalization condition. Despite the negative evaluation of the usage of some personal data for marketing purposes by pretest respondents, the high personalization condition (which included these types of data) produced the 'best' results (e.g., for brand engagement). Intention to forward among adolescents was proven to be the highest for the highly personalized ads. In this regard, van Noort, Antheunis, and van Reijmersdal (2014) described the disclosure of personal information as a virality (eWOM) enhancing characteristic of an online advertisement. Intention to forward remained high, even in the high personalization condition, when the ad was, based on our pretest, assumed to be intrusive. Huang, Chen, and Wang (2012) argue that the quality of the content of the ad and empathy toward the sender can positively affect forwarding intentions. The high level of personalization might have failed to trigger the persuasion knowledge of the adolescents, who might have been entertained by the novelty of an ad including their personal picture and references to several aspects of their identities. They did not adopt a critical stance toward the highly personalized ad, and thus, attitudes toward the ad remained unchanged and positive. In this regard, our results add to the findings of Friestad and Wright (1994) confirming the fact that adolescents could still prove to be highly susceptible to influences of marketing campaigns that use personalized advertisements.

Another possible explanation is that although most young adolescents are aware of the intent of online advertising, they may be less informed about the personalization tactics of marketers. Finally, their attitudes toward and trust in the advertiser might have outweighed their general privacy concerns. More generally, previous studies report that source credibility plays an important role in the credibility of banner ads, and this affects attitudes toward ads/brands and purchase intentions in student populations (Choi and Rifon 2002; Kang and Sundar 2014). Previous studies also report that trust can mitigate information privacy concerns among young people (Heirman et al. 2013; Pavlou, Liang, and Xue 2007). Moreover, adolescents' trust in particular companies predicts their disclosure of personal data on the websites of those companies (Heirman et al. 2013). The positive inclination of our respondents toward the personalized ads could thus be partially explained by source credibility and trust, as well as by their attitude toward the renowned brand. Further experimental research could include more diversified brands to investigate the possible influence of brand attitude and trust.

We expected privacy concern to kick in for highly personalized ads in the form of personalization reactance, thus resulting in negative outcomes for highly personalized ads. Contrary to our expectations, privacy concern did not affect the advertising effects of personalization. This could further endorse the "privacy paradox" (Barnes 2006; Norberg, Horne, and Horne 2007): consumers experience benefits of sharing privacy sensitive information, but

paradoxically, sharing this information at the same time may increase consumers' sense of vulnerability. Although consumers declare to be concerned about their (online) privacy, their concern contrasts with disclosure behavior in concrete situations. In the context of SNSs, Debatin and colleagues (2009) and Taddicken (2014) showed that privacy concerns are almost not related to uploading large amounts of personal information. Debatin and colleagues (2009) suggested that high gratifications of disclosing personal information contribute to this paradox. Similar results have been found in the context of online marketing among adolescents (Brown and Muchira 2004). For example, consumers are concerned with advertising that is based on their online clicking behavior; however, at the same time, they rather share their clicking behavior and receive behavioral targeted and therefore relevant ads, than random ads (Smit, Van Noort, and Voorveld 2014). In sum, the benefits that occur from sharing privacy sensitive information may outweigh the possible disadvantages. This could also be the case in the specific context of this study: personalized ads in SNSs. The immediate benefits experienced through personalized ads, being exposed to relevant and personally addressed ads, may overshadow general privacy concerns.

The results of this study may be of particular interest to the educational sector. Our results could be an indication of a lack of advertising literacy and possibly privacy literacy among adolescents in the country of this study. Online personalization is a relatively new form of advertising. Therefore, educational initiatives could be taken to increase young people's persuasion knowledge for this specific novel type of online advertising. However, this study's results can also be a sign for the online advertising and marketing sector. Our results show that adolescents have a positive stance toward advertising personalization and marketers can use this to their advantage. Yet, it is important to treat consumers' personal information with care and respect the underlying privacy concerns and privacy rights.

Despite the previously described contributions for the fields of advertising effectiveness research in general and research on adolescents' responses to personalized advertising in particular, this study is also subject to several limitations. First, because respondents were invited to access the research project's Facebook page, highly privacy-concerned adolescents might have been less inclined to participate. In contrast to previous research (Im et al. 2008), we did not ask for self-disclosure in an imaginary context for a non-existent brand. Instead, we focused on an existing brand, albeit with a product that had not been marketed in the country where the study was conducted. Still, the brand's notoriety might nevertheless have influenced respondents' attitudes. Therefore, future research should investigate the possible influence of respondents' previous experiences with the recipient (i.e., brand) of self-disclosed data, their involvement with the product or service category, and the congruence between the personal data used and the product/brand promoted.

Moreover, to increase the external validity of the design, and the look and feel of the Facebook page, the Coca-Cola plus page was constructed inspired by other Facebook pages dedicated to this brand. Still, we did not measure the perceived realism of this page among the study's participants.

Finally, future research could investigate whether the results of this study are similar within an adult age group and whether the hypothesized optimal point of personalization would be present among adults. In other words, researchers could take an intergenerational approach to investigate how distinct age groups respond to different levels of personalization.

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Appendix A. Stills out of the video depicting an ad in the high personalization condition.

The top screenshot shows the Facebook profile for 'Coca-Cola Plus'. The main content area features a large image of a can of Coca-Cola Plus with the text 'The Can chooses YOU'. A play button icon is overlaid on the can. The left sidebar shows navigation options like 'Profiel', 'Info', and 'Activiteiten van vrienden...'. The right sidebar shows 'Jij en Coca-Cola Plus' and 'Vind vrienden van Boom'.

The bottom screenshot shows a 'Verzoek om toestemming' (Request for permission) dialog box. It lists several permissions:
 

- Toegang tot mijn algemene gegevens:** Gevoel je raar, profiel-aanmelding, gegevens, netwerken, lid ID, vrienden en andere informatie die jij op publiek hebt staan.
- Toegang tot mijn profielgegevens:** Voorkeuren, muziek, tv, films, boeken, uitstralen, Over me heen, Conversatielijnen, huidige woonplaats en Opleidingen.
- Toegang tot mijn familie en relaties:** Familielid en relatiestatus.
- Verstuur mij e-mails:** Je geeft Girls Guide To toestemming om me direct te mailen.
- Namens mij inhoud op Facebook plaatsen:** Mij namens mij statusberichten, notities, foto's en video's plaatsen.

 At the bottom of the dialog are buttons for 'Toestaan' and 'Niet toestaan'.



Coca-Cola PLUS™

chose its  
drinker  
ITSELF

The screenshot shows a social media profile for 'Valérie'. The profile information includes:
 

- Name: Valérie
- Gender: Vrouw
- Date of Birth: 26/11/1994
- Email: hanne@...com
- Interests: Flux Pavilion, Gossip Girl, Jason Derulo, Benidorm Bastards
- Recent Activity: "Valérie gaat naar Schoolrock 2012 - zaterdag 28 april om 14:30." with a photo of three people at a school event.

**Appendix B.** Overview of measures.

Measure	Items	[Min; Max]	Mean			Cronbach's $\alpha$		
			Low	Med.	High	Low	Med.	High
Attitude toward the ad	7	[0; 7]	4.48	4.82	4.97	.89	.85	.88
Brand engagement	5	[0; 7]	3.84	3.99	4.21	.92	.92	.89
Intention to forward the ad	3	[0; 7]	3.73	3.98	4.33	.85	.90	.90
Privacy concern	8	[0; 7]		5.73			.77	