The Consumer Motivation Scale: A detailed review of item generation, exploration, confirmation, and validation procedures

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Abstract

This data article offers a detailed description of analyses pertaining to the development of the Consumer Motivation Scale (CMS), from item generation and the extraction of factors, to confirmation of the factor structure and validation of the emergent dimensions. The established goal structure – consisting of the sub-goals Value for Money, Quality, Safety, Stimulation, Comfort, Ethics, and Social Acceptance – is shown to be related to a variety of consumption behaviors in different contexts and for different products, and should thereby prove useful in standard marketing research, as well as in the development of tailored marketing strategies, and the segmentation of consumer groups, settings, brands, and products.

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**Specifications Table**

| Subject area          | Psychology                          |
|-----------------------|-------------------------------------|
| More specific subject area | Consumer psychology, scale development |
| Type of data          | Tables                              |
| How data was acquired | Survey                              |
| Data format           | Analyzed                            |
| Experimental factors  | A variety of consumer contexts/products, including food, clothes, entertainment, and vacation travel |
| Experimental features | The scale was developed across a variety of contexts and products to ensure a generalizable goal structure |
| Data source location  | Gothenburg, Sweden                  |
| Data accessibility    | With the article (+supplementary file for further details) |

**Value of the data**

- Scale development requires a multitude of analyses to be performed, the results of which are often buried in supplementary files, if presented at all. By publishing all the relevant data in the present open access data article, we hope to increase transparency and offer researchers and practitioners alike a detailed overview of the procedures through which the Consumer Motivation Scale (CMS) was developed.
- Researchers and practitioners interested in the CMS, or consumption goals in general, will find a detailed account of the structure and characteristics of influential consumption goals.
- Researchers and students that wish to learn more about scale development may find this article useful as a practical and extensive example of the steps involved in the extraction, confirmation, and validation of psychological factors.

1. **Data**

   This data article offers a detailed review of the development of the Consumer Motivation Scale (CMS; [4]). The objective of the research is to establish a structure of sub-goals that form a coherent and practical measurement scale which is:

   1. **Integrative** – encompassing not only utilitarian, but also hedonic and normative goals;
   2. **Multi-dimensional** – taking potential sub-goals of the three master goals into account;
   3. **Context-sensitive** – measuring not only individual, but also situational variance;
   4. **General** – applicable to a wide variety of consumption settings and products.

   The scale development procedure follows Churchill's [12] paradigm for developing marketing constructs. The procedure consists of the following five steps:

   1. **Specifying the domain of the construct**: The three master goals and their potential sub-goals are specified and described.
   2. **Item generation**: Items were generated based on theories and scales related to the identified sub-goals.
   3. **Establishing a factor structure**: The goal structure was explored and purified on Sample 1 A, and confirmed on Sample 1B.
   4. **Convergent, discriminant, and construct validity**: Additional data (Sample 2) was collected, thoroughly testing the convergent, discriminant, as well as construct validity of the emergent dimensions.
5. **Criterion-related validity**: Finally, more data (Sample 3) was collected to test criterion-related validity, showing that the dimensions explain choice between alternative products.

The presented data is organized accordingly:

1. **The domain of the construct**
   - Table 1. The nine preliminary sub-goals of the gain, hedonic, and normative master goals
2. **Item generation**
   - Table 2. A list of the adapted and generated items, with items wordings and origin
3. **Establishing a factor structure**
   1. **Data collection (Sample 1)**
   2. **Factor extraction**
   - Table 3.2. Factor extraction – The seven-factor structure
   3. **Scale purification**
      - Table 3.3.1. Items excluded due to insufficient communality ( < .5)
      - Table 3.3.2. Items excluded due to cross-loadings ( > .32 and 50% of main loading)
   4. **Dimension labels**
      - Table 3.4. Themes and labels of the seven emergent dimensions
3.5 **Factor confirmation**
   - Table 3.5. Confirmatory factor analysis
3.6 **Invariance testing**
   - Table 3.6.1. Metric and scalar invariance
   - Table 3.6.2. Scalar invariance for each dimension
   - Table 3.6.3. Scalar invariance for each item in Quality, Safety, Stimulation, and Comfort
3.7 **Finalized version of the Consumer Motivation Scale (CMS)**
   - Table 3.7. The Consumer Motivation Scale (CMS)

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### Table 1
The nine preliminary sub-goals of the gain, hedonic, and normative master goals.

| Goal     | Sub-goal       | Underlying motive                                                                 |
|----------|----------------|-----------------------------------------------------------------------------------|
| **Gain** | Value for Money| To get value for money, pay a reasonable price, avoid wasting money\(^{\text{a}}\)  |
|          | Quality        | To get something of high quality and reliability, that meets one's highest expectations\(^{\text{b}}\) |
|          | Function       | To get something useful and practical, that serves many purposes\(^{\text{c}}\)         |
|          | Safety         | To feel safe, calm and prepared for the unforeseen\(^{\text{d}}\)                      |
| **Hedonic** | Pleasure    | To get something that satisfies immediate needs, that makes one feel good and happy\(^{\text{e}}\) |
|          | Stimulation    | To get something exciting, stimulating or unique, avoid dullness\(^{\text{f}}\)         |
| **Normative** | Ethics       | To act in accordance with one's moral principles and obligations, avoid guilt\(^{\text{g}}\) |
|          | Social Acceptance | To make a good impression, identify with peers, live up to expectations\(^{\text{h}}\) |

\(^{\text{a}}\) Zeithaml [34], Sheth et al. [26], Sweeney and Soutar [29], Lindenberg and Steg [19], Barbopoulos and Johansson [3]

\(^{\text{b}}\) Zeithaml [34], Dodds et al. [16], Sheth et al. [26], Sweeney and Soutar [29], Lindenberg and Steg [19], Barbopoulos and Johansson [3]

\(^{\text{c}}\) Sheth, et al. [26]

\(^{\text{d}}\) Becker [7], Schwartz [25], Rindfleisch and Burroughs [22], Lindenberg and Steg [19], Barbopoulos and Johansson [3]

\(^{\text{e}}\) Batra and Ahtola [5], Childers et al. [11], Lindenberg and Steg [19]

\(^{\text{f}}\) Russel [23], Bello and Etzel [8], Watson and Tellegen [33], Ornel et al. [21], Childers et al. [11], Lindenberg and Steg [19], Helm and Landschulze [17], Aluja et al. [1]

\(^{\text{g}}\) Bello and Etzel [8], Ornel et al. [21], Childers et al. [11], Lindenberg and Steg [19]

\(^{\text{h}}\) Schwartz [24], Schwartz [23], Dawes and Messick [15], Stern [28], Bamberg and Schmidt [2], Thøgersen [31], Steg et al. [27], Lindenberg and Steg [19], Barbopoulos and Johansson [3]

