Information Processing of Advertising among Young People: The Elaboration Likelihood Model as Applied to Youth

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The purpose of this study was to test whether Petty and Cacioppo's Elaboration Likelihood Model is relevant to young people. An earlier central study on adults was replicated, through 330 in-depth interviews among three age groups (4–7, 8–11, 12–15). The findings: young people do not use either the central or peripheral route for changing attitudes as in the original adult studies. Indeed, in all three age groups, the young people's attitudes were similar in both high and low involvement. We offer explanations for these surprising findings.

THIS STUDY APPLIES an important model from psychology and advertising—the Elaboration Likelihood Model (ELM) (Cacioppo and Petty, 1989; Petty and Cacioppo, 1981)—to young people. This model remains a major framework for explaining advertising effects (Agostinelli and Grube, 2002; Chang, 2002; Chebat, Charlebois, and Gelinas-Chebat, 2001; Chebat, Vercollier, and Gelinas-Chebat, 2003; Coulter, 2005; Coulter and Punji, 2004; Livingstone and Helsper, 2006; Scholten, 1996; Whittler and Spira, 2002). Yet, the ELM has rarely been applied to research with young people or to distinguish between persuasion processes at different stages of cognitive development (Livingstone and Helsper, 2006).

An investigation into ELM's relevance to young people promises to deepen our understanding regarding the way advertising influences youngsters. Moreover, completing the picture would help resolve some ethical questions pertaining to issues of fairness: are young people fair target for advertisers—or are some limits appropriate? (Kunkel and Wilcox, 2001).

Within the framework of applying the ELM to young people, this article discusses several central concepts: advertisements, involvement, information processing of advertisements, and advertisement efficacy (Table 1).

ON THE CONCEPT OF INVOLVEMENT

What creates involvement is the personal significance that the individual ascribes to the object (the message, situation, product) (Antil, 1984).

Zaichkowsky (1986) related to the relationship between the concept of involvement and the cognitive elaboration of the advertisement. In her view, this variable takes on considerable importance in the study of advertising effectiveness as involvement serves as a mediating variable in determining the degree of the advertisement's influence on the receiver. Yet despite the considerable research on involvement, many researchers are convinced that no complete understanding of the involvement concept has yet been formulated. In the view of some, it is very important that additional work be conducted to examine the issue of involvement (Day, Stafford, and Camacho, 1995; Zaichkowsky, 1986).

THE ELABORATION LIKELIHOOD MODEL

According to the ELM the elaboration process of advertising data among adults can take two separate routes depending on the level of involvement. On the higher-involvement level, adults elaborated data through a central route, being persuaded by means of a strong message that appeared in the advertisement. On the other hand,

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TABLE 1
Central Research Terms and Variables

The Advertisement	
Type of message	**Strong** **Weak**
Character attractiveness	**Attractive character** **Nonattractive character**
Involvement	
Ability to process the information	Personal variables: • **Cognitive development** • Prior knowledge Message's nature Situational factors
Level of motivation to process information	**High (promised gift)** **Low (without gift)**
⇩	
The Information Processing	
The Elaboration Likelihood Model	Central route Peripheral route
Alternative model	One unified route
⇩	
The Advertisement Effect	
Attitude toward the advertisement	0–100
Attitude toward the brand	0–100
Purchase intent	0–100

Note: The boldface terms are the study's variables.

on a lower-involvement level adults elaborated the data through a peripheral route, being persuaded by the attractiveness of the advertisement character (Cacioppo and Petty, 1989; Petty and Cacioppo, 1981; Petty, Cacioppo, and Schumann, 1983).

The use of the central route increases when both motivation and the ability to think about the message are high. On the other hand, when motivation and/or the ability to think are low, chances of substantial thought decreases and persuasion will occur along the peripheral route (Cacioppo, Petty, and Stoltenberg, 1985).

To determine which route will be taken, one has to first know the individual's level of motivation to process information. Motivation is mainly influenced by, and positively correlated to, perceived personal relevance (Cacioppo and Petty, 1989; Petty and Cacioppo, 1979, 1986a, 1986b, 1990).

In addition, one has to determine whether the receiver is capable of processing the message through the central route. This is a function of the message's nature (level of complexity, repetition), situational factors (e.g., environmental noise undercutting concentration), and personal variables (e.g., previous knowledge) (Cacioppo and Petty, 1989; Petty and Cacioppo, 1983, 1984).

In a major study of the ELM (Petty, Cacioppo, and Schumann, 1983), college students were asked to look at a print advertisement for a new razor blade (Edge). The high-involvement group was told that the product would soon be purchasable in their neighborhood, and after viewing the advertisement each participant could select one package of the blades. The low-involvement group was told that the product would not be available in their neighborhood for a while, and as recompense for participating in the test each was given a modest gift: toothpaste.

