


ORIGINAL ARTICLE

Application of two projective techniques in the study of consumer perception of antiperspirant/deodorants

Adriana Gámbaro¹ | Antonella Roascio¹ | Lucía Boinbaser² | Suhey Pérez³ | Emma Parente² 

¹Department of Food Science and Technology, Sensory Evaluation Area, Facultad de Química (School of Chemistry), Universidad de la República, Montevideo, Uruguay

²Department of Pharmaceutical Sciences, Cosmetic Chemistry Laboratory, Facultad de Química (School of Chemistry), Universidad de la República, Montevideo, Uruguay

³Department of Services Technology, Universidad Simón Bolívar, Caracas, Venezuela

Correspondence

Emma Parente, Department of Pharmaceutical Sciences, Cosmetic Chemistry Laboratory, Facultad de Química (School of Chemistry), Universidad de la República, Montevideo, Uruguay.

Email: emma.parente27@gmail.com

Abstract

The present study aimed to identify the main aspects involved in consumers' perception of four types of antiperspirants/deodorants (APDs); cream, aerosol, roll-on and stick; and compared the findings by using projective techniques; word association (WA) and product personality profiling (PPP) tasks. To apply the PPP task, participants had to imagine that each type of APDs was a person and describe it by gender, age, marital status, children, physical complexion, personality, work/profession/occupation, transport used, physical activity performed, and diet type. The different terms obtained were grouped into 16 categories in the WA task and in 36 subcategories in the PPP task. Both techniques provided data on different and complementary aspects of the products studied. While WA provided information on the characteristics of the different forms of APDs, the PPP gave information about the image that consumers have of each product. Both techniques could be used independently or in a complementary way.

Practical applications

This work provides information about consumers' perceptions of different types of antiperspirants/deodorants. It is shown that each applied task provides information which can be used for different purposes. The word association task provided information which could be applied in the optimization and/or development of one of these cosmetic forms, while the product personality profiling task gave information that could be used in marketing, either to reaffirm it, to revert it or to introduce a new product into the market.

1 | INTRODUCTION

Although the terms antiperspirant and deodorant are frequently used interchangeably by the public, they represent two different and distinct actions. Historically, there has been some confusion among the public when distinguishing between the benefits provided by commercial antiperspirant and deodorant products (Dodds, Tseñon, & Weitkamp, 2008; Torres & Bijmolt, 2009; Wild, Lanzalaco, & Swaile, 2006). According to Schreiber (2009, p. 632), Schreiber (2009, p. 643), "designed to reduce underarm wetness by limiting eccrine sweat production" and "deodorants are topically applied products designed to reduce underarm odor."

In the world market of hygiene products, there are different types of antiperspirants/deodorants (APDs): aerosols, roll-ons, creams, pads,

and solid or extrudable bars, among others (Schreiber, 2009; Schreiber, 2009). The market for APDs grows steadily every year; it is considered that the increase in demand for this type of product is the largest among personal care products. It is estimated that between the years 2010 and 2015, the annual average demand volume increased by 5%, and that by 2021, the aerosol deodorant segment will represent 75.3% of the world market revenues and the roll-on 15.6% (Kung & O'Connor, 2017).

Companies that develop and market personal care products need to understand the attitudes of consumers toward the products to predict their purchasing behavior and thus offer products which may have a good chance of success. With this objective, projective techniques which involve subjecting individuals to a condition of free interpretation or ambiguous stimuli, can be applied so that the subject

“projects” their feelings and unconscious motivations in their responses, thereby avoiding social, cultural, and personal barriers that can restrict the expression of their unconscious thoughts, feelings, or emotions (Kubacki & Siemieniako, 2017; Pich & Dean, 2015).

There are different types of projective techniques which offer information at different levels of ambiguity, from the construction of drawings and stories without structure to highly structured sentences and stories. The selection of the most appropriate technique depends on the research objective, the type of participants and the level of freedom that the researcher wishes to give to the participants (Tantisenepong, Gorton, & White, 2012).

In the present work, the techniques of word association (WA) and product personality profiling (PPP) are used. In the WA task, the individual is subjected to a stimulus and it is expected that he or she will spontaneously express the words associated with the stimulus. It is based on the theory of reasoned action of Ajzen and Fishbein (1980); it assumes that the most prominent associations or beliefs that consumers have about the object in question are the best predictors of consumers behavior toward said object. Therefore, the associations that first come to the minds of the respondents could be the most relevant in the choice and purchase decision of the product (Roininen, Arvola, & Lähteenmäki, 2006). Likewise, this technique provides information regarding the consumer vocabulary associated with each product (Gudkova, 2016). Although the WA task has been applied mainly to food products (Eldesouky, Pulido, & Mesias, 2015; Esmerino et al., 2017; Soares et al., 2017; Vieitez, Gámbaro, Callejas, Miraballes, & Iriagaray, 2014), there is a precedent for its application to cosmetic products, specifically skincare creams (Gámbaro, Parente, Boinbaser, & Roascio, 2014). Although WA can be conveniently used to quickly assess consumer opinions, it has disadvantages such as the unavoidable degree of subjectivity involved in the interpretation of the data, the implementation cost, and the limited validity and reliability of the results (Donoghue, 2000).