\(^{\text{i}}\) McGuire [20], Burnkrant and Cousineau [9], Bearden et al. [6], Cialdini et al. [13], Barbopoulos and Johansson [3]
Table 2
A list of the adapted and generated items, with items wordings and origin.

| Item# | When I _, it is important that what I choose | Item adapted from: |
|-------|---------------------------------------------|-------------------|
| VfM1  | Is reasonably priced                        | Sweeney and Soutar [29] |
| VfM2  | Offers value for the money                  | Sweeney and Soutar [29] |
| VfM3  | Is a good choice considering the price      | Sweeney and Soutar [29] |
| VfM4  | Is economical                              | Sweeney and Soutar [29] |
| VfM5  | Provides good return for the money          | Sweeney and Soutar [29] |
| VfM6  | Is not too expensive                       | – |
| VfM7  | Is not a waste of money                     | – |
| Quality1 | Is of consistent and high quality         | Sweeney and Soutar [29] |
| Quality2 | Is well made (or well performed)           | Sweeney and Soutar [29] |
| Quality3 | Has an acceptable standard of quality      | Sweeney and Soutar [29] |
| Quality4 | Is first class                             | – |
| Quality5 | Meets even the highest requirements and expectations | – |
| Quality6 | Has a lasting value                        | – |
| Function1 | Does not have too limited or short use    | Sweeney and Soutar [29] |
| Function2 | Is reliable                               | Sweeney and Soutar [29] |
| Function3 | Is practical                              | – |
| Function4 | Is useful                                 | – |
| Function5 | Is functional and fit for purpose          | – |
| Function6 | Serves many purposes                       | – |
| Safety1 | Makes me feel calm and safe                | – |
| Safety2 | Makes me feel safe for the future          | – |
| Safety3 | Takes consideration of needs that may arise in the future | – |
| Safety4 | Is a good choice in the long-term         | – |
| Safety5 | Makes me prepared in case something unforeseen would happen | – |
| Safety6 | Improves my safety or security            | – |
| Pleasure1 | Makes me feel good                        | Childers et al. [11] |
| Pleasure2 | Is enjoyable                              | Childers et al. [11] |
| Pleasure3 | Is pleasant or enjoyable                   | Batra and Ahtola [5] |
| Pleasure4 | Makes me want to use it                   | Sweeney and Soutar [29] |
| Pleasure5 | Appeals to me                             | – |
| Pleasure6 | Makes me happy and satisfied              | – |
| Pleasure7 | Satisfies immediate needs                 | – |
| Stimulation1 | Is exciting                           | Childers et al. [11] |
| Stimulation2 | Is interesting                         | Childers et al. [11] |
| Stimulation3 | Offers diversity                       | Aluja et al. [1] |
| Stimulation4 | Is not too dull or routine               | Aluja et al. [1] |
| Stimulation5 | Gives a unique experience                | Bello and Etzel [8] |
| Stimulation6 | Is new or exotic                        | Bello and Etzel [8] |
| Stimulation7 | Is stimulating                          | – |
| Comfort1 | Is not too uncomfortable                  | Childers et al. [11] |
| Comfort2 | Gives relaxation                          | Bello and Etzel [8] |
| Comfort3 | Gives me rest and recovery               | Bello and Etzel [8] |
| Comfort4 | Is not too much bustle or stress         | Bello and Etzel [8] |
| Comfort5 | Is not too complicated or strenuous      | – |
| Comfort6 | Is smooth and comfortable                | – |
| Comfort7 | Makes me feel less stressed out          | – |
| Ethics1 | Is consistent with my personal and moral obligations | Steg et al. [27] |
| Ethics2 | Does not make me feel guilt               | Steg et al. [27] |
| Ethics3 | Makes me feel like a good person in my own eyes | Steg et al. [27] |
| Ethics4 | Does not violate my principles           | Bamberg and Schmidt [2] |
| Ethics5 | Gives me a good conscience               | Thøgersen [31] |
| Ethics6 | Is not morally wrong                     | Thøgersen [31] |
| Ethics7 | Is consistent with my ideals and opinions | – |
| Social1 | Is approved by my friends                | Bearden, Netemeyer and Teel [6] |
| Social2 | Is liked by people who are important to me | Bearden et al. [6] |
| Social3 | Is what my friends would expect me to choose | Bearden et al. [6] |
| Social4 | Makes a good impression on people who are important to me | Bearden et al. [6] |
| Social5 | Gives me a sense of belonging with people who are like me | Bearden et al. [6] |
| Social6 | Makes me more alike my role models       | Bearden et al. [6] |
| Social7 | Is similar to what people who I identify with choose | Bearden et al. [6] |
4. Convergent, discriminant, and construct validity

4.1. Data collection (Sample 2)

Table 4.1. The target information types, upgrade packages, and reference scales for the seven dimensions of the CMS

4.2. Convergent validity

Table 4.2.1. Factor loadings for item 1-5 in each dimension, as well as average communalities and Cronbach’s alpha

Table 4.2.2. Component reliability (CR) and average extracted variance (AVE)

Table 4.2.3. Bivariate correlation coefficients for each dimension of the CMS and its reference scale

4.3. Discriminant validity

Table 4.3.1. Cross-loadings by item number (1-5) and dimension

Table 4.3.2. Component correlations between the dimensions

Table 4.3.3. Average variance extracted (AVE), maximum shared variance (MSV), and average shared squared variance (ASV)

Table 4.3.4. Target correlations vs. unrelated correlations

4.4. Construct validity

Table 4.4.1. Standardized regression coefficients for the dimensions in the CMS and the reference scales (Ref.) for information search behaviors (Info.) and upgrade preferences (Pref.). The hypothesized relations are identified in the bolded diagonal (CMS), and in the bolded column (reference scales)

Table 4.4.2. Comparison of target correlations for the CMS versus the reference scales (Ref.)

5. Criterion-related validity

5.1. Data collection (Sample 3)

5.2. Criterion-related validity

Table 5.2.1. Observed and predicted choices per the binary logistic regression.

Table 5.2.2. Logistic regression coefficients and odds ratio for the dimensions of the CMS, as well as pseudo R2 for the whole model.

Please see [4] for the theoretical background and discussion related to the conclusions and implications of the data and the CMS, and see the supplementary file for further details pertaining to the data presented in this article.

2. Experimental design, materials and methods

2.1. The domain of the construct

The Consumer Motivation Scale (CMS; [4]) builds on the goal-framework developed by Lindenberg and Steg [19], in which three overarching “master” goals are identified and described, namely: the gain goal (“to guard or improve one’s resources”; [19], p. 119), the hedonic goal (“to feel better right
now”; [19], p. 119) and the normative goal (“to act appropriately”; [19], p. 119). The three master goals are assumed to consist of several sub-goals, that in turn are related to means and behaviors.

