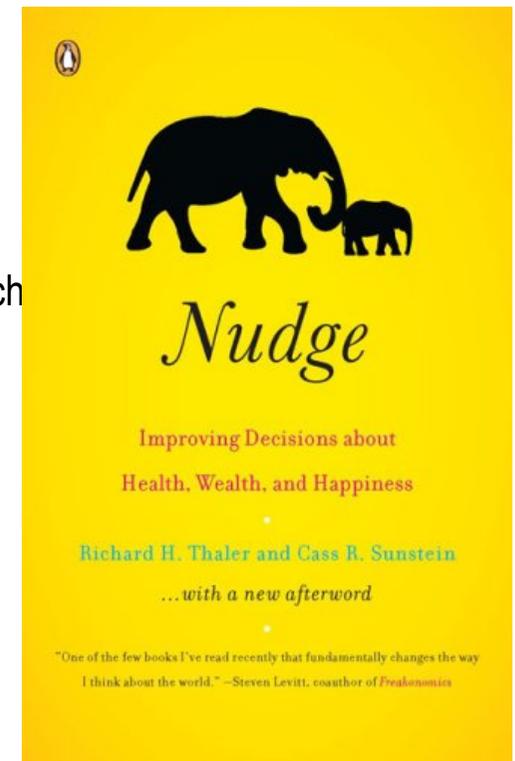




Nudging people –

Some input from the behavioral sciences

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ICT solutions for sustainable lifestyles

World Resources Forum (WRF), International Telecommunication Union (ITU), Global e-Sustainability Initiative (GeSi), and HP
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Nudging

- Nudging strategies = Implementing a **policy of *libertarian paternalism***
- ‘Paternalism’ = limiting some person or group’s autonomy for their own good
- The ‘libertarian’ aspect refers to the necessity of respecting everyone’s freedom to act, decide or even change their minds as it suits them.
- In sum: It means leading individuals to make choices in the collective interest, without being prescriptive.
- Nudging alters the decision maker’s behavior without limiting her/his choice options and without significantly altering the decision maker’s incentives, in terms of payoffs- and utility increase.

Example: Imprinted fly on urinal



Example from: <http://www.inudgeyou.com/nudge-policy-the-behavioural-insights-team/>
Picture: <http://www.fotocommunity.de/pc/pc/display/20646354>

My taking home message:

ICT's function in this is...

...to contribute to novel and effective forms of nudging...

..through...

1. Convenience techniques
2. Information techniques
3. Monitoring techniques
4. Social-psychological techniques

Overview

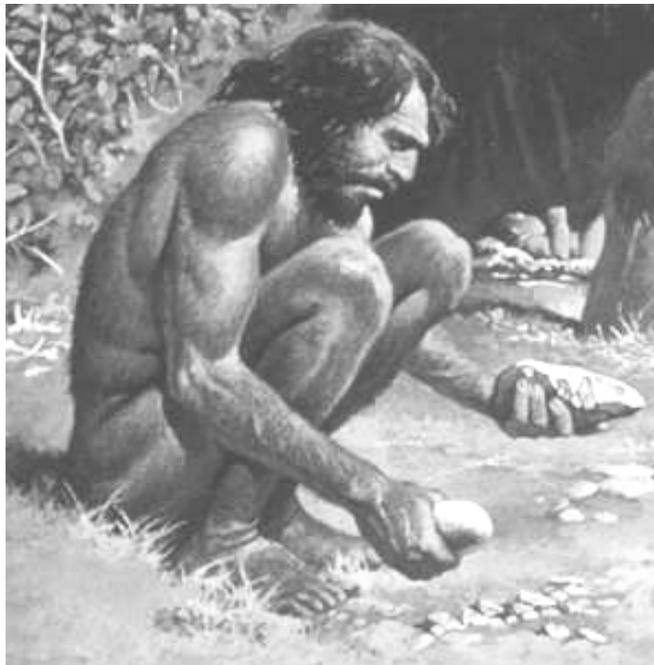
1. Perceiving
2. Assessing
3. Acting

Conclusions

1. Perceiving

Evolutionary limits

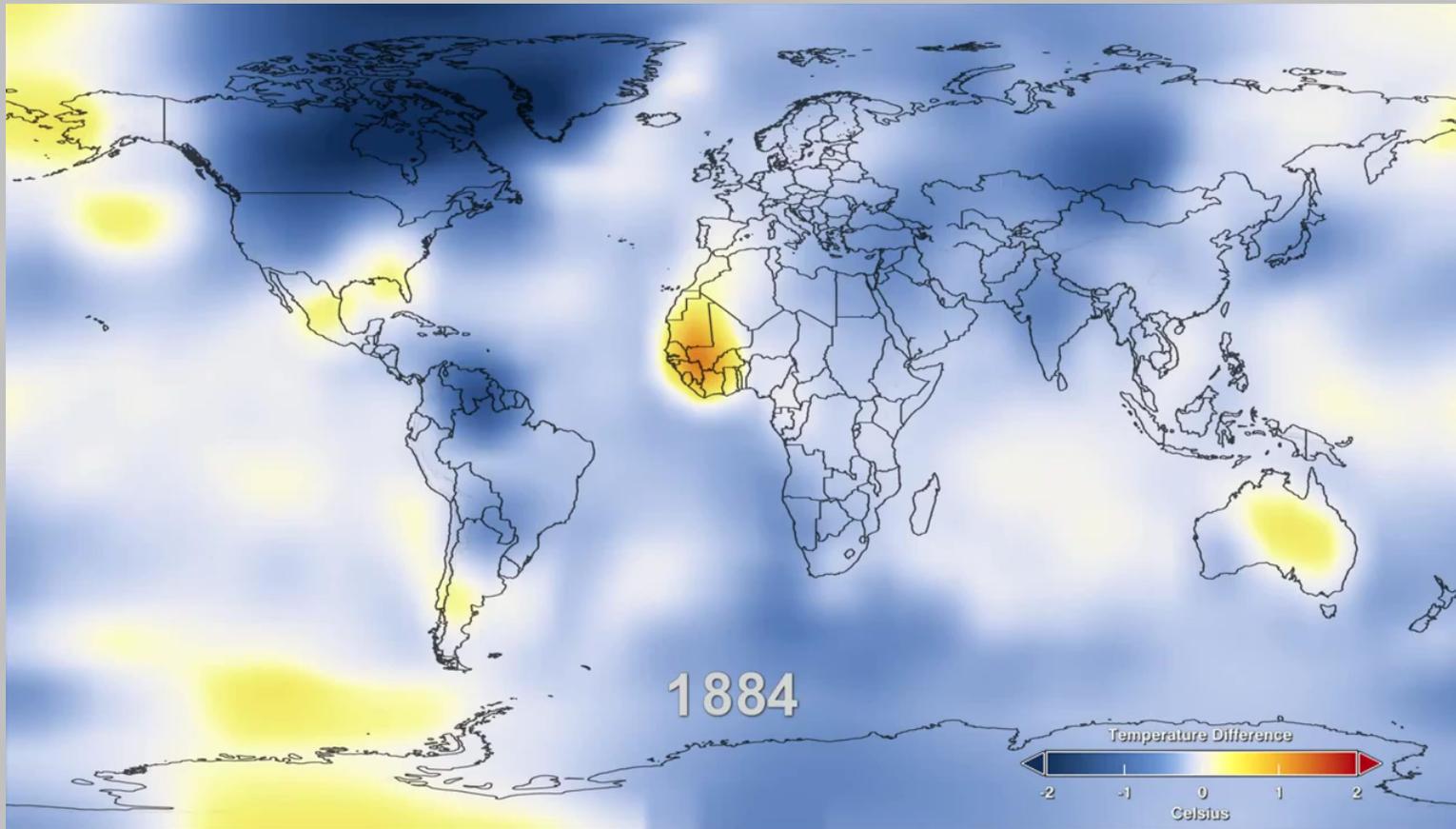
- Our genetic make-up is essentially identical to the genome of Stone Age people 30-40'000 years ago (1300 generations ago). What makes us what we are today is our experience acquired through learning, our culture (⇒ cultural evolution).
- But our genetic make-up, adapted to the conditions of life long ago, still today co-determines how we “function,” such as how we assess risks, how we consume, or invest.



