

**Bridging the Gap between Environmental Concern and Behavior  
: Pro-environmental Behavior Changes by Generation  
during Covid-19 and its Determinants**

Jeeyeon Sah\*, Minyoung Huh



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**“Why is it important”** to study pro-environmental behavior changes by generation during Covid-19?

2. Research Design

**“How do we analyze”** the pro-environmental changes by generation during Covid-19?

3. Results

**“What were the results”** generational changes in pro-environmental behavior during Covid-19

4. Discussion

**“What we’ve learned”** from the results

5. Conclusion

**“What should we do”** to encourage pro-environmental behavior for each generation

1. Background

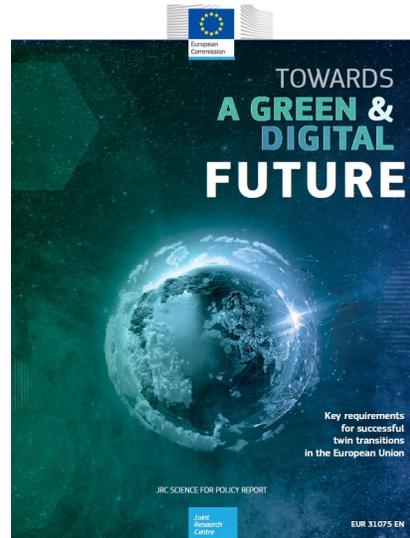
2. Research Design

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# The role of Consumers in the Green Transition



“

The key changes in the world after Covid-19 can be summarized in two main terms

**: digital transformation  
& green transition.**

”

“

For a successful transition to a green economy,  
**a virtuous transition of the economic system  
driven by changes in consumer behavior**  
is the most important component.

”



1. Background

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4. Discussion

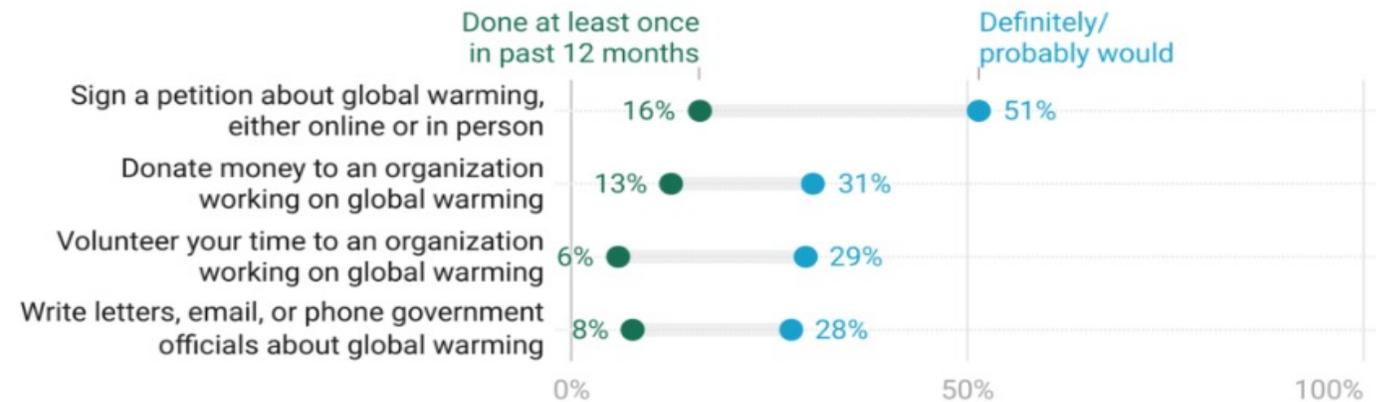
5. Conclusion

## But the problem is...



### The gap between the attitude and the actual behavior

#### Many Americans say they are willing to engage in climate action, but fewer have done so in the past 12 months



Over the past 12 months, how many times have you done the following?

How likely would you be to do each of the following things if a person you like and respect asked you to?

March 2021, September 2021, April 2022, December 2022, April 2023, October 2023. Base: 6,190 U.S. adults.

Source: Yale Program on Climate Change Communication;

George Mason Center for Climate Change Communication • Created with Datawrapper

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# But the problem is...



## The gap between the attitude and the actual behavior

“ Same in South Korea ”

### Strong Interest in the Environment, But Eco-Friendly Purchases Are Dropping

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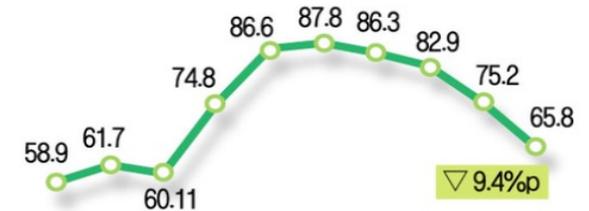


환경산업기술원, 2023년 환경 인식 및 제품 구매 설문조사 발표  
환경문제 관심도 90.5%, 친환경제품 관심도 84.8% '높은 수준'  
친환경제품 구매경험 65.8%...전년비 10%p ↓, 2016년 이후 최저  
구매하지 않는 이유 '비싸서' '정보 부족' '다양성 부족' 1~3순위

**90.5% of Korean Consumers**

show strong concern for environmental issues

### Eco-Friendly Product Purchase Experience (%)



2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

자료: 한국환경산업기술원 '2023년 친환경제품 및 정책 국민 인지도 조사' 보고서  
그래픽=김베타 기자 seuk22@ekn.kr

**But only 65.8% of consumers**

had experience purchasing eco-friendly products

**We need to bridge the gap  
between the concern and the actual behavior**

**We need  
“Pro-environmental Behavior”**

1. Background

2. Research Design

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## Pro-environmental behavior(PEB) is...

“

**The behavior that harms the environment as little as possible, or even benefits the environment** (Steg & Vlek, 2009, p.309)

”

**1) Behaviors to minimize the negative impact**

ex) reducing energy consumption, showering less long

**2) Behaviors to promote improvements for the nature**

ex) purchasing environmentally harmful products,  
donating money to environmental charities

“ **PEB includes**

**a whole array of different types of consumer’s environmental behaviors ”**

(Udall et al., 2020)

1. Background

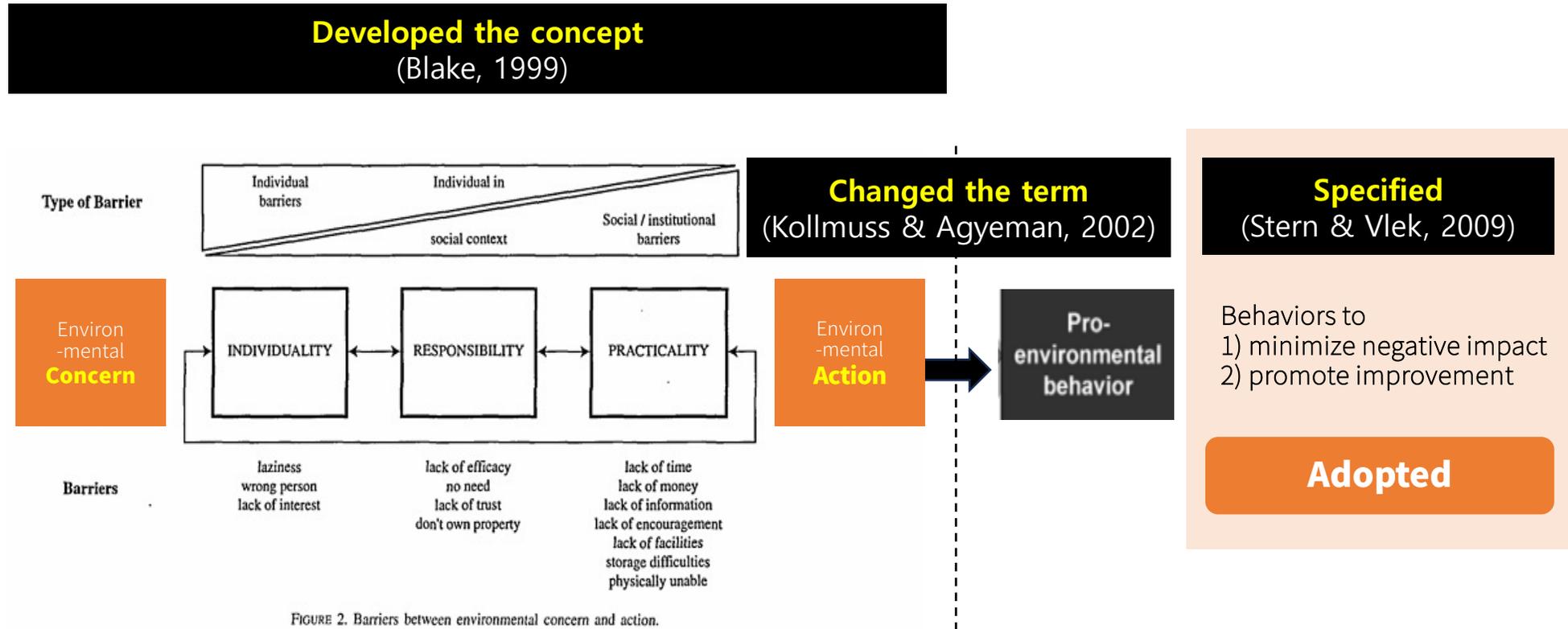
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# Pro-environmental behavior(PEB) Researches are...



