Visual Attention & Choice in Retail Settings

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Agenda

- Visual attention
  - Exposure- **Attention** – Perception- *Retention*

- Marketing & Retail applications/ implications:
  - (Atalay, Bodur, and Rasolofoarison 2012)

Can the store/shelf layout make the consumer buy?

✓ Atmospherics

✓ Impact of Packaging

✓ Impact of Facings

?   Impact of shelf location

Exposure to Stimuli in Retail Settings

Four levels of Filtering:

1. Selective **Exposure** - medium through which the stimulus gets delivered. (is the brand available?)

2. Selective **Attention** – does each stimulus/brand get noticed? (is the brand seen?)

3. Selective **Perception** – do people understand the stimulus? (how is the brand evaluated?)

   ➤ *Is the brand chosen?*

4. *Selective **Retention** – does the stimulus make it all the way to memory so people can use that information when they need to. (is the brand remembered?)*

Breaking out of the clutter

- What makes people pay attention?

- Prominence Effect:

  - People attend mostly to a more prominent (standing out, easily noticeable) attribute (e.g. benefit as opposed to cost)

    - _Vividness/salience_

    - _Relevance_ – personally important

    - _Concreteness_ – easy to picture or imagine/think about

    - _Proximity_

Selective perception & retention

- Perception = how we organize the information into a 'coherent' whole

- Perception = a lot of interpretation to arrive at a meaningful picture of the world

- Perception = is subjective process

- Retention: Our interpretations from the perception processes is what is retained and goes into memory (long term).

Mere Exposure Effect

- Familiarity leads to liking (Zajonc, 1968)

- The more you see a novel stimulus, the more you like it.
  - Examples: nonsense syllables, Chinese characters, faces, the Eiffel Tower.

- In vision research: Looking more is a predictor of choice (Krajbich et al. 2010).

- A feedback loop: The more the individuals look at a stimulus, the more they like it, and the more they like it the more they look at it (Simion and Shimojo 2006).

丸量

Can shelf location make consumers buy?

- Central Shelf Location vs. Eye/Hand Level

    - Ergonomics: Eye level is superior (verticality)

    - Centrality: horizontal location – **MIXED EVIDENCE**
        - Center is perceived to be popular.
        - Left is low visual lift.
        - Right is preferred.

Origins

- Which dessert would be chosen more often?