In recent exploratory research by the authors of the present data article [3], the three higher-order goals were shown to be represented by multiple distinct sub-goals, as the gain goal emerged as two distinct dimensions, one dealing with thrift, and the other with financial security. Likewise, the normative goal emerged as two separate dimensions, one dealing with ideals and moral norms, and the other with social status and fitting in. It was concluded that. It was concluded that the hedonic master goal can likely be represented by multiple sub-goals as well, and that the dimensionality of the master goals should be examined further. To this end, an in-depth literature review was conducted with the purpose of identifying relevant theories and measures related to each of the three master goals. Based on this review, nine preliminary sub-goals were identified and described (Table 1).

### 2.2. Item generation

Items were adapted or generated, based on a selection of established theories and scales related to the nine preliminary sub-goals. Generated items were formulated based on our understanding of the theories related to the given goal, while adapted items were based on the content of established scales (see Table 2 for references). To get information about the active goals, the scale is introduced with the statement “When I_, it is important that what I choose...” (where the blank is replaced by a suitable reference to the product under study, e.g. “shop for clothes”), followed by the list of items, represented as the continuation of that statement (e.g. “... is not too expensive”).

### Table 3.2

Factor extraction – The seven-factor structure.

| Preliminary dimension | When I _, it is important that what I choose... | I  | II | III | IV | V  | VI | VII |
|-----------------------|-----------------------------------------------|----|----|-----|----|----|----|-----|
| **Comfort**           | gives me rest and recovery                    | .66| .12| .37 | .13| .08| .08| .01 |
| Safety                | makes me feel calm and safe                   | .63| .12| .03 | .02| .09| .09| .14 |
| Safety                | makes me feel safe for the future            | .62| .24| .15 | .13| .10| .01| .10 |
| Safety                | makes me prepared in case something unforeseen would happen | .61| .15| .04 | .03| .06| .12| .01 |
| Safety                | takes consideration of needs that may arise in the future | .61| .06| .09 | .16| .07| .07| .16 |
| Safety                | improves my safety or security               | .59| .20| .04 | .04| .12| .05| .28 |
| **Comfort**           | makes me feel less stressed out              | .57| .04| .37 | .14| .11| .05| .14 |
| Quality               | has a lasting value                           | .54| .02| .12 | .37| .11| .12| .26 |
| Function              | serves many purposes                         | .43| .04| .15 | .01| .01| .28| .11 |

- Social Ac. improves the way I am perceived by people who are important to me
- Social Ac. is approved by my friends
- Social Ac. is what my friends would expect me to choose
- Social Ac. is similar to what people who I identify with choose
- Social Ac. is popular among my friends
- Social Ac. makes me more alike my role models
- Social Ac. makes a good impression on people who are important to me
- Social Ac. is liked by people who are important to me
- Social Ac. makes me feel accepted
- Social Ac. gives me a sense of belonging with people who are like me

- Stimulation is exciting
- Stimulation is stimulating
- Stimulation gives a unique experience
- Stimulation is not too dull or routine
- Stimulation is interesting
Table 3.2 (continued)

| Factor | Item wording | Communalities |
|--------|--------------|---------------|
| Comfort | gives relaxation | .46 .04 .61 .12 .04 .08 .05 |
| Pleasure | is pleasant or enjoyable | .05 .10 .60 .09 .22 .09 .11 |
| Stimulation | offers diversity | .10 .07 .59 .05 .07 .11 .03 |
| Stimulation | is new or exotic | .05 .17 .52 .11 .05 .03 .09 |
| Pleasure | makes me feel good | .31 .10 .37 .01 .18 .05 .24 |

Note: For increased readability, loadings > .5 are bolded while non-significant cross-loadings are colored gray. Items in italics show items which were removed following scale purification.

Original item # | Factor | Item wording | Communality |
|----------------|--------|--------------|-------------|
| Pleasure4 | VII | Makes me want to use it | .30 |
| Pleasure7 | VII | Satisfies immediate needs | .35 |
| Comfort4 | VII | Is not too much bustle or stress | .37 |
| Stimulation3 | III | Offers diversity | .41 |
| Stimulation6 | III | Is new or exotic | .40 |
| Function1 | IV | Does not have too limited or short use | .46 |
| Function6 | I | Serves many purposes | .49 |
| Quality3 | IV | Has an acceptable standard of quality | .49 |
| Factor | Theme | Dimension label |
|--------|-------|-----------------|
| I      | Safety, being prepared, future needs | Safety |
| II     | Appearance, gaining approval, fitting in | Social Acceptance |
| III    | Excitement, stimulation, uniqueness | Stimulation |
| IV     | Quality, first class, acceptable standards | Quality |
| V      | Morally correct; per one's ideals, principles, conscience | Ethics |
| VI     | Reasonable price, economical, value for money | Value for Money |
| VII    | Comfort, avoid complications and effort | Comfort |

**Table 3.3.3**
Cronbach’s alpha.

| Factor | α   |
|--------|-----|
| I      | .86 |
| II     | .92 |
| III    | .89 |
| IV     | .82 |
| V      | .88 |
| VI     | .89 |
| VII    | .81 |

**Table 3.3.2**
Items excluded due to cross-loadings (2nd loading > .32 and 50% of main loading).

| Original item # | Factor | Item wording | Cross-loading |
|-----------------|--------|--------------|---------------|
| Function3       | IV     | Is practical | 85.5%         |
| Comfort7        | I      | Makes me feel less stressed out | 93.0%         |
| Safety4         | IV     | Is a good choice in the long-term | 92.1%         |
| Pleasure6       | VII    | Makes me happy and satisfied | 86.6%         |
| Comfort3        | I      | Gives me rest and recovery | 83.8%         |
| Pleasure5       | VII    | Appeals to me | 70.5%         |
| Function4       | VII    | Is useful | 98.5%         |
| Quality6        | I      | Has a lasting value | 66.9%         |
| Function5       | IV     | Is functional and fit for purpose | 67.4%         |

**Table 3.5**
Confirmatory factor analysis.

| k | χ² | DF | χ²/DF | Δχ² | ΔDF | p   | RMSEA | CFI |
|---|----|----|-------|-----|-----|-----|-------|-----|
| Model 1 | 1 | 7879.98 | 950 | 8.30 | – | – | .12 | .29 |
| Model 2 | 3 | 5354.03 | 942 | 5.68 | –2525.95 | –8 | .000 | .10 | .55 |
| Model 3A | 5 | 4202.28 | 935 | 4.49 | –1151.75 | –7 | .000 | .08 | .67 |
| Model 3B | 4 | 4727.81 | 939 | 5.04 | –626.22 | –3 | .000 | .09 | .61 |
| Model 3C | 4 | 4191.43 | 939 | 4.46 | –1162.60 | –3 | .000 | .08 | .67 |
| Model 4A | 7 | 2398.28 | 924 | 2.60 | –1793.16 | –15 | .000 | .06 | .85 |
| Model 4B | 7 | 1089.49 | 506 | 2.15 | –1308.79 | –418 | .000 | .06 | .89 |

