(Araştırma)

BREAKING POINT IN AGE REGARDING CHILDREN'S ATTITUDES TOWARD TV COMMERCIALS[1]

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ABSTRACT

The aim of the study is to investigate the evolution of children's attitudes toward TV commercials. The study is exploratory in nature, it is hypothesized that children's attitudes toward TV commercials are positive up to some age and changes over time. The study targets children between 5-10 years old in order to determine the structural changing age in which the children's attitude toward TV commercials change. Change point analysis and Chow test are conducted in the research. The findings suggest that there is a change point age at ages 7 and 8 where children's attidude towards TV commercials change. Graphical presentations suggest that childhood attitudes toward TV commercials are positive at first, then suddenly decreases and begins to increase again, however never be the same again.

Keywords: TV, commercial, children, breaking point, change point analysis, chow test

ÇOUKLARIN TV REKLAMLARINA KARŞI TUTUMLARINDAKİ KIRILMA YAŞI

ÖZ

Bu çalışmanın amacı, çocukların TV reklamlarına karşı tutumlarının gelişimini incelemektir. Çalışma, doğası bakımından keşfedicidir, çocukların TV reklamlarına karşı tutumlarının belirli bir yaşa kadar olumlu olduğu ve zaman içinde değiştiği varsayılmıştır. Çalışmada, çocukların TV reklamlarına yönelik tutumlarının değiştiği yaşı belirlemek amacıyla 5-10 yaş arasındaki çocukların tutumları incelenmiştir. Araştırmada Değişim noktası analizi ve Chow testi uygulanmıştır. Bulgular, çocukların 7 ve 8 yaşlarında TV reklamlarına karşı tutumlarında bir değişim noktası noktası olduğunu göstermektedir. Grafik sunumlar, televizyon reklamlarına karşı çocukların tutumlarının ilk başta olumlu olduğunu, sonra aniden azaldığını ve tekrar artmaya başladığını, ancak bir daha asla aynı seviyede olmadığını göstermektedir.

Anahtar kelimeler: TV, reklam, çocuklar, kırılma noktası, değişim noktası analizi, chow testi

1. Introduction

Children's attitude toward TV commercials is a promising research area where expenditures of the children rose to billions of dollars (Lindstrom, 2004) and an average child watches thousands of TV commercials a year (Calvert, 2008). Not only children spend their own money but also they influence adults purchasing decisions (Hasmini Ghani and Zain, 2004; Shoham and Dalakas, 2005). Researchers found out that TV watching children, especially alone watchers, are more prone to become consumers at early stages of childhood (Pine and Nash, 2002).

Most of the research on children within TV commercials context is whether the children should be avoided, alcohol and cigarette commercials towards children, food consumption (Blades, et al., 2013), ethical issues and brand cognition of the children. The previous studies focus on the age when children can distinguish a commercial from other television content and the age when children realize the 'persuasive intent' of the commercials (Blades et al., 2013; D'Alessio, Laghi, and Baiocco, 2009). The assumption is that when children can understand persuasive intend of the commercials they will be able to make judgments of their own about the commercials (Blades et al., 2013).

John (1999) classified children's socialization stages under 3 categories; perceptual stage where a child can distinguish commercials, analytical stage where a child can understand persuasive intend of the commercial and reflective stage where understanding of consumer market place occurs. Literature supports evidence that children can identify commercials at the age of 5 (Levin et al., 1982), however, literature provides no evidence that children can understand the persuasive intent of advertising until after 8 years of age (D'Alessio et al., 2009; John, 1999; Kunkel et al., 2004).

There is a consensus that brand cognition starts in the early childhood. Children are very dynamic in nature and they continuously develop psychologically and socially. Although literature supports evidence that children trust and believe in ads upto some age then they become skeptical about ads (Chan et al., 2003), and most of the studies are on adolescents or mostly ages above 8 years old (D'Alessio et al., 2009; Derbaix and Pecheux, 2003; Kunkel et al., 2004; Rossiter, 1977) or ages below 8 (Pine and Nash, 2002). Authors use childhood and adolescent samples in their researches however, "most of the studies researched children's attitudes in a narrow age range, and almost no longitudinal or cross-sectional research exists giving a sense of developmental trends outside of the area of cognitive development… there is far less research examining whether and at what ages children begin to appreciate that advertising messages are inherently biased or on when children begin to develop strategies to counteract the bias within these messages" (Kunkel et al., 2004, p. 5).

Thus, the aim of the study is to fill the gap in the literature on children's attitude toward TV commercials within 5-10-year age range, in other words children

from perceptual stage to analytical stage. Another contribution of the paper to the current advertisment literature is the Change Point Analysis (Fernandez-Duran, 2016) conducted which is used in quality control, econometrics and medicine and CHOW test develeoped for econometrics which tests structural change. The study aims to provide some useful insights to advertisers targeting children, public where protective precautions are the concern and academicians studying advertising towards children.

