

Drivers of liking in men's skin care across cultures

by

Grace Isabella Deubler

B.S., University of Wisconsin - Madison, 2017

M.S., Kansas State University, 2019

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Food, Nutrition, Dietetics, and Health  
College of Health and Human Sciences

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

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## **Abstract**

The male consumer has long been ignored in the skincare space. Times are changing and this demographic has become more open and interested in traditionally feminine beauty and skin care products. This dissertation aims to begin creating a body of knowledge regarding sensory and consumer research on men's personal care products by identifying drivers of liking in the face lotion category and subsequently exploring the male skincare consumer.

In Phase I, eighteen interviews were conducted in two markets, Kansas City and Los Angeles, to understand the baseline information on men's perceptions, opinions, beliefs, and attitudes related to skin care. Men recruited for the interviews were between the ages 18-49 and were willing to try new skin care products. The key take-aways from this research included that men generally appreciate easy, fast skin care routines, use affordable and readily available products, and desire to maintain the look and/or health of their skin. A sorting task completed during the interviews provided the researcher with information on men's perceptions of different brands and commercially available products. Based on these learnings, 12 lotion products were selected for further research based on their perceived relevance to the male skin care consumer.

In Phase II, descriptive analysis was performed by six highly trained panelists at the Kansas State Sensory and Consumer Research Center. A consensus-based modified flavor/texture profile method was used. The panel evaluated for 48 attributes across five modalities: appearance, aroma, pick up, rubout, and afterfeel. This evaluation differentiated across the products and demonstrated the key similarities and differences; this was made clear as the results were visualized via cluster analysis and principal component analysis. The men's face lotion samples tended to have more masculine scents and thicker textures compared to gender neutral or feminine-leaning products.

In Phase III, a home use test was conducted on eight products – selected for their differentiated profiles according to the descriptive analysis – to determine drivers of liking for men's face lotion. The research was conducted in two markets: Olathe, KS, USA and Seoul, Republic of Korea. Products were tested by 80 male participants in each country in an incomplete randomized block design; each panelist evaluated four assigned products for two days each, completing a questionnaire for each sample. The results showed adequate discrimination across products; acceptance for overall liking, aroma, and texture was captured along with perceptions of specific product attributes, product usage, and purchase interest. In addition, non-product related questions were asked to gain a better view of the consumers who participated including psychographic measures, demographics, and general lotion preferences. Integrity of shape (appearance attribute) and several aroma attributes were identified as key driver of liking in both countries. Attributes associated with slow absorption and lasting skin residues, such as oil and amount of residue, were identified as drivers of disliking in both countries. The present work provides a realistic research plan for identifying drivers of liking and successfully achieved its central objectives; this is a valuable building block on which future men's skin care research can build.

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Approved by:

Co-Major Professor  
Dr. Marianne Swaney-Stueve

Approved by:

Co-Major Professor  
Dr. Kadri Koppel



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# **Chapter 1 - Literature Review**

## **Introduction**

The field of sensory science has historically shown more emphasis in studying food and beverages and had a lesser focus on personal care and other non-food consumer goods categories. However, the sensory field is changing and showing more interest in these categories, as referenced in a talk and poster promoting non-food research at the 2018 Society of Sensory Professionals Conference (Van Haren et al., 2018). That presentation announced the need for more non-food research regarding different product categories, innovations, and methods (Van Haren et al., 2018). Personal care is one such category that would benefit from a deeper understanding of products and consumer's use experiences.

Personal care encompasses a diverse set of product categories including primarily skincare, makeup, and haircare, among others. Sensory researchers must adapt traditional methods to fit the products they intend to test; these products often have varied use occasions and application styles. Some commonly used methods include interviews, focus groups, descriptive analysis, consumer research, and instrumental testing. Often, sensory research for these products is proprietary so the amount of available published research is not as abundant as food and beverage research; this can be a challenge when a researcher is unfamiliar with the product category and does not have access to suitable resources. Moreover, sensory research of personal care products, specifically skincare and makeup, tends to focus on the feminine viewpoint. This leads to fewer resources and methods suitable for understudied demographics, such as men, who are often left out of research studies. Much of the available research on men's skincare is based in the Asia-Pacific region with less being published on men in America. Many of the sources on the topic are thesis or conferences reports, and not published in peer-reviewed journals. Further,

much of this literature is from the late 2000's and is not considering the current state of the industry, trends, and drift from brick-and-mortar retail to the direct-to-consumer, internet culture of today.

This dissertation aimed to close that gap by conducting a comprehensive series of sensory and consumer research studies on men's face lotion; the research and accompanying methods used help to build the body of published knowledge regarding skincare research, specifically with a focus on the male consumer. The research consisted of three phases: an exploration phase which included interviews with male skincare consumers, an analytical phase involving descriptive analysis on men's face lotion products, and a hedonic-based phase centered around home use tests fielded in the United States and Republic of Korea. The interviews provided information on what factors, attributes, and brands were most important to the men which guided the selection of samples evaluated in the descriptive analysis. The results of the descriptive analysis allowed for eight samples to be chosen for the home use test based on their differentiated profiles. The home use test allowed for consumer acceptance to be measured and later associated with the sensory characteristics to produce the drivers of liking. The consumer work was performed in two markets – the United States and Republic of Korea – to compare two diverse sets of male skin care users. This was an interesting comparison as the Republic of Korea is known for their advanced beauty and skin care industries and more forward-thinking men's skin care consumers. The overarching objective of the research was to identify the drivers of liking in men's face lotion compared across two cultures. The research discussed in this dissertation was covered by a general approval for sensory and consumer research of personal care products from the Committee on Research Involving Human Subjects / Institutional Review

Board (IRB) for Kansas State University (IRB #10062). The following chapter will delve into the existing literature related to the dissertation.

## **Personal Care Research**

### **Qualitative Consumer Research**

To explore new markets and gain a deeper understanding of products and offerings, personal care consumers can be recruited for qualitative consumer research. Many methods exist including one-on-one interviews, dyads, triads, focus groups, and online bulletin boards (Lawless & Heymann, 2010). The uses for qualitative research vary from primary research that explores the fundamentals of a topic, to in-depth probes into the consumer's true experiences, feelings, and opinions (Lawless & Heymann, 2010). In-person focus groups tend to be the most common qualitative method used; some benefits of focus groups include the ability for participants to interact and discuss, flexibility in questions and structure, and the ability to show things like products or marketing materials (Lawless & Heymann, 2010).

In-depth interviews (IDIs), also called one-on-one interviews, are an alternative to focus groups (Henderson & Hairston, 2017). Though the benefit of group discussion is lost, IDIs offer several advantages. First, they can work well when the objective would be best answered by a brief session with limited and specific questions (Henderson & Hairston, 2017). Additionally, if the topic is particularly personal or sensitive, respondents may be more willing to open up in a one-on-one setting over a group setting (Henderson & Hairston, 2017). Finally, if the respondents are particularly hard to recruit, IDIs may offer more flexibility in scheduling (Henderson & Hairston, 2017). Some drawbacks of IDIs include the cost, time, and risk of a mis-recruit which may lead to a less productive session (Henderson & Hairston, 2017). Researchers

can choose between the various qualitative methods to best fit their needs based on the project objectives and resources.

Talavera and Sasse offered an example of using qualitative research to get deeper personal care learning by conducting three focus groups with women about beauty care (2019). The objective of the focus groups was to collect “consumer-friendly terminology” and understand emotional responses related to the women’s beauty products and routines by using situational examples (Talavera & Sasse, 2019). Aside from discussion during the session, participants were asked to complete a homework assignment prior to the focus groups; their task was to make a collage that answered the question: “How do you feel when taking care of your face and your appearance?” (Talavera & Sasse, 2019). This activity helped prime participants to talk about this somewhat personal topic and offered an additional discussion point during the session.

Another commonly used activity, or intervention, in qualitative research is sorting (Henderson & Hairston, 2017). Sorting activities are effective for achieving a deeper understanding of how participants perceive the similarities and differences and can facilitate deeper conversation (Henderson & Hairston, 2017). It is also less taxing than asking many questions on individual samples or presenting the samples in small groups or pairs to compare and contrast (Santosa et al., 2010). Sorting results can be analyzed qualitatively at a high-level, or quantitatively using established techniques such as multidimensional scaling (MDS), STATIS, generalized Procrustes analysis (GPA), or DISTATIS (Santosa et al., 2010). DISTATIS, a relatively new method combining MDS and STATIS, was used in a study of olive oils where 31 respondents were asked to sort 25 bottles of olive oil based on the bottle and label appearance (Santosa et al., 2010). Following the completion of the task, the respondents were asked to

verbally explain their groupings; all parts of the study were completed individually (Santosa et al., 2010). The results allowed the researchers to identify groups of consumers and was effective in more specifically defining some of the consumer language for these products; by combining participant's verbal explanations with the statistical DISTATIS results, the researchers were able to gain a deeper understanding of the consumer's perceptions (Santosa et al., 2010). Aside from the method, this study helps to illustrate how consumers perceive similarities and differences in packaging, which can be applied to non-food items such as personal care.

Online bulletin boards can also be a powerful method for conducting at-home evaluations. Benefits of bulletin boards include being able to conduct the research in different geographic locations, giving participants more flexibility as they can answer prompts and join discussions throughout the day (Lawless & Heymann, 2010). Participants can give real-time feedback on products as they use them at home. Moderators can ask for things like video testimonials and/or videos of the consumer using the product which helps to generate thoughtful group conversations (Lawless & Heymann, 2010). These can also be effective for capturing feedback over time (Lawless & Heymann, 2010); for example, when testing a night cream, the researchers may be curious how the skin appearance and feel differ before use, in the morning after use, and after several nights of use. This is a dynamic method that offers much flexibility and customization based on the product being evaluated. Though little published research exists on qualitative methods for personal care, it is commonly done in industry. Publications and methods based on other industries, such as food and beverage, can still be applied in personal care, though the specific project objectives should be considered to choose the right techniques.

## **Quantitative Consumer Research**

Another type of consumer-focused methods that may be used for personal care products is quantitative consumer research, though the limitations in this type of research must be considered. Due to the challenge of creating typical use environments in a central location test (CLT), and the desire to collect data from a longer timeline than CLTs traditionally allow, researchers have considered home use tests (HUT) the most appropriate options for personal care research (Jaeger & MacFie, 2010). However, researchers have acknowledged the limitations associated with HUTs such as: high costs, less control, potential for increase in missing data points, longer run time, etc. (Jaeger & MacFie, 2010). In some cases, CLTs may prove more appropriate, like in situations where very specific sensory properties are explored, or when the product is used by a third party (i.e., not the consumer), such as a cosmetologist or the like (Jaeger & MacFie, 2010). In these cases, the participant may come into a lab setting and have a product or service performed on them by a trained professional and the researcher would record the results.

An extensive HUT on makeup wipes was conducted with 962 consumers in the USA and the UK (Xing et al., 2020). Eighteen test products were created based on a 4-factor design of experiments with each participant testing six of the samples over a 6-week period and recording their feedback in weekly online surveys (Xing et al., 2020). The purpose of the study was to optimize the products to elicit the highest acceptance and purchase interest scores; in doing this, the researchers also looked at what factors were responsible for driving the top scores (Xing et al., 2020). In order to determine these drivers, the researchers used a method novel to sensory and consumer research: sensitivity analysis (Xing et al., 2020). Sensitivity analysis is defined as “the study of how the uncertainty in the output of a model (numerical or otherwise) can be

apportioned to different sources of uncertainty in the model input” (Saltelli, 2002). This study is an example of using a HUT to obtain rich learnings that can be used to guide product development. Due to the long test time, number of products, and number of participants, it is clear this study may not be feasible in all situations because of the resource and financial commitments required; however, it presents several quality methods that can be applied in other contexts.

As in other areas of consumer research, the study of emotions elicited by personal care products has been of interest to researchers. In one example, Painchault et al. (2020) examined physiological, task-based, and behavioral responses of 55 women to scented shampoo and hair serum products. The objective of the study was to determine if the scented products, containing a Peony fragrance, showed a relaxing effect on the participants (Painchault et al., 2020). Physiological measures such as heart rate, blood pressure, and electrodermal activity were cited as the most effective measures for demonstrating relaxation; the results from these measures were significant enough to support a product claim on the “emotional benefits” of the aroma (Painchault et al., 2020). This represents a novel approach to claims testing and demonstrates that non-verbal measures, instead of self-reported data, can be effective in characterizing consumer’s emotional response to products. Another study of scented personal care products also looked at product’s effects on the emotional state. David and others (2019) provided consumers with an odorless and rose-scented cosmetic cream; participants (N=26) were then asked to complete a survey on their emotional state (“mood”) and undergo face analysis and an MRI to record their brain activation patterns. These measures were compared and correlated; positive results were found for the scented cream, compared to less positive outcomes for the odorless sample (David et al., 2019). Overall, this is another novel measure of emotional or mood states in consumers

based on their response to products. The authors acknowledged the limitations of the low sample size and indicated more testing was needed (David et al., 2019), however, the methods in this study and that performed by Painchault and others (2020) provide an interesting look at alternative, and more quantitative, approaches to measuring emotional response in consumers.