Note: In model 1, all items load on a single general factor. In model 2, items load on their respective master goal (gain, hedonic, or normative), while in models 3A, 3B, 3C the master goals were split into sub-goals one at a time: in 3A gain was split into the three sub-goals Value for Money, Quality, and Safety; in 3B hedonic was split into Stimulation and Comfort; and in 3C normative was split into Ethics and Social Acceptance. Δ for model 3A, 3B and 3C were calculated in comparison to model 2. Finally, in model 4, all items load according to the PCA. A shorter version (model 4B) was then tested, with the purpose of achieving higher model fit and parsimony. Δ for model 4A was calculated in comparison to the best of model 3A, 3B and 3C (i.e 3C)
k = number of factors
Table 3.6.1
Metric and scalar invariance.

|               | \( \chi^2 \) | DF | \( \chi^2/DF \) | RMSEA | CFI | \( \Delta \text{CFI} \) |
|---------------|--------------|----|----------------|-------|-----|---------------------|
| Configural    | 4131.53      | 2530 | 1.63          | .04   | .78 |                     |
| Metric        | 4293.06      | 2638 | 1.63          | .04   | .77 | −.008               |
| Scalar        | 5069.14      | 2774 | 1.83          | .04   | .68 | −.089               |

Note: Non-equal models are bolded. \( \Delta \) was calculated in comparison to the previous model.

Table 3.6.2
Scalar invariance for each dimension.

|               | \( \chi^2 \) | DF | \( \chi^2/DF \) | RMSEA | CFI | \( \Delta \text{CFI} \) |
|---------------|--------------|----|----------------|-------|-----|---------------------|
| Metric        | 4293.06      | 2638 | 1.63          | .04   | .77 |                     |
| VfM           | 4375.34      | 2658 | 1.65          | .04   | .76 | −.008               |
| Quality       | 4411.63      | 2658 | 1.66          | .04   | .76 | −.013               |
| Safety        | 4477.24      | 2658 | 1.68          | .04   | .75 | −.022               |
| Stimulation   | 4503.30      | 2658 | 1.69          | .04   | .74 | −.026               |
| Comfort       | 4423.08      | 2654 | 1.67          | .04   | .75 | −.016               |
| Ethics        | 4327.59      | 2658 | 1.63          | .04   | .77 | −.002               |
| Social Ac.    | 4365.66      | 2658 | 1.64          | .04   | .76 | −.007               |

Note: Non-equal dimensions are bolded. \( \Delta \) was calculated in comparison to the invariant metric model. VfM = Value for Money; Social Ac. = Social Acceptance.

Table 3.6.3
Scalar invariance for each item in Quality, Safety, Stimulation, and Comfort.

|               | \( \chi^2 \) | DF | \( \chi^2/DF \) | RMSEA | CFI | \( \Delta \text{CFI} \) |
|---------------|--------------|----|----------------|-------|-----|---------------------|
| Metric        | 4293.06      | 2638 | 1.63          | .04   | .77 |                     |
| Quality1      | 4342.16      | 2642 | 1.64          | .04   | .76 | −.006               |
| Quality2      | 4325.29      | 2642 | 1.64          | .04   | .77 | −.004               |
| Quality3      | 4308.09      | 2642 | 1.63          | .04   | .77 | −.001               |
| Quality4      | 4301.89      | 2642 | 1.63          | .04   | .77 | .000                |
| Quality5      | 4314.14      | 2642 | 1.63          | .04   | .77 | −.002               |
| Safety1       | 4398.45      | 2642 | 1.67          | .04   | .76 | −.014               |
| Safety2       | 4392.01      | 2642 | 1.66          | .04   | .76 | −.013               |
| Safety3       | 4375.08      | 2642 | 1.66          | .04   | .76 | −.011               |
| Safety4       | 4398.12      | 2642 | 1.67          | .04   | .76 | −.014               |
| Safety5       | 4359.77      | 2642 | 1.65          | .04   | .76 | −.008               |
| Stimulation1  | 4361.66      | 2642 | 1.65          | .04   | .76 | −.009               |
| Stimulation2  | 4402.37      | 2642 | 1.67          | .04   | .76 | −.014               |
| Stimulation3  | 4327.80      | 2642 | 1.64          | .04   | .77 | −.004               |
| Stimulation4  | 4383.14      | 2642 | 1.66          | .04   | .76 | −.012               |
| Stimulation5  | 4421.29      | 2642 | 1.67          | .04   | .76 | −.017               |
| Comfort1      | 4374.40      | 2642 | 1.66          | .04   | .76 | −.010               |
| Comfort2      | 4370.11      | 2642 | 1.65          | .04   | .76 | −.010               |
| Comfort3      | 4326.79      | 2642 | 1.64          | .04   | .77 | −.004               |
| Comfort4      | 4330.58      | 2642 | 1.64          | .04   | .77 | −.004               |

Note: \( \Delta \) was calculated in comparison to the invariant metric model. Non-equal items are bolded. The item numbers correspond to the numbers in the final version of the CMS (see Table 3.7)
Table 3.7
The Consumer Motivation Scale (CMS).

| Item # | What matters the most to you when you _? |
|--------|----------------------------------------|
| VfM1   | Reasonable price: the product should be reasonably priced |
| VfM2   | Not too expensive: the product should not be too expensive |
| VfM3   | Economy: the product should be economical |
| VfM4   | Value for money: I should get a lot for the price I pay |
| VfM5   | Not wasteful: the product should not be a waste of money |
| Quality1 | Quality: the product should be of consistent and high quality |
| Quality2 | First class: the product must be of the highest class |
| Quality3 | Well made: the product should be well-made or well-performed |
| Quality4 | Fulfills expectations: the product should fulfill even my highest requirements and expectations |
| Quality5 | Reliability: the product should be reliable (I should know what I get) |
| Safety1 | Security: the product should provide a prolonged and persistent feeling of security |
| Safety2 | Safe and secure: the product should feel safe and secure |
| Safety3 | Preparation: the product should make me well-prepared in case something unforeseen happens |
| Safety4 | Calm and safe: the product should make me feel calm and safe |
| Safety5 | Future needs: Needs that may arise in the future should be taken into consideration |
| Stimulation1 | Exciting: the product should be exciting |
| Stimulation2 | Stimulating: the product should be stimulating |
| Stimulation3 | Avoid boredom: It is important that the product is not too boring or routine |
| Stimulation4 | Unique: the product should be unique (or give many unique experiences) |
| Stimulation5 | Interesting: the product should be interesting |
| Comfort1 | Smoothness: the product should be smooth and comfortable |
| Comfort2 | Avoid inconvenience: the product should not be too inconvenient |
| Comfort3 | Avoid hassle: the product should not be too complicated or strenuous |
| Comfort4 | Pleasure: the product should be pleasant and agreeable |
| Ethics1 | Not morally wrong: the product should not be morally wrong |
| Ethics2 | Principle: the product should not violate my principles |
| Ethics3 | Obligations: the product should be compatible with my personal and moral obligations |
| Ethics4 | Ideals and opinions: the product should be compatible with my ideals and opinions |
| Ethics5 | Good conscience: the product should give me a good conscience |
| Social Ac.1 | Friends' approval: the product should be approved by my friends |
| Social Ac.2 | Popularity: the product should be popular in my circle of friends |
| Social Ac.3 | Friends' expectations: the product should not go against my friends' expectations of me |
| Social Ac.4 | Good impression: the product should make a good impression on people who are important to me |
| Social Ac.5 | Liked: the product should be liked by people who are important to me |

