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Green consumer orientation in cosmetic sector: construct definition, measurement scale development, and validation

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ABSTRACT

Green consumption behavior remains ambiguous due to researchers' difficulties in exploring its predictors. This study conceptualizes Green Consumer Orientation (GCO), a new construct that develops a standardized scale gathering and measuring predictors of green consumption behavior. In-depth focus groups, content analysis, and consumer surveys were conducted among Algerians to develop a concise 21-item GCO scale that fits into three main dimensions: Identification, Equilibrium, and Interaction. The GCO scale is an improvement over existing scales thanks to its profiling role of green behavior and multifaceted predictors. Following Churchill's paradigm, this new construct is supposed to be a driving variable explaining green attitudes and behavioral intentions. It can help decision-makers gain insights into green consumption behaviors that need improvement for a better sustainable lifestyle. It can also help businesses identify opportunities in green personal care products markets.

IMAPCT STATEMENT

Today, consumers are aware of their harmful consumption consequences. However, not all of them are acting upon it. To overcome this gap, Green Consumer Orientation (GCO) is a new concept developed in this study and established as a new tool to measure the propensity of consumers to consume green. To develop and validate this tool, qualitative and quantitative surveys were performed among Algerian cosmetics consumers and concluded with a 21-items GCO measure. The findings assert that the investigated population is strongly guided by health considerations, perceptual relationships, and environmental awareness; there are not clear-cut with green labeling and Fairtrade issues; and relate green cosmetics to an ostentatious consumption behavior. The GCO measure profiles how consumers are oriented towards green products. Thus, it will assist decision-makers in revealing the levers that should be used to encourage sustainable way of life.

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1. Introduction

Nowadays, it is crucial to pay full attention to issues related to green and sustainable consumption, especially with the damaged environment we live in and its effect on people's health.

Consumer green behavior is a scientific field that has grown in recent decades. Nevertheless, individuals' behavior has retained its complexity and ambiguity, and studies are still conducted to explain it.

The green consumption concept first appeared in the 1970s in the marketing literature through the research of Fisk (1974) on the theory of responsible consumption and of Kardash (1974) on the notion of 'ecological consumer concern'. In earlier times, green consumption behavior was limited to recycling and energy savings (Kilbourne & Beckmann, 1998). In later green consumer behavior studies, researchers

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such as Van Dam and Apeldoorn (1996) were able to detail this behavior and understand the relationship between attitude, intention, and behavior.

Nonetheless, most studies fail to agree on the driving factors of green behavior. They examine the impact of a set of variables on green attitude and green purchasing intention. Some provided new measurement scales focusing on sustainable, environmentally friendly, socially or ethically minded behavior. However only some tried to reuse and update the existing specific scales (these studies are detailed in the literature background). Scrolling the existing literature, there is no available study, to the best of our knowledge, that attempted to provide an exhaustive variable that assembles existing factors into a homogeneous and holistic construct. More explicitly, existing literature reports results regarding the influence of several factors on green attitudes and intentions. Put together, green consumer behavior might be guided differently; thus, the impact of each factor, when gathered, could be relatively considered by the consumer. This confronts green behavior research with an important issue about: What actually explains green attitudes and intentions? The present paper aims to provide the Green Consumer Orientation (GCO) measure that tackles the abovementioned issues.

The research especially analyses the GSO in the cosmetic sector by Algerian consumers. Few studies are interested in green cosmetics and self-care products (Wilson et al., 2018). In this sense, some consumer experts argue that as consumers' interest in what they ingest in their bodies increases, so does their interest in what they apply to their bodies (Cervellon et al., 2011).

The Churchill's (1979) paradigm steps were adopted to develop, build, and validate the green consumer orientation (GCO) scale. This implied a mixed method, including a qualitative study to explore green consumption behavior predictors by focus groups; and a quantitative study to purify and validate the scale by Exploratory and Confirmatory Factor Analysis.

The purpose of developing the GCO measure is to contribute to the green behavior literature by highlighting the importance of updating general theories, such as the Theory of Reasoned Action and the Theory of Planned Behavior; and building new predictors' construct that explains/influences green attitudes and behavioral intentions. Undoubtedly, this will contribute to the managerial side.

In the following sections, this paper first introduces the theoretical background of green consumer behavior in which Green Consumer Orientation (GCO) is defined and explains the methodology in section 3. The results are presented in section 4 and discussed in section 5. where the contributions and limitations of the GCO scale are highlighted. Finally, theoretical and managerial implications are highlighted in section 6, followed by the limitations and suggestions for future research.

2. Literature review

The concept of green consumption emerged in the 1970s from several theoretical underpinnings, going from ethics to ecology and then to the concept of socially responsible consumption (Binninger & Robert, 2008). This early concept remains highly debatable. According to Peattie (2010), 'GREEN' implies conserving environmental resources, while consumption generally implies their disposal. In simpler words, and to stop any confusion, 'GREEN' is considered, in this sense, as a meaningful abbreviation for sustainability-oriented consumption. This kind of consumption remains as relative as the green product (Miniero et al., 2014; Nair & Little, 2016).

A green product can be defined as a product that is distinguished by natural constituents whose production, use, and disposal are not harmful to humans or the environment. However, despite their environmental and health benefits, not all consumers lend themselves to a 'green-oriented consumption behavior'; and have the same involvement within a green behavior (Schiffman & Wisenblit, 2015, pp. 61–62; Head et al. 2017).

2.1. Green consumption behavior components

Most research on green behavior showed that a potential green purchasing decision can be predicted by green purchase intention (Davis-Bundrage & Soyoung, 2012), which is, itself, still predicted by green attitudes (Akbar et al., 2014). Thanks to these researchers, green behavior is considered a causal

relationship between the variables that constitute it, mainly green (behavioral) intentions and green attitudes. In a general marketing context, Solomon et al. (2014) and, Fishbein and Ajzen (1980), among many other researchers, confirmed that attitude has always influenced purchasing decisions.

Many studies have approached consumers to determine factors that drive them to act when dealing with green products. Some studies tried to explore factors predicting and influencing green behavior (attitudes and intentions). Clark et al. (2003) asserted that attitude is influenced by social, cultural, environmental, economic, political, and other factors that drive the green purchase decision. Van Dam and Apeldoorn (1996) found that motivations, psychology, and institutional factors play an important role in driving green consumption behavior. Furthermore, various studies have individually examined the impact of different predictors on green consumption behavior. Examples included social value by Gupta and Ogden (2009); social status by Griskevicius et al. (2010); and environmental knowledge by Fryxell and Lo (2003). All these studies indicated that the cited factors have a significant and positive influence on both attitude and purchase intention towards green products.

It turns out that exploring the green consumption behavior predictors could narrow the green behavioral complexity. Previous studies have been caught up in the whirlwind of academic trends by attempting to explore the impact of economic, social, and even environmental factors on green attitudes and intentions. However, according to those previous studies, green behavior is framed by the Theory of Reasoned Action and the Theory of Planned Behavior. It means that consumers buy products that provide them with added value based on a particular conviction. Therefore, examining the impact of a singular predictor would not explain the changes and differences in green attitudes and intentions as long as the green behavior remains planned and reasoned. It becomes consequently a matter of importance to explore new constructs that explain these changes. Hence, the purpose of this research work is to develop the GCO construct to explain the green attitudes and behavioral intentions of consumers towards a green product by exploring their predictors.

2.2. Green Consumer Orientation framework

Recent studies are increasingly focused on the development of new constructs - and thus new measurement scales - that will be able to explain sustainable consumer behavior. Reviewing the existing literature over the past three decades, only six relevant studies, spanning from 2014 to 2021, have attempted to provide new measurement scales explaining the antecedents of green behavior (see Table 1). Most of these studies, close to this research work, focus on environmental, ethical, or socially responsible behaviors (Gupta & Agrawal, 2018; Johnson & Chattaraman, 2019; Sudbury-Riley & Kohlbacher, 2016). These new constructs powerfully explain consumers' environmental attitudes and behavioral intentions. Among these studies, Haws et al. (2014) developed a new variable named 'GREEN' that guides consumption behavior whose interest revolves around valuing the environment through green values. The scale of this

Table 1. Green consumption behavior measurement scales.

