

Determinants of environmentally friendly consumption

Comparing two conceptual frameworks

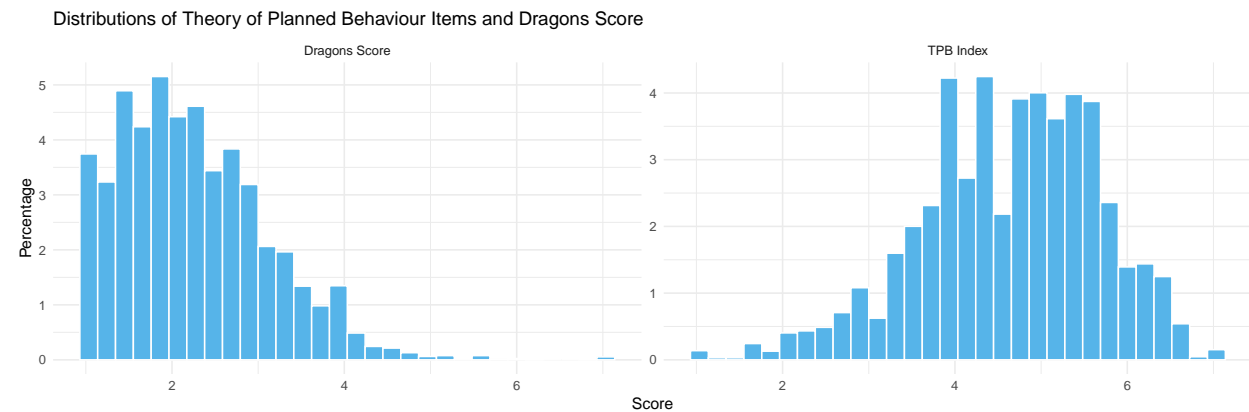
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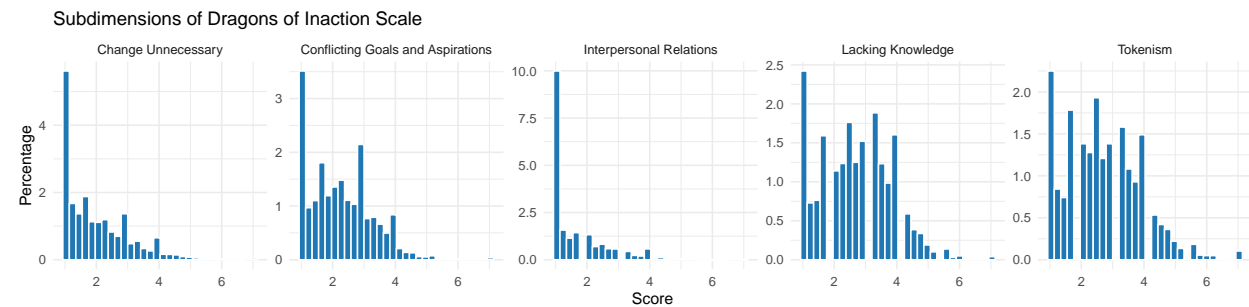
1 Descriptive statistics

1.1 Distribution of the two main concepts: DIPB and TPB

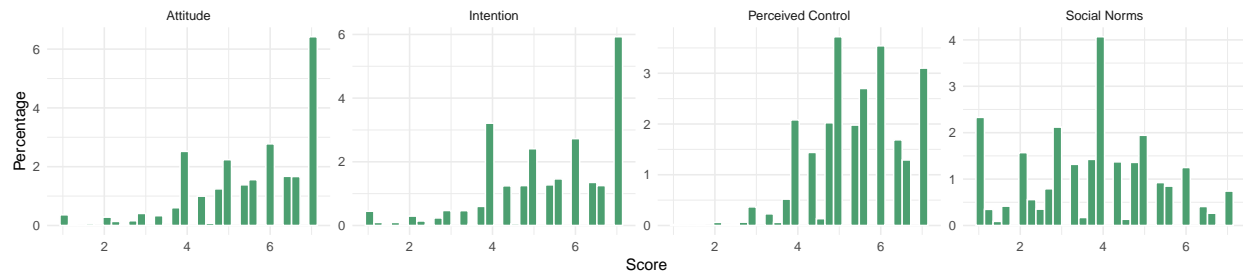
The distributions of the Dragons of Inaction (DIPB) and Theory of Planned Behavior (TPB) scores show distinct patterns. The DIPB scores are left-skewed, indicating that most respondents score relatively low on psychological barriers to environmentally friendly consumption (Comparison to other studies?). In contrast, the TPB scores are more equally distributed, yet somewhat right-skewed, with more respondents expressing high levels of pro-environmental attitudes, social norms, perceived control, and behavioral intentions.



