How Exposure to Advertising in Childhood Can Create Biased Product Evaluations That Persist into Adulthood

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Marketing vs. Advertising

- According to the American Marketing Association (AMA), ***advertising*** is one of several ***marketing*** functions.
- Definitions from AMA's website (https://www.ama.org/resources/Pages/Dictionary.aspx):
  - Marketing
    - Marketing is the activity, set of institutions, and processes for creating, ***communicating***, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large (emphasis added).
  - Advertising
    - The placement of announcements and persuasive messages in time or space purchased in any of the mass media by business firms, nonprofit organizations, government agencies, and individuals who seek to inform and/ or ***persuade*** members of a particular target market or audience about their products, services, organizations, or ideas (emphasis added).

Genesis of Project

- Observation: American university students eat a lot of pre-sweetened cereal, even though those ads are targeted to very young children.

- Question: Might there be some long-lasting effects from the ads they saw as children?

- How might that happen?

Age of Acquisition Effects on Memory

Brand names and category associations learned early in life are recognized more quickly and accurately than those acquired later in life.

(Ellis, Holmes, and Wright 2009)

- Early acquired concepts are more firmly embedded in semantic memory than are later acquired concepts.

(Steyvers and Tenenbaum 2005)

- Early acquired concepts shape neural networks into an efficient form for representing them, resisting attempts at reconfiguration by later-learned concepts.

(Ellis and Lambon 2000)

What Do Children Learn from Ads Targeted to Them?

- Fun and happiness are the most common primary appeals employed in advertising directed toward children

(Kunkel and Gantz 1992)

- Young children are unlikely to consider advertiser motivations or to integrate these understandings with multiple product dimensions into their processing of advertising messages

(Bahn 1989)

How Children Process TV Advertising

- Prior to age 7, children do not make relevant distinctions between advertisements and television programming.

  (Butter et al. 1981; Palmer and McDowell 1979; Ward 1972)

- Children develop perspective-taking social skills throughout childhood, hampering their understanding of selling intent at younger ages.

  (Moses and Baldwin 2005)

- Cognitive defenses toward advertising develop late in childhood, and even then children must be reminded to apply skepticism when faced with advertising.

  (Brucks, Armstrong, and Goldberg 1988)

- Children reach adult-like levels of coping with advertising at about age 13

  (Boush, Friestad, & Rose, 1994)

Central Assertion:

A child's extant abilities at the time of initial encoding of advertising into memory will effect how this advertising is remembered and used throughout one's lifetime…

- Early acquisition effects
- Hedonic associations and likely halo effects
- Uncritical processing

…Resulting in biased brand judgments in adulthood

- Brand beliefs are likely to be biased in an affect-congruent direction that globally benefits the product across many attributes

(Batra and Stayman 1990; Isen et al. 1978; Isen and Shalker 1982; Mackie and Worth 1989)

Bias Corrections in Adulthood?

- Corrections for biases are most likely to occur when people have the ability and motivation to reconsider beliefs

(Wegener and Petty 1995)

- Otherwise, people tend to use the knowledge that is most accessible to them in forming judgments

(Higgins, Lombardi, and Bargh 1985; Feldman and Lynch 1988; Smith 1990; Wyer 2008)

Bias correction

We examine the resiliency of these biases by utilizing known correction techniques:

- Cognitive goal structures (i.e., making negative attributes of associated products accessible)

(Bargh et al. 2001)

- Activating advertising knowledge for cognitive defense against marketing communications

(Brucks et al. 1988; Campbell and Kirmani 2000)

However, biases accompanied by highly positive affect may be resistant to correction

(Ahluwalia, Burnkrant, and Unnava 1997)

Brand Extensions

- Individuals often use affect toward extant brands in memory in forming judgments of extensions

  (Bousch and Loken 1991)

- Therefore, hedonic associations with advertising experienced at a young age may not necessarily limited to the original advertised product, and could also lead to biases in favor of future product extensions

The current research

- Pilot Study
  - Demonstrate phenomenon exists
- Studies from *Journal of Consumer Research* paper
  - Study 1
    - Demonstrate that exposure to advertisements in early childhood can lead to biases in favor of that product, and that this bias is caused by positive affect (feelings) toward advertising elements (e.g., characters)
  - Study 2
    - Demonstrate that advertising creates positive biases above and beyond fond memories of product consumption
  - Study 3
    - Provide further evidence that biases are caused by advertising, not memories of consumption
    - Demonstrate that biases are resilient, but can be corrected under some conditions with goal priming
  - Study 4
    - Demonstrate that biases are not limited to the original product, and can transfer to brand extensions
    - Demonstrate that biases are resilient, but can be corrected under some conditions by activating advertising knowledge
- Follow-up Study (being revised for resubmission to *Journal of Communication*)
  - Explore other mechanisms that contribute to long-term biases