That's how it started. See it now?



Visualization: NASA finds 2011 9th warmest year on record since 1884



http://www.youtube.com/watch?feature=player_embedded&v=unqe0qR-MOM

Do we perceive *fast* changes?

Quirkology Channel

THE COLOUR CHANGING CARD TRICK

www.RichardWiseman.com

[http://www.youtube.com/watch?
annotation_id=annotation_262395&feature=iv&src_vid=voAntzB7EwE&v=v3iPrBrGSJM](http://www.youtube.com/watch?annotation_id=annotation_262395&feature=iv&src_vid=voAntzB7EwE&v=v3iPrBrGSJM)

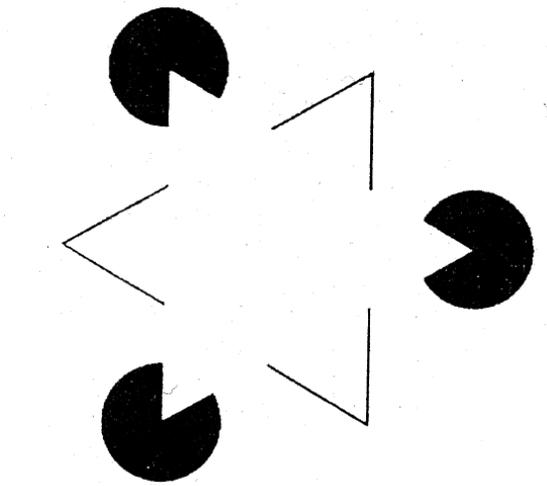
Our perception: A data-driven, bottom-up process?



...or a constructive, top-down process?



Perception is a product of two processes:
Bottom up and top down



12 13 14

A B C

1. Perceiving

Perception is limited by evolutionary constraints, it is not simply a data-driven process of representation (bottom-up); it always involves some construction (top-down).

Role for ICT: Draw attention to crucial facts; visualize; deliver vivid, localized, individualized experience; propagate relevant concepts, etc.

2. Assessing

Street Calculus

Do we “calculate” when assessing such situations?

Answer: Not really!

Taken from: Slovic, P., Finucane, M.L., Peters, E., & MacGregor, D.G. (2004). Risk as analysis and risk as feelings: Some thoughts about affect, reason, risk, and rationality. *Risk Analysis*, 24(2), 312.



Dual-process model of cognitive/affective processing

Fast, automatic system (System 1)	Slow, reflective system (System 2)
<ol style="list-style-type: none">1. Integral, intuitive2. Affective: positive affect/negative affect-oriented3. Associative connections4. Behavior based on experience and the associated affect5. Processes reality in images, metaphors, stories6. Rapid processing7. Directly action-oriented8. Self-evident (“experiencing is believing”)	<ol style="list-style-type: none">1. Analytical2. Logical: argument-oriented3. Logical connections4. Behavior based on conscious deliberation5. Processes reality in abstract symbols, words, numbers6. Slower processing7. Indirectly action-oriented8. Justification via logic and evidence

Based on: Slovic, P., Finucane, M.L., Peters, E., & MacGregor, D.G. (2004). Risk as analysis and risk as feelings: Some thoughts about affect, reason, risk, and rationality. *Risk Analysis*, 24(2), 311–322; Epstein, S. (1994). Integration of the cognitive and the psychodynamic unconscious. *American Psychologist*, 49, 709-724.

Distorted assessment

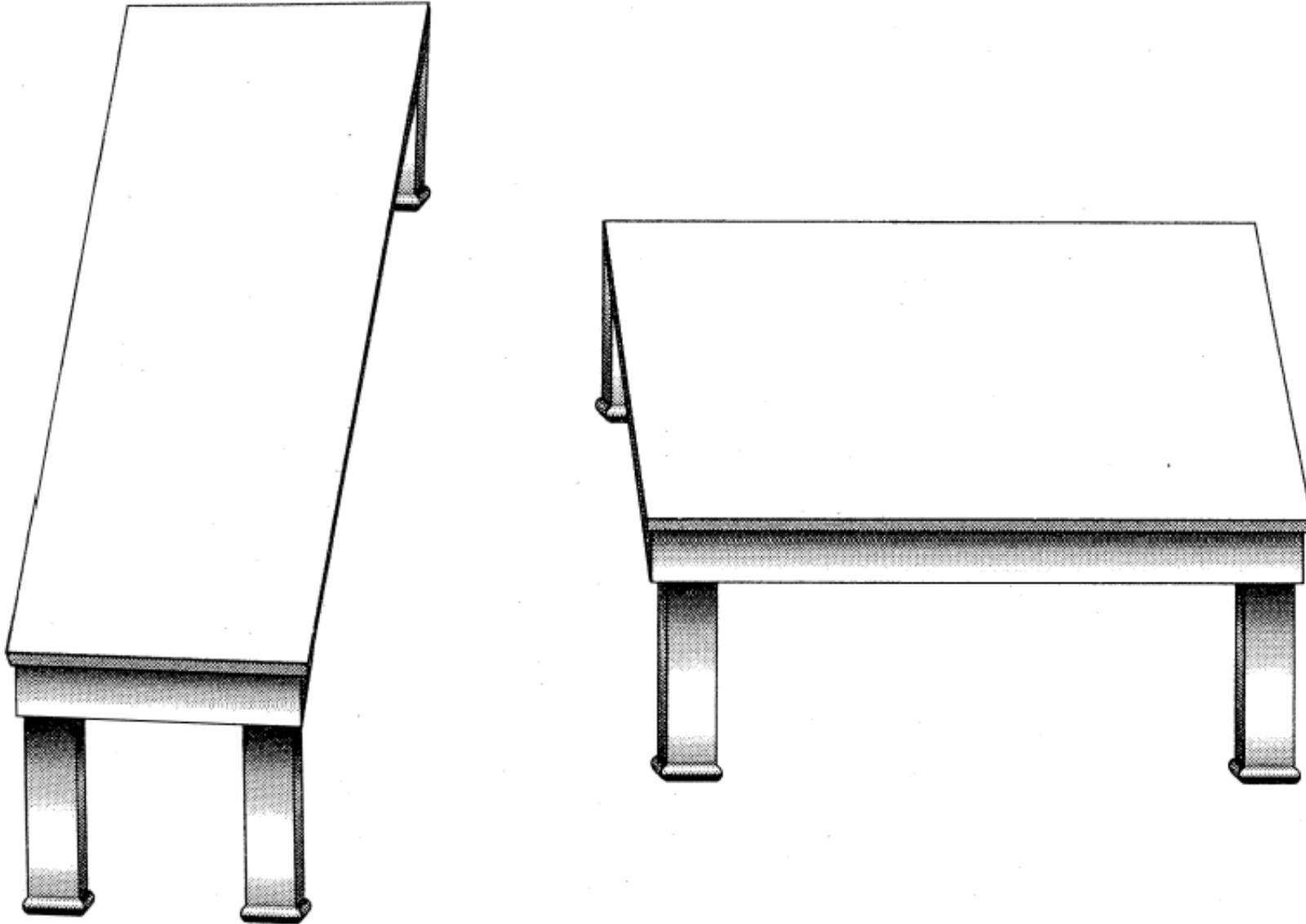
Examples for the *above average effect*:

- Every Swiss driver believes that he drives better than the average Swiss ;-)
- Each of us think we are friendlier, less bourgeois/narrow-minded, and more progressive than the average Swiss ;-)

Distorted assessment

- *Illusion of control: We overestimate the degree of control that we have over the things that happen* Taylor, S. & Brown, J. (1994). Positive illusions and well-being revisited. Separating fact from fiction. Psychological Bulletin, 116, 1, 21-27.
- *We tend towards unrealistic optimism* Taylor, S. & Brown, J. (1994). Positive illusions and well-being revisited. Separating fact from fiction. Psychological Bulletin, 116, 1, 21-27.
- Nothing is going to happen to us...
- ...and if it does, we all will be affected equally, and then we will at least be in good company, and that will surely lead us to find new solutions in time..., etc.,etc...