Left ?   Center?   Right?
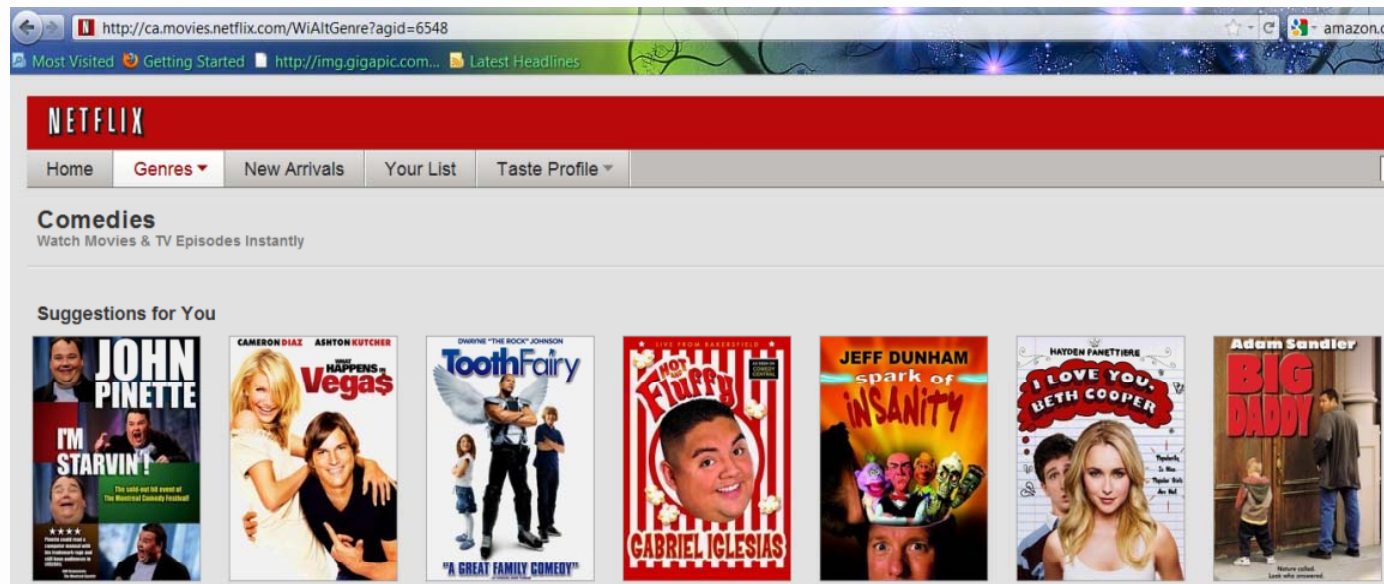
Origins

- Which bathroom stall would be chosen more often?

Left ?   Center?   Right?

Preliminary evidence

- People choose the middle options rather than the ends of the array:
- Christenfeld (1995), based on field data:
  - Bathroom stalls (**Chosen= 60%, Exp= 50%**)
  - Toilet paper dispensers (**Chosen**= **62%**, **Exp**= **50%**)
  - Items on supermarket shelves (**3-21% more than expected%**)
- Shaw et al. (2000), based on lab data:
  - Highlighters (**61%**), surveys (**76%**), chairs (**71%** vs. exp **33%**)

- **Explanations:**
  - Minimum effort explanation
  - Preference for symmetry explanation
  - Focus of attention explanation (directional support)

Centrality effect in marketing

- Consumer exposure to (horizontal) arrays of products in various contexts
  - Movie selection, combo menu displays, vending machines
  - Online and offline product displays

Centrality effect in marketing

Centrality effect in marketing

Centrality effect in marketing

Horizontal center → Brand choice

Further evidence, different explanations

(1) Due to in-store attention (Chandon et al., 2009)

Horizontal Centrality	→	Visual Attention (eye tracking)	→	Brand Choice
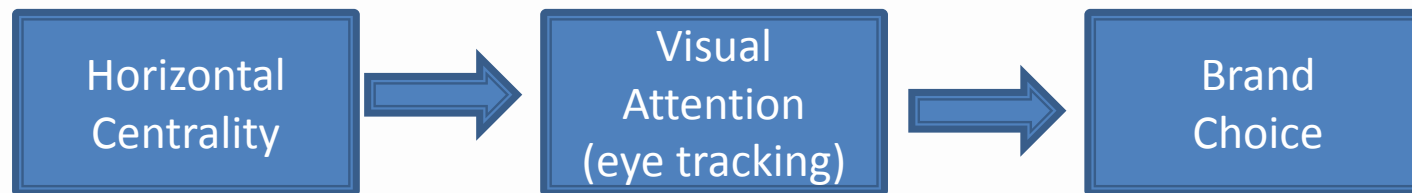
(2) Due to perception/ brand inferences (Valenzuela & Raghubir, 2009)

Horizontal Centrality	→	Brand Inferences	→	Brand Choice
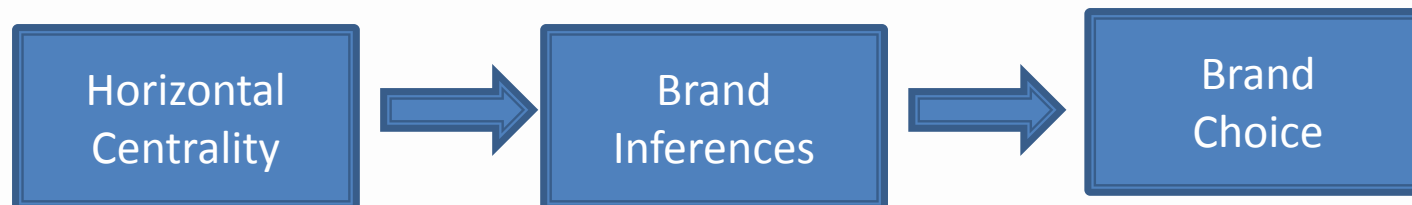
Motivation …

- Does horizontal centrality increase brand choice probability?

- *How?*

  - Brand-related attention **or** Brand inferences?