1.2 Distribution of subdimensions of both frameworks

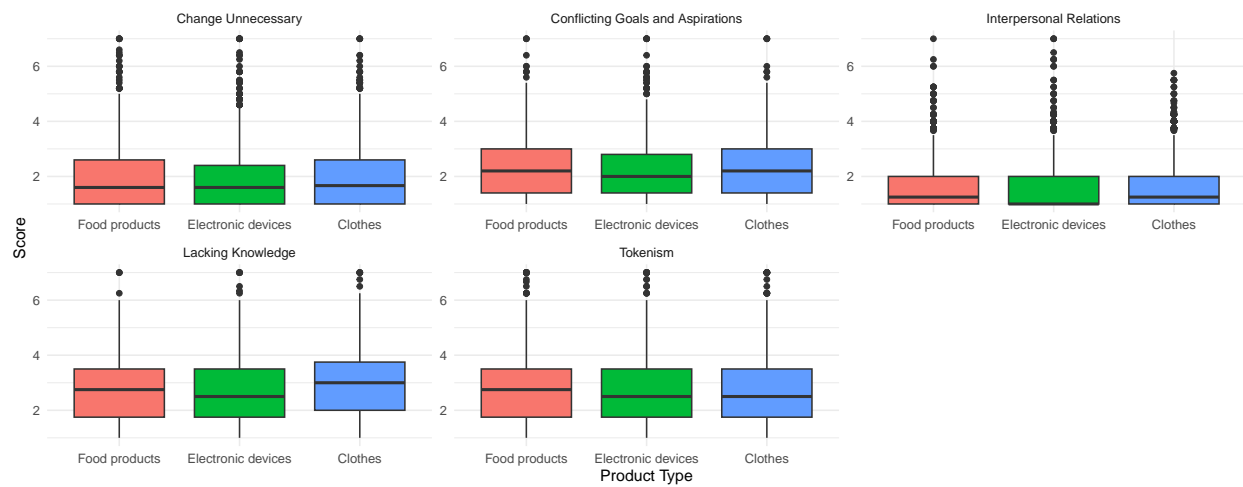


Components of Theory of Planned Behaviour

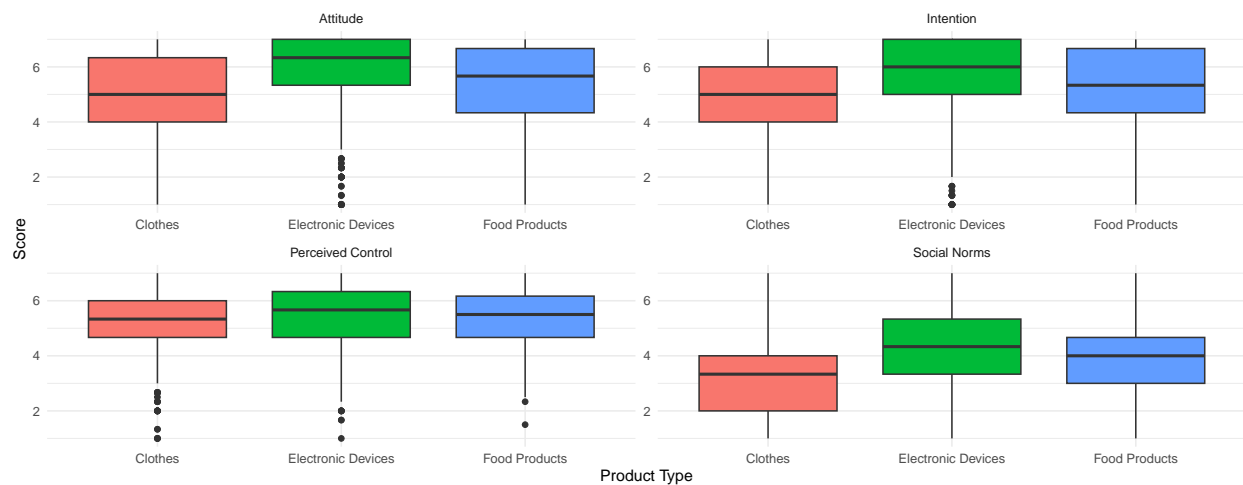


The 'dragons of inaction' sub-dimensions hardly vary by product type. There is somewhat more variation for the 'theory of planned behavior' concepts. Clothes have somewhat lower median values within our sample on all four sub-dimensions.