1. Background

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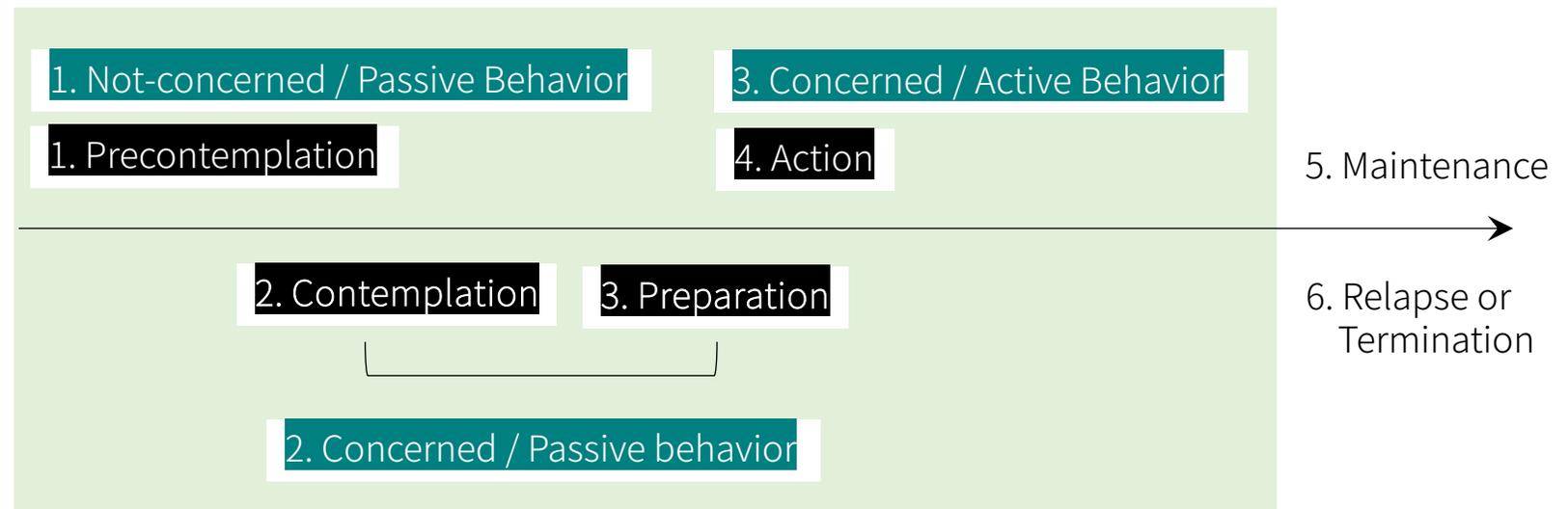
5. Conclusion

## + Specifying with ‘transtheoretical model(TTM)’

“

TTM is a psychological theory used to understand how people intentionally change their behavior, especially in health, sustainability, and lifestyle contexts

”



**We specified the pro-environmental behavior “stages” based on TTM**

1. Background

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## + Making a hierarchy among ‘different types of PEB’

“ Changing purchasing behavior generally has greater environmental benefit than reusing or recycling available products (Gardner & Stern, 2002; Stern & Vlek, 2009) ”

### When applied to the ‘6R model’...

<b>Low</b>  <b>Pro-activeness</b>  <b>High</b>	<b>1. Recycle</b>	Actively participate in any recycling programs available in communities
	<b>2. Reduce</b>	Reduce the quantity of products purchased and used
	<b>(Reuse)</b>	Reuse Products in their original function or reformed functions
	<b>3. Refuse</b>	Do not buy and use products that will harm environment
	<b>4. Reach</b>	Reach and buy green products whenever possible
	<b>5. Respond</b>	Actively participate in public policy making processes and community activities to promote environmental protection

1. Background

2. Research Design

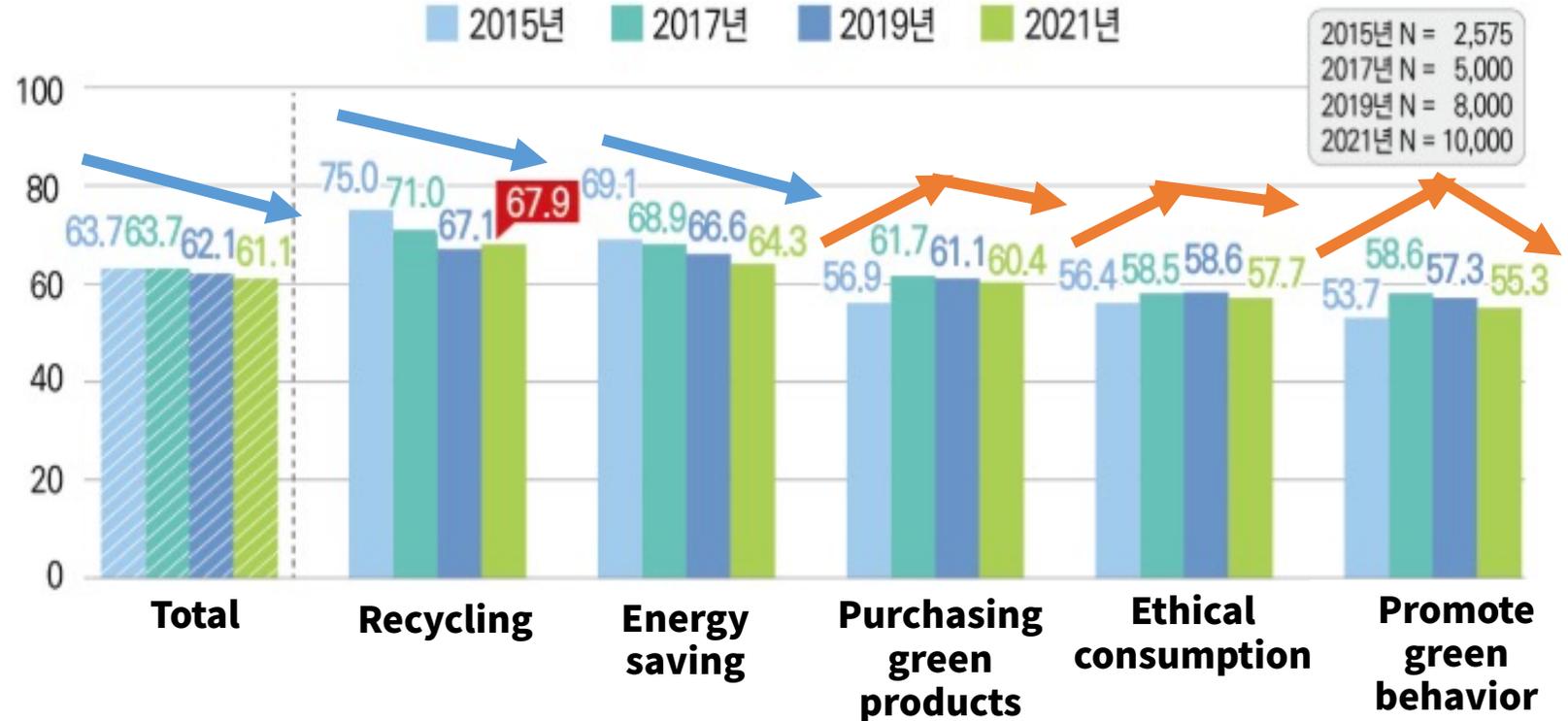
3. Results

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## + Making a hierarchy among ‘different types of PEB’

“ Shows different patterns in South Korea ”



1. Background

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## + Comparing Generational Differences During the Covid-19

“

Generation is not merely a matter of age difference; it is a key variable that reflects the motivational structure and value identity behind environmental behavior. (Hawcroft & Milfont, 2010)

”

“ Special Report in 2017 ”



“ Agoston et al. (2024) ”

Emotional empathize  
Actual behavior

Aged 15 to 30

**High**  
**Not enough**

Aged over 50

**Low**  
**Habitual**

MZ generations prefer...