Conversely, the PPP task is a projective technique that offers an idea of who the target consumers are according to the perception of the interviewee. The participants imagine the product as a person and provide information regarding their character and lifestyle, such as age, gender, marital status, occupation, physical appearance, place where they spend their holidays, and personality, among other features (Bruseberg & McDonagh-Philp, 2001). This technique is based on anthropomorphism, that is, the imbuing of nonhuman agents with human-like characteristics (Epley, Waytz, Akalis, & Cacioppo, 2008). Historically, personification has been defined as a “figure of speech in which inanimate objects are characterized in terms of human attributes, thus representing the object as a living and feeling person” (Ricoeur, Czerny, Mclaughlin, & Costello, 1979, p. 497). When consumers think of a product as a human being, they attribute many characteristics to it, such as intelligence and emotions that are not innate to it (Hart, Jones, & Royne, 2013). The comparison of an object to a human being constructs a metaphor; that is, the object is compared to a person to transfer some personal or human attribute to the object, although the response of the consumer to the personification is necessarily an amalgam between the anthropomorphism and the metaphoric processing (Delbaere, McQuarrie, & Phillips, 2011). Although the technique is, to a certain extent, limited, as perceptions vary

among individuals, it helps to discover social value systems and emotional responses associated with the products (Delgado-Ballester, Palazón, & Pelaez-Muñoz, 2017; Freling, Crosno, & Henard, 2011). The PPP technique has been applied to various products such as laptops, cell phones, USB drives, and toothbrushes (Hart et al., 2013), toasters (Bruseberg & McDonagh-Philp, 2001) and fruit and nut bars, moisturizers, snack mixes, and bleach (Delbaere et al., 2011), but there is no record of scientific publications on its application to personal hygiene products.

The objectives of this study were: (a) to study the perception that consumers have of different types of antiperspirant/deodorants using two projective techniques (word association and product personality profiling), and (b) to compare the results obtained by both techniques.

2 | MATERIALS AND METHODS

2.1 | Participants

The study was conducted in the city of Montevideo, Uruguay with a convenience sample. Two hundred deodorant users were recruited in shopping areas, universities, and other public places. The socio-demographic and consumer data of the respondents were collected at the time of recruitment. Participants were divided into two groups of 100 consumers each, who completed different tasks without significant differences ($p > .05$) in their socio-demographic data (age, marital status, and education level) according to the chi-square test.

Respondents in Group 1 ranged in age from 19 to 67 (average of 38.5, $SD = 12.7$), 50% female, 53% lived with a partner, 66% were university students or professionals. Respondents in Group 2 ranged in age from 19 to 71 (average of 36.7, $SD = 12.1$), 56% female, 45% of whom lived in a relationship, 73% were university students or professionals. The word association task was completed by consumers from Group 1, and participants from Group 2 completed the product personality profiling task. The tasks were carried out at the same recruitment site.

2.2 | Word association task

To elicit relevant word associations, four different antiperspirants/deodorants (ADPs) names (cream, aerosol, roll-on, and stick) printed on four different cards were presented to respondents in a random fashion. Instructions given to participants were the following: “Please, write down all the words, descriptions, associations, thoughts or feelings that come to your mind related to these products.” An open blank space was provided where they could fit as many words or phrases as they required.

2.3 | Product personality profiling task

To apply the personality profiling task, participants were given a form with the following instructions: “If this product was a person, how would that person be with respect to...” Participants had to describe that person in terms of 10 categories: gender, age, marital status, children, physical complexion, personality, work/profession/occupation, means of transport used, physical activity performed, and type of diet. The different ADP types (cream, spray, roll-on, and stick) were presented to respondents in a random fashion.

2.4 | Data analysis

The associations made by the respondents were analyzed qualitatively. Initially, the recurrent terms were identified and those from the WA task were grouped into categories and those from the PPP task were grouped into subcategories. The procedure was based on the researchers' personal interpretation of the meanings of words and on the word synonymy as determined by a Spanish dictionary. The analysis was conducted individually by each of the members of the research team and the generated results were later discussed in detail among the research team before definitive categories and labels were finally agreed upon by consensus (Guerrero et al., 2010). Frequencies of mention for each category (WA) and subcategory (PPP) were determined by counting the number of consumers that used similar words to describe the concepts encompassed within each category. Only those categories and subcategories mentioned by 10% or more of the respondents were considered.

Differences in consumer perception according to ADPs type were evaluated by means of a Cochran's Q test. Correspondence analysis—a descriptive/exploratory technique designed to analyze simple two-way contingency tables showing a certain degree of correspondence between rows and columns—enabled a spatial representation of the data, reflecting the relationship between the stimuli and the elicited concepts (Greenacre, 2010). Statistical analyses were conducted using XL-Stat 2017 software (Addinsoft, NY).

3 | RESULTS

3.1 | Word association task

The application of this technique generated a total of 1,231 associations. The resulting word categories, as well as examples of individual associations, are shown in Tables 1 and 2.

The terms selected by the participants were grouped into 18 categories (*actuality, pleasure of use, environment, color/appearance,*

knowledge of use, displeasure of use, efficacy, packaging/presentation, function, ingredients, brands/advertising, smell/aroma, price, healthiness, sensation on the skin, texture, user and application zone); of them, those that presented a number of mentions of less than 10% for each APD type (*application zone and ingredients*) are not considered. Of the remaining 16 categories, 11 showed significant differences ($p < .05$) in the number of mentions obtained for each type of APD according to Cochran's Q test.

The most mentioned categories were those related to sensory aspects: *sensation on the skin* with 174 total mentions and *smell/aroma* with 147 mentions (Table 1).