2. Measuring Children's Attitudes Toward Tv Commercials

Advertisement literature bases on the cognitive skills of the consumers (Wright, 1986) which depends on the information processing capabilities. When it comes to children a sharp change with the age is expected toward TV commercials. Previous studies support evidence for such a change in adolescences (age 10-19), as the adolescences move from tangible to intangible thinking (Keating, 1990). Researchers found out that adolescents are better than children but not as good as adults in the name of consumer consciousness, they are weak at processing information in ads, and they are skeptical towards ads (Manis et al., 1980; Moschis and Churchill Jr, 1979; Moschis and Moore, 1979). Previous researches also suggest that children develop general attitudes toward commercials during their childhood (Boush et al., 1994).

The reasons and mechanism why and how children's attitudes toward TV commercials change is out of the scope of this paper. Thus, the study has one objective; there is a specific structural changing point age where children's attitudes toward TV commercials change, and the study aims to identify this age using change point analysis method and Chow test.

Literature supports three scales when it comes to measure the children's attitude toward TV commercials (D'Alessio et al., 2009; Derbaix and Pecheux, 2003; Rossiter, 1977), which all use the same approach and similar items.

Rossiter (1977)'s scale is composed of seven questions with four-point Likert type questions. Answers are "YES", "yes", "no", "NO". Although the scale is unidimensional and item scores can be summed up to form children's attitude towards TV commercials index, an inspection of items suggests that 3 items measure the credibility of commercials dimension, Two items measure likeability of commercials dimension, and 2 items measure the persuasive power of commercials.

Derbaix and Pecheux (2003)'s scale is composed of seven items targeting 8-12 years old children. Children answer four-point Likert type questions ranging from "Yes—I agree very much" to "No—I disagree very much". Derbaix and Pecheux (2003) scale capture two dimensions, the entertaining dimension with five items and the credibility dimension with two items. The weakness of the scale is that it captures the "credibility dimension" with two items only, and there is no dimension concerning the effects of advertising on behavior dimension towards TV commercials.

D'Alessio et al. (2009)'s scale is composed of 12 items capturing enjoyment (5 items), credibility (3 items), behavioral intent (4 items) dimensions. The scale uses a five-point Likert type questionnaire ranging from 1 = Very False to 5 = Very True. The sample involves children between 8-10 years old. Although the scale is tested for validity and reliability, convergent reliability results are not too promising (Pearson Correlation Coefficients calculated suggest statistically significant but weak relationships).

All the scales developed for measuring children's attitudes towards TV commercials carry some methodological weaknesses. It may be because of the target group, the children itself. In this study children's attitudes toward TV commercials scale developed by   Rossiter (1977) is operationalized because it is evaluated as a reliable and valid scale (Riecken and Samli, 1981). As the other two scales are targeted for children over 8 years old, Rossiter (1977)'s scale has been conducted for this study because the study targets children between 5-10 and this scale is easy to be replied by the children.

3. Change Point Analysis

Change point analysis (CPA) is widely used in engineering, econometrics, quality control, meteorology, medicine, etc., CPA is a very useful tool when the goal is to detect the change that has occurred on a series of time data (Taylor, 2000). Although not common in social sciences, CPA offers potential in marketing and advertising where the aim is to detect the changing point, structural change, or breaking point.

CPA is conducted using the change-point analysis software (Change-Point Analyzer 2.3 program, Taylor Enterprises, Libertyville, IL, USA), which iteratively uses a combination of cumulative sum charts (CUSUM) and bootstrapping to detect changes. It is capable of detecting multiple changes, and for each change, it provides detailed information, including a confidence level indicating the likelihood that a change occurred (Awadein et al., 2014, p. 589).

4. CHOW Test

Developed for econometrics, CHOW test is used to determine the change point in the data set (Chow, 1960). The test is based on regression coefficients. Data is split into parts, and regression equations are calculated for each split part, and one for all data. The hypothesis is that if there is no change in the data set, the calculated coefficients of the regression equations should be the same.

If there is no change, then $b_1 = b_2$ and $\mu_1 = \mu_2$, and data set can be represented by a single regression equation.

If there is a change, then $b_1 \neq b_2$ and $\mu_1 \neq \mu_2$, and the data can be represented with two different regression equations at time "t".

$y_t = X_t * b_0 + \mu_0$, ($y_t = X_t * b_0 + \mu_0$, represents the regression equation calculated for all data, or pooled data)   (1)

$y_t = X_t * b_1 + \mu_1$ ($y_t = X_t * b_1 + \mu_1$, represents the regression equation calculated before change point)   (2)

$y_t = X_t * b_2 + \mu_2$ ($y_t = X_t * b_2 + \mu_2$, represents the regression equation calculated after change point)   (3)

For hypothesis testing a significance level can be calculated using F- statistics, F critical values table can be used for checking whether H_0 is rejected or accepted.

