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Young adolescents' advertising literacy and purchase intention in social network games : influence of perspective taking and need for cognition

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Abstract

Social network games (SNGs) are popular online venues for young-adolescents. The aim of this study is to examine how individual traits, need for cognition (NFC) and perspective taking (PT), are related to young-adolescents conceptual and attitudinal advertising literacy in these SNGs. The current study also examines how a child's conceptual and attitudinal advertising literacy are related to purchase intentions after seeing advertising in a SNG. In total, 780 young adolescents (aged 10-14 years) took part in our study. First, participants were shown a five-minute video clip of a SNG with advertising included. After watching the video clip, the participants completed a questionnaire about, amongst others, NFC, PT, conceptual advertising literacy (i.e. understanding selling and persuasive intentions of SNG advertising), attitudinal advertising literacy (i.e. critical attitude towards SNG advertising) and purchase intentions. NFC was found predictive of children's understanding of selling and persuasive intent of SNG advertising. This means that children who score higher on the NFC scale are also more likely to have a higher conceptual knowledge of SNG advertising. PT was found to negatively influence critical attitude towards SNG advertising. As expected, critical attitude towards advertising was negatively related to purchase intentions. Finally, purchase intention was only partially related to conceptual advertising literacy.

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Social network games (SNGs) are popular online venues for adolescents (Ward & Gummerus, 2014). A SNG can be described as ‘an online community where players can interact and play games with new and old friends’ (Rozendaal, Slot, van Reijmersdal, & Buijzen, 2013, p. 142). In other words, these games are a type of virtual worlds characterized by social interaction (Mäntymäki & Salo, 2011). Marketing research (Kzero, 2012, 2014) revealed that SNGs reach a significant amount of adolescents of which a majority is under 13 years of age. Due to the games’ popularity, advertisers use these games to target young-adolescents. While a lot of research on SNGs deals with identity aspects, learning, but also developmental and relational problems such as cyberbullying (Martínez, 2014; Ward & Gummerus, 2014), the commercial aspects of these games, such as advertising and the sale of virtual goods, are currently under-studied (Barnes, Mattsson, & Hartley, 2015; Grimes, 2015; Martínez, 2014). Nevertheless, in SNGs, children encounter advertising and are often able to buy products with virtual currency. Studying these aspects of SNGs and virtual worlds are important as they have become places of consumer socialization for children (Martínez, 2014).

Ward (1974, p. 2) defined consumer socialization as “the processes by which young people acquire skills, knowledge, and attitudes relevant to their functioning as consumers in the marketing place”. During childhood and adolescence, a child passes through different phases where new consumer skills are learned (Moore, 2004). These phases are clearly described in John’s theory of consumer socialization and are based on children’s cognitive development (John, 1999). Each phase takes place within a certain age range (Moore, 2004). Therefore, age has been seen as an important predictor of children’s consumer socialization (John, 1999; Spielvogel & Terlutter, 2015). Advertising literacy is an important skill within the consumer socialization and refers to the ability of children to comprehend the intent of advertising targeted towards them (Priya, Kanti Baisya, & Sharma, 2010). Although age and cognitive development have been central in research of children and advertising, there might also be other important variables in studying children’s ability to comprehend (online) advertising’s intentions (Shin, Huh, & Faber, 2012). For example, studies investigating advertising literacy found differences in advertising literacy among children with the same age (Spielvogel and Terlutter, 2015). These differences in advertising literacy among children of the same age might be caused

by differences in individual traits, which can contribute to differences in how information is processed (Mills & Elashi, 2014; Spielvogel & Terlutter, 2015). Therefore, the present study focuses on two individual traits, namely need for cognition (NFC) and perspective taking skills. This might also be applicable to how a commercial message within a SNG is processed. Therefore, the aim of this study is to examine how two individual traits, NFC and perspective taking, are related to young-adolescents conceptual (i.e. understanding selling and persuasive intentions) and attitudinal (i.e. critical attitude) advertising literacy in SNGs. Furthermore, the current study examines how children's conceptual and attitudinal advertising literacy is related to purchase intention after seeing advertising in a SNG.

Literature

Since SNGs are immensely popular among children and young-adolescents, these virtual worlds have become new places to learn consumer skills (Grimes, 2015; Martínez, 2014). Consumer skills include how to deal with commercial practices. Children are often encouraged to take part in commercial activities while playing SNGs (Grimes, 2015). Two major types of commercial activities within SNGs can be discerned: buying virtual goods and advertising. With regard to the first, most SNGs allow children to buy virtual goods within the virtual world. These goods can be paid with virtual currency, which can be earned by playing, but also with real-life money (Grimes, 2015; Lehdonvirta, Wilska, & Johnson, 2009). With regard to the latter, advertising in SNGs allow children to more or less experience a brand in a virtual world. Different types of advertising exist within SNGs. Passive forms of advertising entail billboard advertising or promotional videos (Grimes, 2015; Pharr, 2011). Children who actively participate in commercial content, such as watching a promotional video, are sometimes rewarded, by receiving virtual currency to buy virtual products within the SNGs (Grimes, 2015). More active forms, such as product usage, allow players to interact with a brand or product by for example taking a bottle of coke out of a vending machine (Grimes, 2015; Nelson, Keum, & Yaros, 2004).