The *roll-on* form was mainly associated with negative aspects related to the *sensations on the skin* caused by its use on the skin, such as “sticky skin,” “wet underarm,” “residue,” and “leaves no sense of freshness.” It related to a high number of mentions for *displeasure of use*, with references to “discomfort-dripping,” “it gets used up fast,” “stains clothes,” “wet clothes,” “irritation,” and “last resort.” It also presented a significantly higher number of mentions than the rest of the APDs in the *packaging/presentation* category and was associated with a “small container” that is “comfortable to move,” “discrete” and “anatomical.” The category *smell/aroma* presented an important number of contradictory mentions; on one hand, some consumers associated it with “pleasant smell,” “intense fragrances,” “citrus aroma,” “nice smell,” and “flowers,” while other respondents associated it with “little fragrance” and “not very pleasant smell.” It is also highlighted in the number of mentions in the category of *pleasure of use*; consumers find this form of presentation “practical,” “easy to transport,” “easy to apply,” and “very accepted.”

The *cream* form presented, like the other forms, a high percentage of mentions in the category *sensation on the skin*, and like the *roll-on* form, it had associations with negative connotations such as “sticky” and “leaves residues on the skin.” In the category of *displeasure of use*, the cream form also presented a significantly higher number of mentions and terms such as “annoying,” “stains clothes,” “uncomfortable,” “not practical,” and “dirty hands” were used. Regarding the *smell/*

TABLE 1 Results of the word association task; number of mentions within each category and p -value according to Cochran's Q test

Categories	Roll-on	Cream	Stick	Aerosol	p -Value	Total number of mentions
Actuality	6	11	17	5	.017	39
Pleasure of use	31	11	21	28	.001	91
Environment	1	0	4	15	.000	20
Color/appearance	6	10	12	4	.097	32
Knowledge of use	6	16	12	3	.006	37
Displeasure of use	40	43	31	17	.000	131
Efficacy	25	19	26	24	.624	94
Packaging/presentation	33	18	15	17	.003	83
Function	5	14	17	12	.034	48
Brands/advertising	10	14	18	21	.111	63
Smell/aroma	32	25	35	55	.000	147
Price	10	5	9	8	.572	32
Healthiness	15	16	4	25	.000	60
Sensation on the skin	58	44	32	40	.001	174
Texture	3	19	19	1	.000	42
User	13	23	12	11	.035	59


TABLE 2 Results of the word association task—Examples of individual associations

Categories	Roll-on	Cream	Stick	Aerosol
Actuality	Modern, new, obsolete	Old, in disuse, Used by mom, old man, no longer used	Old, outdated, traditional	Classic, modern
Pleasure of use	Easy to apply, very accepted, practical, easy to transport, useful	Comfortable, with applicator, practical, practical to carry in the bag, it is used better	The best, comfortable to apply, no stain, quality, practical to apply, practical to carry	Agreeable, comfort-comfort, practical, easy to apply, quick dry, pleasant, does not stain clothes
Environment	Does not pollute the environment	-	Does not pollute the environment, waste	Ozone layer, Pollutes the environment, used to be harmful to the ozone layer
Color/appearance	White, liquid, transparent	Light color	White, cream color, translucent	White
Knowledge of use	Personal use, sporadic use	I do not know anyone who uses it, few times	For running, necessary, not to share	Not on the plane, the only one I can use
Displeasure of use	Discomfort- dripping, irritation, stains clothes, wets clothes, gets used fast, last resort	Uncomfortable, dirty hands, stains clothes, not practical, annoying, horrible	Some stain clothes, broken bars, difficult to apply, uncomfortable, unhygienic	Delay to get dressed, uncomfortable to carry in the bag, stain the clothes, they run out fast, annoying spray
Efficacy	Good protection, insecurity, greater efficiency	24 hr, effective, not effective, security	Confidence, lasting, good protection, the most effective, least effective, protection	Lasting fragrance, does not last, persistence
Packaging/presentation	Anatomical, discrete, small container, comfortable to move	Pot	Compact, container, small	Elegant container, too large, portable, spray
Function	Antiperspirant, skincare, cleaning	Antiperspirant, skincare, hydration and underarm care, cleaning	Antiperspirant, skincare, hygiene, care, Delicate skin	Antiperspirant, hygiene, cleaning, sweat
Brands/advertising	10 market brands are mentioned	5 brands are mentioned, lack of marketing, there are few, few brands	10 market brands are mentioned	7 market brands are mentioned, fun advertising, TV advertising, Advertising
Smell/aroma	Citrus aroma, flowers, perfume, intense fragrances, smells good, pleasant smell, not very pleasant smell, little fragrance	More fragrance, permanent, discrete fragrances, Nice smell, ugly smell, mild smells, Little fragrance, little lasting	Cheap aroma, unpleasant aroma, soft fragrance, pleasant smell, not very modern scents, little aroma	Multiple aromas, leaves no smell, intense odor, pleasant aroma, lavender
Price	Expensive, economical	Expensive, generally expensive, cheaper	Cheap, generally expensive	Cheap, not cheap, varied prices
Healthiness	Burning in the skin, hygiene, unhygienic	Unhygienic, caring, unhygienic, healthy	Burning in the skin, healthy	Allergy, respiratory, suffocating, irritates the skin
Sensation on the skin	Wet underarm, sticky skin, residue, leaves no sense of freshness	Leaves residues on the skin, fresh, not cold, Sticky, wet	Adheres to the armpit, leaves residue, cool, moisture, hairs, sticky substance	Fresh, light feeling, not sticky, moist, freshness, not wet
Texture	Creamy, greasy	Lumpy, pasty, creamy	Fat, pasty	Particles
User	Feminine, masculine, women, adults	Feminine, mother, woman, little juvenile	Adults, man, woman	Adolescent, athletes, active people, deodorant for men, women

aroma category, the cream presentation also obtained contradictory associations similar to those found for the roll-on form.