Authors (y)	Scale	Focus
Sudbury-Riley and Kohlbacher (2016)	Ethiquely Minded Consumer Behavior	Incorporates items that address environmental awareness in the choice of environmentally friendly products, and is designed to assess (a) the purchasing decision and (b) conscious purchasing behavior based on ethical and social values
Quoquab et al. (2019)	Sustainable Consumption Behaviour	Developed on the three dimensions quality of life, care for the environmental well-being and care for the future generations. It is focused on pro-environmental actions such as recycling, nonwaste, reuse, so it is more focused on the environment on the one hand; and it is tested on the Sustainable Consumption Purchase on the other hand.
Johnson and Chattaraman (2019)	Socially Responsible Consumption	Based on recycling and nonwaste actions while referring to environmental issues.
Gupta and Agrawal (2018)	Environmentally Responsible Consumption	Is a wider measure of sustainable consumption that includes a variety of factors including nonwaste, recycling, reuse and green purchasing.
Hosta and Zabkar (2021)	Willingness to behave in environmentally/socially responsible way (WILLINGNESS)	Explores the antecedents of responsible consumer behavior. it states that responsible consumption behavior (attitude, intention, and action) is preceded by a 'willingness to behave responsibly'
Haws et al. (2014)	GREEN scale	Created to explore the green consumption values that guide green consumer behavior. it was tested on attitudes and intentions.

variable was later tested in the research of Bailey et al. (2018) paired with other measurement scales to explain consumer responses to corporate green communication actions.

The notion of 'green value' seems closely linked to the concept of green orientation developed in this research. It was defined as the tendency to express the value of environmental protection through purchase and consumption behaviors (Haws et al., 2014, p. 337). Although it only focuses on the environmental side, the green value could not express the same definition as GCO, which is founded on various green behavior catalysts. Another very interesting construct, developed by Hosta and Zabkar (2021), the environmentally/socially consumer behavior, expresses the willingness to behave in an environmentally/socially responsible way. This scale, called WILLINGNESS, was developed to explain responsible behavior. This construct expresses an intention and, according to these authors, is influenced by several individual, environmental, social, and ethical factors. The gap between this latter vision and the GCO construct is significant.

Nevertheless, new studies have attempted to explore the predictors of green consumption behavior as intended in this work. Kim et al. (2012) developed a measure called Green Consumption Behavior in which several interesting factors were highlighted: social factors such as reference groups (family, friends, colleagues), search and availability of information about green products, accessibility in time, availability of green products in the market, ecolabelling perception and trust, and identification traits of the green product. This measure combines several different determinants and appears to be a comprehensive measure. However, it does not consider the health factor, especially since this is one of the main features of a green product. Also, the wording used in items by the researchers is a mix of facts, beliefs, and actual purchase behavior, which suggest that it does not measure the same state (of mind) and, therefore, not quite the green consumption behavior predictors.

Abdulrazak and Quoquab (2018) explored, through a qualitative study, consumers' motives for sustainable consumption and found that consumers are motivated to consume green/sustainably under four existential principles: the responsibility principle, which represents the consumer's perceived role or obligation to do good for his or her community and the environment; the contribution principle where the consumer evaluates the social and environmental contribution of his or her acts; the contentment principle which brings together feelings of pleasure, satisfaction, self-fulfillment, and, finally, the consumer's atonement principle related to his or her sense of regret for past mistakes. The same study revealed the importance of well-being as an endpoint of sustainable consumption behavior. Abdulrazak and Quoquab (2018) study is an interesting contribution as the researchers managed to unveil important points of motivations for sustainable consumption among consumers. Nevertheless, the study was executed with consumers from the Southeast Asian region who are characterized by a particular culture based on community behaviors. Hence, the results pointed in the same direction, and this present study aims to develop a construct whose measurement would provide a more general contribution.

The systematic review study of Elhoushy and Lanzini (2021) analyzes the predictors of sustainable consumer behavior by quantifying and ranking them according to the number of significant impacts on this behavior. Several factors stood out in addition to the usual factors examined in the Theory of Planned Behavior. This study reported that income, trust, and religiosity significantly impacted sustainable consumer behavior in most of the reviewed studies. Regretfully, Elhoushy and Lanzini (2021) study joined the previously discussed studies that considered sustainable consumption with all its underpinnings, namely ecological, ethically and socially responsible, environmental, and green behavior; it was not focusing on green consumption behavior.

The research of Kim et al. (2012), and Abdulrazak and Quoquab (2018), as well as Elhoushy and Lanzini (2021) have brought new elements to the factors classically adopted to explain green consumption patterns such as accessibility (information, product, time) which, to our knowledge, had not yet been examined. Additionally, other important elements, such as product traits or product specific values and personal traits or values, have proven their role in influencing consumer green purchasing (Bhardwaj et al., 2023). Finally, green (product/labeling) trust or confidence is a considerable element noted by several researchers as having a positive and constructive impact on behavior change decisions regarding organic food among both health-aware and environmentally-concerned consumers (Lazaroiu et al., 2019).

This present study aims to build a measure that identifies the consumer propensity to engage in green consumption by exploring all the correlated catalytic aspects (factors) well before taking a position (attitude) or acting (intention and buying). Based on this literature, the Green Consumer Orientation (GCO) is defined as a directional state of mind that includes all factors determining the interest and the propensity to behave positively or negatively toward a specific green product. The GCO introduced and measured in this research aims to predict green consumption behavior (attitude and behavioral intentions).

3. Methodology

In the development and validation of new constructs, the most commonly used method is the paradigm implemented by Churchill (1979), thanks to its accuracy and relevance (Bohlen et al., 1993; Chan, 2001; Kautish, 2018).

The Churchill paradigm is based on a two-mixed-method research approach, joining qualitative and quantitative studies. In this research work, the steps of this approach were adapted to achieve a concise measure. There are minor adaptations that included either the integration of steps considered important for the study's relevance. The Churchill paradigm's steps were arranged into three main phases: 1) creating a set of items, 2) developing the GCO measurement scale, and 3) finalizing the GCO measurement scale. Figure 1 explicitly shows the conceptual model, including these phases and steps.

3.1. Creating a set of items

3.1.1. Specify the domain of the GCO construct

This step determines the field in which this research is positioned. To this end, the literature on consumption and green consumption behavior was examined to identify all their predicting factors. This procedure allowed to emphasize two gaps that have not yet been discussed according to our knowledge, namely, the influence of many factors as a holistic variable on green attitude and the role and correlation of these factors. If their influence on green consumption behavior has been examined

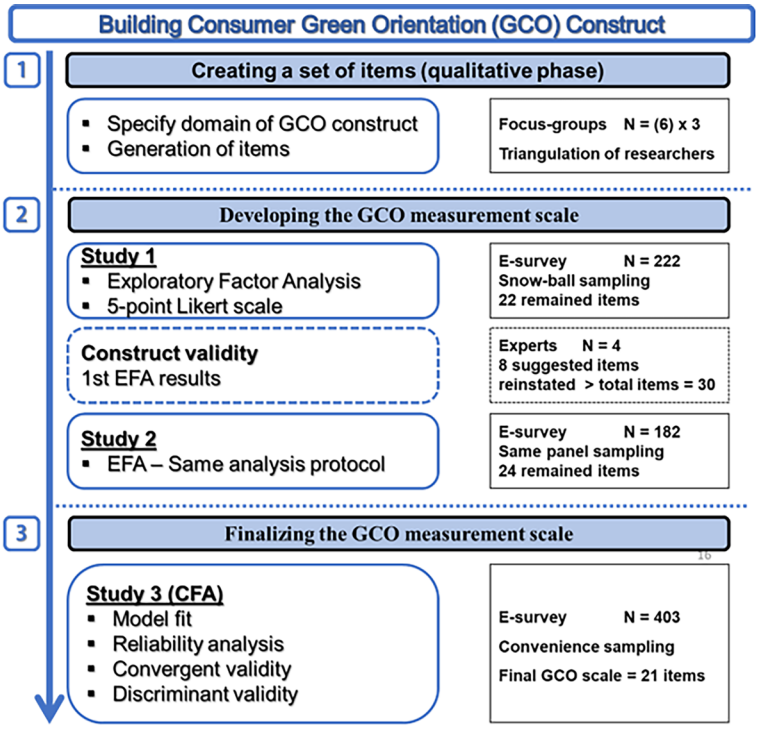

Figure 1. the study conceptual framework.