Presweetened breakfast cereals as a research context

- This product category makes extensive use of hedonic stimuli in its advertising, including mascots, prizes, and jingles
- Represents approximately half of the food advertisements that American children are exposed to

  (Brownell and Horgen 2002)
- Nutritionally more ambiguous than other categories widely advertised to children such as candy or soft drinks
  - Allows for hedonic-based biases toward utilitarian attributes such as health to form
- From a practical standpoint, the consequences from consuming such products in abundance have the potential to lead to obesity, a pressing public health concern

Pilot Study: Stimuli

- **Earlier stimulus: Tony the Tiger, mascot that has represented the Kellogg's cereal brand Frosted Flakes continuously since 1951 in the United States**
  - This stimulus was chosen because all participants would have been likely initially exposed to it in early childhood
- **Later (more recent) stimulus: Buzzbee, mascot that has represented the General Mills cereal brand Honey Nut Cheerios continuously since its product launch in 1979 in the United States**
  - This stimulus was chosen because only some participants would have been likely initially exposed to it in early childhood, whereas other participants would have been likely exposed to it after full development of advertising knowledge

Pilot Study: Participants and procedure

- Participants were divided into younger and older groups based upon the age they would have been in 1979 when this product was launched
  - "older" participants would have been over age 13
  - "younger" participants would have been age 13 or younger

- 158 total participants from the United States were recruited from Amazon Mechanical Turk
  - 80 viewed earlier stimulus (20 "older," 60 "younger")
  - 78 viewed later/more recent stimulus (21 "older," 57 "younger")

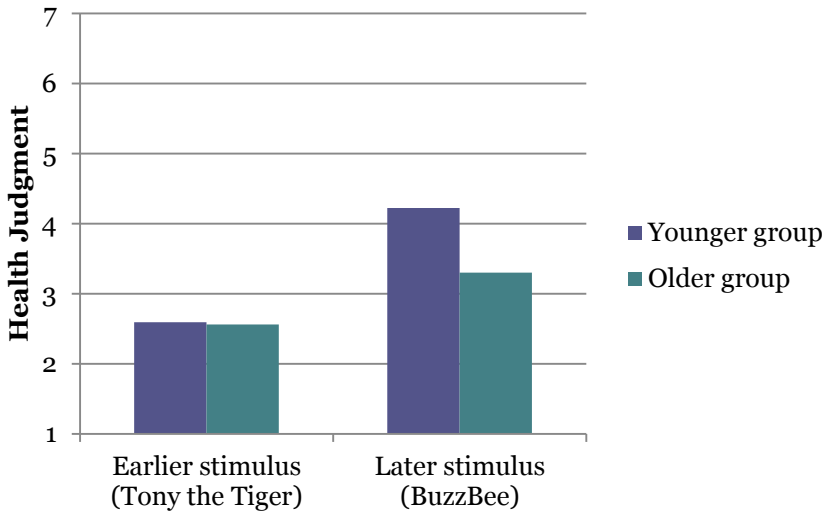
- After viewing the stimulus image, participants proceeded to a different web page where they completed the dependent measure

  - Product endorsed by Buzzbee, General Mills' Honey Nut Cheerios, was rated on four health-related items embedded among nine other measures (e.g., fun to eat), all on 7-point scales.

  - Participants appraised their affect felt toward the image stimulus they saw with a feeling thermometer where they imagined their feelings as if they were degrees on a thermometer (0 = very cold feelings, 50 = neutral feelings, 100 = very warm feelings)

(Payne, Burkley, &Stokes, 2008)

Pilot Study: Results



- Younger participants judged the later/more recent stimulus as healthier than older participants ($M_{YOUNGER}$ = 4.22, M_{OLDER} = 3.30, F (1, 76) = 9.60, p < .01, η^2=.11)
- No difference between age groups in health judgments for the earlier stimulus ($M_{YOUNGER}$ = 2.59, M_{OLDER} = 2.56, F <1)
- Significant two-way interaction between stimulus and age group (F (1,154 = 5.14, p < .05)

What causes this bias?