Distorted assessment



For assessing this
type of situation
we possess
adequate mental
risk models; ...

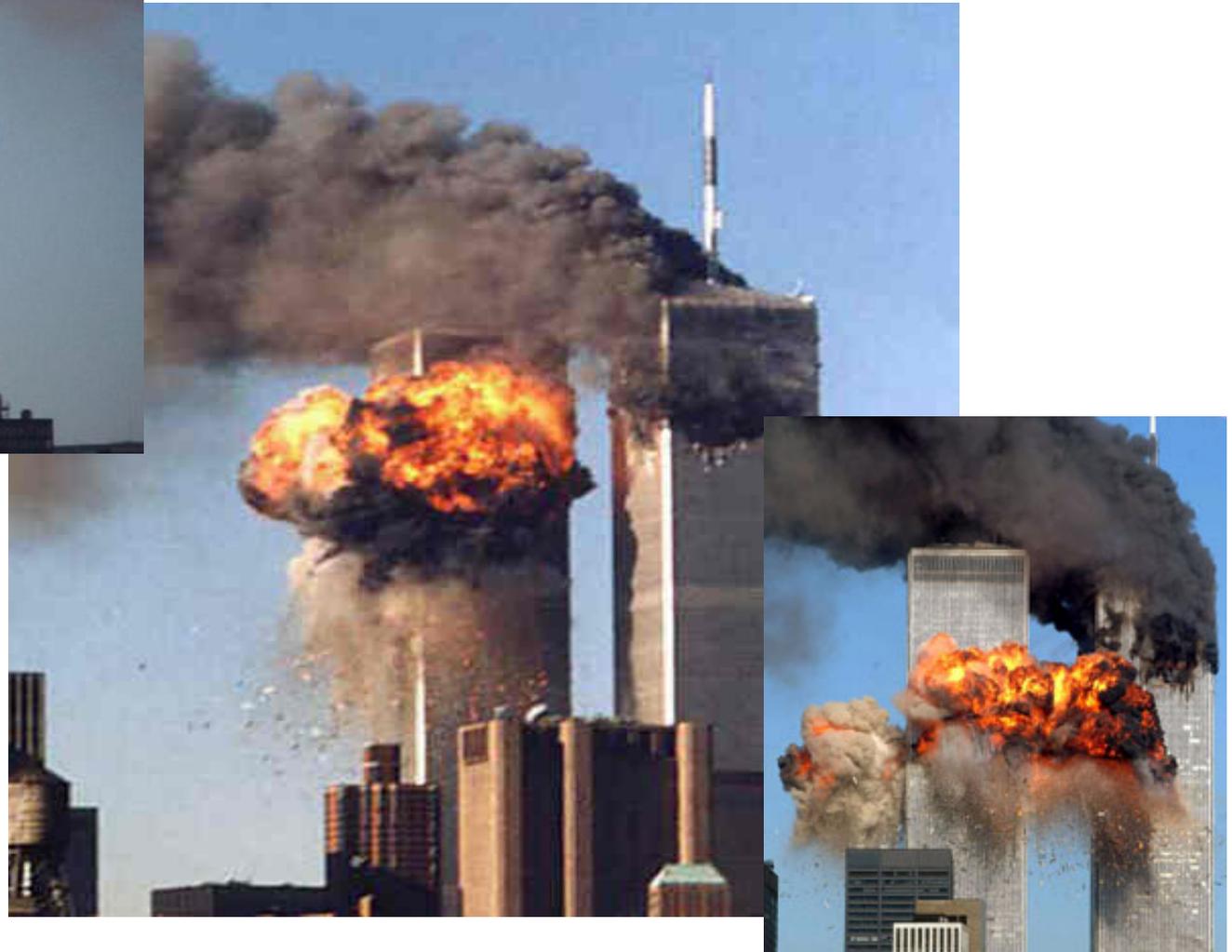


...but not for this type of situation



Gigerenzer, G. (2004). Dread risk, September 11, and fatal traffic accidents. *Psychological Science*, 15(4), 286-287.

Gigerenzer, G. (2006). Out of the frying pan into the fire: Behavioral reactions to terrorist attacks. *Risk Analysis*, 26 (2), 347-351.

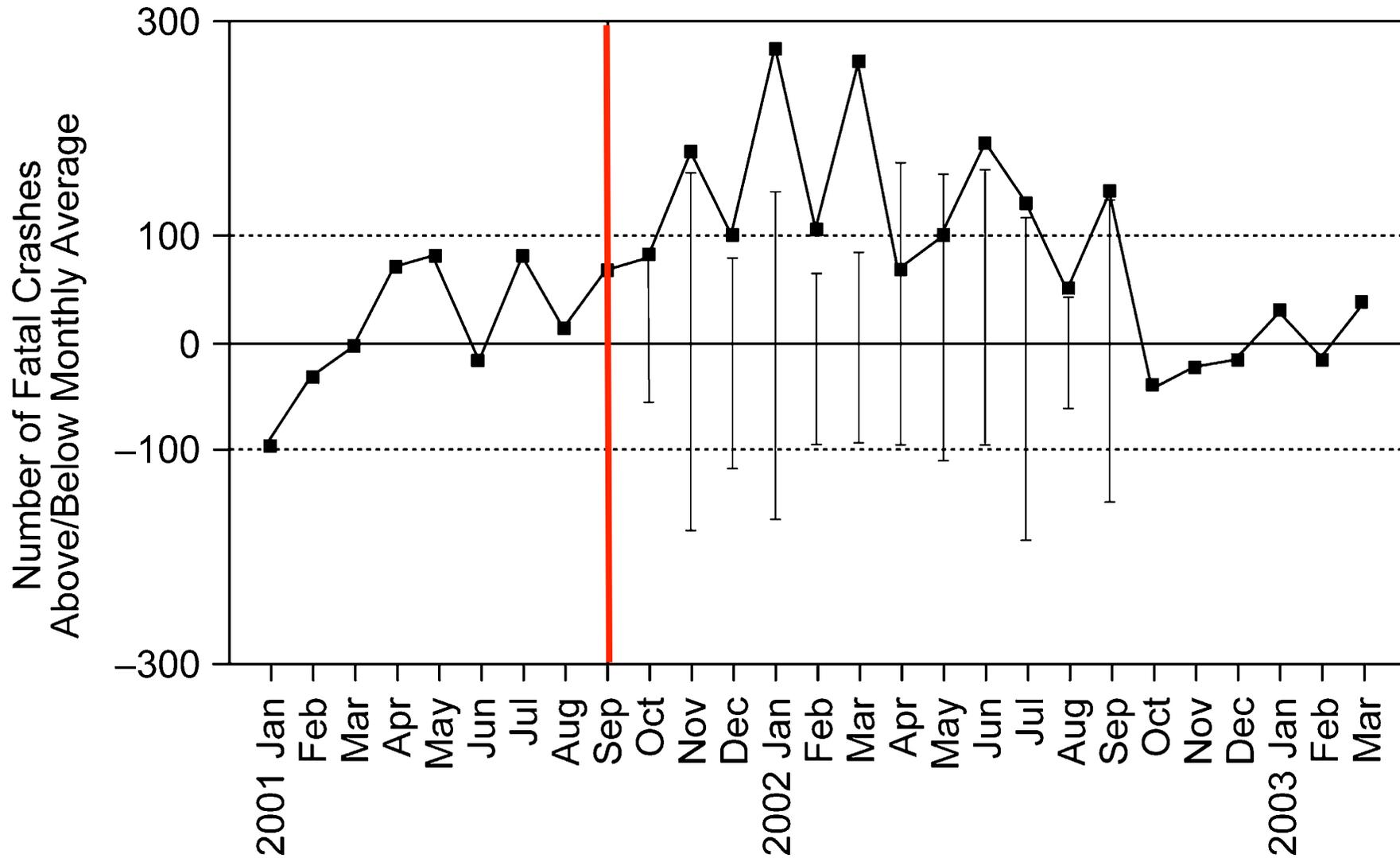


Two basic behavior strategies when dealing with risk

- Attack, eliminate source of risk
- Flee, keep at a distance, avoid source of risk, protect against...
etc.

