Perceptions of Places for Walking and Playing

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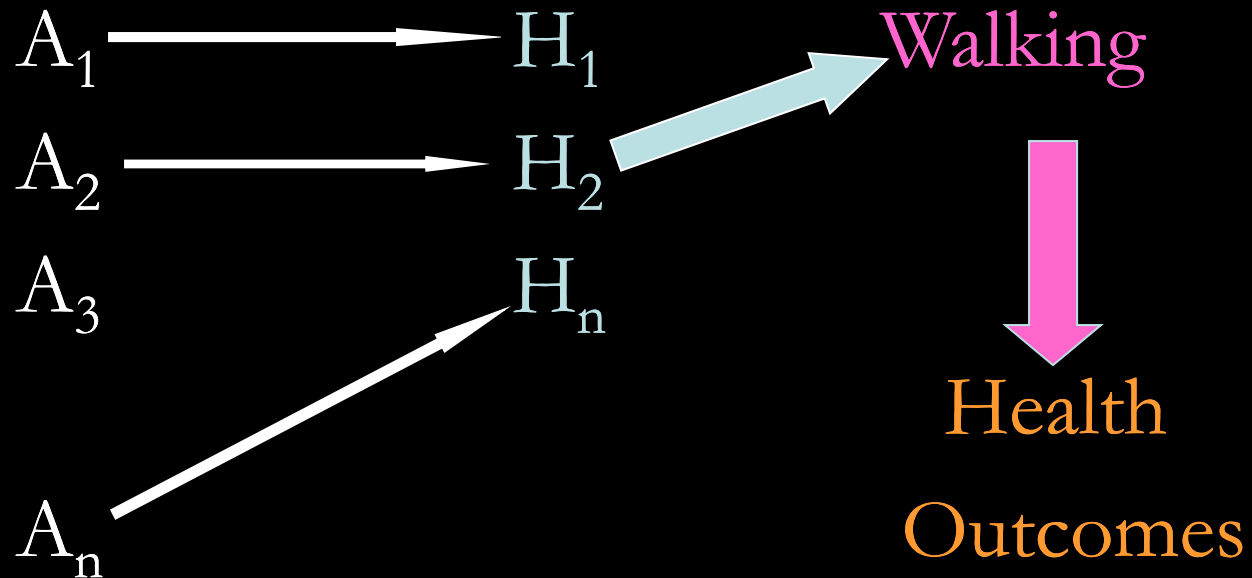
1. Relevance of research on environmental perception

