



**IMPROVING OUR  
ENVIRONMENT:  
EXPLORING THE  
DESIGN/HEALTH  
AXIS**

**SPACE**

**FEEELS**

**LIKE**

**SOMETHING**

**(SO LET'S MAKE IT FEEL GOOD)**



# AGENDA

## **Causes of DIS-ease**

- External Impacts
- Internal Impacts

## **Reverse Engineering Health**

- Cultivating resiliency at multiple scales
- Salutogenesis

## **Resources to Cope**

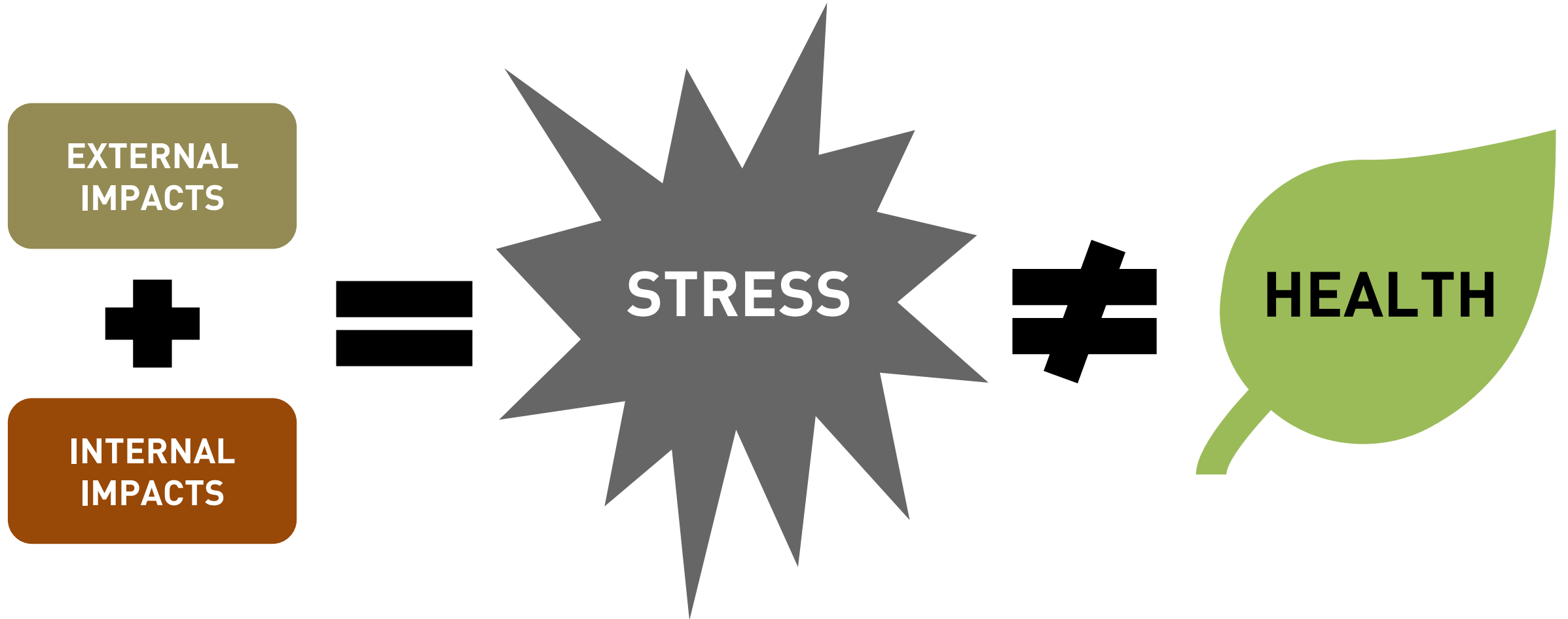
- Design toolbox
- Applying strategies



# CAUSES OF DIS-EASE

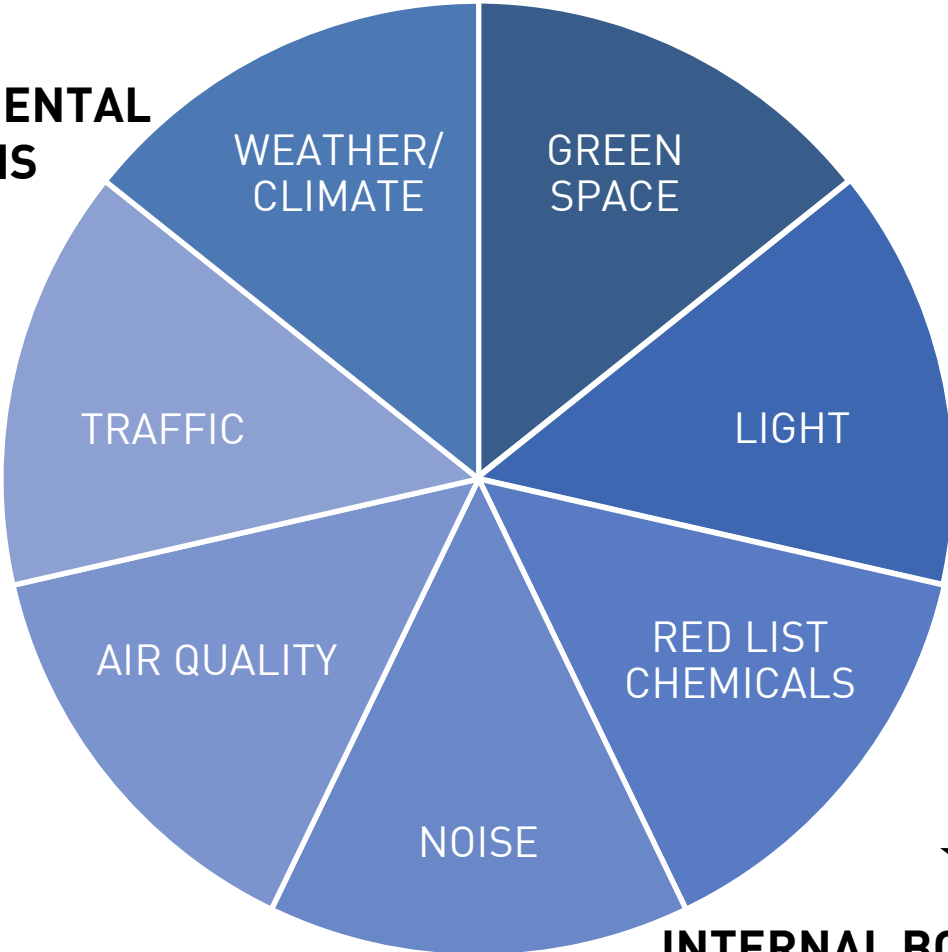


# DIS-EASE EQUATION

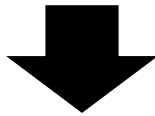
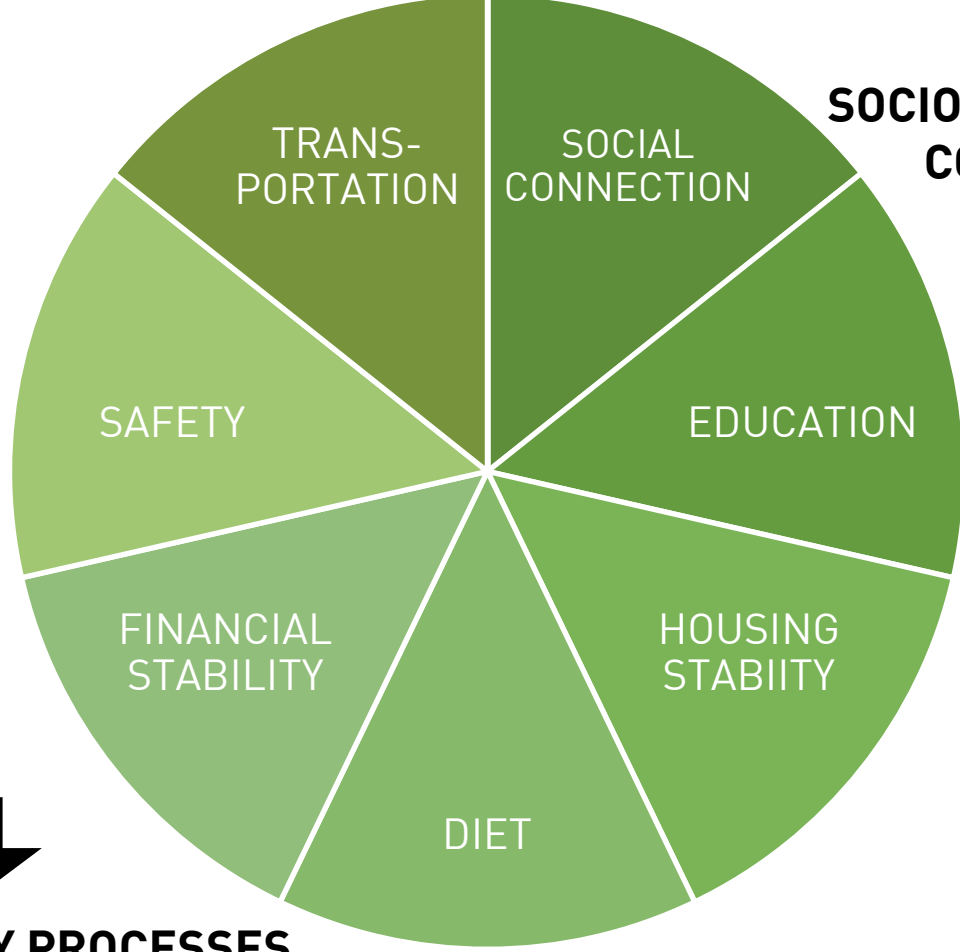