Results of trying to avoid the risk of flying...

Gigerenzer, 2004, 2006



2. Assessing

In the assessment of situations two processes work together: An (all too often neglected) experience-related, automatic, fast (affective) process and a slow, reflective and analytical process. Assessments are also distorted by control illusions and unrealistic optimism and also by limited “built-in” risk models.

Role for ICT: Provide adequate input for and take advantage of the respective processing system, etc.

3. Acting

Status quo bias

Participants (%)
preferring...



... mug to candy



... candy to mug

Group	N	... mug to candy	... candy to mug
1 Give up mug to obtain candy?	76	89%	11%
2 Give up candy to obtain mug?	87	10%	90%
3 No initial entitlement	55	56%	44%

Knetsch, J. (1989). The endowment effect and evidence of nonreversible indifference curves. *American Economic Review* 79 (5), 1277-1284.

3 keys to change

1. Sufficient tension (dissonance) between a desired and current condition. No tension, no change.
2. Sufficient level of perceived behavior control and perceived efficacy
3. Sufficient sense of the benefits of making the change (rule of thumb: two + for one -)

3. Acting

Routine behaviors and assessments that have proven successful make everyday life easier, so that on that basis people can devote attention to the “real” problems of every day life. This promotes a preference for the status quo (as long as it is successful).

3 keys to change: a) sufficient tension between actual state and target state, b) sufficient efficacy and behavior control, c) sufficient cost/benefit ratio of the necessary change

Role for ICT: provide and establish new clever defaults from the beginning; nudge with information about efficacy, etc.

Conclusions

Psycho-Social Determinants of Pro-Environmental Behavior

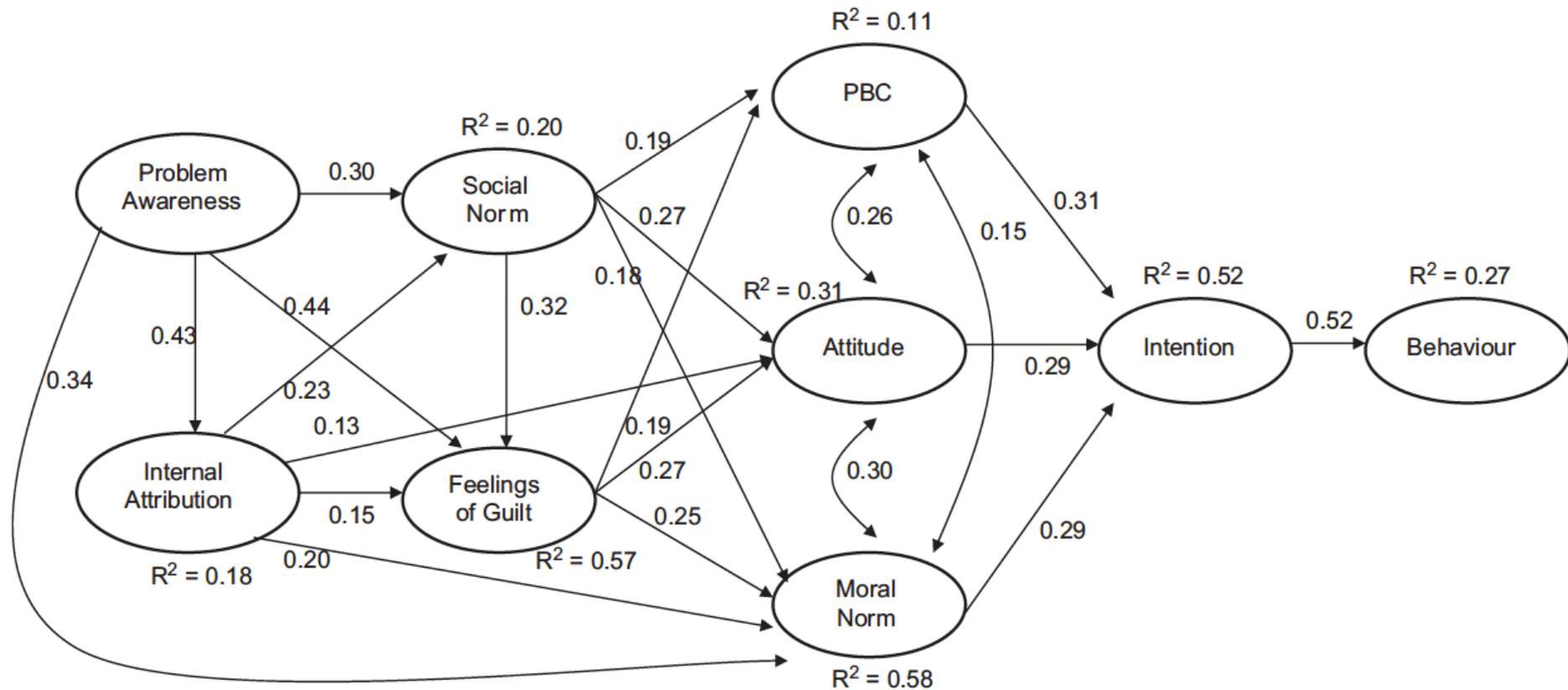


Fig. 1. Results of the MASEM based on pooled random-effects correlations, PBC = perceived behavioural control, single-headed arrows = standardised path-coefficients; double-headed arrows = correlations, R^2 = explained variance.

Structural equation model based on a meta-analysis of 57 empirical studies

Bamberg, S. & Möser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology* 27, 14–25.

Nudging by activating **problem awareness**:

Provide facts, experience in novel ways, use crowd sensing, organize citizen science, demonstrate threat to valued objects, etc.

