



psychology perspective of energy consumption behavior

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Content

- Human resource behavior and attitude in energy efficiency
- Behavior-based energy-saving interventions
 - Overview of established behavior change models
 - The advantages of participatory designs
 - Resistance to Change



Human resource behavior and attitude in energy efficiency

Human resource behavior and attitude in energy efficiency

To maximize energy savings in existing facilities, it is best to adopt **a comprehensive energy plan** that incorporates four initiatives:

proper
maintenance

energy saving
technology

metering

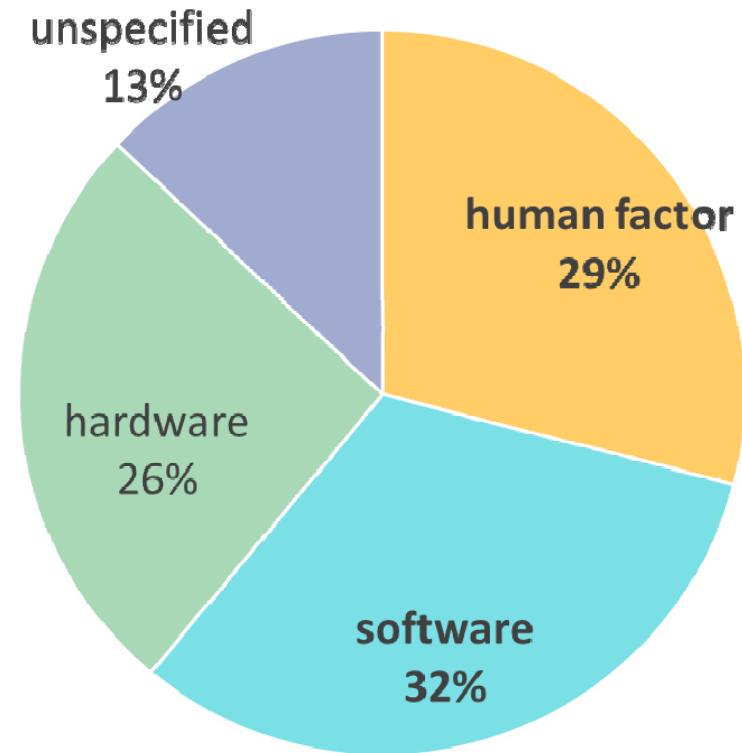
energy
awareness

Human resource behavior and attitude in energy efficiency