Dragons of Inaction Subdimensions – by product type



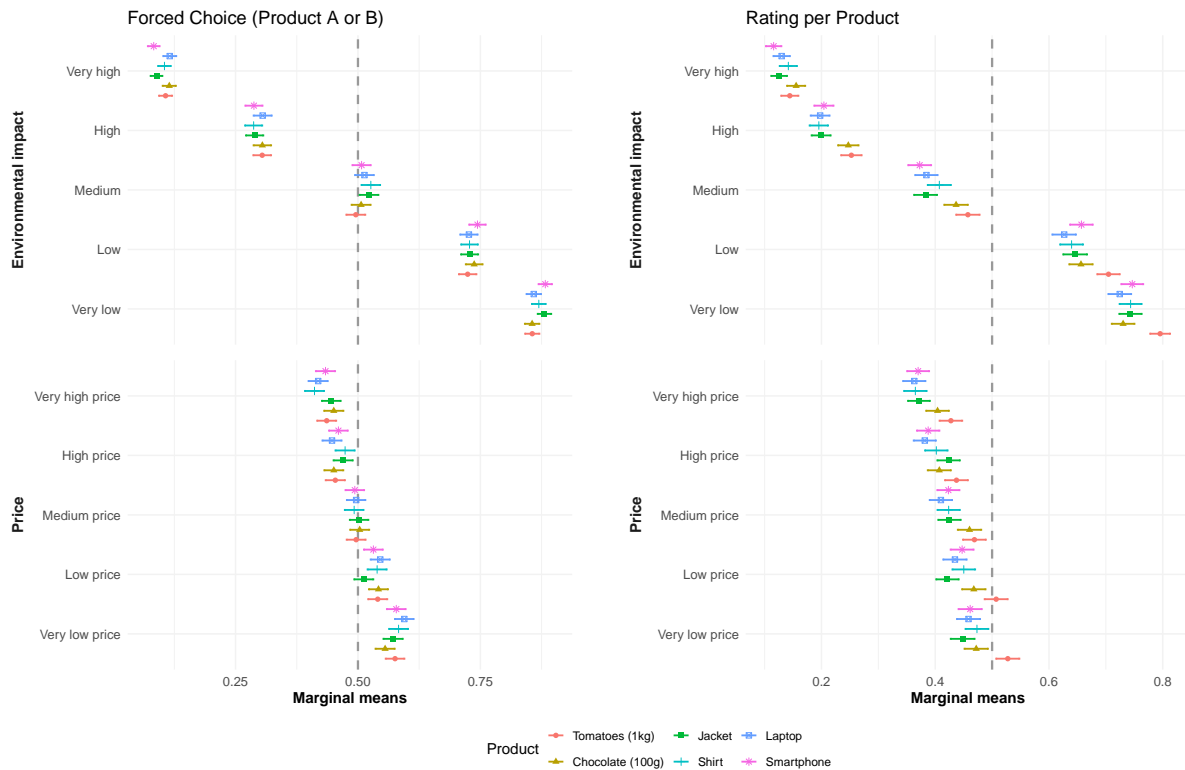
Components of Theory of Planned Behaviour – by product type