In the product development process, companies feel it is beneficial to get consumers involved. Martins et al. (2020) looked at consumer profiling methods to aid in characterizing formulations of cosmetic-type emulsions. Four samples with minor differences in formulation were presented to two groups of female consumers – 57 participants utilized an intensity scaling method and 41 used flash profiling (Martins et al., 2020). The consumers in the flash profiling group generated terms and then performed the task of ranking the four samples based on a list of the terms; those using intensity scales also used a list of the generated terms and evaluated each sample using an unstructured scale (Martins et al., 2020). The results showed high variability; the consumers had a hard time coming to consensus on most attributes (Martins et al., 2020). The methods would not be a suitable replacement for a trained panel and the results were not strong enough for decision making, however, they could give directional guidance to product developers. The methods were effective for generating consumer terminology, such as “thickness” or “absorption”, to describe products (Martins et al., 2020). These types of terms may be useful when designing surveys for CLTs or HUTs.

Overall, there are few published examples of consumer research using personal care products. Typically, these studies are performed in industry and may contain proprietary information that companies are not willing to publish. One example of published industry research was performed and funded by Rodan + Fields, a multi-level marketing company that sells skin care products. In this study, 29 men participated in a four-week evaluation of a three-



step skin care regimen (Rodan, Fields, & Falla, 2017). Twice a day, men were prescribed to use a cleanser and leave-on treatment (similar to a serum or light lotion); they also used a sunscreen product in their morning routine (Rodan, Fields, & Falla, 2017). The skin of the participants was evaluated by trained researchers at specific timepoints throughout the study and the results reported statistically significant improvements in key areas such as appearance and sun damage (Rodan, Fields, & Falla, 2017). A potential limitation of this study is that it was performed and the manuscript authored by employees of Rodan + Fields which could introduce a conflict of interest and bias; however, this paper offers a logical method for conducting skin care research, specifically with men. Other examples of research using consumers in publications were indirect, meaning the consumers were test subjects and understanding acceptance and/or hedonic response was not the objective of the study. Typically, these consumers were being used as more of a trained panel; examples of this are cited in the next section.

### **Sensory Research**

Compared to consumer research, much published sensory research exists on a variety of methods that use highly trained and trained panels to evaluate personal care products. Sensory research is essential to the personal care industry as the effectiveness of a product is not important if consumers are unwilling to use it based on its tactile, visual, or aromatic characteristics. The industry must balance efficacy and product quality to best appeal to consumers. This concept was discussed by Aust, Oddo, Wild, Mills, and Deupree (1987) in their investigation of 5 lotion products using a modified flavor/texture profile method that used modalities unique to lotions such as product appearance, rub-in, absorption, skin appearance, and afterfeel at two timepoints. The importance of evaluating products at different time points is more extensively explained in other personal care studies (Lee et al., 2005; Parente et al., 2008;

Wortel & Wiechers, 2000). It is important because products, like lotions, for example, are often applied then worn for an extended period; researcher desire to know how the product's characteristics change throughout use. Post-application evaluation times range from relatively short times – under 10 minutes (Lee et al., 2005; Parente et al., 2008), to longer times – thirty minutes (Aust et al., 1987) and up to an hour after application depending on the study objectives, product characteristics, and/or product category (Wortel & Wiechers, 2000). There is a potential for even longer evaluation timepoints; for example, they could be used to test a claim referencing long-wear or long-lasting characteristics or benefits of product such as lipstick, foundation, eye liner, etc. Alternatively, other research was more limited in scope and time, such as a study on creams that utilized a Temporal Check-All-That-Apply (TCATA) method to evaluate application characteristics of the products over 60 seconds (Boinbaser et al., 2015). With the range of times found in publications, researchers must consider their most central objective when determining the best method to use.

Included in the published literature are a variety of lexicons and examples of attributes, definitions, and references appropriate for personal care products. Something critical to personal care research that can set it apart from the descriptive analysis of food and beverages is the need for explicit instructions on product use and application. These specific directives are typically included with the definitions and may also help dictate the order of attribute evaluation. In a study of emollients, a personal care ingredient known for its hydrating properties, researchers looked at five attributes: difficulty of spreading, gloss, residue, stickiness, and oiliness (Parente et al., 2008). These attributes were chosen based on previous research and the results showed the attributes were able to differentiate across the sample products (Parente et al., 2008). These same five attributes also appeared in a lexicon developed to evaluate aqua creams (Lee et al., 2005)

and was referenced as a source for the attributes used in the TCATA method (Boinbaser et al., 2015). In addition to these studies, a more comprehensive source of attributes has been assembled in the ASTM standard on descriptive analysis of skin lotions and creams (ASTM, 2012). The ASTM standard organizes attributes by modalities including appearance, pick up, rubout, and afterfeel (immediate and at additional time points), with a supplementary list of terms for fragrance evaluation (ASTM, 2012). For research with texture-specific objectives, Guest et al. (2011) used multidimensional scaling to understand attributes that could be included in a texture lexicon; their work allows researchers to understand similarities and differences in terms (attributes) so they can avoid redundancies or gaps in their lexicons. Additionally, this group created a tool, the Tactile Perception Task (TPT), which includes both physical and emotional terms that can be used to describe tactile experiences with skin care products (Guest et al., 2011); though the emotional terms may lack relevance in descriptive analysis research, the learning from this study can help guide lexicon development. Aside from skin care products, related lexicons and descriptive analysis methods exist for other personal care products such as lip products (Dooley et al., 2009), toothpaste (Hightower & Chambers IV, 2009; Kim et al., 2013), nail polish (Sun et al., 2014), cosmetic powders (Moussour et al., 2017), facial cleansing/makeup remover wipes (Xing et al., 2020), and damaged hair (Bloch et al., 2020). Future research should take inspiration from the existing resources, like the lexicons above, and apply them to other product categories to help fill the gaps and build a better base of published knowledge.

When evaluating personal care items on the body, the skin surface must be cleaned and/or prepped in a manner that resembles the palate cleaning steps recommended in food and beverage evaluation. For example, if the volar forearm is used for evaluation, the ASTM

standard prescribes that the area should be free of any topical products for at least 4 hours prior to testing, cleaned, and dried (ASTM, 2012). Additionally, it dictates methods for marking the skin to help control the application site and for recording the skin's temperature, as this may affect the perceived characteristics (ASTM, 2012). Various methods of this standardization exist in research such as applying an isopropyl alcohol solution to the skin and creating 4-cm circles on the forearm to test products (Boinbaser et al., 2015; Parente et al., 2008), using the back of hands to test products (Lee et al., 2005), and using a pipette to deposit identical amounts of product on the skin (Aust et al., 1987). As important as the skin preparation is sample preconditioning. Prior to testing, products should be held under the appropriate conditions, such as storing and/or holding samples in environments with "similar temperature and humidity conditions" so they can equilibrate (ASTM, 2012). These methods are at the discretion of the researcher and should be chosen to fit the study objectives, resources, and sample products.

A final consideration with respect to sensory research with a trained panel is the method used. A wide variety of descriptive analysis methods are cited in research, including many hybrid and/or modified versions of classic methods like flavor or texture profile (Caul, 1957; Brandt et al., 1963). For example, Wortel and Wiechers utilized the Quantitative Descriptive Analysis (QDA) method with two trained panels to evaluate 55 personal care samples (2000). Panelists used a 6-inch line scale with anchors 0.5 inches from the endpoints to rate the different attributes; the two panels used 31 and 41 attributes, respectively, to describe the products (Wortel & Wiechers, 2000). The Spectrum Descriptive Analysis (SDA) method was utilized in the evaluation of aqua cream-type products by Lee et al. (2005). The panel used 26 attributes to describe the products (Lee et al., 2005). As a final example, Aust et al. (1987) approximately followed the procedures of the flavor and texture profile methods as adapted by Schwartz (1975)

for personal care products. Based on guidance from the ASTM standard (2012), no single method is suggested as being the most effective, rather their guidance focused on general good sensory practices; this indicates any of the referenced methods could be appropriate.

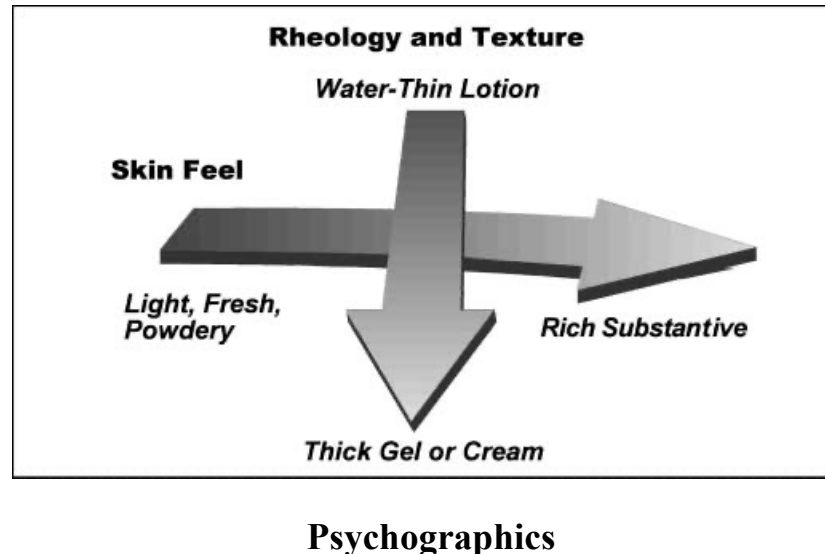
### **Instrumental Research**

Sometimes used in support of sensory and consumer data, instrumental research, such as rheology, can be used to understand differences in personal care products. As discussed in a review by Guest et al. (2013), instrumental rheology is fairly well-studied in the food and beverage industry, but few publications exist for personal care products. One example cited by Guest et al. (2013) was a study by Wegener (1997) that associated rheological data to data from descriptive analysis of several skin care-type formulations. Wegener (1997) found several notable associations between the instrumental and sensory data, for example, viscosity was strongly associated with several sensory attributes including stickiness, oiliness, and spreadability. As summarized by Lukic, Pantelic, and Savic (2013), the study of the associations across sensory and instrumental data may allow researchers to streamline the research process and eliminate the need for trained panels which may not be accessible for all; however, the results of each study are unique to the individual product categories and more research and validation is needed to solidify associations.

Instrumental data can also be useful when compared to less formal sensory methods. In a study on silicones conducted by Dow Corning, the research team took a unique approach to develop a set of test products using a variety of silicone ingredients (Van Reeth, 2006). By studying a large set of skin care advertisements, the team crafted four target sensory profiles that the development team used to create four corresponding test products (Van Reeth, 2006). These products underwent multiple-paired comparison instead of formal descriptive analysis as no

trained panel was available (Van Reeth, 2006). The results showed that fragrance and texture were the most differentiating and important characteristics of the products; the grid below was created to summarize the differences (Figure 1.1) (Van Reeth, 2006). The author discussed how viscosity could be used to characterize these different formulations in relation to the sensory terms associated with their silicone ingredients (Van Reeth, 2006). This is an example of research that combines different business functions and innovative sensory methods to help refine the personal care product development process.

**Figure 1.1 Skin feel sensory properties for different silicone-based products (Van Reeth, 2006)**



Due to the limitations associated with personal care research, psychographics are useful for gaining a deeper understanding of the consumer. Psychographics are used to understand consumer's actions, values, and beliefs through observation and surveys; they are commonly studied and used in market research but have also become common in consumer and sensory research ("Psychographics: Insights Association", n.d.). Two common methods of scoring used in psychographic surveys are Likert and semantic differential scales (Friborg et al., 2006). Likert-type scales measure a respondent's agreement with a product, attitude, behavior, or

opinion statement (Lawless & Heymann, 2010); they can exist in various lengths including 5, 6, and 7-point scales. In contrast, semantic differential scales reword the statement and incorporate a custom scale with different endpoints (Friborg et al., 2006). An example of a Likert-type scale and semantic differential-type scale with corresponding statements is presented in Table 1.1.