(Anderson & Cunningham, 1972; Cho, 2012; Comwell & Schwepker, 1995; Diamantopoulos et al., 2003; Griskevicius et al., 2010; Gupta & Ogden, 2009; Ismail & Ak Panni 2008; Kinnear et al., 1974; Lee, 2008; Mostafa, 2009; Wilson, 1975), no study as known, got involved in exploring a measure that gathers all factors helping to determine and profile consumers green-oriented behavior. Accordingly, all pertinent literature was reviewed and a definition of GCO was developed in the conceptual framework.

It is also to be pointed out that most studies have focused on green behavior issues related to food products, green energy, or green practices such as recycling (Costa Pinto et al., 2016; De Koning et al., 2015; Jauhari & Manaktola, 2007; Lazaroiu et al., 2019). Few studies are interested in green cosmetics and self-care products (Wilson et al., 2018). Cervellon et al. (2011) underline that as consumers' interest in what they ingest in their bodies increases, so does their interest in what they apply to their bodies. Moreover, according to Domzal and Kernan (1993), in their corporal theory, the human body is the most visible expressive image of its 'self', so body maintenance becomes a means of social presentation in interpersonal relationships. According to the foregoing, it was agreed in this research to word the items regarding green cosmetics to decrease the bias of the physiological need related to food products.

3.1.2. Generation of items

To determine the dimensionality of the GCO construct, data were collected from a series of focus group interviews conducted among Algerian people in French. Participants of the three groups have postgraduate study levels, composed of 12 men and 8 women, aged 24 to 36 years, including students, academicians, and practitioners in various fields such as architecture, economics, management, art and communication, and medicine (see Table 2).

Although the focus groups were conducted within a time interval, the semi-structured questions of the interview guide remained the same, as well as the method of conducting the group interviews to maintain the same protocol and not bias the results. Ten questions were formulated to debate the consumption of green products in general, then specifically on green personal care products, ranged into three main parts as follows:

1. All about green products (shared experiences).
2. Green consumption and traditional one.
3. How about green cosmetics?

For cultural reasons, the term 'cosmetics' was more appropriate than 'personal care products' and, therefore, was adopted during interviews and in the measurement scale. The practice in interviews was to capture factors that draw the 'propensity' of consumers to consume green and interact in-depth on these issues. Data were audio recorded for the two last focus groups and note-taking for the first, respecting the participants' choice[1]. Each group interview took around two hours.

Table 2. Demographic characteristics of focus groups participants.

	Participants	Gender	Age	Field	Occupation
Focus Group n°1	P1	Female	25	Business	Master student
	P2	Female	23	Management	Master student
	P3	Female	25	Business	Master student
	P4	Female	22	Business	Master student
	P5	Female	23	Management	Master student
	P6	Female	28	Econometrics	Master student
	P7	Male	24	Medical doctor	Student
	P8	Male	27	Medical doctor	Student
Focus Group n°2	P9	Male	23	Medical doctor	Student
	P10	Male	23	Art and advertising	Master student
	P11	Male	22	Psychology	Master student
	P12	Male	25	software engineering	Master student
	P13	Male	34	Architecture	Lecturer
	P14	Female	29	Architecture	Ph.D student
Focus Group n°3	P15	Female	36	Geology	Logistics employee
	P16	Male	24	Engineering	Ph.D student
	P17	Male	32	Engineering	Private sector
	P18	Male	30	Architecture	Lecturer

Initial composition of the GCO construct generated from focus groups.

Interviews were transcribed and then analyzed with a thematic method, namely manually open coding, using triangulation of researchers to generate more item ideas. More explicitly, the main technique used for the GCO measure was to capture key speech and place it under a corresponding basic theme level. After, basic themes were gathered into subdimensions, which were grouped into the three main dimensions of the construct. The gathering was carried out based on a logical connection between themes. Thereafter, 64 items were generated depending on data, and only 49 items remained in the initial measure after an inter-author's content validity.

3.2. Developing the GCO measurement scale

Two exploratory studies were conducted among Algerian respondents overall in the country to ensure a concise scale. To develop the GCO scale with a relevant representativity, content validity was established between the two exploratory studies.

3.2.1. Study 1

A 49-items questionnaire was built on Google Forms. Questions were formulated in French and Arabic each and were suggested with a five-point Likert scale format ranging from 'completely agree' to 'completely do not agree'.

The first data collection was done online on social networks through a distribution path based on the snowball method. It consists of creating a study sample by sending the questionnaire to a group of contacts who, in turn, send it to their groups of contacts. This chosen route is intended to maintain the same distribution channel for the second exploratory study and to reach approximately the same panel. 231 contributions were received in this first study, but only 222 were retained. Nine contributions were discarded for repetition due to a usual technical defect.

The data were encoded in SPSS 25 software to proceed to an Exploratory Factor Analysis (EFA). Two steps are required in the purification of the measurement scale: the first one is to test the readiness of items for the factor analysis. This procedure involves 1) the value of the determinant is different from zero; 2) the KMO index is greater than 0.50; 3) the level of significance (p) is less than 0.05; and 4) the total explained variance of the cumulative factors (*Eigen* value) is greater than 60%. These scores are obtained by running a factor analysis without rotation; the second step examined whether each item was ready for a VARIMAX rotated factor analysis, considering 1) Measure of sampling adequacy (MSA <0.85), 2) commonality degree where the extraction value must be greater than 0.50, and 3) the number of insignificant correlations (less than 0.2) should not reach or exceed half the total number of correlations with each item. Thus, the item is excluded if all readiness conditions are not met (Öberseder et al., 2014). After examining data readiness, a purification process with Varimax rotated factor analysis was performed. Items were removed when either the communality score was less than 0.50 or the difference score between the two highest loading scores related to the same item was less than 0.30. This process is repeated until no removal result is obtained. In this case, EFA was conducted on each major dimension of the GCO to preserve the authors' thematic framework (George & Mallery, 2019, pp. 258-270; Hair et al., 2010).

3.2.2. Construct validity

Before proceeding with the second data collection and the purification, a construct (content) validation of the GCO remained scale was carried out with four marketing experts (academicians and practitioners) to review the results of the first purification (Yaghmaei, 2003). The item was reinstated when at least two experts suggested it, therefore, the reinstatement of 8 items was realized. Then, a total of 30 items for the GCO scale were ready for a second collection and purification. The experts recommended rewording some items because of ambiguity and/or syntax reasons.

3.2.3. Study 2

After redesigning the questionnaire for the second exploratory study, the same distribution process was adopted to reach approximately the same consumers panel. A sample of 182 respondents was collected.

The same processing method of purification scale was used. Of the 30 analyzed items, 6 were removed. Thus, the final GCO measurement scale includes 24 items in total.

After this step, a reliability test was conducted using Cronbach's alpha before the confirmatory study. Each factor's scale is considered strong if the Cronbach Alpha score exceeds 0,6. Finalizing the GCO measurement scale

3.2.4. Study 3

A Confirmatory Factor Analysis (CFA) was performed to confirm conclusively the new measure. Thus, new data were collected (N = 403). Unlike the last collection process, the link of the questionnaire survey was launched on social network groups targeting a mass Algerian population overall in the country.