H_0: There is no change point at time "t" ($b_1 = b_2$ and $\mu_1 = \mu_2$)

H_1: There is changing point at time "t" ($b_1 \neq b_2$ and $\mu_1 \neq \mu_2$)

$$F = \frac{(RSS_0 - (RSS_1 + RSS_2)) / k}{(RSS_1 + RSS_2) / (n\text{-}2k)}$$

(4)

RSS; is the Residual Sum of Squares

k; is the number of coefficients or parameters estimated in the model,

n; is the number of observations or sample size.

n-2k; is the degrees of freedom.

The CHOW test is most commonly used in time series analysis to test for the presence of a structural break. At the first stage of the CHOW analysis, the changing point should be determined. In econometrics, it is usually an economic crisis date, and the researcher examines the effects before and after the designated date. In this paper, a change-point analysis method will be operationalized in order to determine the significant age that children's attitudes towards TV commercial change and CHOW test will be conducted according to this determined age.

5. Method

The study is a two-stage research design. In the first stage, exploratory in nature, breaking point analysis is conducted to determine the changing point in age. In the second stage, CHOW test is conducted for hypothesis testing.

5.1. Respondents

Respondents were students at a school-age between 5-10 in Alanya, Turkey. However, as the study took place in the classroom base, different ages are included in the participant list, the boy-girl ratio is the same (Table 1). 30 students from

each age are aimed for the study, however, due to working with children a total of 186 participants participated in the study. 2 questionnaires are dismissed because of missing data resulting in 184 participants. The sample represents ages 5-10 years old, although there are 4 (2), 11 (2), and 12 (2) year olds.

Table 1. Demographics

		Frequency	Percent	Valid Percent	Cumulative Percent
Gender					
Valid	Girl	90	48.9	48.9	48.9
	Boy	94	51.1	51.1	100.0
	Total	184	100.0	100.0	
Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	2	1.1	1.1	1.1
	5	27	14.7	14.7	15.8
	6	23	12.5	12.5	28.3
	7	31	16.8	16.8	45.1
	8	27	14.7	14.7	59.8
	9	27	14.7	14.7	74.5
	10	43	23.4	23.4	97.8
	11	2	1.1	1.1	98.9
	12	2	1.1	1.1	100.0
	Total	184	100.0	100.0	

5.2. Procedure

Data are collected with the help of teachers. The data are collected with by-one-by interaction with the children and the teacher. Teacher first plays with the children, sometimes offers a toy for his/her attention and then asks items in the questionaire especially for the early ages. In some cases items are answered by hand rising, the higher the hand the more positive the answer is. Thus, there is always a risk of pollster influence in the data collection. The use of proxy for data collection ensures the privacy of the respondents, regarding ethical considerations.

5.3. Measures

The aim of the study is to determine the breaking point age children's attitudes towards TV commercials change. The questionnaire is an adopted version of Children's Attitudes Toward TV Commercials scale developed by Rossiter (1977) where answers are with smileys and big and small yes or no (YES yes no NO) (Macklin and Machleit, 1990), there is no neutral choice. The teacher reports Demographics about age and gender; no other demographics are asked. The questionnaire contains seven items aiming to capture children's attitude

towards TV commercials; 1- trueness, 2- annoyance, 3- objectivity, 4- likability, 5- persuasiveness, 6- believability of the characters in commercials, and 7- guidance for product purchases.

5.4. Results

5.4.1. CUSUM Analysis

To determine the changing point of children's attitudes towards TV commercials, CUSUM charts are analyzed for each item.

Trueness

In order to capture whether the commercials on TV are perceived as true or not an item "Television commercials tell the truth" is asked. According to the CUSUM chart (Figure 1), there are 4 breaking points in the attitudes of the children towards TV commercials perceived trueness, which means 4 independent regression equations can be calculated to capture the difference in perceived trueness. However, the graphical examination of the chart suggests that children's attitude towards TV commercials trueness decreases as the age increases and hits the bottom value at age 7, then has a plateau and starting from age 8 increases overage. The graphical presentation suggests that children start to realize that TV commercials do not tell the truth, then they accept the commercials as true again. It may be the reason that as the cognitive capabilities of the children increases, they first understand that commercials do not tell the truth, then as they grow up, they may distinguish what is true and what is not presented in the TV commercials.
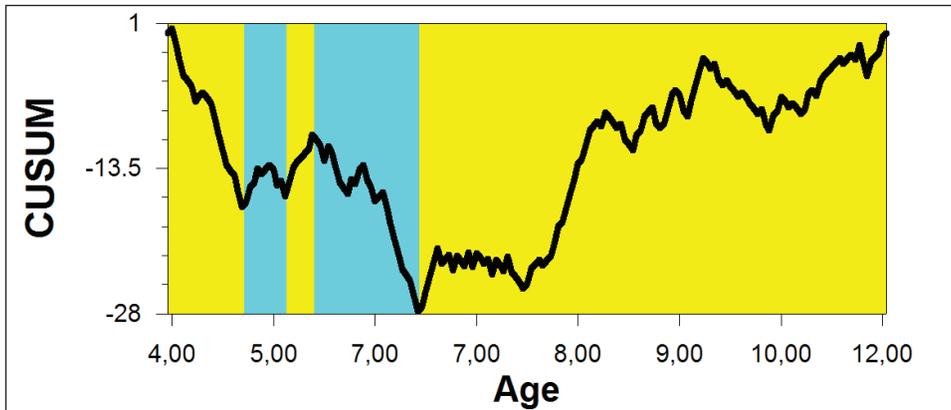
Figure 1. CUSUM Chart for Trueness Attitude of Tv Commercials of Children