Methodology: Pretest

- *Control for familiarity & memory:*
  – fictitious brands

- *Control for vividness & salience:*

  Eliminate differences in package color
  – Pretest (N=58)
  – 10 color patches with fictitious brand names tested
  – Manipulated colors on HSL (hue, saturation, luminosity) dimensions.
  – DV's: ease of readability

- *Control for facings (exposure):*
  – 3 variants of each brand

Procedures:
Study 1A

(1) Calibration with Tobii 1750 eye-tracker

(2) Evaluate products from shelf display (planogram, 3 x 3 matrix), <u>no</u> <u>time</u> constraints or head-gear

(3) Choose one of 3 brands

(4) Self report measures of brand inferences

(5) Self report measures of attention

Methodology: Study 1A

Stimuli: Vitamin supplements, meal replacement bars

Design: 3 (brand name) x 3 (brand location)

Attributes: Similar in importance (pretested)

Brand names: Similar in attractiveness (pretested)
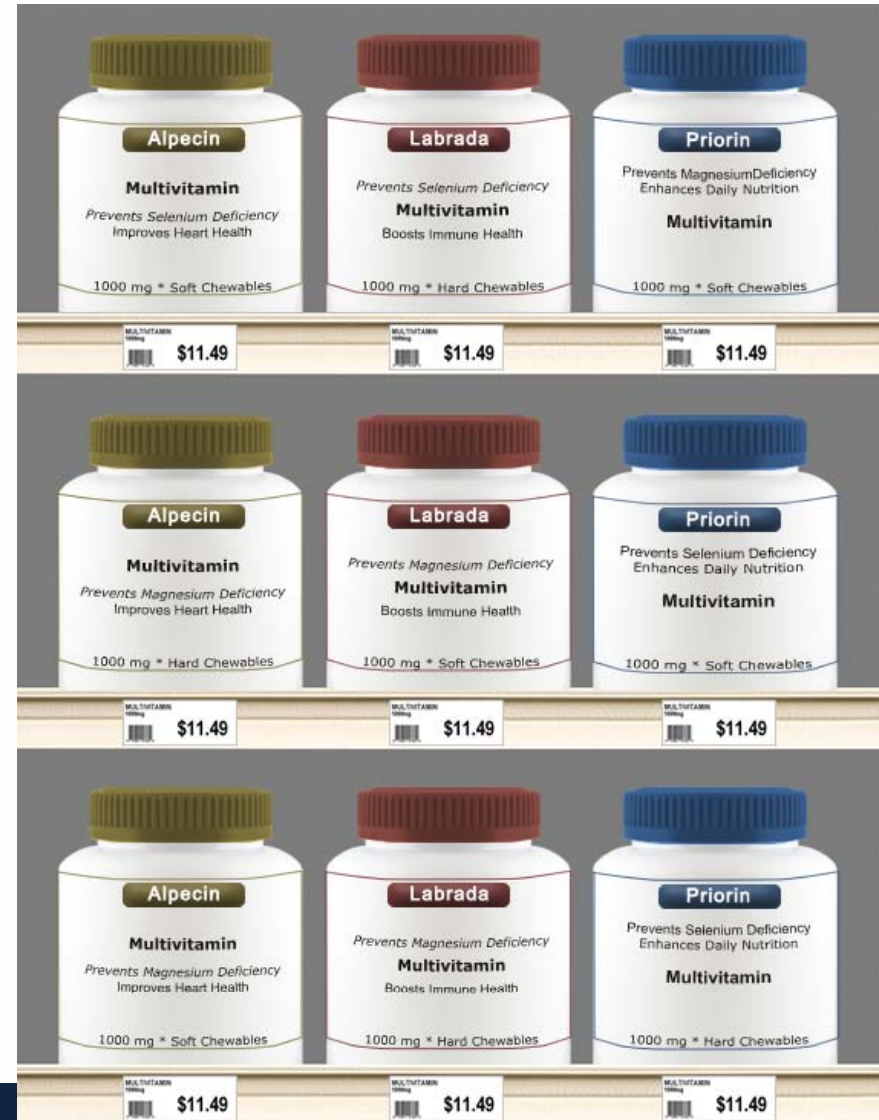
Methodology: Study 1A

- Brand inference measures:

- Attractiveness
- Popularity
- Quality

- Market share
- Retail space allocation

- Attention measures:

- Visual attention
- Self-reports of attention (2 items)
- Recall based attention
  - Unaided recall
  - Aided recall

Study 1A: Basic Findings

- N=63

- All fixations > 100 ms

- Brand in center

  - Higher choice frequency

    - Center: **45.3%** vs. Left/right: **27.3%**, $p < .01$

  - Higher eye fixation frequency

    - **60.9** vs. **48.7**; $F(1, 375) = 13.47$, $p < .01$

  - Higher total fixation duration

    - **15.1** vs. **12.6** sec; $F(1, 375) = 5.37$, $p < .05$

  - No difference in brand inferences OR self-reports of attention

- Similar results with different fixation cutoff's: 50, 100, 200 ms

Study 1A:
GAZE PATTERNS

Potential Explanations for the process of the effect:

Central Fixation Bias (Tatler 2007): Individuals fixate on the center of scene in the initial moments for orientation.