**Personal identity  
connected behavior**

e.g.  
Value-driven consumption  
Participation in SNS campaigns

Older generations prefer...

**Normative  
responsible behavior**

e.g.  
Energy conservation  
recycling

## **“Our research questions are…”**

### **RQ1.**

How has the pro-environmental **“stage”** of consumers changed in South Korea during the Covid-19 in each generation?

### **RQ2.**

What drives variation in **“pro-environmental stages”**?

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# Data Description

## The Social Survey in Korea

conducted by Statistics Korea since 2003 is an annual, nationwide survey individuals aged 13 and older. It covers 10 different survey topics such as family, education, health, labor, housing, and environment.

“ We extracted the data from... ”

those who born in  
1955 to 2009

\* Excluded post-Gen Z(Gen-Alpha)  
and pre-Baby Boomer generations(Industrialization)

### Descriptive characteristics of the Dataset (n=148,812)

	Gen-Z	Gen-M	Gen-X	Gen-BB	Total	
Birth Year	1995 ~ 2009	1980 ~ 1994	1964 ~ 1979	1955 ~ 1963	1955 ~ 2009	
N / %	2016	6644(21.2%)	7259(23.2%)	10944(35.0%)	6447(20.6%)	31294(100%)
	2018	6217(20.3%)	7406(24.1%)	10776(35.1%)	6285(20.5%)	30684(100%)
	2020	6287(20.8%)	7158(23.7%)	10472(34.6%)	6344(21.0%)	30261(100%)
	2022	5313(18.6%)	7177(25.1%)	9987(34.9%)	6161(21.5%)	28638(100%)
	2024	5040(18.0%)	6790(24.3%)	9758(34.9%)	6347(22.7%)	27935(100%)
Total	29501(19.8%)	35790(24.1%)	51937(34.9%)	31584(21.2%)	148812	

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# Variables & Measurements

## Pro-environmental behavior

Variable		Measurements	Scale
Dependent	1. Recycling	Separating recyclables	1=Not trying at all 2=Not trying much 3=Some trying 4=Very trying
	2. Reducing	1) Saving water 2) Reducing standby power in the household	
	3. Refusing	1) Reducing the use of synthetic detergents 2) Do not use disposable products	
	4. Reaching	Purchasing and using eco-friendly products	
	5. Responding	Participating in nature conservation and environmental preservation activities	

## Environmental concern

Variable		Measurements	Scale
Independent	Environmental concern	How concerned are you about climate change (heat waves, floods)?	1=Not at all concerned 2=Not very much concerned 3=Average 4=Slightly concerned 5=Very much concerned

## Controls

Age  
Gender  
Income

1. Background

2. Research Design

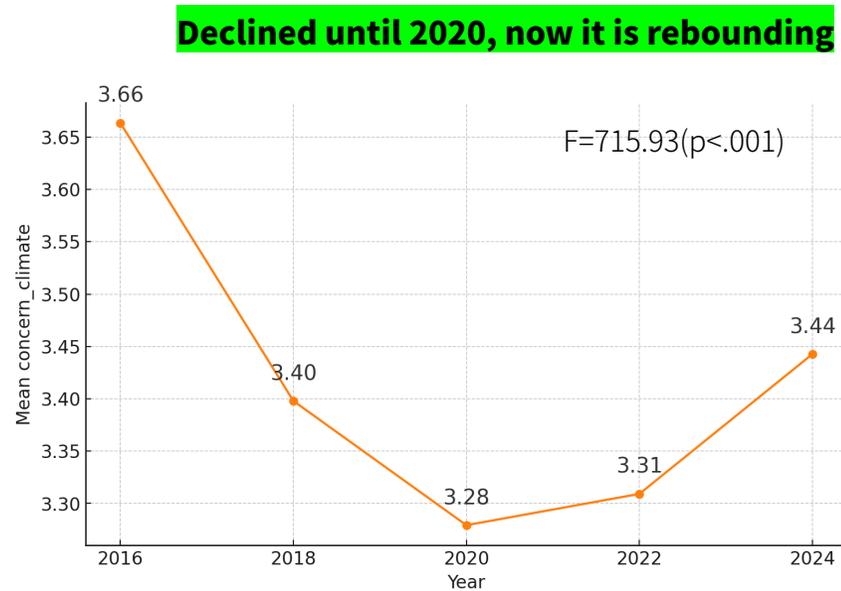
3. Results

4. Discussion

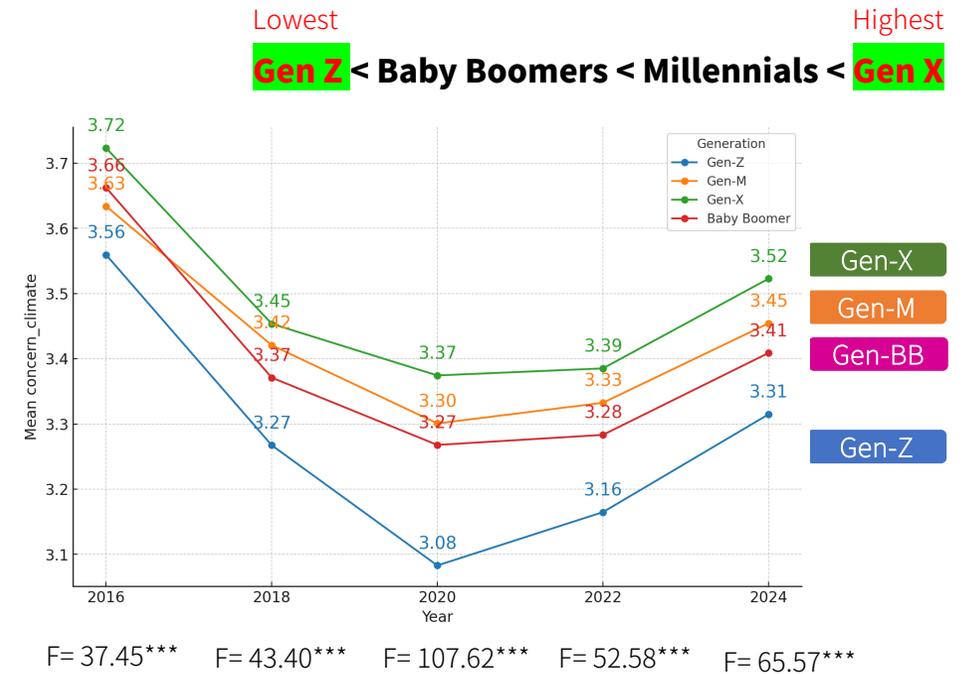
5. Conclusion

# Environmental Concern “Changes”

+ in period



+ in generation



1. Background

2. Research Design

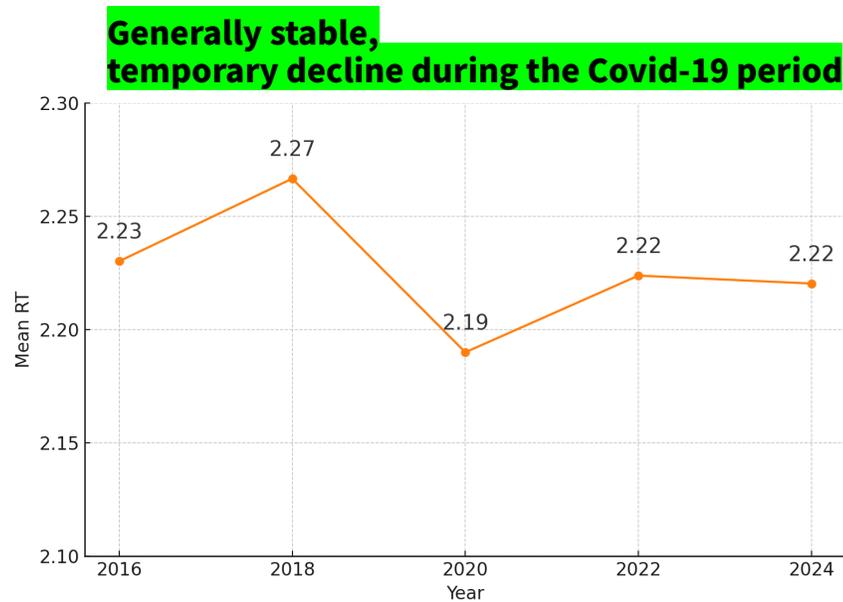
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4. Discussion