**Table 1.1 Example of Likert- & semantic differential-type scales and statements**

	1	2	3	4	5
<b>Likert</b>					
Wearing sunscreen every day is essential.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<b>Semantic differential</b>					
Wearing sunscreen every day is	Unimportant				Essential

Friborg and others compared the two methods and looked at the risk of acquiescence bias (2006). Acquiescence bias is when respondents tend to respond positively to statements or items regardless of their subject or meaning (Friborg et al., 2006). This bias is common with Likert-type scales and is typically overcome by reversing the statements, meaning if the respondent agrees with the statement they are disagreeing with the idea (Friborg et al., 2006). The findings from this study indicated the use of the semantic differential method can decrease the risk of acquiescence bias (Friborg et al., 2006), however, it should be noted the method may be more taxing for participants to complete. The authors concluded that the transformations were promising in the specific case discussed but future research could be done to determine the benefit for other popular Likert-based scales (Friborg et al., 2006).

One example of psychographics in consumer research is the WellSense Profile developed by King and others (2015). The objective when developing the tool was to create a survey that evaluated consumer's perceived wellness as it related to food (King et al., 2015). The authors

acknowledged the existence of other wellness-related tools, though they were not satisfied with the other tools' abilities to apply to food and consumer research situations (King et al., 2015). The tool the researchers developed and validated has the benefit of addressing five different dimensions of wellness: physical, emotional, social, spiritual, and intellectual (King et al., 2015). In addition, it uses terms rather than statements which provides more flexibility; the authors demonstrated this flexibility by using their tool in an internet study and a CLT using actual food items (King et al., 2015). Though there are no specific examples of the WellSense Profile being used in personal care research, the concept of wellness discussed by the researchers still applies to these types of products.

Another example of a commonly used psychographic method is the Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1965). The purpose of the scale is to measure individual self-esteem (Rosenberg, 1965); the benefits of the scale are that it uses relatively simple language and has just 10 items (Schmitt & Allik, 2005). The original purpose of the scale was for psychological evaluation with a foundation in medicine; however, the results may be useful in understanding consumer's relationships to products, especially those that may affect appearance such as personal care. The scale has been used and studied in many different countries, cultures, and languages; one comprehensive example compared RSES across 53 nations and found, in general, the scale was valid (Schmitt & Allik, 2005). These types of studies are critical as it is important to have scales properly translated and validated in different languages if researchers desire to use them and compare results across cultures.

Consumer values have long been of interest in the realm of psychographics. Several methods exist with two of the most popular being List of Values (LOV) and Values and Life Style (VALS) (Kahle et al., 1986). The LOV method (Figure 1.2) is a relatively short 9-item



survey that assigns respondents to one of 8 segments that characterizes traits common to individuals in said segment (Kahle & Kennedy, 1988). Comparatively, the VALS method is a 35-item survey with additional demographic questions that also assigns consumers to one of 8 segments described to be “vivid, perspicuous individual portraits” (VALS, n.d.; Kahle et al., 1986). In a study by Kahle et al. (1986), the LOV method was found to be more predictive than the VALS method along with being easier to run, however, both methods are valid and VALS is still heavily used in industry. In research, these profiling tools can be combined with other psychographic, behavioral, or hedonic questions to gain insights about a certain industry or product group. An example of this type of research looked at the media habits of Generation Y college students using the VALS method (Valentine & Powers, 2013). The researchers were able to combine the 8 VALS segments with data on media consumption and demographics to gain a richer understanding of the targeted group of consumers (Valentine & Powers, 2013). A multi-method approach like this could be applied to other consumer and product groups.

**Figure 1.2 List of Values Method (Kahle & Kennedy, 1988)**

<p><b>Table 2</b> <b>Questionnaire Format for the List of Values</b></p>		
<p>The following is a list of things that some people look for or want out of life. Please study the list carefully and then rate each thing on how important it is in your daily life, where 1 = not at all important, and 9 = extremely important.</p>		
	<b>Very Unimportant</b>	<b>Very Important</b>
1. Sense of Belonging	1—2—3—4—5—6—7—8—9	
2. Excitement	1—2—3—4—5—6—7—8—9	
3. Warm Relationships with Others	1—2—3—4—5—6—7—8—9	
4. Self-Fulfillment	1—2—3—4—5—6—7—8—9	
5. Being Well Respected	1—2—3—4—5—6—7—8—9	
6. Fun and Enjoyment of Life	1—2—3—4—5—6—7—8—9	
7. Security	1—2—3—4—5—6—7—8—9	
8. Self-Respect	1—2—3—4—5—6—7—8—9	
9. A Sense of Accomplishment	1—2—3—4—5—6—7—8—9	
<p>Now reread the items and circle the one thing that is most important to you in your daily life.</p>		

Many psychographic scales exist to better understand consumer's buying behaviors – one such example is the “Need for Touch” (NFT) scale. The scale was developed to measure differences in “haptic information processing” as it relates to individual shopping and purchasing behaviors (Peck & Childers, 2003). The 12-item scale measures two dimensions of the NFT: autotelic and instrumental (Peck & Childers, 2003). The autotelic dimension involves touch for the sake of touch; this elicits a positive response such as “fun, arousal, sensory stimulation, and enjoyment” with no specific end goal (i.e. purchase) (Peck & Childers, 2003). Conversely, the instrumental element is based on a goal, such as purchasing the product (Peck & Childers, 2003). In this dimension, an individual is touching the product to make a decision and evaluate the products quality, weight, size, etc. (Peck & Childers, 2003). Combining the two dimensions in this scale gives researchers a broader understanding of the consumer than either dimension could on its own (Peck & Childers, 2003). In terms of applying this scale to personal care, the use may not be as straight forward as with other consumer goods; personal care products are typically packaged and difficult to handle in-store. However, consumer may make assumptions about the product based on its packaging. Additionally, some shopping channels do allow for product testing, for example, consumers may be able to swatch color cosmetics on their own skin at beauty stores. This leads to a different shopping and buying experience than if the same product was purchased online. The NFT scale could help to differentiate consumer groups who may or may not require in-person product evaluation before the purchase of personal care items. Another benefit of the scale is that it has been used in other countries and cultures. One such example evaluated Korean consumer's fashion apparel shopping behaviors by looking at characteristics such as “gender, fashion consumer group, need for touch and Korean apparel consumers' shopping channel preference” (Workman & Cho, 2013). The results showed women were more

inclined to show autotelic touch behaviors and therefore prefer “touch shopping channels” compared to men (Workman & Cho, 2013). This article also demonstrates the scale’s flexibility in being compared to other scales and data; it may be valuable to combine this psychographic scale with others to gain a deeper understanding of individual shopping behaviors.

Buyer behavior can be approached from many directions. A study on a group of “Chinese elite” consumers looked at characteristics such as conspicuousness, collectivism, impulsiveness, and innovativeness using Likert-type statements to segment consumers into four groups: “Luxury Lovers”, “Luxury Followers”, “Luxury Intellectuals”, and “Luxury Laggards” (Table 1.2) (Xiao Lu & Pras, 2011). Though cultural differences may influence the proportion and demographics of each group in a particular country or culture, the behaviors and beliefs could still apply in different product categories and markets.

**Table 1.2 Summary of Chinese luxury consumer segment characteristics (Xiao Lu & Pras, 2011)**

<b>Luxury Lovers</b>	<i>“conspicuous-oriented, rational-analytical rather than impulsive, and slightly collectivist”</i>
<b>Luxury Followers</b>	<i>“highly collectivist, slightly conspicuous, and impulsive”</i>
<b>Luxury Intellectuals</b>	<i>“very individualist, not very conspicuous, rather functional, and analytical”</i>
<b>Luxury Laggards</b>	<i>“functional and rather impulsive and heterogenous with regard to the individualist factor”</i>

In a more pointed evaluation of buying behavior, a scale specific to conspicuousness was developed (Roy Chaudhuri et al., 2011). The scale was developed and validated based on several studies using students and “general consumers” in India (Roy Chaudhuri et al., 2011). In the end, 11 items were kept to create the Conspicuous Consumption Orientation (CCO) Scale which proved reliable and valid in the author’s repeated tests (Roy Chaudhuri et al., 2011). However, since the scale was developed for Indian consumers, researchers should take caution in blindly

applying this scale and results to other countries and cultures without considering differences in language and behavior.

In contrast to conspicuous consumers, others are much more price motivated or may be inclined to purchase traditionally cheaper, generic products. In a study by Shukla and others (2013), a convenience sample of supermarket consumers were asked to complete a survey containing seven dimensions that can be used to evaluate consumer perceptions of private label brands. The five dimensions included general deal proneness, price deals, non-price deals (end-of-aisle proneness), impulsiveness (similar to one of the dimensions studied by Xiao Lu & Pras, 2011), smart-shopper self-perceptions, brand loyalty, and attitude towards private label brands (Shukla et al., 2013). The survey, 28 Likert-type items, was fairly long compared to some of the other scales previously discussed, however, the results showed high reliability and validity (Shukla et al., 2013). The test was somewhat biased towards food items as it was conducted outside supermarkets (Shukla et al., 2013), though it would likely be applicable to other product categories – such as personal care – if conducted under a different context.

In a study of comparison shoppers (Mittal, 2016), some dimensions similar to those studied by Shukla et al. (2013) were present. For example, Mittal looked at the dimension “smart shopper” which looks similar to Shukla and others “smart-shopper self-perceptions” (2013). Additionally, Mittal looked at a “budget conscious” dimension which is related to “price deals” (Shukla et al., 2013). What set the survey for evaluating comparison shoppers apart were questions about the individual’s shopping enjoyment and personality-based questions (Mittal, 2016). The results of this study showed some demographics have a higher incidence of comparison shoppers, such as older individuals and females, and others have a lower incidence, such as highly-educated individuals with high-income levels (Mittal, 2016). Though these results

may not apply to every population, they may be a guide as to whether including “comparison shopper”-type statements in a study would provide new or deeper learnings.

A final example of popular psychographic measures are those that evaluate purchase intent or interest and willingness to pay (Barber et al., 2012). These types of attributes can be hard to measure as consumers will often overstate their intentions or behaviors in surveys (Barber et al., 2012). In research by Barber and others (2012), a two-phase study on wine was conducted with 120 respondents. In phase 1, an online survey asked respondents to evaluate a list of both Likert- and semantic differential-type statements including several related to purchase intent (Barber et al., 2012). They were also given a benchmark price point for a bottle of wine and asked how much more they would be willing to pay (Barber et al., 2012). The results of phase one showed four of the five dimensions (self-transcendence values, conservation values, self-enhancement values, and environmental consequences) tested were significant and characterized some of the differences between high, moderate, and low purchase intent respondents (Barber et al., 2012). In phase 2, respondents met in-person to learn about four wine products, including completing a blind tasting, and then participated in an auction to evaluate willingness to pay using the Vickrey auction method (Barber et al., 2012). The results showed that on average, the respondents said they were willing to pay more for the bottle of wine in the online survey than in the phase two auction, and both amounts were higher than what they currently pay for a bottle of wine (Barber et al., 2012). The authors also expressed that wine tends to be a “high-involvement” product and more testing would be required to understand the methods with lower involvement products like “paper products and detergents” (Barber et al., 2012). This type of information could be interesting across different types of personal care products as some may be considered “high-involvement” – like an expensive perfume – while

others may be lower involvement – like a body wash. The downfall of the Vickrey auction method is the time and expense of the method, which may not be accessible to all researchers. Alternatively, the online survey method that combined psychographics and pricing questions was less accurate but would likely be more accessible and efficient. In this case, the method choice should be based on the inherent risk of the project; higher risk projects may require the more accurate and more expensive auction method.

The discussion above offers a look into the vast field of psychographics. A take-away from these examples is the need for testing across countries and cultures to verify the reliability and validity of scales. The next section will cover some of the challenges and considerations in cross-cultural research.

