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Cognitive Chrono-Ethnography (CCE) to Reveal Personal Walking Motivations and Nudging Habit Formation in Reaction



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Presenter Resume



Max Hanssen

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2017 – 2020	The Netherlands University of Technology Eindhoven Industrial Design Bachelor
2020 – 2021	Japan University of Tsukuba Kansei Design Research Student
2021 - 2023	University of Tsukuba Environmental Design Master
2023 - current	University of Tsukuba Environmental Design PhD

Currently, researching the role of **Visual Landscapes** in public open spaces and its role on park visitor's walking and staying behavior, particularly on identifying factors that promote habit formation as a PhD student.

Studied the subjective differences between individuals' walking experiences, and the effect of scenery in public spaces as a Master student

Cognitive Chrono-Ethnography (CCE) to Reveal Personal Walking Motivations and Nudging Habit Formation in Reaction

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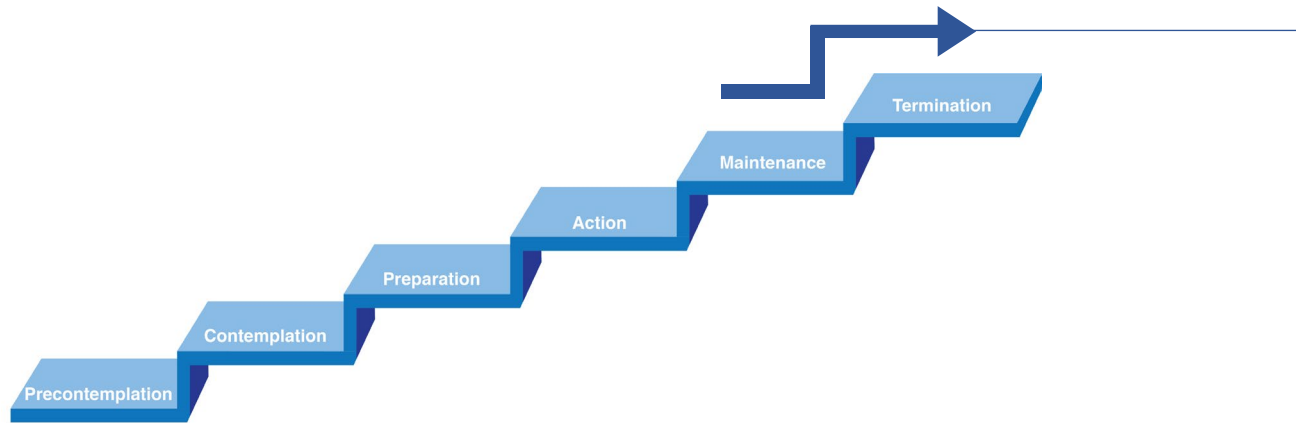
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Introduction

Transtheoretical Model



1. **Precontemplation:** People have no intention to take action in the foreseeable future and are unaware of their behaviour.
2. **Contemplation:** People are aware of their behaviour, and intend to take action in the foreseeable future.
3. **Preparation:** People are intending to take action in the immediate future, and may begin taking small steps of behaviour change.
4. **Action:** People have made overt modifications in their behaviour or in acquiring new healthy behaviours.
5. **Maintenance:** People have been able to sustain their change for at least six months and are working to prevent relapse.
6. **Termination:** People have zero temptation and they are sure they will not return to their old behavior.

Nudge Theory

This research considers the capability of the nudge theory to push people along the different stages of the transtheoretical model.