# HEALTH EQUITY AND THE EXPOSOME

**EXTERNAL ENVIRONMENTAL CONDITIONS**



**EXTERNAL SOCIOECONOMIC CONDITIONS**



**INTERNAL BODILY PROCESSES**

AGING

EPIGENETICS

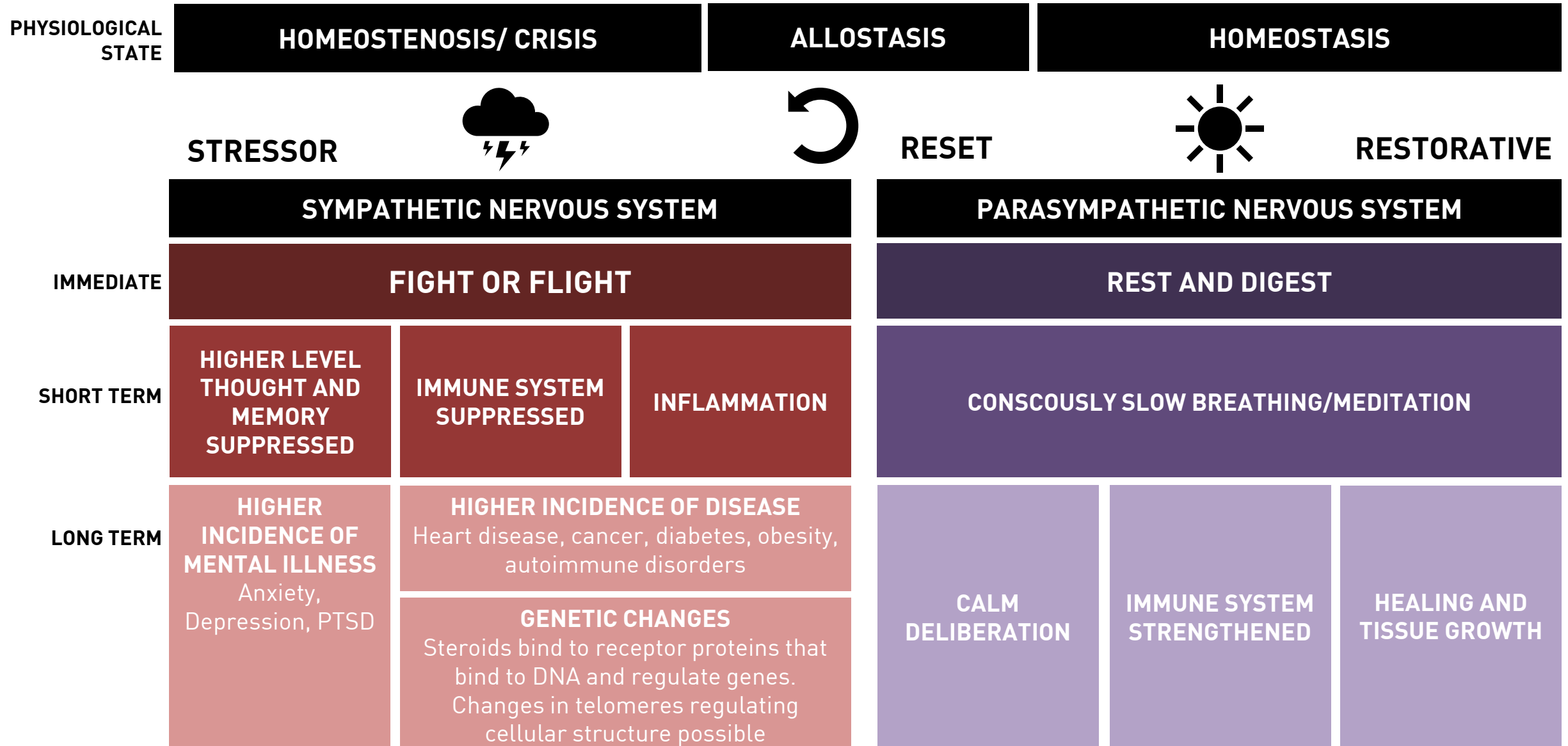
INFLAMMATION

METABOLICS

GUT MICROBIOME

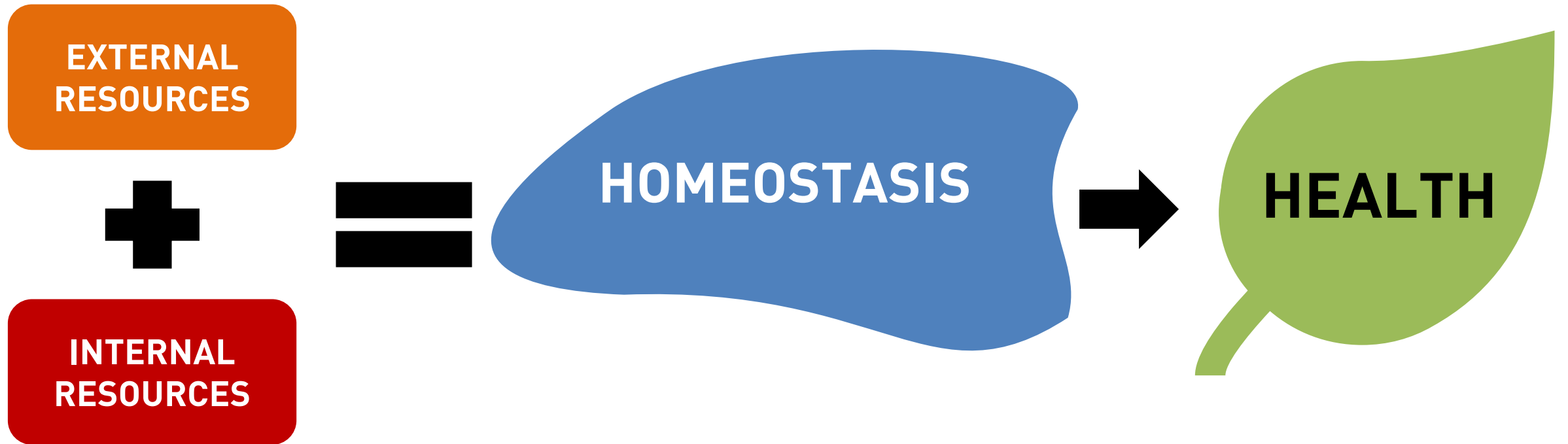
FERTILITY

# AUTONOMIC NERVOUS SYSTEM AND STRESS FIGURE 1



**REVERSE ENGINEERING**  
**HEALTH**

# HEALTH EQUATION





# RESOURCES = RESILIENCE

## ECONOMIC

- Education level
- Economic wherewithal
- Generational wealth

## ENVIRONMENTAL

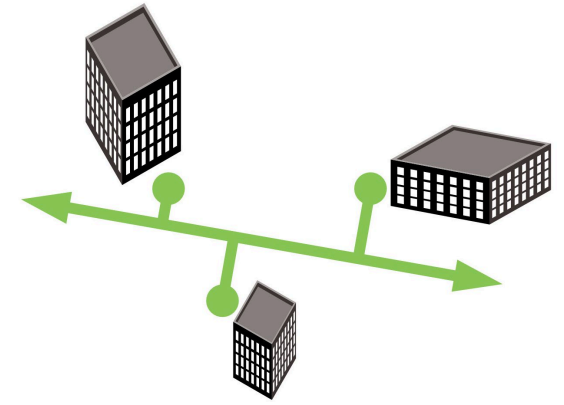
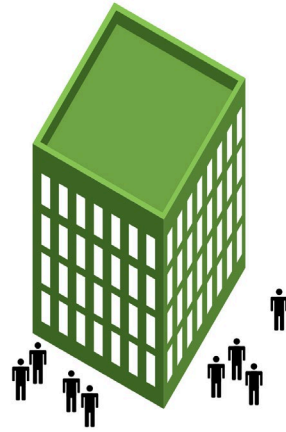
- Supportive and safe
- Accessible:
  - To places/events
  - For activities
- Neutralize adverse climate events

## SOCIAL

- Diverse
- Culturally competent
- Robust networks
- Health Literate



# SCALES OF RESILIENCE



	HUMAN	BUILDING	INFRASTRUCTURE
WHAT	Mental and physical wellbeing of the individual	Buildings and physical spaces for one individual to a community	Connecting transportation, utilities, and public commodities
HOW	Providing for respite and recovery	Flexibility to adapt to potential future stressors	Minimizing impact of future use and growth
	Equitable access to healthcare and resources	Using equitable design to increase accessibility	Providing equitable access to resources for all communities
	Optimizing for safety and security from stressors	Minimizing exposure to external stressors	Maintaining systems for optimal operation

# DESIGN IMPLICATIONS

## OPERATIONAL: HEALTH BEYOND BUILDINGS

- Push instead of pull
- Community impacts

## 24 HOUR BUILDINGS

- What else can it be?

## SALUTOGENESIS

- Well-being
- Stress reduction

## SUSTAINABILITY

- Non Toxic environments
- Active Design

## SAFETY AND SECURITY

- Crime prevention through environmental design (CPTED)