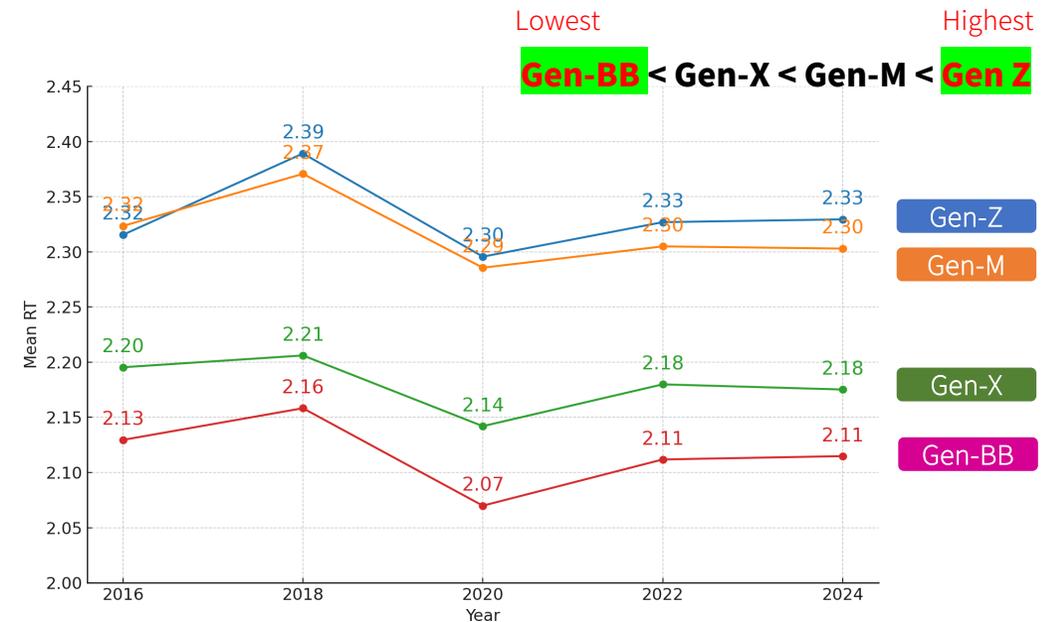
5. Conclusion

# Pro-environmental Behavior “Changes” - overall

+ in period



+ in generation



1. Background

2. Research Design

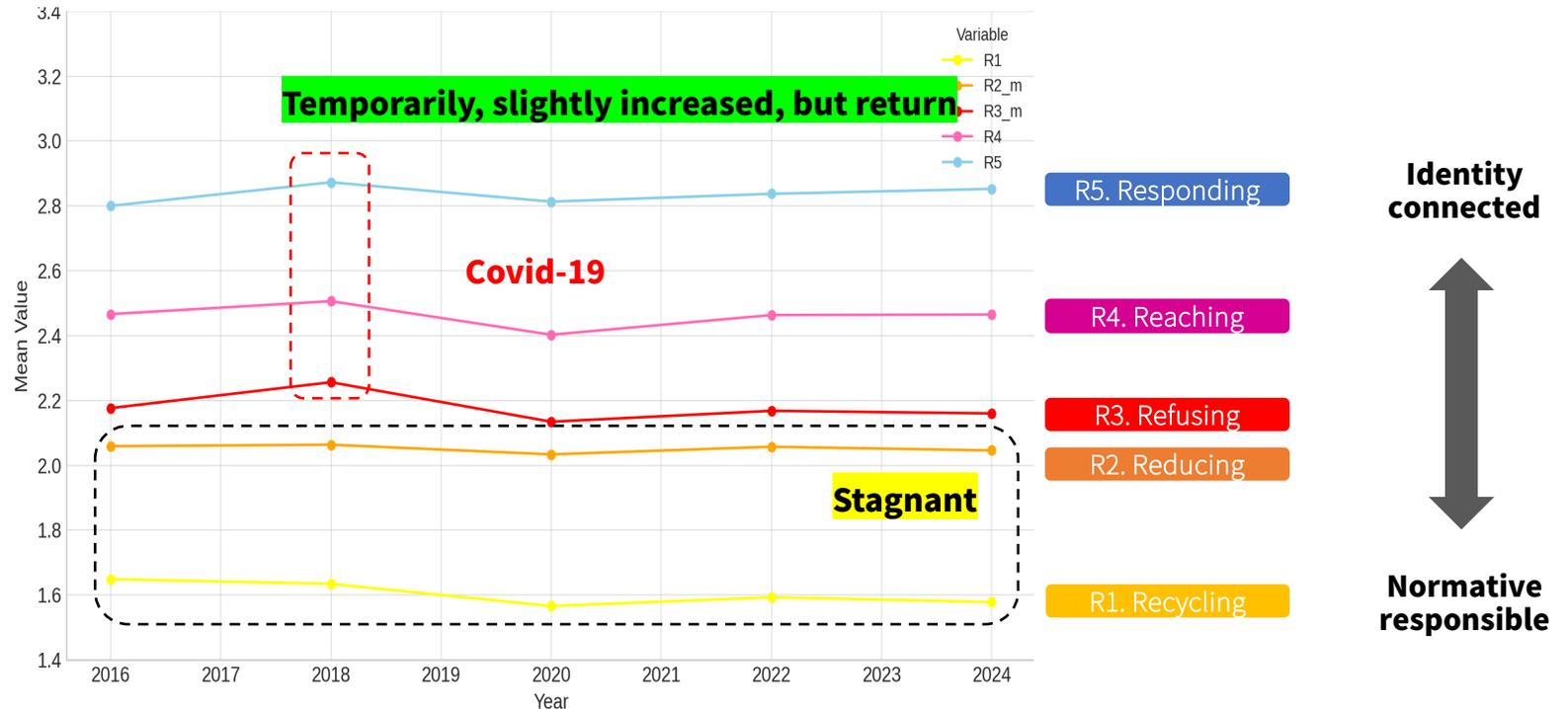
3. Results

4. Discussion

5. Conclusion

# Pro-environmental Behavior “Changes” - for each types

+ in period



1. Background

2. Research Design

3. Results

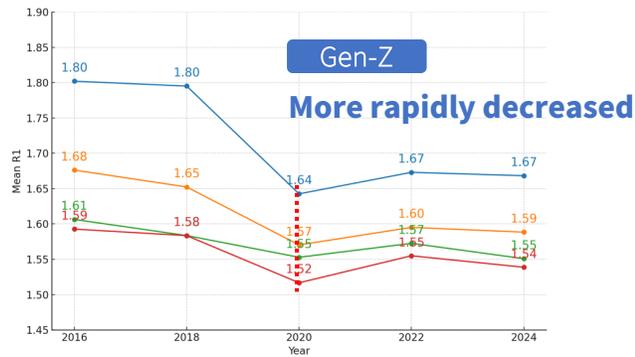
4. Discussion

5. Conclusion

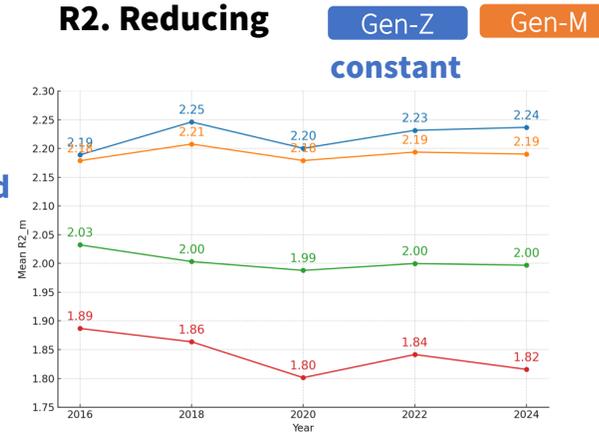
# Pro-environmental Behavior “Changes” - for each types