Assessing CFA to validate the GCO scale involves using the Structural Equation Modeling (SEM) technique. SEM is a set of interrelated statistical methods used to describe structural relationships between manifest variables and latent variables (Hosta & Zabkar, 2021; Ullman & Bentler, 2012). To perform CFA, Model Fit and both convergent and discriminant validity are required, therefore, data were transposed on Amos 23 software. Assessing nomological validity within path analysis to confirm GCO position in green consumption patterns is postponed for future research. Conditions and scores indicators required for model fit test (Bentler, 1990; Bentler & Bonett, 1980; Browne & Cudeck, 1992; Byrne, 2016; George & Mallery, 2010; Hair et al., 2010; Hooper et al. 2008; Hu & Bentler, 1999; Tanaka & Huba, 1985; Wheaton et al., 1977) and both convergent (Fornell & Larcker, 1981; Lam, 2012) and discriminant validity (Gaskin et al., 2016; Henseler et al., 2015; Hu & Bentler, 1999) were drawn from baseline references and newest ones.

4. Results

The presentation of the results follows the methodology phases as presented above. The final Green Consumer Orientation measurement scale is detailed in Table A2.

4.1. The thematic content analysis

The double coding of the focus group results revealed that the GCO construct is a multidimensional variable that may be grouped into three main dimensions. The first dimension, 'Identification' (ID), emerged from extensive discussions about how to identify a green product and how consumers perceive it. *It expresses the idea and the view that the consumer schematizes about the green product. How can he identify the green product? How should be a green product, according to him?* The second dimension, 'Equilibrium' (EQL), expresses what makes the consumers feel cozy about consuming green products. *It Includes consumers' impressions about the reported-behavior consumption situations of green products, which aim at a balanced status*. The third and last dimension, 'Interaction' (INTRCT), positions the consumer's daily exchanges regarding being green. *It expresses consumers' know-how-to-be regarding green products when dealing with external facts*. Figure 2 shows the dimensions, subdimensions, and basic themes of the GCO construct resulting from the content analysis.

To build the GCO measure, a relevant pool of items was generated from a triangulation of researchers conducted by authors. For each basic theme, a set of items was formulated based on verbatims in general affirmation sentences and not reported behavior -as the aim of GCO is to predict why the green consumption behavior is performed. Only relevant items were retained and used, avoiding redundancy or combining possibilities. As previously mentioned, the measure consisted of 49 items. Thus, 'Identification' included 19 items, 'Equilibrium', included 16 items, and 'Interaction' included 14 items (see Figure 2).

Since interviews were conducted in French, items were written in French with a translation in Arabic. Also, when phrasing the items, participants' expressions were privileged. Thus, in the GCO measure, some items are negatively worded, such as EQL13 ('My income does not allow me to start consuming green

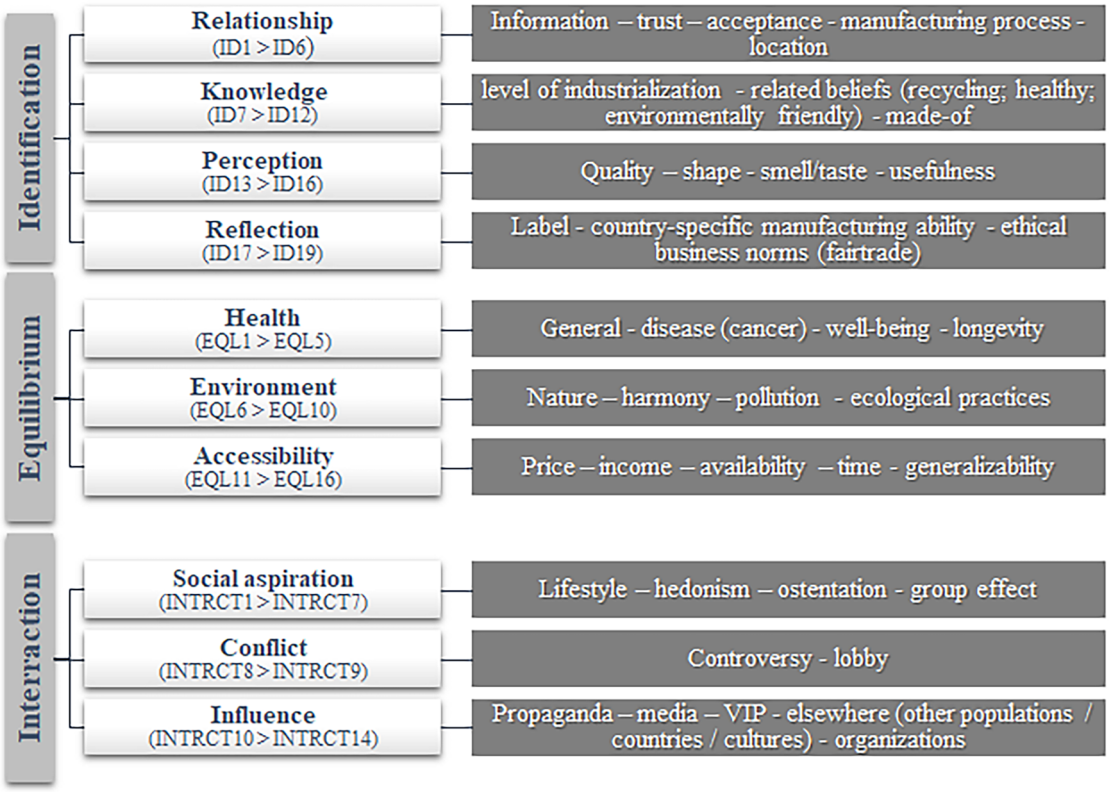

Figure 2. The initial distribution of GCO determinants.

cosmetics'), or negatively expressed, such as ID14 ('Green cosmetics are less effective'). The encoding of these items' answers was reversed in SPSS 25. as recommended by Kim et al. (2012).

Before starting the purification phase, the items consistency with their themes was examined. Wording and similarity with other items in the same subdimension and dimension were reviewed, too. For some basic themes, several items were formulated based on participants' discussions in the focus groups. For example, for the basic theme 'Lifestyle > Social aspirations > Interaction', two items were formulated in diverse styles: 'I find it difficult to change my cosmetic habits' and 'I consume green products as far as possible', to properly frame the theme. After refining the initial measurement scale, the questionnaire was implemented to engage the purification.

4.2. Purification of the GCO measure

In this part, two exploratory studies followed the Churchill's paradigm protocol to purify the green consumer orientation (GCO) scale. Table A1 shows samples of all empirical samples, including the two exploratory studies.

4.2.1. Study 1

The sample of this first exploratory study constituted 222 Algerian cosmetics consumers of both genders, all age categories, various education levels, and various sociodemographic criteria (see Table A1).

To maintain the authors' thematic contribution, EFA was carried out only for each dimension of the GCO measure, where subdimensions were not considered. This procedure choice aimed to check if basic themes were gathered in a relevant manner to their corresponding subdimension, as done by the authors.

First, the readiness test was conclusive for both Equilibrium and Interaction sets of items. Whereas, for Identification, one item was not ready for an EFA (MSA = 0.923 > 0.85; loading = 0.39 < 0.5; weak correlations); thus, it was removed. Then, the EFA carried out 18, 16, and 14 items for Identification, Equilibrium,

Table 3. The results of the first EFA.

Dimension	Factor	item	Extraction	Loading
Identification	F1	ID3	0.787	0.851
		ID4	0.812	0.883
	F2	ID7	0.826	0.904
		ID8	0.875	0.923
		ID9	0.797	0.877
	F3	ID14revss	0.732	0.851
		ID16revrs	0.730	0.848
Equilibrium	F4 (Health)	EQL3	0.742	0.844
		EQL4	0.842	0.892
		EQL5	0.736	0.833
	F5 (Environment)	EQL6	0.811	0.850
		EQL7	0.853	0.918
	F6 (Accessibility)	EQL12revrs	0.589	0.652
		EQL13revrs	0.634	0.746
		EQL15revrs	0.691	0.823
		EQL16revrs	0.549	0.730
Interaction	F7	INTRCT5	0.868	0.920
		INTRCT6	0.853	0.894
	F8	INTRCT8revrs	0.968	0.984
	F9	INTRCT11	0.570	0.703
		INTRCT13	0.707	0.836
		INTRCT14	0.698	0.791

F: factor.

and Interaction, respectively. As expected, factors resulting from the EFA are following pre-proposed sub-dimensions. This enhances the scale development-work credibility carried out in the qualitative study.