Table 2. Significant Changes for Truth

Age	Conf. Interval	Conf. Level	From	To	Level
5.00	(5.00, 6.00)	100%	1.6316	2.6774	3
6.00	(6.00, 7.00)	95%	2.6774	1.5	6
7.00	(7.00, 7.00)	98%	1.5	2.9545	5
8.00	(7.00, 11.00)	94%	2.9545	2.6711	4

Annoyance

Annoyance attitude towards TV commercials is captured by the item "Most TV commercials are in poor taste and very annoying", which is reversed codded. CUSUM chart suggests that children find TV commercials as not annoying, and somewhere between ages 6 and 7, they begin to find TV commercials annoying (Figure 2). Although not-annoyance levels decrease over time, it never falls bottom again. The chart suggests that after a bottom at age 7, children find TV commercials not-annoying.
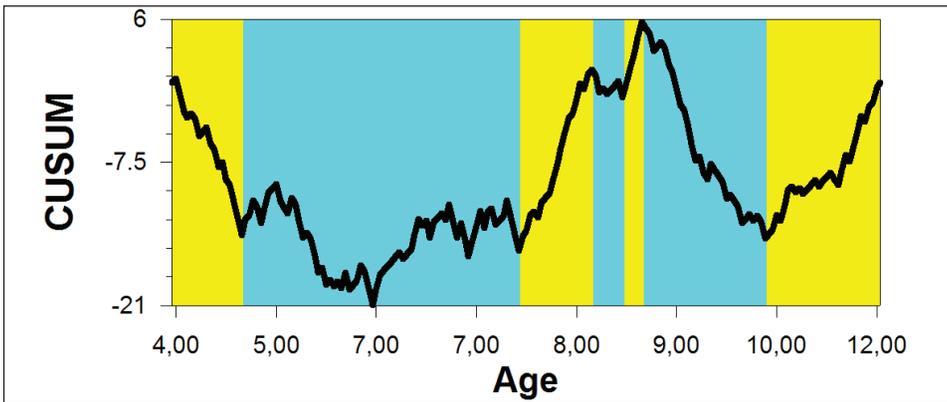
Figure 2. CUSUM Chart for Non-Annoyance Attitude of Tv Commercials of Children (Reversed).

Table 3. Significant Changes for Non-Annoyance

Age	Conf. Interval	Conf. Level	From	To	Level
5.00	(5.00, 7.00)	91%	1.7778	2.5556	1
8.00	(7.00, 8.00)	93%	2.5556	3.4737	4
8.00	(8.00, 9.00)	96%	3.4737	2.25	8
9.00	(9.00, 9.00)	92%	2.25	4	7
9.00	(9.00, 9.00)	95%	4	1.9375	3
10.00	(10.00, 10.00)	100%	1.9375	3.0667	4