The category with the highest number of mentions for the *stick* form was *smell/aroma*, which contained contradictory expressions such as “pleasant smell” and “unpleasant aroma,” in addition to specific expressions such as “cheap aroma,” “not very modern scents.” Another category that had a significant number of mentions was *sensation on the skin* in which “sticky substance,” “cool,” “adheres to the armpit,” “sticky,” “hairs,” and “dry” were noted. In the category *displeasure of use* are mentions such as “uncomfortable,” “some stain clothes,” “difficult to apply,” “broken bars,” and “unhygienic.” The *actuality* category obtained a significantly higher number of mentions ($p < .05$) designated as “old,” “outdated,” and “traditional.”

The *aerosol* form obtained a significantly higher number of mentions for the *smell/aroma* category, among which are associations that could be considered positive such as “intense odor,” “no odor,” “pleasant aroma,” and “multiple aromas.” The aerosol had a significantly higher number of mentions for the *healthiness* and *environment* categories, highlighting the references to “irritates the skin,” “respiratory allergy,” and “suffocating” for the first category, and “ozone layer” and “pollutes the environment” for the second category. In these two categories, the other forms of presentation for APDs had few or no mentions.

The above relationships among the different types of APDs and elicited associations are also reflected in the results of the correspondence analysis (Figure 1). The analysis accounted for 90.61% of the variance. Factor 1, accounting for 62.35% of the variance, correlated positively with *pleasure of use*, *environment*, *healthiness*, and *smell/aroma*, and negatively with *actuality*, *knowledge of use*, *displeasure of use*, and *texture*. Factor 2, accounting for 28.25% of the variance, correlated positively with *actuality*, *environment*, *function*, and *texture*, and negatively with *displeasure of use*, *packaging/presentation*, and *sensation on the skin*. The distribution of the four types of APDs in the four

quadrants shows that each one created different associations in the minds of the consumers.

3.2 | Product personality profiling task

By means of this technique, a total of 3,850 words were obtained. The terms selected by the participants in the 10 categories were grouped into 39 subcategories. The categories gender, marital status, and children were divided into two subcategories each; the categories age, means of transport, and type of diet were divided into four subcategories each; the categories work/profession/occupation, physical complexion, and personality were divided into five subcategories each; and the physical activity category was divided into six subcategories. In particular, subcategories in the personality category were generated based on the five dimensions in which the personality traits of the Aaker's personality scale were grouped: *sincerity*, *excitement*, *competence*, *sophistication*, and *ruggedness* (Aaker, 1997; Upadhyaya, 2012).

The subcategories that presented a number of mentions of less than 10% for each of the types of APDs were not considered: *housewife* (work/profession/occupation), *sophistication*, and *ruggedness* (personality). The subcategories of resulting words are shown in Table 3. Of the 36 remaining subcategories, 26 presented significant differences ($p \leq .05$) in the number of mentions obtained for each type of APD according to the Cochran's Q test.

The *roll-on* form was associated by a significant percentage of the respondents with *young* and *adult* individuals of *both sexes* (although mostly women), *with partner* or *single*, *with or without children*, *administrative/employee*, *slim* or with *average physical complexion*, with *competence* personality, who moves in a *car/truck* or *public transport* and with a *healthy* or *normal diet*. This form of presentation of APDs received, in addition, a significantly greater number of mentions to *gym* than the other subcategories of physical activity.

The *cream* form was associated by a high percentage of respondents with *adults* (30–60 years old), mainly women, *with or without partner*, *with or without children* (although mostly with children), *administrative/employee*, *slim*, with *competence* personality, who moves in a *car/truck* and with a *healthy diet*. The subcategory *older than 60* received a significantly greater number of mentions to than the roll-on and aerosol forms, which could be related with the following characteristics: *retired*, *overweight*, and practicing *Pilates/yoga*.

The *stick* presentation was associated by a significant number of respondents with *adult* individuals, mainly *men*, *with partner* or *single*, *with children*, *administrative/employee*, with personality *competence*, who have a *car/truck*, *sedentary* and have a *healthy diet*. The number of mentions to individuals *older than 60* years was significantly higher and it was also associated with individuals with *robust complexion*, *overweight* and a *meat-based diet*.

The *aerosol* deodorant was linked to *young* individuals, *men*, *single* and *without children*, *students*, *slim*, with personality *competence*, who travel in a *car/truck*, who perform *physical activity*, *athletes* and with *healthy* or *normal diet*. The *adolescent* subcategory received a significantly higher number of mentions. In addition, it was also associated with *athletic* individuals who travel by *motorcycle* or *bicycle* and with an *unhealthy diet*.