Second, Table 3 shows the last EFA results of the 22 remaining items in this first exploratory study. According to this table, 7 items remained in Identification and were dispatched on 3 factors (subdimensions); thereby, the consciousness-related item was removed. For this dimension, the remaining items were well correlated and independent of each other as well as factors explained more than 79% of the total variance of this dimension (determinant = 0.060, Bartlett = 613.113, Sig = 0.000, KMO = 0.683, Eigenvalue = 79.401%). About Equilibrium, 9 items were validated following the EFA results, and the 3 factors remained the same. Items' correlation and representativeness criteria were good, too, for this dimension (determinant = 0.029, Bartlett = 769.141, Sig = 0.000, KMO = 0.760, Eigenvalue = 71.639%). Finally, only 6 items from 14 were retained in Interaction distributed on the 3 pre-proposed factors, which explained almost 78% of the total variance of the dimension, while their items showed good correlations independency scores (determinant = 0.214, Bartlett = 335.979, Sig = 0.000, KMO = 0.669, Eigenvalue = 77.744%).

4.2.2. Construct validity results

Before proceeding with the second exploratory study, content validity was performed on the results of the EFA by calling on the skills of four experts, as previously mentioned. According to Churchill's paradigm, the validity test is generally done as a last step. In this step, the authors felt that content validity was more appropriate at this research stage, i.e. after the first scale purification and before proceeding with the second purification. The main reason for assessing this procedure is to avoid the removal of an item that may prove to be important. Therefore, the first purification of the scale was used to review the items to be excluded following the factor analysis results.

After checking both the content and composition of the initial measurement tool with the first EFA results, the experts found it necessary to reinstate some removed items in the three dimensions of the GCO. They recommended rewording them, too, as shown in Table 4.

According to Table 4, 9 items were unanimously suggested for reinstatement in the Green Orientation scale measurement. By combining items INTRCT4 and INTRCT7, the number of items to be reinstated to the 22 confirmed items becomes 8, which makes a total of 30 ready items for the second exploratory study. Other items were recommended, but the experts were not all of the same opinions on the same items. It was considered that it is better to refrain from reinstating them to avoid overloading the measurement scale, while the objective is to purify it on the one hand, and we noticed that it was possible to imply their meaning in the already remaining items. Study 2

Table 4. Summary review of experts' recommendations.

IDENTIFICATION		
Items		*Recommendation*
ID1	I always read the composition of green cosmetics	Minor rephrasing (Arabic Version)
ID11	Recyclable (container, packaging, waste, etc.) ⇨ *Green cosmetics packaging is Recyclable*	Major rephrasing
ID17	I trust on green cosmetic labels ⇨ *I trust green cosmetic labels*	Minor rephrasing
ID19	The benefit of a green cosmetic product must be fair to all (farmers, producers, traders) ⇨ *Green cosmetics provide a fair profit for both the producers of the raw materials and the companies that manufacture*	Major rephrasing
EQUILIBRIUM		
Items		*Remarque*
EQL2	Industrial cosmetics induce cancer. ⇨ *Today's industrial cosmetics cause diseases like cancer*	Minor rephrasing
EQL10	I think that the packaging of green cosmetics should be recyclable. ⇨ I think that green cosmetics should be environmentally friendly	Major rephrasing
INTERACTION		
Items		*Remarque*
INTRCT2	I use cosmetics first for my personal pleasure. ⇨ *I favor green cosmetics because they give me pleasure*	Minor rephrasing
INTRCT4 + INTRCT7	INTRCT4: I do not see myself changing my cosmetic habits. INTRCT7: If I am the only one using green cosmetics, it will not make much difference to the environment. ⇨ *If many people change their habits to green cosmetics, nature will be better off*	Fusion and major rephrasing

The same protocol as in the first exploratory survey was elaborated for the second survey to have an equivalent panel for convenience. The second questionnaire contained 30 items distributed as follows: Identification included 11 items instead of 7 items; Equilibrium included 11 items instead of 9 items; and Interaction included 8 items where 2 more items were reinstated. Since in Identification, all items were positively expressed and phrased; item ID14revrs has also been reworded in such a way. All items' labels were renamed and listed the same way as the first time.

For this survey, not all respondents wanted to repeat the experiment on the one hand, and new respondents gave their opinions on the other hand. This resulted in new descriptive and empirical data that did not affect the purpose of the research. The second sample was made up of 182 respondents.

The EFA process for this second study followed the same protocol and was performed on each dimension. All EFAs started with all items through their satisfying readiness results.

At first, results indicate that 3 items should be removed from 'Identification'. Two of them were the same removed in the first EFA owing to their weak representativeness, and which, respectively, asked about the green label and the fairtrade. Also, the EFA results led to ed to the discarding of only one item from 'Equilibrium', discussing the consequences of non-green cosmetics on health. Also, 2 items were removed for Interaction expressing sustainable group behavior and green behavioral conflict ('green cosmetics are a business illusion'), respectively. Moreover, dimensions factors were reduced too. Identification is composed of two factors, Equilibrium remained its three initial factors, while Interaction was reduced to two factors (see Table 5). Those EFA results are reliable as the Bartlett test was significant, the quality of cross-item correlations was very good for each Identification, Equilibrium, and Interaction (KMO = 0.827, 0.785, and 0.762 respectively), and the total variance of each of these dimensions is well explained by its own factors (*Eigen*value = 67.260%, 67.551% and 75.834% respectively).

As shown, the final exploratory GCO scale comprises 24 items organized through the three dimensions. Names and numbers of factors (subdimensions) remained the same for both Equilibrium (Health, Environment, Accessibility) and Interaction (Social Aspiration, Influence); only the factor expressing 'Conflict' was discarded from this latter following the EFA results. For Identification factors, a content review was done by the authors. It was revealed that the first factor, composed of the three first items, expresses actual information consumers consider in identifying the green product/cosmetic; thus, it was named 'cognitive relationship'. However, the second factor, composed of the last five items, expresses how the consumer sees the green product/cosmetic; thus, it was named 'perceptual relationship'.

Table 5. The results of the second EFA.

Dimension	Factor	item	Extraction	Loading
Identification	F1	ID1 (ID3)	0.624	0.739
		ID2 (ID2)	0.741	0.845
		ID3 (ID4)	0.640	0.800
	F2	ID4 (ID7)	0.757	0.835
		ID5 (ID8)	0.743	0.856
		ID6 (ID9)	0.754	0.828
		ID7 (ID11)	0.574	0.752
		ID8 (ID14)	0.547	0.696
Equilibrium	F3 (Health)	EQL2 (EQL3)	0.786	0.854
		EQL3 (EQL4)	0.761	0.788
		EQL4 (EQL5)	0.787	0.883
	F4 (Environment)	EQL5 (EQL6)	0.676	0.816
		EQL6 (EQL7)	0.757	0.830
		EQL7 (EQL10)	0.723	0.741
	F5 (Accessibility)	EQL8 (EQL12revrs)	0.629	0.699
		EQL9 (EQL13revrs)	0.531	0.688
		EQL10 (EQL15revrs)	0.593	0.764
		EQL11rev (EQL16revrs)	0.512	0.690
Interaction	F6	INTRCT1 (INTRCT2)	0.617	0.706
		INTRCT2 (INTRCT5)	0.877	0.925
		INTRCT3 (INTRCT6)	0.821	0.889
	F7	INTRCT6 (INTRCT11)	0.714	0.803
		INTRCT7 (INTRCT13)	0.765	0.860
		INTRCT8 (INTRCT14)	0.755	0.848

F: factor.

Table 6. Reliability results of the GCO measure.