Study 1: Stimuli

- **Earlier stimulus: Tony the Tiger, mascot that has represented the Kellogg's cereal brand Frosties continuously since 1952 in the United Kingdom**
  - This stimulus was chosen because all participants would have been likely initially exposed to it in early childhood

- **Later (more recent) stimulus: Coco the Monkey, mascot that has represented the Kellogg's cereal brand Coco Pops continuously since its product launch in 1986 in the United Kingdom**
  - This stimulus was chosen because only some participants would have been likely initially exposed to it in early childhood, whereas other participants would have been likely exposed to it after full development of advertising knowledge

Study 1: Participants and procedure

- Participants were divided into younger and older groups based upon the age they would have been in 1986 when this product was launched
  - "older" participants would have been between 24 and 28
  - "younger" participants would have been between 3 and 8

- 177 total participants from the United Kingdom were recruited from an online panel
  - Participants were randomly assigned to view the earlier (Tony) or the later (Coco) stimulus.

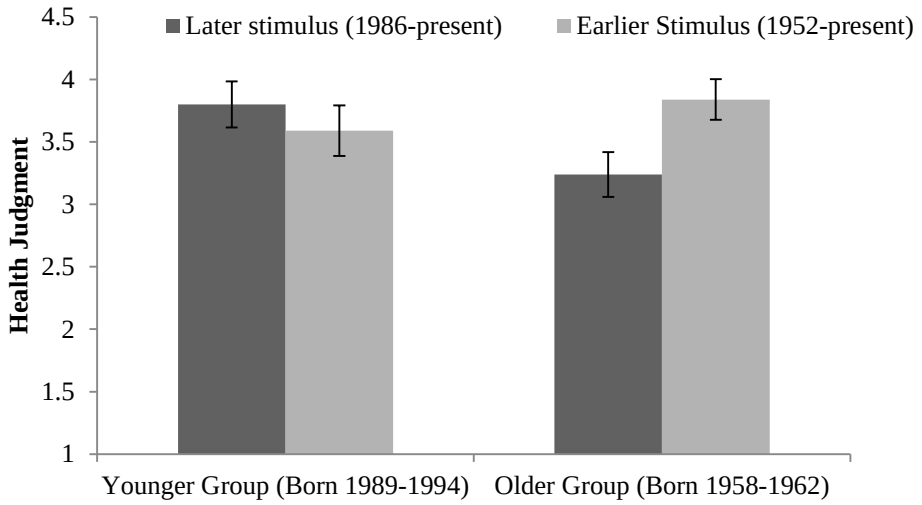
- After viewing the stimulus image, participants proceeded to a different web page where they completed the dependent measure s

  - Product endorsed by the character (Coco Pops or Frosties) was rated on four health-related items embedded among nine other measures (e.g., fun to eat), all on 7-point scales.

  - Participants appraised their affect felt toward the image stimulus they saw with a feeling thermometer where they imagined their feelings as if they were degrees on a thermometer (0 = very cold feelings, 50 = neutral feelings, 100 = very warm feelings)

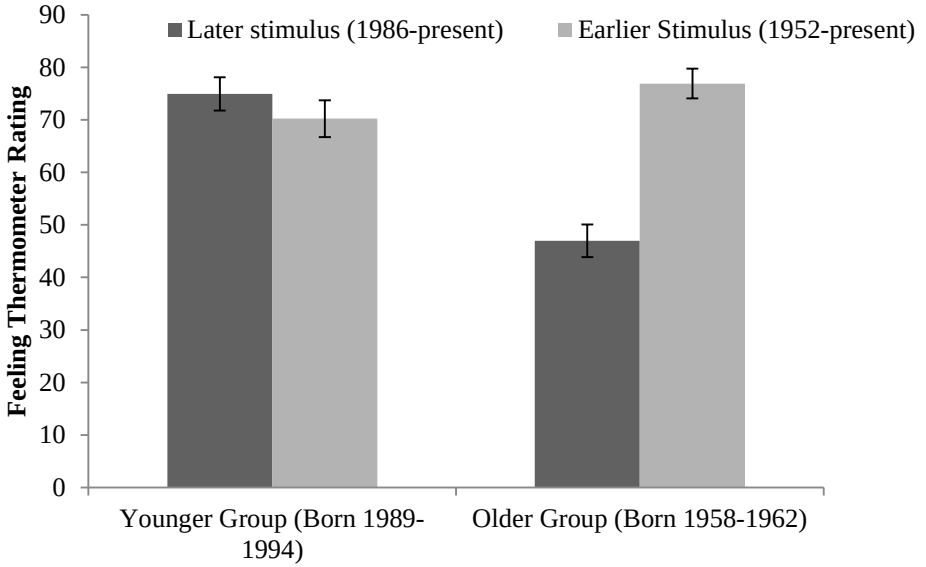
(Payne, Burkley, &Stokes, 2008)