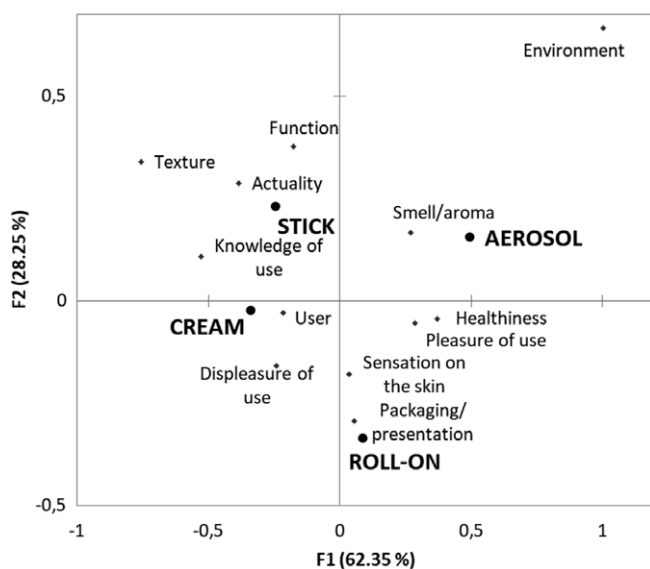


FIGURE 1 Correspondence analysis plot for the categories associated with the different types of APDs during the word association task

**TABLE 3** Results of the personality profile number of mentions within each category and subcategory

Categories	Subcategories	Roll-on	Cream	Stick	Aerosol	p Value
Age	Adolescents	7	10	5	24	<.0001
	Young people (18–30)	40	27	26	58	<.0001
	Adults (30–60)	45	44	50	14	<.0001
	Older than 60	8	19	19	4	.00036
Gender	Women	61	89	21	23	<.0001
	Men	39	11	79	79	<.0001
Marital status	With partner	38	52	56	16	<.0001
	Single	62	45	44	84	<.0001
Children	Without children	46	32	29	75	<.0001
	With children	54	68	70	23	<.0001
Work/ Profession/ Occupation	Administrative/employee	41	42	44	29	.075
	Student	19	14	10	50	<.0001
	Retired	5	14	9	1	.002
	Professional	25	17	23	13	.086
Physical complexion	Athletic	9	4	4	16	.002
	Robust complexion	5	7	19	6	.0001
	Slim	32	34	23	37	.112
	Overweight	14	20	24	8	.009
	Average physical complexion	31	21	20	21	.155
Personality	Sincerity	29	29	21	28	.500
	Excitement	25	25	15	19	.149
	Competence	37	40	53	35	.028
Means of transport	Car, truck	50	60	57	38	.007
	Public transport	34	26	29	27	.546
	Motorcycle	5	3	6	14	.007
	Bicycle	11	11	7	21	.011
Physical activity	Sedentary	19	22	30	10	.002
	Physical activity	29	22	27	32	.221
	Athlete	21	19	19	44	<.0001
	Walk	6	11	9	3	.087
	Gym	22	11	8	10	.005
	Pilates, yoga	4	12	4	0	.0003
Type of diet	Unhealthy	8	7	19	24	.001
	Healthy	52	61	34	34	<.0001
	Meat-based diet	2	7	21	8	<.0001
	Normal diet	35	24	26	32	.129

The above relationships among the different types of APDs and elicited associations are also reflected in the results of the correspondence analysis (Figure 2). The analysis accounted for 95.07% of the variance. Factor 1, accounting for 66.27% of the variance, correlated positively with *adolescents, young people, students, without children, single, athletes, bicycle, motorcycle, unhealthy diet* and *men*, and negatively with *adults, older than 60, retired, with children, with partner, women*, and *Pilates/yoga*. Factor 2, accounting for 28.80% of the variance, correlated positively with *women, gym, Pilates/yoga* and *healthy diet*, and negatively with *men, robust complexion, meat-based diet*, and *unhealthy diet*. It is observed that the forms cream and roll-on are close in space, so it could be concluded that they have a similar personality image in the mind of the consumer. On the contrary, the

aerosol form is well differentiated from the rest of the APDs, to the right of Figure 1, with a well-defined personality.

4 | DISCUSSION

4.1 | Word association task

The categories most mentioned by consumers were those related to sensory aspects (*sensation on the skin* and *smell/aroma*). Frequency of elicitation has been associated with the intensity or significance of a particular concept in the minds of respondents (Guerrero, Colomer, Guàrdia, Xicola, & Clotet, 2000). These results show that the sensory

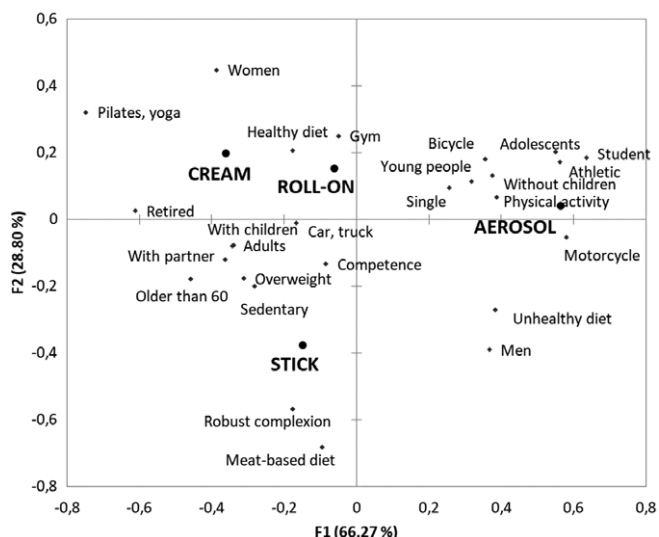


FIGURE 2 Correspondence analysis plot for the categories associated with the different types of APDs during the product personality profiling task

aspects, both positive and negative, are the most important in the minds of consumers of this type of products, beyond their effectiveness, price, or availability. This is especially important for the cream and roll-on presentations as they have a large number of words associated with defects (“stickiness, residue, moisture, stains”); so, to obtain successful products in the market, paying special attention to these aspects during their development is of interest.