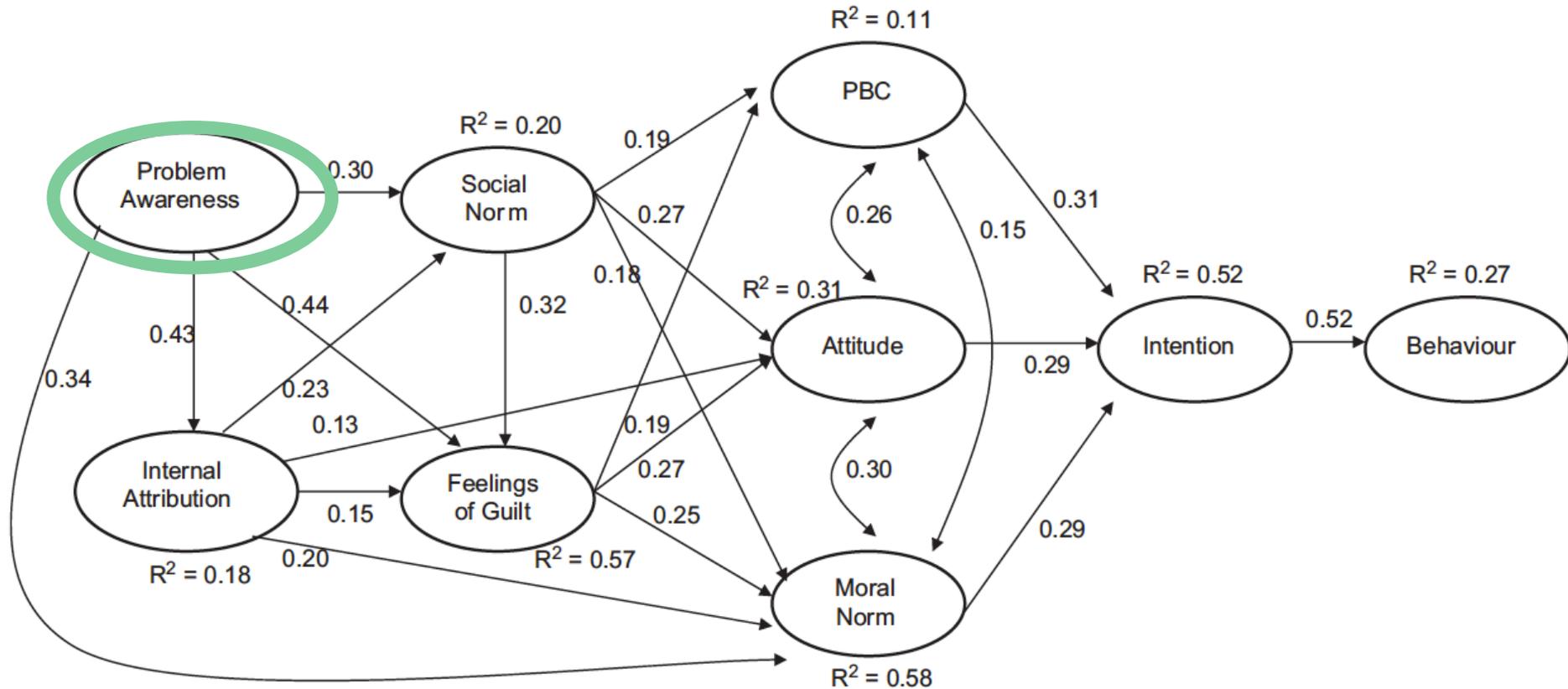


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Nudging by activating **internal attribution**:
 Provide adequate mental models, knowledge, strong convincing narratives, etc.

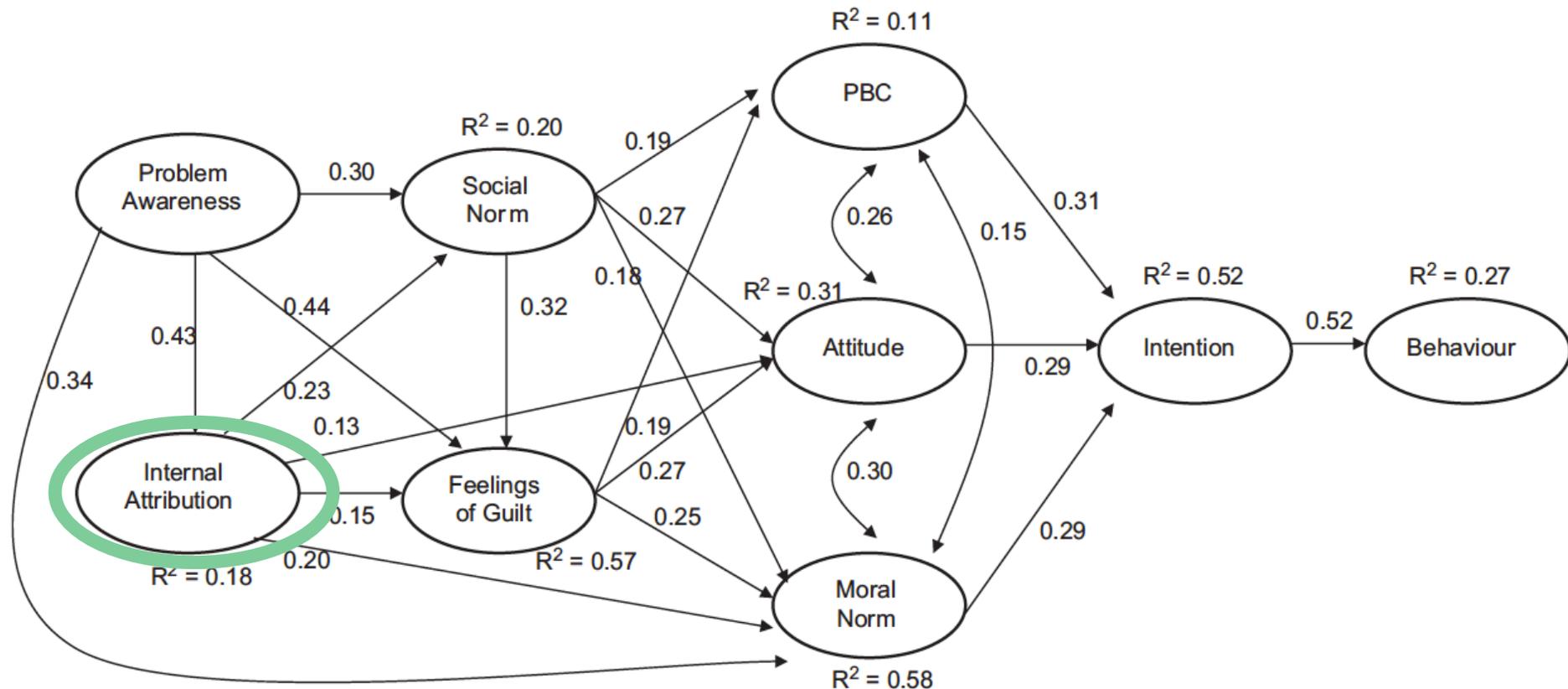


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Nudging by activating **feelings of guilt**: Build up tension (dissonance) between own behavior and self-concept, confront with effects of own behavior, consider perceived severity and perceived vulnerability, etc.