## DAYLIGHT

- Equitable access
- Use to orient occupants

## VENTILATION

- Reduce exposure to toxins

## ACCESSIBLE DESIGN

- Bariatric
- Accessible routes
- Hearing and vision impaired
- Neurodiversity

## PUBLIC ACCESS

- Access to public transportation
- Bike accessible

## MAINTAINANCE

- Building upkeep and system upgrades
- Optimization of systems

## REGENERATIVE SPACE

- Space for seclusion and reflection
- Respite space
- Religious accommodations

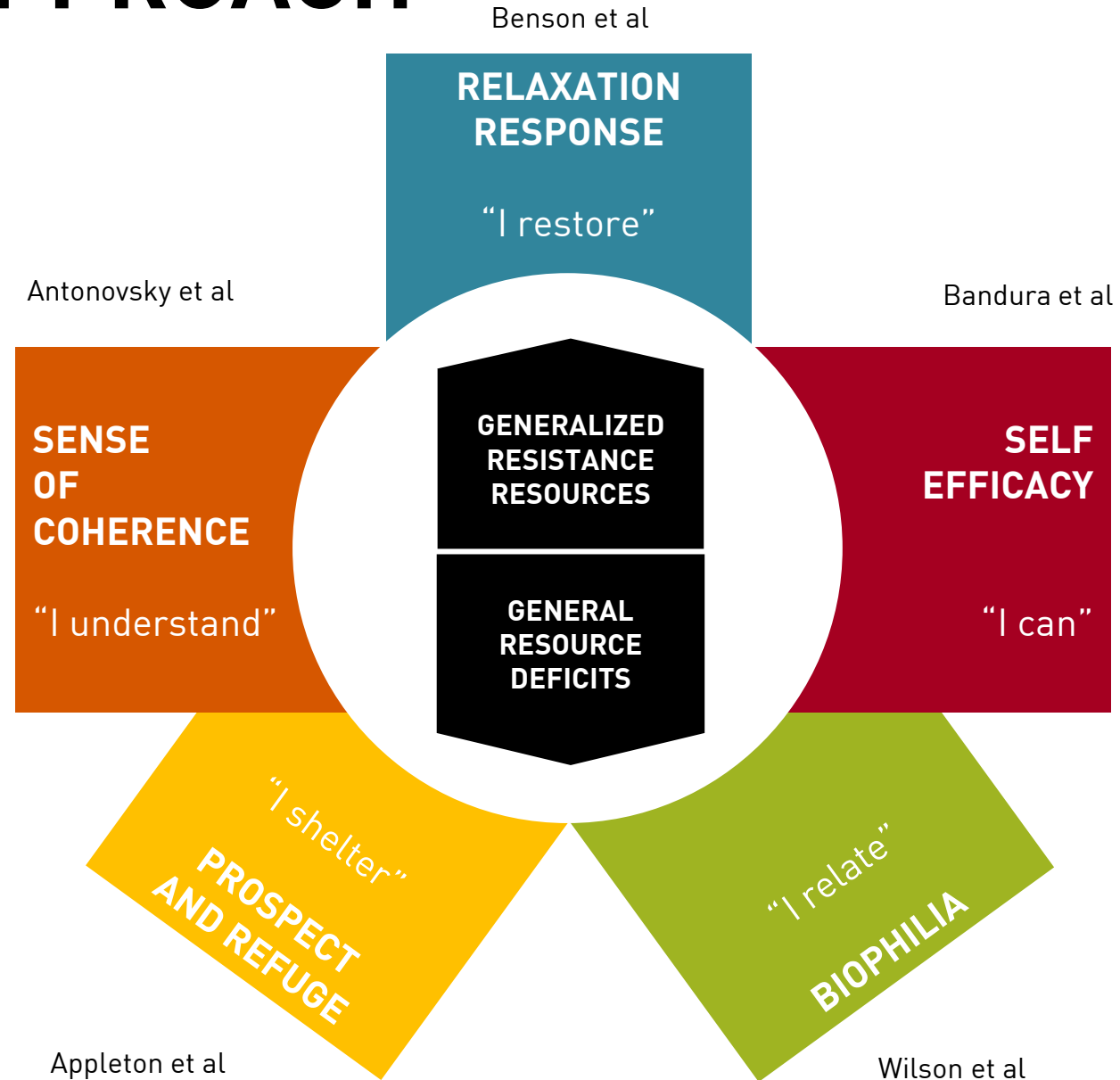
## ENERGY EFFICIENCY

- Reducing energy consumption
- Minimize reliance on central grid



# A SALUTOGENIC APPROACH

Focus on alleviating stress and building resiliency by providing an abundance of environmental resources



# RESOURCES TO COPE



# BUILDING AND LOSING RESOURCES



RESOURCE BANK

THREATS

RESOURCES TO COLLECT

# DESIGN TOOLBOX

# “I UNDERSTAND”

Ability to **make sense of an environment** via analogies between a new spatial experience (or a change to a space we are already familiar with) and something we already know.

Provides the resource of understanding. Meaningful, manageable, comprehensible.

Predictable and rewarding

## **Analogous mapping**

- Space evokes a similarity to another type of space with pleasant associations
- Meaningful familiarity- order can be established
- Multisensory
- How to use the space is apparent
- Context related to environment is provided
- Personalization (Objects, Music)

## **Seeing and Being Seen: Anticipation of path**

- Highly transparent
- Moderately transparent
- Mildly transparent

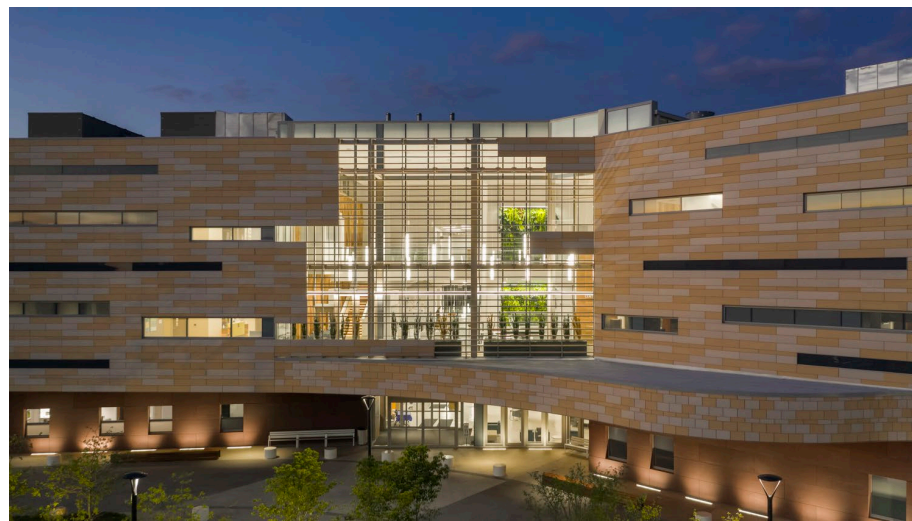
## **Textural/material cues to measure and comprehend scale**

- Textures/patterns that recede into distance
- Horizontal or vertical elements regularly spaced to understand linear perspective
- Objects of known size that provide a sense of scale such as trees or furniture

## **Ability to understand time**

- Views of clocks, calendars or other displays of time
- Awareness of time of day and season (views to outside)