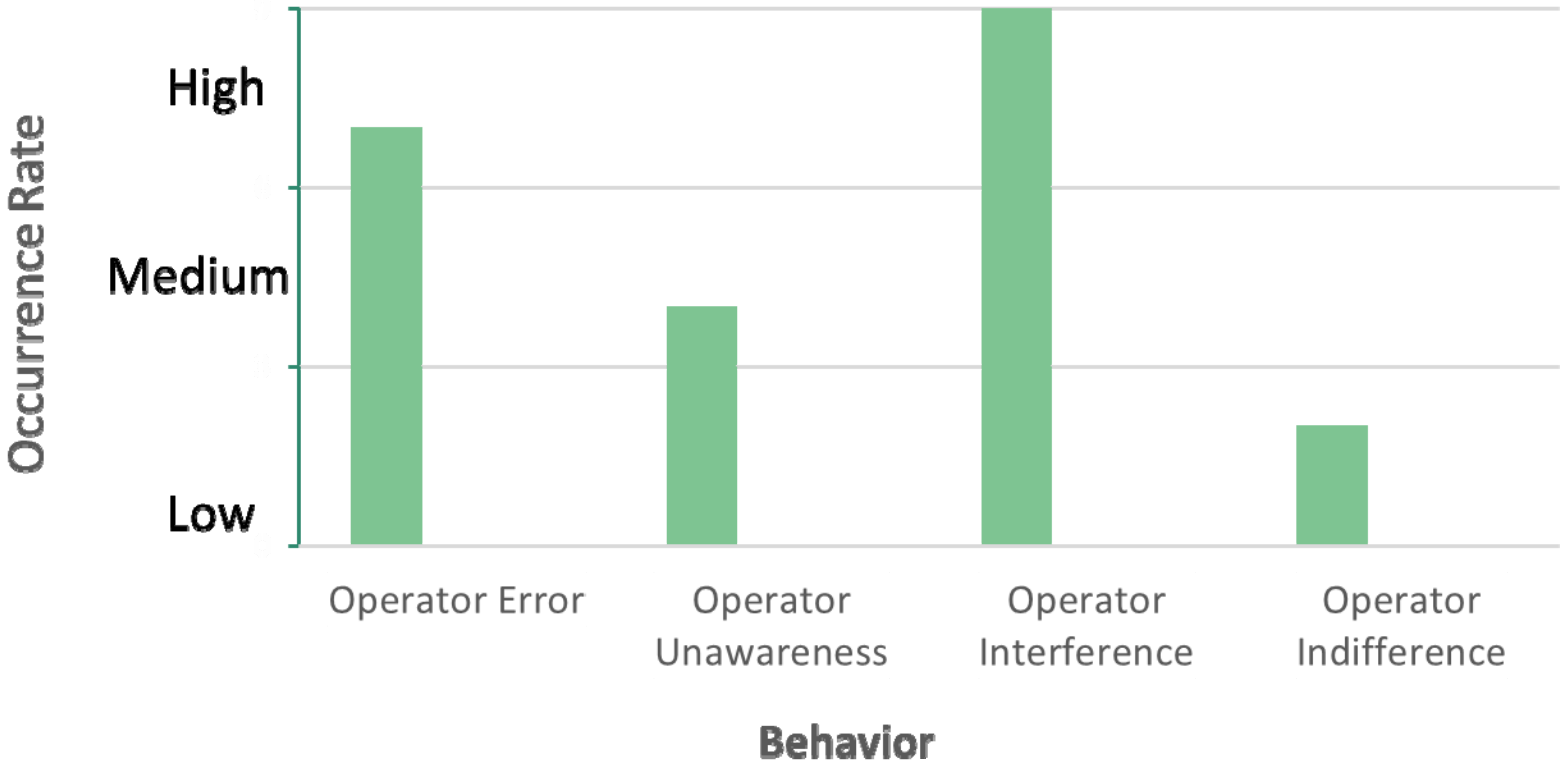
The relationship between **control-related problems** and energy consumption

“The National Buildings Control Information Program,”

Floyd E. Barwig et al, of the Iowa Energy Center.



Motivation behind human factor issues



Although technological changes in equipment can help to reduce energy use, changes in staff behavior and attitude may have a greater impact.

Staff should be trained in both skills and the company's general approach to energy efficiency in their day-to-day practices.

Personnel at all levels should be aware of energy use and objectives for energy efficiency improvement.

CHRISTINA GALITSKY, ERNST WORRELL AND MICHAEL RUTH
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Energy Efficiency : different approaches