Study 1: Health Judgment



- "Older" participants judged the earlier recent stimulus as healthier than the more recent stimulus ($M_{EARLIER}$= 3.84, M_{LATER} = 3.24, F (1, 97) = 4.06, p < .05)
- No difference between product evaluations for "younger" participants ($M_{EARLIER}$= 3.59, M_{LATER} = 3.80, F <1)
- Two-way interaction between stimulus and age group (F (1,173 = 5.14, p = .056)

Study 1: Positive Affect



- "Older" participants showed stronger positive affect toward the older stimulus (M_{EARLIER}= 76.91, M_{LATER} = 46.96, F (1, 97) = 53.21, p < .001)
- No difference in positive affect for "younger" participants (M_{EARLIER}= 70.23, M_{LATER} = 74.98, F <1)
- Two-way interaction between stimulus and age group (F (1,173 = 15.88, p < .001)

Study 1: Mediation Analysis

- The mediating role of affect (i.e., causal link between childhood exposure and judgment bias) is conditional on age group because participants in the older group could not have experienced the newer ad-related stimulus in childhood, whereas participants in the younger group would have been likely to have done so.
- To test this proposed mediation model, we first tested three equations to establish the predicted relationships before directly testing the conditional indirect effect using the procedures and accompanying SPSS Macro from Preacher, Rucker, and Hayes (2007; model 2).
  - The first equation regressed participant age group, stimulus age, and their interaction on health evaluation ($\beta = .73$, $t = 1.98$, $p < .05$)
  - The second analysis regressed participant age group, stimulus age, and their interaction on the proposed mediator, affect toward the advertising character ($\beta = 34.7$, $t = 5.48$, $p < .01$).
  - Furthermore, when including the proposed mediator in the first equation, we find that the participant age group × advertising character age interaction is no longer significant ($\beta = .36$, $t = .39$, $p > .36$) while the effect of the mediator is ($\beta = .01$, $t = 2.42$, $p = .05$).
  - A 10,000-sample bootstrap confirmed this conditional indirect effect (CI (95%) = .05, .63).

Do fond memories of consumption cause the observed biases?

Study 2: Stimuli

Advertising		
Consumption		
	Kellogg's Froot Loops	McDonald's French Fries

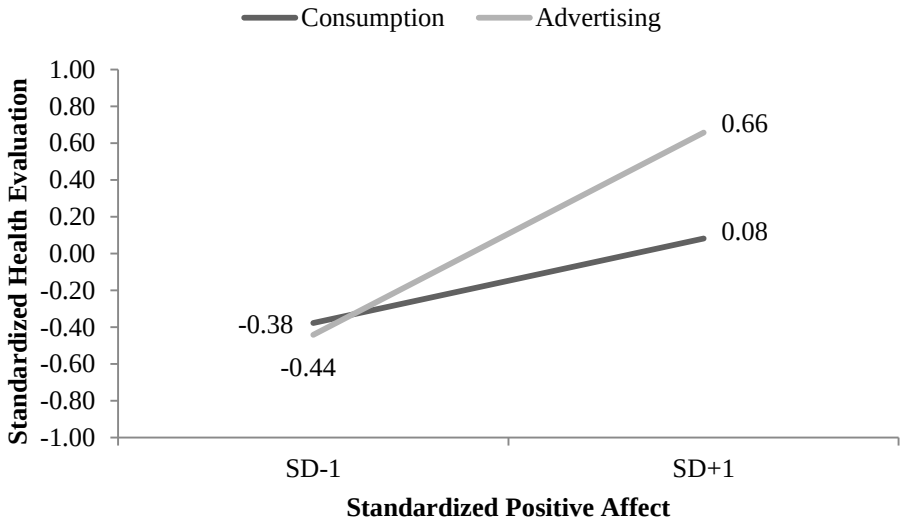
Assumption is that U.S. participants would have been highly likely to have been exposed to both ad stimuli in childhood

Study 2: Participants and procedure

- 151 U.S.-born (45.8% female, born between 1966 and 1994) participants recruited from an online panel.
  - We imposed a selection criterion of birth year later than 1966 (when the newest stimulus began being advertised) to ensure likely exposure to the stimulus in childhood.
- Participants were randomly assigned to view either an advertising or product image for one of the two brands.
- After viewing the stimulus image, participants proceeded to a different web page where they completed the dependent measure s
  - Product endorsed by the character (Kellogg's Froot Loops or McDonald's French Fries) was rated on four health-related items embedded among nine other measures (e.g., fun to eat), all on 7-point scales.
  - Participants appraised their affect felt toward the image stimulus they saw with a feeling thermometer where they imagined their feelings as if they were degrees on a thermometer (0 = very cold feelings, 50 = neutral feelings, 100 = very warm feelings)