# SENSE OF COHERENCE: I UNDERSTAND

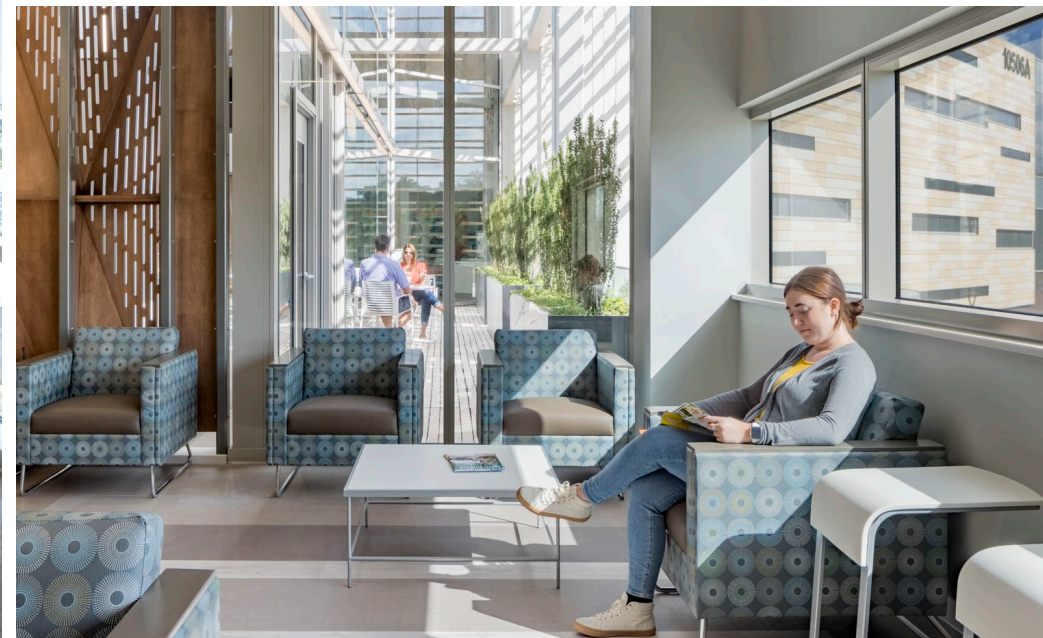


## SEEING AND BEING SEEN: ANTICIPATION OF PATH

Being able to sense activity before entering a space \* Knowing what and who to expect \* Transparency to reassuring activity



# SENSE OF COHERENCE: I UNDERSTAND



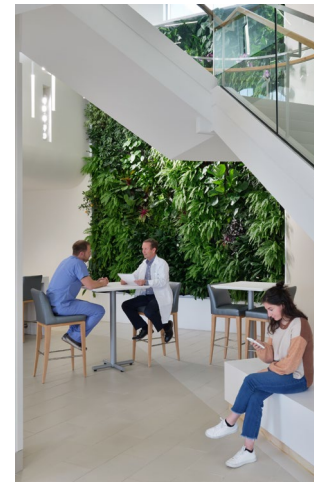
## PREDICTABLE AND REWARDING

Being able to recognize everyday elements in a new environment and create a cognitive map

Predictable and rewarding resources are available within the space \* Able to understand time \* Cultural Relevance



# SENSE OF COHERENCE: I UNDERSTAND



## ANALOGOUS MAPPING

Forming a relationship between a new environment and a positive familiar one to determine behavior  
Creates positive associations \* Cues physical and mental responses

# “I CAN”

The extent one believes they have the resources and competency to be successful

Encouraging cues providing a measure of control over thoughts, emotions and self-discipline

Ability to actively participate

## **Choice and control**

- Variety of activities is supported (Sociopetal and Sociofugal)
- Variety of seating is supported
- Lighting controls
- Sound Controls
- Temperature controls
- Space can be reconfigured to suit needs by users

## **Wayfinding**

- Ability to see destination or next step in proceeding there
- Landmark elements help mark the path
- Cognitive chunking for multisensory memory moments
- Entry points are clear

## **Hierarchical barrier**

- Minimal barrier such as podium or table
- High barrier such as transaction counter
- Staff is behind glass or otherwise physically separated from user

## **Empowerment**

- Opportunities to take independent action
- Ergonomics



# SELF EFFICACY: I CAN



## CHOICE AND CONTROL

Customization of environment to suit needs \* Opportunities for autonomy and self determination \* Variety of activities is supported



# SELF EFFICACY: I CAN



## COGNITIVE CHUNKING

Intuitive wayfinding \* Environmental anchors and landmarks \* Multisensory strategies for defining destinations and spatial qualities



# SELF EFFICACY: I CAN



## HEIRARCHY

Breaking down perceived barriers to access \* Empowering cues provided within design and furniture \* Visual dominance for major elements



# “I RELATE”

Experiences that our brain can link to the natural world are naturally calming, while those devoid of such references create stress.

Focus and concentration can be restored because full attention is not required.

## **Access to Nature**

- Outdoor planted space or water feature - measure distance from any given point to a garden or planted area
- Indoor planted space or water feature
- Views of nature (garden, green roof)

## **Blurring of interior/exterior edge**

- Continuation of materials from exterior to interior
- Full height glass
- Continuation of hardscape elements into building

## **Access to natural light**

- Sunlight in space
- Daylighting
- Color tuned light
- Diffuse/dynamic light

## **Natural/organic forms**

- Natural materials visibly employed
- Images of nature
- Patterns found in nature
- Forms found in nature

# BIOPHILIA: I RELATE

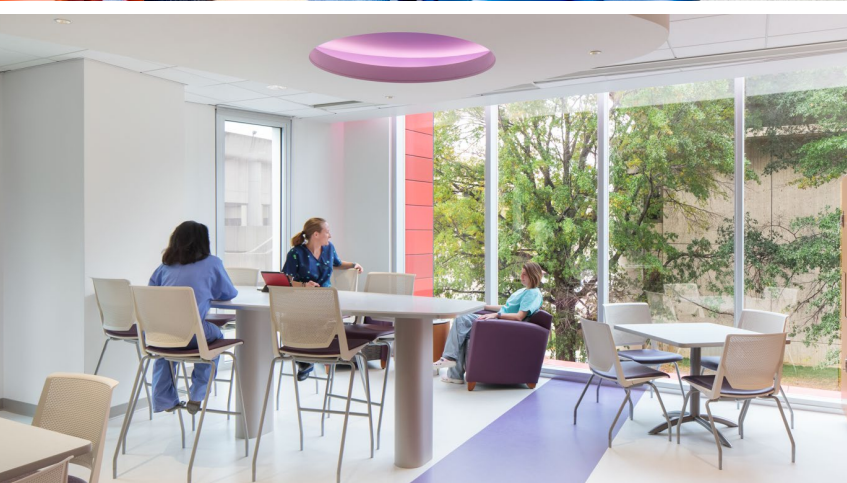


## DIRECT ACCESS

Gardens and water features \* Indoor green space \* Paths and approaches \* Balconies and roof gardens



# BIOPHILIA: I RELATE



## EXPERIENTIAL ACCESS

Blurring of interior/exterior edge \* Views that provide awareness of time of day, weather and season \* Play of natural light and shadow



# BIOPHILIA: I RELATE



## METAPHORICAL ACCESS

Patterns found in nature \* Natural Materials \* Nonrhythmic sensory stimuli \* Images of nature \* Complexity and order

# “I SHELTER”

Ability to survey our surroundings from a space and choose our level of participation or socialization according to our preferences

Psychological Safety/defensible space

Thigmotactic qualities

Opportunities for adventure via direct and indirect prospects

## Occupying the edge

- Built in seating along a wall
- Clear boundaries and borders

## Vantage Points

- Entry to space is visible from occupant position
- Occupant has back to a solid form to prevent unexpected approach
- Occupant can see into adjacent spaces