Four versions of the Edge advertisement were prepared. The differences between the advertisements involved two variables: type of message (strong/weak) and character attractiveness (famous personality/regular citizen). The study hypothesized that the persuasiveness of the message on the recipients' attitude would be greater when involvement was high. On the other hand, the persuasiveness of the attractive character would be greater when the receiver's involvement was low. The study's findings supported these hypotheses and thus the researchers concluded that high-involvement persuasiveness worked as a result of information being processed through the central route; conversely, low-involvement persuasiveness used the peripheral route to process information.

The participants were also asked about the chances that they would purchase Edge in the future. The low-involvement participants were not influenced to purchase, whereas the high-involvement participants were influenced by the type of the message. Overall, then, the findings provided strong evidence of the existence of two information processing routes.

Does ELM hold true for young people as well? Do they also have two information processing routes?

However, the fact that the ELM studies held constant the variable of information processing ability has led us to the central question of the present study: *Does ELM hold true for young people as well? Do they also have two information processing routes?*

If the present study succeeds in showing that high involvement leads to central route processing and low involvement to peripheral route processing, we will then have shown that the ELM is relevant to advertising processing among young people as well. Different findings would prove that the ELM does not apply to young people.

THE PROCESSING OF ADVERTISING AS A FUNCTION OF AGE AND COGNITIVE DEVELOPMENT

The possibility that young people might use different routes is based on findings reported in numerous studies in advertising literacy and advertising effect among young people.

Numerous research studies have been undertaken over the past few decades to determine *the development of advertising literacy* among young people. Advertising literacy is understood as the skills of analyzing, evaluating, and creating persuasive messages across a variety of contexts and media (Livingstone and Helsper, 2006; Young, 2003). Those studies examined the awareness of persuasion intent (Brucks, Armstrong, and Goldberg, 1988; Donohue, Henke, and Donohue, 1980; John, 1999; Kunkel, 2001; Macklin, 1987; Moore, 2004; Robertson and Rossiter, 1974; Van Evra, 1990; Ward, Wackman, and Wartella, 1977; Young, 1990) and the ability to identify lack of balance and misleading intent (Bever, Smith, Bengen, and Johnson, 1975; Boush, 2001; Martin, 1997; Peterson and Lewis, 1988; Peterson, Jeffrey, Bridgewater, and Dawson, 1984; Ward, Wackman, and Wartella, 1977). According to these studies, around the age of 8, children evidently start to become more critical toward advertising messages and use the mechanisms at their disposal to filter the information passed on by the advertisement.

In addition, research studies have been taken to determine *advertising effects among young people*: attention to advertisements (Anderson and Lorch, 1983; Gunter and McAleer, 1997; Wartella and Ettema, 1974); understanding the contents (Liebert, Sprafkin, Liebert, and Rubinstein, 1977; Pawlowski, Badzinski, and Mitchell, 1998; Wartella, 1981); appreciating and liking the advertisements (Robertson and Rossiter, 1974; Van Evra, 1990); and the way advertising influences the behavior of different aged children (Atkin, 1975; Roedder, Sternthal, and Calder, 1983; Ward, Wackman, and Wartella, 1977).

The findings of the studies show that significant changes in the various levels of influence occur at around the age of 8. Up until then, children find it difficult to recall and understand advertisements, although it is evident that there is a high level of positive feeling toward the advertisement as well as strong influence of the advertisement on the children's behavior. From the age of 8 and up, the situation starts to change. Older children have better recall and understanding of the advertisement, but their positive feelings for the advertisements and behavioral effect are weaker in comparison to the younger ages. It should be noted, however, that in a recently published, wide-ranging survey of the research literature, evidence was found that children younger than 7 years old are the least influenced by advertising whereas those over 12 years old are the most influenced (Livingstone and Helsper, 2006).

In short, to better understand advertising information processing among young people, one must test the applicability of ELM to this group, broken down into a broad range of discrete age subgroups.

HYPOTHESES

The hypotheses of this study relate to all three age groups (4–7, 8–11, 12–15). Because the age of 8 has been found to signify a shift in the child's development, we distinguish between children 8 years or older and those below 8 years old.

Thus, the first four hypotheses of this study assume that young people 8 years old and above will process information along the same routes that adults use (i.e., a central as well as a peripheral route).

H1: Among ages 12–15: The effect of an advertisement with central arguments will be stronger under conditions of high involvement than low involvement.

H2: Among ages 12–15: The effect of an advertisement with attractive characters will be stronger under conditions of low involvement than high involvement.

H3: Among ages 8–11: The effect of an advertisement with central arguments will be stronger under conditions of high involvement than low involvement.

H4: Among ages 8–11: The effect of an advertisement with attractive characters will be stronger under conditions of low involvement than high involvement.