Dimensions	Factors					
Identification	Cognitive Relationship			Perceptual Relationship		
	Items	**α**		Items	**α**	
	ID1 (ID3) ID2 (ID2) ID3 (ID4)	0.743		ID4 (ID7) ID5 (ID8) ID6 (ID9) ID7 (ID11) ID8 (ID14)	0.869	
	α_{ID} = 0.826					
Equilibrium	Health		Environment		Accessibility	
	Items	**α**	Items	**α**	Items	**α**
	EQL2 (EQL3) EQL3 (EQL4) EQL4 (EQL5)	0.855	EQL5 (EQL6) EQL6 (EQL7) EQL7 (EQL10)	0.792	EQL8rev (EQL12rev) EQL9rev (EQL13rev) EQL10rev (EQL15rev) EQL11rev (EQL16rev)	0.696
	α_{EQL} = 0.571					
Interaction	Social Aspiration			(External) Influence		
	Items	**α**		Items	**α**	
	INTRCT1 (INTRCT2) INTRCT2 (INTRCT5) INTRCT3 (INTRCT6)	0.841		INTRCT6 (INTRCT11) INTRCT7 (INTRCT13) INTRCT8 (INTRCT14)	0.827	
	α_{INTRCT} = 0.837					

4.2.3. Assessing reliability

After structuring the 24-items GCO scale, a reliability test was performed. Interestingly, scores were higher than expected, regardless of whether this scale is the newest one never performed before and not inspired by prior measures. Cronbach's Alpha scores of all factors were very satisfactory, ranging from 0.743 to 0.869 (see Table 6). For the Equilibrium dimension, reliability results of accessibility were acceptable, with an Alpha Cronbach's score (0.696) lower than the other scores in the scale, which affected the total dimension's score (0.571). The required reliability score adopted in this research should be at least 0.6. However, according to Nunnally (1967, p. 226), a reliability score ranging from 0.5 to 0.6 is sufficient and acceptable to approve the scale. He also highlights that improving reliability from a sufficient level to reach 0.8, in this case, is considered a waste of measurement.

Table 7. model fit results scores before and after enhancing the model.

	CMIN/df	GFI	TLI	CFI	SRMR	RMSEA	PCLOSE	AIC	ECVI
Indicator norms	Between 1 and 3	Above 0.90	Above 0.90	Above 0.95	Below 0.08	Below 0.06	Above 0.05	Below independent model score	Below independent model score
Fit Results before	2.514 P = 0.000	0.892	0.899	0.915	0.080	0.061	0.002	718.628 4452.41	1.788 11.076
Evaluation	Excellent	–	–	Excellent	Excellent	Excellent	Excellent	–	–
Fit results after	1.976 P = 0.000	0.927	0.946	0.957	0.055	0.049	0.551	457.892 4024.915	1.139 10.012
Evaluation	Excellent	–	–	Acceptable	Excellent	Acceptable	Horrible	–	–

To enhance the scale, the items EQL8rev ('Green cosmetics are more expensive') and EQL9rev ('My income does not allow me to start consuming green cosmetics') should be removed according to the in-depth results. This would increase the reliability scores of the accessibility factor from 0,696 to 0.709, which is not a significant improvement. Henceforth, it was agreed to keep these two items since they might not harm the reliability of the 24-items GCO scale in one part, and the scale was about to be improved in the following CFA phase.

4.3. Validation of the GCO new measurement scales

4.3.1. Study 3

The confirmatory study aimed to validate the GCO measurement scale. To do well, a Structural Equation Modelling (SEM with Amos 23) was performed. A fresh round of data was collected (N = 403). A convenience sample among the Algerian population was collected (see Table A1).

In the first step of this CFA, covariance and coefficients were estimated to evaluate the goodness of fit of the composite model. Although most fit indicators were acceptable, as shown in Table 7: PCLOSE score was still below 0.05, and GFI and TLI were below the indicator standard. To improve the model, we referred to items' loadings in the composite model, where the loading scores of three items were less than 0.5 (ID8 = 0,22; EQL11revrs = 0,46; INTRCT1 = 0,49), though they were removed (see Figure 3). These measures were sufficient to improve the GCO composite model. According to those new results, the goodness of fit of this latter is excellent, and it validates the scale model.

In the second step, convergent validity was examined based on scores of the average variance extracted (AVE) and composite reliability (CR). Those latter were calculated for each factor, as demonstrated in Table 8. Scores were all satisfactory except for the factor cognitive relationship and the factor accessibility, whose AVE scores were below 0.5 (IDT1 = 0.452; EQLB3 = 0.465). The CR scores of these two factors exceeded 0.6, and therefore, their CR scores could be accepted according to the study of Fornell and Larcker (1981). Beyond that, all maximum shared squared variance (MSV) scores are greater than AVE scores, on the one hand, and their maximum reliability (MaxR(H)) scores were above 0.7. Thus, the convergent validity of the 21-items GCO construct is fulfilled.

In the third and last step, discriminant validity was assessed. To this end, the square root of AVE (Gaskin et al., 2016; Hu & Bentler, 1999) and Heterotrait-Monotrait (HTMT) (Henseler et al., 2015) tests are performed for each factor. The square root of AVE scores, ranging from 0.672 to 0.870, are represented in the diagonal values in Table 9; they exceeded their related rows and columns values. Additionally, according to the HTMT matrix (see Table 10), all correlation ratios are below 0.85. these results provide evidence of well-established discriminant validity. Thus, the 21-items GCO scale is considered a robust measure regarding the purpose for which it was developed.

To conclude, the GCO scale is developed and validated through Churchill's paradigm. It is now made of 21 items organized into three dimensions: Identification, Equilibrium, and Interaction. Its purpose is to profile consumers' propensity to behave green toward green products/cosmetics and explain green attitudes and behavioral intentions.