(Payne, Burkley, &Stokes, 2008)

Study 2: Results



- Measures were standardized and combined
- When positive affect was "low" (1 standard deviation below the mean), there was no difference in health evaluation between the image stimulus conditions ($z_{CONSUMPTION} = -.38$, $z_{ADVERTISING} = -.44$; $F < 1$).
- In contrast, when positive affect was "high" (1 standard deviation above the mean), the difference between the conditions was significant ($z_{CONSUMPTION} = .08$, $z_{ADVERTISING} = .66$; $F(1, 151) = 6.94$, $p < .01$), with positive affect toward advertising stimuli resulting in more favorable product evaluations than positive affect toward consumption stimuli.
- Two-way interaction between image type (product vs. advertising) and positive affect (F (1,151 = 3.86, $p = .05$)

How resilient are these biases?

Study 3: Stimuli

- Advertising stimulus: Tony the Tiger
  - Emblem in continuous and heavy use since 1951

- Control stimulus: Play-doh Pete
  - Emblem in continuous and heavy use since 1970
  - Control group used to :
    - Demonstrate that awareness of the source of bias (i.e., hedonic associations with the advertising for an associated product) is needed in order to correct bias

Study 3: Participants and design

- 150 U.S.-born undergraduate participants (47% female) were randomly assigned to a between-subjects design
  - Ability to correct (source of bias made salient/not made salient) manipulated
  - Motivation to correct (prime: health/control) manipulated
  - Affect toward the stimulus image was measured as a continuous independent variable

Study 3: Procedure

- Participants in the motivational prime condition completed a word-search priming task

  (Bargh et al. 2001)

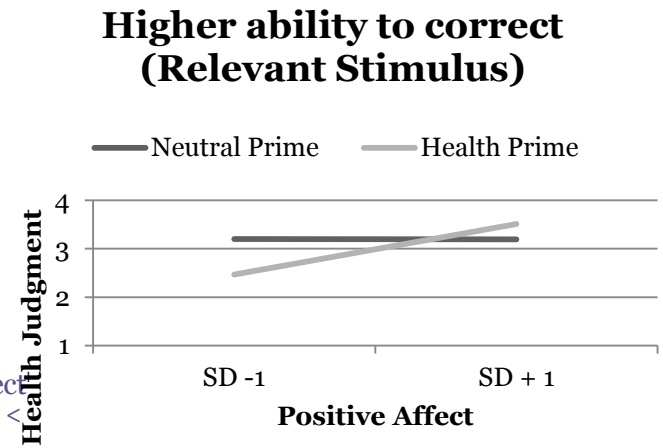
  - 7 words related to health among 6 neutral words
  - Participants in the control condition searched for 13 neutral words
- Participants then visualized a memory involving either Tony the Tiger or Play-doh Pete
  - Purpose of the memory exercise was to make the source of bias (advertising stimulus) salient for participants in the relevant (Tony the Tiger) condition but not in the irrelevant (Play-doh Pete) condition
- Participants appraised their affect felt toward the stimulus image with a feeling thermometer
- Product endorsed by Tony the Tiger, Kellogg's Frosted Flakes, was rated on four health-related items embedded among nine other measures (e.g., fun to eat), all on 7-point scales.

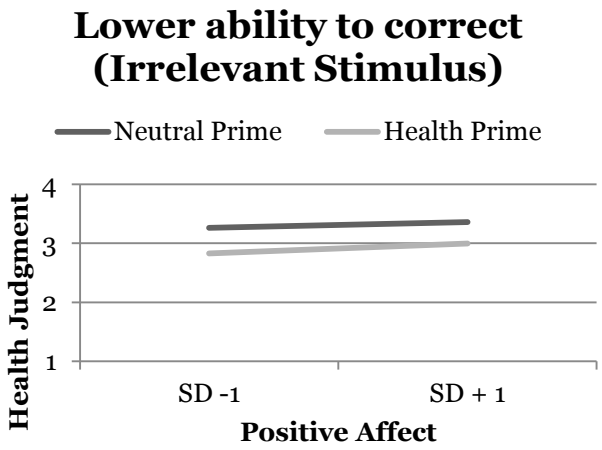
Study 3: Analysis

- Hypotheses were tested with full factorial ANOVA
  - Prime and stimulus relevance as categorical independent variables
  - Feeling thermometer measure as a continuous independent variable
  - Composite of the five health-related questions as the dependent variable ($\alpha = .74$)
- Relevant and irrelevant stimulus images did not differ in level of positive affect felt toward them ($M_{\text{Tony}} = 71.85$, $M_{\text{Pete}} = 72.79$, $F < 1$)