Consumer socialization and advertising literacy

The cognitive development theory of Piaget is often referred to in studies on children and advertising (John, 1999; Livingstone & Helsper, 2006; Moses & Baldwin, 2005; Nairn & Dew, 2007). Piaget (1964) identified four stages of cognitive development: *sensorimotor* (birth to two years), *preoperational* (two to seven years), *concrete operational* (seven to eleven years) and *formal operational* (eleven years to adolescence). In the sensorimotor stage, children react largely according to reflexes and they do not understand genuinely relationships (Neeley, 2007). The preoperational stage is based primarily on perceptual thinking (John, 1999), while children in the concrete operational stage can consider several dimensions of a stimulus at a time (John, 1999). When children reach the formal operational stage, they progress to a more adult-like thought pattern, thus becoming capable of more complex thinking (John, 1999). Nevertheless, in comparison to adults, young-adolescents still demonstrate weaknesses in cognitive processing (Pechmann, Levine, Loughlin, & Leslie, 2005).

Until now, advertising research among children often focuses on how children's understanding of persuasive messages evolves according to their cognitive development (see John, 1999 for an extensive overview). A number of researchers have argued that children lack the cognitive skills necessary to interpret an advertising message critically (Moore, 2004). Through consumer socialization, children gain fundamental insights, so that they gradually develop persuasion knowledge, namely the personal knowledge about the tactics used in persuasion attempts, such as in advertising. This persuasion knowledge helps young people to identify how, why and when marketers try to influence them (Friestad & Wright, 1994). Age is an important predictor of these skills and knowledge acquired during consumer socialization (Moschis, Moore, & Smith, 1984).

John's (1999) theory of *consumer socialization*, applies the above cited theory to the ways in which children learn consumer skills and consists of three phases. Children in the *perceptual phase* (3-7 years) are strongly focused on the perceptual features of products and services (John, 1999). Consumer decisions by children in this stage are often made quickly and are often based on a single, clearly observable attribute, such as size (John, 1999; Moore & Rideout, 2007). Therefore, these children are seen as the most vulnerable to persuasive attempts, regardless of the medium

(Moore & Rideout, 2007). During the *analytical phase* (7-11 years), children become more capable of symbolic thought, which leads to a more sophisticated understanding of the marketplace and more complex knowledge on advertising and brands (John, 1999). Consumer decisions are based on more than one attribute (John, 1999). Around eleven years of age, in the *reflective phase*, children further develop the skills learned in the previous stage. This stage is characterized by more sophisticated information processing and social skills (John, 1999). Children's knowledge on commercial aspects, such as advertising, becomes more nuanced (John, 1999).

This theory has often been applied to children's (television) advertising literacy (Nairn & Dew, 2007). Advertising literacy has been traditionally divided into two main skills: recognizing advertising messages and understanding advertiser's intent (Rozendaal, Buijzen, & Valkenburg, 2010; Spielvogel & Terlutter, 2015). Around the age of 5, children are capable to recognize TV commercials (John, 1999). This recognition is strongly based on perceptual cues, such as advertising jingles, as children in the perceptual phase mostly rely on what is directly observable (John, 1999). Understanding advertising's intentions follows later in their development, since this requires abstract thinking that goes beyond the perceptual environment (John, 1999). Around 8 years old, a child becomes capable of understanding advertising's selling intentions (i.e. 'advertising is trying to sell something'). By the end of the analytical phase, children develop a more elaborate understanding of advertising, namely understanding advertisers' persuasive intent (i.e. advertising wants to positively influence my attitude towards a brand/product) (John, 1999). In addition, children in the analytic phase learn to understand advertisers' tactics and strategies (John, 1999).

In general, researchers agree that younger children are more easily influenced by advertising messages compared to older children (Livingstone & Helsper, 2006). This has been attributed to the children's cognitive development as described above. Nevertheless, research connecting children's advertising literacy to advertising effects showed that advertising knowledge does not always assist in counteracting advertising effects (Livingstone & Helsper, 2006; Rozendaal, Lapierre, van Reijmersdal, & Buijzen, 2011). More recent, scholars studying children's advertising literacy have therefore added another aspect to children's advertising literacy, namely

the attitudinal advertising literacy (Rozendaal *et al.*, 2011). Unlike the conceptual advertising literacy (i.e. understanding selling and persuasive intentions of advertising), the attitudinal advertising literacy does not focus on basic knowledge, but on children's critical attitude towards advertising. Empirical evidence indeed suggests that attitudinal advertising literacy can negatively influence brand desire (Rozendaal *et al.*, 2013). Attitudinal advertising literacy can also be linked to the theory of consumer socialization as described by John (1999) and is strongly related to a child's age (Mens & Buijzen, 2006). In the perceptual stage, children possess a positive attitude towards advertising (John, 1999). During the analytic phase, children become more critical towards advertising and therefore develop a negative attitude towards TV advertising (John, 1999). However, empirical research on online advertising and children from Shin *et al.* (2012) does not support this assumption. In this research, older children had more positive attitudes towards online advertising in comparison to the younger children in the sample (Shin *et al.*, 2012).

Despite the fact that the Piagetian approach is the most often used theory in advertising research, it has been challenged increasingly (Moses & Baldwin, 2005). One major criticism is that Piaget strongly focuses on precisely delimited age groups. Nevertheless, along with children's age-related development, individual differences might still occur within children of the same age (Mills *et al.*, 2014; Spielvogel & Terlutter, 2015). More particularly, some children might be more skilled in evaluating information compared to other children of the same age (Mills *et al.*, 2014). This suggests that other factors than age could be found to account for individual differences in information processing (Mills *et al.*, 2014; John, 1999). A previous study has established that children's self-esteem positively influenced advertising literacy (Spielvogel & Terlutter, 2015). Our study investigates two other personality traits that might possibly account for differences in advertising literacy towards SNGs: Need for Cognition and Perspective Taking.

This study focuses on young-adolescents between 12 and 14 years old for three reasons. First, these adolescents are still in the final stage of cognitive development, and continue to learn cognitive skills, which might impact their behavior (Blakemore & Choudhury, 2006). Consequently, consumer socialization and the associated advertising literacy skills may still develop during adolescence (Moses & Baldwin, 2005). Previous studies on advertising literacy have often assumed that advertising literacy develops between eight and twelve years old (Rozendaal *et al.*, 2010).