Based on previous research findings that advertising effectiveness is different for the youngest age cohort than for older ones, the final two hypotheses assume that children under the age of 8 will process information differently than adults, i.e., will not use both routes, as 4–7 year olds have a far more limited cognitive capability than their adult (or older adolescent) counterparts.

H5: Among ages 4–7: The effect of an advertisement with central arguments will be equal under conditions of high involvement and low involvement.

H6: Among ages 4–7: The effect of an advertisement with attractive characters will be stronger under conditions of high involvement than low involvement.

METHODOLOGY

Subjects

Three groups of young people participated in the study: age group 4–7; age group 8–11; age group 12–15. The choice of these age groups is based on findings reported in numerous studies on advertising information processing and advertising effectiveness among young people, as noted above. In addition, as opposed to most other studies on young people (Livingstone and Helsper, 2006), this study deals with a wide range of age groups in order to test whether the underlying hypothesis is universal for all youth or rather applicable only to specific age cohorts.

To test significant differences between the three age groups, we chose young people at the median age of each group: 5–6 (preschool); 9–10 (fourth grade); 13–14 (eighth grade). The field research sample size was 330 young people, divided respectively among the three age groups: 111 (young children); 106 (children); 113 (adolescents).

Procedure

The study was based on 24 cells of analysis: 3 age groups × 2 levels of involvement (high/low) × 2 types of message (central/peripheral) × 2 character attractiveness (attractive/unattractive character).

Step by step description

The *first stage* involved a preliminary research through in-depth, face-to-face interviewing of 61 young people in the 4–15 age range, designed to choose strong and weak messages regarding the product and selecting attractive and unattractive characters for the advertisements to be shown. In other words, the goal of this stage was to develop the four advertisements. Thus, the characters chosen according to the respondent's answers were: "mother" as the attractive character and "neighbor" as the unattractive character, each respectively comprising a strong message—"taste"—and a weak message—about the "package."

Another goal of the preliminary research was to fit the concepts in the questionnaire to the young respondents so that they would understand the questions and provide authentic answers. In addition, the Pollimeter was utilized (details in the Appendix). Finally, the preliminary research found that the young people were able to sit through and answer the questionnaire as a whole.

In the end, four advertisements were designed in accordance with the results of the preliminary research. The differences between the four advertisements involved two elements: type of message and character (see Table 2).

At *stage two*, comprehensive, quantitative field research was carried out. Every child was interviewed individually, face-to-face, during the morning and early afternoon hours, within the confines of each child's school (or kindergarten) in a separate room or quiet corner to avoid disruptions. The interview involved the following parts in this order:

TABLE 2
Argument Quality and Character (Un)Attractiveness

	Type of Message (Argument Quality)	
	Strong	**Weak**
Type of character (attractiveness)		
Attractive	Mom always says: the tastiest chocolate in the world is "Shokolak."	Mom always says: the chocolate in the nicest package is "Shokolak."
Unattractive	The neighbor always says: the tastiest chocolate in the world is "Shokolak."	The neighbor always says: the chocolate in the nicest package is "Shokolak."

Part 1: Advertisement presentation and manipulation—every child was shown one advertisement. The respondents were divided into two groups. One group was promised a gift at the end of the interview (defined as the high-involvement group) while the second group was explicitly told that they would not receive a gift at the end (low-involvement group).

Part 2: Personal questions—in order to provide a methodologically necessary pause between presenting the advertisement and the questions regarding the advertisement, as well as collecting personal background data, seven personal questions were put forward such as leisure time habits, extent of television viewing, etc.

Part 3: Questioning the child—here the effect of the advertisement was tested.

Stage three involved six focus groups of five to six respondents each, two for each age group. The sessions offered the participants the opportunity to explain their opinions regarding several of the research issues (e.g., involvement, gifts, advertisements), thereby enabling a better understanding of the quantitative findings' significance.

Measures

Level of cognitive development. As noted, this study focused on young people in three age groups: young children (aged 4–7), children (aged 8–11), and adolescents (12–15).

Involvement. The present study focused on situational involvement that was defined by Mitchell (1979) as internal arousal, personal interest, or willingness to act—all as a function of a specific situation.

Through a promised gift (or lack thereof), each child's involvement was manipulated positively or negatively—replicating the original study (Petty, Cacioppo, and Schumann, 1983). However, as opposed to the original study, in the present study no specific material gift was promised, but rather the abstract term "gift" was used so that the influence of the "gift" concept would be tested without worrying about the positive/negative attitudes the respondents held regarding any specific gift.

To guarantee that the manipulation worked consciously, each child was asked at the end of the questionnaire whether a gift was promised. The nine children who did not recall whether or not they were promised a gift were removed from the study.

Type of message. In the original study (Petty, Cacioppo, and Schumann, 1983), the stronger argument was based on scientific elements related to the razor blade, whereas the weaker one regarded its esthetic aspects. The present study also used strong and weak arguments: the former involved the taste of the chocolate; the latter, its packaging. The arguments chosen were based on the results of the preliminary research study.