Study 3: Results

- 3-way interaction between motivation condition (health/neutral prime) stimulus relevance, and felt positive affect (F (1,141) = 4.23, p < .05, η^2 = .03)
  - Relevant stimulus condition/Ability to correct enhanced (Tony the Tiger)
    - Participants who were not given health prime (lower motivation to correct) did not alter their health evaluations, regardless of felt affect (t < 1, β = -.01)
    - In the health prime condition (higher motivation to correct), there was a significant linear relationship, with the effect of a decreasing likelihood to correct bias as positive affect toward the relevant stimulus increased (t = 3.14, β = .46, p < .01)
    - Spotlight analyses
      - When affect was neutral/mildly positive, participants who were primed to correct bias tended to adjust their health judgments downward (F (1, 69) = 5.75, p < .01, η^2 = .08)
      - When affect was extremely positive, there was no difference between bias correction conditions on health judgment (F (1,69) = 1.15), confirming that participants experiencing extremely positive affect were less likely to correct
  - Irrelevant stimulus condition (Play-doh Pete)
    - Neither participants in the control (t < 1) nor in the health prime (t < 1) condition altered their health evaluations, regardless of felt affect





Are these biases limited to the original products featured in the advertising?

Study 4: Participants and Design

- 78 U.S.-born and raised undergraduate students (40% female) randomly assigned to a between-subjects design
  - Ability to correct (advertising knowledge activated/not) manipulated
  - Motivation to correct measured through choice task
  - Affect toward the advertising stimulus measured as a continuous independent variable

Study 4: Procedure

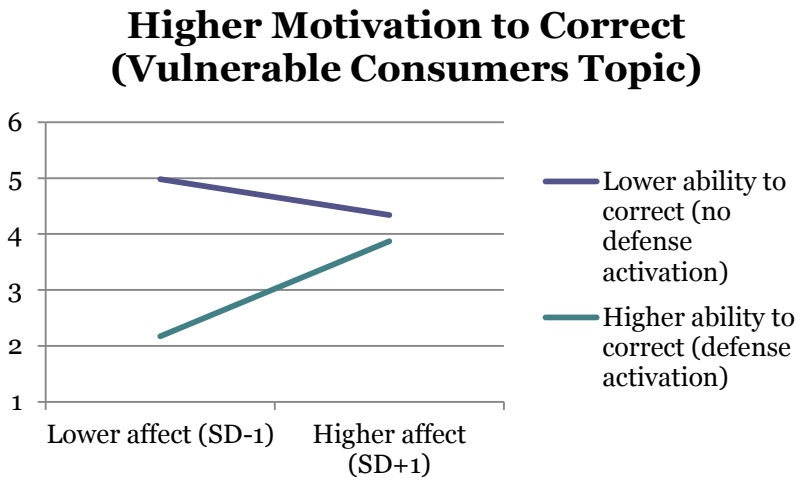
- Participants first shown an image of the target childhood mascot (Tony the Tiger) and then completed a childhood memory exercise
- Appraised affect toward stimulus with feeling thermometer
- Participants were given two ostensible marketing and society seminar topics and were asked to vote for one (motivation measure)
  - Shelf space (all participants read about one topic) vs. vulnerable consumers (participants read one of two topics listed below)
- Advertising knowledge manipulation (ability to correct manipulation)
  - In activation condition, participants read a short passage about young children's lack of capacity to defend against advertisements due to their lack of advertising knowledge
  - In the control condition, participants read a passage on elderly consumers and their reduced capacity to defend against advertisements due to cognitive decline
- Fictional extension endorsed by Tony the Tiger, Kellogg's Frosted Puffs, was rated on four health-related items embedded among nine other measures (e.g., fun to eat), all on 7-point scales.