Gaze Cascade Effect (Shimojo et al. 2003; Simion and Shimojo 2006) : a tendency to accelerate gazes in the final moments of the search on the central option?

1. Does horizontal central brand get more attention in the **initial** OR **final** moments of the choice task?

2. If attention is concentrated on the center initially/finally, does this bias lead to choice?

Gaze patterns include all fixations, including very short fixations (> 20ms).

Vitamins:
Does central brand get more attention in the initial OR final moments?

- Initial 5 seconds

- Final 5 seconds
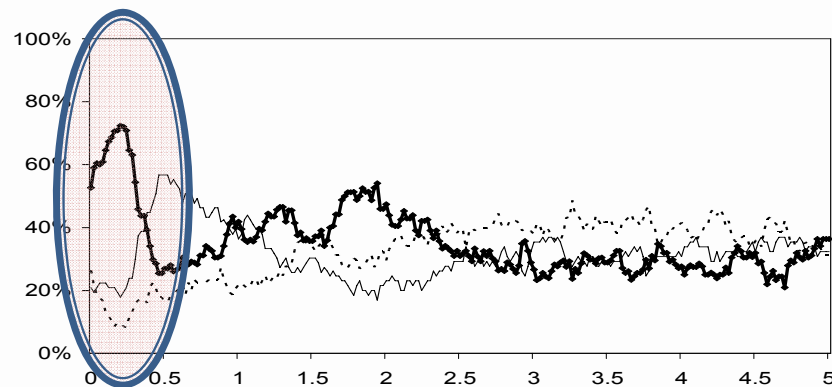
Bold: Likelihood to look at the central brand

Solid: Likelihood to look at the left brand

Dashed: Likelihood to look at the right brand

Bold: Likelihood to look at the central brand

Solid: Likelihood to look at the left brand

Dashed: Likelihood to look at the right brand

Meal Bars:
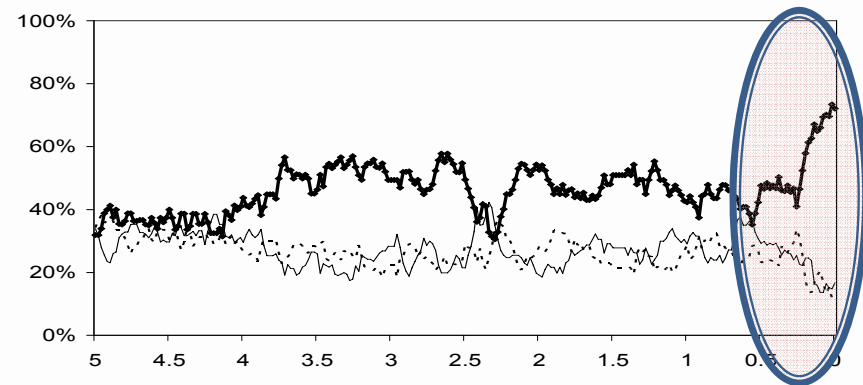## Does central brand get more attention in the initial **OR** final moments?