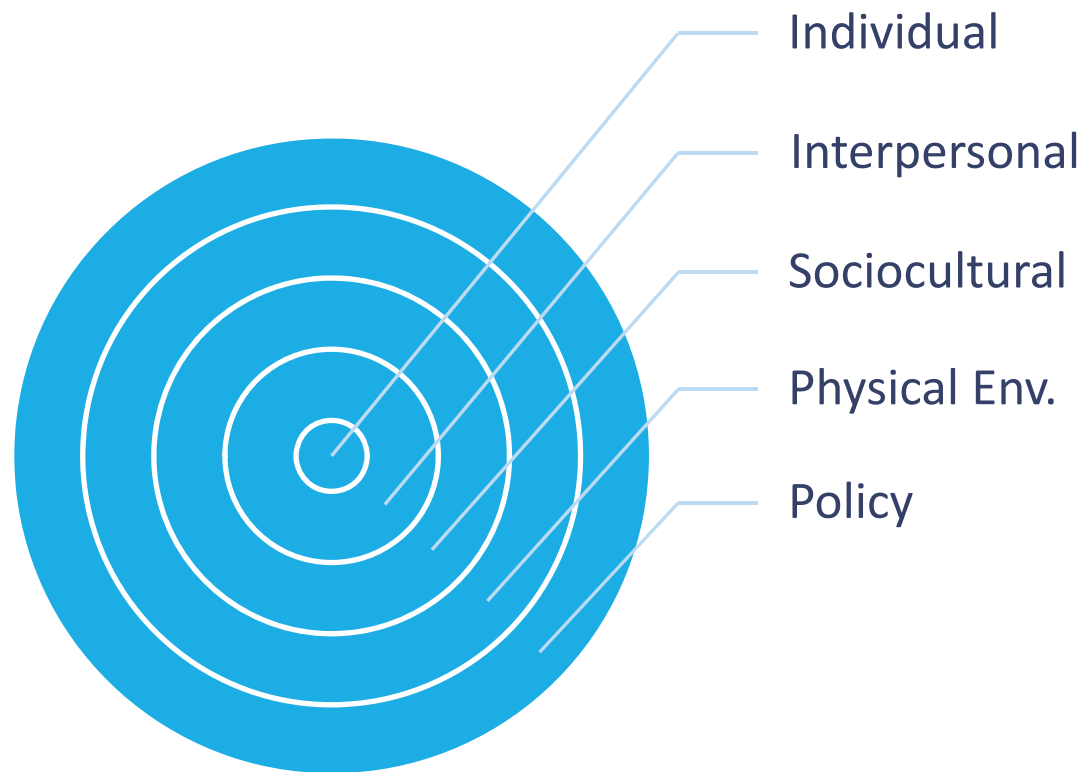


Technical &
Economic

Behavioral
Science?

Levels of Interventions

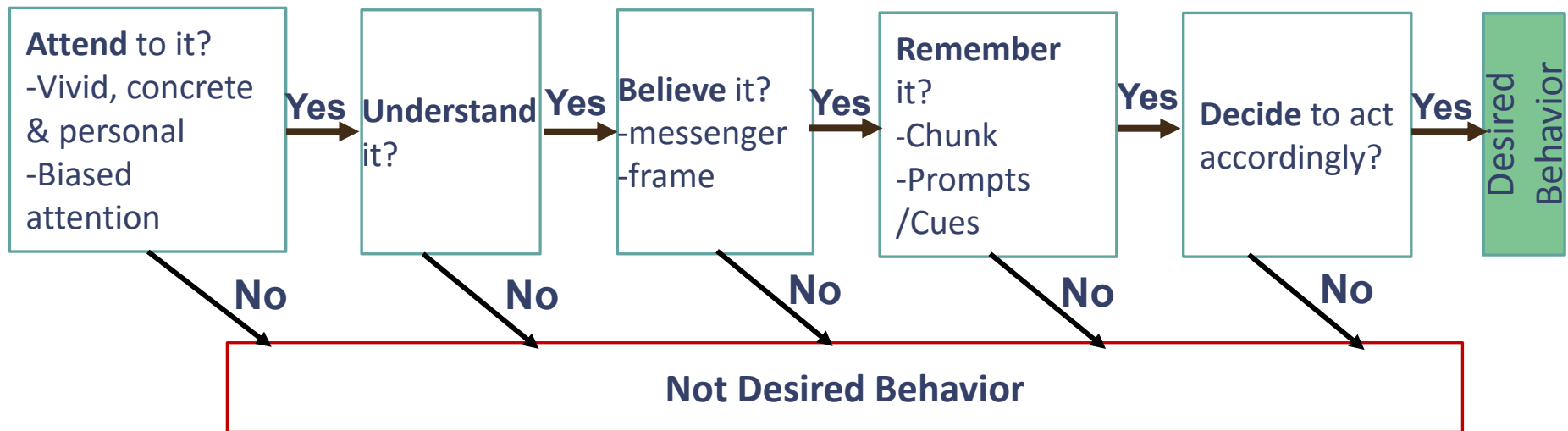
Based on the socio-ecological model of health behavior