## Social Choice

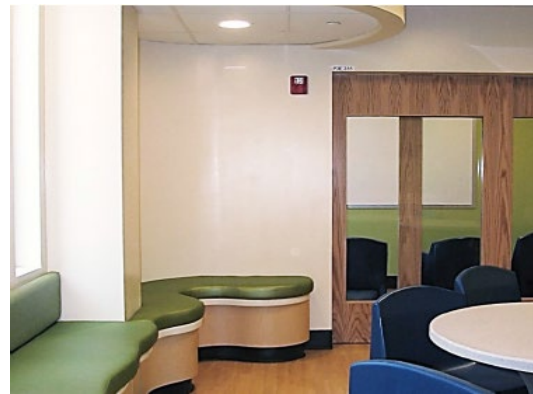
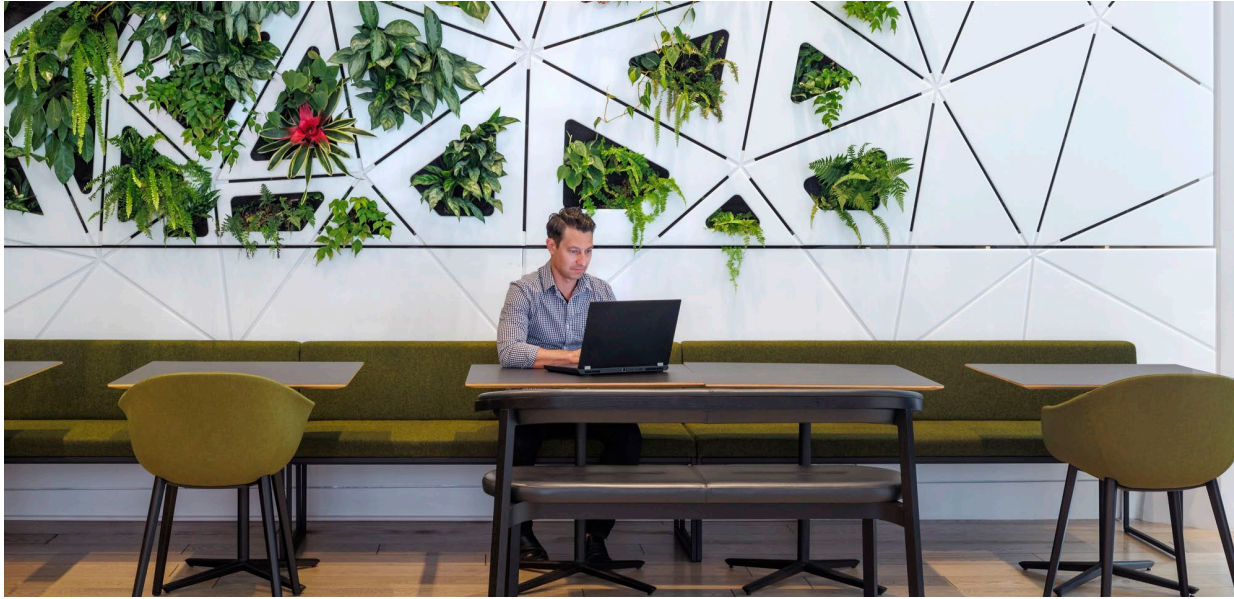
- Sociopetal
- Sociofugal
- Adjustable for group size

## Focal points for social activity

- Gathering zones
- Activities
- Displays
- Stage or podium



# PROSPECT AND REFUGE: I SHELTER



## OCCUPYING THE EDGE

Safety of boundary \* Reduce cognitive burden \* Defensible space



# PROSPECT AND REFUGE: I SHELTER



## VANTAGE POINTS

View to adjacent spaces\* sense of shelter \* ability to observe activity without being seen



# PROSPECT AND REFUGE: I SHELTER



## SOCIAL CHOICE

Ability to engage in social or solitary postures \* social signaling \* zoning of space



# “I RESTORE”

Environments can offer us supportive elements that regulate the nervous system and stimulate the relaxation response

Calming cues act as shock absorber for dis-ease.

Distractions disrupt the stress response

Strategic use of sound to regulate arousal level

## **Positive visual distraction**

- High visual complexity
- Medium visual complexity
- Low Visual complexity

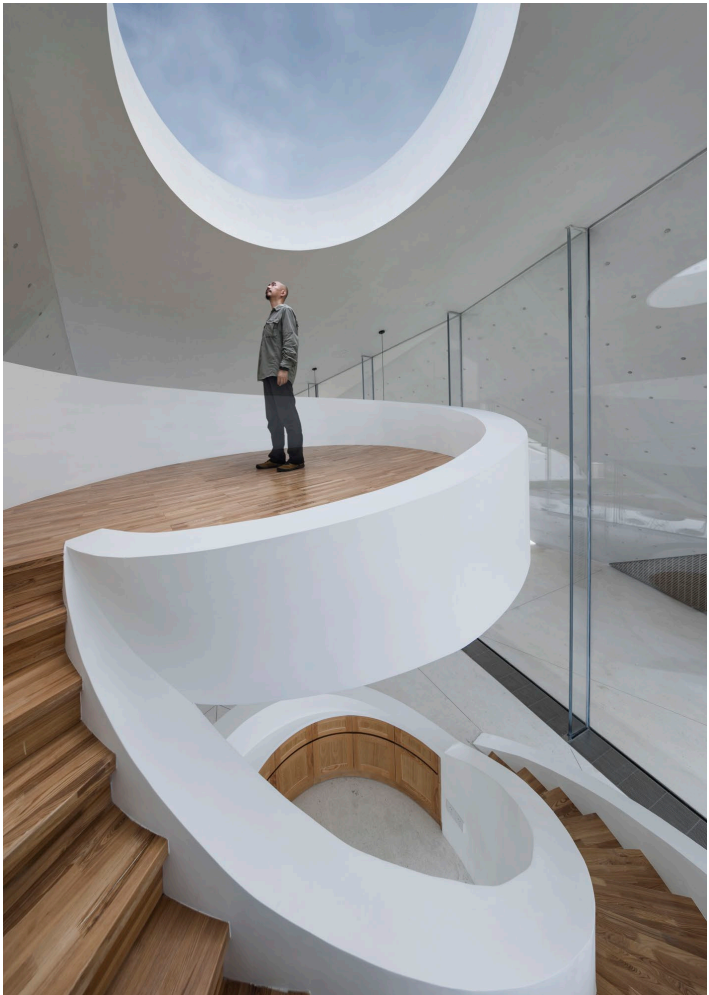
## **Physical calming**

- Ability to engage in repetitive motion activity (rocking, pacing)
- Designated space for calming activity such as dance, yoga or guided meditation
- Ability to find personal space (still contemplative areas)