- Initial 5 seconds

- Final 5 seconds

Bold: Likelihood to look at the central brand

Solid: Likelihood to look at the left brand
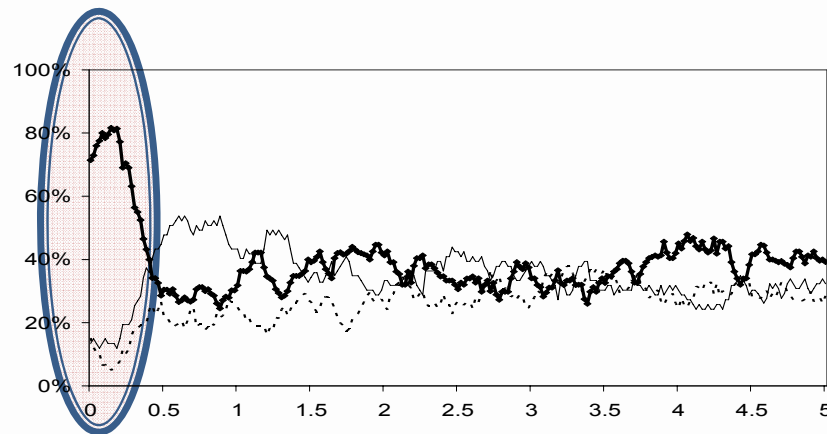
Dashed: Likelihood to look at the right brand
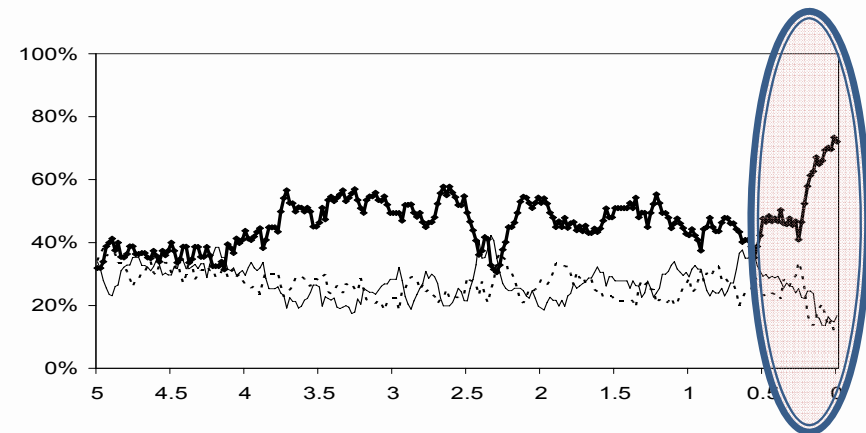
Bold: Likelihood to look at the central brand

Solid: Likelihood to look at the left brand

Dashed: Likelihood to look at the right brand

Is brand choice driven by *initial* or *final* fixation densities?

Multiple Mediation Model: Preacher & Hayes, 2009, Bootstrapping with 5000 samples
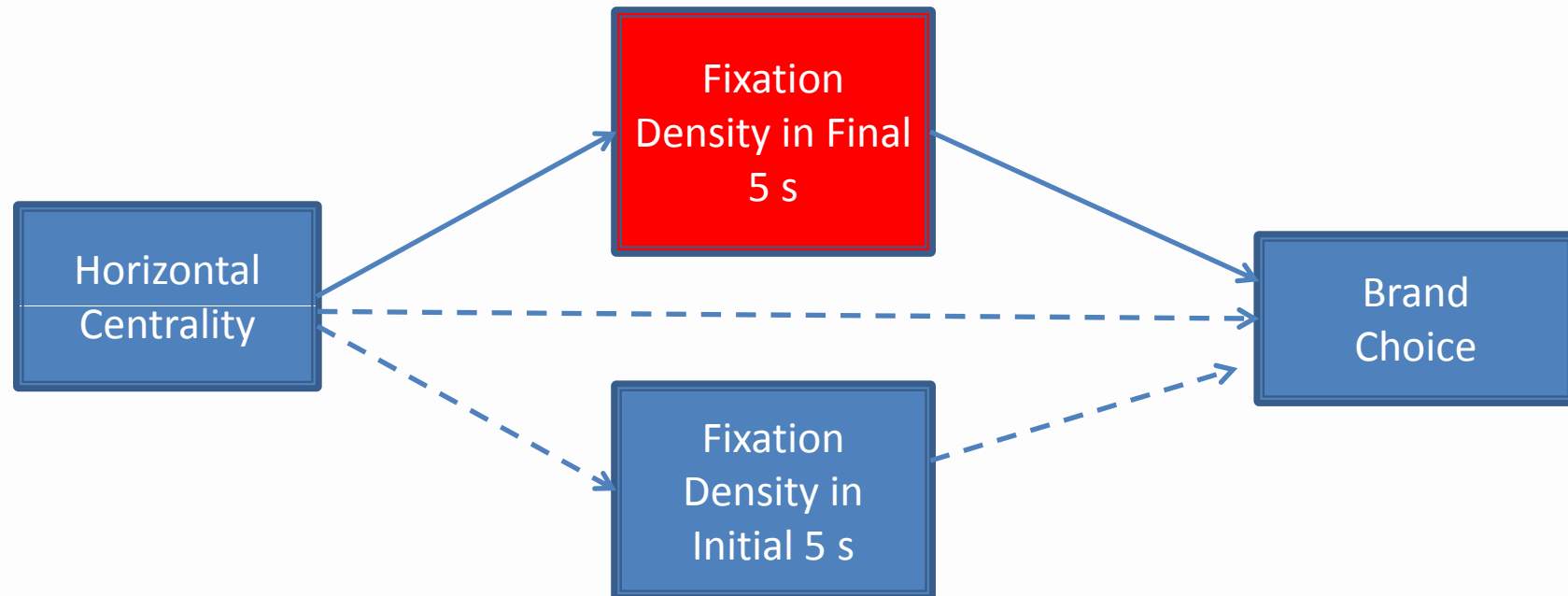
IV: *Fixation density:* the proportion of fixations on the centrally located brand and all fixations in the *initial (final)* 5 seconds of the gaze.