Objectivity

To capture whether TV commercials are objective or not, "Television commercials tell only the good things about a product—they don't tell you the bad things" item is asked, which is reverse coded. CUSUM chart suggests that children are incapable of disguising the non-objectivity (or subjectivity) of the TV commercials (Figure 3). TV commercials are designed to present the good or favorable parts of the products or services offered, and children cannot understand the non-objectivity of the commercial at ages between 5-10 years old. Graphical examination suggests that the subjective nature of the TV commercials hit bottom at the age between 8-9, has a plateau, and increases with age.
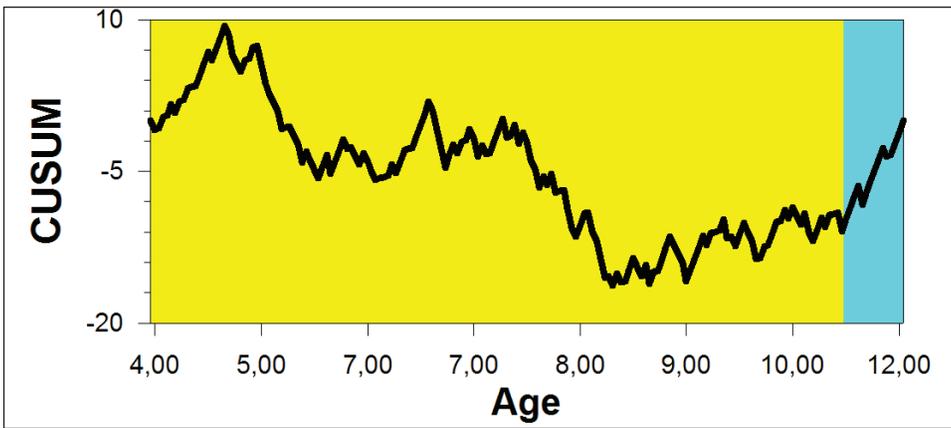
Figure 3. CUSUM Chart for Non-Objectivity Attitude of Tv Commercials of Children

Table 4. Significant Changes for Objectivity

Age	Conf. Interval	Conf. Level	From	To	Level
10.00	(6.00, 10.00)	95%	2.8047	3.6	1

Likability

In order to capture whether the TV commercials are liked or not "I like most television commercials" item is asked. CUSUM chart suggests that children like TV commercials in their early childhood but decreases over time and hits bottom at the age 7, then slightly increases with the age (Figure 4).
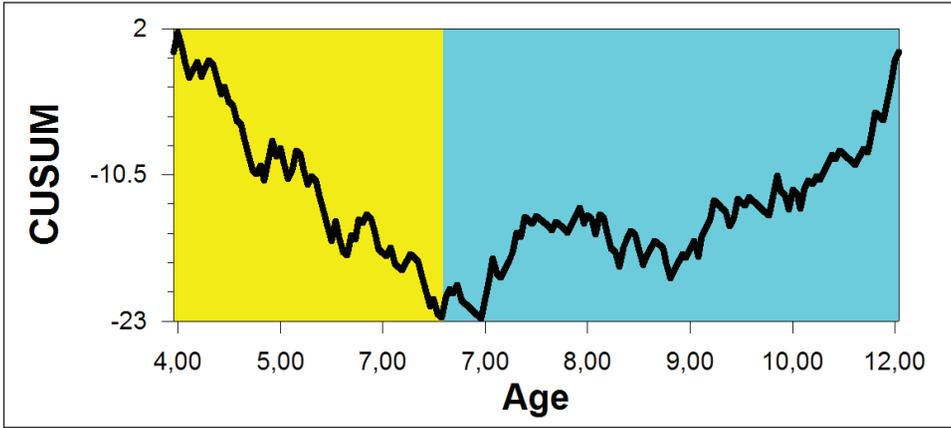
Figure 4. CUSUM Chart for Likability Attitude of Tv Commercials of Children

Table 5. Significant Changes for Likability

Age	Conf. Interval	Conf. Level	From	To	Level
7.00	(5.00, 9.00)	98%	1.9706	2.5	2

Persuasiveness

The persuasive nature of the TV commercials is that they want consumers to do something, in most cases buy the product or service advertised. In order to understand the persuasive intent of the TV commercials, "Television commercials try to make people buy things they don't really need" item is asked, which is reverse coded. CPA suggests a change at age 7-8 years old. Graphical examination of the CUSUM chart suggests that the ability to realize the persuasive intent of the TV commercials change over time and hit the bottom at age 10 (Figure 5).
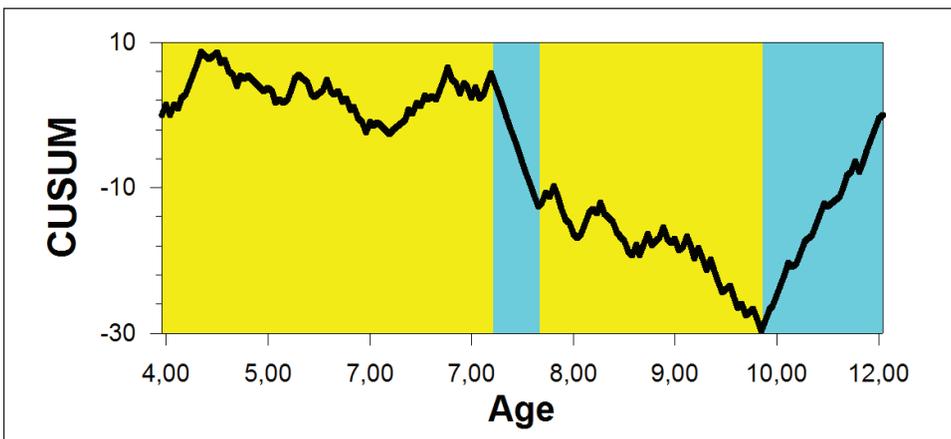
Figure 5. CUSUM Chart for Non-Persuasiveness Attitude of Tv Commercials of Children