2 Conjoint Outcomes

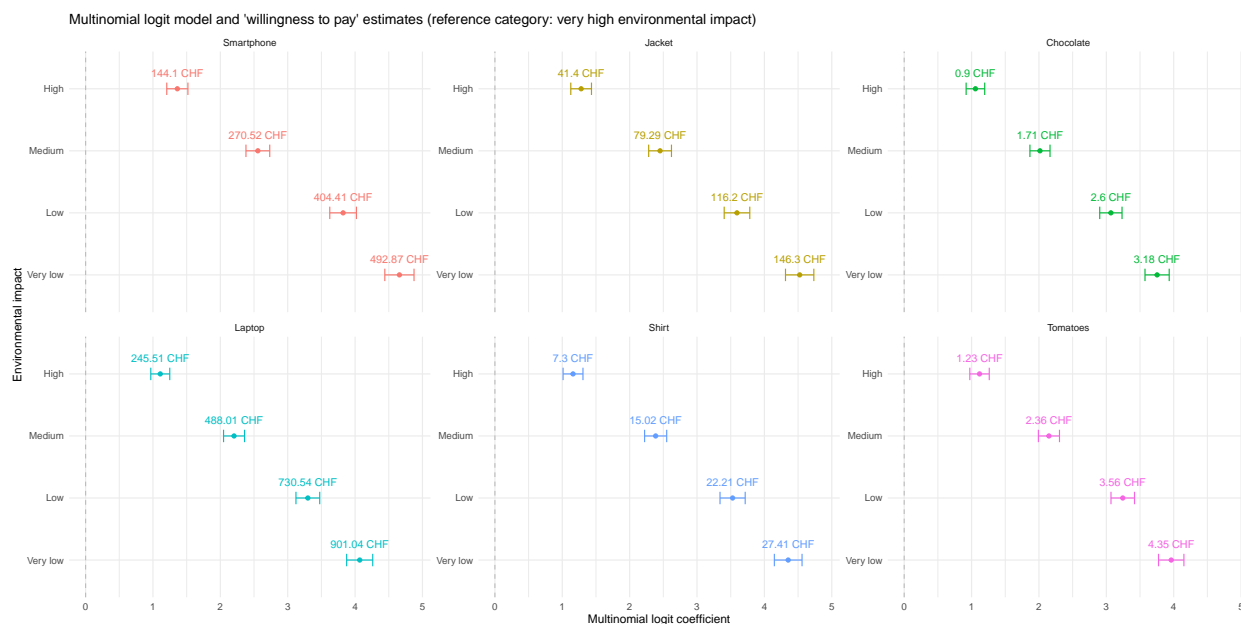
Respondents completed six conjoint tasks—three per product category—in which they indicated their preferences between two product profiles. In each round, they made a forced choice between “Product A” and “Product B” and rated both products individually on a 7-point scale. For analysis, the rating outcome was dichotomized (1–4 vs. 5–7), which results in coefficients leaning toward the negative due to the chosen cut-off.

The conjoint results show that both environmental impact and price significantly influence consumer preferences. However, given the relatively narrow price ranges used in the design, the effect of environmental impact emerged as stronger than that of price. Overall, respondents showed a clear preference for products with lower environmental impact and lower cost. These patterns were consistent across product categories, with no substantial variation in answer tendencies by product type.



We also conducted a willingness-to-pay (WTP) analysis using the price variable. The results of the multinomial logit model confirm that environmental impact is a strong predictor of product choice, even when controlling for price. Products with lower environmental impact were significantly more likely to be chosen than those with very high impact. This relationship reflects a general willingness to pay more for environmentally friendly attributes—though the extent of this willingness varies across individuals and product types.

However, the absolute WTP estimates appear inflated, even after accounting for outliers with reversed utility patterns. This is primarily due to the fact that the price coefficient enters the WTP formula in the denominator. When the price coefficient is relatively weak—as observed in our model—it leads to disproportionately large WTP values. This may be because the selected price categories were perceived as too narrow or insufficiently relevant. Furthermore, social desirability bias may have caused respondents to focus more on environmental impact than price, further weakening the price signal. Given these factors, we interpret the findings in relative terms—i.e., how WTP differs across environmental impact levels and product types—rather than relying on the absolute monetary estimates.