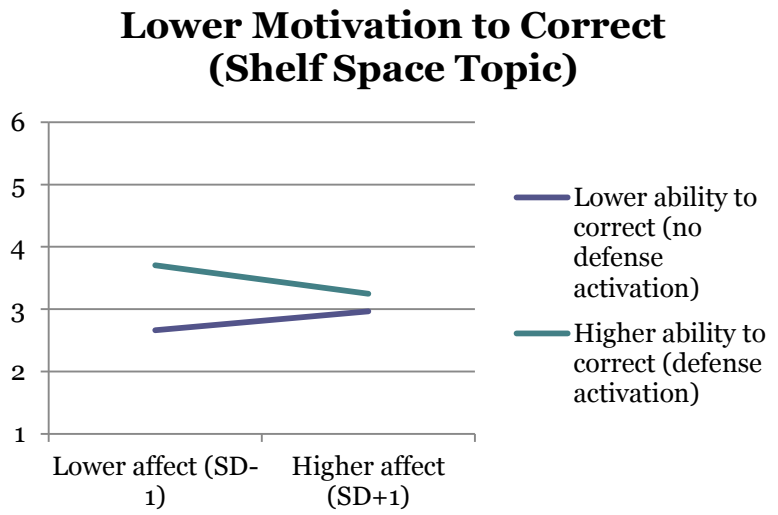
Study 4: Analysis

- Full-factorial ANOVA
  - Advertising knowledge as independent variable
  - Feeling thermometer measure as a continuous independent variable
  - Perceived healthiness of the target product as the dependent variable (α = .79)

Study 4: Results

- 3-way interaction of defense activation, motivation to correct bias, and feeling thermometer (F (1,69) = 5.10, $p < .05$, $\eta^2 = .07$)
  - As in study 3, higher levels of positive affect felt toward the mascot interfered with bias correction when ability to correct was enhanced and participants were motivated to attend to the message (i.e., lowered health evaluations of the associated product) ($t = 2.94$, $\beta = .55$, $p < .01$)
  - Spotlight analyses
    - When affect was neutral/mildly positive ("low"), participants who were motivated to attend to the bias correction manipulation adjusted their health judgments downward (F (1, 32) = 4.32, $p < .05$, $\eta^2 = .12$)
    - When affect was extremely positive, there was no difference between motivated and unmotivated participants on health judgment (F (1,32) = 1.61, $p = .21$)
  - Also replicating the pattern in study 3, judgments did not change regardless of level of felt affect in the other three conditions (all $t < |1|$)





Follow-up Study: Participants

- 51 U.S.-born and raised undergraduate and graduate students (ages 18-35, 42% female)
- As in study 1, participants were classified as "older" (over age 13) or "younger" (age 13 or under) based on the age the participant would have been at the time the later stimuli were introduced
  - "Older" participants could have experienced only half the stimuli in early childhood
  - "Younger" participants would have likely experienced all of the stimuli in early childhood, before advertising knowledge would have been fully developed

Are there other mechanisms at work, and what might cause children to develop affective attachments to advertising elements?

Follow-up Study: Stimuli

	Words	Older Stimuli	Newer Stimuli
Advertising Stimuli	Commercial Selling Spokesperson Sponsor		
Entertainment Stimuli	Channel Entertainment Program Series		

Follow-up Study: Procedure

- Participants completed seven trials in an Implicit Association Test (IAT) where they classified randomly appearing stimuli as either entertainment or advertising using the “e” and “i” keys on the computer

(Brunel , Tietje, and Greenwald 2004; Greenwald 2008)

  - Block 1: Practice block, visual stimuli (“TV characters” or “Mascots”)
  - Block 2: Practice block, word stimuli (“TV shows” or “Advertising”)
  - Block 3: Practice block, all stimuli (“TV shows or TV characters” or “Advertising or Mascots”)
  - Block 4: Measurement block, all stimuli (“TV shows or TV characters” or “Advertising or Mascots”)
  - Block 5: Practice block, all stimuli, “e” and “i” keys reversed
  - Block 6: Practice block, all stimuli , mismatched word and image task ("TV shows or mascots" or "Advertising or TV characters“)
  - Block 7: Measurement block, all stimuli, mismatched word and image task ("TV shows or mascots" or "Advertising or TV characters”)

- 600 ms penalties imposed for incorrect categorizations

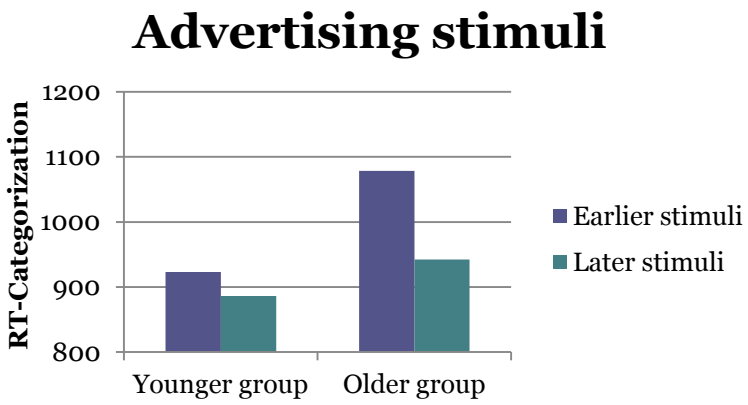
(Greenwald , Nosek, and Banaji 2003)