Character attractiveness. According to the original study (Petty, Cacioppo, and Schumann, 1983), character attractiveness related to such characteristics as personal traits, external appearance, and group affiliation. In the original study, use was made of professional athletes versus middle-aged anonymous people. As noted above, our study used the image of Mother as the attractive character, and Neighbor as the unattractive character—again, a result of the preliminary research study.

Dependent variable—advertisement effect. In this study, the examination of the effectiveness of the advertisement focused on the participant's attitudes due to their central role in predicting behavior. Previous research in this field has shown that attitudes toward the advertisement, the brand, and the purchase intent were the most important measures of the message's effectiveness (Cacioppo, Petty, and Stoltenberg, 1985; Lutz, 1975; Mackenzie, Lutz, and Belch, 1986; Mazis and Adkinson, 1976; Olson and Mitchell, 1975; Petty and Cacioppo, 1981; Petty, Cacioppo, and Schumann, 1983).

1. *Attitude toward the advertisement*: The participant's attitude toward the advertisement was tested using elements suggested by Mitchell and Olson (1981): Good/Bad advertisement; Interesting/Uninteresting advertisement; Not Irritating/Irritating; Like/Dislike. These attitudes were scored by the use of the Pollimeter, with the response scores ranging from 0–100 (see the Appendix). The attitude scores of the various elements were combined and equally averaged into an index. Kronbach's alpha yielded 0.706 (n = 330) internal reliability for this combined index of four subvariables.
2. *Attitude toward the brand*: Belch (1982) examined brand attitude using the differential semantic scale relating to four elements: bad/good brand, foolish/wise brand, unfavorable/favorable brand, harmful/beneficial brand. In this study, some of the scales suggested by Belch were changed as it was found in the preliminary research that the children did not understand some of the concepts. The scales used in the current study were: good/bad brand,

smart/stupid brand, healthy/harmful brand (relevant to a food product), and a brand that should be/shouldn't be in the home. Here too the Pollimeter was employed, and all four scores were combined into an overall index (Kronbach's alpha = 0.759, $n = 330$).

3. *Purchase intent*: In this study, the purchase intent of young people was examined while relating to both the personal purchase intent as well as the intent to request the brand from their parents. The measurement was carried out by means of the Pollimeter. After the measurement, the personal purchase intent and purchase request from parents were combined (by means of the average) into a complex index (Pearson correlation between the two responses: $n = 330$, $r = 0.555$, $p = .000$).

RESULTS

General findings

Involvement level and advertising effectiveness. No significant differences were found when testing the difference between advertising effectiveness among high-involvement respondents and their low-involvement counterparts in all their attitude measures:

- Attitude toward the advertisement: ($f = 6.81$, $df = 1$, $sig = 0.918$)
- Attitude toward the brand: ($f = 0.01$, $df = 1$, $sig = 0.929$)
- Purchase intent: ($f = 0.04$, $df = 1$, $sig = 0.848$)

Involvement level, age, and advertising effectiveness. The youngest to the oldest age cohorts with high involvement displayed no difference in all three attitude measures:

- Attitude toward the advertisement: ($f = 1.19$, $df = 2$, $sig = 0.304$)
- Attitude toward the product: ($f = 0.57$, $df = 2$, $sig = 0.57$)
- Purchase intent: ($f = 1.57$, $df = 2$, $sig = 0.209$)

Message type, advertisement character, age, and advertising effectiveness. The attitude toward the advertisement was found to be significantly influenced by the message type ($f = 7.56$, $df = 1$, $sig = 0.006$) and age ($f = 39.98$, $df = 2$, $sig = 0.000$)—that is, the likeability of the advertisement decreases as the age of a young person increases (ages 4–7: $m = 65.92$, $sd = 28.21$; ages 8–11: $m = 53.85$, $sd = 27.04$; ages 12–15: $m = 35.35$, $sd = 21.45$). The attitude toward the advertisement was not influenced by the advertisement character.

The attitude toward the brand was not significantly influenced by any of these three independent variables.

A significant effect was found between *purchase intent* and the age of the subject ($f = 4.03$, $df = 2$, $sig = 0.019$), i.e., purchase intent decreases as the age of the subject increases (ages 4–7: $m = 55.20$, $sd = 38.44$; ages 8–11: $m = 46.11$, $sd = 36.12$; ages 12–15: $m = 41.22$, $sd = 33.97$). Purchase intent was not influenced by message type and advertisement character.

In short, attitude toward the advertisement was influenced by age and message type. Purchase intent was influenced by age alone. The general findings are exhibited in Tables 3–5.

The main conclusion of this study is that in contradistinction to adults, children and early adolescents do not use the two routes for processing information.