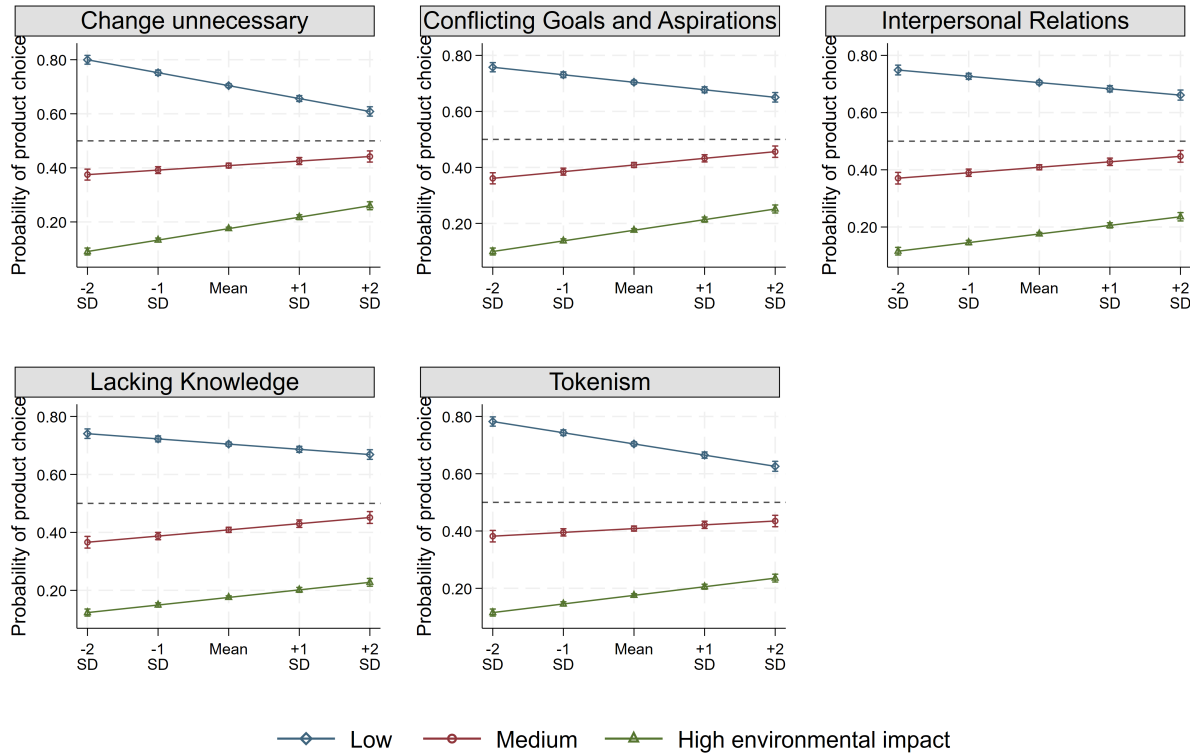
3 Comparing the explanatory power of two scales

3.1 Product Choice by Dragons of Inaction and Theory of Planned Behavior

Including interaction terms in the conjoint analyses allows us to inspect varying response patterns conditional on an individual's DIPB-Score or TPB-Score. All concepts are standardized and displayed from -2 to +2 standard deviations. The measured outcome is the conjoint choice for a specific product given its environmental impact (split into terciles) and holding price constant.

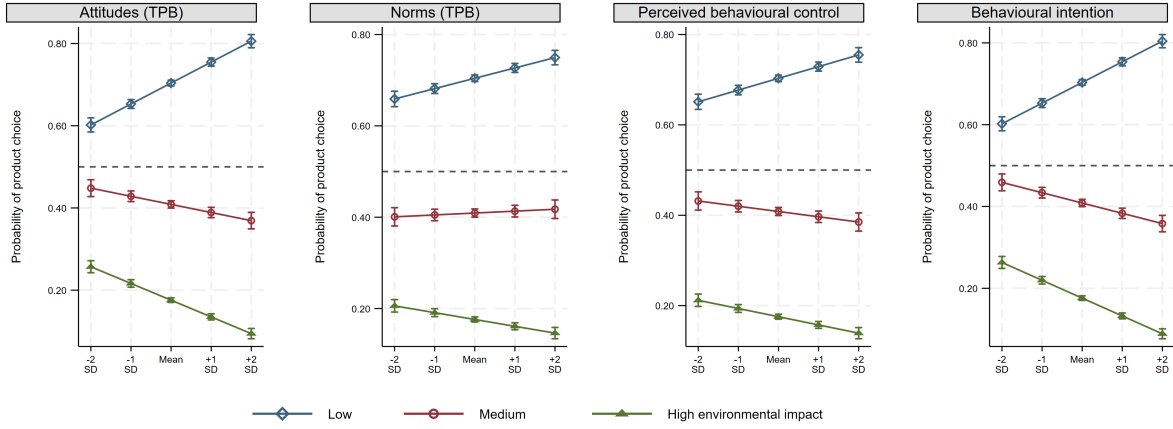
3.1.1 Dragons of inaction

The pattern is the same for each sub-dimension of the DIPB-scale. The higher the score the less likely are the respondents to choose an environmentally friendly product.