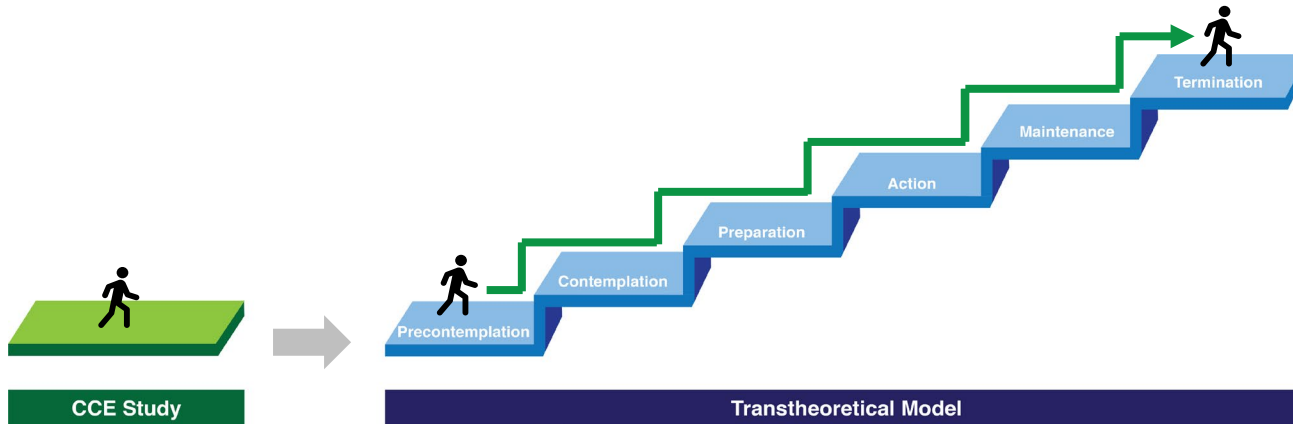


Nudge theory is based on the concept that by shaping the environment, one can influence the likelihood that one option is chosen over another by individuals [1].

[1] R. H. Thaler and C. R. Sunstein, *Nudge: Improving decisions about health, wealth, and happiness*. Penguin Books, 2009

Introduction

Cognitive Chrono-Ethnography



Cognitive Chrono-Ethnography (CCE) as defined by Kitajima [2] explores the qualitative nature of people's decision-making process through ethnographical field observation to identify human behaviors related to a daily activity. Afterwards, study parameters are identified through model-based simulation, which are used to find participants who suit the criteria. Consequently, a CCE study is conducted where participant's activity is recorded without interfering their usual behavior.

Hypothesis

Past studies have used CCE to study individual walking experiences [3][4]. **We hypothesized that participants of this study unconsciously progressed on the transtheoretical model, as they became aware of their appreciation for certain elements of a walk.**

Objective

However, research has not yet confirmed whether the past CCE studies nudged participants to form a habit. Therefore, **the objective of this study is to clarify how CCE revealed individuals' walking motivations** and how participation to the CCE study could nudge participants to make a permanent change in behavior.

[2] M. Kitajima, H. Tahira, S. Takahashi, and T. Midorikawa, *Understanding tourists'in situ behavior: A cognitive chrono-ethnography study of visitors to a hot spring resort*, Journal of Quality Assurance in Hospitality & Tourism, vol. 13, no. 4, pp. 247–270, 2012.

[3] M. Hanssen, E. Onchi, M. Kitajima, and S. Lee, *Subjective differences of walking behaviors between familiar and unfamiliar routes*, 4th International Conference of the Korean Society on Emotion and Sensibility, pp. 91–99, 2021.

[4] M. Hanssen, M. Kitajima, and S. Lee, *The evaluation of beneficial walking elements to identify motivations for walking habit formation*, Emotion and Sensibility 27 [under review], 2023.

Methodology

Past Cognitive Chrono-Ethnography Study on Walking Behaviors



Methodology

Past Cognitive Chrono-Ethnography Study on Walking Behaviors



Group W
(Habit)



Group HW
(Half Habit)