## **Sound (consonance, resonance, dissonance)**

- Quiet space
- Background ambient noise
- Loud, active space

# RELAXATION RESPONSE: I RESTORE



## STILL MOMENTS

Provide restorative opportunities for reflection or soothing motion



# RELAXATION RESPONSE: I RESTORE

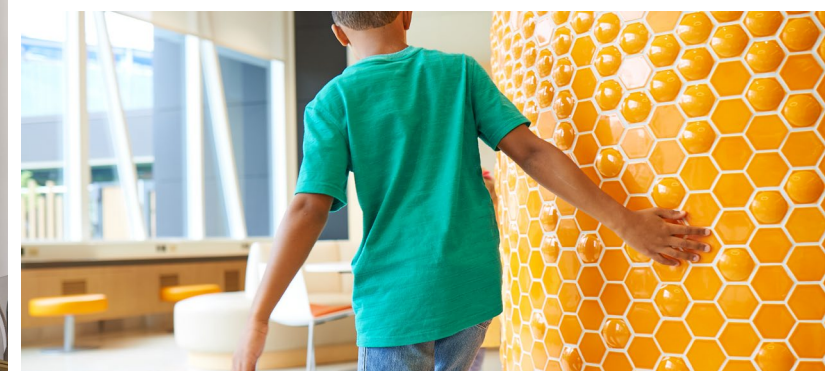
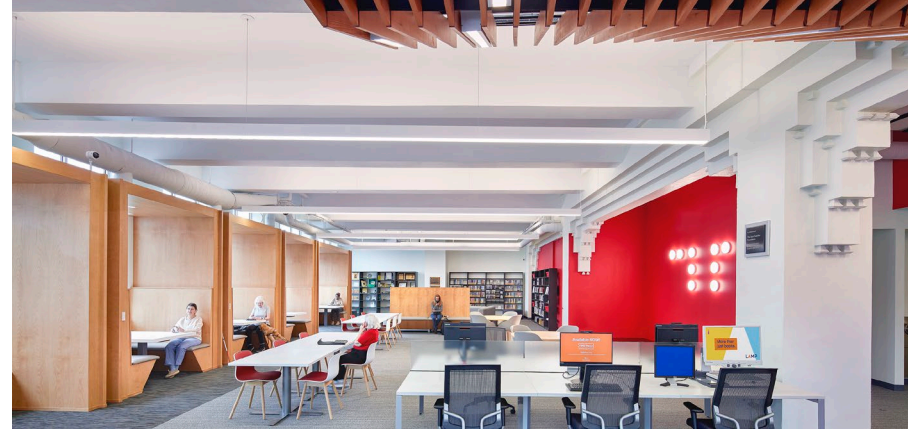


## POSITIVE DISTRACTION

Occupying the "thinking mind" helps with control of emotion \* Multisensory spaces



# RELAXATION RESPONSE: I RESTORE



## CALMING CUES

Soft forms, open spaces \* Inspiring delight \* Sense of belonging \*Tactility

# APPLYING STRATEGIES



# MEETING PEOPLE ON THEIR OWN TERMS



OVERCOMING FEARS  
AND LIMITATIONS

ENGAGING WITH THE SPACE

ADDRESSING NEEDS

NORMALIZATION

HABITUATION

CONFIRMATION BIAS

# IN SITU ADAPTATION

## CHANGE

Design is about making change to an environment (we hope) for the better.

## HABITS

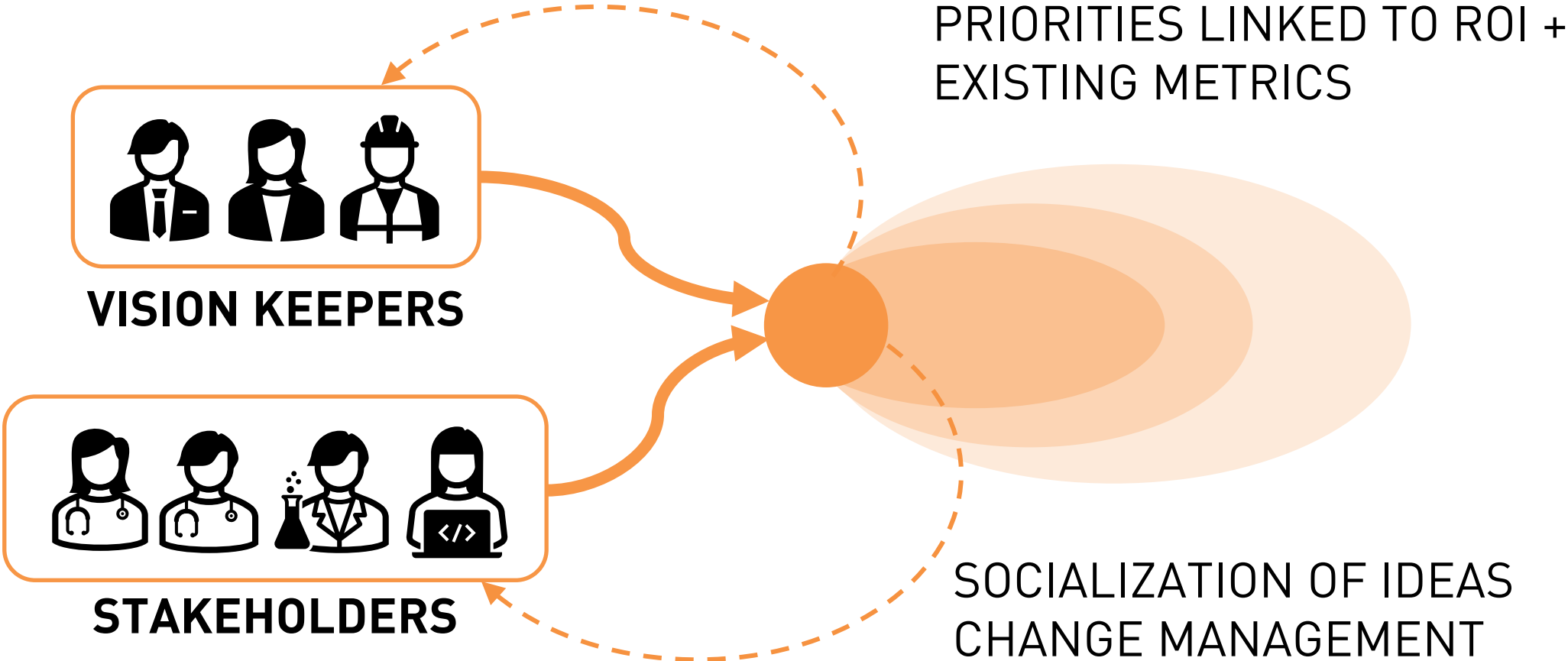
Tendency to revert to habitual behaviors, creating cognitive dissonance between the activity and how well it is supported in the environment.

## MOTIVATION

People may not be motivated or able to adapt to changes made because of the effort required.