3.1.2 Theory of planned behaviour

The pattern is reversed for sub-dimensions of the theory of planned behaviour. The higher respondents score on an item, the more likely they are to choose environmentally friendly products.



3.1.3 Indices by product category

The patterns remain the same across varying product categories.

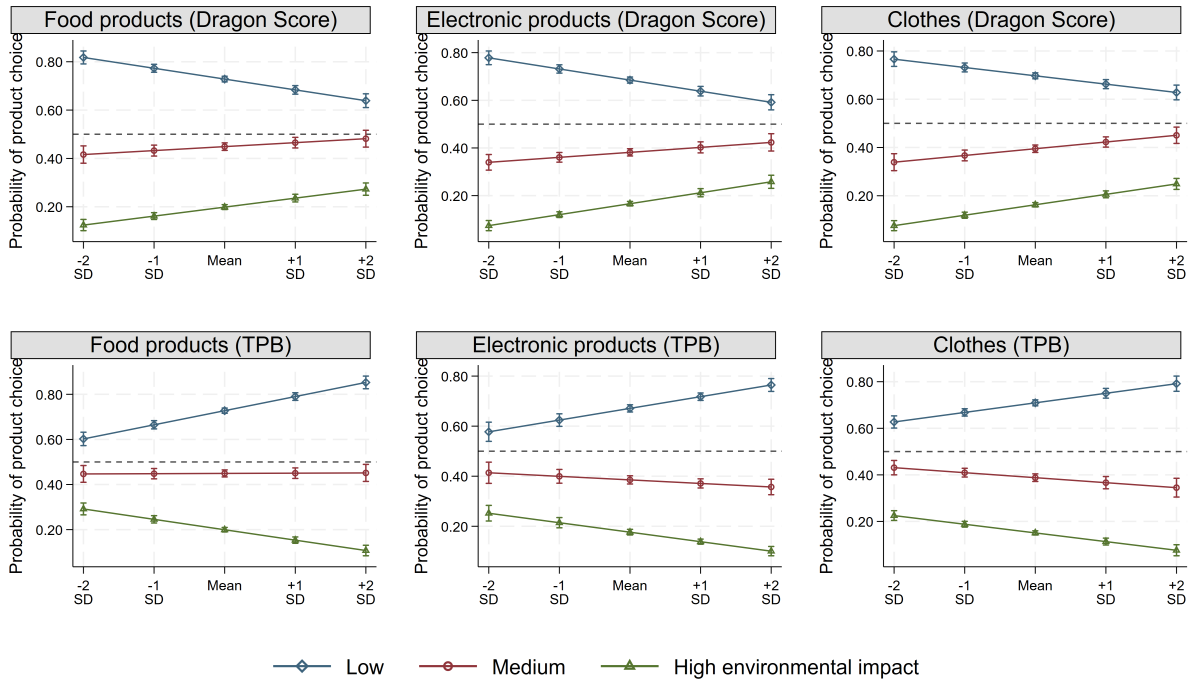


Table 1: Linear regression models for green consumer behaviour

	Dragons Index	TPB Index	Dragons Items	TPB Items
Dragons Index	-0.059*** (0.002)			
TPB Score		0.041*** (0.002)		
Change unneccesary (DI)			-0.026*** (0.003)	
Goal aspirations (DI)			-0.016*** (0.003)	
Interpresonal relations (DI)			-0.007** (0.003)	
Lacking knowledge (DI)			-0.007** (0.002)	
Tokenism (DI)			-0.002 (0.002)	
Attitude (TPB)				0.016*** (0.003)
Subjective norm (TPB)				-0.008*** (0.001)
Behavioural control (TPB)				0.006** (0.002)
Behavioural intention (TPB)				0.024*** (0.002)
Num.Obs.	6279	6279	6279	6279
R2	0.105	0.076	0.110	0.112
R2 Adj.	0.105	0.076	0.109	0.111