Hypotheses testing

The hypotheses were analyzed through a *t*-test for independent groups. Hypotheses H1–H4 and H6 were not confirmed, i.e., no significant differences were found between involvement levels under the various conditions (strong argument and attractive character). On the other hand, Hypothesis H5 was validated as no differences were found among the age 4–7 cohort at different involvement levels for an advertisement with a strong argument. The hypotheses tests are exhibited in Tables 6–8.

To sum up the findings, the level of involvement among young people does not significantly influence advertising effectiveness under different conditions. All three age groups whose involvement level was either high or low were similarly influenced by the advertisements.

DISCUSSION

The main conclusion of this study is that in contradistinction to adults (Petty, Cacioppo, and Schumann, 1983), children and early adolescents do not use the two routes for processing information. This study's findings provide evidence that the involvement variable, which is critical among adults in explaining the use of two information processing routes, does not have the same effect on young people—no significant differences were found in advertising effectiveness between high and low involvement.

These findings and the concomitant overall conclusion are extremely interesting

TABLE 3
Attitudes toward the Advertising

Attitude toward the Advertisement				
Age Group	**Involvement**	***n***	***M***	***SD***
4–7	Low	56	66.41	26.31
	High	55	65.42	30.27
	Total	111	65.92	28.21
8–11	Low	54	50.86	28.07
	High	52	56.95	25.83
	Total	106	53.85	27.04
12–15	Low	59	37.43	21.94
	High	54	33.07	20.87
	Total	113	35.35	21.45
Total	Low	169	51.32	28.02
	High	161	51.84	29.27
	Total	330	51.57	28.60

Attitude toward the Advertisement			
Source	***df***	***f***	***p***
Type of message	1	7.56	0.006
Source of the message	1	0.63	0.430
Age group	2	39.98	0.000
Involvement	1	6.81	0.918
Age group ∗ involvement	2	1.19	0.304

Note: n = total number in the sample, M = mean, SD = standard deviation, df = degree of freedom, and p = significance.

and demand a wide-ranging discussion. The following analysis, therefore, will deal with the theoretical framework of the ELM, with aspects of the specific sample group tested in the original study (Petty, Cacioppo, and Schumann, 1983), and finally with explanations not integral to the model.

The explanation concerning ELM relates to the two factors that determine the information processing route: motivation and the ability to process information.

Regarding *motivation*, the difference in results between young people and adults might be related to the type of manipulation carried out in the research—use of a gift and the extent that this motivates the young people and adults to process information.

Young people today grow up in an environment that provides countless marketing and advertising stimuli. Among them one finds sales promotions that target young people specifically, offering attractive deals to entice youngsters to buy a specific brand. Data show that there has been a significant increase in use of this tactic over time (McNeal, 1992). It is possible that due to gift "saturation" of the market its level of effectiveness on sales promotion activity targeting young people has been impaired. Young people encounter countless attractive deals and therefore are no longer easily enticed.

Thus, it is possible that for the adults tested in the original ELM studies, gift offers were a significant factor in raising motivation—more so than for young people growing up in our contemporary, hypermarketing environment.

Another important point in this context is the fact that the present research promised an unnamed, "abstract" present and not by a concrete gift as in the prior ELM study. This could have led to our different result. Thus, we suggest a study using both an abstract and a concrete gift offer among adults and youth simultaneously (2×2 research design) to neutralize this issue.

Another important point related to this study's findings is connected to the variable of motivation and level of involvement. In the original ELM study, the involvement variable did not receive adequate attention at the individual level, simply assuming that everyone promised a razor blade would have high involvement and everyone promised toothpaste would have low involvement. The assumption that such a manipulation affects everyone in the same way, and that motivation can be studied merely through the prism of the individual's specific situation in the study, has little basis of support. The variable of involvement has to be examined in a more serious and in-depth fashion, differentiating between different types and degrees of involvement (involvement in the situation, the product, and the advertisement), and certainly not assuming that the involvement level can be predetermined.

TABLE 4
Attitudes toward the Brand as Influenced by the Independent Variables

		Attitude toward the Brand		
Age Group	**Involvement**	***n***	***M***	***SD***
4–7	Low	56	50.16	33.50
	High	55	47.31	33.29
	Total	111	48.75	33.28
8–11	Low	54	44.68	26.90
	High	52	49.06	23.77
	Total	106	46.83	25.39
12–15	Low	59	44.96	21.68
	High	54	42.60	23.93
	Total	113	43.83	22.71
Total	Low	169	46.59	27.65
	High	161	46.30	27.41
	Total	330	46.48	27.49

	Attitude toward the Brand		
Source	***df***	***f***	***p***
Type of message	1	0.06	0.811
Source of the message	1	0.36	0.550
Age group	2	0.91	0.405
Involvement	1	0.01	0.929
Age group ∗ involvement	2	0.57	0.57

Note: n = total number in the sample, M = mean, SD = standard deviation, df = degree of freedom, and p = significance.