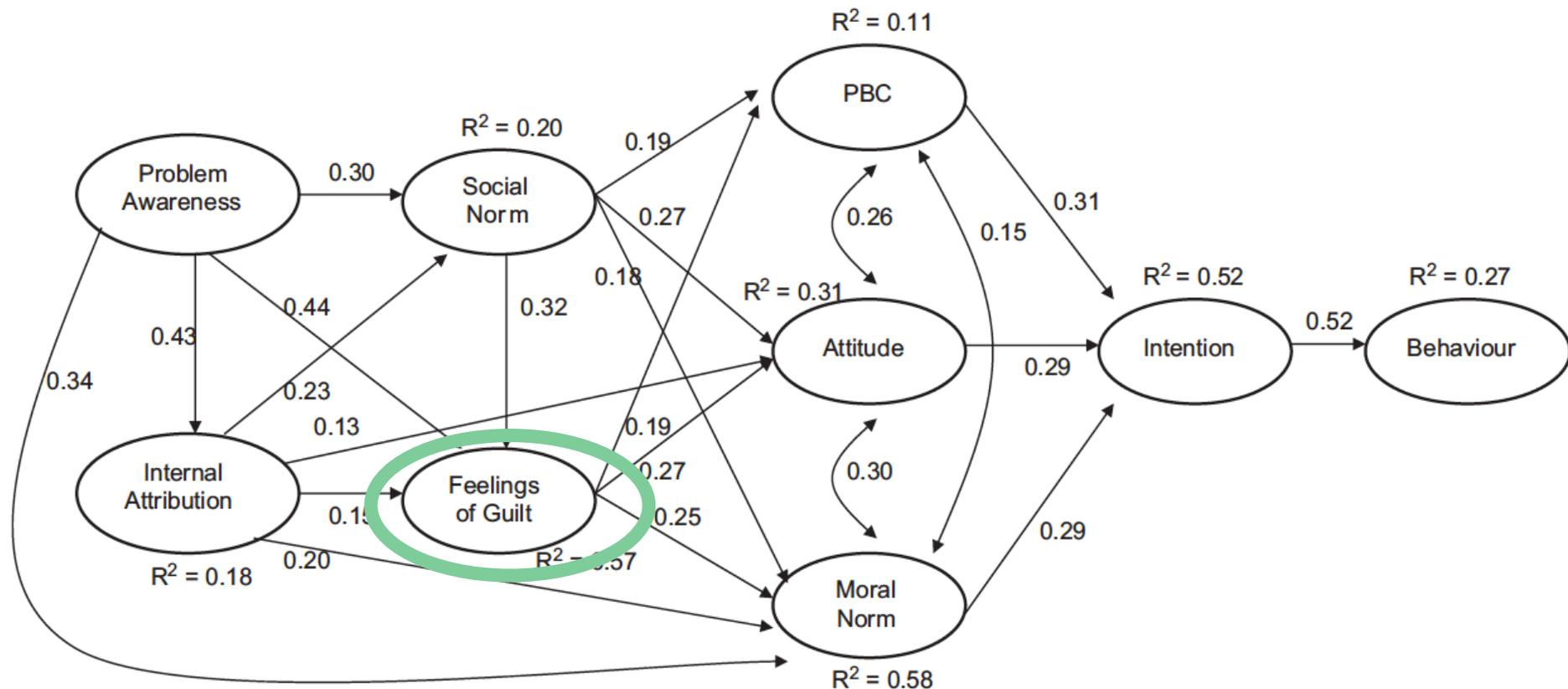


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Nudging by activating **social norm**: Make novel social norms visible and prominent (diffusion); propagate, provide “we-feeling”, feeling of “being part of the solution”, activate the social network, induce social pressure, feedback, etc.

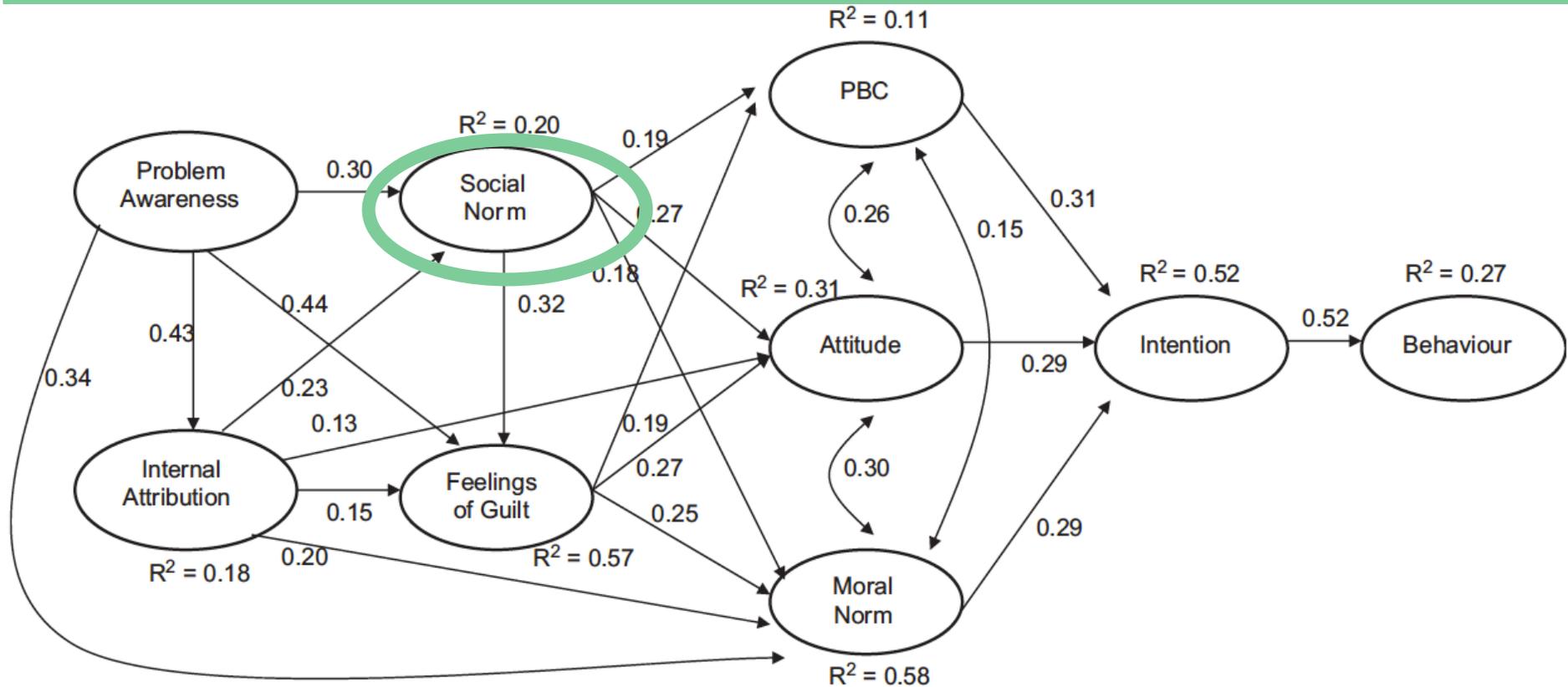


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Nudging by activating **moral norm**: Provide a “sense of obligation to act according to own convictions”; moral norms act as a kind of “internal moral compass”, use moral norm against rebound effects, etc.