Sociocultural level

media and marketing interventions

Communication



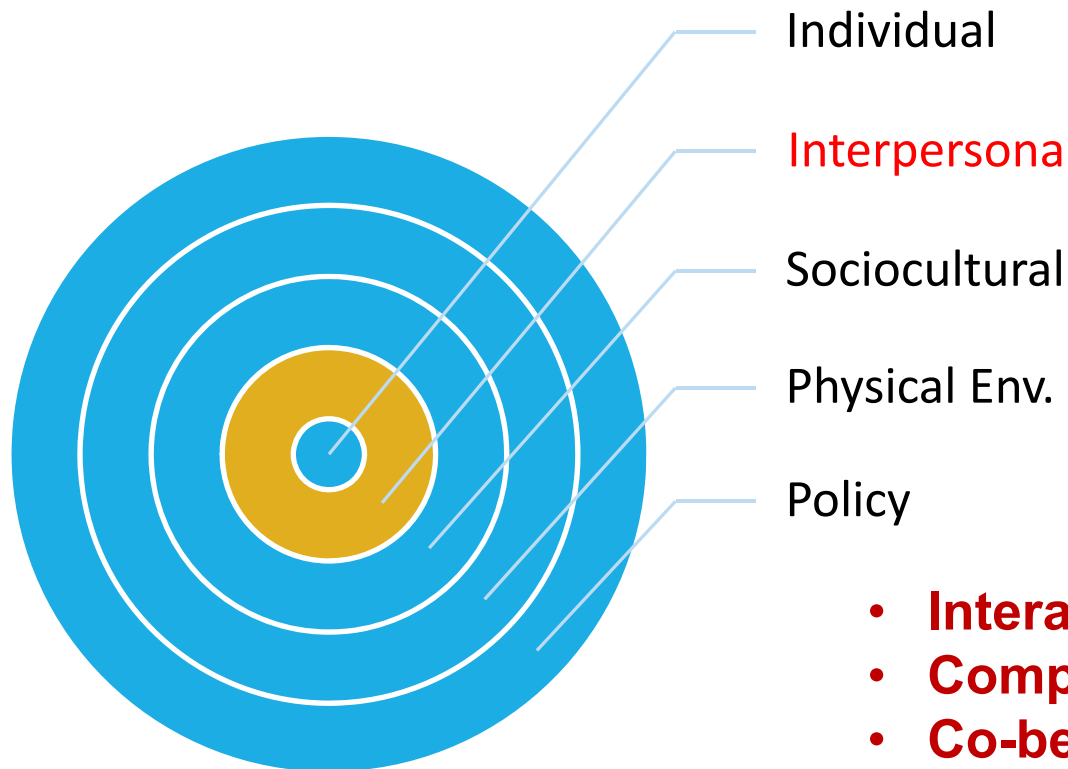
Sociocultural level

media and marketing interventions

- The role of the messenger;
- Framing of the message;
- Norms;
- Understanding individual's mental model;
- Habit or myths:
 - Cultural habits, Personal habits, Myths or erroneous mental models of how the world works

Levels of Interventions

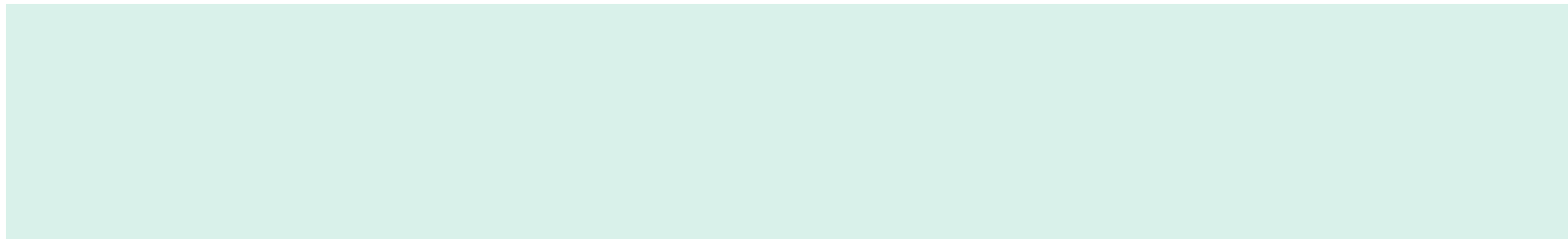
Based on the socio-ecological model of health behavior



- **Interactions between levels**
- **Complementary interventions**
- **Co-benefits**

It's a design failure,
not a people failure.