Recently, this assumption has been questioned (Verhellen, Oates, De Pelsmacker, & Dens, 2014), suggesting that older age groups should also be studied. Second, advertising in SNGs takes place in a medium where advertising and entertainment is blurred. This strong integration of advertising can make it more difficult for players to understand the intentions of advertising (Verhellen *et al.*, 2014) compared to more traditional forms of advertising. Third, most studies on virtual worlds has strongly focused on an adult-targeted games (e.g. Second Life). Studies on teenagers, which are the target group for most SNGs, are rare (Mäntymäki & Riemer, 2014).

Hypotheses development

Need for cognition (NFC) is defined as 'differences among individuals in their tendency to engage in and enjoy thinking' (Cacioppo & Petty, 1982, p. 116). In other words, need for cognition refers to the willingness and motivation of a person to undertake effortful cognitive work (Haugtvedt, Petty, & Cacioppo, 1992). NFC as defined by Cacioppo and Petty (1982) is primarily a motivational concept (Haugtvedt *et al.*, 1992). A high NFC person is more intrinsically motivated to engage in high cognitive thinking and reasoning (Preckel, 2014). This means that a person who scores high on NFC enjoys thinking, while a person who scores low on NFC chooses to avoid high cognitive work (Haugtvedt *et al.*, 1992). High NFC individuals prefer complex tasks, love to engage in resolving complex tasks and actively think back on information to make sense of stimuli (Cacioppo, Petty, Kao, & Rodriguez, 1986; Haugtvedt *et al.*, 1992). Low NFC individuals prefer to rely on others, such as experts, heuristics or social comparison to make sense of their environment (Cacioppo *et al.*, 1986). The NFC framework is often linked to the elaboration likelihood model (ELM) (Haugtvedt *et al.*, 1992). In the ELM, two routes of persuasion exist. First, information can be processed through a central route, which assumes motivation and ability to elaborate the message (Te'eni-Harari, 2014). Second, information can also be processed through a peripheral route, in which people rely on non-content cues in the persuasion message, such as expertise of the speaker (Cacioppo & Petty, 1982). NFC might play a role in determining which route will be followed when confronted with a persuasion attempt. For example, Haugtvedt *et al.* (1992) established that a high NFC person is more likely to change his/her attitude after seeing a commercial based on a thorough evaluation of product attributes and therefore follows the central route. A low NFC person will most likely change his/her

attitude following the peripheral route, which suggests that the attitude change is primarily based on peripheral cues included in the ad (Haugtvedt *et al.*, 1992).

Few studies have focused on young-adolescents (Preckel, 2014). One study on children and young adolescents suggests that children scoring high on NFC performed better at a probabilistic reasoning tasks compared to children scoring low on NFC (Kokis, Macpherson, Topley, West, & Stanovich, 2002). Understanding selling and persuasive intention of advertising requires a certain amount of cognitive skills (John, 1999). This might implicate that if children score high on NFC, they might be more motivated to use their cognitive resources to understand the selling and persuasive intentions of advertising. Based on the abovementioned theoretical framework, we hypothesize:

H1: A child's level of NFC is positively related to that child's (H1a) understanding of the selling intent and (H1b) persuasive intent of advertising on SNG.

Empathy refers to affective and cognitive responses to others' emotional circumstances (Davis, 1980; Garton & Gringart, 2005; Hawk *et al.*, 2013). The cognitive component of empathy refers to a person's perspective taking ability, while the affective component refers to a person's ability to share another's feelings (Garton & Gringart, 2005). For the purpose of this research, we focus on perspective taking which has been identified as an important concept in advertising literacy (see below). Perspective taking (PT) can be described as 'understanding that another person's beliefs about events may be different from reality and that those beliefs will guide future behavior' (Sigman & Capps, 1997). PT is related to the theory of mind framework (TOM) (Blakemore & Choudhury, 2006; Moses & Baldwin, 2005). One needs to be capable of being aware of one's own feelings, before being able to consider the perspective another person (Blakemore & Choudhury, 2006; Hawk *et al.*, 2013). PT skills are essential for adequate functioning in social behaviors (LeBlanc *et al.*, 2003). Learning perspective taking skills, and by extension empathy, are closely related to a child's development (Garton & Gringart, 2005). Abovementioned developmental theories concerning cognitive development (Inhelder & Piaget, 1964; John, 1999) suggest that children around eight years old gain significant PT skills to understand advertisers' intentions with regard to television advertising.

Following John's theory of consumer socialization, it has been assumed that perspective taking is crucial to how children process advertising (John, 1999; Nairn & Dew, 2007). Understanding the intention of advertising requires a substantial amount of perspective taking skills, since it assumes the ability to reason about other people's perspectives (advertiser and viewer) (Moses & Baldwin, 2005; John, 1999). Necessary PT skills appear during the concrete operational stage, which is situated between ages 7 to 11 (John, 1999). The fact that children around 8 years old start understanding advertising intent is often attributed to these growing PT skills (Moses & Baldwin, 2005). Similarly, due to a higher insight on the advertisers' perspective, a child scoring high on PT skills may be more critical towards the advertising. Still, empirical evidence on individual differences in children's understanding of advertising and PT skills is currently lacking. Based on the abovementioned, we formulate the following hypothesis:

H2: A child's level of perspective taking skills is positively related to that child's (H2a) understanding of the selling intent and (H2b) persuasive intent of advertising on SNG and (H2c) the child's critical attitude towards advertising in SNG.