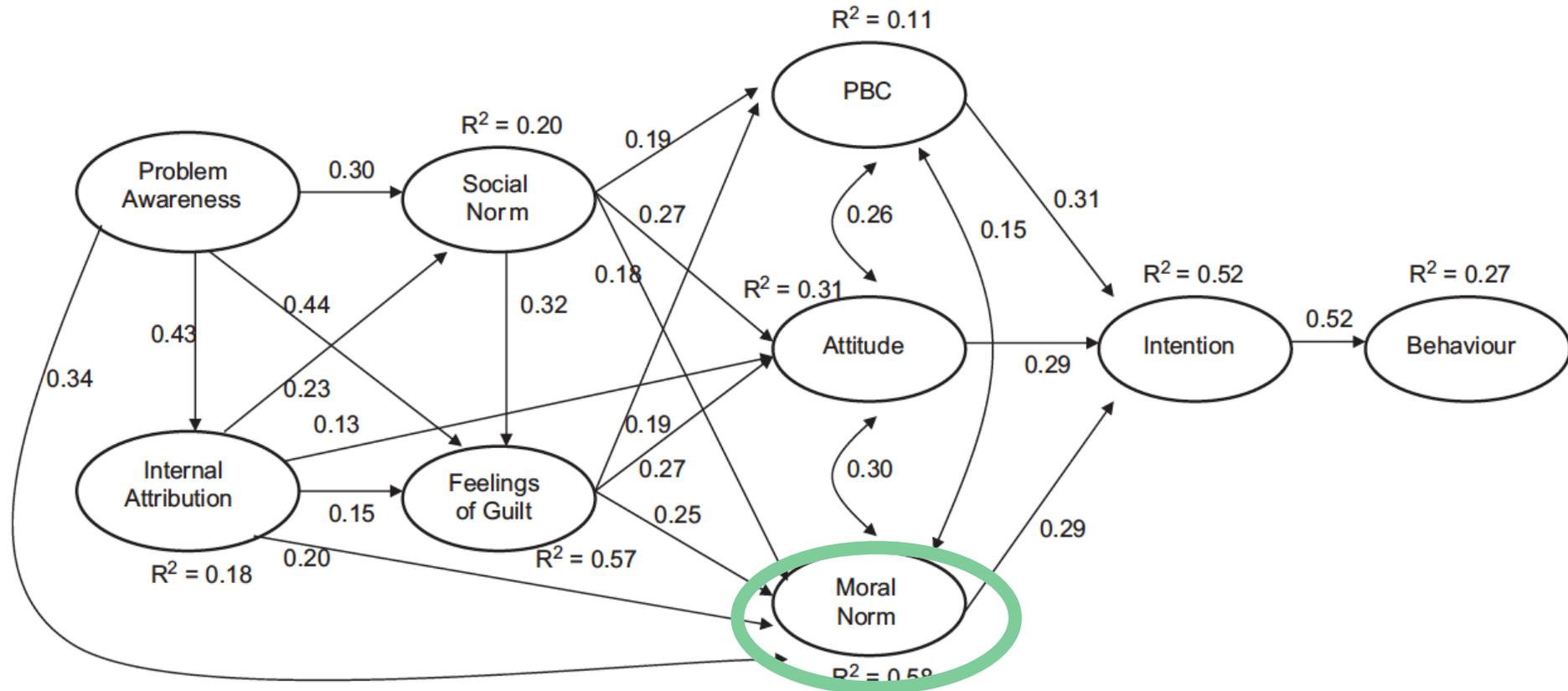


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Nudging by activating and influencing **attitude**: Influenc cost-benefit assess- ment of „green“ behavior, induce moral costs for not acting, consider heuristic (System 1) and deliberate (System 2) decisions, attack flimsy excuses, etc.

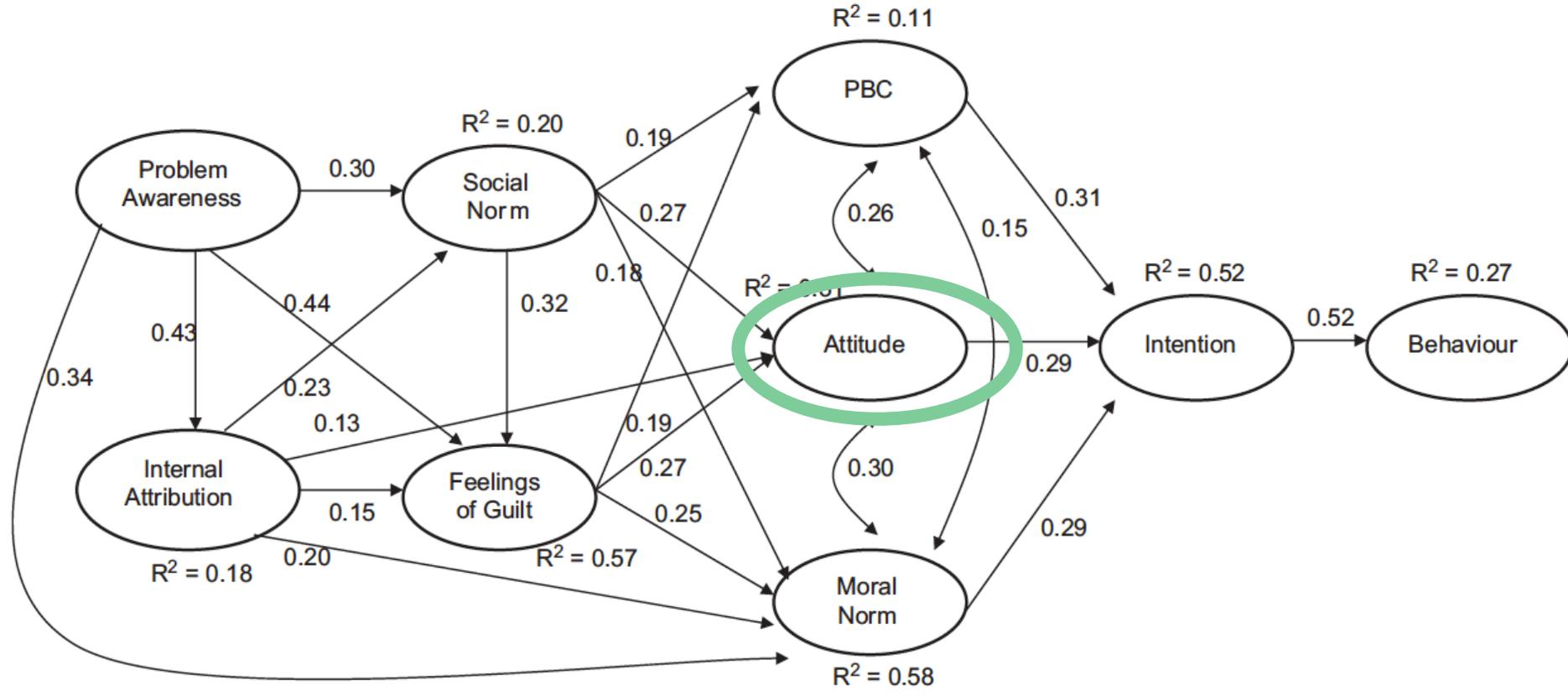


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Nudging by activating **PBC (Perceived Behavior Control)**: lower information and time costs of green behavior, organize “crowd greening”, demonstrate adding-up-effects (even tipping points) in collective action frameworks, etc.

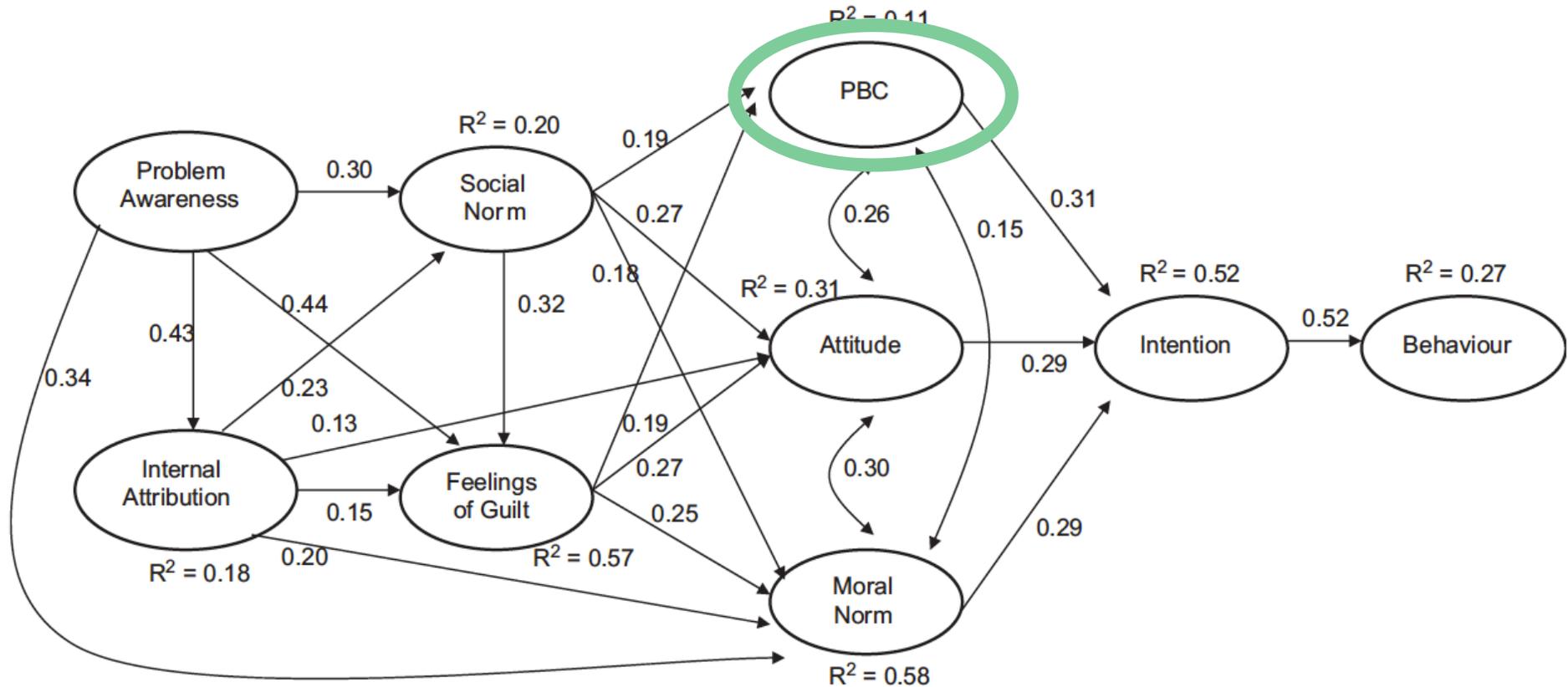


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Nudging by pushing decision processes towards **intention**-building:
 push decision through pre-decisional stages, etc.