Table 6. Significant Changes for Persuasiveness

Age	Conf. Interval	Conf. Level	From	To	Level
8.00	(7.00, 8.00)	91%	2.5952	1	2
8.00	(8.00, 9.00)	94%	1	2.2281	3
10.00	(10.00, 10.00)	100%	2.2281	3.4839	1

The believability of the characters in ads

In order to capture whether children believe in TV commercials or not, "You can always believe what the people in commercials say or do" item is asked. CUSUM chart suggests that children believe in TV commercial in their early childhood, but believing levels decrease with age and hits bottom at age 7-8, then rises again with age (Figure 6). It may be the reason that as the child grows up, children may begin to distinguish what is believable or not presented in the TV commercials.
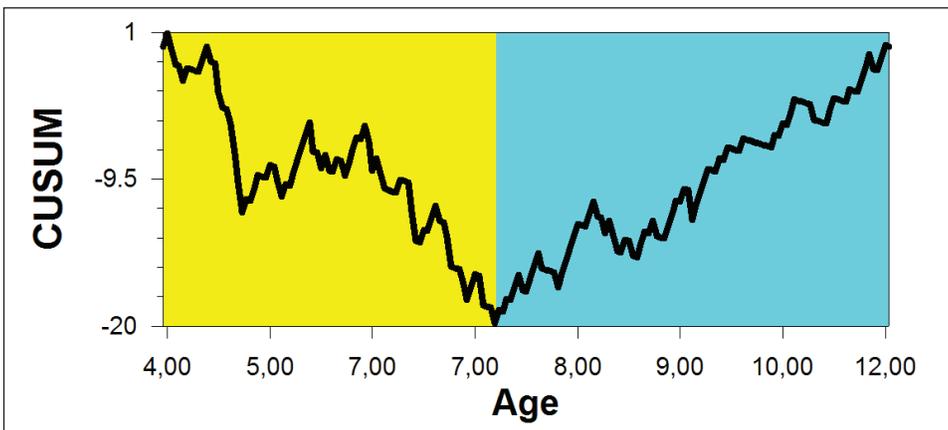
Figure 6. CUSUM Chart for Believability of the Characters in Ads

Table 7. Significant Changes for Believability

Age	Conf. Interval	Conf. Level	From	To	Level
8.00	(5.00, 9.00)	98%	2.8571	3.29	1

Guidance for product purchases

In order to capture whether children think advertised products or services are the best buys, "The products advertised the most on TV are always the best products to buy" item is asked. CUSUM chart suggests three different regression equations can be calculated (Figure 7). Until age 7, children think that products or services advertised on TV are the best buys, but the level suddenly drops at the age of 7 and slightly increases with age.
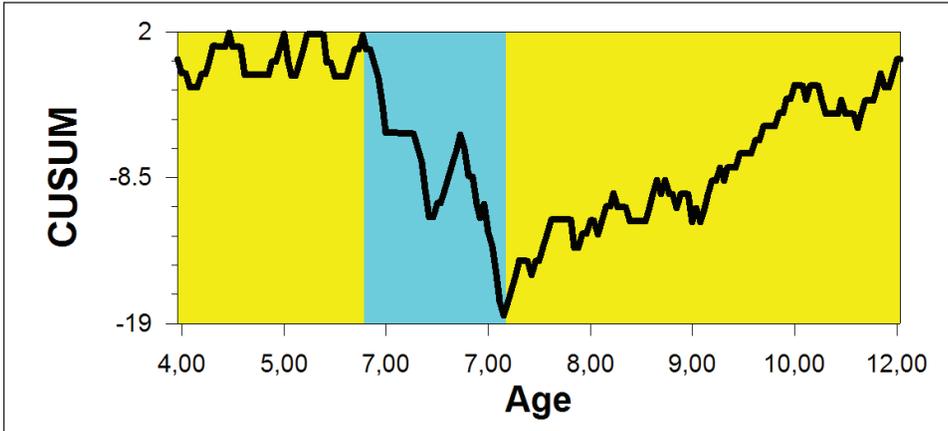
Figure 7. CUSUM Chart for Guidance for Product Purchases Attitude of Tv Commercials of Children.