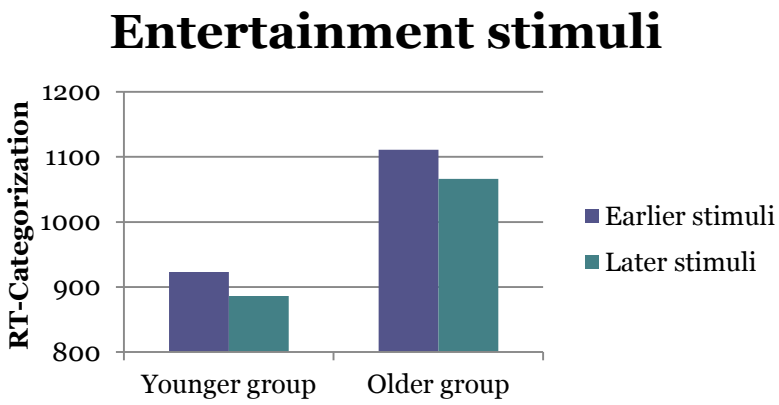
Follow-up Study: Main effects

- Baseline measure
  - Response times to advertising word stimuli were faster than the response times to entertainment word stimuli ($M_{\text{Advertising}}$ = 1013 ms, $M_{\text{Entertainment}}$ = 1112 ms, F (1,51) = 9.90, $p < .01$)

- Mixed ANOVA with one between-subjects factor (participant age group: younger/older) and two within subjects factors (stimuli chronology: earlier/later, stimuli type: advertising/entertainment)
  - Stimuli chronology (F (1,50) = 9.27, $p < .01$)
  - Stimuli type (F (1,50) = 6.67, $p < .01$)
  - Participant age group (F (1,50) = 8.96, $p < .01$)

Follow-up Study: Interaction





- 3-way interaction between participant age group, stimuli chronology, and stimuli type (F (1, 50) = 3.81, p =.056)
- Within advertising stimuli, 2-way interaction of stimulus chronology by age group (F (1,50 = 4.46, p < .05)
  - Enhanced ability in the older group of participants to categorize advertising stimuli that they would have been exposed to after full development of advertising knowledge ($M_{Earlier}$= 1078.64, M_{Later}= 942.45, F (1,50 = 11.04), p < .001)
  - No differences in the ability to categorize advertising stimuli among the younger group of participants, who would have been exposed to all of the stimuli before advertising knowledge was fully developed ($M_{Earlier}$ = 923.13 , M_{Later} =886.31 ms, F (1,50) = 1.88, p = .18)
- Importantly, this two-way interaction did not replicate within the entertainment stimuli (F (1,50) < 1)

Overview of findings

- Pilot Study
  - Exposure to advertisements in early childhood can lead to biases in favor of that product
- Study 1
  - Positive affect toward childhood advertising icons is a causal mechanism of this bias
- Study 2
  - Biases cause by advertising are above and beyond biases caused by memories of consumption
- Study 3
  - Biases are resilient, but can be corrected when ability and motivation to correct are enhanced
  - Polarized positive affect is a motivational deterrent to correct bias
- Study 4
  - Biases are not limited to the original product, and can transfer to brand extensions
  - Biases are resilient, but can be corrected when motivation to correct is high and ability to correct is enhanced
  - Polarized positive affect is a motivational deterrent to correct bias
- Follow-up Study
  - Distinctions between early childhood advertising and entertainment are blurred

Implications

- Advertising to young children has effects that can last for years, even decades, into adulthood
  - Distinctions between advertising and entertainment remain blurred and are not spontaneously corrected through metacognitive processes, leading to biases in favor of associated products
  - Both ability and motivation to correct must be high for bias correction to occur
    - Even so, resulting biases favorable to products are resilient to known bias correction processes when affect toward advertising objects (e.g., mascots) is strongly positive
- Biases created by early childhood advertising have the potential to adversely affect consumer health and well-being
- Policies banning licensed characters accomplish little, as company-created mascots have strong associations with entertainment (versus advertising)

Questions?

"The past is never dead. It is not even past."

--William Faulkner, *Requiem for a Nun*