Children and teenagers can exercise different types of consumer behavior, which can be influenced by advertising. Teenagers do not only impact their parents' buying behavior (i.e. pester power), but also possess a significant amount of spending power (Singleton Jackson, 2011). Studies on children and advertising have examined behavioral responses to advertising, such as purchase intentions and pester intentions (Panic, Cauberghe, & De Pelsmacker, 2013; Te'eni-Harari, Lehman-Wilzig, & Lampert, 2009; Waiguny & Terlutter, 2011). Purchase intention indicates the extent to which someone is inclined to buy a specific brand or product. In a study comparing television advertisements and advergames, a significant relationship between behavioral intentions and persuasion knowledge was found for television advertisements, but not for advergames (Panic *et al.*, 2013). Nevertheless, theoretical frameworks such as the persuasion knowledge model (Friestad & Wright, 1994) suggest that persuasion knowledge should help consumers to deal with advertising effects. Due to the abovementioned theoretical framework, we hypothesize the following:

H3: A child's understanding of the selling intent (H3a) and the persuasive intent (H3b) of advertising in SNGs is negatively associated with the child's purchase intention of a product seen in a SNG.

Less research has been conducted with regard to the influence of critical attitude on behavioral measures. From a theoretical point of view, attitudinal advertising literacy might be effective in reducing advertising effects (Rozendaal *et al.*, 2011). Children mostly process advertising on a low elaboration level, which suggest that they do not use extensive cognitive resources when being confronted with advertising (Rozendaal *et al.*, 2011). Attitudinal advertising literacy does not require an extensive elaboration, suggesting that even if children only use a limited amount of resources to process a commercial message, they still can rely on their attitudes towards advertising (Rozendaal *et al.*, 2011). The first studies incorporating the attitudinal advertising literacy concept confirm that it may be more effective in reducing advertising effects than conceptual advertising literacy. For SNGs, Rozendaal *et al.* (2013) found that for 10 to 12 year old children a critical attitude towards advertising lowers the brand preference. In this study, we investigate whether a critical attitude towards advertising also lowers the purchase intention.

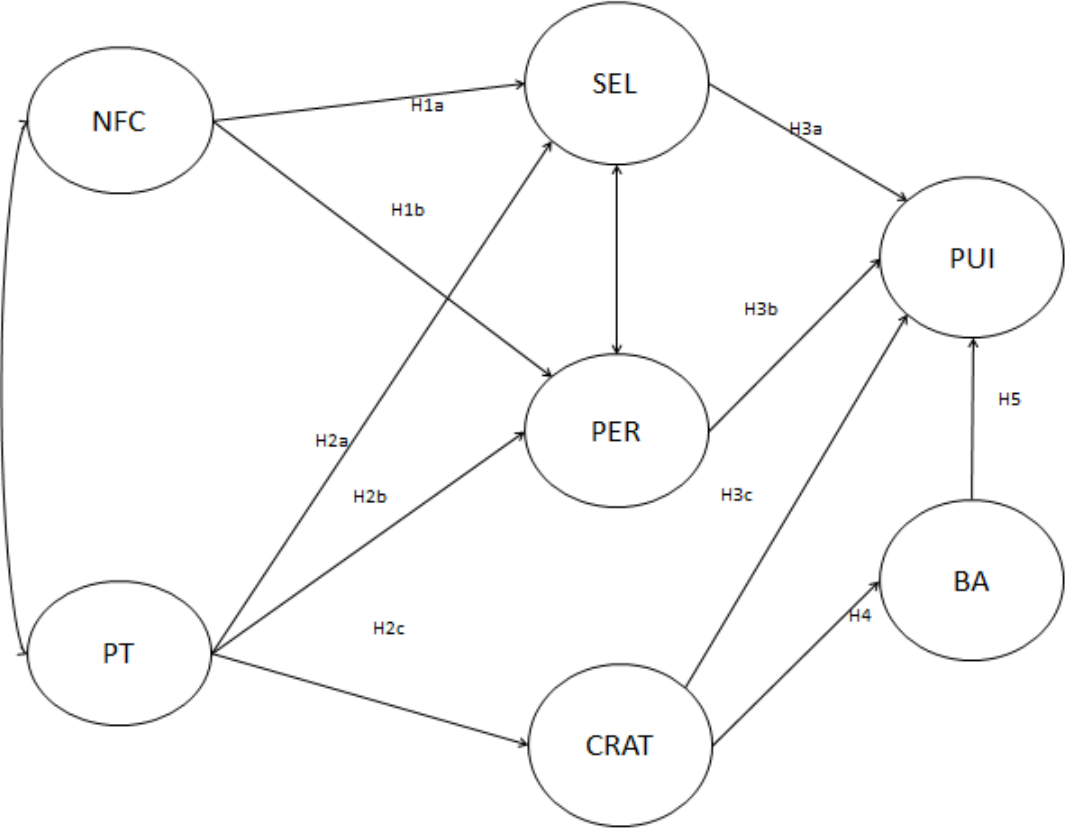
H4: A child's critical attitude towards advertising on SNG is negatively related to the child's attitude towards the brand seen in a SNG.

Information processing of advertising among young people is a complex process, which might not be based only on direct effects (Te'eni-Harari, 2014). One possible mediating variable could be brand attitude, which can be seen as an affective response to advertising (van Reijmersdal, Rozendaal, & Buijzen, 2012). Brand attitude and purchase intention are both measures of ad effectiveness (Te'eni-Harari *et al.*, 2014). In research on adults and advertising, it is assumed that brand attitudes are influenced positively if the brand is associated with an enjoyable experience via an affect transfer mechanism (van Reijmersdal *et al.*, 2012). Previous research has established that brand attitude has a direct effect on purchase intention (Te'eni-Harari *et al.*, 2014). In this study, we are interested whether children's attitude towards the advertised brand also affects the relationship between the critical attitude towards SNG advertising and purchase intentions. More particularly, we expect that a child's brand attitude mediates the relationship between a child's critical attitude towards

advertising in a SNG and the child's purchase intention of a product seen in a SNG. This leads to the following hypothesis:

H5: Brand attitude mediates the relationship between a child's critical attitude towards advertising in SNG and a child's purchase intention after seeing a product in a SNG.