Regarding *ability*, Cacioppo and Petty (1989) defined several elements for determining information processing ability: message characteristics, situational factors, and level of prior knowledge. Regarding the first (i.e., message complexity and repetitiveness), it does not seem that this caused any problems for the young people in our study, as the message was designed (through a pilot study) to fit their age groups. Each child could read (or be read to) as many times as necessary. The situational factors, too, did not seem to be a problem as every effort was made to ensure that there would no surrounding interruptions or any cause to disrupt the young person's attention.

However, the lack of young people's central route processing might well derive from *prior knowledge*. The extent of prior knowledge and its mental organization is dependent on the memory system's development, on the receiver's cognitive level, and on the extent of prior experience with relevant objects or subject matter. Mussen, Conger, Kagan, and Huston (1984) lend support to this explanation, arguing that many differences between youngsters and adults can be explained by the accumulation of facts and general knowledge as the individual gets older. This explanation would sharpen the issue regarding the place of the "prior knowledge" variable in information processing—accumulated knowledge might well be the factor distinguishing between young people and adults. This issue calls for further research, taking into account each respondent's prior knowledge regarding the various aspects of advertising.

Another explanation regarding the lack of central route use by the young people is related to the specific nature of the *adult population sampled* in the original ELM study (Petty, Cacioppo, and Schumann, 1983): college students. It can be argued that students of higher education are a population group with cognitive abilities greater than the general population. They can be defined as having wider knowledge and also greater interest to process information. Indeed, Cacioppo and Petty (1982) argued that people who have a tendency toward cognitive thinking will also tend to process messages through the central route, as they enjoy investigating issues and investing mental energy in complex problem solving through seeking out hidden clues, differentiating between factors, and analyzing circumstances. In other words, such people enjoy the very exercise of thought. The research of Bakker (1999) as well as Zhang and Buda (1999) points to the importance of cognitive needs and the ramifications such a factor has on information processing.

As a result, one can safely assume that college students not only have a higher level of knowledge, but also a greater tendency to cognitive thinking in comparison to the general population. These two

TABLE 5
Purchase Intent as Influenced by the Independent Variables

		Purchase intent		
Age Group	**Involvement**	***n***	***M***	***SD***
4–7	Low	56	58.52	34.57
	High	55	51.82	42.06
	Total	111	55.20	38.44
8–11	Low	54	48.47	38.10
	High	52	43.66	34.13
	Total	106	46.11	36.12
12–15	Low	59	36.85	31.78
	High	54	45.99	35.91
	Total	113	41.22	33.97
Total	Low	169	47.74	35.76
	High	161	47.23	37.52
	Total	330	47.49	36.57

	Purchase Intent		
Source	***df***	***f***	***p***
Type of message	1	0.87	0.353
Source of the message	1	0.51	0.475
Age group	2	4.03	0.019
Involvement	1	0.04	0.848
Age group * involvement	2	1.57	0.209

Note: n = total number in the sample, M = mean, SD = standard deviation, df = degree of freedom, and p = significance.

variables together may well have led to the original study's findings of central route processing—a finding that one cannot necessarily generalize to the population at large. In that case, the present findings regarding young people are actually representative of the less intellectually oriented population at large.

It should be noted that the other main research studies on ELM were based on college student populations as well (Petty and Cacioppo, 1979; Petty, Cacioppo, and Goldman, 1981; Schumann, Petty, and Clemons, 1990). Thus, the present study's findings regarding information processing among juveniles raise a question mark regarding the corpus of ELM work and suggest that further research among nonstudent adults is imperative to fully understand what happens with adults of different cognitive abilities.

The above explanations regarding motivation, ability, and research population can perhaps explain the absence of central route processing among young people. However, the present findings also discovered that young people do not use the peripheral route either. One solution to this conundrum was offered by Petty and Wegener (1999) in an updated ELM study: we ought to view the information processing route as a spectrum. At one extreme we find high levels of information processing, while at the other extreme very low levels. In addition, they conclude that regarding the peripheral route one can find several qualitative elements, expressed through special processes: identification with the character, use of heuristics, and others.

In light of this ELM revision, it is possible to view the young people's results as a special route on the spectrum, somewhere between the pure central and peripheral routes. This route is "special" in that one cannot discern differences between low and high involvement.

A further explanation is not integral to the model and is based on a different approach to adult information processing. O'Keefe (2002) offered an alternative model called the Unimodel of Persuasion—not always is there a significant difference between central and peripheral arguments (in the case at hand, between tasty chocolate and attractive packaging). Thus, argues O'Keefe, the receiver attempts to justify the conclusion/decision arrived at by way of the facts that were absorbed. If the facts are not significantly different, the message will be processed through one unified route.

The similarity between the Unimodel of Persuasion and the present study's findings lies in the single route for information processing—blurring the lines between the central and peripheral routes.