## **Cross-Cultural Research**

With the global economy trending towards increased globalization, organizations are showing more interest in cross-cultural research. If a company desires to launch a product in multiple countries, it is important that the product be tested in each market to compare the expectations of and feedback from the different consumers. It is critical to take culture into account when designing research projects (Slater & Yani-de-Soriano, 2010). One example of an important consideration in cross-cultural research is language. When translating research materials such as surveys or moderator guides, the back-translation method is the most common and has been recommended (Ares, 2018), however, the “team approach” is also discussed in the literature as another suitable method (Slater & Yani-de-Soriano, 2010). Back-translations consist of one native speaker translating materials from language A to language B, followed by another native speaker translating it from language B back to language A to verify the meanings did not change. In contrast, the “team approach” uses multiple native speakers working as a group to

translate the materials. Both methods aim at limiting bias and producing the most accurate translations. A specific challenge when doing translations are emotion and feeling words; these tend to not have direct translations across all languages and may take a higher level of cultural understanding (Ares, 2018). When conducting research in a country where the organization is not currently present, it is recommended that a local agent is used to advise the research design and oversee fielding (Buil et al., 2012). In reference to research design, it is not necessary to do every step in an identical manner across countries; the goal in designing cross-cultural research is to use “equivalent, not identical” methods that fit the needs and limits of each country (Buil et al., 2012). For example, in some countries in Asia, the use of an interviewer to guide the participant through a taste test is common and appropriate, whereas this is uncommon and somewhat inappropriate in the United States. Though the methods are not identical, the results can still be compared as they are equivalent. Finally, cultural differences should be considered while analyzing results. Participants of different cultures may express themselves differently which can influence how they respond to research questions (Ares, 2018). Two methods for overcoming these differences are standardization of scores prior to statistical testing and the use of methods that are not scale-based (Ares, 2018).

In an example from the literature, Xing et al. (2019 & 2020) completed a global evaluation of makeup wipes via descriptive analysis and consumer testing. The descriptive analysis was performed by a trained panel in the USA; however, the products were globally sourced (North America, Europe/Middle East/Africa, Asia Pacific, and Latin America regions) (Xing et al., 2019). The products were found to be highly differentiated (Xing et al., 2019). Following this evaluation, a consumer test was conducted with makeup wipe acceptors in the USA and the UK (Xing et al., 2020). These countries tend to have shared cultural traits such as

English being their primary language; this likely reduced the concerns over translating test materials and allowed researchers to use the same wording with both populations. The results showed no significant differences between the two groups across key measures such as purchase intent and overall liking (Xing et al., 2020). However, the authors did note that countries with less shared cultural traits, such as Asian and western populations, have been found to have been found to show more significant differences in their behaviors (results from internal research, unreported) (Xing et al., 2020). The studies discussed here offer a comprehensive example of cross-cultural research in the personal care space. By being thoughtful about the concerns regarding cross-cultural research, sensory scientists can design effective and valid research for the global market.

### **Current Trends in Men's Personal Care**

Men have generally been ignored when it comes to the skin care and beauty industries, but in recent years, that has been rapidly changing. In a report on men's personal care, Allied Market Research reported a compound annual growth rate of 5.4% from 2016-2022 (Singh, 2016). With an estimated worth of \$166 billion by 2022, companies and consumers alike are starting to pay more attention to this forgotten demographic (Singh, 2016). Despite this high predicted growth, there remains a need for current research on men and personal care.

Traditionally, women have been the focus of the already limited publications regarding personal care. As the stigma around what it means to be masculine fades, men are more apt to take interest in self-care, along with their health and appearance (Souiden & Diagne, 2009). Therefore, an opportunity exists to explore this underexploited market.

Though there is not much literature on sensory and consumer research focusing on men's personal care, some marketing-focused publications exist. In one example, Souiden and Diagne



(2009) looked at the differences in the cosmetic consumption habits of men in Canada and France and proposed three variables that influence that consumption: personal affect (health and appearance), sociocultural affect, and marketing affect. Their questionnaire collected information on self-image, aging, attractiveness, health, lifestyle, attitudes towards advertising, consumption habits, and demographic information (Souiden & Diagne, 2009). The results showed attractiveness and advertising had the greatest effect on consumption between the two cultures (Souiden & Diagne, 2009). This was a comprehensive and interesting review and study, but the influence of social media would need to be considered to make it relevant today.

In the skincare and beauty industries, the Asia market – specifically South Korea – is a leader in sales, innovation, and production (Deliotte, 2017). Consequently, most of the published research on men's personal care comes out South Korea and other countries in Asia. For example, Ridwan, Maulina, and Chan (2017) published a case study comparing men from Suwon City, South Korea, and Bandung, Indonesia. They wanted to understand the differences between male consumers in these two markets with a focus on men's skin care (Ridwan F, Maulina & Chan, 2017). The specific methods and survey details were unclear, however, they concluded that the South Korean population was most influenced by the "normative influence" and their personal attitudes towards using skin care products, while the Indonesian population was most influenced by their self-image and the aging effects. This influence of physical appearance for the Indonesian population was similar to the conclusions reported in literature based on men from Canada, France, Hong Kong, and Japan (Leung & Man, 2002; Souiden & Diagne, 2009; Tan, 2008). Overall, the study demonstrated some of the cultural differences of men in South Korea and Indonesia compared to other countries but lacked the depth or detail to be significant to the skin care industry. In a study out of Thailand, Sukato and Elsey (2009) looked at men's

buying behavior when it comes to skin care. With questionnaire results from over four-hundred men in the Bangkok area, the researchers created a model to better understand the consumer behavior of men in this market (Sakuto & Elsey, 2009). The survey contained psychographic-based questions (Likert-type) that asked participants about several topics including product beliefs, self-image, and purchase intent and behaviors (Sakuto & Elsey, 2009). The results of the study were called “exploratory” by the authors; however, they still give insight to marketers and others in the skin care industry that can help direct decisions for things like advertising and in-store experience (Sakuto & Elsey, 2009).

In terms of innovations in men’s products, one case where South Korea demonstrated they were ahead of the times was with the launch of Chanel’s newest men’s makeup line, Boy de Chanel (Figure 1.3) (Weiner, 2019). The line – which currently contains a foundation, eyebrow pencil, and lip balm – was first launched in the South Korean market using Korean celebrities (Weiner, 2019). The attributes that seem to set this line apart from Chanel’s traditionally feminine-targeted beauty products include the mattifying effect of the lip balm and foundation, promise of a “natural look”, and the sleek, masculine packaging. The products are now available online in the USA; however, this phased launch demonstrates that global brands are aware of South Korea’s forward-thinking culture when it comes to men’s personal and beauty care (Rapp, 2019).

**Figure 1.3 Boy de Chanel (Weiner, 2019, courtesy of Chanel)**



In comparison to the Asian markets, the male skin care market in the USA is less developed but constantly evolving and growing (Rao, 2019). For a long time, the masculine or “macho” stereotype prevented many American men from being comfortable with what they may consider excessive grooming or beauty care. As these attitudes have shifted, the industry has responded. Historically, men’s products have been characterized by dark packaging, heavy cologne aromas, and multi-purpose claims (e.g., 2-in-1, 3-in-1) (Chiquoine, 2020; Rao, 2019). These products are easy to find in big box retailers and drugstores and tend to be affordable for most consumers. Outside of these traditional brands, a new type of company with a focus on men’s grooming and personal care is growing: the direct-to-consumer (DTC) model (Chiquoine, 2020; Rao, 2019). These brands – with an aim to challenge the men’s personal care industry – include somewhat mainstream names like Dollar Shave Club and Harry’s, along with newer players like Bevel and Huron (Chiquoine, 2020; Rao, 2019). As the American market continues to take beauty and skincare influence from countries like South Korea, and social media continues to push new products to our image-focused culture, there will be a need for understanding the American male consumer’s opinions and expectations on skincare.

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## **Chapter 2 - Using In-Depth Interviews to Explore Perceptions and Opinions in Men's Skin Care**

### **Abstract**

Affective and behavior-based research on men's personal care products has not been abundant in published research. As the market for men's personal care products grows, specifically the skin care category, more research is required to better understand this consumer group. Eighteen in-depth interviews with male consumers ages 18-49 were conducted in two markets, Olathe, Kansas and Los Angeles, California, to understand baseline information on men's perceptions, opinions, beliefs, and attitudes related to skin care. Key take-aways included that men generally appreciate easy, fast skin care routines, use affordable and readily available products, and desire to maintain the look and/or health of their skin. Though some skin care claims can be appealing, many of the men were somewhat skeptical of typical marketing strategies. These findings help to show how brands are succeeding and failing at meeting male consumer expectations of skin care products and demonstrate the need for more exploration into this demographic.

### **Introduction**

Prior to the COVID-19 crisis, Mintel had estimated year-over-year growth for the men's skin care industry through 2025; due to changing consumer behaviors in response to social distancing guidelines, there has been a decreased need for grooming products (Guinaugh, 2020). Despite this change, the market is still set to grow, just at a slower rate (Guinaugh, 2020). In recent years, the landscape for men's personal care, specifically skin care, has seen many changes including an increase in direct-to-consumer (DTC) players and even makeup for men.

This change has happened in tandem with the transformation of how society defines masculinity. Men are feeling more comfortable expressing themselves via their appearance and in turn, have spent more time and resources on products in the personal care realm. Despite these developments, there is still virtually no research on men's perceptions, opinions, beliefs, and attitudes related to skin care. This gap in knowledge provides an opportunity for sensory and consumer researchers to learn more about this demographic.

As a first step for exploring the men's skin care category and consumers, qualitative research can be used to explore the "Fuzzy Front End" as described by Meilgaard, Civille, and Carr (2007). In-depth interviews (IDIs), focus groups, and observational approaches are just a few of the methodologies that can be used. In the case of IDIs, the technique allows researchers to probe into an individual consumer's personal experiences and can be useful for more intimate topics (Meilgaard, Civille, and Carr, 2007; Merriam & Tisdell, 2016). In the case of personal care, the degree to which a respondent is comfortable talking about themselves may depend on the product category. For skin care – especially with male consumers – there is a chance some respondents may not feel confident sharing their experiences with things like hygiene or acne in the presence of strangers. In consequence, it is important for researchers to consider their objectives and the nature of information being asked of the respondents when choosing methodologies.

Though there are few examples in the literature, one study of interest, from Hashim and Musa (2014), explored a different underserved consumer group. The purpose of this research was to explore Halal cosmetics with Muslim women to understand their feelings and experiences (Hashim & Musa, 2014). Like men, Halal consumers have different needs than the industry-standard White women. The researchers used focus groups to dig into what products Muslim

women were using, what they were missing from the market, and whether their needs were being met (Hashim & Musa, 2014). These focus groups were able to provide the research team with information on how these women make their purchase decisions and where the gaps in offerings exist; with that, researchers were able to continue to plan further research to address these findings (Hashim & Musa, 2014). This is one example of how qualitative research can be the catalyst for further market discoveries, specifically for more “niche” personal care consumer groups that have been largely ignored by the industry. Another focus group-based study by Talavera and Sasse (2019) focused on American female consumers and their emotional responses to beauty care. They aimed at characterizing the language women use when talking about different beauty products including skin care and cosmetics (Talavera & Sasse, 2019). This research provided some of the first published examples on how consumers talk about personal care and how it can be best addressed in a qualitative setting.

The present research aims to explore male consumers and the men’s skin care landscape. It will provide a base for which further research can build upon. The specific objectives are: (1) to understand the types of products men use, (2) to gather perceptions and opinions of brands on the market, (3) to assess their connection to skin care both emotionally and practically, (4) to compare men from different backgrounds (age, income, skin type, market/location), and (5) to examine potential drivers of liking, marketing claims, and product characteristics.

## **Materials and Methods**

### **Participants**

Two locations were the target of this research: Olathe, Kansas (greater Kansas City area) and Los Angeles, CA. These were chosen to gather perspectives from two different types of consumers – a lighter user group (recruited in Olathe), and a heavier user group (recruited in Los

Angeles). Recruiting was managed by the Sensory and Consumer Research Center (Olathe, KS), and by Jackson Research (Los Angeles, CA). Participants were monetarily compensated for their participation. Eighteen 60-minute in-depth interviews were conducted via Zoom (Zoom Video Communications, San Jose, CA) by a trained moderator. Men ages 18-49 who did not work in any conflicting industries, had no major skin issues – these included rosacea, eczema, psoriasis, allergies, or extreme sensitivities – and reported being open to trying new skin care products (i.e., skin care acceptors) were recruited for this research. In Los Angeles, the men also had to report using at least 3 categories of skin care items such as moisturizers, cleansers, toners, serums, and more (i.e. heavy users). A range of skin types (oily, normal, combination, dry), racial and/or ethnic backgrounds (Asian, Black, Latino, & White), and income levels (\$35,000-\$49,999, \$50,000-\$59,999, \$60,000-\$74,999, \$75,000-\$99,999, \$100,000-\$149,999, \$150,000 or greater) were also chosen.