## + in generation

### R1. Recycling



### R2. Reducing



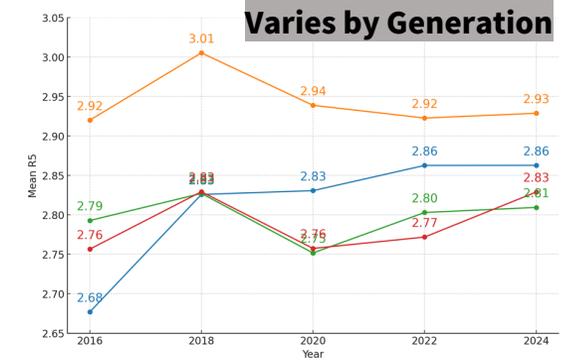
### R3. Refusing



### R4. Reaching



### R5. Responding



Gen-Z Rapidly increasing  
Gen-M Highest

1. Background

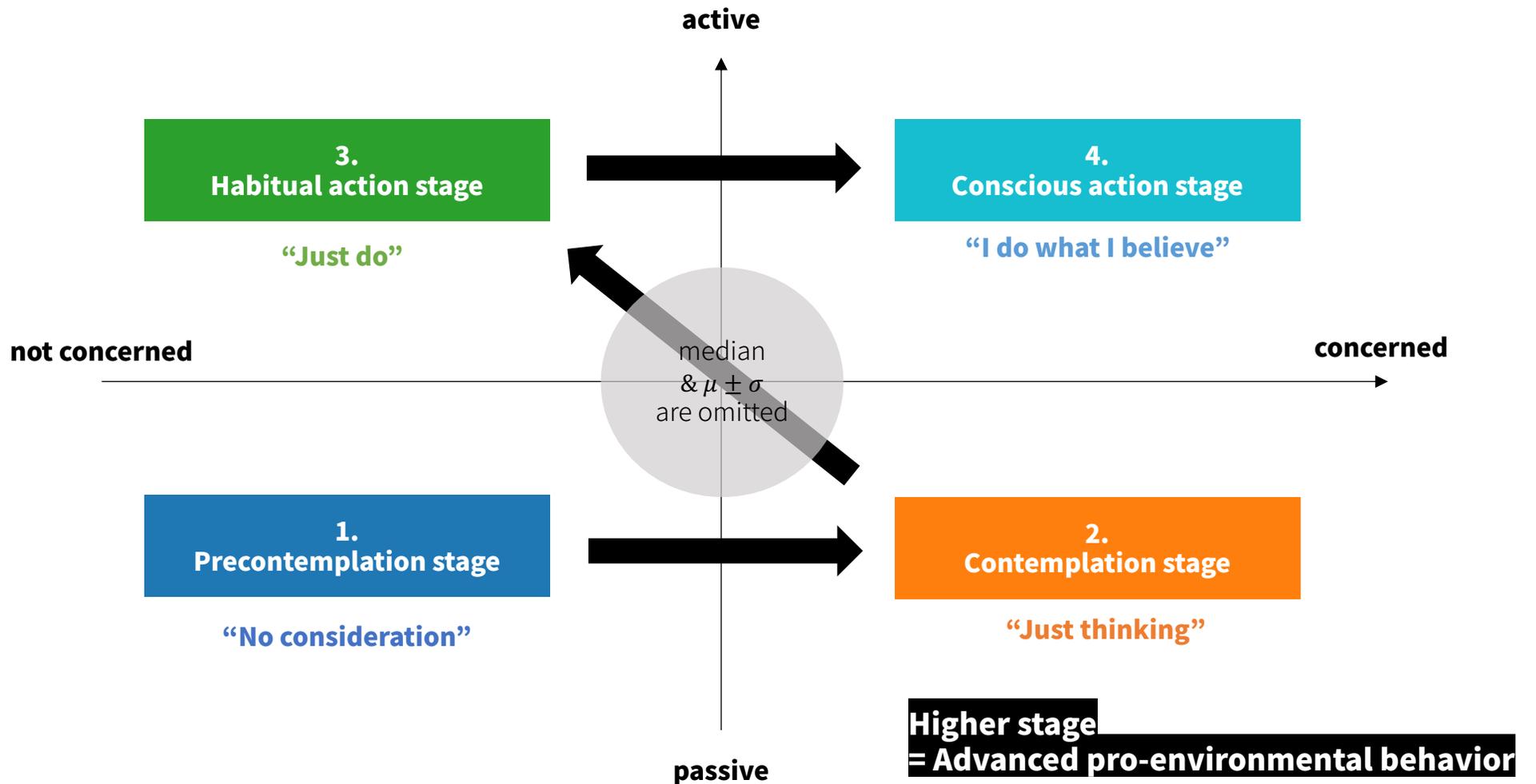
2. Research Design

3. Results

4. Discussion

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# Pro-environmental behavior “stage” classification