- Active Living
  - Physical activity
  - Exercise
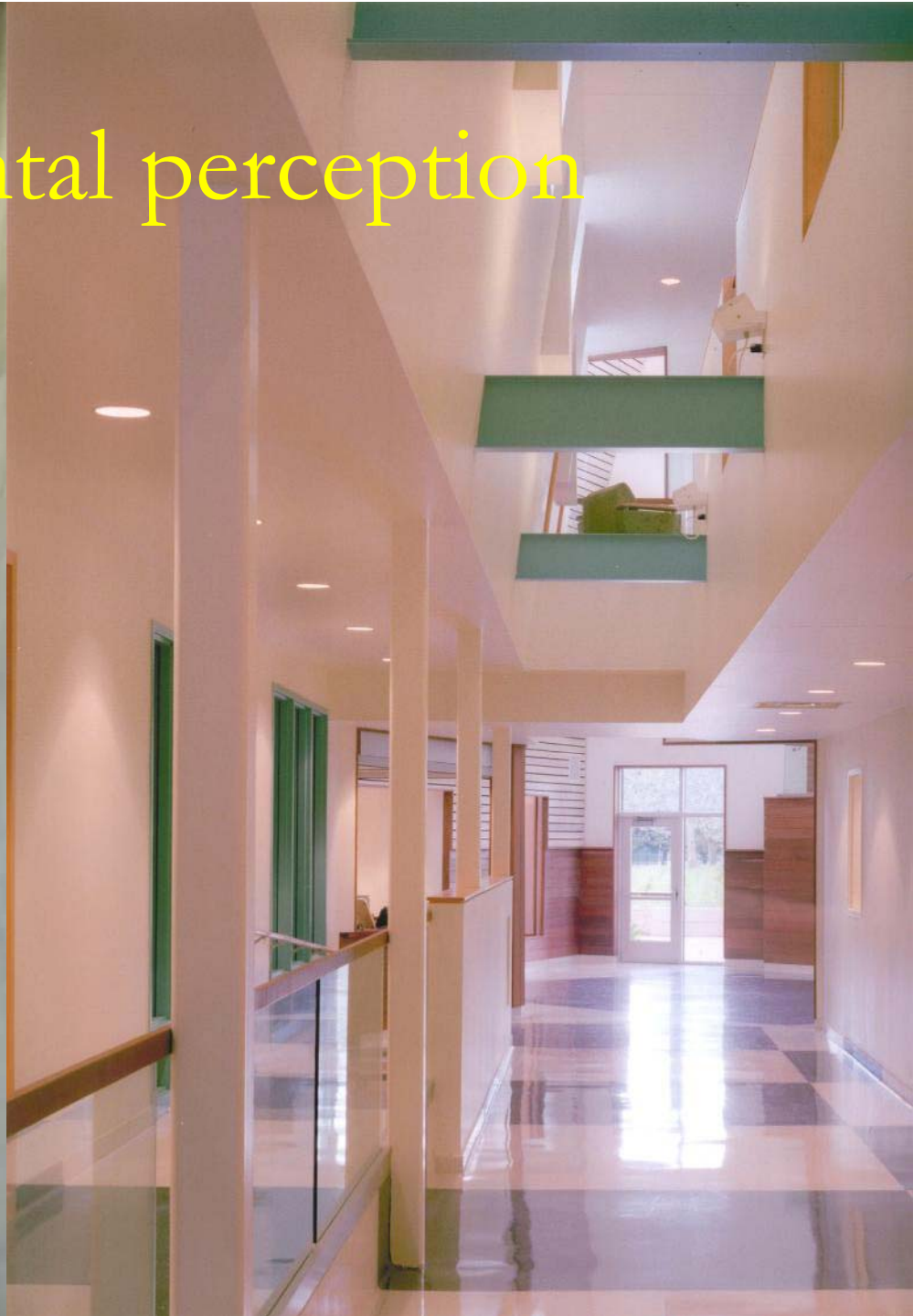 - Physical fitness
  - Health benefits

Model

Place attributes
(multiple levels)