A final interesting finding of this study is that *advertising effectiveness is influenced by age*. As age increases, positive attitudes toward advertising decrease, as well as purchase intent. The findings are in keeping with many previous studies that examined the influence of advertising on the attitudes and behavior of young

TABLE 6
Hypotheses H1–H2: 12–15 Age Group

	Involvement Level	*n*	*M*	*SD*	*t*	*df*	*p*
Hypothesis H1: 12–15 Age Group							
Attitude toward the advertisement	Low	30	43.10	22.74	0.898	55.00	0.373
	High	27	37.77	21.97			
Attitude toward the product	Low	30	45.29	23.15	0.280	55.00	0.781
	High	27	43.50	25.20			
Purchase intent	Low	30	40.56	30.64	–0.813	55.00	0.420
	High	27	47.94	37.83			
Hypothesis H2: 12-15 Age Group							
Attitude toward the advertisement	Low	31	38.81	24.24	0.706	56.00	0.483
	High	27	34.42	22.95			
Attitude toward the product	Low	31	45.65	24.45	0.295	56.00	0.769
	High	27	43.77	23.80			
Purchase intent	Low	31	37.53	32.86	–0.224	56.00	0.823
	High	27	39.56	35.81			

Note: n = total number in the sample, M = mean, SD = standard deviation, t = computed value of t-test, df = degree of freedom, and p = significance.

people at different ages (Anderson and Lorch, 1983; Atkin, 1975; Gunter and McAleer, 1997; Liebert, Sprafkin, Liebert, and Rubenstein, 1977; Pawlowski, Badzinski, and Mitchell, 1998; Robertson and Rossiter, 1974; Roedder, Sternthal, and Calder, 1983; Van Evra, 1990; Ward, Wackman, and Wartella, 1977; Wartella, 1981; Wartella and Ettema, 1974). The fact that age has a significant impact on the way young people are influenced by the advertising is not surprising and does not break new ground. At the same time, it is revealing that the age of the subject *does* have a significant influence, while involvement does not have a significant influence on the attitudes of young people.

The present research constitutes a pioneering study of advertising information processing among young people (Livingstone and Helsper, 2006). As a result, further research is necessary to answer questions that have now arisen. First and foremost, there is a need for a combined study of advertising information processing among young people and adults together. This would also enable us to discover at what age (if at all) the change of route occurs. Such research also has to take into account prior knowledge of the respondents (of whatever age). In addition, the involvement variable has to be looked at in greater depth as we noted earlier. Finally, it would be extremely useful to test the whole issue in other media as well—especially television and the internet—central to young people's lives today.

IMPLICATIONS

These research findings have important implications in developing a specific advertising campaign oriented for young people. As there are significant differences in advertising information processing between young people and adults, one must allocate the necessary funds for campaigns addressed to young people. Additionally, even among young people one has to carefully choose the target audience by specific age group as the findings clearly show age to be a central variable, i.e., advertising effectiveness decreases with an increase in age among young people. Once the audience is chosen, the optimal budget and media mix have to be decided upon too.

Another important point relates to the question of motivation to process advertising information. This study's findings provide evidence that information processing is not significantly affected by situational involvement (i.e., the gift). Thus, one should look into the possibility of increasing audience motivation through highlighting the product's importance, i.e., to deal with the product involvement variable (Te'eni-Harari, 2004).

Choosing the appropriate character for the campaign is another important consideration. Using famous characters (real or cartoon) entails a large monetary investment. Many advertisers tend to decide on the most popular character based on audience fondness and identification. However, our findings show that the most well-liked or popular character will not necessarily be more effective than an unknown (and inexpensive) character. We cannot assume the conventional wisdom regarding popularity = effectiveness. It is important to note that this recommendation is valid when the advertising goal is to create positive attitudes and not necessarily when the main goal is message retention or creating message salience.

We provide a hypothetical example incorporating these suggestions. It involves a brand within the soft drink category

Our findings show that the most well-liked or popular character will not necessarily be more effective than an unknown (and inexpensive) character. With young people, one cannot assume the conventional wisdom regarding popularity = effectiveness.

with the goal of creating a positive attitude toward the brand among young people.

The advertiser must first decide on, and focus upon, one of the primary age groups: 4–7, 8–11, or 12–15. This decision has to be based on the size of the group and other age group considerations such as soft drink habits, brand loyalty, etc. In addition, one must take into account that youngsters are more influenced by advertising, so it can be expected that the financial investment will be greater for older age groups.

After choosing the audience age group, one has to check the relevance of soft drinks for this audience and try to increase the motivation of the young people to process advertising information. Furthermore, a choice has to be made regarding the advertisement character—not necessarily one who is widely popular, as we noted above. The only important matter is effectiveness, at times attainable with an unfamiliar character.