Note: The dimension labels and the item # should not be visible when used in a questionnaire, and the items should be presented in randomized order.
Social Ac. = Social Acceptance
3. Establishing a factor structure

3.1. Data collection (Sample 1)

Nine-hundred eighty-seven respondents were recruited from a general population research panel at the University of Gothenburg, Sweden. The CMS was presented with the question “When I _, it is important that what I choose…” (where the blank was replaced by one of the following:

| Information type | Upgrade package | Reference scale |
|------------------|-----------------|-----------------|
| VfM | I seek rebate and deals | Get 600 SEK discount per person [approx. €60] | PERVAL-price Sweeney, Soutar [29] |
| Quality | I seek information about hotel classifications and quality standards | Change to a 4-star hotel with excellent quality and great feeling for details, in everything from interior design to service | PERVAL-quality Sweeney, Soutar [29] |
| Safety | I seek information regarding insurances, safety, unrest | Get an extra travel insurance without deductible, with compensation for lost or damaged goods, free health care and cancellation protection | Security value Schwartz [25] |
| Stimulation | I seek information about activities, sights and experiences | Change to an ‘adventure hotel’ where bungee jumping, rafting, kite surfing, mountain climbing, diving and other exciting activities are arranged | Sensation-seeking Aluja et al., [1] |
| Comfort | I try to find out what’s available at the hotel or in close vicinity to the hotel | Upgrade flight seat to 1st class and change to an extra comfortable room. You will also get access to the hotel spa and relax facilities with Jacuzzi, sauna and various spa and massage treatments | Restful experience Bello, Etzel [8] |
| Ethics | I seek information about environmental standards, environmental impacts and carbon emission | Change to an environmentally certified hotel and fly with an airplane which emits about 30% less carbon dioxide per passenger | Universalism value Schwartz [25] |
| Social Ac. | I ask my friends and acquaintances about their opinions and recommendations | Change to a hotel which has 4.5/5 user rating and lies in an area which recently has been selected “One of the summers’ trendiest travel destination” by a panel of well-known fashion and travel magazines | CSII Bearden et al., [6] |

Note: Values that fail to surpass the thresholds are bolded.

VfM = Value for Money; Qua. = Quality; Saf. = Safety; Com. = Comfort; Eth. = Ethics; Soc. = Social Acceptance
Table 4.2.3
Bivariate correlation coefficients for the CMS dimensions and their reference scales.

| CMS dimension          | r   | p    | Reference scale   |
|------------------------|-----|------|-------------------|
| Value for Money        | .36 | .000 | PERVAL-price      |
| Quality                | .67 | .000 | PERVAL-quality    |
| Safety                 | .32 | .000 | Family security   |
| Stimulation            | .46 | .000 | Sensation-seeking |
| Comfort                | .67 | .000 | Restful experience|
| Ethics                 | .45 | .000 | Universalism      |
| Social Acceptance      | .53 | .000 | CSII              |

Note: Values that fail to surpass the thresholds are bolded.

Table 4.3.1
Cross-loadings as % of the main loading, by item number (1–5) and dimension.

|                  | VfM | Qua. | Saf. | Sti. | Com. | Eth. | Soc. |
|------------------|-----|------|------|------|------|------|------|
| Item #1          | 6.1%| 11.5%| 14.2%| 8.9% | 11.6%| 15.3%| 10.5%|
| Item #2          | 22.4%| 23.0%| 12.2%| 13.7%| 2.3% | 7.8% | 15.6%|
| Item #3          | 17.5%| 11.5%| 13.7%| 12.6%| 11.1%| 8.0% | 8.4% |
| Item #4          | 25.8%| 38.2%| 12.0%| 20.8%| 19.2%| 18.7%| 5.9% |
| Item #5          | 12.1%| **56.3%**| 21.2%| 6.9% | –    | 26.0%| 13.7%|

VfM = Value for Money; Qua. = Quality; Saf. = Safety; Com. = Comfort; Eth. = Ethics; Soc. = Social Acceptance

Table 4.3.2
Component correlations between the dimensions.

|       | VfM | Qua. | Saf. | Sti. | Com. | Eth. | Soc. |
|-------|-----|------|------|------|------|------|------|
| VfM   | –   | –    | –    |      |      |      |      |
| Qua   | .25 | –    | –    |      |      |      |      |
| Saf   | .41 | .35  | –    |      |      |      |      |
| Sti   | .06 | .32  | .28  | –    |      |      |      |
| Com   | .46 | .41  | .45  | .18  | –    |      |      |
| Eth   | .27 | .32  | .39  | .35  | .26  | –    |      |
| Soc   | .13 | .19  | .33  | .17  | .20  | .18  | –    |

VfM = Value for Money; Qua. = Quality; Saf. = Safety; Com. = Comfort; Eth. = Ethics; Soc. = Social Acceptance

food”, “shop for clothes”, “shop for something that is entertaining or amusing”, “spend money on travel”, or “look for housing”), followed by the list of items, represented as the continuation of that question (e.g. “… is not too expensive”). The participants were asked to rate the importance of the 63
### Table 4.3.3
Average variance extracted (AVE), maximum shared variance (MSV), and average shared squared variance (ASV).

|     | AVE | MSV | ASV |
|-----|-----|-----|-----|
| VfM | .55 | .29 | .12 |
| Qua | .45 | .20 | .06 |
| Saf | .53 | .29 | .11 |
| Sti | .52 | .21 | .11 |
| Com | .50 | .22 | .16 |
| Eth | .59 | .20 | .07 |
| Soc | .53 | .22 | .12 |

VfM = Value for Money; Qua. = Quality; Saf. = Safety; Com. = Comfort; Eth. = Ethics; Soc. = Social Acceptance