Figure 1. Conceptual model



Note. NFC = need for cognition; PT = perspective taking; SEL = understanding selling intentions; PER = understanding persuasive intentions ; CRAT = critical attitude towards SNG advertising; PUI = purchase intention; BA = brand attitude

Method

This study is part of a larger project on children and SNG advertising. In total, 780 young adolescents (aged 10-14 years; 46% boys, $n = 358$; 53% girls, $n = 412$) from eight schools, both rural and urban, took part in our study. The respondents' mean age was 11.75 years old ($SD = 1.17$). Prior to data collection, we obtained approval from the schools, teachers and parents.

Procedure and stimuli

First, participants were shown a five-minute video clip of Habbo hotel, a SNG in which players can create their own avatar and come in contact with other players. Although Habbo Hotel has been suffering from decreasing visitors, the site remains one of the most popular SNGs targeted at children (Mäntymäki & Riemer, 2014). Further, for research purposes, Habbo can be seen as a representative example of SNGs as it shares characteristics with other SNGs (Mäntymäki & Riemer, 2014). After seeing the video clip, the participants were asked to imagine playing the game themselves. The video clip was recorded using game recording software. The clip showed two avatars visiting three rooms: a game room, containing a commercial message for Pepsi Coke, a neutral room without any advertising, and a theatre room, with a static banner ad, which was not the main focus of this study. The commercial message for Pepsi Coke in the game room consisted of a vending machine, out of which the avatar took a bottle of Pepsi Coke. On the side of the vending machine, the Pepsi Coke logo was present.

Immediately after watching the video clip, the participants completed a questionnaire about, amongst others, NFC, perspective taking, conceptual advertising literacy (i.e. understanding selling and persuasive intentions of SNG advertising), attitudinal advertising literacy (i.e. critical attitude towards SNG advertising) and purchase intentions.

Measurements

Need for cognition. NFC was measured using an 11-point scale from Preckel (2014). This scale was based on the NFC scale from Cacioppo and Petty (1982), but was adapted by Preckel (2014) to be suitable for young-adolescents. Originally, the scale consisted of 19 items, but only 11 positively worded items were included in our questionnaire. The items (e.g. 'I like finding solutions for problems') were measured

along a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The internal consistency of the scale was good, with Cronbach's alpha of .87.

Perspective Taking. To measure the children's perspective taking skills, we used the seven items from the Dutch version of the Interpersonal Reactivity Index which represented the perspective taking dimension of empathy (Davis, 1980; De Corte *et al.*, 2007). Some words were slightly adjusted or clarified to fit the language level of young-adolescents. The items were measured along a five-point Likert scale. While investigating the scale's internal consistency, it became apparent that the scale's Cronbach's alpha was questionable ($\alpha = .54$). Further investigating via the index 'alpha if item deleted' showed problems with item1 and item4, which were both negatively worded items. After removing these two items, the internal consistency of the remaining five items was found acceptable with Cronbach's alpha = .74.

Conceptual advertising literacy. Based on previous research by An and Stern (2011) and Rozendaal and colleagues (2010), we developed two four-item scales to measure the children's understanding of advertising intent. The first scale was designed to measure children's understanding of the selling intent (e.g. 'the purpose of this image is to sell [brand name]'), while the second aimed at measuring children's understanding of the persuasive intent (e.g. 'this image wants me to feel good about [brand name]'). Each of the items was measured along a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Both scales scored good on internal consistency with Cronbach's alpha of .88 for understanding selling intent and .87 for understanding persuasive intent.

Attitude towards the advertising type. Attitude towards the advertising type was measured with a three-item scale, based on an existing scale (Poels, Janssens, & Herrewijn, 2013; Pollay & Mittal, 1993). The three items (e.g. 'Overall, I consider this type advertising in a game like Habbo a good thing) were measured on a five-point scale and were found reliable with Cronbach's alpha = .85. Prior to the analyses, the scale was recoded so that low scores indicate a low critical attitude.

Purchase intention. To measure children's purchase intention, a two-item scale adjusted from Rozendaal *et al.* (2013) and van Reijmersdal *et al.* (2012) was used (e.g. 'I would like to buy [brand name]'). Each of the items was measured along a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Brand attitude. Brand attitude was measured using a five-item scale developed by Putrevo and Lord (1994). All items were measured along a scale ranging from 1 (strongly disagree) to 5 (strongly agree). Examples of items were 'Buying [brand name] is a good decision' and 'I think [brand name] has a lot of beneficial characteristics'. The scale proved adequately reliable with Cronbach's alpha of .82.

Results

Analytic strategy

To verify our model, we conducted structural equation modelling (SEM) with maximum likelihood estimation in Mplus (Muthén & Muthén, 2010). The analyses were conducted in two steps. First, we built a measurement model to investigate the fit of the latent constructs NFC, PT, selling intent, critical attitude towards SNG advertising, purchase intention and brand attitude. Second, a structural model was built including all the hypothesized relationships. In addition, we allowed latent variables selling and persuasive intent to correlate, as these variables are both part of conceptual advertising literacy. Age and gender were included in the structural model as covariates of the endogenous variables.