To be sure, there is a second side to the coin of advertising for young people. Following are several recommendations for media regulators and educators involved in teaching media literacy in general and critical viewing of commercials specifically. These recommendations are designed to achieve the best balance between all the parties' interests, and especially regarding fair advertising for young people.

According to the study's findings, when an advertisement presents a weak argument or a less attractive character to young people, it does not mean ipso facto that it will not have a strong influence on them. Thus, educators and lawmakers must evaluate advertisements oriented to young people differently than we do regarding adult advertising. One cannot assume that advertisements for young people are not effective just because the main character or the advertising argument is not "impressive."

Another implication is that one must treat different age groups in different fashion when deciding what is to be considered "fair" advertising for young people. Again, as the age group becomes younger, the greater the advertising influence, thus necessitating greater caution. One example could be the number of repetitions permitted for each advertisement within a specific broadcast time period, depending on the age group. Children's television policy in the United States (U.S. Congress, 1990) limited the duration of advertising during children's programs, but did not limit the number of repetitions of the same advertisement. On the other hand, the Australian children's Television policy (ABT, 1991) requires all

TABLE 7
Hypotheses H3–H4: 8–11 Age Group

	Involvement Level	*n*	*M*	*SD*	*t*	*df*	*p*
Hypothesis H3: 8–11 Age Group							
Attitude toward the advertisement	Low	30	58.78	26.27	0.886	56.00	0.379
	High	28	52.63	26.62			
Attitude toward the product	Low	30	49.13	27.81	0.483	56.00	0.631
	High	28	45.86	23.17			
Purchase intent	Low	30	57.52	39.65	1.259	56.00	0.213
	High	28	45.21	34.33			
Hypothesis H4: 8–11 Age Group							
Attitude toward the advertisement	Low	27	44.07	28.12	−1.297	52.00	0.200
	High	27	54.28	29.67			
Attitude toward the product	Low	27	39.35	26.05	−0.919	52.00	0.362
	High	27	45.83	25.78			
Purchase intent	Low	27	45.31	38.43	−0.086	52.00	0.932
	High	27	46.17	33.96			

Note: n = total number in the sample, M = mean, SD = standard deviation, t = computed value of t-test, df = degree of freedom, and p = significance.

TABLE 8
Hypotheses H5–H6: 4–7 Age Group

	Involvement Level	*n*	*M*	*SD*	*t*	*df*	*p*
Hypothesis H5: 4–7 Age Group							
Attitude toward the advertisement	Low	31	68.14	27.49	−0.383	60.00	0.703
	High	31	70.77	26.66			
Attitude toward the product	Low	31	47.44	33.98	−0.230	60.00	0.819
	High	31	49.42	34.05			
Purchase intent	Low	31	56.69	35.56	0.870	60.00	0.388
	High	31	48.03	42.50			
Hypothesis H6: 4–7 Age Group							
Attitude toward the advertisement	Low	28	76.81	21.97	1.360	54.00	0.179
	High	28	67.81	27.27			
Attitude toward the product	Low	28	62.00	31.40	1.702	54.00	0.095
	High	28	57.20	33.66			
Purchase intent	Low	28	64.07	31.14	1.987	48.81	0.053
	High	28	43.93	43.69			

Note: n = total number in the sample, M = mean, SD = standard deviation, t = computed value of t-test, df = degree of freedom, and p = significance.

advertising during children's programs not to be repeated more than three times a day or not more than once in any 15-minute period (Lisosky, 2001). Our findings strongly suggest that such legislation has to be expanded by limiting the number of repetitions of each advertisement, relative to the specific program's audience age.

In sum, when dealing with children and early teenagers, conventional advertising wisdom is not necessarily correct. Marketers, advertisers, regulators, and educators would all do well to consider how young people process the advertising information depending on their age group. JAR

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APPENDIX

The PolliMeter™—The Main Measurement Device

In order to make the young people's responses as easy as possible while increasing the validity and reliability of their answers, the study used the PolliMeter (Lampert, 1979, 1981) as its main measuring device.

The PolliMeter is comprised of two basic components: a rectangular scaling device with a sliding colored ruler that can be moved to the right or the left, in the housing. The participant's side is marked or scaled using the colors black and white. At the outset of each question, the scale is set in a balanced position—50 percent black, 50 percent white. The participant is instructed that black represents a negative attitude and white the positive attitude. The subject is requested to set the scale—adding more black or more white to the ruler as needed, to reflect his or her response to the question.

The tester's side of the PolliMeter, which the participant cannot see, "translates" the participant's response into a numerical scale. In other words, the score is calculated by computing X percent of the one color and $(100 - X$ percent) of the other. That is, moving the colored scale to show 100 percent black would represent the most negative attitude, whereas moving the colored scale to 100 percent white would represent the most positive attitude.

The PolliMeter has been selected as the preferred scale among subjects with a low level of education (Lampert, 1978, 1979).