3.2 Regression models

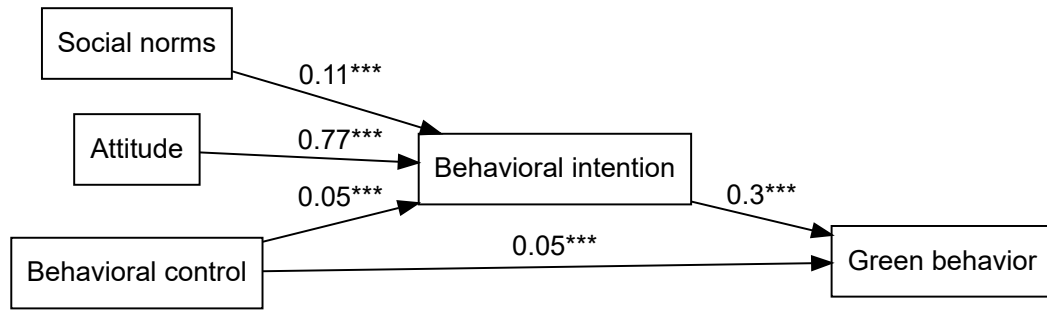
Running regression models with the DIPB-score and TPB-score as explanatory variables shows that both are statistically significant predictors of green consumer behaviour. The adjusted R-squared is somewhat larger for the model only including the DIPB-score and controls as compared to the TPB-score and controls.

In addition, we conducted a likelihood ratio test to compare the predictive power of the four models.

3.3 Path analysis

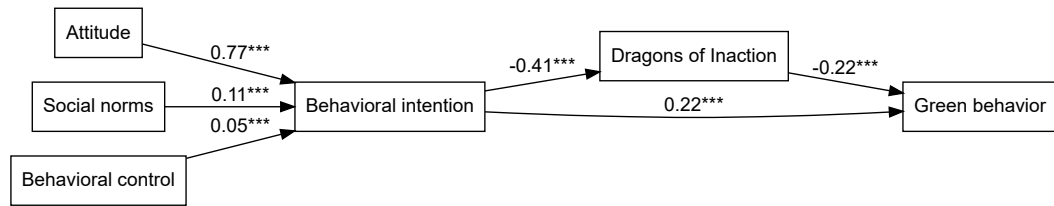
Lastly, we fit three path models corresponding to the theoretical expectations posed in the pre-registration.

3.3.1 Path model 1: Theory of planned behaviour



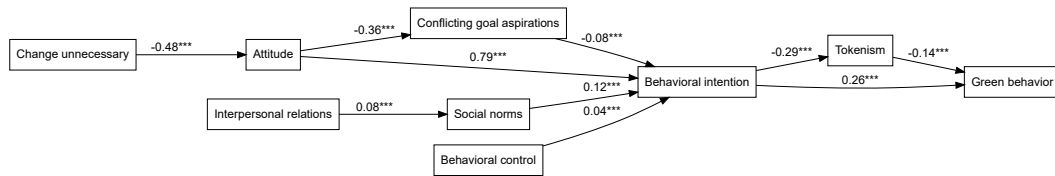
3.3.2 Path Model 2: DIPB as mediating factor in the TPB framework

From Pre-reg: “So far, the explanatory value of the DIPB Scale has not been systematically assessed, particularly in comparison or in combination with the Theory of Planned Behavior (TPB). For instance, as Gifford et al. (2022) suggested, the DIPB might be viewed as mediating between Intention and Behavior in the TPB framework (see Figure 1).”



3.3.3 Path Model 3: Potential effects of components of the DIPB in the TPB framework

From Pre-reg: “It is unclear, however, whether the DIPB should be understood as a mediator in the effect of intention on behavior or whether different “dragons” (subscales of the DIPB) may affect different components of the framework shown in Figure 2. For instance, “Change Unnecessary” addresses a dragon that is closely linked to attitude. “Interpersonal relations” addresses a dragon that is closely linked to social norms. “Lacking knowledge” addresses a dragon that is closely linked to perceived behavioral control. “Conflicting goals” addresses a dragon that is closely linked to attitude and intention. “Tokenism” addresses a dragon that is closely linked to intention and behavior.”