Table 8. Significant Changes for Guidence for Product Purchases

Age	Conf. Interval	Conf. Level	From	To	Level
6.00	(5.00, 7.00)	97%	3.0426	2.4444	6
8.00	(7.00, 8.00)	99%	2.4444	3.1881	7

CUSUM charts support graphical presentations and confidence levels, which can be interpreted as significance levels. As in Truth, the attitudes of the children towards TV commercials is positive during their early childhood, children think television commercials tell the truth at age 5. Then over time, children's perception of commercials' trueness diminishes and hits bottom at the age 7/8, then rises over age again. A similar pattern is evident for Truth, Annoy, Like, Persuade, Believe and Best Buy, but Good Only. There seems to be no structural change in Good Only. Psychological, social or any related factors are on the stage at ages 7-8, or it is just a natural pediatric development process, which is out of the scope of this paper. Also, CUSUM charts suggest that there are more than one structural changing point (ages), 4 changing points in Truth, 6 in Annoyance, 3 in Persuade and 2 in Best Buy, and 1 in like and 1 in believe and no changing point in Good Only. More than one changing point suggests that the attitudes of the children towards TV commercials is not linear, and children can be segmented into sub-segments.

CUSUM charts are great tools for determining changes in the data set, and CPA supports confidence levels. In the study age determined by CPA is used in CHOW test for additional significance testing. Although, for every changing points (age) captured by CPA a CHOW test can be performed, based on the literature review (John, 1999) paper focuses on ages 7 and 8. The changing points are used as a base for CHOW test in following section.

5.4.2. CHOW Test

Findings of the CPA are retested using CHOW test for robustness. The changing age (or structural change point) of the children is extracted from CPA. Thus, the hypotheses are;

H_1: *There is a structural change in the children's attitudes towards TV commercials in Truth at age 8.*

H_2: *There is a structural change in the children's attitudes towards TV commercials in Annoyance at age 7.*

H_3: *There is a structural change in the children's attitudes towards TV commercials in Good Only at age 8.*

H_4: *There is a structural change in the children's attitudes towards TV commercials in Like at age 8.*

H_5: *There is a structural change in the children's attitudes towards TV commercials in Persuade at age 8.*

H_6: *There is a structural change in the children's attitudes towards TV commercials in Believe at age 8.*

H_7: *There is a structural change in the children's attitudes towards TV commercials in Best Buy at age 8.*

Table 9. CHOW Test Results

	RSS_0	RSS_1	RSS_2	n	k	F_Statistics*	Significance
Truth	193.716	100.944	84.906	184	2	3.809200969	Significant
Annoy	215.764	58.434	148.971	184	2	3.627251031	Significant
Good Only	226.961	172.792	50.408	184	2	1.516532258	Not Significant
Like	174.205	62.971	111.034	184	2	0.103445303	Not Significant
Persuade	251.994	91.862	140.15	184	2	7.751237005	Significant
Believe	135.867	83.482	50.231	184	2	1.449821633	Not Significant
Best Buy	139.651	75.536	57.417	184	2	4.534083473	Significant

*Critical $F_{5\%}(2.180) = 3.04614794$

CHOW test results suggest that there is a structural changing point in children's attitudes for Truth ($F_{2.180}= 3.80; p<0.05$), Persuade ($F_{2.180}= 7.75; p<0.05$), and Best Buy ($F_{2.180}= 4.53; p<0.05$) as the children pass from 7 to 8, and for Annoy ($F_{2.180}= 3.62; p<0.05$) from 6 to 7. F statistics report no significance for Good Only, Like and Believe.

6. Discussion

The aim of the study is to determine the age where children's attitudes toward TV commercials change. The findings state a breaking point at the ages 7 and 8. There remains a black box for how psychological and social factors affect children's advertisement information processing abilities. Previous studies suggest that as children get older, they may become more skeptical towards information provided resulting in a change in their attitudes and as they get older children to learn the relative nature of the truth (Boyes and Chandler, 1992). Our findings support evidence that a rapid decrease occurs in attitudes towards TV commercials at the age of 7-8.

The author suggests that under 8 years old, children accept what they watch on TV as true, entertaining (not annoying), they do not try to impose anything (persuade for buying), and they are the best products and services to buy. Graphical presentation of CUSUM charts suggests that as the children grow older, positive attitudes toward TV commercials diminish and hits the bottom at ages around 7-8 after 8 positive attitudes begin to increase again. The authors suggest that children learn that TV commercials do not tell the truth as they pass to 8, then hit the bottom at 8 then as they grow, they learn what is true and what is not true in the TV commercials, as well as annoy, persuade and best buy. So, there may be a learning curve in the TV commercials context, children may be learning the nature of TV commercials or it is just pediatric development. Findings of the study are congruent with the current literature, which supports evidence that children under the age of 8 years are also perceptually dependent, focusing more on how something looks than what is said about it (Kunkel et al., 2004).