Results are replicated when initial and final ½ , 1, 2, 3, 4 seconds are used.

Study 1A: Gaze Patterns

HEC
PARIS
The more you know,
the more you dare*

Gaze Cascade Effect (Shimojo et al., 2003): Bias in the gaze directed toward the to-be-chosen option.

Does horizontal central brand get more attention because it is in the **center** _OR_ because it is chosen or **to-be-chosen**?

- DV= Gaze likelihood (probability of looking at the center, arcsine transformed).
- IVs= chosen (chosen =1), central location (center = 1), choice × central location

$$\Pr(\textit{Fixation}) = \beta_0 + \beta_1 * \textit{Chosen} + \beta_2 * \textit{Central} + \beta_3 * (\textit{Central} \times \textit{Chosen})$$

β1 = .33, t = 6.03, $p < .01$
β 2= .14, t = 2.60, $p < .01$
β 3 not significant, $p > .10$

An additive effect of both!

Study 1A: Conclusions

Horizontal Centrality → Choice

- Not explained by:
  - Brand inferences
  - Memory-based measures of attention
  - Central fixation bias
- BUT by gaze cascades on the central brand in the final few seconds of the task

Study 1B: Motivation

- Could computer-based task lead to more fixations in the center?
  - Unlikely given S1A results with initial fixations