Craig Lawrence, IDEO



behavior-based energy-saving interventions

PARTICIPATORY INTERVENTIONS

intervention strategies

Overview of established behavior change models

The advantages of participatory designs

Resistance to Change

increase in energy efficiency



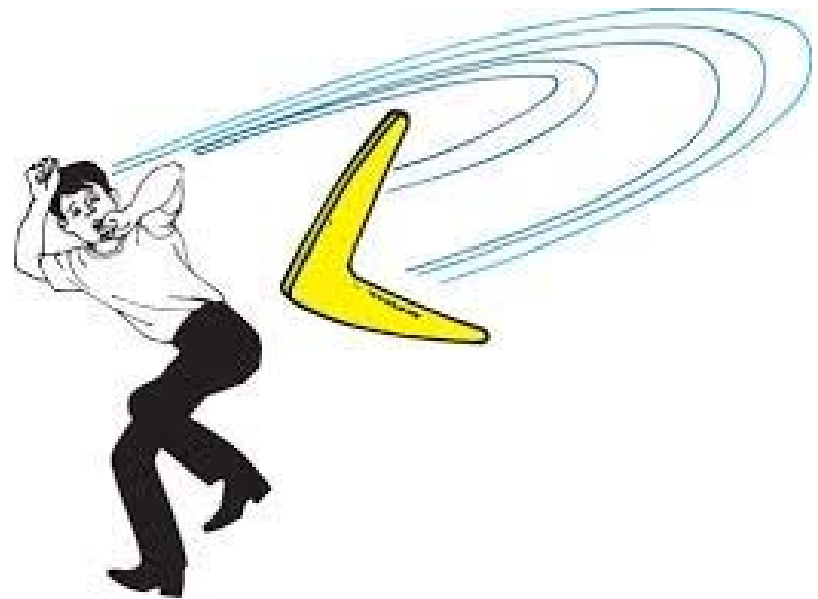
development of new technologies



implementing behavior change strategies

complex issue of motivating employees

- Be careful about underlying psychological processes;
- Boomerang effect;



What makes people conserve energy?

THEORY OF PLANNED BEHAVIOR (TPB);

THE VALUE NORM BELIEF (VBN) THEORY;

Theory of planned behavior (TPB)

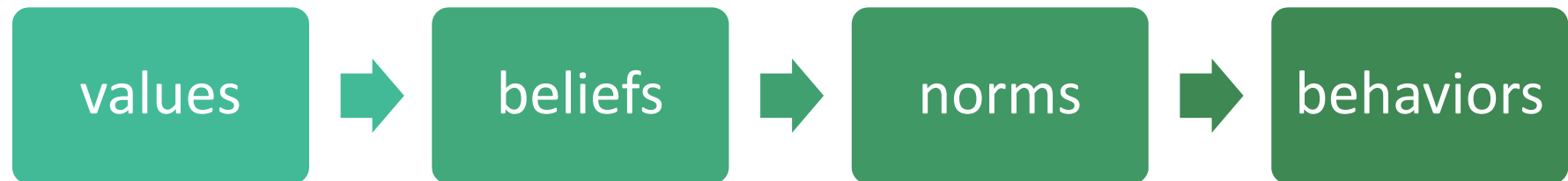
An individual's intention to engage a specific behavior (saving energy)

An individual's **attitude** towards the behavior;

subjective **norm**;

perceived behavioral **control** of this behavior;

The VBN theory



a chain of psychological constructs for predicting individuals' behaviors

Why people do not save energy?

Pitfalls & Barriers for organizations

The information–behavior gap;



Habits interference with energy-saving intentions;



The rebound effect;



The rebound effect

Energy-efficient technology impedes energy-saving behaviors!

as technological improvements decrease energy use, they also decrease monetary costs to use these devices;

moral licensing effect;

Energy conservation in the non-residential sector

Organizational Culture

employees should learn that energy conservation is part of the social norm



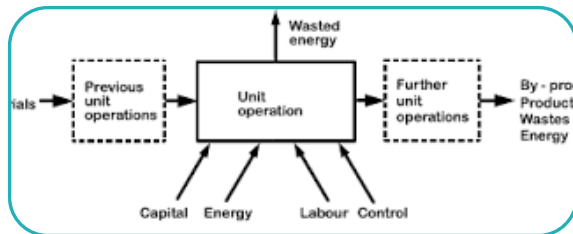
Descriptive norms



Injunctive norms

Energy conservation in the non-residential sector

Receiving feedback



individual usage



paying for consumption



diffusion of responsibility

Case study: Comparative feedback

- setting goals and receiving feedback on their own conservation behavior

Unit 1
(feedback)



- also receiving information about the performance of the first unit

Unit 2
(Comparative
feedback)



Participatory interventions benefits

Providing opportunity to **engage** in the **decision process**;

bottom-up communication streams are suitable for integrating the value sustainability in an organization's culture;



Participatory interventions benefits

- 1) promote self-determination,
- 2) enable an optimal fit between the behavior's difficulty and individuals abilities,
- 3) encourage social processes that foster energy-saving behaviors,
- 4) promote generalization of specific behaviors to a broader context,
- 5) foster public commitment-making strategies of employees.