# SHIFTING TO A COCREATION MODEL

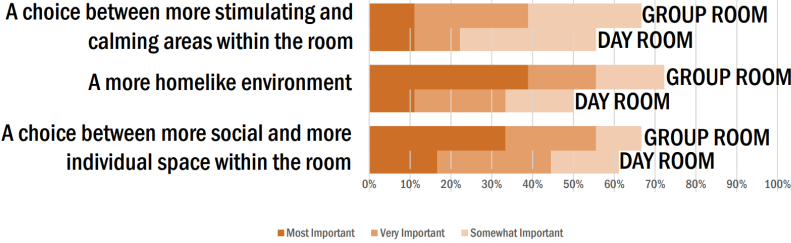




# TRAUMA INFORMED CARE



## ATTRIBUTES THAT MAKE SUCCESSFUL MILIEU SPACE



#of Patients



#rooms accessible to them



SOCIAL DENSITY<sub>1</sub>

### FACILITY AMENITIES

- DINING
- FAMILY RESOURCES
- EDUCATION
- RECREATION

### FLOOR AMENITIES

- SHARED MILIEU
- STAFF SUPPORT
- FAMILY RESOURCES
- CONSULT

### UNIT NEIGHBORHOOD

- SLEEPING SUITE
- UNIT MILIEU
- SUPPORT/ASSESSMENT
- SLEEPING SUITE

### UNIT NEIGHBORHOOD

- SLEEPING SUITE
- UNIT MILIEU
- SUPPORT/ASSESSMENT
- SLEEPING SUITE

THE CLOUD ROOM  
Quiet, calming, soothing  
Space for individuals



THE FIRE PIT  
Active, social space  
Large, organized group



THE PARK  
Friendly, social  
Small, informal groups



# SALUTOGENESIS MAPPING

FIGURE 5

**SENSE OF COHERENCE** 2.25

- Analogous Mapping 3
- Anticipation of Path 2
- Textural or material cues 3
- Ability to understand time 1

**SELF EFFICACY** 3.25

- Choice and Control 3
- Wayfinding 3
- Hierarchy 5
- Empowerment 2

**BIOPHILIA** 3.25

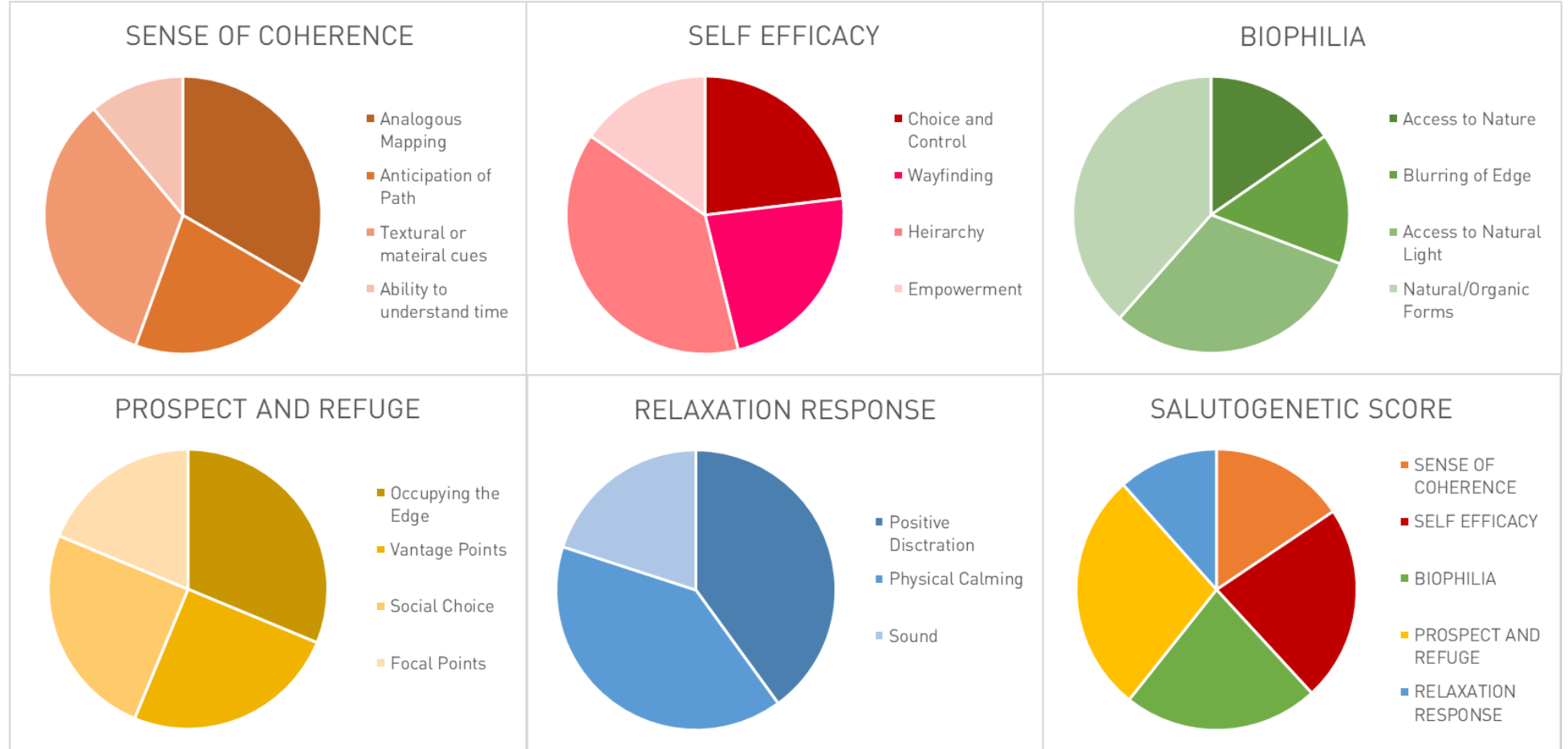
- Access to Nature 2
- Blurring of Edge 2
- Access to Natural Light 4
- Natural/Organic Forms 5

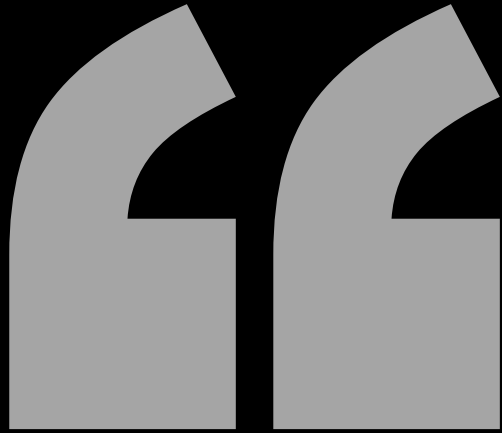
**PROSPECT AND REFUGE** 4

- Occupying the Edge 5
- Vantage Points 4
- Social Choice 4
- Focal Points 3

**RELAXATION RESPONSE** 1.67

- Positive Distraction 2
- Physical Calming 2
- Sound 1





I've learned that people will  
forget what you said, people will  
forget what you did, but people  
will never forget how you made  
them feel.

Maya Angelou