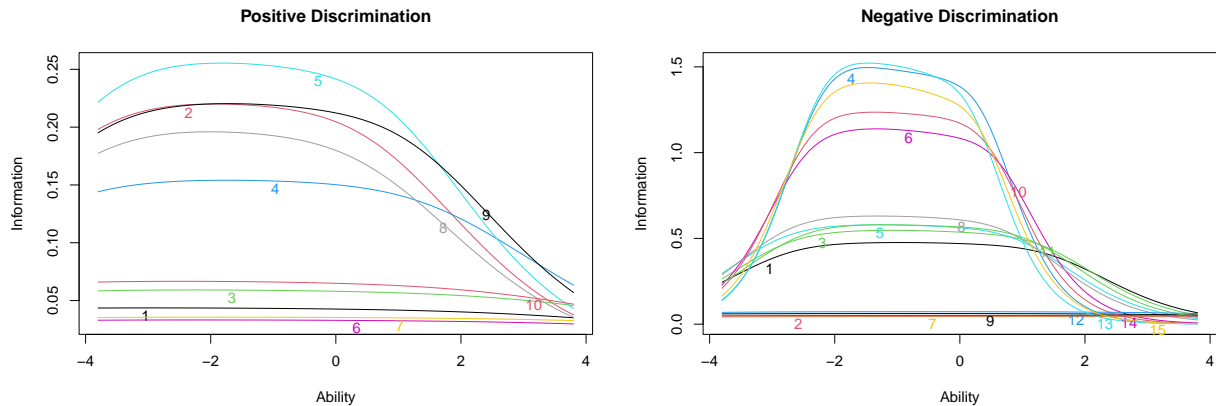


4 Appendix

4.1 Building a ‘green consumerism’ score

Table 2: GRM Parameters: Discrimination and Thresholds for Each Product-Impact Combination

item	Threshold1	Threshold2	Threshold3	Threshold4	Threshold5	Threshold6	Discrimination
p1_e1	0.50	-0.30	-0.92	-1.38	-1.83	-2.42	-1.88
p1_e2	1.32	0.26	-0.57	-1.14	-1.92	-2.69	-1.21
p1_e3	5.71	3.06	1.12	-0.58	-2.74	-5.26	-0.37
p1_e4	-6.05	-4.35	-3.23	-2.02	-0.43	2.21	0.45
p1_e5	-3.90	-3.15	-2.58	-1.90	-1.07	0.32	0.78
p2_e1	0.36	-0.35	-0.93	-1.40	-1.86	-2.38	-1.96
p2_e2	1.18	0.12	-0.66	-1.28	-1.84	-2.69	-1.30
p2_e3	4.73	2.60	0.66	-0.89	-2.78	-5.36	-0.40
p2_e4	-7.33	-5.24	-3.84	-2.43	-0.35	2.87	0.37
p2_e5	-3.89	-2.99	-2.38	-1.77	-0.86	0.43	0.82
p3_e1	0.25	-0.47	-1.05	-1.51	-1.82	-2.20	-2.15
p3_e2	1.00	0.02	-0.76	-1.36	-1.90	-2.54	-1.34
p3_e3	4.76	2.48	0.65	-1.03	-3.13	-5.63	-0.39
p3_e4	-5.94	-4.32	-3.01	-1.84	-0.13	2.71	0.43
p3_e5	-3.69	-2.80	-2.16	-1.55	-0.70	0.66	0.88
p4_e1	0.18	-0.60	-1.11	-1.53	-1.88	-2.27	-2.08
p4_e2	0.83	-0.16	-0.88	-1.46	-2.02	-2.79	-1.33
p4_e3	3.49	1.64	0.02	-1.21	-2.83	-4.76	-0.47
p4_e4	-7.14	-5.14	-3.31	-1.76	0.74	4.16	0.32
p4_e5	-3.81	-2.77	-2.09	-1.38	-0.46	1.02	0.82
p5_e1	0.06	-0.67	-1.17	-1.59	-1.90	-2.21	-2.17
p5_e2	0.69	-0.25	-0.94	-1.50	-2.04	-2.71	-1.39
p5_e3	3.50	1.57	-0.06	-1.52	-3.32	-5.62	-0.44
p5_e4	-6.88	-4.78	-2.94	-1.26	1.22	4.64	0.33
p5_e5	-4.26	-3.21	-2.21	-1.36	-0.18	1.37	0.69



Larger (more positive) thresholds mean a respondent needs a higher latent pro-environmental preference to rate the product positively. Lower thresholds mean a respondent needs a lower latent pro-environmental trait to rate the product positively, since the product has a high environmental impact. The discrimination parameter indicates how well the item distinguishes between respondents with different levels of the latent

trait (pro-environmental consumer tendency). Higher positive values mean the product profile strongly differentiates between low and high scorers. Items with negative discrimination suggest that as latent pro-environmental trait increases, respondents actually like the product less — which reflects the negative impact of the product on the ‘green consumerism’ score.

3D Scatter Plot of Rating Frequencies