The high number of mentions of the category *smell/aroma* indicates the importance of the aroma for consumers of APDs, which coincides with the information reported in other articles of the research team (Parente, Gámbaro, Boinbaser, & Roascio, 2014; Parente, Mazoni, & Ares, 2011), about the incidence of fragrances in the preference of cosmetic products. The contradictory associations connected to this category as assigned to roll-on, cream and stick forms, both in terms of fragrances and intensity, could indicate that each consumer has different personal expectations regarding this sensory attribute and their judgment will depend upon personal experiences. In previous studies, it has been observed that consumers penalize products that have aromas that they do not consider pleasant (Parente et al., 2011, 2014). In product development, the selection of the aromatic composition to be used in the formulations would be of great importance, as well as its intensity and persistence. Many APDs are offered in the market with the same base formulation, the same generic name, and different aromas and made up names, so it is possible that the same product has varieties that satisfy the tastes of different consumers exclusively with respect to the aroma.

No evidence was found that other components (e.g., alcohol and aluminum salts) of the products are of particular interest to consumers as ingredients was a category that had few associations and reached 10% of mentions in none of the forms of presentation; thus, it was not considered for analysis.

Also, in the *displeasure of use* category, the presentations of cream and roll-on had a significantly higher number of mentions than the other ones. They were associated by a significant number of consumers with the mentions “stains clothes,” “not practical,” “dirty

hands,” “uncomfortable”—defects that should be mitigated in the development of new products. It is noteworthy that for the components available for formulation, these products often have associated sensory properties that can be considered defects by consumers (Schreiber, 2009; Schreiber, 2009). An alternative to the cream form is its inclusion in stick-shaped containers, giving rise to the so-called “soft sticks” (Schreiber, 2009) that solve part of the problem of application, as they do not require hand contact with the product to apply it.

Some of the associations given by the consumers to the aerosol form coincide with the disadvantages suggested by Schueller and Romanowski (2009): “Package can over-pressurize and rupture under extreme heat,” “mist can be irritating if inhaled,” “relatively high packaging costs,” “the term ‘aerosol’ may have environmentally negative connotations to consumers” (Schueller & Romanowski, 2009, p. 265). Among the words or phrases selected by the participants who responded to the WA task, associations arose with the last three defects indicated by these authors.

Although the *efficacy* category did not show significant differences in the frequency of mention of the different forms of presentation, it is interesting to analyze the words that were included in this category. The effectiveness of the analyzed APDs was associated with terms such as “effective,” “protection,” “security,” “24 hours,” “lasting,” and “does not last.” This coincides with what is reported by Dolnicar (2001) regarding the motivations for the use of APDs, which highlights the attributes to prevent body odor, to block perspiration and makes someone feel safe.

Ganesh and Oakenfull (2000) studied the perceptual maps of APDs in the Mexican market. In preliminary studies, they found that the attributes that consumers considered important for the selection of deodorants were: fragrance, price, effectiveness, dryness, antiperspirant effectiveness, soft texture, attractive packaging, no white residue, long lasting, does not irritate the skin after use, clear/transparent, and effectively covers body odor. The results of the WA in the present work confirm that the respondents assign importance to some of the attributes highlighted by this author.

Torres and Bijmolt (2009) found 11 factors that determine the image of different brands of deodorants and antiperspirants: prevents body odor all day, keeps me dry all day, does not irritate my skin, has a long-lasting fragrance, has a pleasant fragrance, makes me feel safe, leaves no marks on my clothes, can be used on the whole body, is portable, quick to apply, and costs a little less than other brands. Consumers who performed word associations in the present work mentioned examples of most of the factors highlighted by these authors.

4.2 | Product personality profiling task

According to several authors (Maehle, Otnes, & Supphellen, 2011; Tariq, Nawaz, Nawaz, & Butt, 2013), the personality of a product can be said to be a multidimensional construct as it is composed of the ideal image, apparent image, social image, perceived image, and true image of the consumer; this coincides with the results of the present study. When a product type has a distinctive personality, it has the

capacity to come to life in the perception of the consumer and will tend to develop an affective link towards it (Avis & Aitken, 2015).

The type of APD that presented a personality profile which differed from the rest was the aerosol. The young and masculine profile with which it is associated also corresponds to an individual without children, a student, who moves by motorcycle or bicycle, and corresponds with the personality traits selected for this product. According to Delgado-Ballester et al. (2017), people use the symbolic meaning of the products to convey information about themselves and other users. The symbolic meaning has been studied from a social perspective (group membership) and from a more individualistic perspective. From this last perspective, the associations would reflect the stereotypical image of the user.

According to Thomas and Sekar (2008), if youth is a characteristic of the personality of a product, it does not mean that the product is only intended for young consumers, but that the product can be used by consumers of any age for whom being young is important.

The categories age, gender, marital status, children, profession, and physical activity contributed to establishing differences between the different forms of presentation of APDs so their contributions to obtaining personality profiles for the forms of presentation studied deserve to be highlighted. Of these categories, age and gender were the most important to discriminate products. The roll-on was associated with young and adult women and the presentations cream and stick were associated with adults older than 60 (the first with females and the second with men). Freling et al. (2011) report that determining the personality of a product has many positive effects, such as influencing preference and use, increasing the level of trust and loyalty, evoking the emotions of consumers, stimulating the processing of active information, motivating self-expression and association, providing the fundamental aspects of the differentiation of the product and influencing the attitude toward the product and the cognitive associations.