1. Background

2. Research Design

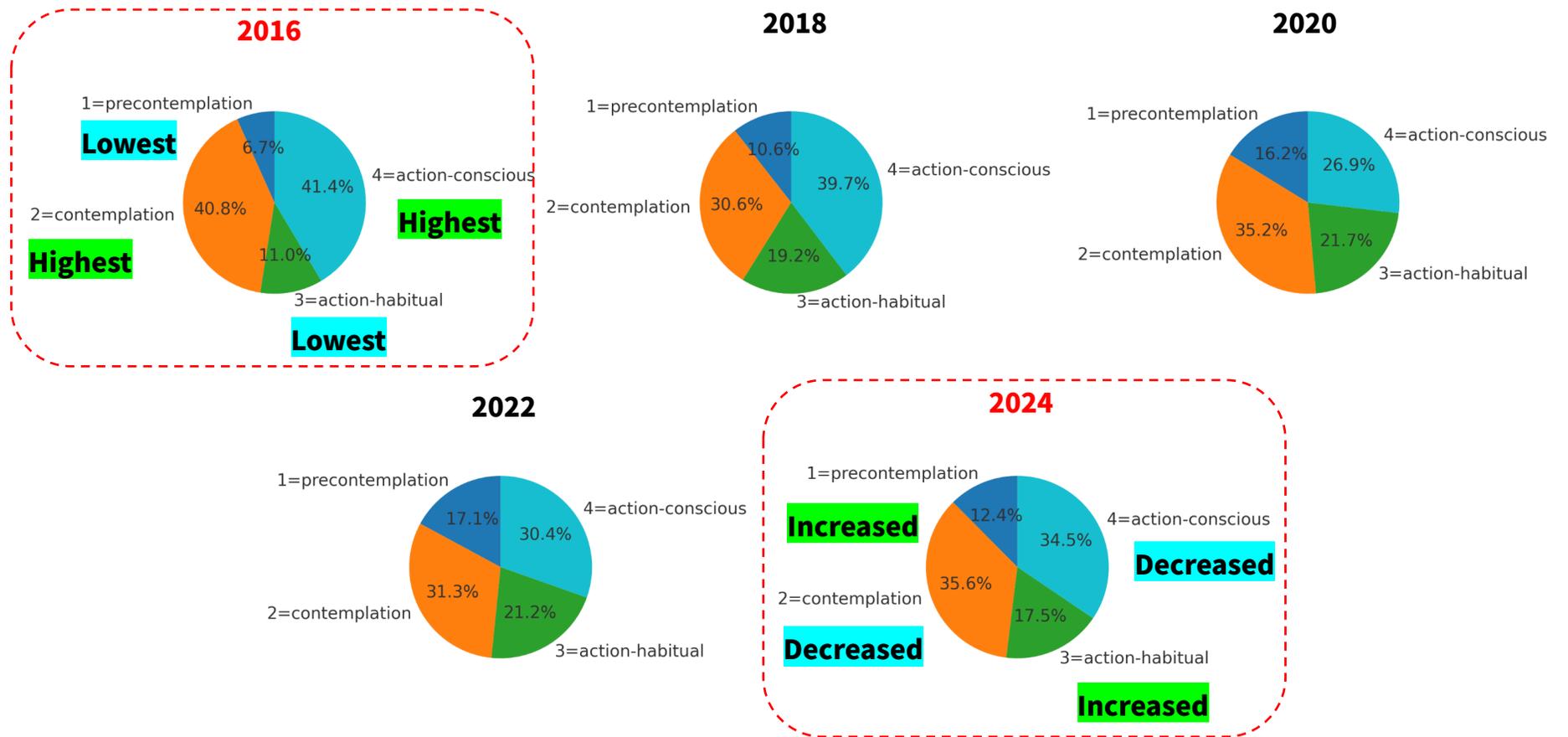
3. Results

4. Discussion

5. Conclusion

# Pro-environmental behavior “stage” change

+ in period



1. Background

2. Research Design

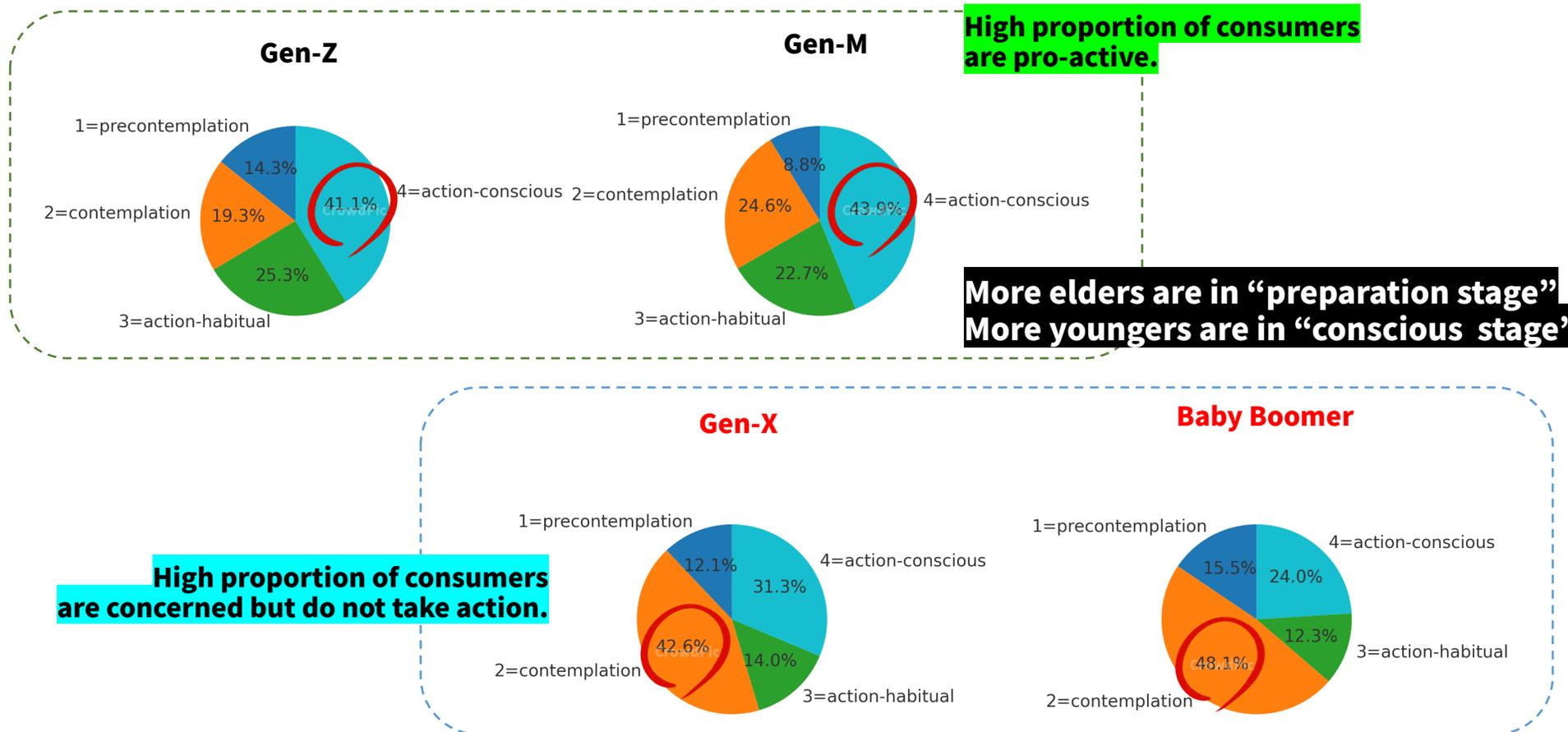
3. Results

4. Discussion

5. Conclusion

# Pro-environmental behavior “stage” differences

+ in generation



1. Background

2. Research Design

3. Results

4. Discussion

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# “Determinants” of Pro-environmental behavior stage

## [Results of Multilevel Multinomial Logistic Regression Model]

**Table 1. Fixed Effects Estimates**

Variable	Estimate ( $\beta$ )	Std. Error	95% CI	Odds Ratio (exp ( $\beta$ ))	p-value
Intercept[1]	-3.94	0.61	[-5.13, -2.73]	–	< .001
Intercept[2]	-1.86	0.61	[-3.08, -0.63]	–	< .01
Intercept[3]	-1.08	0.60	[-2.26, 0.17]	–	n.s.
Age (centered)	0.02	0.02	[-0.03, 0.06]	1.02	n.s.
Age squared	-0.00	0.00	[-0.00, -0.00]	1.00	n.s.
Sex (male = 0)	-0.72	0.08	[-0.87, -0.57]	0.49	< .001
Income	-0.06	0.02	[-0.09, -0.03]	0.94	< .001

“female”  
“higher income consumers”  
tend to be in lower stages.

**Table 2. Random Effects Estimates**

Grouping Variable	Variance	Std. Dev.	95% CI
gen_4	0.29	0.54	[0.05, 1.02]
year	0.20	0.45	[0.04, 0.54]

significant differences in stage levels  
across years & generations

1. Background

2. Research Design

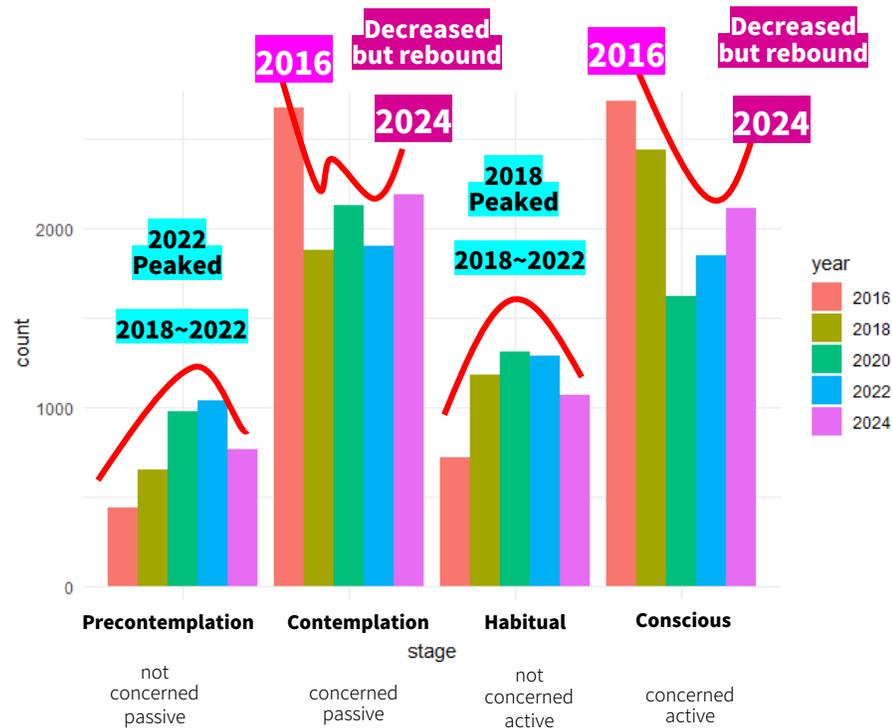
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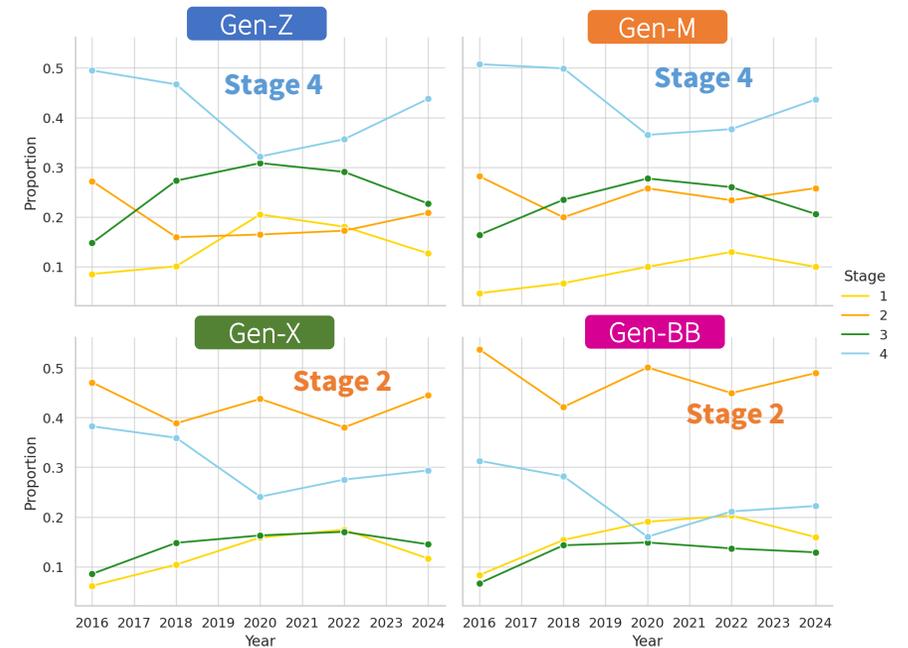
# “Determinants” of Pro-environmental behavior stage