### Table 4.3.4
Target correlations vs. unrelated correlations.

|     | VfM | Qua. | Saf. | Sti. | Com. | Eth. | Soc. |
|-----|-----|-----|-----|-----|-----|-----|-----|
| Target r | .36 | .67 | .32 | .49 | .67 | .45 | .58 |
| Avg. unrelated r | .24 | .38 | .41 | .11 | .39 | .23 | .17 |
| Z | 1.48 | 4.61 | -1.17 | 4.78 | 4.48 | 2.81 | 5.51 |
| p | .139 | .000 | .242 | .000 | .000 | .005 | .000 |

VfM = Value for Money; Qua. = Quality; Saf. = Safety; Com. = Comfort; Eth. = Ethics; Soc. = Social Acceptance

### Table 4.4.1
Standardized regression coefficients for the dimensions in the CMS and the reference scales (Ref.) for information search behaviors (Info.) and upgrade preferences (Pref.). The hypothesized relations are identified in the bolded diagonal (CMS), and in the bolded column (reference scales).

|     | VfM | Qua. | Saf. | Sti. | Com. | Eth. | Soc. | Ref. |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Info. Deals | .24*** | .01 | .33*** | -.01 | .00 | -.01 | .03 | .17*** |
| Pref. Discount | .15* | -.11 | .25* | -.03 | -.04 | -.06 | .01 | .12 |
| Info. Classification | -.04 | .41*** | .06 | .04 | .19* | -.09 | .06 | .62*** |
| Pref. 4-star | -.12 | .34*** | .06 | -.01 | .23* | -.15* | -.01 | .31*** |
| Info. Safety | -.12 | .09 | .43*** | .14* | .12 | .06 | .11 | .01 |
| Pref. Travel insurance | .01 | .07 | .30*** | .05 | -.11 | .04 | .04 | .04 |
| Info. Activities | -.01 | -.06 | .22* | .30*** | -.09 | .13* | -.01 | .10 |
| Pref. Adventure | .10 | .15 | -.09 | .28*** | -.28*** | -.10 | .07 | .51*** |
| Info. Availability | -.06 | .16 | .20* | .08 | .25** | -.09 | .00 | .03 |
| Pref. Comfort | .03 | .21* | .04 | -.02 | .19* | -.20** | .02 | .13* |
| Info. Envr. impact | -.09 | -.07 | -.01 | .08 | -.08 | .54*** | -.02 | .41*** |
| Pref. Envr. certificate | -.07 | -.23* | .10 | .01 | -.11 | .58*** | -.13* | .54*** |
| Info. Friends | .06 | .18 | .01 | .14* | .02 | -.07 | .22*** | .14* |
| Pref. Popular | -.07 | .22* | .03 | .08 | .08 | -1.18** | .25*** | .36*** |

Note: For increased readability, hypothesized relations are in bold, and non-significant relations are colored gray.

VfM = Value for Money; Qua. = Quality; Saf. = Safety; Sti. = Stimulation; Com. = Convenience; Eth. = Ethics; Soc. = Social Acceptance; Envir. = Environmental

*p < .05.
**p < .01.
***p < .001.
items in their respective context, on a seven-point scale, ranging from 0 (not at all important) to 6 (extremely important). The sample was then randomly split into two halves, with exploratory analyses performed on the former (Sample 1 A), and confirmatory on the latter (Sample 1B).

### Table 4.4.2
Comparison of target correlations for the CMS versus the reference scales (Ref.).

| CMS       | Ref. | Z  |
|-----------|------|----|
| Deals     | .36  | .35| <1 |
| Discount  | .17  | .11| <1 |
| Classification | .59 | .59| <1 |
| 4-star    | .48  | .44| <1 |
| Safety    | .42  | .41| 3.79*** |
| Travel insurance | .30 | .35| >1 |
| Activities | .34  | .09| >2.96 |
| Adventure | .31  | .35| >2.57 |
| Availability | .47 | .29| 2.37 |
| Comfort   | .35  | .29| <1 |
| Envir. impact | .49 | .35| 1.92 |
| Envir. certificate | .51 | .51| <1 |
| Friends   | .28  | .16| 1.42 |
| Popular   | .31  | .42| -1.43 |

Envir = Environmental.

*, p < .05.
**, p < .01.
***, p < .001.

### Table 5.2.1
Observed and predicted choices per the binary logistic regression.

| Predicted | Green | Regular |
|-----------|-------|---------|
| Correct green | 92    | 35      |
| Correct regular | 31    | 98      |
| Correct total | 190   | 74.2%   |
| Incorrect total | 66    | 25.8%   |

### Table 5.2.2
Logistic regression coefficients and odds ratio for the dimensions of the CMS, as well as pseudo R² for the whole model.

| B            | Wald  | p     | Odds ratio |
|--------------|-------|-------|------------|
| Value for Money | -1.16 | 24.32 | .000       | -3.19      |
| Quality      | -.15  | .38   | .538       | -1.16      |
| Safety       | -.34  | 3.16  | .076       | -1.40      |
| Stimulation  | .61   | 9.29  | .002       | 1.84       |
| Comfort      | -.04  | 0.03  | .856       | -1.04      |
| Ethics       | 1.20  | 34.99 | .000       | 3.32       |
| Social Acceptance | -.27 | 3.60 | .058       | -1.31      |
| Constant     | .64   | .46   | .496       | 1.90       |
| -2 Log likelihood | 264.71|     |            |            |
| Cox & Snell R Square | .30   |     |            |            |
| Nagelkerke R Square | .40   |     |            |            |
3.2. Factor extraction

Principal component analysis (PCA) was conducted on Sample 1A (N = 496) to find the structure with the highest explained variance without signs of over-extraction. Over-extraction was defined as a structure with at least one factor made up of fewer than three main loading items [14], while a main-loading item was defined as an item with a factor loading of .5 or greater, and that does not have a cross-loading which amounts to at least .32 and > 50% of the main loading [30].

The conditions for PCA were met in that KMO is larger than .6 (.923) and Bartlett’s p is significant (p < .001; [18]). An oblique rotation was used since the dimensions are assumed to be naturally correlated.

Of the structures that meet the set criteria, the seven-factor structure is the structure with the highest explained variance (59.9%; Table 3.2.1). In comparison, the eight-factor structure has one factor that is made up of only two items, none of which load greater than .5.

3.3. Scale purification

The emergent structure was then purified by removing weak and cross-loaded items one by one, recalculating the communalities and factor loadings after each removal, with the following criteria being used for exclusion:

1. Insufficient communality (Table 3.3.1): Communality < .5 [14]; or:
2. Significant cross-loading (Table 3.3.2): Secondary loading that amounts to at least .32 and 50% of the main loading [14,30].

One additional item was removed from factor III: Comfort3 “gives relaxation”. The decision was based on content rather than communalities or cross-loadings. The other items in factor III are about stimulation and excitement, and so we opted to exclude this item to keep the factor relatively clean.