## Procedure

### Figure 2.1 Sorting activity

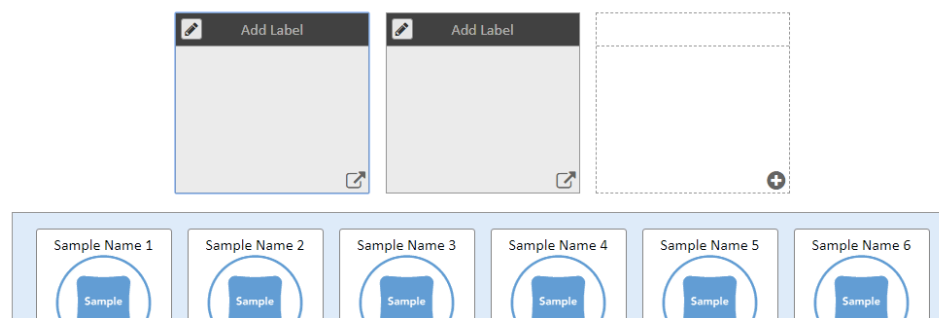
Please sort these skin care brands/products into groups according to:

- Appearance
- Branding
- Anything you have seen, read, or heard about the brand or product previously.

The groupings can be multidimensional:

- You can use any criteria you want to sort these samples.
- You can make as many groups as you like.
- You can put as many samples as you like into each group.
- You will need to indicate a unique name for each group.

Note: To make the images larger, please click the magnify glass icon on the bottom right of each image. To create the groups, click and drag each image into the boxes. To add a new group, click the plus icon on the right-most box. To name the boxes, click "Add Label".



The full moderator guide can be viewed in Appendix A. The moderator and participant introduced themselves in the beginning of the interviews. The discussion began with some general questions such as what skin care meant to them, what types of skin care they used, who typically bought their skin care products, and where the products were purchased. Next, participants were asked to complete an online sorting activity (Figure 2.1) using Compusense Cloud (Compusense, Inc., Guelph, Ontario, Canada). Participants were verbally instructed as follows:

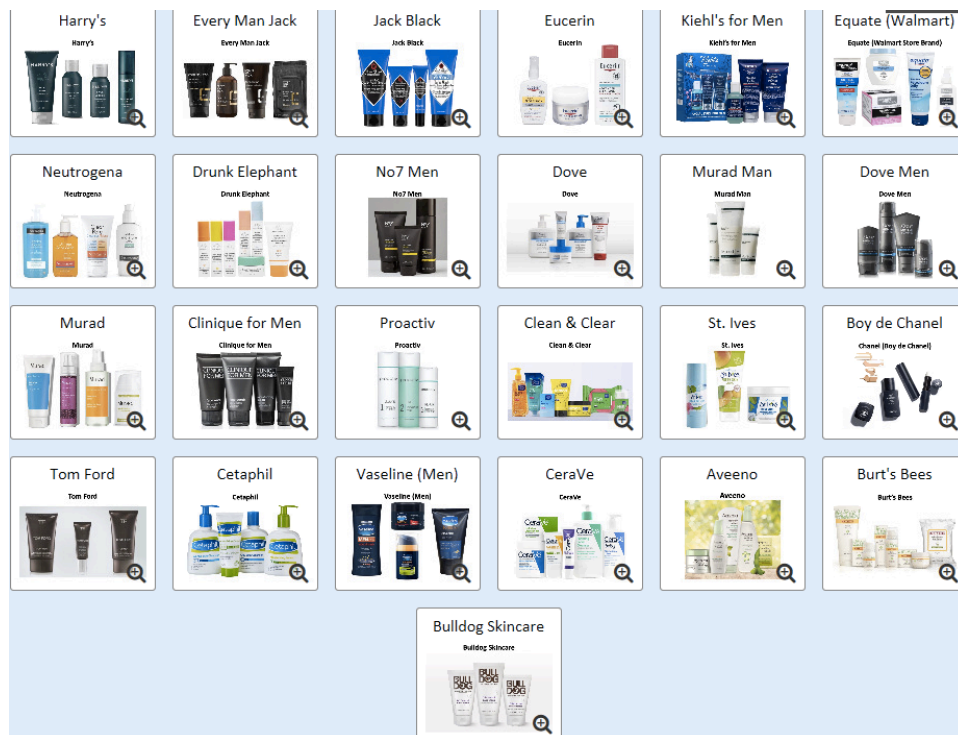
*Please sort these skin care brands/products into groups according to your impressions of the similarities and differences you perceive from the appearance, branding, and anything you have seen, heard, or read about the brand or product previously. I am going to ask you to describe the characteristics that define each group after you finish. The groupings can be multidimensional, meaning you do not have to group them in terms of just one attribute or one dimension. There are 25 items in front of you – you may sort in as few as two groups or as many as 24.*

The twenty-five items were chosen prior to this research to represent a range of products available in the United States. Both gendered and non-gendered products of various price-points were represented; all twenty-five items are shown in Figure 2.2. Once participants finished sorting the items and naming their groups, the moderator probed to better understand their perceptions and reasonings behind each grouping.

To analyze this data, the sorted group names were used to summarize common themes in the participant's perceptions about the samples. The sorted products were also coded to show whether the participant spoke positively (1), negatively (-1), or neutrally (0) about the product during the activity. Finally, the products were coded as use (1) or do not use (0). This allowed means to be calculated to show which brands and products had the most positive reactions and which were used most often.



**Figure 2.2 Sorting items**



Following the sorting activity, the discussion moved to more specific questions on the participant's skin care such as their typical routine on a normal workday, a weekend, and a special occasion. Additionally, they discussed what benefits they expect from their skin care routine and whether they experience consequences if they skip a step or fail to do their routine altogether. The next questions focused on skin care claims and ingredients; the moderator held up cards containing claims or specific ingredients that are sometimes used by the skin care industry and participants were asked to give their opinions or first reactions. The following claims were tested: crafted especially for men, Korean skin care (to capture any existing knowledge of the global skin care space), fragrance-free, multi-purpose products, non-greasy, free from, for fine lines and wrinkles, dermatologically tested, allergy tested, for sensitive skin, not tested on animals, and mattifying. These claims were identified by looking at packaging and advertisements for skin care products currently on the market. To close the discussion, the

participants were asked to give their three biggest take-aways related to men's skin care. These interviews were recorded with the participant's permission so the information could be coded and analyzed by the moderator. This work was approved by the Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University (IRB #10062).

## **Results and Discussion**

Most respondents associated skin care with cleansing and moisturizing the skin; exfoliation was also discussed. Both the face and body were included, though most participants referred to the face. Addressing acne with proper skin care and medications was also brought up several times. This was more often an issue for younger men, but some older participants still struggled with acne as well. In general, health was a driver for caring about skin care for several men who were heavy users, whereas this aspect was not generally discussed by any of the light users. Most men related their skin's health to the absence of skin cancer and to maintaining the look and feel of their skin. Many of the terms and concepts were like those mentioned about beauty care in focus groups with women (Talavera & Sasse, 2019) – specifically, cleansing, moisturizing, sunscreen, and health were mentioned in both studies. Overall, the light users tended to be less interested and/or less knowledgeable about skin care compared to the heavy users.

In terms of what types of products they use, the brands CeraVe and Neutrogena were the most commonly mentioned. In addition to these brands, the heavy users also mentioned some higher-end brands such as Kiehl's Since 1851 and Jack Black. Standard products like face wash, moisturizer/lotion, exfoliators, acne treatments, and sunscreen were mentioned by participants in both cities. Brand opinions were consistent across ages, skin type, race/ethnicity, and income

levels. Specialty-type products like serums, toner, and masks were not mentioned or used by the respondents; this demonstrates a lack of interest and focus on these products which may not be considered necessary. In general, the men in this study were not interested in long or complicated routines – they were looking to do just enough to keep their skin in good condition, but nothing extra. An example of this was how they talked about and used sunscreen; the men were not as concerned with the prevention of aging or wrinkles – instead, they were concerned with the short-term benefit of no sunburn. None of the men were wearing sunscreen every single day, but instead would use it “as needed” or when they thought they would spend a lot of time in the sun. This contrasts with Talavera and Sasse’s (2019) findings which showed women are more concerned with the anti-aging effects of their skin care products, such as sunscreen, as it makes them feel “in control”. A general theme from the respondents was that aging is inevitable and no product they use is going to stop it; this theme was seen across user groups, age groups, income levels, race/ethnicity, and skin types.

When asked who typically purchases their skin care, light users mentioned that their wives and mothers buy their skin care in addition to themselves; all the heavy users reported purchasing their own skin care. The men reported shopping at a variety of sources such as drug stores, grocery stores, big box stores like Target and Walmart, and Amazon. A few men mentioned specialty beauty stores like Sephora or Ulta, though this was not common. Several heavy users also mentioned department stores; they liked the option to ask for suggestions and assistance at these types of stores. When researching products to purchase, men rely on search engines such as Google, product reviews on retailer’s websites, social media such as reddit, and recommendations from their friends, family, and partners. However, some men were skeptical of any information listed online as they believed it was paid for or planted by the brands themselves

– “to be honest, the like magazine ones (a common result when he searches for product recommendation online) I don’t really trust because I feel like they are product placements or they get paid for the advertisement....you have to look into it to see if there is bias or product placements in the research” (Heavy user, 25-29, LA). In cases like this, the men sometimes reported preferring trial and error. In general, heavy users were more independent when it came to finding and purchasing their skin care.

**Table 2.1 Sorting Summary**

Item	Common Themes	Positive/Negative Code	Use Code
Dove	Commonly used, Universal, Many have tried	0.582	0.638
Neutrogena	Commonly used, Universal	0.582	0.638
Cetaphil	Commonly used, Clinical, Universal	0.477	0.428
Aveeno	Common, Universal, Widely used	0.319	0.323
CeraVe	Commonly used, Universal, Unknown	0.266	0.375
Eucerin	Commonly used, Universal	0.266	0.270
Burt's Bees	Commonly used, Universal, For women, Natural	0.214	0.375
Clean & Clear	Commonly used, For acne	0.214	0.375
Dove Men	For men, Commonly used, Basic	0.161	0.481
Clinique for Men	For men, Premium	0.108	0.270
Vaseline (Men)	For men, Common, Cheap	0.083	0.255
Every Man Jack	Not widely known, For men, Specialty brand	0.056	0.165
Harry's	For men, Many are familiar, Specialty brand	0.056	0.165
St. Ives	Common, Universal, Some didn't like/had negative connotations	0.003	0.323
Jack Black	For men, Specialty brand, Lesser known	0.003	0.165
Murad Man	For men, Lesser known	0.003	0.060
Proactiv	For acne, Clinical, Specialty brand, Universal	-0.050	0.112
Murad	Not widely known, Specialty brand	-0.050	0.060
Drunk Elephant	Not widely known	-0.050	0.007
Equate (Walmart)	Commonly used, Universal, Cheap	-0.102	0.165
Kiehl's for Men	Lesser known, For men	-0.102	0.112
No7 Men	For men, Lesser known	-0.102	0.112
Bulldog Skincare	Not widely known, For men, Specialty brand	-0.155	0.217

Tom Ford	For men, Designer, Lesser known	-0.207	0.112
Boy de Chanel	Not widely known, Premium, For men, Designer	-0.576	0.007

Results from the sorting task are summarized in Table 2.1. Mainstream brands that can be found at many different retailers and that are gender neutral tended to be the most widely used and had the most positive perceptions (i.e., Dove, Neutrogena, Cetaphil). High-end, expensive brands like Tom Ford and Boy de Chanel were not well-known and rarely used. In comparing the user types, more heavy users reported using the higher-end brands compared to the light users where these brands were largely unknown. This supports the hypothesis that men who are heavy users are slightly more adventurous and forward thinking about skin care. Surprisingly, income did not have a substantial effect on the brands or types of products men were buying; all income groups tended to prefer the affordable, gender-neutral brands.

When discussing potential differences in respondents' routines across different occasions (pre-COVID workday, weekend, and special events), men had largely similar routines. The most structured routines were on workdays where many men reported doing the same steps and using the same product each morning. Weekends lent themselves to less regimented routines as men may not have any obligations and do not feel the need to perform their skin care routine when they will be staying home. For special events, some men reported doing something "extra" like including an exfoliator or spending more time on grooming, but still about half of the participants reported no changes in their routine regardless of a special event. In general, these findings show that men are consistent with their skin care and supports previously discussed findings on their preferences towards uncomplicated routines.