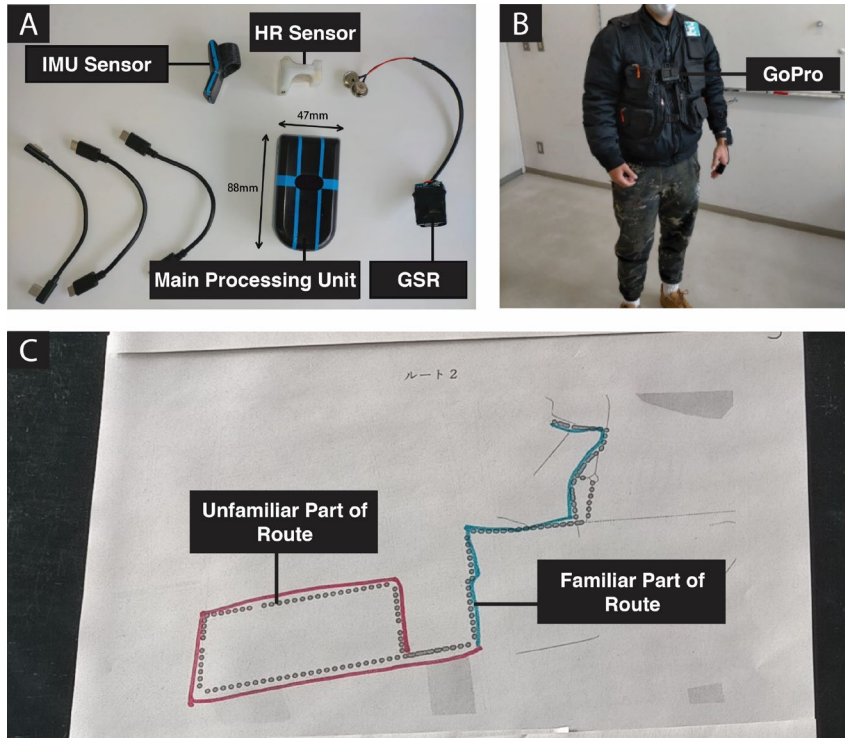


Group NW
(No Habit)

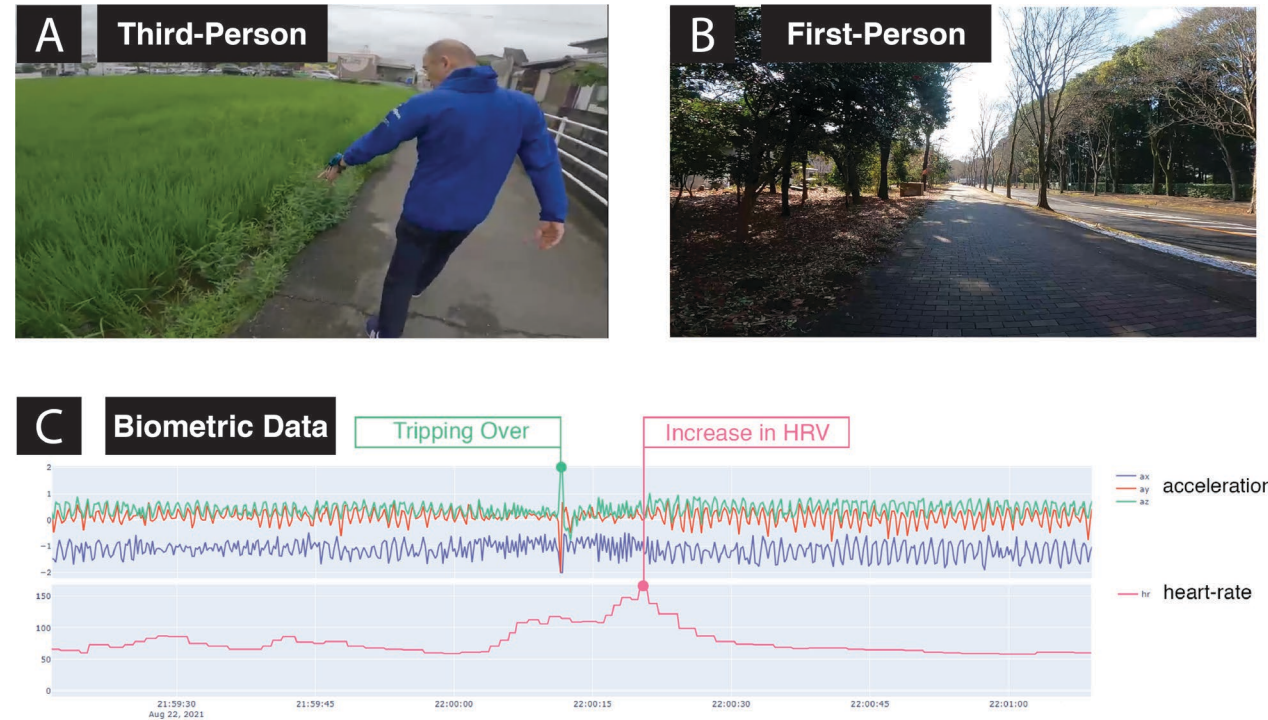
Groups	Mostly Familiar Route (A)	Mostly Unfamiliar Route (B)
Group W (Habit)	Condition W-A	Condition W-B
Group HW (Half-Habit)	Condition HW-A	Condition HW-B
Group NW (No Habit)	Condition NW-A	Condition NW-B

Methodology

Past Cognitive Chrono-Ethnography Study on Walking Behaviors



Walking experiences were recorded via (A) biometric data captured with a wearable device, (B) video footage captured with a GoPro camera, and (C) a map showing the familiar and unfamiliar parts of the route.