Cronbach’s alpha was calculated to ensure that the established dimensions are sufficiently reliable (i.e. > .7, or preferably > .8; [18]; Table 3.3.3).

3.4. Dimension labels

The seven emergent dimensions correspond to seven of the nine preliminary dimensions, and the labels were therefore applied accordingly. Factor I is entirely made up of items from the preliminary Safety dimension and the label was therefore retained. Likewise, factor II is made up of items from the Social Acceptance dimension, factor V of items from the Ethics dimension, and VI of items from the Value for Money dimension. For the remaining three factors, III, IV, and VII, one of the preliminary dimensions is clearly focal in terms of number of items as well as factor loadings, with a maximum of one or two items from another dimension. The preliminary labels were therefore retained for them as well. Only Function and Pleasure did not emerge as distinct factors.

3.5. Factor confirmation

Confirmatory factor analysis was performed on sample 1B (N=491; Table 3.5) to confirm the emergent factor structure. A null model, in which all variables were assumed to be uncorrelated, was compared to four specified models, with increasing levels of separation between the dimensions. In model 1, all items load on a general factor, in model 2, all items load on factors representing the master goals: gain (Value for Money, Quality and Safety items), hedonic (Stimulation and Comfort), and normative (Ethics and Social Acceptance), in models 3A, 3B, and 3C, the master goals were split into sub-goals one at a time: in 3A gain was split into the three sub-goals Value for Money, Quality, and Safety; in 3B hedonic was split into Stimulation and Comfort; and in 3C normative was split into Ethics and Social Acceptance. Finally, in model 4, all items load according to the PCA. A shorter version (model 4B) was
then tested, with the purpose of achieving higher model fit and parsimony. In this model, items per dimension was reduced to a maximum of five, based on factors loadings as well as content (in general, we wanted strong loadings while maintaining varied content), resulting in a 34-item model.

Model fit improved significantly for each model \( (p < .001) \), with model 4A and 4B both reaching satisfactory fit in terms of \( \chi^2/DF ( < 3) \) and RMSEA \( ( < .10) \), while model 4B approach satisfactory CFI \( (.89; > .9 \) is preferable, but these cut-offs are not clear-cut).

3.6. Invariance testing

The scale was tested for invariance on Sample 1B, first for factor loadings (metric invariance) and intercepts (scalar invariance), and then for factor means (structural invariance) and residuals (strict invariance). While the model should be invariant on the metric and scalar levels to allow for meaningful comparisons between contexts, it is assumed that the model is not invariant on the structural level, as the means are expected to vary from context to context, and we do not require our model to be invariant on the strict level, even though it would be preferable. As the name applies, strict invariance is simply not feasible for most models \[32\].

First, a baseline configural model was defined, in which the contexts were specified, but all parameters remained unconstrained across the contexts. Each subsequent model then builds on the previous model, but with added constraints for that level of measurement; factor loadings were constrained equal for the metric model, factor loadings and intercepts for the scalar model, factor loadings, intercepts, and means for the structural model, and finally, factor loadings, intercepts, means, and residuals for the strict model.

As a general criterion, a model was considered invariant if \( \Delta \text{CFI} \) is not below \( -.01 \) in comparison to the previously accepted model \[10\]. If invariance does not hold for a model (i.e. \( \Delta \text{CFI} \) is below \( -.01 \)), then the test is repeated for each dimension, and if invariance does not hold for a dimension, the test is repeated for each item in that dimension, thus identifying the source of the non-equality. For partial invariance to hold, a dimension should have at least two invariant items.

As the scalar model has a \( \Delta \text{CFI} \) below \( -.01 \), invariance of intercepts is tested for each dimension on the scalar level of measurement (Table 3.6.2.).

As \( \Delta \text{CFI} \) is below \( -.01 \) for Quality, Safety, Stimulation, and Comfort, scalar invariance is tested for each item in these dimensions (Table 3.6.3.).

All items are invariant for the Quality and Comfort dimensions, while Stimulation has at least two invariant items, thus meeting the criterion for partial invariance. Unfortunately, Safety only has one invariant item, and is therefore not sufficiently invariant on the scalar level. Since situational fluctuations in intercepts could influence the mean, situational differences in this dimension should therefore be interpreted carefully. However, two things should be noted: first, \( \Delta \text{CFI} \) is not extreme, ranging from \( -.011 \) to \( -.014 \), and second, contexts that are very different from each other increase the likelihood that a model will fail to be invariant. The contexts in the present study were purposefully chosen as they represent different areas of consumption, and should therefore be considered a harsh test of invariance. For instance, when the housing context is dropped from the model – leaving food, clothes, entertainment, and travel – all five Safety items achieve satisfactory invariance on the scalar level, with \( \Delta \text{CFI} \) ranging from \( -.001 \) to \( -.005 \). Thus, situational differences in the Safety dimension should be interpreted carefully across contexts that are very different from each other (e.g. food vs. housing), but it is unlikely that this would be problematic in most scenarios.

For the final test, the partially invariant scalar model, in which the constraints for the non-equal intercepts were relaxed, was compared to the constrained structural (factor means) as well as strict (residuals) models (Table 3.6.4.).

As expected, \( \Delta \text{CFI} \) is below \( -.01 \) for the structural model, which suggests that the means of the dimensions do indeed vary significantly across contexts. These results were replicated in a MANOVA: all dimensions vary significantly (F range from 6.3 to 39.64, all significant at \( p < .001 \), and \( \eta^2 \) range from .05 to .26), except Ethics (F [4, 441] = 1.32, \( p = .261, \eta^2 = .012 \)). It is not within the scope of the present article to further test variations across contexts, please see \[5\], for a series of experiments testing the situational activation of the sub-goals across functional, hedonic, and social situations.

Invariance of residuals (strict invariance) is not supported across these contexts.
3.7. Finalized version of the Consumer Motivation Scale (CMS)

In the finalized 34-item version of the scale, the items are introduced by the question “What matters the most to you when you _?” (where the blank is replaced by a suitable reference to the product under study, e.g. “shop for clothes”), followed by the list of items, representing statements that answer the question. Note that the item wordings were modified slightly from previous versions, in order to improve clarity and allow it to be better tied to the context at hand. For instance, “is reasonably priced” was changed to “Reasonable price: the product should be reasonably priced” (where “the product” can be changed freely to suit the context, although this is optional). The participants then rate to what extent each statement is important to them in the given context, for instance rated on a six-point scale, from 0 (not at all important) to 5 (extremely important).

4. Convergent, discriminant, and construct validity

4.1. Data collection (Sample 2)

Two-hundred fifty-five respondents were recruited from a pool of voluntary research participants at the University of Gothenburg, Sweden. Participants were asked to what extent they search for different kinds of information before they decide where to go for vacation (rated on a six-point scale ranging between 0 [not at all] to 5 [to a very high degree]), and which of seven hypothetical travel package upgrades they prefer (rated on a five-point scale ranging from 1 [least preferred] to 5 [most preferred]). One information search behavior and one hypothetical travel package was formulated for each dimension of the CMS.