Participatory approach

Case Study

The most systematic study of the phenomenon of resistance to change that has been made in a factory setting, conducted by Lester Coch and John R.P. French, Jr.

1

- No-participation

2

- Participation-through-representation

3

- Total participation

4

- Total participation
- 

Participatory approach

Case Study

Research findings:

No-participation group

The researchers reported a marked contrast between the results achieved by the different methods of introducing this change.

The output of Group #1 dropped immediately to about two thirds of its previous output rate. The output rate stayed at about this level throughout the period of 30 days after the change was introduced.

Resistance developed almost immediately after the change occurred.



Participatory approach

Case Study

Research findings:

Total-participation groups

In contrast with this record, Groups #3 and #4 showed a smaller initial drop in output and a very rapid recovery not only to the previous production rate but to a rate that exceeded the previous rate. In these groups there were no signs of hostility toward the staff people or toward the supervisors, and there were no quits during the experimental period.

Participation is a feeling on the part of people, not just the mechanical act of being called in to take part in discussions.

PARTICIPATION IS NOT SOMETHING THAT CAN BE CONJURED UP OR CREATED ARTIFICIALLY.

Resistance to Change



sources of resistance in individual's personality

1. reluctance to lose control

- Organizational studies that advocate employee involvement and participation in organizational decision making as a means of overcoming resistance to change focus on this source of resistance.

2. cognitive rigidity


- change is a stressor, and therefore resilience should predict an individual's ability to cope with change.
- 

sources of resistance in individual's personality

3. lack of psychological resilience

- change is a stressor, and therefore resilience should predict an individual's ability to cope with change

4. intolerance to the adjustment period involved in change

- Change involves more work in the short term. New tasks require learning and adjustment.
- 

Sources of resistance in individual's personality

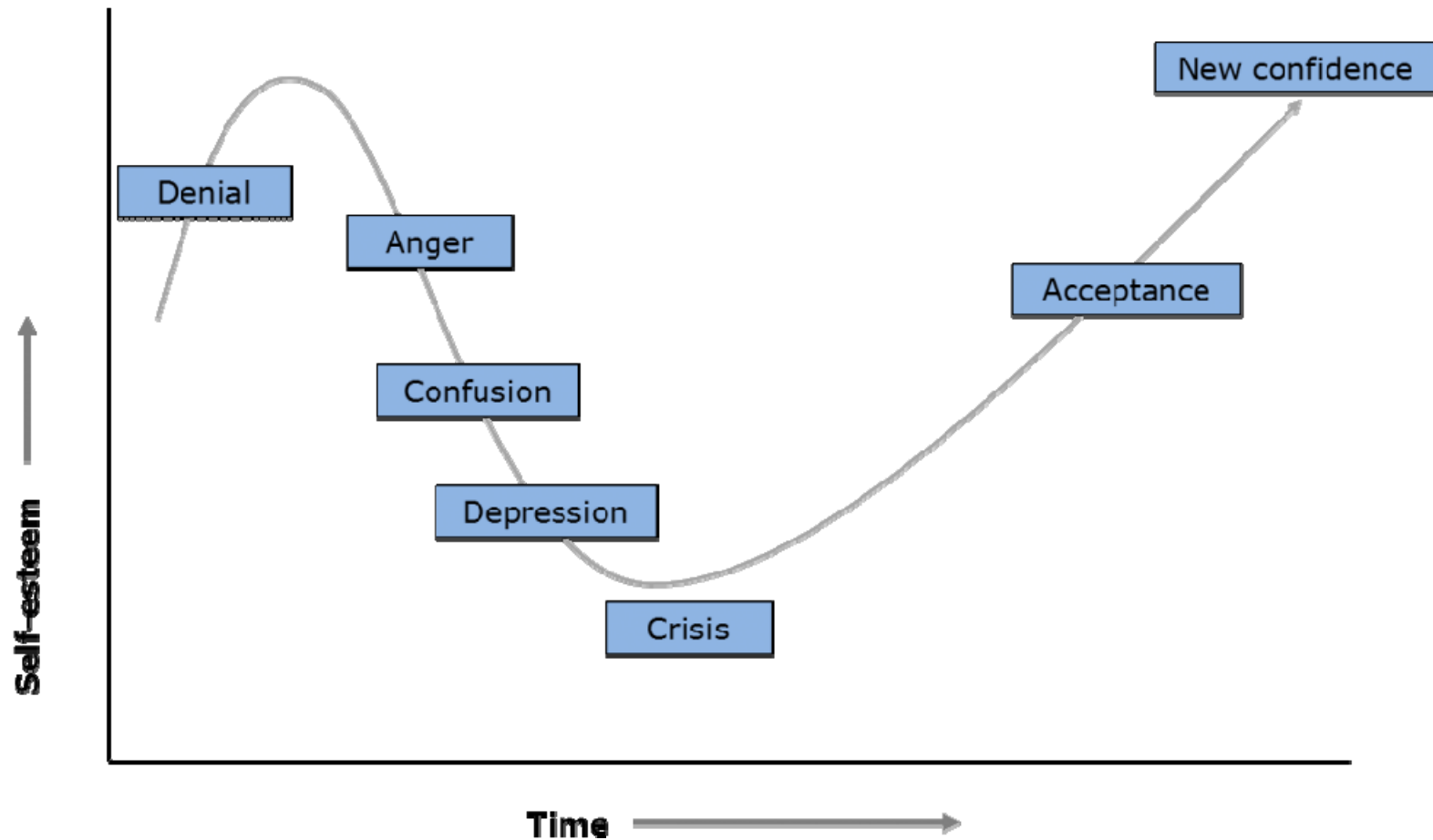
5. Preference for low levels of stimulation and novelty