Table 1. Descriptive statistics for the indicators

		<i>M</i>	<i>SD</i>
Age		11.57	1.17
Need for cognition			
Item 1:	I enjoy to think of solutions for problems	3.23	1.18
Item 2:	I prefer solving a complex question, which is difficult and requires though, compared to a question, which is important but does not require thought	2.73	1.20
Item 3:	I like situations where I by thorough thinking can achieve something	2.97	1.19
Item 4:	I love it when my life is full of difficult tasks that I have to solve	2.24	1.09
Item 5:	It is especially fun for me if I have completed an important task, which requires a lot of thinking	3.38	1.27
Item 6:	I prefer complex problems over simple problems	2.34	1.15
Item 7:	I like to do tasks in which one have to think much	2.38	1.16
Item 8:	I often say to myself that people should think carefully and long to find the best solution to a problem	2.98	1.23
Item 9:	I am someone who enjoys thinking	2.60	1.15
Item 10:	I like to think about a problem, even when I know that my thinking will change nothing about the problem	2.61	1.15
Item 11:	When I put my mind to solving a difficult problem, I usually succeed	2.78	1.15
Perspective taking			
Item 1:	I sometimes find it difficult to see things from some else's point of view (reverse)	2.47	1.07
Item 2:	I try to look at everybody's side of a disagreement before I make a decision	2.68	1.06
Item 3:	I sometimes try to understand my friends better by imagining how things look from their perspective.	2.56	1.05
Item 4:	If I'm sure I'm right about something, I don't waste much time listening to other people's arguments (reverse)	2.67	1.11
Item 5:	I believe that there are two sides to every question and try to look at them both	2.81	1.03
Item 6:	When I'm upset at someone, I usually try to "put myself in his shoes" for a while	3.29	1.30
Item 7:	Before criticizing somebody, I try to imagine how I would feel if I were in their place	2.76	1.06
Understanding of the selling intent			
Item 1:	This picture tries to promote the selling of	2.64	1.28
Item 2:	This picture wants to stimulate the purchase of [brand name]	2.90	1.27
Item 3:	The purpose of this picture is to sell [brand	2.64	1.29

	name]		
Item 4:	The creator of this picture wants me to buy [brand name]	2.71	1.26
Understanding of the persuasive intent			
Item 1:	This picture wants me to feel good about [brand name]	2.76	1.23
Item 2:	The purpose of this picture is to make me like [brand name]	2.50	1.21
Item 3:	The creator of this picture wants me to have a good attitude towards [brand name]	2.67	1.24
Item 4:	This picture tries to influence my beliefs about this product	2.87	1.32
Critical attitude towards advertising			
Item 1:	My general opinion of this type of advertising in a game like Habbo is favorable (reverse)	2.78	1.22
Item 2:	Overall, I consider this type advertising in a game like Habbo a good thing (reverse)	2.63	1.22
Item 3:	Overall, I like this type of advertising in a game like Habbo (reverse)	2.59	1.28
Purchase intention			
Item 1:	I would like to buy [brand name]	3.40	1.26
Item 2:	I am willing to buy a bottle of [brand name]	3.80	1.25
Brand attitude			
Item 1:	The decision to buy [brand name] is foolish (r)	3.42	1.26
Item 2:	Buying [brand name] is a good decision	2.61	1.08
Item 3:	I think [brand name] is a satisfactory brand	3.01	1.18
Item 4:	I think [brand name] has a lot of beneficial characteristics	2.66	1.13
Item 5:	I have a favorable opinion of [brand name]	2.88	1.20

Measurement model

The initial measurement model provided a good fit to the data: $\chi^2(506) = 1024.434$, $p < .001$, CFI = .95, RMSEA = .036 (CI: .033 - .040), SRMR = .038. However, for the brand attitude scale, item1 had a low factor loading (.35). Therefore, this item was removed from the analysis. The adjusted measurement model provided a good fit to the data: $\chi^2(474) = 960.28$, $p < .001$, CFI = .95, RMSEA = .036 (CI: .033 - .040), SRMR = .038. All factor loadings were greater than .44 and were found significant. The correlations among the variables in the path model are shown in Table 2.

Table 2. Correlations among the latent constructs

	1	2	3	4	5	6	7
1 Need for cognition							
2 Perspective taking	.43**						
3 Selling intent	.12**	.02					
4 Persuasive intent	.20**	.07*	.62**				
5 Critical attitude	-.12**	-.08*	-.08	-.10**			
6 Brand attitude	.15**	-.01	-.01	.03	-.36**		
7 Purchase intention	.14**	.06	.19**	.25**	-.35**	.39**	

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Structural model

Our structural model is presented in Figure 2. This model provided a good fit to the data: $\chi^2(540) = 1250.344$, $p < .001$, CFI = .93, RMSEA = .041 (CI: .038 - .044), SRMR = .074.

Our analysis revealed that a child's NFC positively influenced young-adolescents' understanding of the selling intent (H1a, $\beta = .17$, $p < .001$) and understanding of the persuasive intent (H1b, $\beta = .25$, $p < .001$). Perspective taking was neither associated with understanding selling intentions (H2a, $\beta = -.03$, *ns*), nor with understanding persuasive intent (H2b, $\beta = -.00$, *ns*). Furthermore, a young-adolescent's level of perspective taking (H2c, $\beta = -.17$, $p < .01$) negatively influenced the critical attitude towards advertising on a SNG. This suggests that young-adolescents reporting a higher ability in perspective taking were more likely to report a lower critical attitude towards advertising on SNGs.