4.3 | Comparison of both techniques

It is noteworthy that both techniques provided information that allowed for differentiation between the various forms of APDs presentation studied. Both techniques provided data on different and complementary aspects of the products studied which could be applied according to different objectives. While WA provided information on the characteristics of the different forms of APDs, which could be applied in the optimization and/or development of one of these cosmetic forms, the PPP gave information about the image that consumers have of each product; the latter could be used in marketing, either to reaffirm or revert it, or to introduce a new product into the market. Both techniques could be used independently or in a complementary way.

There were few similarities between some categories of WA and PPP. Although the user category of WA was one of those which received the lowest number of total mentions, the cream form was associated with older women, thus coinciding with the personality profile of this APD. It could also be assumed that the association of the PPP technique with older individuals was reflected in the actuality WA category with associations referring to "old," "outdated," "in-

disuse." The WA task would not then serve to obtain information about the target consumer of this type of product. For this purpose, the PPP task should be applied, as it asks the respondent directly to imagine the product as a person—something which does not arise spontaneously in the WA.

Whatever the forms of presentation for APDs that consumers prefer, there will always be a segment in the market for the different forms that already exist and for those to come. So, at the time at which these types of products are developed and put on the market, it is useful to have tools that allow these products to have the best chance of success in a very competitive market.

Before generalizing the results of this empirical study, some limitations need to be considered. The stimuli used for the application of the techniques studied were generic forms of APDs; other presentations, such as emulsion sticks, fluid gel sticks, solid gel sticks, and so on, were not included. Another consideration relates to the preference for the forms of APDs studied by the participants, which could have been related to the results obtained for both techniques. External validity is also limited by the study's biased sample toward Caucasians with relatively high levels of education and household income.

Further research is needed to study the application of the PPP technique to other products, such as cosmetics and food products. Likewise, the results of the methodology proposed in the present study could be compared with those obtained by applying other projective techniques. Specifically, with respect to APDs, it would be necessary to study whether the consumer's concept of efficacy is explained only for the duration of the effect or if it integrates other components. It may also be of interest to use other techniques for the purpose of determining the duration that consumers consider desirable for an APD. Regarding this point, it should be noted that in the market there are products with claims of 48 and up to 72 hr.

5 | CONCLUSIONS

Consumers perceived in a differentiated way the various forms of presentation of the APDs under investigation through the two projective techniques applied.

The WA task allowed us to obtain the profile of use reasons which were associated mainly with the sensory characteristics of the products, while the PPP task allowed us to learn the personality characteristics attributed to the consumer of each form of presentation.

Both techniques were useful and complementary and could be applied in different instances in the development of any personal care products.

ORCID

Emma Parente  <https://orcid.org/0000-0002-0279-6001>

REFERENCES

- Aaker, J. L. (1997). Dimensions of brand personality. *Journal of Marketing Research*, 34, 347–356.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting behavior*. New Jersey, Englewood Cliffs: Prentice-Hall.