- adaptive individuals, are best at performing within a well-defined and familiar framework but Innovators are better at finding novel solutions;

6. Reluctance to give up old habits

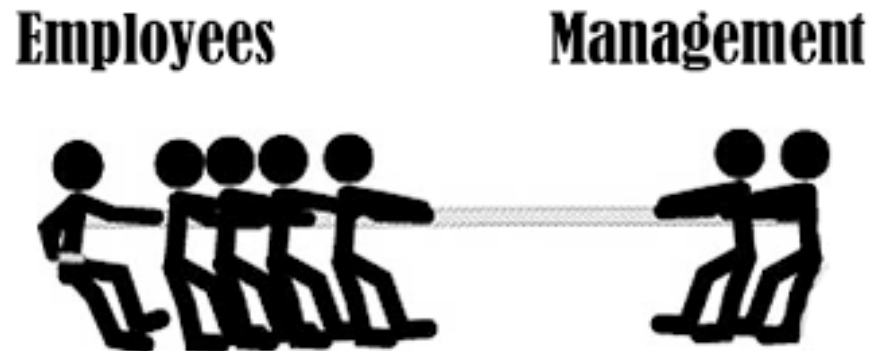
- Familiarity breeds comfort;
- 

Classic psychological reactions to change



Typical reasons for resistance to change

- Misunderstanding about the need for change/when the reason for the change is unclear
- Fear of the unknown
- Lack of competence
- Connected to the old way
- Low trust



Motivational Interview

FOR ENERGY MANAGERS

MI

Successful change management depends on how necessary changes are communicated to the employees whose work lives will be affected.