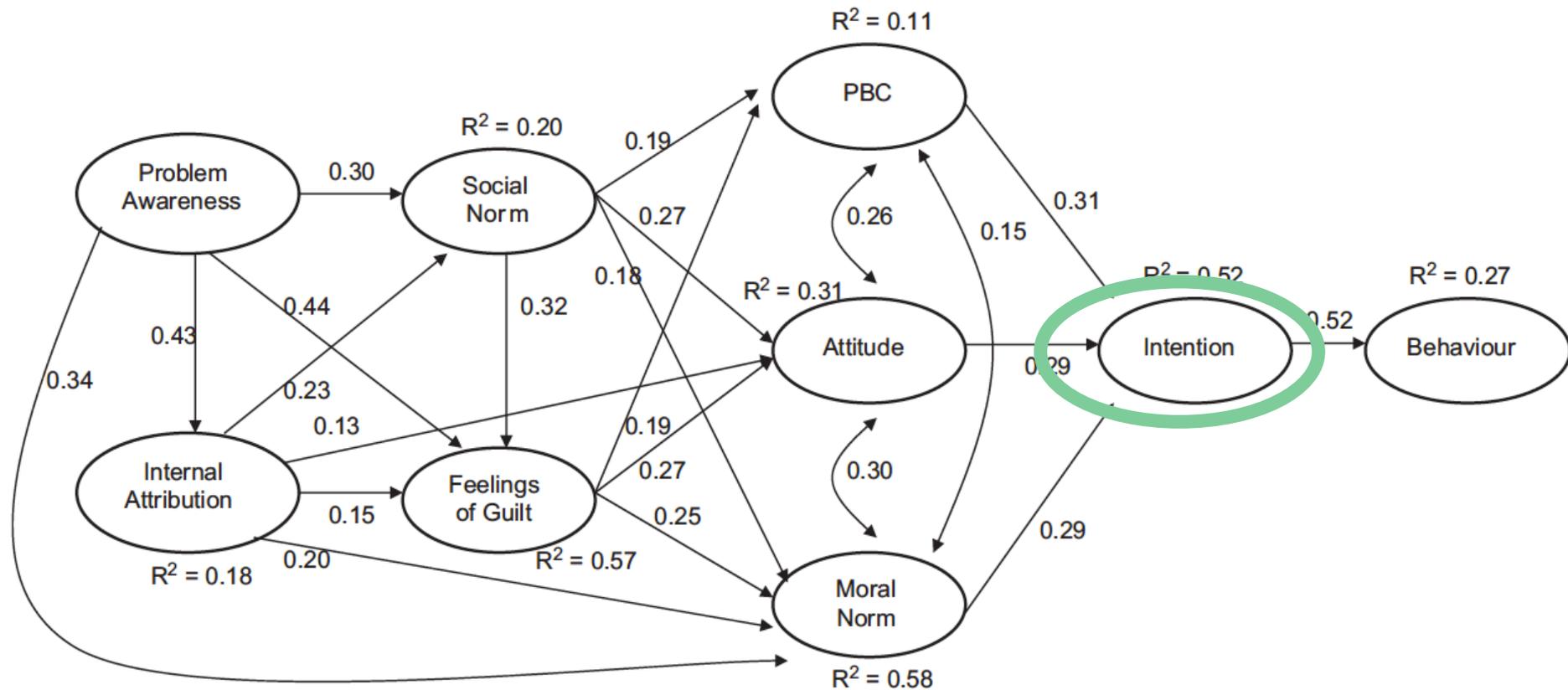


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Nudging by activating and pushing adequate **behavior**: provide individualized, localized prompts, consider the different behavior types (political, economic, operational), etc.

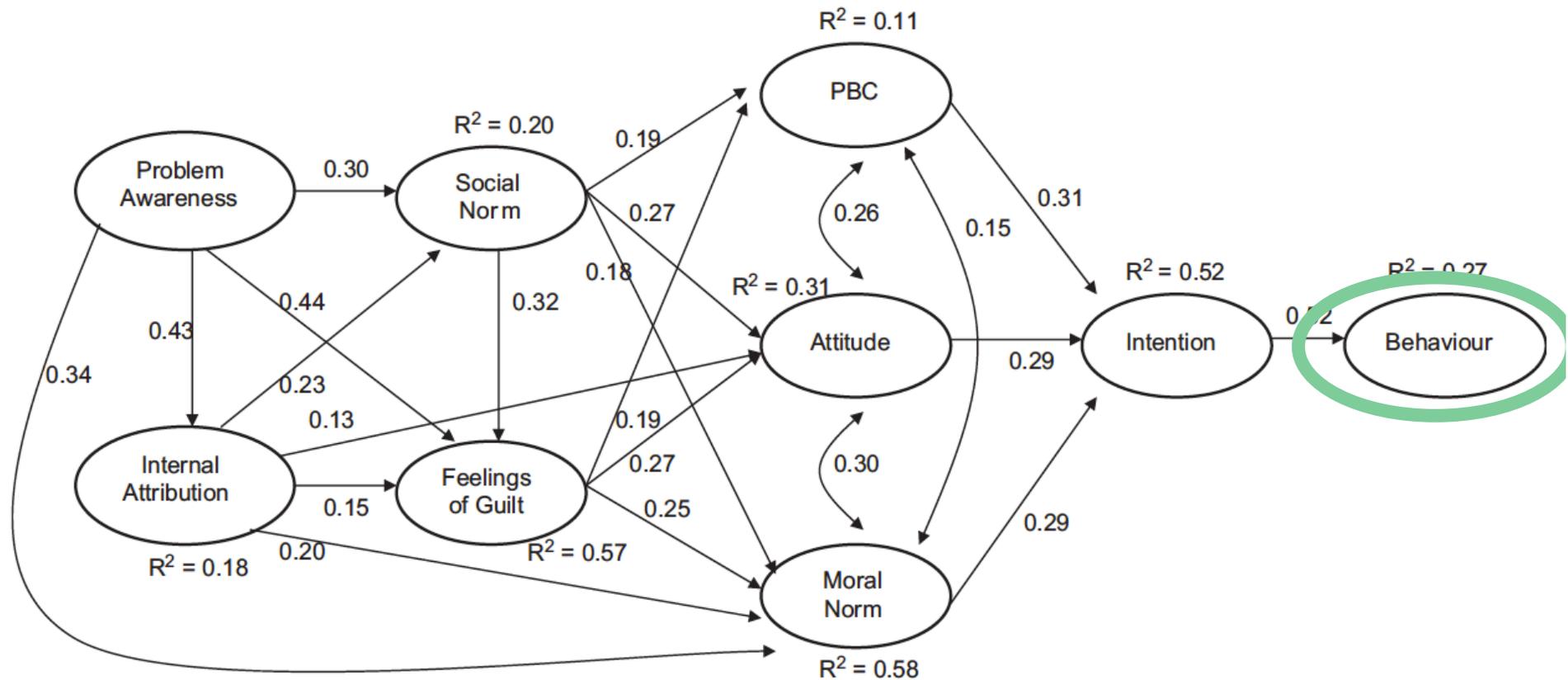


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yeah, let's go!

ICT's contribution:

1. Convenience techniques
2. Information techniques
3. Monitoring techniques
4. Social-psychological techniques