Part of assessing men's connection to skin care involved understanding how they feel during and after use occasions. It was hypothesized that men would have positive feelings associated

with using their skin care products and it would improve their mood and emotions throughout the day. This is like how women felt about using skin care and make up as reported by Talavera and Sasse (2019). Contrary to this, the participants did not associate strong emotions with their skin care. Some reported feeling a marginal sense of accomplishment around their health and well-being when they used their skin care consistently, but these feelings were casual and did not follow them throughout their day. When asked how missing a step or skipping their skin care routine entirely would affect their day, the participants did not associate this with any negative emotions. Instead, they reported the only downside would be if their skin felt less comfortable than normal (dry, tight). These findings further support men's practical use of skin care and refutes the hypothesis that they would have strong emotional associations like women.

The men were also asked to discuss the benefits they expect to see from their skin care routine. Something that was brought up many times was the desire to maintain the skin. None of the men felt that skin care could miraculously stop aging or turn back the clock – “aging is aging” (Heavy user, 40-44, LA) – however, they did feel that a good skin care routine could be preventative and help preserve their skin for longer. Lessening the effects of acne was also a common theme among the participants. Men wanted their skin to feel clean, fresh, comfortable, and moisturized but not greasy. They expect their products to last most of the day and if they start using a new product, they hope to see results quickly (one participant expects results in 1-2 weeks). They want a “simple, straightforward, and effective routine” and “want to use products that work” (Light user, 30-34, Olathe). There were no distinctions in benefits or expectations between men in the two user groups. Overall, men were realistic about their expectations surrounding the benefits of skin care, but if they do not see results in a timely manner, they will likely give up on the product.

Another take-away from the discussions was that the men were most concerned with the functional properties of the product. Even though there are a lot of products targeting males on the market, there is not a lot of intentional or thoughtful differentiation in function. Instead, the products vary in their superficial characteristics (scent, packaging, etc.) but can fail to address differences in needs. Men's brands could consider exploring the newer trend of individualized products, like the Function of Beauty hair care brand. This brand allows consumers to not only change superficial characteristics like the scent or color, but also functional characteristics like their hair type and hair goals (shine, volume, etc.); the same format could be applied to men's skin care to cater to wider markets. This learning is important for brands as many of the male-targeted products on the market tend to put a lot of resources into appealing marketing, manly names, and masculine scents, but the return may not match the investment. Based on the perceptions and opinions of the men interviewed, they typically are searching for products that work and see through a lot of these superficial characteristics.

Claims are often an important marketing tool for skin care and an important decision-making tool for consumers. Since so much skin care research and marketing targets women, it can be challenging to ascertain the effect of claims on male consumers. Based on the conversations in these interviews, men do pay attention to claims overall. These claims are also important as many men are buying their products from stores where they are unable to test products before purchasing, therefore they must rely on the package messaging. The claims tested were selected based on their relevance to the over-arching objectives of this dissertation and on their prevalence in the market. There was little difference between men in the user groups which was contrary to the hypothesis that men who were heavy users would be more knowledgeable and/or opinionated when it came their skin care; respondent opinions are detailed below by claim:

- Crafted especially for men – Overall, men were skeptical of this claim - “obvious marketing target...I would think that hopefully it is not just a marketing scheme that says, “crafted especially for men”, that there is actually research done behind it that says there are benefits for men vs. woman based on the particular ingredients or whatever product it is” (Light user, 40-44, Olathe). Though it may be good for specific products like deodorant or shaving creams, most saw through the claim as a marketing gimmick. There was moderate appreciation for the more masculine scents these products usually have, but that only mildly motivates purchase behaviors.
- Korean skin care – Only one participant was fully aware of the Korean skin care market - “I have heard a lot of what people say, how it is like good quality stuff. I just think quality is to be determined – I am not too sure at least. When I think Korean skin care, I think like Korean girls on YouTube and stuff, using it and it is a lot of steps. It seems like it is a lot, but it gets good results” (Light user, 18-24, Olathe). Most were completely unaware of how the claim was relevant – some thought it was racially insensitive, and two were unfamiliar but thought it may indicate higher quality products. Currently, this is not a compelling claim for men in the United States.
- Fragrance-free – Many associated this claim with their kids or those with allergies or sensitive skin – “I look at that as something that might be useful for people who have a hard time with fragrances, like maybe it really irritates your nose or you might have allergies to specific fragrances. For me, it’s not necessarily something that draws me to buy it or draws me away. If it is for a skin care product, I am not looking for a smell necessarily, but for deodorant I might, or body spray” (Heavy user, 18-24, LA). The general reaction was positive and many mentioned sometimes being overwhelmed by



products with strong fragrances. Products like soap, hand sanitizer, or lip balm were identified as good candidates for being “fragrance-free” while a few men called out deodorant and body lotion as being best with fragrance added. The relevance of this claim is product and target market specific.

- Multi-purpose products – These products were described as a “jack of all trades....master of none” (Light user, 18-24, Olathe). A few men reacted positively to this claim as they appreciate the convenience factor, however, most men agreed that the quality is typically lower than using the products separately. The most common association with this claim was hair products (e.g., shampoo + conditioner). The only skincare related product came from one participant who has a 2-in-1 eye cream – “2-in-1 is the most, 3-in-1 is too much for anything. 2-in-1 can be okay, I use a 2-in-1 for shampoo and conditioner. I think this eye thing is 2-in-1 – yeah this eye things says 2-in-1 for puffy eyes and dark circles, but that is kind of the same thing” (Heavy user, 25-29, LA). Overall, the men were not sure if this would work for skin care and could not pinpoint a particular product example.
- Non-greasy – Almost every single participant had a strong, positive reaction to this claim. “That’s big for me. I’m a black male and I have drier skin, I get ashy...and the reason that usually I don’t wear (lotion) on my body or anything is because of that (non-greasy). I don’t like leftover, I don’t like residue, so honestly I usually just use water...my hands tend to sweat and a lot of my body parts tend to sweat....so I don’t like anything greasy...that would be a huge selling point” (Light user, 30-34, Olathe). The men liked products that absorb quickly and don’t leave a residue behind; they associated those characteristics with being non-greasy. One participant associated this claim with hair gel and did not see a connection to skin care. Another felt it was a good claim, however, he

finds that products rarely meet his expectations of non-greasy so he was somewhat skeptical. This is a strong claim for men's lotion products especially and could sway purchase decisions.

- Free-from – This claim received mixed reactions of appreciation and skepticism. Some men really valued it and they do actively avoid certain ingredients like parabens. Men perceived these products as being “clean”, “natural”, not containing harsh ingredients, or “organic”; a few even stated they would be willing to pay more for a product with this claim. One participant, who liked this claim, said he typically does not look for it because he buys higher-end products that he expects would not add these “questionable” ingredients – “Yeah that’s appealing...when you buy a higher end product, you just sort of assume that all these things are there. I feel like the higher end products, they don’t necessarily need to have all these claims, it is almost liked assumed they are not using dyes...” (Heavy user, 25-29, LA). A few men thought it was a marketing scheme and it did not really add or detract from the product. Two light users associated the claim with their wives who have a tendency of religiously reading labels to check for certain ingredients but were not highly motivated by the claim themselves – “For me personally, probably not that big of a deal just because I don’t get into it that deep, but I know my wife looks at all that stuff so I am sure she has the free from parabens and all that stuff...me personally, I am not going to not buy something if it doesn’t say that though” (Light user, 35-39, Olathe). The free-from claim is rather polarizing but can really speak to consumers who are ingredient-focused.
- For fine lines and wrinkles – Most participants mentioned that they do not believe you can stop or prevent aging; they care more about preserving their skin. “Haha I don’t care

about wrinkles...that's not something I look for in a product, I typically think of that in women's skincare where they are a little more concerned about lines and wrinkles...I am going to age the way I age, if it is lines and wrinkles then it is lines and wrinkles" (Light user, 40-44, Olathe). Some of the younger men thought they may eventually try a product like this, but none felt some sort of "miracle" product existed. Overall, this could be a "nice to have" if the men already enjoy the product but it would not have much influence over their purchase decisions.

- Dermatologically tested – Men related this claim to a variety of things, for example, brands like Cetaphil, Eucerin, or Vaseline, as targeting people with severe skin problems, and products that have gone through a clinical trial. Most men had a positive feeling around this claim, but many still felt it was not backed by anything substantial. "I like that, that kind of gives me some information that they put their product line, whether it is true or not, through some sort of clinical testing....that's a plus for me, that's a good marketing word" (Heavy user, 45-49, LA). One participant said this type of claim is more important for certain products like sunscreen but may not be necessary for everything. Another associated this claim with product safety but still did not feel it was of great importance. In general, this claim is another "nice to have" but not necessary.
- Allergy tested – None of the men interviewed had significant allergy concerns so they felt rather neutral about the claim. They could see how it would be important for groups of people with sensitivities, but it was not important to them – "Yeah I think that's pretty important. I don't have allergies so that's not something I have to look for, but I know people who do....I think it is important for some people but not for me personally" (Light user, 18-24, Olathe).

- For sensitive skin – This claim had several positive associations, but some felt it was an empty claim or not applicable for them. One man thought it had the same connotations as “allergy tested”, others thought it would indicate a lighter product or something that was fragrance-free and did not contain harsh chemicals, and several felt that it was extremely beneficial and would seek it out. One participant who does purchase products for sensitive skin stated he was not sure of the difference between the product he uses and the original – “I think the shaving gel that I use is for sensitive skin, I don’t know the science behind it, what makes it sensitive or not, but usually they are pretty comparable in price if not exactly the same (as the original) so when there is both I’ll reach for the sensitive skin version” (Light user, 25-29, Olathe). More differentiation or claim explanation may be needed to better attract potential male consumers. Product wise, the claim was associated with and would be beneficial for shaving and face products.
- Not tested on animals – While the majority (13) of men felt this was a beneficial claim, only two actively looked for it – “I think that’s important but that’s not really something I look for, which may or may not be a good thing...but if I know a product is not tested on animals...I may be more likely to try it” (Light user, 18-24, Olathe). One participant also mentioned he expected his products, which tend to be “free from” or “organic”, to automatically not test on animals. The other men did not feel negatively about the claim but admitted that they did not care and would never seek out this type of product. This claim is generally beneficial and does not detract from the product so it is a good option for marketing; a similar positive result was found with women in previous beauty care research (Talavera & Sasse, 2019).

- Mattifying – The men in this study were mostly unaware of the meaning of this claim.

Once it was explained, there was a variety of opinions. One participant related the word to women's makeup and was not interested. Three men thought it may be useful in hair applications – “That I use for hair products because I like the natural, not shiny, natural looking hair...maybe if the product I was using was leaving my skin too shiny I would try something that didn't leave it shiny so it would look like I wasn't wearing anything” (Heavy user, 35-39, LA). A few thought it could be useful for controlling oily skin and one pointed to sunscreen as an applicable product. Overall, none of the men were highly motivated by this claim so it likely would not resonate with the greater demographic.

In addition to the pre-selected claims, men were also asked to identify any other claims that are relevant to them. Many were ingredient-based such as charcoal (positive), benzoyl peroxide and salicylic acid (polarizing), sun protection factor (positive), “provides vitamins and minerals” (indifferent), shea butter or avocado (positive), vegan (skeptical), aloe (positive), and oil-free (positive). Non-ingredient claims included brands mentioning charity organizations they support, for example, giving back to an animal cause (positive), skin-specific claims like “regenerative” (positive), quick-absorbing (positive), time effects like “24-hour protection” (positive), mentions of correcting cracked skin (positive), pore-clearing (positive), and claims mentioning the removal of dead skin cells (positive). These diverse claims help to show that there are likely many different segments of men's skin care consumers that the rather homogenous market is not reaching; brands and developers have an opportunity to increase market share and provide more options and better targeted marketing. Additionally, this research offers some basic findings on consumer reactions to skin care claims, which is lacking across all demographics.

A central limitation of this research was that participants could not interact with one another nor with the products themselves. If a focus group method had been used, participants may have been able to get into deeper, unprompted discussions which may have led to novel learnings. Additionally, had the participants been in person, they could have performed the sorting task by both appearance and feel by manipulating packaging and testing products – this too may have led to new or deeper findings. Another limit was in the recruit; men with specific medical skin concerns, such as eczema or rosacea, were excluded from the present research. This was to avoid conversations centered around medical advice or prescription products as those were less relevant to the research objectives. However, future research could expand to these distinct groups to understand how their perceptions and behaviors compare to those discussed in the present work.