MI-based interaction process

Phase 1

- Exploring individuals' values

Phase 2

- Anchoring the energy-saving norms into employees' daily routines

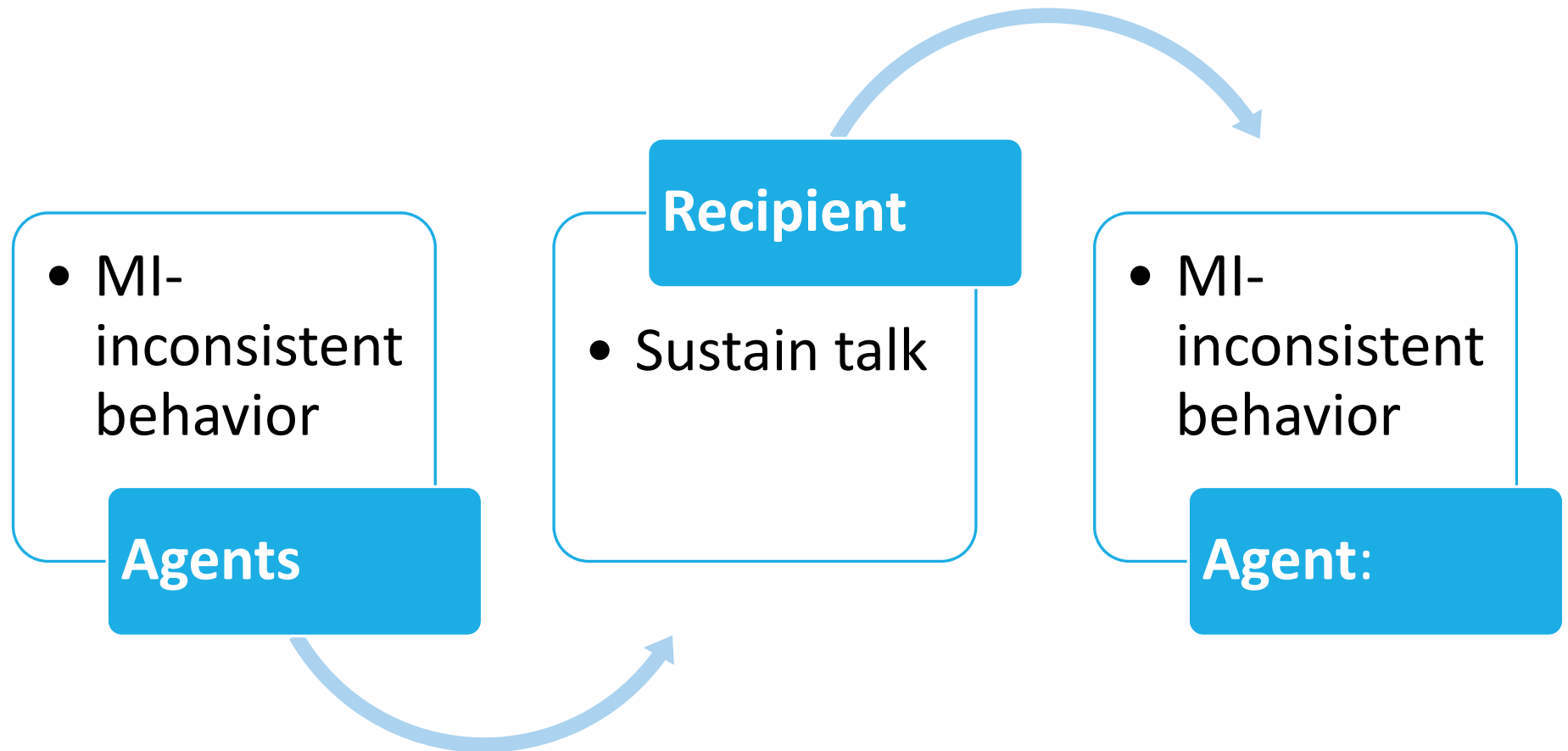
Main principles of MI

- ✓ **express empathy,**
- ✓ **roll with the resistance,**
- ✓ **develop discrepancies**
- ✓ **and support clients' self-efficacy**

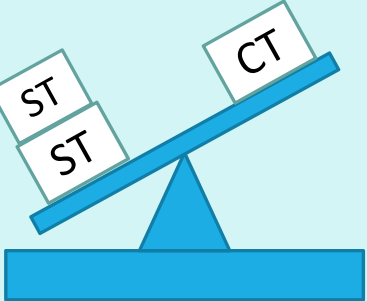
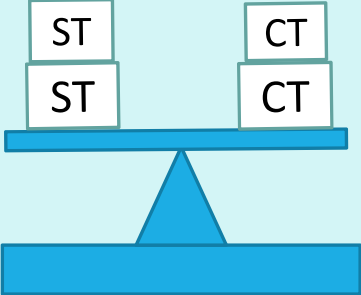
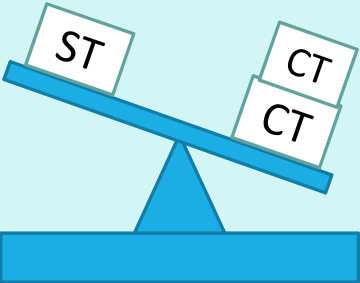


let clients argue themselves for the need to change and give them the opportunity to talk about the possible reasons for and benefits of changing.

How Change Agents Contribute to Resistance to Change



Transtheoretical model of change

TTM Change	Pre-contemplation	contemplation	preparation	Action	Maintenance
Decisional Balance					
	Costs (ST) outweigh the benefits (CT) of changing		Benefits begin outweighing the costs of changing		
Implication	Change is not possible		Change is possible		

Thank you