Filtered through human perception

$A_1 \longrightarrow H_1$

$A_2 \longrightarrow H_2 \longrightarrow$ Walking

$A_3 \qquad H_n$

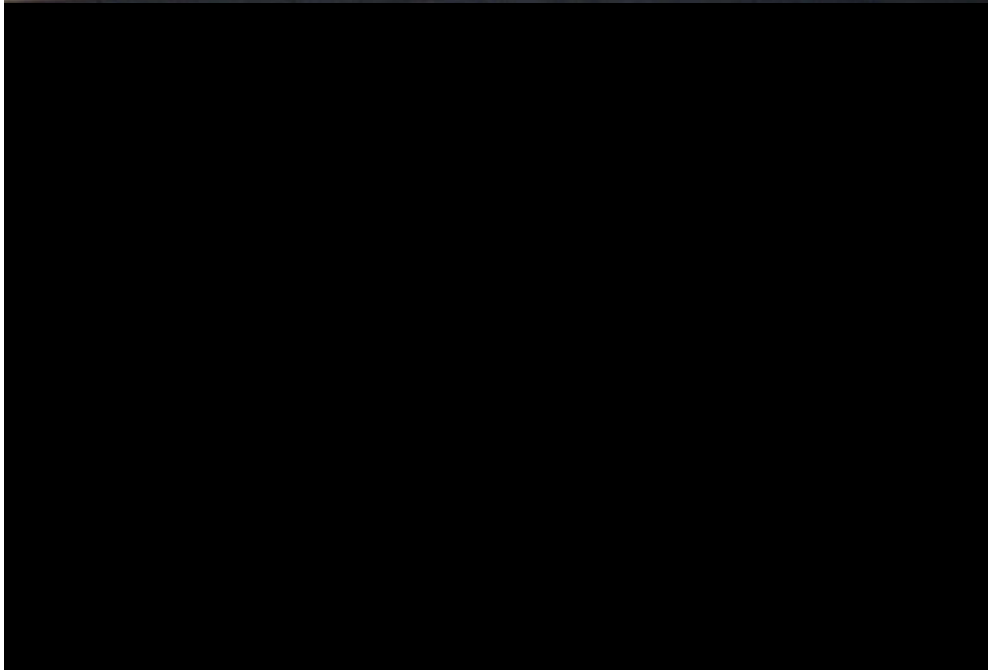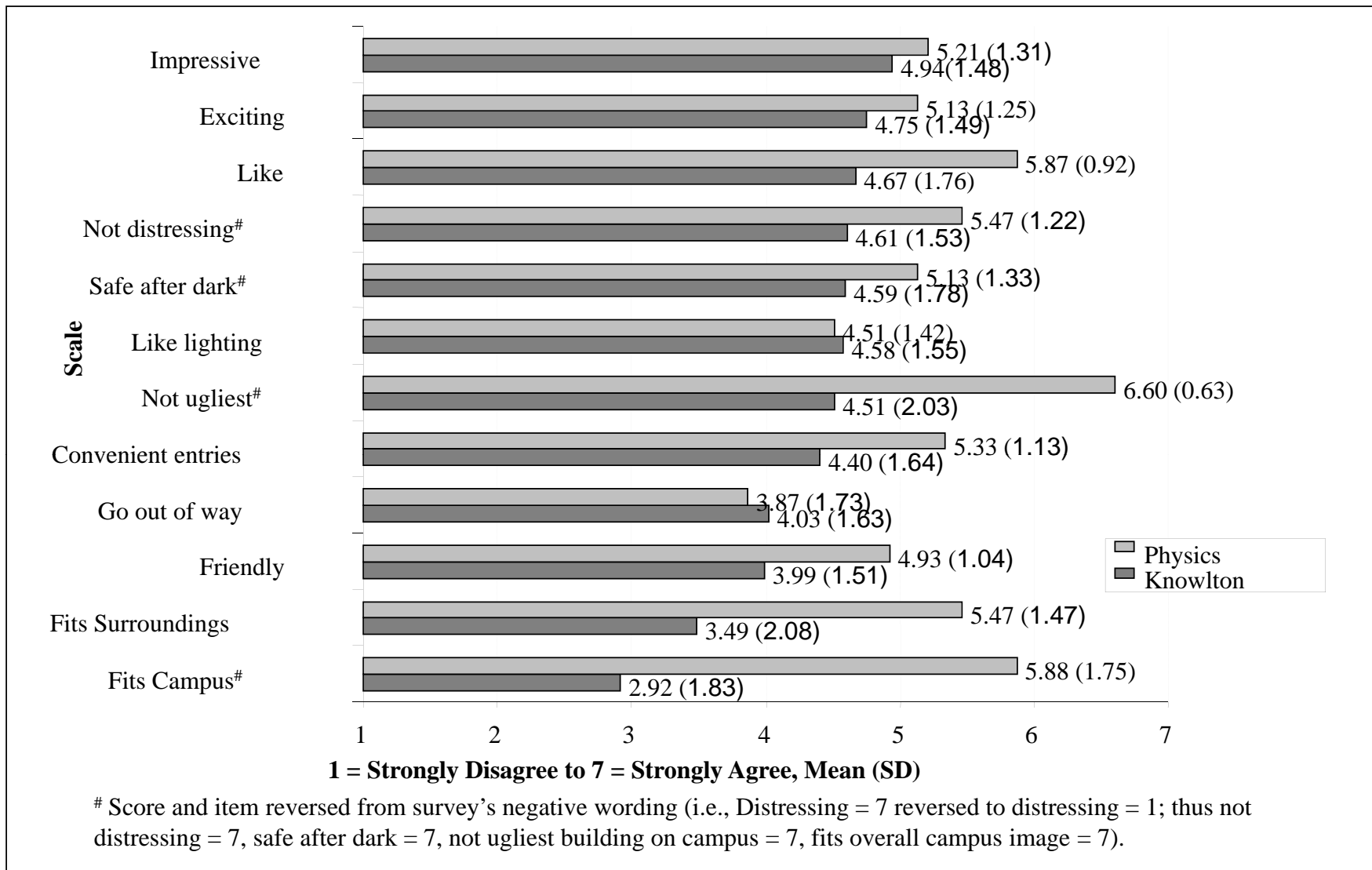$A_n \nearrow$