- Replicated S1A after shifting choice set to the left or right of the screen

Study 1B: Results

- N=64
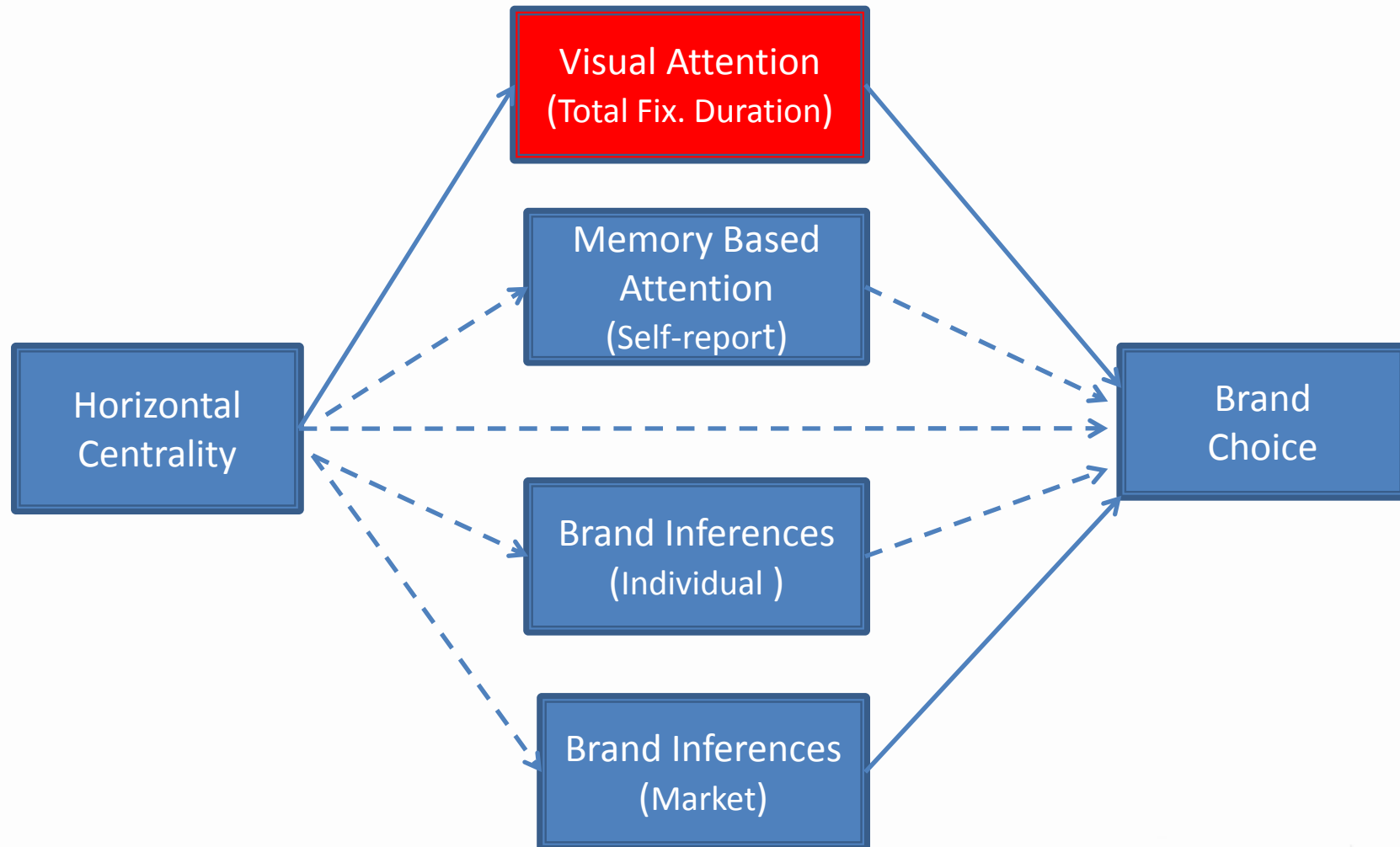- All fixations > 100 ms
- Brand in center
  - Higher choice frequency
    - Center: **44.4%** vs. Left: **23.8%** or right **31.7%**, $p < .05$
  - Higher eye fixation frequency
    - **57.4** vs. **49.3**; $p < .05$
  - Higher total fixation duration
    - **14.5** vs. **12.5** sec, $p < .05$

  - No difference in brand inferences OR self-reports of attention
- Similar pattern of results as Study 1A

Study 2: Overview

Center of product array vs. center of shelf

- Centrally located brand in one product category may not be in the center of the shelf space *or* the consumers' visual field
- Would a brand placed in the center of the product category, but not the center of the shelf still be chosen more often?

Eliminate common method variance:
- Choice context with tangible product packages (not PC based)

Design:
- 3 (brand location within category: left, center, right) ✕
2 (product category location on the shelf: left, right)

Study 2: Energy Drinks

- Evaluate Energy Drinks presented with 2 other filler product categories

Study 2: Results Summary

- N=84

$$Brand\_Choice$$
$$= \beta_0 + \beta_1 * \Pr odCatCenter$$
$$+ \beta_2 * ShelfLocation$$
$$+ \beta_3 * (\Pr odCatCenter \times ShelfLocation)$$

- Brand in horizontal center of the category was chosen more often $\beta = 1.62$, $p < .05$.

- Shelf location did not have a direct or indirect effect on choice all p's >.10.

Discussion

Horizontal centrality → Choice

- Robust across 3 studies and 3 product categories
- Mediated by attention but not inferences
- No significant correlation between memory-based vs. visual attention measures
- Not an artifact of screen-based presentation
- Preference for the center of the product category regardless of other options

Limitations

- Caution with inferences of causality
- Focus on unfamiliar product categories and fictitious brands
  - Dominance of in-store (vs. out-of-store) factors: 2:1 (van der Lans, 2008)
  - Consistent with findings with familiar products (Chandon et al., 2009)

Future Directions

- What motivates the observed patterns of attention?
    - Loop of initial and final visual attention
- Would this effect hold with familiar product categories?
- Can underdog brands use central location as a competitive advantage?
- When does the attention advantage translate into longer term brand inference effects?

QUESTIONS?

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Thank you!