The final version of the CMS was used in this study (see Table 3.7), introduced with the question “What matters the most to you when you choose among vacation trips?” (note that “the product” part of the item wordings in Table 3.7 was changed to “the vacation trip” to suit the context), rated on a six-point scale, from 0 (not at all important) to 5 (extremely important).

The questionnaire also contained a selection of similar scales (from here on referred to as “reference scales”); one reference scale was selected for each dimension. For Value for Money and Quality, items from the PERVAL dimensions price and quality [29] were included and rated on the same scale as the CMS. For Safety, Schwartz’s [25] security value type was selected, rated on a six-point scale ranging from 0 (not at all important) to 5 (extremely important). The sensation-seeking scale (SSS; [1]) was chosen as reference to Stimulation, rated on a six-point scale ranging from 0 (does not apply at all) to 5 (applies precisely). The restful experience dimension reported by Bello and Etzel [8] was used for Comfort, and was rated on the same scale as the CMS.

The universalism value type [25] was chosen for Ethics, rated on a six-point scale ranging from 0 (not at all important) to 5 (extremely important), and for Social Acceptance, consumer susceptibility to interpersonal influences (CSII; [6]) was chosen, rated on a six-point scale ranging from 0 (does not apply at all) to 5 (applies precisely).

4.2. Convergent validity

Convergent validity was tested on Sample 1 A by recalculating the PCA on the confirmed 34-item scale. The factor loadings should be at least > .5 (but preferably > .7; [18]), a criterion met by all items except one. The internal consistency of the dimensions is satisfactory, with Cronbach’s alpha ranging from .81 to .88 (> .7 is commonly regarded as acceptable).

Several measures were calculated on Sample 1B to test convergent validity (Table 4.2.2). According to Hair et al. [18], convergent validity is supported if average variance extracted (AVE) is greater than .5 and if composite reliability (CR) in turn is greater than AVE. These criteria were met for all dimensions except Quality (AVE=.45). Low AVE may indicate low factor loadings, however, since four of the five factor loadings are significant on Sample 1A as well as 1B, this is not considered problematic for the dimension as a whole.
Bivariate correlations were calculated for each dimension of the CMS and its reference scale on Sample 2 \((N = 255)\). All dimensions correlate positively and significantly with their respective reference scale. Note that a single item from the security value type, namely “Family security”, was chosen as reference scale for Safety due to insufficient Cronbach’s alpha when the items were combined (.60). Note that as there are a few shared items between the CMS and the reference scales, whenever the CMS dimension and the given reference scale is correlated, the overlapping items were excluded from the CMS to avoid inflated correlations.

4.3. **Discriminant validity**

To test discriminant validity, the factor loadings and component correlations from the recalculated PCA were examined once more, this time to check for remaining cross-loadings and excessive overlap. There is only one remaining cross-loading, and correlations between components are not excessive \((< .7)\).

Several measures were calculated on Sample 1B to test discriminant validity. According to Hair et al. [18], discriminant validity is supported if the average variance extracted (AVE) is greater than the maximum shared squared variance (MSV) as well as the average shared squared variance (ASV), criteria met by all dimensions.

To test discriminant validity on Sample 2, the “target” bivariate correlation coefficients in Table 4.2.3 were compared to the average correlation between a given dimension of the CMS and the six “unrelated” scales (i.e. the reference scales of the other dimensions). Fisher’s r-to-Z transformation was calculated for significance testing.

The target correlations were significantly stronger than the average unrelated correlations for all dimensions except Value for Money and Safety. For Value for Money, the non-significant Z likely depends on the relatively weak correlation between this dimension and its reference scale (.36). Since Value for Money performs well on the previous tests of convergent as well as discriminant validity, this is not seen as problematic. For Safety, the negative Z value likely depends on the relatively strong correlation with the unrelated scales (.41). Excessive correlations between the dimensions were not observed in previous contexts, and the overlap is therefore concluded to be contextual. A high correlation between, for instance, Safety, Comfort, and Quality, may in fact be expected in a travel context, as few vacation goers would consider a vacation package that is unsafe and uncomfortable to be of high quality.

4.4. **Construct validity**

Construct validity was tested on Sample 2 by performing a series of regression analyses with the dimensions of the CMS as independent variables, and the 14 target constructs as dependent variables. For comparison, a parallel model was defined in which the CMS was replaced by the reference scales. All target regression coefficients for the CMS were statistically significant at \(p < .05\). The reference model performed worse in this regard, as five coefficients out of 14 were non-significant.

Also, bivariate correlations were calculated for each dimension of the CMS/reference scale on the one hand, and the seven target constructs on the other. The coefficients of the CMS were then compared to the coefficients of the reference scales, using Fisher’s r-to-Z transformation. The coefficients of the CMS were significantly stronger in three cases, and weaker in one case.

Note that due to limitations in size and format of the questionnaire, the reference scales could not always be included in full or exactly as intended by their authors (the stimulation-seeking scale, for instance, consists of 40 items alone). The comparison between the CMS and the bundle of reference scales should therefore not be considered a test of the reference scales themselves, but rather as a test of the principle of bundling different scales to represent a multi-dimensional measure. The difficulty in accomplishing this is in itself an advantage of the CMS.
5. Criterion-related validity

5.1. Data collection (Sample 3)

Two-hundred fifty-six participants were recruited in a classroom environment at the University of Gothenburg, Sweden. The participants were asked to make a hypothetical choice between a regular chocolate at the cost of 20 SEK (approx. €20), and a carbon-compensated “green” chocolate bar at the cost of 50 SEK (approx. €50).

5.2. Criterion-related validity

To test criterion-related validity, binary logistic regression was performed with purchase choice (regular vs. green chocolate) as the dependent variable and the seven dimensions of CMS as independent variables. The model correctly explained 74.2% of the choices, and Cox & Snell R2 as well as Nagelkerke R2 were satisfactory (.30 and .40 respectively), suggesting that the dimensions explain choice well. Three of the dimensions were significantly related to the choice of green chocolate. Ethics and Stimulation increases the likelihood of choosing green over regular; \( \beta_{\text{Ethics}} = 1.20, p < .001; \beta_{\text{Stimulation}} = .61, p = .002 \); whereas Value for Money decreases the likelihood; \( \beta_{\text{VfM}} = -1.16, p < .001 \).

For an increase of 1 unit in the Value for Money dimension, the likelihood of choosing green chocolate decreased by a factor of 3.19, while each increase of 1 in the Ethics dimension increased the likelihood by a factor of 3.32.

Appendix A. Supplementary material

Supplementary data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.dib.2017.04.054.

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