Activities of participants 1 to 5 were recorded via (A) third-person view, while participants 6 to 29's (B) first-person view was recorded, and (C) biometric data of all participant was visualized.

Results

Values mentioned by each participant

Participant	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6	Value 7
1	Safety	Unknown Scenery	Rhythm				
2	Safety	Daylight					
3	Conversation	Flora	Company	Surrounding	Nature		
4	Flora	Insects	Talking	Scenery	Nostalgic	Benefits	
5	Seeing Firework	Night	Nostalgic	Conversation	Relax	Scenery	
6	Sunny	Seeing pigeon	Seeing buddha statue	Seeing playground	Seeing school	Seeing lake	Seeing trees
7	New things						
8	New things	Weather	Feeling environment				
9	Safety	Air quality	Scent	Weather			
10	Peaceful Atmosphere	Safety					
11	Less people	Scenery	Tempo and music	Adventure			
12	Mental thinking	Scenery					
13	Scenery	Sunny	Time	Less people			
14	Natural view	New shops	Less people	Explore	Season	Flowers	
15	Physical	Oxygen	Thinking while exercising	Road condition			
16	Landmarks	Familiarity	Purpose	Fun shops			
17	Sunny	Greenery	Peaceful and silent				
18	Safety	Scenery	No cars				
19	Mentality	Weather					
20	Pedestrian road	Plants	Season				
21	Relaxing						
22	Others	Nature	Scenery				
23	Purpose	Solitude	Nature	Silence	See others	Continuity	
24	Time	Freedom	With someone	Purpose	Plan		
25	With someone	Walkability	Scenery				
26	Scenery changes	Newness	Nature	Walkability			
27	Physical Benefits	Purpose					
28	Familiarity	Adventure	Time				
29	Weather	New things					

Results

One-on-one Interviews

*“I felt **nostalgic** while walking because I used to take recreational walks in the past but not any more. My father used to walk with me everyday because I had many personal troubles after we moved to a different house. Now I realize that walking everyday gave me many **benefits** that helped me to overcome that situation.”*

Participant	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6	Value 7
4	Flora	Insects	Talking	Scenery	Nostalgic	Benefits	

*“The narrow pedestrian road was too close to the cars passing-by and made the route not enjoyable. Therefore, I think **safety** is the most important factor for a good walk.”*