## “yearly differences”



**Rising environmental concern,  
the gap lies in action!**

## “generational differences”



**More elders are in “contemplation stage”  
More youngsters are in “conscious stage”**

1. Background

2. Research Design

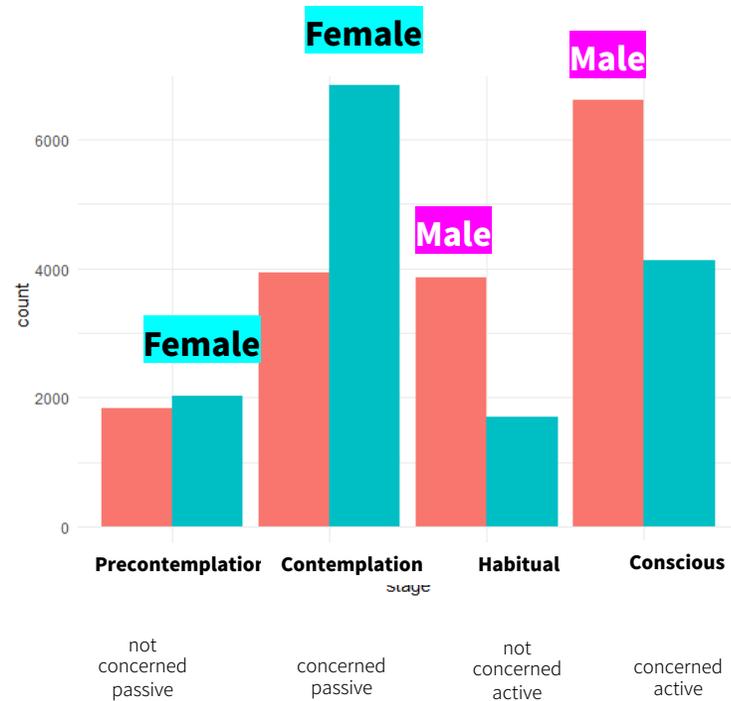
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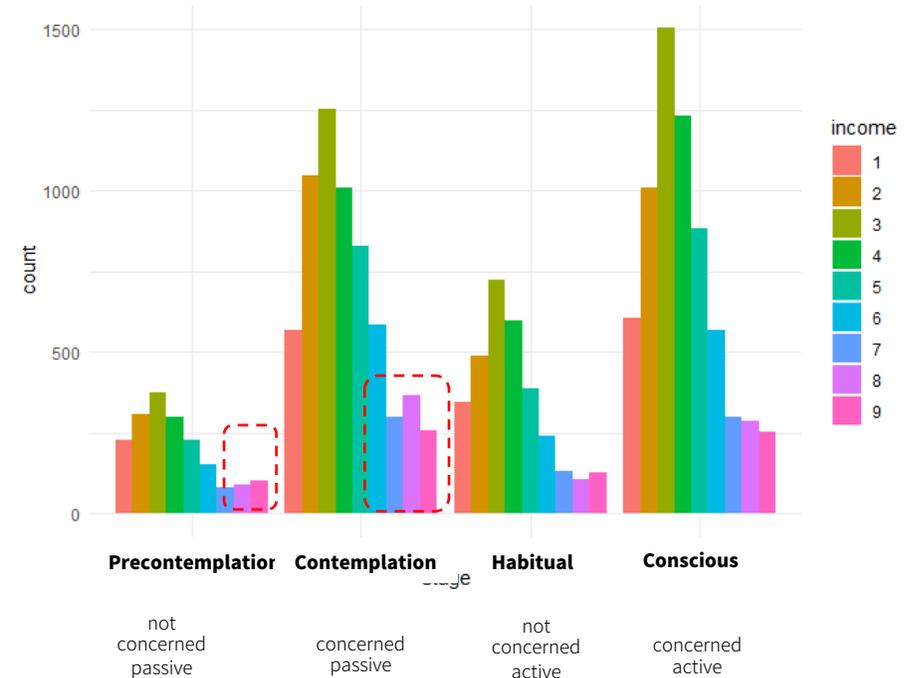
# “Determinants” of Pro-environmental behavior stage

## “gender differences”



**Female → More in lower stage**  
**Male → More in higher stage**

## “Income-level differences”



**High income → More in lower stage**

“The result shows…”

1. Background

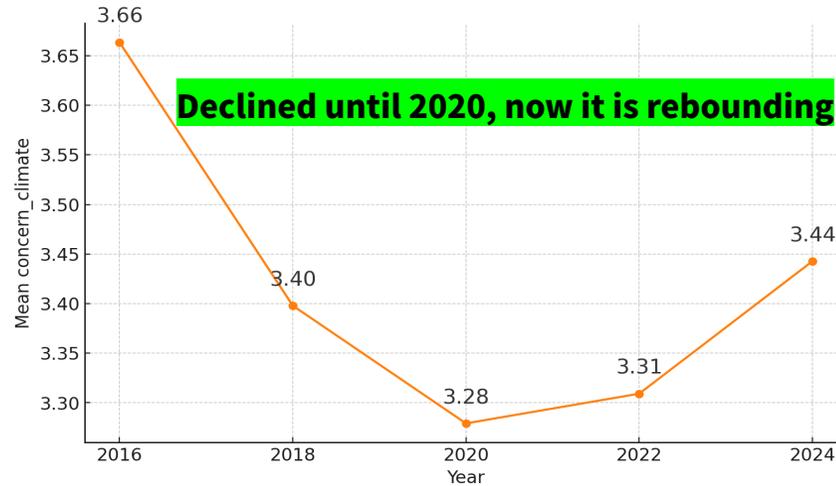
2. Research Design

3. Results

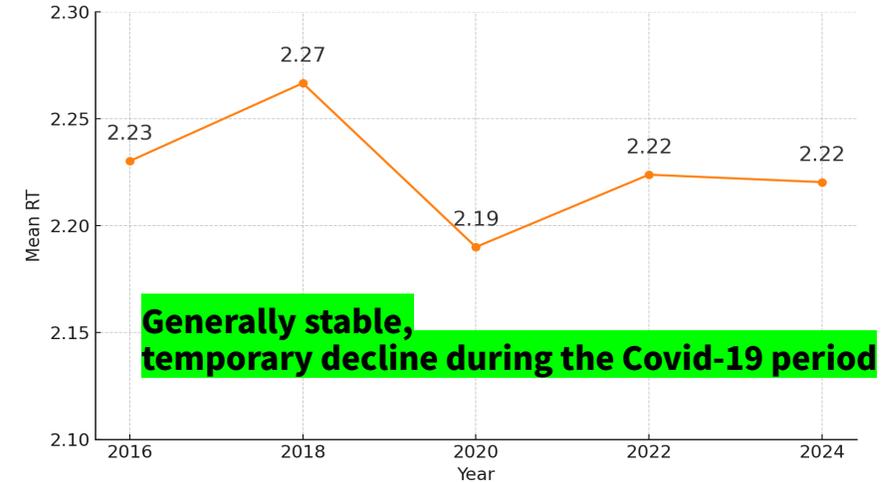
4. Discussion

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### Environmental Concern



### Environmental Behavior



1.

**Environmental concern** declined until the Covid-19, but began to rebound afterward. **However, environmental behavior** remained **stable with a slight downward trend**.

“We confirmed” the gap between environmental concern & behavior

“The result shows…”