Health Outcomes

Environmental perception

Immeasurable?

The Architecture vs. Physics (composite: ARCH= 4.23, PHYS=5.28).

Measures

Two kinds of variables: Formal & Symbolic

Place <u>Attributes</u>

<u>Observer</u>

<u>(personality, affective state, intentions, &</u>

<u>Cultural experiences)</u>

A_1 →   Perception   →   Cognition

A_2

A_3

A_n

Affect   Affective
appraisals/
meanings

Spatial behavior

2. Measuring environmental perception

- **Decisions**
  A. The selection of respondents
  B. The selection and presentation of environments
  C. The selection and measurement of environmental attributes
  D. Selection of response measures (scaling)

A. Selection of Respondents

- Keep independent measures (assessment of attributes) separate from dependent measure (evaluations of the environments)
  - Independent judges rate attributes of the environments
  - Random sample of relevant population
    Residents
    Assess walkability
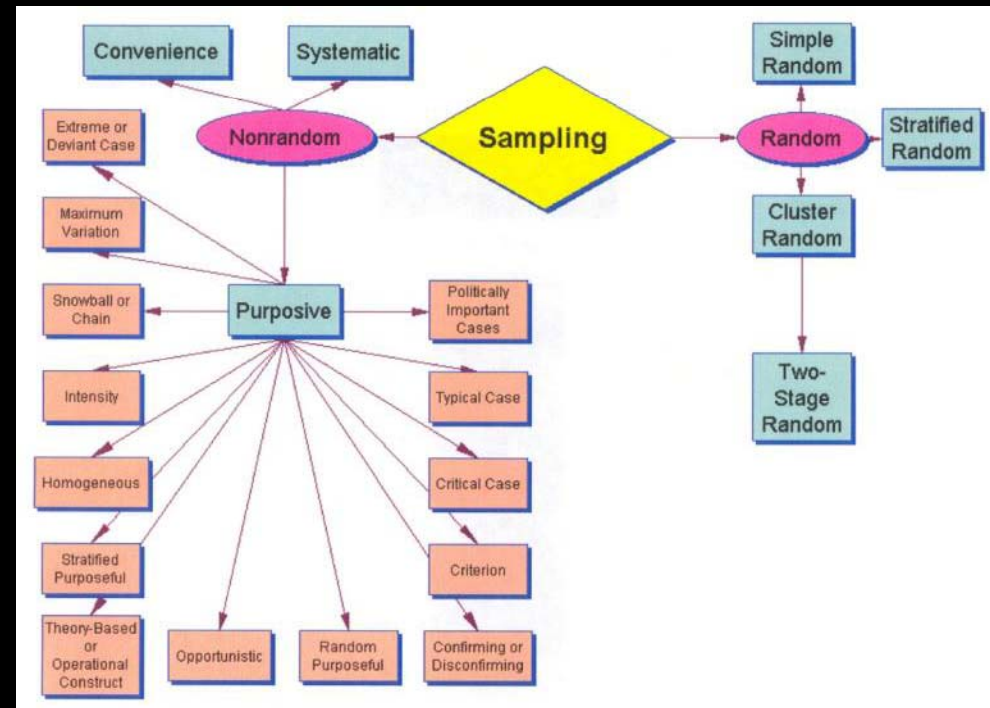
B. Selection and Presentation of Environments

- Relevant environment
  - **Visible block & views of destinations (parks, playgrounds, recreation areas)**