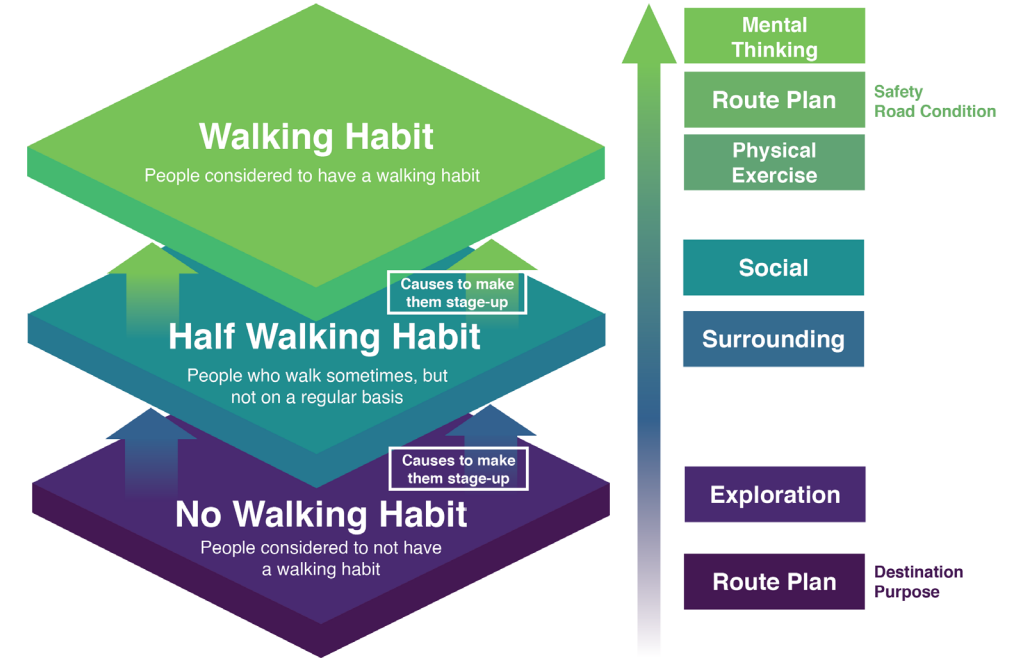
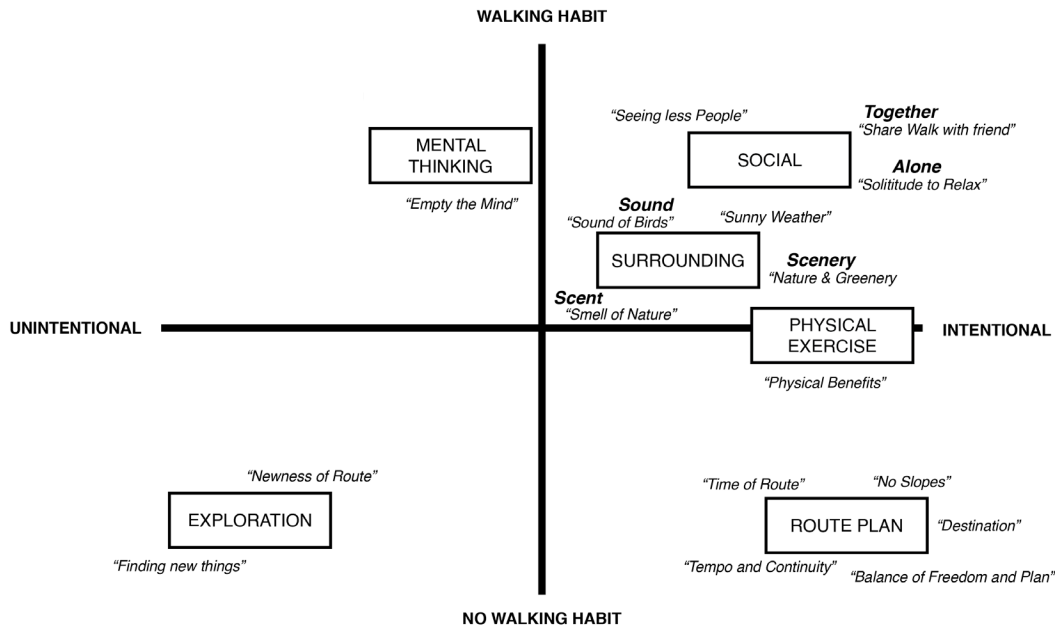
Participant	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6	Value 7
1	Safety	Unknown Scenery	Rhythm				

*“I like to **explore** during a walk. I saw new shops that looked interesting. It is nice to find new shops that I can maybe visit later in the future.”*

Participant	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6	Value 7
14	Natural view	New shops	Less people	Explore	Season	Flowers	