- Avis, M., & Aitken, R. (2015). Brand personification, brand personality and brand relationships in historical perspective. *Journal of Historical Research in Marketing*, 7, 208–231.
- Bruseberg, A., & McDonagh-Philp, D. (2001). New product development by eliciting user experience and aspirations. *International Journal of Human-Computer Studies*, 55, 435–452.
- Delbaere, M., McQuarrie, E. F., & Phillips, B. J. (2011). Personification in advertising. Using a visual metaphor to trigger anthropomorphism. *Journal of Advertising*, 40, 121–130.
- Delgado-Ballester, E., Palazón, M., & Pelaez-Muñoz, J. (2017). This anthropomorphised brand is so loveable: The role of self-brand integration. *Spanish Journal of Marketing - ESIC*, 21, 89–101.
- Dodds, R., Tseñlon, E., & Weitkamp, E. (2008). Making sense of scientific claims in advertising. A study of scientifically aware consumers. *Public Understanding of Science*, 17, 211–230.
- Dolnicar, S. (2001). Getting more out of three way data—Simultaneous market segmentation and positioning applying perceptions based market segmentation (PBMS). *30th EMAC Annual Conference*, (p. CD Proceedings). Bergen, Norway.
- Donoghue, S. (2000). Projective techniques in consumer research. *Journal of Family Ecology and Consumer Sciences*, 28, 47–53.
- Eldesouky, A., Pulido, A. F., & Mesias, F. J. (2015). The role of packaging and presentation format in Consumers' preferences for food: An application of projective techniques. *Journal of Sensory Studies*, 30, 360–369.
- Epley, N., Waytz, A., Akalis, S., & Cacioppo, J. T. (2008). When we need a human: Motivational determinants of anthropomorphism. *Social Cognition*, 26, 143–155.
- Esmerino, E. A., Ferraz, J. P., Tavares Filho, E. R., Pinto, L. P., Freitas, M. Q., Cruz, A. G., & Bolini, H. M. (2017). Consumers' perceptions toward 3 different fermented dairy products: Insights from focus groups, word association, and projective mapping. *Journal of Dairy Science*, 100, 1–12.
- Freling, T., Crosno, J., & Henard, D. (2011). Brand personality appeal: Conceptualization and empirical validation. *Journal of the Academy of Marketing Science*, 39, 392–406.
- Gámbaro, A., Parente, M. E., Boinbaser, L., & Roascio, A. (2014). Word association technique applied to cosmetic products—A case study. *Journal of Sensory Studies*, 29, 103–109.
- Ganesh, J., & Oakenfull, G. (2000). International product positioning. *Journal of Global Marketing*, 13, 85–111.
- Greenacre, M. (2010). Correspondence analysis. In P. Peterson, E. Baker, & B. McGaw (Eds.), *International encyclopedia of education* (Vol. 8, 3rd ed., pp. 103–111). New York: Elsevier.
- Gudkova, N. (2016). The language of colour as a stimulus for unconscious hedonistic associations in modern beauty product advertising. *Applied Linguistics*, 37, 1282–1290.
- Guerrero, L., Claret, A., Verbeke, W., Enderli, G., Zakowska-Biemans, S., Vanhonacker, F., ... Hersleth, M. (2010). Perception of traditional food products in six European regions using free word association. *Food Quality and Preference*, 21, 225–233.
- Guerrero, L., Colomer, Y., Guàrdia, M. D., Xicola, J., & Clotet, R. (2000). Consumer attitude towards store brands. *Food Quality and Preference*, 11, 387–395.
- Hart, P. M., Jones, S. R., & Royne, M. B. (2013). The human lens: How anthropomorphic reasoning varies by product complexity and enhances personal value. *Journal of Marketing Management*, 29, 105–121.
- Kubacki, K., & Siemieniako, D. (2017). Projective techniques. In K. Kubacki & S. Rundle-Thiele (Eds.), *Formative research in social marketing innovative methods to gain consumer insights* (pp. 165–182). Singapore: Springer.
- Kung, K., & O'Connor, L. (2017). Biometrics in health care. In S. Mitra & M. Gofman (Eds.), *Biometrics in the data driven world trends, technologies and challenges* (pp. 109–146). New York: CRC Press.
- Maehle, N., Otnes, C., & Supphellen, M. (2011). Consumers' perceptions of the dimensions of brand personality. *Journal of Consumer Behaviour*, 10, 290–303.
- Parente, M. E., Gámbaro, A., Boinbaser, L., & Roascio, A. (2014). Selection of fragrance for cosmetic cream containing olive oil. *Journal of Cosmetic Science*, 65, 161–173.
- Parente, M. E., Mazoni, A. V., & Ares, G. (2011). External preference mapping of commercial antiaging creams based on consumers' responses to a check-all-that apply question. *Journal of Sensory Studies*, 26, 158–166.
- Pich, C., & Dean, D. (2015). Qualitative projective techniques in political brand image research from the perspective of young adults. *Qualitative Market Research: An International Journal*, 18, 115–144.
- Ricoeur, P., Czerny, R., McLaughlin, K., & Costello, J. (1979). The rule of metaphor: Multidisciplinary studies of the creation of meaning in language. *Journal of Aesthetics and Art Criticism*, 37, 496–498.
- Roininen, K., Arvola, A., & Lähteenmäki, L. (2006). Exploring consumers' perceptions of local food with two different qualitative techniques: Laddering and word association. *Food Quality and Preference*, 17, 20–30.
- Schreiber, J. (2009). Antiperspirants. In A. O. Barel, M. P. Howard, & I. Maibach (Eds.), *Handbook of cosmetic science and technology* (3rd ed., pp. 631–641). New York: Informa Healthcare.
- Schreiber, J. (2009). Deodorants. In A. O. Barel, M. P. Howard, & I. Maibach (Eds.), *Handbook of cosmetic science and technology* (3rd ed., pp. 643–651). New York: Informa Healthcare.
- Schuller, R., & Romanowski, E. (2009). Aerosols for apprentices. In R. Schuller & E. Romanowski (Eds.), *Beginning cosmetic chemistry* (3rd ed., pp. 259–270). Carol Stream, IL: Allured Publishing Corporation.
- Soares, E. K., Esmerino, E. A., Ferreira, M. V., Da Silva, M. A., Freitas, M. Q., & Cruz, A. G. (2017). What are the cultural effects on consumers' perceptions? A case study covering coalho cheese in the Brazilian northeast and southeast area using word association. *Food Research International*, 102, 553–558.
- Tantiseenepong, N., Gorton, M., & White, J. (2012). Evaluating responses to celebrity endorsements using projective techniques. *Qualitative Market Research: An International Journal*, 15, 57–69.
- Tariq, M., Nawaz, M. R., Nawaz, M. M., & Butt, H. (2013). Customer perceptions about branding and purchase intention: A study of FMCG in an emerging market. *Journal of Basic and Applied Scientific Research*, 3, 340–347.
- Thomas, B., & Sekar, P. (2008). Measurement and validity of Jennifer Aaker's brand personality scale for Colgate brand. *Vikalpa: The Journal for Decision Makers*, 33, 49–61.
- Torres, A., & Bijmolt, T. (2009). Assessing brand image through communalities and asymmetries in brand-to-attribute and attribute-to-brand associations. *European Journal of Operational Research*, 195, 628–640.
- Upadhyaya, M. (2012). Projective techniques for brand image dimensionality and using various techniques to investigate and improve the brand personality. *Polish Journal of Management Studies*, 6, 89–100.
- Vieitez, I., Gámbaro, A., Callejas, N., Miraballes, M., & Irigaray, B. (2014). Consumer perception of goat cheese using word association technique. *Journal of Food Science and Engineering*, 4, 120–130.
- Wild, J., Lanzalaco, A., & Swaile, D. F. (2006). Antiperspirants. In Z. Draelos & L. Thaman (Eds.), *Cosmetic formulation of skin care products* (pp. 123–134). New York: Taylor & Francis Group.

How to cite this article: Gámbaro A, Roascio A, Boinbaser L, Pérez S, Parente E. Application of two projective techniques in the study of consumer perception of antiperspirant/deodorants. *J Sens Stud*. 2019;34:e12478. <https://doi.org/10.1111/joss.12478>