- Sampling the environment.
  Get broad variety of scenes: (Phase 1) Cluster random sample
  Phase 2: Systematically manipulate environments along salient features

- Mode of Presentation
  - **Color slides/photos (phase 1)**
  - **Phase 2: desk-top virtual reality**

C. Measurement of Environmental Attributes

- **Physical measures**

  +Reliable (after training)

  +Accurate

  -Don't know if they link to human perception of the attribute, which would influence evaluation and behavior

  -May miss integration of features into perception that affects evaluation and action

- **Observer Judgments**

  +Reliable (after training)

  +Accurate

  + <u>Can capture relevant human perceptions that affect evaluations and behavior</u>

What to measure?

- **Parks/playgrounds/recreation areas (all with high inter-observer reliabilities)**
  - Fenced or not ($\alpha = .89$)
  - Tree canopy or not ($\alpha = .92$)
  - Natural Surveillance (none, school/church yard, in neighborhood) ($\alpha = .93$)
  - Seating (for parent) ($\alpha = .88$)
  - Type of area: equipment for children, park/open field, organized sports field/court, paved school yard, combination ($\alpha = .85$)
  - If equipment for children:
    - Distance from viewer ($\alpha = .93$)
    - Diversity: Number of different activities ($\alpha = 0.86$)
  - If park/open field: no path, unpaved path, paved path ($\alpha = 0.85$)

- **Attributes along streets that may affect walking**
  - Perceived safety from traffic
  - Perceived safety from crime
  - Visual appeal (aesthetics)
  - Ease of (comfort for) walking

Assessing attributes of the environments: Response format

12 measures of 68 streets. 8 measures of 42 parks.

Ranking

Varied to fit scale and street-side environment or parks.

We defined the scale and points along it and had visual examples.

Tested for inter-observer reliability

Ease/comfort for walking

- Sidewalk width (number of adults who could fit walking side by side) (α = .85)

- Sidewalk quality * (α = .78)

- Tree protection (canopy) * (α = .85)

* In other research these attributes are associated with fear of crime or visual appeal

Visual Appeal

- Naturalness (α = .89)
- Land-use mix (α = .82)

Traffic

- Sidewalk protection (unpaved path, no sidewalk, sidewalk but no buffer, sidewalk with buffer) ($\alpha = .90$)

- Likely speed of vehicles (from number of lanes, parked cars, expected ease of crossing, context) ($\alpha = .79$)

Fear of crime

- Natural surveillance (α = .81)
- Upkeep (physical incivilities)* (α = .83)
- Chain link fences* (α = .84)
- Potential hiding places (low α = .74)
- Openness of view ahead* (low α = .77)

*Other research has found these variables associated with visual appeal

Deriving salient dimensions of perception

- The Sample:
  - 32 4th and 5th grade children and their parent or guardian
- The measures:
  - Sort 15 streets in terms of their similarity to one another as places* to walk or play
  - Sort 15 parks, playgrounds, recreation areas in terms of their similarity to one another as places* to walk or play
    - *Parents sorted them in terms of places for your child
 - Produces dissimilarity scores (distances) between each pair of places

- Analyses:
  - Multidimensional scaling (MDS) of similarity scores (frequency grouped together) maps places in conceptual space, identifies the number of dimensions and assigns scores to each place on each axis/dimension.
  - Do groups share the same dimensions of response?
    - Compare dimensions across groups—parents, children, 4th and 5th grade children, males and females.
  - What perceived attributes describe the salient dimensions
    - For each derived dimension, look at correlation between attribute scores for each place and MDS scores on that dimension