Contrary to our expectations, the understanding of the persuasive intent of advertising in a SNG positively influenced the level of purchase intention (H3b, $\beta = .23$, $p < .001$). Understanding the selling intent was not associated with the level of purchase intention (H3a, $\beta = .04$, *ns*). Brand attitude was positively related with the level of purchase intention ($\beta = .33$, $p < .001$). A child's critical attitude towards SNG advertising was negatively associated with brand attitude ($\beta = -.41$, $p < .001$). Finally,

a young-adolescent's critical attitude towards advertising on a SNG negatively influenced the level of purchase intention (H4, $\beta = -.23$, $p < .001$).

In order to study whether brand attitude mediates the relationship between critical attitude towards advertising in SNG and purchase intention, we used the INDIRECT command in Mplus to formally test evidence of mediation. A model without brand attitude included as mediating variable showed a significant negative effect from critical attitude on purchase intention ($\beta = -.37$, $p < .001$). The indirect effect of critical attitude towards advertising on purchase intention was still found significant (total indirect $\beta = -.15$, $p < .001$), suggesting partial mediation.

With regard to the covariates, age was negatively related to the purchase intent, with older young-adolescents less inclined to buy the advertised product ($\beta = -.08$, $p < .05$). Further, gender was significantly related with critical attitude towards SNG advertising ($\beta = .17$, $p < .001$), indicating that girls were more likely to score higher on critical attitude.

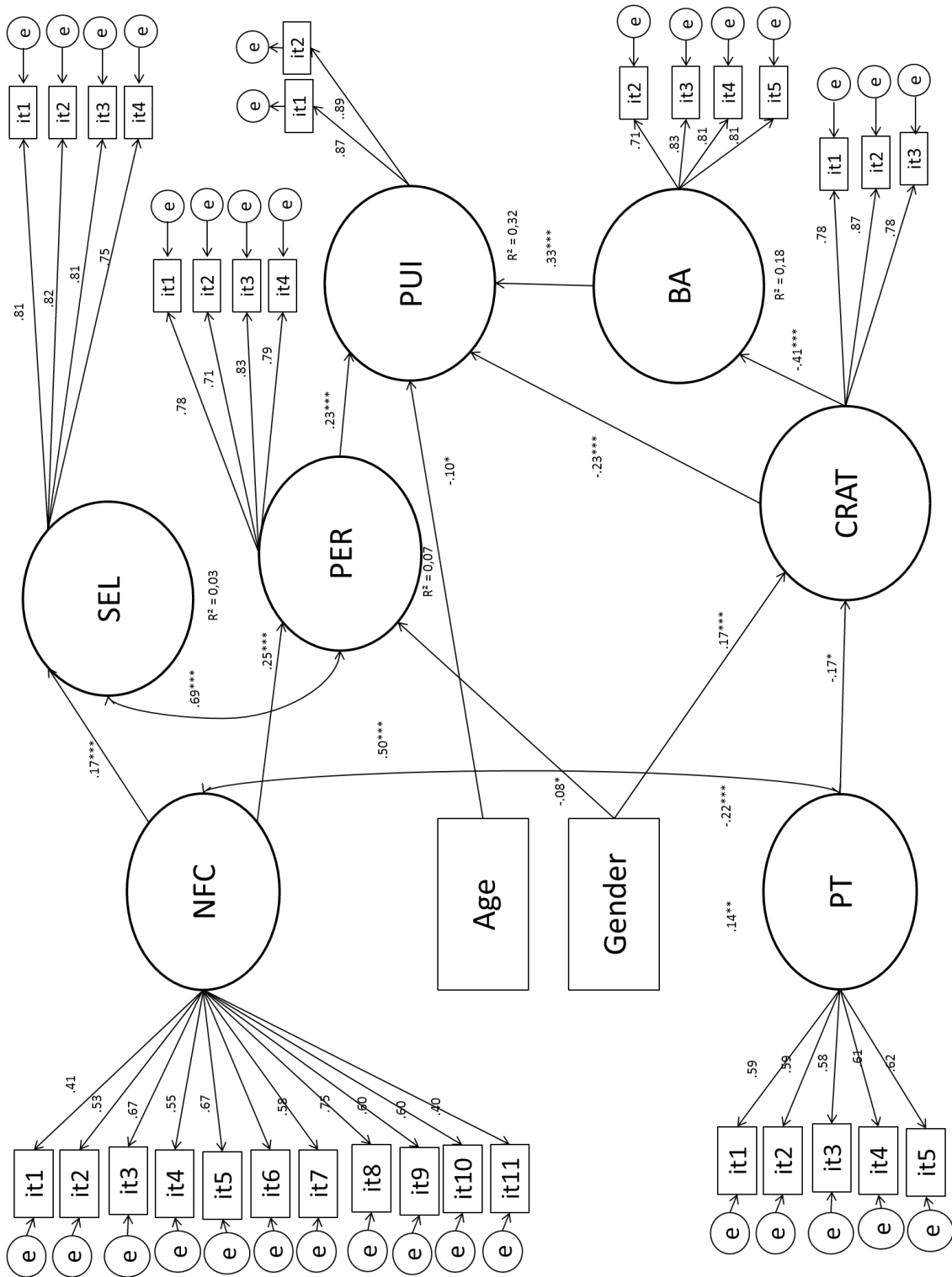


Figure 2 - Structural model

Note. Only significant pathways were included in our analyses. NFC = need for cognition; PT = perspective taking; SEL = understanding selling intentions; PER = understanding persuasive intentions ; CRAT = critical attitude towards SNG advertising; PUI = purchase intention; BA = brand attitude

* $p < .05$; ** $p < .01$, *** $p < .001$

Discussion and conclusion

The aim of this study was to build a model to investigate how the two personality traits NFC and perspective taking, are related to children's conceptual and attitudinal advertising literacy, and in turn how conceptual and attitudinal advertising literacy was related to children's brand attitude and purchase intentions after seeing an advertising in a SNG. Need for cognition was found predictive of the children's understanding of the selling and persuasive intent of SNG advertising. This means that children who score higher on the NFC scale are also more likely to have a higher conceptual knowledge of SNG advertising. This finding is important as many of the previous studies on children and advertising have highly focused on the role of age. In our study, which was conducted within a limited age range, we found that differences in NFC contribute to differences in conceptual advertising literacy.