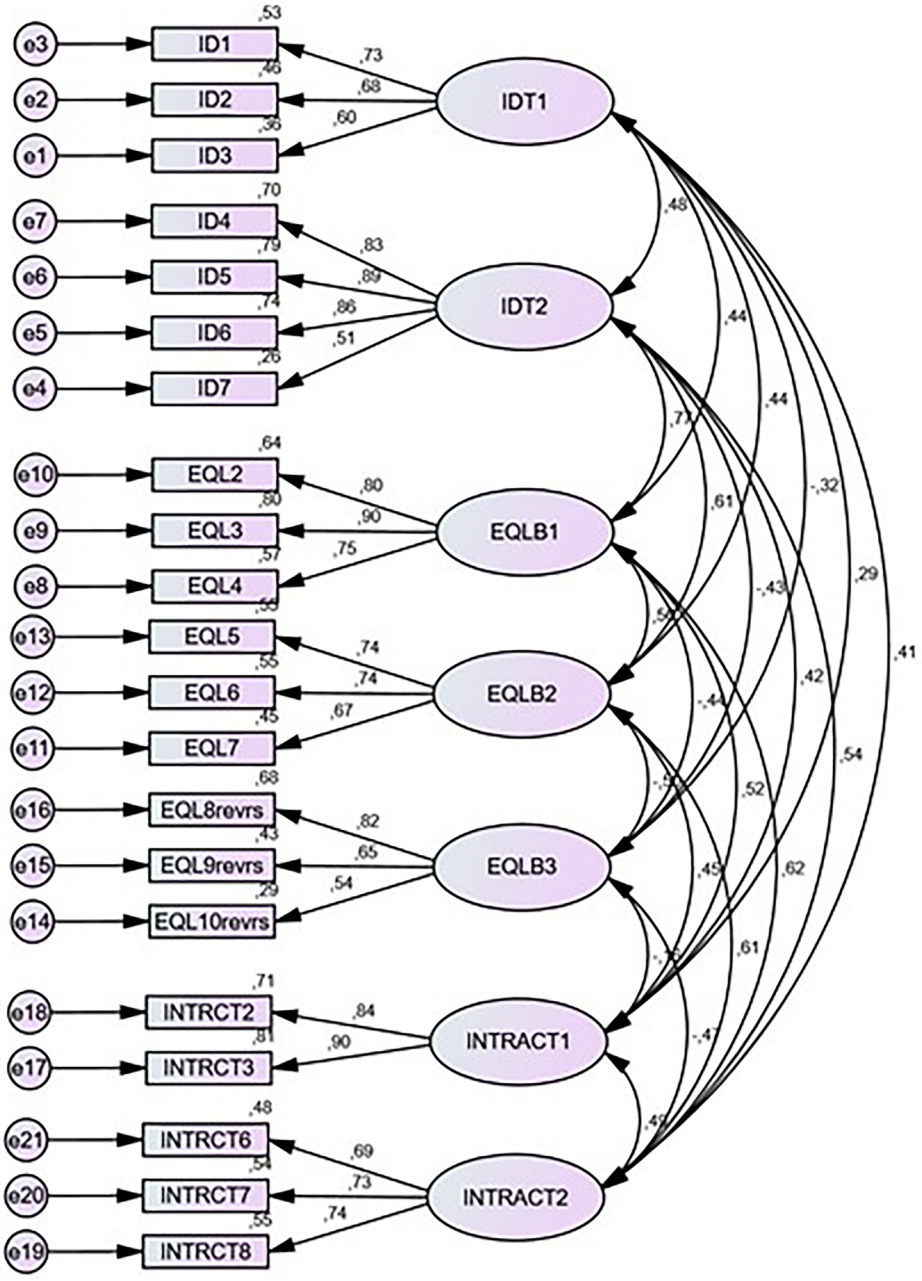

Figure 3. Confirmatory factor analysis on GCO measure.

Table 8. convergent validity results on GCO measure.

Factors	CR > 0,6	AVE > 0,5	MSV > AVE	MaxR(H) > 0,7
IDT1	0,711	**0,452**	0,235	0,720
IDT2	0,864	0,623	0,591	0,903
EQLB1	0,857	0,668	0,591	0,877
EQLB2	0,762	0,516	0,371	0,765
EQLB3	0,716	**0,465**	0,247	0,764
INTRACT1	0,861	0,757	0,270	0,868
INTRACT2	0,767	0,523	0,386	0,768

Table 9. Discriminant validity results using the square root of AVE.

	IDT1	IDT2	EQLB1	EQLB2	EQLB3	INTRACT1	INTRACT2
IDT1	**0.672**						
IDT2	0,484	**0,789**					
EQLB1	0,443	0,768	**0,817**				
EQLB2	0,442	0,605	0,555	**0,719**			
EQLB3	0,317	0,435	0,440	0,497	**0,682**		
INTRACT1	0,294	0,416	0,519	0,454	0,155*	**0,870**	
INTRACT2	0,405	0,538	0,621	0,609	0,468	0,491	**0,723**

Significance of Correlations:.
*$p < 0.050$, $p < 0.001$.

Table 10. Discriminant validity results HTMT.

	HTMT						
IDT1							
IDT2	0,488						
EQLB1	0,445	0,774					
EQLB2	0,442	0,609	0,557				
EQLB3	0,320	0,441	0,444	0,502			
INTRACT1	0,294	0,419	0,521	0,455	0,159		
INTRACT2	0,406	0,542	0,622	0,610	0,472	0,491	
	IDT1	**IDT2**	**EQLB1**	**EQLB2**	**EQLB3**	**INTRACT1**	**INTRACT2**

5. Discussion

The performed GCO scale measures various determinants (cognitive, perceptual, emotional, including health, environmental, economic, social, political, and ethical dimensions) that could explain consumers' attitudes and behavioral intentions toward green products. This differentiates itself from previous studies where new scales were suggested on environmentally, ethically, or socially minded consumer behavior (Gupta & Agrawal, 2018; Hosta & Zabkar, 2021; Sudbury-Riley & Kohlbacher, 2016); or other scales about green consumption behavior focusing on purchase, use, and disposal exclusively developed for organic food (Fischer et al., 2017; Gupta & Agrawal, 2018). because it provides a new composite and multifaceted tool to explain green attitudes and intentions. It could be used in other mass consumption fields and is not limited to cosmetics, since it was developed from generalized interviews' speeches on green consumption.

The findings revealed the relativity of the GCO measure thanks to its diversity in including all sustainable development aspects. Outstandingly, not all green/sustainable traits have been taken considered by Algerian consumers. Firstly, for the dimension of Identification, respondents focus their relationship with green products/cosmetics on a search for information, while they do not carry about confidence in green cosmetics and judge that the loyalty to their cosmetics, in general, is temporary. This comes contrary to Kahraman and Kazançoğlu (2019) findings, where trust is an important determinant of green cosmetics purchase. Respondents knew the green cosmetic product as being respectful of the environment and the individuals' health, made of natural components, not necessarily artisanal, they do not contain chemical components; however, respondents did not attach importance to its packaging being recyclable. Also, respondents perceive green cosmetics as less effective and more of a trick than having a less attractive design or a good smell. Finally, the respondents do not give importance to the ethical representations of green cosmetics, such as the green label ('I trust green cosmetic labels', removed). This result joins some Kahraman and Kazançoğlu (2019) 's conclusions when they attested that such green claims are not (totally) true among consumers. According to our investigation, it seems that most of the existing studies resulting in a positive green (labeling) trust effect were done regarding to organic food consumption behavior (Elhoushy & Lanzini, 2021; Lazaroiu et al., 2019). Green trust might be different when the product is. Also, it was the same case for the fairtrade item ('Green cosmetics provide a fair profit for both the producers of the raw materials and the companies that manufacture them', removed). This result joins Hosta and Zabkar (2021) results, where they justified that fairtrade products are mostly unknown and not seen on stores' shelves by consumers. For the present study, results about green labels and fairtrade are mostly related to the fact that Algerian consumers (respondents) are not clear-cut on these issues, unlike other populations where these issues are part of green consumption. Only a minority of focus groups participants have raised green labels and Fairtrade issues linking them to trust and ethics, respectively. This minority turns out to be representative of the population. Furthermore, the findings support the relativity of the propensity to move

towards green products as well as the relativity of green products and green consumption. More explicitly, and referring to their high loading scores, cognitive and perceptual relationship factors play an important role in measuring the green orientation of the consumer by identifying how he determines the greenness product level. Such determinants' meanings were partially met only in Nair and Little (2016) and Kim et al. (2012) studies, but not clearly and narrowly expressed. It is one of the added values of this present research, as it has developed and integrated this first dimension into consumer green consumption profiling, which, to the best of our knowledge, has not been performed before.

Secondly, concerning the dimension Equilibrium, respondents do not relate conventional cosmetics to green ones. Hence, all items that do not include green traits were excluded in EFA. The Algerian consumers identified three main elements in the health factor that determine their green orientation: well-being, prevention, and longevity. This finding was expected till respondents do not like linking negative states such as diseases to green products. On the environmental side, respondents are not inclined towards harmony and biodiversity issues – where personal values were met like biosphere. Despite their significant impact, according to Bhardwaj et al. (2023) and other previous studies, our findings do not meet the same result. Algerian consumers look more concerned about environmental awareness. Moreover, a surprising finding regards the irrelevance of recycling, from which the referred item was removed during the two EFAs despite its rewording ('I think that green cosmetics should be recyclable/environmentally friendly'). This is probably because of the environmental infrastructure in the country, where waste sorting and recycling systems still need to be adopted and mass communicated. Finally, the accessibility factor, as expected, focuses on income, price, and availability. This finding asserts the importance of including green aspects built by consumers among green products, which has become obvious according to previous studies such as Nejati et al. (2011) and Kim et al. (2012). The main added value for this factor was the time related item ('I do not have time to look for the green cosmetics', removed) built from verbatim and validated in EFAs but removed in CFA because of its lack of relevance. This could be explained by people's consciousness of weak availability and high prices of green products; thus, they are less considering time element. The latter remains an important determinant in the scale because it measures the effort (sacrifice) the consumer is willing to make to lend himself to green consumption. It is therefore recommended that it could be reintegrated into future research (see Table A3).