Parks (2 dimensions)
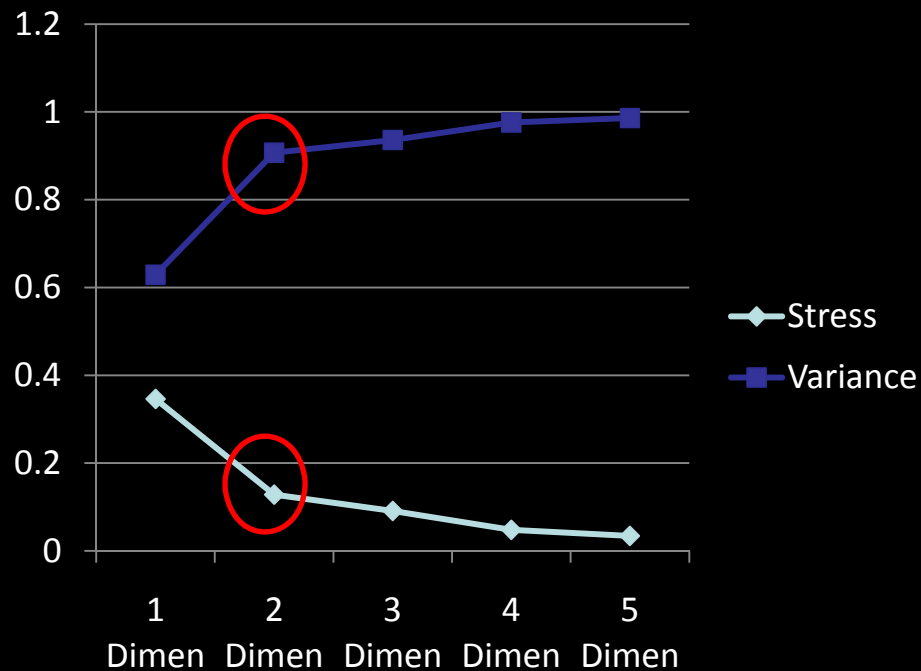
Streets (3 dimensions)
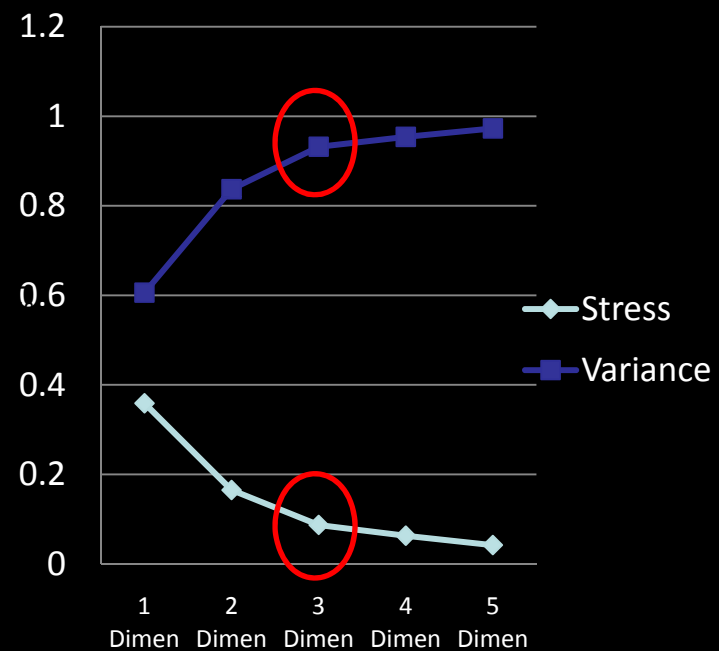
Salient dimensions labeled

- Parks/playgrounds/recreation areas
  - Dim. I: Seats or no seats (r's =.70, -.67)
  - Dim. II: Fence or no fence(r's = .77, .45)
  - Added Dim III: Type of playground (r =.45)

- Streets
  - Dim. I: Traffic speed (via functional street width) (r's = -.80, -.68)
  - Dim. II: Hiding places (r's = .79, .79)
  - Dim. III: Upkeep (r's = -.82, -.76)

- Results suggest that:
  - For parks:
    - seats (comfort), fence (safety/protection) and equipment may attract walking and playing
  - For streets or routes to parks:
    - Traffic calming (comfort, safety from autos), removal of hiding places (safety from crime), improved upkeep (safety from crime) may attract walking and playing
- Next phase
  - Pairwise choices of streets and parks varied on salient attributes (partial factorial) for desirability as a place to walk and play.

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