The other personality trait addressed in our study was perspective taking. Young adolescents' perceived PT skills were not significantly associated with conceptual advertising knowledge, but perspective taking was found to be negatively associated with critical attitude towards SNG advertising. At first, this finding may sound counterintuitive, since the consumer socialization theories assume that PT skills are necessary for becoming more critical towards advertising. Nonetheless, drawing on theoretical frameworks on perspective taking (John, 1999; Selman, 1980), we suggest that young-adolescents who score high on perspective taking skills are more capable to consider the marketers' perspective compared to young-adolescents scoring low on perspective taking skills. Young-adolescents with enhanced perspective taking skills can therefore relate to the intentions of marketers, which in the end lead to a lower critical attitude towards SNG advertising.

Conceptual advertising literacy was only partially related to purchase intention. More specifically, only understanding persuasive intentions of SNG advertising was related to a higher level of purchase intention. In other words, our study found that those adolescents with a higher understanding of SNG advertising persuasive intentions were more likely to have the intention to buy the advertised brand. This is in contrast with assumptions from the PKM, which postulates that persuasion knowledge helps consumers to deal with advertising attempts. To explain this finding, we need to take into account the specific context in which SNG advertising takes place. SNG advertising is highly integrated in the entertaining context (Pharr, 2011). It might be

that players first need to understand why a brand is integrated into the content before considering buying the product.

Consistent with previous research, brand attitude had a direct effect on children's purchase intentions after seeing SNG advertising. In addition, brand attitude partially mediated the relationship between young-adolescents' critical attitude towards SNG advertising and their purchase intentions after seeing SNG advertising. As expected, young-adolescents critical attitude towards advertising was negatively related to their purchase intentions. This finding strengthens the assumption that strengthening young people's critical attitude towards advertising is important to empower children's abilities to thoroughly process advertising.

Limitations and suggestions for future research

Despite careful preparation, this study is subject to some limitations. First, our study used a video compilation of the SNG Habbo to investigate our hypotheses. This was necessary to ensure that all participants had equal advertising exposure. In addition, letting the children play in the real-life version of Habbo would entail that children could encounter players outside the experiments. Both aspects would have been a major trait to internal validity. At first sight, showing the participants a video, instead of letting them play, might seem unnatural. Nevertheless, watching a video game, instead of playing the game itself, often occurs in real life (Nelson *et al.*, 2004). Young-adolescents might view a re-play or watch their friends play the video game. Although this situation impacts on brand recognition, which was not addressed in our study, empirical research comparing gamers and observers established that there were no differences in persuasion between players and observers to in-game advertising (Nelson, Yaros, & Keum, 2006). Second, we only investigated two possible individual traits, which could account for differences in understanding advertising among children in the same age category. Other personality traits could also be important to study. For instance, Terlutter and Capella (2013) suggest taking susceptibility to advertising as an individual trait into account in research on advertising and online games. Third, our study focused on children's advertising knowledge and purchase intentions by using a quantitative approach. Future research might focus on how participation in SNGs can contribute to children's consumer socialization. For example, in-depth qualitative research could provide insights on children's point of view with regard to commercial strategies and

advertising tactics in SNGs. Fourth, our study has been conducted within the environment of the school. This suggests that only children administered at schools were reached. Because this study has been conducted in a country where education is compulsory, the part of the research population that is not reached is likely to be very small. Finally, our study only studied children between 10 and 14 years old. For this age group, our study did not find a significant effect from age on advertising literacy, which might indicate that the level of advertising literacy (both attitudinal and conceptual) does not increase between 10 and 14 years old. To verify this statement, longitudinal research on advertising literacy could provide more information on how advertising literacy evolves. In addition, studies on advertising literacy could consider a more elaborate age range (e.g. 7 through 16 years old), to further examine the role of cognitive development.

Implications

This study has both academic as practical implications. Policy regulations are often strongly focused on setting ages at which children need protection from advertising (Moses & Baldwin, 2005). Our study shows that, for the age group 10 through 14 years old, other factors than age are important with regard to advertising literacy. In particular, we found that studying NFC is relevant for young adolescents and advertising, since we established that there was a positive relationship between NFC and conceptual advertising knowledge. Academic research should investigate further how this new insight on NFC and advertising literacy can be used for educational purposes. A different approach might be needed to teach about advertising literacy for young-adolescents low in NFC compared to young-adolescents high in NFC. With regard to policy, it might be meaningful to not solely focus on age, but also consider the type of advertising (i.e. level of embeddedness). With regard to perspective taking skills, we did not see any effect on conceptual advertising literacy. This suggests that within the age range (10-14 year old) perspective taking skills do not impact upon children's advertising knowledge. Nevertheless, it might be interesting to investigate whether this also holds for younger children, as from a theoretical perspective (see Moses & Baldwin, 2005) perspective taking skills have been seen as an important condition to achieve advertising literacy. Finally, even though a higher knowledge of the persuasive intent lead to higher advertising effectiveness, it remains important to include advertising literacy training into the curriculum. Those children who are aware

of advertising intent are able to make an informed decision on whether or not to buy the product and are not unconsciously persuaded. In addition, next to solely teaching children about advertising intent, it is important that teachers stimulate children's own critical thinking skills, so that children themselves become skilled in reflective thinking about advertising. This way, children's attitudinal advertising literacy assists children to critically process embedded types of advertising, such as advertising on SNGs.

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