1. Background

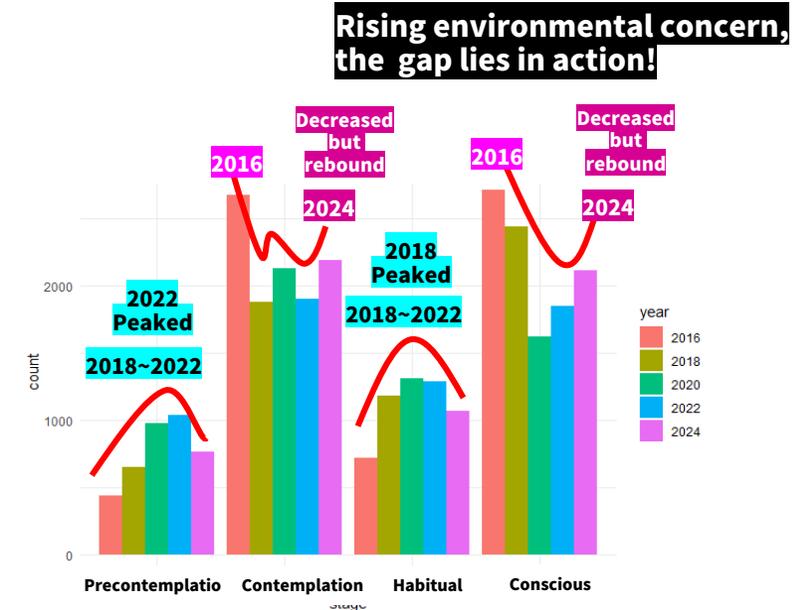
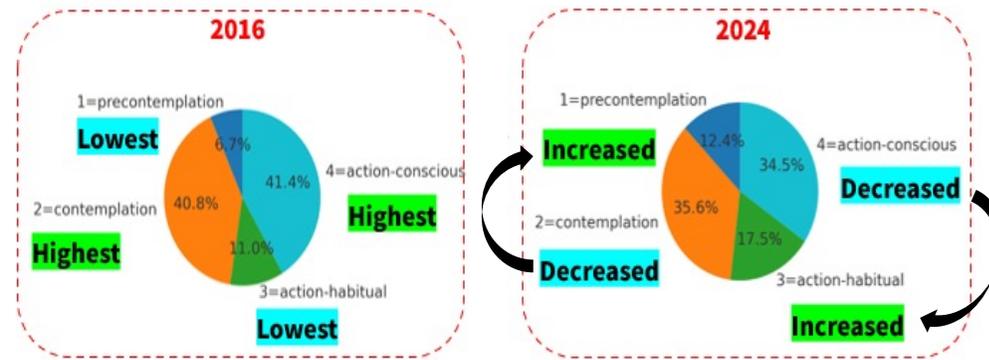
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## Pro-environmental stages



2.

The pro-environmental behavior stages of Korean consumers **are polarized between** the contemplation stage (**stage 2**) and the conscious action stage (**stage 4**). And the key factor distinguishing these two stages was **presence or absence of actual behavior**.

“We should” make efforts to transform the growing number of consumers in the contemplation stage (stage 2) into active participants (stage 3 or 4).

1. Background

2. Research Design

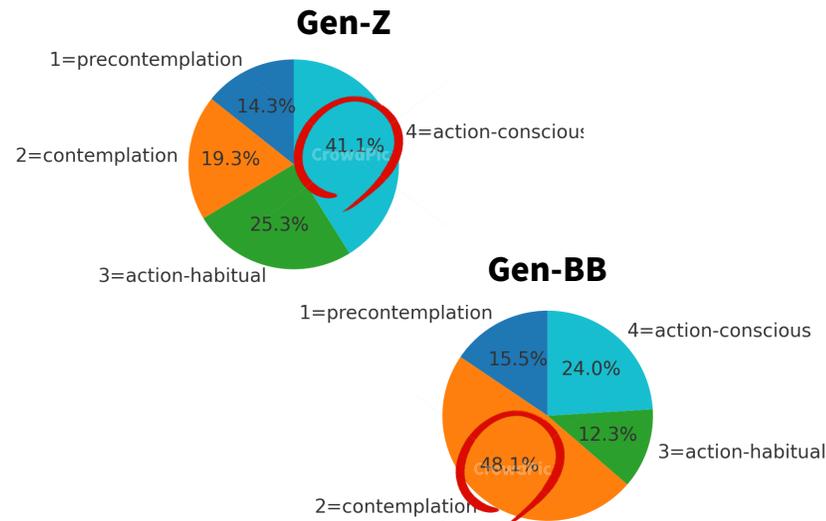
3. Results

4. Discussion

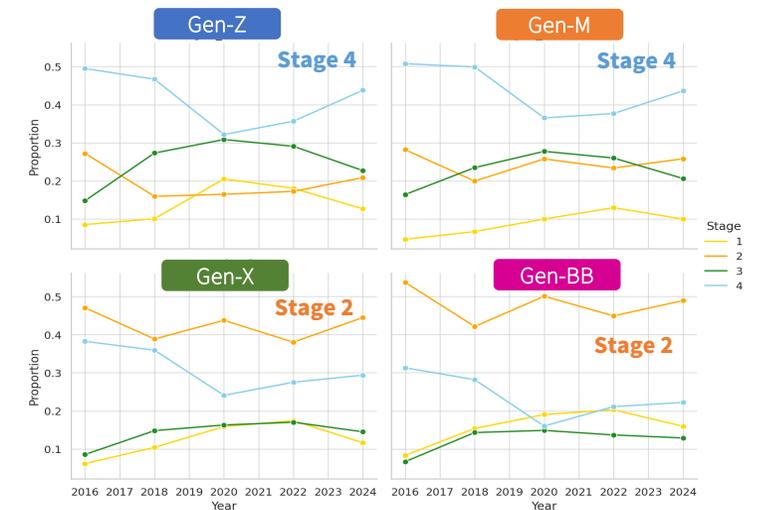
5. Conclusion

“The result shows…”

### Generational differences



More elders are in “contemplation stage”  
More youngsters are in “conscious stage”



### 3.

**Younger generations** are mostly in ‘conscious actions stage’

their portion temporary dropped during Covid-19 but is now increasing again.

**Older generations** are mostly in ‘contemplation stage’

their portion has shown repeated fluctuations.

“We should”

apply generation-specific strategies to promote pro-environmental stages

1. Background

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3. Results

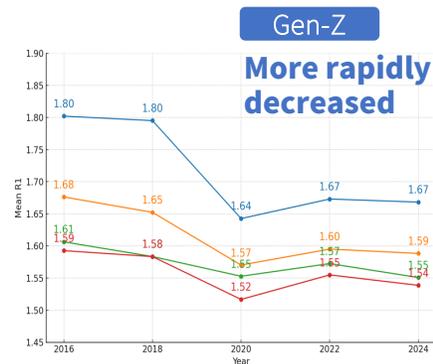
4. Discussion

5. Conclusion

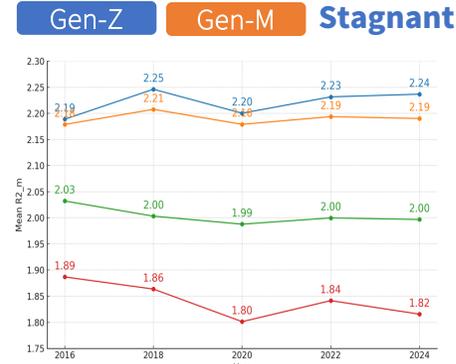
“The result shows…”

### Normative behavior

#### R1. Recycling

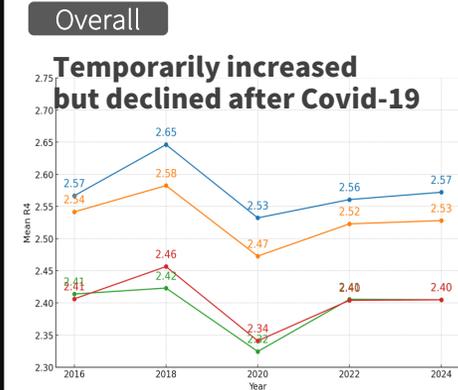


#### R2. Reducing

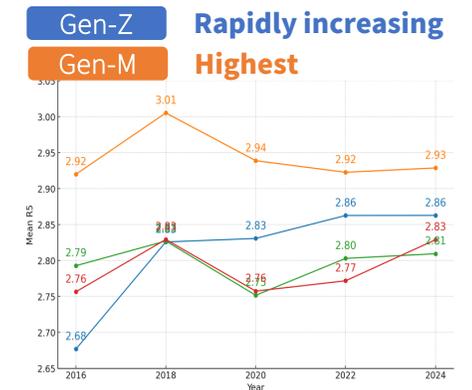


### Identity connected behavior

#### R4. Reaching



#### R5. Responding



## 4.

The younger generation shows a decreasing or stagnant trend **in normative behaviors**, whereas **identity-connected behaviors** show either a temporary or consistently increasing tendency.

“We should”

provide more identity-connected green consumption opportunities for future generation

## “In conclusion”

### 1.

Among Korean consumers, environmental concern had been declining prior to COVID-19, but began to rebound after the pandemic.

However, this rebound in concern was not accompanied by a corresponding increase in environmental behavior.

**These findings highlight what we now need is to bridge the gap between environmental concern and actual behavior.**

### 2.

**To achieve this, generation-specific strategies are essential :**

older generations(mostly included in contemplation stage)

**need behavioral transition education,**

while younger generations(mostly included in conscious action stage)

**need more diverse green consumption opportunities.**

# Thank you for Listening

**Jeeyeon Sah**  
[\(sahjeeyeon@snu.ac.kr\)](mailto:sahjeeyeon@snu.ac.kr)

Assistant Professor  
Dept. of Consumer Science / Seoul National University