Thirdly, for the dimension Interaction, basically, 7 items were built for the social aspiration factor. Unexpectedly, only 2 items expressing ostentatious character are part of the scale after the CFA. Algerian respondents do not consider very much personal and social values developed within this factor, such as altruism and contagion, but they do show an ostentatious character regarding the consumption of green cosmetics. This finding is probably related to the feelings of self-assertion and self-demonstration when consuming cosmetic products, as explained by Domzal and Kernan (1993). Therefore, the GCO scale could lack social and personal determinants when applied in regard to other kinds of green products or among other populations. Furthermore, for influence factors, campaigns and doctors' opinions are the remaining determinants of the GCO scale. More surprisingly, the admiration for developed countries concerning their progress in the consumption of green cosmetics within all economic aspects is very representative in this dimension ('I appreciate the efforts of developed countries in terms of green cosmetics'). This represents another added value to this research work; hence, such a determinant has not been performed in previous studies on developing countries' populations. Therefore, it joins the work focused on this area and enriches the related literature in the MENA region. It should be noted that this item cannot be included in the scale if the study is done among a developed country population.

6. Conclusion

Since its appearance in literature, green behavior continues to attract researchers for its complexity. Researchers no longer dwell on early theories such as reasoned action (Ajzen & Fishbein, 1975) and planned behavior (Ajzen, 1985), but, instead, attempt to develop new ones; this study is one such. In fact, much previous qualitative research has been undertaken to explore the predictors of green behavior. However, only some have developed a new construct and validated its measurement scale, as in this study.

The present study developed a synthetic measure of the new Green Consumer Orientation (GCO) construct. Using Churchill's (1979) paradigm steps, GCO was defined, and its domain was specified; a

21-item scale was validated within its three dimensions (see Table A2). The main aim of this research work was to establish a new tool to measure the propensity of consumers to consume green, unlike previous studies that focused on reexamining existing scales. Thus, this measure involves a set of factors that profile how consumers are oriented toward green products/cosmetics. Indeed, the GCO measurement tool implies all relevant predictors of green attitudes and behavioral intentions.

6.1. Theoretical implications

The GCO scale does not measure actual behavior like most previously cited studies, since that was never its purpose. Rather, it measures the consumer's state of mind with respect to his or her behavior toward green products, which emphasizes the difference between it and those previous studies. This is the main added value of this research work. It is an important contribution to the existing literature aiming to better understand green behavior by tracking down its predictors.

More deeply, because of its three-dimensional composition, the GCO scale is a concise, precise, and comprehensive tool dedicated to measuring the consumer's propensity to go green. Thanks to its comprehensiveness, this scale brings new elements that were not considered before in green behavior, such as consumer-product relationships and accessibility regarding time. It also highlights the relevant role of health considerations as well as external influence.

This study supports that Green Consumer Orientation is a driving variable of green consumption behavior that explains green attitudes and behavioral intentions. This tool is designed to reduce some gaps in green consumption behavior and update the related literature on green behavior. It also reveals opportunities for investors and highlights the levers that decision-makers can use to encourage more responsible and sustainable consumption.

6.2. Managerial implications

Thanks to the GCO scale, this study sheds light on the levers to be used by governmental and non-governmental bodies, policymakers, marketers, and economic and environmental actors to move towards a more sustainable way of life. For example, the lack of discernment toward green labels by Algerian consumers – as among many other populations - requires a rigorous build-up of strong green brand equity by marketers. Also, the lack of interest in recycling requires a robust strategy planning's installation of recycling processes by the government and sensitive mass communication on waste sorting methods.

In sum, the GCO tool would pinpoint green economic, environmental, social, and political fields' weaknesses through consumer consumption behavior.

6.3. Limitations and future reserach

This study emphasizes the importance of the correlation between social, environmental, health, economic and cultural aspects. It has also pointed out the ambiguity of some predictors that limit its scope. The first limitation of the GCO scale is addressed in regards to green label and Fairtrade, which relevance is perceived depending on the level of sustainability practices spread within a population. To reduce this limitation, it is suggested to reinstate the former items (See Table A3) in the GCO scale when dealing with other study populations in future research. The second limitation has been noticed after the shrinking of social aspirations factor remaining only ostentatious determinants. Thus, phrasing the scale for a specific economic sector may reduce its relevance. Future researchers wishing to go further within GCO can re-launch this scale by adding other items representing social aspiration like social contagion, altruism, etc., if they ever want to apply it to other sectors such as organic food or clothes or among other populations. The third limitation of the GCO scale concerns specific determinants formulated for developing countries, such as the last item expressing admiration for developed countries, which cannot be used among all populations. However, future researchers can adapt it to raise a particular cultural difference, such as between Eastern and Western countries or Europe and the USA.

To ensure the continuity of this research, researchers are invited to revisit the new scale among other populations in both developing and developed countries to assess its usefulness. With this same aim, researchers could examine the influence of GCO on attitudes and behavioral intentions for assessing nomological validity. This would confirm its position and role in green consumption patterns according to the advanced framework.

Note

1. The University of Liege and the University of Constantine 2 do not require or issue ethics clearance. They, however, promote high standards of research through critical reflection of a study's ethical implications. The objectives, methods, and activities of the research, including the voluntary nature of participation in the e-surveys and focus group discussions, were clearly and fully explained to all stakeholders. The participants' anonymity and information confidentiality were maintained throughout the study, including in writing this paper.

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Appendix

Table A1. Samples' sociodemographic characteristics of all the studies.

Characteristics	Sample 1	Sample 2	Sample 3
Size	222	182	403
Gender			
Female	51%	71,4%	61,3%
Male	49%	28,6%	38,7%
Age			
Young [23-40]	80%	86,2%	83,4%
Marital status			
Single	60%	73,6%	69,2%
Married	34,3%	26,4%	30,8%
Educational level			
University degree	90%	89,6%	71,5%
Work status			
Employed	90,4%	81,9%	86,1%
Unemployed	9,6%	18,1%	13,9%
Income			
≤ SNMG[a]		Less than 50%	

[a]This is Decree No. 21-137 of April 7, 2021, setting the national minimum wage guaranteed. Thus, through the publication of this decree, the SNMG, which was previously 18,000 dinars, has been raised to 20,000 Algerian dinars.

Table A2. Final GCO measurement scale.

IDENTIFICATION	
Cognitive Relationship	
ID1	I am well informed about green cosmetics
ID2	I always read the composition of green cosmetics.
ID3	I find information on green cosmetics whenever I look for it because it is available
Perceptual Relationship	
ID4	Green cosmetics are environmentally friendly
ID5	Green cosmetics are derived from natural products
ID6	Green cosmetics are good for health
ID7	Green cosmetics packaging is Recyclable
EQUILIBRIUM	
Health	
EQL2	Green cosmetics contribute to my well-being
EQL3	Consumption of green cosmetics preserves health
EQL4	Green cosmetics extend my beauty over the years.
Environment	
EQL5	The environmental impact is essential in my choice of cosmetics
EQL6	Adopting green cosmetics reduces our impact on the environment
EQL7	I feel that green cosmetics should be environmentally friendly
Accessibility	
EQL8rev	Green cosmetics are more expensive.
EQL9rev	My income does not allow me to start consuming green cosmetics
EQL10rev	It is not conceivable to supply the whole population with green cosmetics
INTERACTION	
Social Aspiration	
INTRCT2	I like it to be known that I use green cosmetics
INTRCT3	It makes me proud When others know I use green cosmetics
External Influence	
INTRCT6	Information campaigns on green cosmetics attract my interest
INTRCT7	Recommendations of doctors would lead me to turn to green cosmetics
INTRCT8	I appreciate the efforts of developed countries in terms of green cosmetics

Table A3. Items recommended to reinstate in future research.

ID9	I trust green cosmetic labels
ID10	Green cosmetics provide a fair profit for both the producers of the raw materials and the companies that manufacture them
EQL11rev	I do not have time to look for the green cosmetics