One of the implications of this finding is in marketing ethics, commercials should not target age under 8, as the children are insufficient to process commercial information. Tripicchio et al. (2016) reported that half of the US adult population appears to have an appetite for restricting advertising to children, part of childhood obesity prevention strategies. Another example is the alcohol and tobacco commercials, under age 8 children have positive attitudes towards commercials on TV, they trust in the TV ads, they do not understand the persuasive intent of the commercials and think that advertised products and services are the best buys (Vasiljevic et al., 2016). Advertising enforces children's consumer behavior with four different modes. First, the ad reveals expectations that increase the motivation to purchase. Secondly, the acquisition of advertisements is accompanied by positive emotions (happiness, satisfaction). Thirdly, the fun dimension of advertising creates a pleasant mood. Fourth, children are not always capable of recognizing the persuasive nature of the ad (Lioutas and Tzimitra-Kalogianni, 2015). Pitt et al. (2017) reported that children recall in detail sports betting advertisements that they had seen, with humor the most engaging appeal strategy, many children described how advertisements demonstrated how someone would place a bet, with some children recalling the detailed technical language associated with betting. Kim et

al. (2016) showed that general-nutrition food commercials use persuasive appeals with central cues more frequently than low-nutrition food commercials on four major children's cable television channels in the United States. Thus, it may be wise to regulate TV commercials targeting children below 8 years old. Tektaş (2019) studied parenting styles of children 3-8 years and found that parenting style has an effect on children's attitudes towards advertising, suggesting parents and children watching TV together. Another effective strategy suggested is the intervention in preparing children to better deal with advertising (del Mar Pàmies et al., 2016)

Watkins et al. (2016) reports on two independent New Zealand studies of public and parental concerns about the nature and extent of television advertising to preschool children, showing high levels of concern with the effects of advertising on preschool children and considerable support for its regulation. TV advertisements to preschool children normalize the consumption values and promotion of material culture, providing useful evidence to public policy recommendations.

On the other hand, public service commercials targeting children may also not be appropriate. Warnings about TV ads targeting ages under 8 may not be meaningful, however, starting from age 9 children begin to understand that everything seen on TV ads may not be true and they begin to develop their own attitudes towards TV ads. Or, the public policymakers may choose to target children before their defensive mechanisms developed. Public policy may benefit from the findings of the study when it comes to ban commercials or target children with public service ads.

Another implication may be for the education systems, under age 8 children seem to believe in what they hear and see on TV, however, after 8 they begin to recognize what is true or what is true up to some point. The findings of this study can be used by the pedagogs for educational purposes on TV. It is out of the scope of this study, however, findings of the study can be used to develop educational material presented on TV.

From a marketing point of view, the literature supports evidence for brand awareness is developed in early childhood. May the marketers target ages under 8 for long term brand awareness and brand loyalty where the cognitive defense mechanism of the children has not been developed. As a result, children are the target of intense marketing and advertising efforts, multiple techniques and channels are used to reach youth, beginning when they are toddlers, to foster brand-building and influence purchase behavior (Murugesan and Ponnarasi, 2015). TV food advertisements are reported as a powerful medium predisposing the mind of children to non-core foods through appealing TV commercials, promoting purchase requests and generating unhealthy food preferences in early childhood (Ng et al., 2015).

Another implication for researchers is as the findings suggest that there is a changing point at age 8, however, respondents are between 5-10, it may be more appropriate for future studies to target children age under 8 and children older than 8 bases. Researchers should prepare a graphically based data collection tool for age under 8 and verbal based questionnaire older than 8.

7. Limitations and Future Research

The study has some severe limitations concerning the data collection. First of all, data is collected in Alanya, Turkey. The education system may have an effect on the recognition levels of children as well as culture, social life, and ect. Another limitation is that no demographics are asked within the study, especially parents' background may have an effect on cognition levels of the children. However, the analysis methods proposed in the study is still useful for different participant lists. Second of all, the study does not aim to research why and how the change occurs in attitudes towards TV commercials, which can be a future study. Third, data collection is actually conducted by the adults according to children's responses, the pollster effect is inevitable. For data collection, a 7 item questionnaire is used, as some of the target group is too young, with 4 point scale. A more comprehensive data collection tool with more items for every subgroup of dimensions and a more point scale may benefit for detailed results. Another limitation with the 4 points Likert type scale is that reliability and validity measures can not be calculated, as the assumptions of the methods require interval or ratio scales.

Despite the limitations, the study operationalizes analysis methods developed for econometrics and quality control. Change point analysis and CHOW test can be used for detecting changes in consumers' attitudes when the aim is to classify participants, especially in longitudinal studies in marketing and advertising. The methods can be used to determine breaking points, for example, whether the commercial changes attitudes of the target group or not in future studies.

Another area of research is the new advertising formats, children's advertising literacy by exploring their knowledge and judgments of the new advertising formats for children of ages 9–11 years is already taken attention (De Pauw et al., 2018). Persuasion strategies and tactics of brand integration, interactivity and personalization in the advertising formats, brand placement, advergames and retargeted pre-roll video ads on social media are near-future research areas in advertising towards children.

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