Results

Emerging Themes



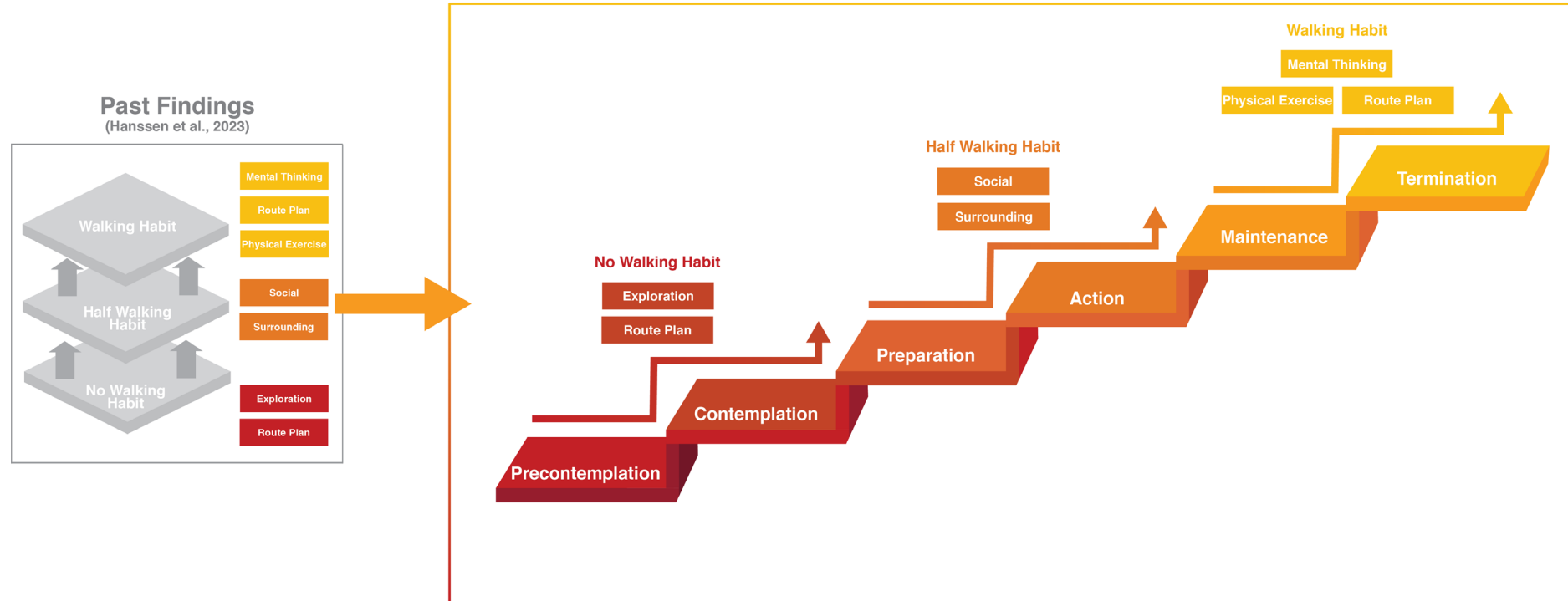
The **Thematic Analysis** of the previous CCE studies showed that people with different walking habits valued different walking elements.

As a result, The past study [4] classified the values into the following **six emerging themes** to relate the values to walking habit stages

[4] M. Hanssen, M. Kitajima, and S. Lee, *The evaluation of beneficial walking elements to identify motivations for walking habit formation*, Emotion and Sensibility 27 [under review], 2023.

Discussion

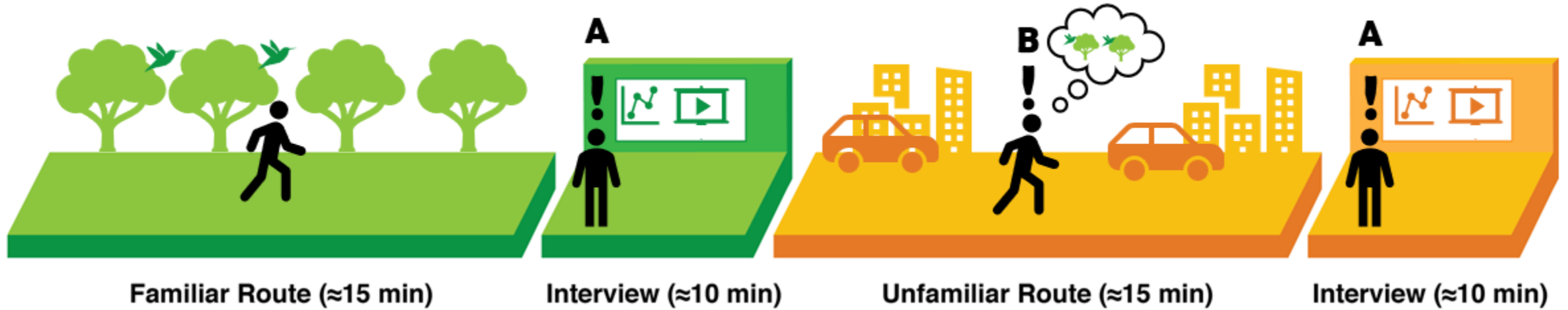
Emerging Themes in Transtheoretical Model



- **Precontemplation – Contemplation:** People at this stage are motivated to stage-up by values related to “**Exploration**” and “**Route Plan**” of walking. Specifically, the “**Route Plan**” needs a purpose and destination.
- **Preparation – Action:** People at this stage are motivated to stage-up by values related to “**Social**” and the “**Surrounding**” of walking.
- **Maintenance – Termination:** People at this stage are motivated to stage-up by values related to “**Mental Thinking**”, “**Physical Exercise**” and “**Route Plan**” of walking. Specifically, the “**Route Plan**” needs to be have good road conditions and safety.

Discussion

CCE as a Nudge for Walking Habit Formation



A

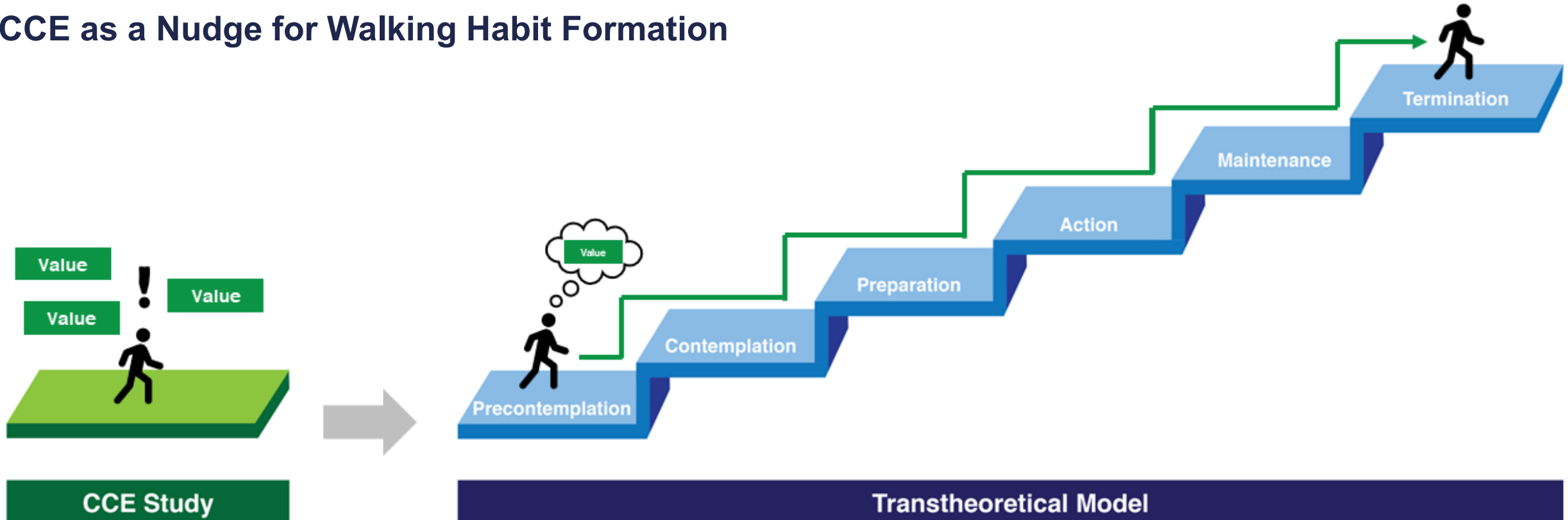
When participants were questioned about their walking motivations, they discovered that they had an appreciation for certain walking elements that they previously did not know.

B

Participants discovered their appreciation for walking elements during the unfamiliar route. In this regard, participants either realized their personal walking motivations because the usual elements that they encounter in their familiar walk were not present during the unfamiliar walk, or because the unfamiliar walk introduced them to new elements that they immediately appreciated.

Conclusion

CCE as a Nudge for Walking Habit Formation



The interview results from past CCE studies showed that **participants became more aware of their appreciation for walking elements**, possibly nudging them towards the next stage in the transtheoretical model.

CCE can be applied to **any activity that requires progression through the transtheoretical model**, such as psychological rehabilitation.

By uncovering personal motivations and facilitating progression through the transtheoretical model, CCE helps participants to become aware of contributing elements and address missing components.