## **Conclusion**

Men's skin care expectations are more consistent than hypothesized. Aside from specific skin concerns like acne, men were found to generally want accessible, affordable, and effective skin care that preserved their skin without being overly complicated or time consuming. They had positive perceptions towards the more main-stream, gender-neutral brands like Neutrogena or Cetaphil that are affordable and readily available at many retailers; these tended to be the most used brands and products as well. Perceptions and opinions were stable across skin types, markets, ages, and income groups, though more variation did occur between user groups (heavy vs. light). Participants mostly connected to their skin care on a practical level – the emotional component was not as strong as previously reported in beauty research on women. In discussing marketing claims, the participants revealed that functional claims like “dermatologically tested” or “non-greasy” were more influential than claims they viewed as marketing jargon like “for fine

lines and wrinkles” or “crafted especially for men”. While these findings cannot be translated perfectly to fit other markets, they do provide some of the first published learnings on the men’s skin care industry and give a platform for other research to expand on. Future research will include both sensory and consumer work that explores the men’s skin care landscape in more detail.

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## **Chapter 3 - Characterizing Men's Face Lotion: Descriptive Analysis**

### **Evaluation**

#### **Abstract**

Using descriptive analysis to understand the sensory profiles of skin care products can help product developers and decision makers better understand consumer acceptance. The purpose of this research was to profile a range of commercially available men's face lotion products. The face lotions were evaluated via descriptive analysis using a consensus-based, modified flavor/texture profile method. A six-member, highly trained panel remotely evaluated 12 commercially available face lotion samples for appearance, aroma, pick up, rubout, and afterfeel; the methodology was adapted from previous publications to account for research constraints due to the COVID-19 pandemic. The product set included a mix of gender-neutral and masculine-leaning face lotions with various characteristics and price points. Clustering and principal component analysis were used to visualize the set and understand the similarities and differences across the products. Results showed that face lotions targeted specifically towards men were differentiated by their fragrance and had somewhat thicker textures with minimal lasting residue left on the skin. This adapted method could be used for similar products – like face lotions, creams, gels, and serums – to profile for distinctions and aid in development and business decisions.

#### **Introduction**

Interest in skin care continues to be a growing piece of the personal care industry across many target markets (Guinaugh, 2020). With an ever-growing assortment of lotions, creams, serums, and more, it is critical for companies to understand the characteristics associated with



their products and how the formulation affects the overall sensory perceptions. Descriptive analysis has long been used as a tool for characterizing food and beverage products but has also expanded to various consumer goods such as skin care. Personal care research and analysis bring up different challenges than those encountered in food and beverage work, so different methods and techniques are needed. One such guide for this type of research, specifically dealing with lotions and creams, is ASTM standard E1490-11 (ASTM International, 2012). This guide presents instructions for starting a panel, training them on the descriptive analysis of lotions and creams, conducting this type of research, and analyzing the results (ASTM International, 2012). To get a complete profile of the lotion or cream products, the standard suggests evaluating for five different modalities: appearance, aroma, pick up (how it feels between the fingers), rubout (how it feels when being applied to the skin), and afterfeel (how the skin feels immediately after application and after a set amount of time) (ASTM International, 2012). This is a valuable resource for researchers looking to conduct descriptive analysis on lotion products and is one of the few guides available on the topic. More research in the personal care and skin care spaces is needed to help provide a stronger base of knowledge on these product categories.

Though limited, several studies related to descriptive analysis on skin care products exist in the literature. Aust et al. (1987) and Lee et al. (2005) offer examples of descriptive analysis on lotions and aqua creams, respectively. The work by Aust et al. (1987) utilized a modified texture profile method to evaluate the lotion samples on several modalities including appearance, rub-in, absorption, and afterfeel at multiple time points. Lee et al. (2005) used similar modalities to Aust et al. (1987) and the ASTM standard (ASTM International, 2012) but used the Spectrum method. Attributes tended to show overlap as well, with slight variations to cover characteristics that are only found in aqua creams (Lee et al., 2005). This study also used an all-female panel (Lee et al.,

2005); Aust et al. (1987) did not specify the gender of the panelists. These publications offer the most comprehensive examples of evaluating lotion and cream products via descriptive analysis, but these and other available sources tend to have a feminine focus. Though much of the skin care and beauty industry has been targeted towards female consumers, the interest in and number of products marketed specifically towards men continues to grow (Guinaugh, 2020). To meet this demand, more research needs to be done from the masculine perspective. One example from the literature that focuses on men is a clinical trial that tested a three-product routine over four weeks on a group of 29 men (Rodan, Fields, & Falla, 2017). The results were positive and supported the use of this type of regimen (Rodan, Fields, & Falla, 2017). More male-centered research like this is needed to inform product developers and sensory researchers working within this category.

As discussed in a summary released in April 2020 by a team put together by the Society of Sensory Professionals, practicing “sensory agility” continues to be critical during the ongoing COVID-19 pandemic (Lawless, 2020). This summary presented a variety of methods and suggestions for doing research that would be effective, safe for researchers and panelists, and flexible for changing conditions (Lawless, 2020). One such alternative called for remote, at-home panels; other suggestions included giving panelists or employees standard equipment to keep at their homes, doing product drop-offs, using video conferencing, and more (Lawless, 2020). These suggestions helped to guide researchers who were having to pivot projects and expectations in response to the changing times. The present research was conducted remotely using these principles to account for panelist safety; the methods and challenges will be discussed. The central objective of this research was to characterize the product set – with an

emphasis on male-targeted products – and understand the similarities and differences in appearance, skin feel, and aroma across the samples.

## Materials and Methods

This work was approved by the Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University (IRB #10062).

### Samples

Twelve commercially available lotion products were chosen to represent a range of sensory characteristics such as texture and aroma (Table 3.1). The products also varied in factors such as price point (quality), perceived gender target, scented/unscented, use (face, body, general), and sun protection factor (SPF). These selections were based on learnings from conversations with men’s skin care consumers, as outlined in Chapter 2. Products were purchased locally at Wal-Mart, Target, CVS Pharmacy, and/or Walgreens and stored away from direct sunlight at room temperature (~20 °C).

**Table 3.1 Product Set**

Lotion	Price	Gender	Scent Intensity	Use
<b>Aveeno</b> Positively Radiant Daily Moisturizer (Johnson & Johnson Consumer Inc., Skillman, NJ)	\$\$\$\$	N	Light	Face
<b>Bulldog</b> Original Moisturizer (Bulldog Skincare For Men, London, UK)	\$\$\$	M	Medium	Face
<b>CeraVe</b> Moisturizing Cream (CeraVe LLC, New York, NY)	\$\$	N	Unscented	General
<b>Cetaphil</b> Moisturizing Lotion (Galderma Laboratories, L.P., Fort Worth, TX)	\$	N	Unscented	General
<b>Clean &amp; Clear</b> Watermelon Gel Moisturizer (Johnson & Johnson Consumer Inc., Skillman, NJ)	\$\$\$	N	Medium	Face
<b>Dove</b> Men+Care Face Lotion (Unilever, Trumbull, CT)	\$\$\$	M	Strong	Face
<b>Eucerin</b> Daily Protection Face Lotion & Sunscreen (Beiersdorf Inc., Wilton, CT)	\$\$	N	Light	Face
<b>Every Man Jack</b> Face Lotion Natural Menthol (Every Man Jack, Corte Madera, CA)	\$\$	M	Medium	Face
<b>Harry's</b> Face Lotion (Harry's, Inc., New York, NY)	\$\$\$\$	M	Medium	Face

<b>Neutrogena</b> Hydro Boost Body Gel Cream (Johnson & Johnson Consumer Inc., Skillman, NJ)	\$	N	Unscented	Body
<b>St. Ives</b> Renewing Moisturizer (Unilever, Trumbull, CT)	\$	N	Light	Face
<b>Vaseline</b> Men Fast Absorbing (Unilever, Trumbull, CT)	\$	M	Strong	General

Notes: Price point based on per ounce cost (\$\$\$\$ = \$5.00-7.99, \$\$\$ = \$3.00-4.99, \$\$ = \$1.00-2.99, \$ = <\$0.99); Gender (N = Neutral, M = Male); Bolded brand name identifies how products will be referred to in the text.

## Sensory Evaluation

Descriptive analysis was carried out on the sample set using a hybrid, consensus-based flavor/texture profile method by six highly trained panelists from the Sensory and Consumer Research Center at Kansas State University (Manhattan, KS). In terms of characterizing panelist's skin, all were 60-80 years of age and Caucasian. There were 5 women and 1 man on the panel. The entire evaluation was conducted virtually via Zoom (Zoom Video Communications, Inc., San Jose, CA) in response to social distancing guidelines due to the COVID-19 crisis. Panelists had a minimum of 120 hours of personal care training and 1000+ hours of general descriptive analysis experience. The lexicon and method were heavily based on the ASTM standard for skin cream and lotion evaluation (ASTM International, 2012); appearance, pick up, rubout, afterfeel, and aroma were evaluated. The evaluation process took place over seven days. Days one and two were used for orientation of the appearance and skinfeel attributes. Four products were evaluated per day on days three through five for appearance and skinfeel. Day six started with a brief aroma orientation, then six of the products were evaluated for aroma. The aroma evaluation of the final six samples was completed on day seven. The aroma evaluation was performed separately from the appearance and skinfeel evaluations to better organize the large number of samples and references and to control the amount of preparation needed each day.

As the evaluations were completed remotely, samples had to be prepared in a way that preserved them during transfer. All samples for evaluation and reference purposes were prepared in the lab on their respective test days. These samples and the associated supplies – such as petri dishes, syringes, soap for washing, ballots, and more – were packed into containers which were dropped off at each panelist’s home about an hour prior to the session. Before the session began, panelists unpacked their boxes and set up a space to perform their evaluations that had appropriate lighting, good ventilation, and no lingering aromas. The attributes, definitions, and references for all modalities are listed in Table 3.2. These are based on the ASTM standard (ASTM International, 2012) previously mentioned, though panel consensus was used to finalize all attributes and definitions. Attributes were evaluated on a 15-point scale with 0.5 increments.

**Table 3.2 Lexicon (based on the method from ASTM (2012) with some adaptations)**

*Note: Unless otherwise stated, 6 g of all skinfeel references were provided in lidded, 1-ounce souffle cups.*

#### Appearance

*Fill syringe to 0.8 mL. In a petri dish, dispense the product in a spiral shape. Using a nickel size circle, fill from edge to center.*

Integrity of shape	<p>The degree to which the product holds its shape: [Flattens.....Retains shape]</p> <p>Reference:     Johnson &amp; Johnson Baby Oil = 1.0                             Keri Lotion, Original = 6.0                             Vaseline Intensive Care = 12.5</p> <p>The degree to which product holds its shape after 10 s:          [Flattens.....Retains shape]</p> <p>Reference:     Johnson &amp; Johnson Baby Oil = 0.5                             Keri Lotion, Original = 4.5                             Vaseline Intensive Care = 12.0</p>
Gloss	<p>The amount of reflected light from the product: [Dull/flat.....Shiny/glossy]</p> <p>Reference:     Gillette Foamy Reg. Shave Cream = 0.5                             Neutrogena Hand Cream = 11.0                             Johnson &amp; Johnson Baby Oil = 15.0</p> <p>Preparation:   A full can of shaving cream is provided so panel can get fresh product when needed for reference</p>

Opacity	The level of transparency or translucency of the product: [Opaque.....Transparent] Reference: Gillette Foamy Reg. Shave Cream = 0.5 Johnson & Johnson Baby Oil = 14.0
Preparation:	A full can of shaving cream is provided so panel can get fresh product when needed for reference
Color	The color of the product: True White, Ivory, Beige, Pink No reference, based on group consensus

### Pick Up

*Fill syringe to 0.1 mL, deliver product to tip of thumb. Compress product slowly between finger and thumb one time.*

Firmness	The force required to fully compress product between thumb and index finger: [No force.....High force] References: Johnson & Johnson Baby Oil = 0.0 Vaseline Intensive Care = 5.0 Petrolatum = 12.5
Stickiness	The force required to separate fingertips: [Not sticky.....Very sticky] References: Johnson & Johnson Baby Oil = 0.0 Vaseline Intensive Care = 4.0 Petrolatum = 12.5
Cohesiveness	The amount of strings rather than breaks when fingers are separated: [No strings.....High strings] References: Jergens Original = 7.5 Petrolatum = 12.5
Amount of peaking	The degree to which product makes stiff peaks on fingertips: [No peaks/flat.....Stiff peaks] Reference: Johnson & Johnson Baby Oil = 0.0 Vaseline Intensive Care = 5.5 Petrolatum = 14.5

### Rubout

*Fill syringe to 0.05 mL of product to center of the circle on inner forearm. Spread product within the circle using index or middle finger at a rate of two strokes per second.*

After three rubs, evaluate for:

Wetness	The amount of water perceived while rubbing: [None.....High amount]
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Reference: Petrolatum = 3.5  
Vaseline Intensive Care = 7.0  
Water = 15

Spreadability      The ease of moving product over skin: [Difficult/drag.....Easy/slip]  
Reference:      Petrolatum = 4.5  
                    Vaseline Intensive Care = 9.0  
                    Johnson & Johnson Baby Oil = 14.5

After 12 rubs, evaluate for:

Thickness          The amount of product felt between fingertip and skin:  
                          [Thin, almost no product.....Thick, lots of product]  
Reference:      Isopropyl alcohol = 0.5  
                    Vaseline Intensive Care = 4.5  
                    Petrolatum = 10.0  
                    Neutrogena Hand Cream = 13.0

Add another 0.05 mL of product with the syringe to the same circle. Rub 20 times, then evaluate for:

Oil                    The amount of oil perceived in the product during rubout:  
                          [None.....Extreme]  
Reference:      Johnson & Johnson Baby Oil = 14.0

Wax                   The amount of wax perceived in the product during rubout:  
                          [None.....Extreme]  
Reference:      Beeswax = 14.0

Grease               The amount of grease perceived in the product during rubout:  
                          [None.....Extreme]  
Reference:      Amerchol Lanolin AAA = 14.0

Continue rubbing and counting to evaluate for:

Absorbency          The number of rubs at which the product loses wet, moist feel and a  
                          resistance to continue is perceived: [Upper limit = 120 rubs]

#### Afterfeel (immediate)

*Fill syringe to 0.05 mL of product to center of the circle on inner forearm. Spread product within the circle using index or middle finger at a rate of two strokes per second. Rub 20 times.*

Gloss                The amount or degree of light reflected off skin: [Dull.....Shiny]  
Reference:      Petrolatum = 6.0  
                    Johnson & Johnson Baby Oil = 14.0

Sticky	The degree to which fingers adhere to product: [Not sticky.....Very sticky] Reference: Johnson & Johnson Baby Oil = 1.0 Petrolatum = 4.0 Neutrogena Hand Cream = 13.0
Slipperiness	The ease of moving fingers across skin: [Difficult/drag.....Easy/slip] Reference: Petrolatum = 4.5 Vaseline Intensive Care = 9.0 Johnson & Johnson Baby Oil = 14.5
Cooling	The degree of cooling on skin: [None.....Extreme cooling] Reference: Every Man Jack Original Mint = 8.0 Vick's Vapo Rub = 14.5
Amount of residue	The amount of product on skin: [None...Large amount] Reference: Vaseline Intensive Care = 2.0 Keri Lotion, Original = 7.0 Petrolatum = 10.0
Type of residue	The naming of all residues present on the skin to include, but not limited to oily, waxy, greasy, silicone (dry/slick), powdery, chalky, and pilling. No reference, based on group consensus

#### Afterfeel (after 10 minutes)

Lasting feel	The measure of how long any feelings last on the skin: [Short.....Long] Reference: Petrolatum = 3.0 Vaseline Intensive Care = 7.0
Lasting aroma	The measure of aroma perceived from mild/subtle to strong/potent: [Weak.....Strong] Reference: Every Man Jack Original Mint = 10.0

#### Aroma

Overall Strength	The overall impact of the product aroma: [Mild/subtle.....Strong/potent] Reference: Vaseline Intensive Care = 5.0 Vick's Vapo Rub = 12.0 Preparation: Place 4 g of Vaseline in an 8 oz. Styrofoam cup with lid. Place 3 g of Vick's in an 8 oz. Styrofoam cup with lid.
Soapy	A pungent, slightly fragrant aromatic with fatty base notes characteristic of unscented hand soap Reference: Ivory Soap Bar = 7.5



	Preparation: Place 1 T of soap shavings in a lidded 8 oz. Styrofoam cup.
Musk	<p>Aromatic associated with base notes in perfumery, it is characterized for animal-like, brown, earthy, and woody notes.</p> <p>Reference: Lotus 41 – Musk = 5.5</p> <p>Preparation: Place 2 drops on a smelling strip in a test tube.</p>
Leather	<p>Aromatic impression that is characterized as being somewhat damp, dark, and heavy, and is connected to musty, new leather.</p> <p>Reference: Le Nuz de Vin #45 = 4.0</p> <p>Preparation: Place 3 drops on a smelling strip in a test tube.</p>
Petroleum	<p>The aromatics associated with a petroleum product, described as clean, heavy, and oily.</p> <p>Reference: Petrolatum jelly = 3.0</p> <p>Preparation: Place 6 g petrolatum jelly into a lidded 8 oz. Styrofoam cup.</p>
Medicinal	<p>A clean, sterile aromatic characteristic of antiseptic like products such as Band-Aids, alcohol, and iodine.</p> <p>Reference: Listerine Original (Diluted) = 8.0</p> <p>Preparation: Add 1 tablespoon of Listerine to 1 cup water. Serve 2T in a lidded 8 oz. Styrofoam cup with lid.</p>
Fruity	<p>Sweet, light, slightly fragrant aromatic associated with fruit</p> <p>Reference: Welch's White Grape Juice = 6.0</p> <p>Preparation: Mix 1 part of water and 1 part of juice. Place ¼ cup in an 8 oz. Styrofoam cup with lid.</p>
Floral	<p>Sweet, light, slightly fragrant aromatic associated with fresh flowers</p> <p>Reference: Welch's White Grape Juice = 4.0</p> <p>Preparation: Mix 1 part of water and 1 part of juice. Place ¼ cup in an 8 oz. Styrofoam cup with lid.</p>
Spicy Floral	<p>Aromatics associated with dried flowers, such as lilac and /or lavender. This aromatic is characterized as spicy floral as in an 'old fashioned sachet'</p> <p>Reference: Lavadin oil = 12.0</p> <p>Preparation: Place 2 drops on a smelling strip in a test tube.</p>
Rose	<p>A sweet, soft, slightly musty/dusty floral fragrance associated with fresh or dried roses</p> <p>Reference: Le Nuz du Vin #28 = 6.0</p> <p>Preparation: Place 2 drops on a smelling strip in a test tube.</p>
Menthol	The pungent, cooling medicinal aromatics similar or camphor.

	Reference: Bengay = 12.0 Preparation: Place 4 g in an 8 oz. Styrofoam cup with lid.
Pine	Aromatics reminiscent of resinous pine tree. Can be medicinal or disinfectant in character. Reference: Le Nuz de Vin #35 = 6.0 Preparation: Place 2 drops on a smelling strip in a test tube.
Woody	The sweet, brown, musty, dark aromatics associated with a bark of a tree. Reference: Wood chips = 4.0 Preparation: Place 5 g of wood pellets into an 8 oz. Styrofoam cup with lid.
Hay-like	Slightly sweet dry dusty aromatic with a slight green character associated with dry grasses Reference: McCormick parsley Flakes = 7.5 Preparation: Place 1 teaspoon in an 8 oz. Styrofoam cup with lid.
Grassy/green	Green, slightly sweet aromatic typical of fresh cut grass, parsley, or cilantro. Reference: Fresh parsley = 5.0 Preparation: Chop parsley and place 1 teaspoon in an 8 oz. Styrofoam cup with lid.
Cucumber	Green, fresh, vegetal. Reference: Cucumber slices = 7.5 Preparation: Slice English cucumber into .25-inch slices. Add 3 slices into an 8 oz. Styrofoam cup with lid.
Citrus	Citrus aromatic impact that includes the raw notes and the distilled and expressed oil notes. Reference: Le Nuz de Vin #1+#2+#3 = 6.0 Preparation: Place 1 drop of each reference on the same smelling strip in a test tube.
Lime	The citric, sour, astringent, bitter, green, peely, sharp and somewhat floral aromatics associated with limes. Reference: Lime peel = 7.5 Preparation: Place 0.3 g into an 8 oz. Styrofoam cup with lid.
Melon	Melon flesh, rinds. Sweet, fruity, green. Reference: Le Nuz de Vin #7 = 6.0 Preparation: Place 2 drops on a smelling strip in a test tube.
Almond	Light, sweet, nutty aromatic reminiscent of almonds Reference: Benzaldehyde = 7.5

	Preparation: Place 1 drop of benzaldehyde on a cotton ball and put into an 8 oz. Styrofoam cup with lid.
Black pepper	<p>Spicy, pungent, musty, and woody aromatics characteristic of ground black pepper.</p> <p>Reference: McCormick Ground Black Pepper = 9.0</p> <p>Preparation: Place 1/2 tsp of black pepper in an 8 oz. Styrofoam cup with lid.</p>
Brown spice	<p>The aromatics commonly associated with brown spices, may include spice such as cinnamon, cloves, nutmeg, all spice and others.</p> <p>Reference: Spice brown complex = 6.5</p> <p>Preparation: Place 0.25 g of McCormick all spice powder in an 8 oz. Styrofoam cup with lid.</p>
Brown sweet	<p>A rich full round sweet aromatic impression characterized by some degree of darkness.</p> <p>Reference: C&amp;H Golden brown sugar = 6.0</p> <p>Preparation: Place 1 teaspoon of brown sugar in an 8 oz. Styrofoam cup with lid.</p>
Vanillin	<p>An extremely sweet, non-natural aromatic often associated with vanilla, cotton candy, and marshmallows.</p> <p>Reference: Le Nuz de Vin #40 = 6.0</p> <p>Preparation: Place 2 drops on a smelling strip in a test tube.</p>

## Methodology Deviations

The present research was conducted following local COVID-19 guidelines. Participants completed all evaluations remotely. This led to some deviations from the ASTM standard (ASTM International, 2012) and typical lab practices. Table 3.3 provides an explanation of important aspects of the method including the most notable changes.

**Table 3.3 Methodology Notes**

Modality	ASTM Directive (if applicable)	Change/Method Applied
General	Evaluate samples in replicate	Samples evaluated via consensus method
General	Forearm should be marked, using an appropriate skin marker, with 2-inch circle for testing	Forearms were marked using the opening of a small disposable cup, 2.25 inches in diameter, to create an indentation that would serve as the test location. Panelists recorded the location and corresponding sample number on their ballots.
General	Panelists should follow a supervised cleaning procedure and 15-minute dry out period	Panelists were asked to use the provided hand soap to wash their forearms prior to testing. This was not supervised. Additionally, the testing area (2.25 in circle) was cleansed as needed between samples, however, the test locations were never reused within a single testing period.
General	The panel room's conditions should be controlled as much as possible.	Panelists were asked to follow several procedures when selecting their evaluation space including choosing a well-ventilated room with appropriate artificial lighting and a comfortable temperature that would not lead to perspiration or excessively cold skin. As panelists were doing the evaluation from home, the panel leader could not verify the true conditions.
General	Panelists should all be seated at a round table for discussion and provided booths for evaluation.	Panelists were at their individual homes and joined the panel via Zoom. Panelists had their cameras on for the entire evaluation and could discuss the entire time as a consensus method was used.
General	The sample should be uniformly deposited by a panel leader or technician.	The samples were deposited by the panelists themselves given the remote circumstances.

General	A metronome was suggested for standardizing the rate of rubbing.	The panel leader led the rubs by counting the rate out loud – panelists followed along at the same rate.
Aroma	-	Hot towels were used for clean-out between aroma evaluations.
Aroma	ASTM Standard gives suggested list of fragrances for evaluating lotions and creams.	The panel used for this study developed their own fragrance lexicon for the set of lotions in the present research.
Rubout/Afterfeel	An automatic pipette should deposit 0.05 cm <sup>3</sup> onto the test circle. This amount of sample was to be used to evaluate all attributes in the rubout and afterfeel modalities.	A manual syringe was used to deposit 0.05 mL onto the test circle three separate times across the rubout and afterfeel modalities: before wetness, before oil, and before gloss. The rubbing procedure was defined for each attribute/deposit. Product was deposited in the same spot each time.

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Recommendations for method adaption were taken from a summary from the Society of Sensory Professionals on “sensory agility” (Lawless, 2020) and practices that were previously adopted by the Kansas State Sensory and Consumer Research Center in response to the COVID-19 pandemic. Overall, the method allowed for less control than an in-person evaluation where the researcher and/or panel leader can intimately oversee each detail. Instead, the researcher had to virtually instruct participants through the evaluation. Despite these changes, the author feels the results still meet expectations for accuracy and precision. The data are logical, follow expected patterns, and offer appropriate discrimination. This is a valuable learning as real research cannot always be as neat and easy as the “gold standard” method may seem. Researchers must make decisions on how to best approach and field their research using the given resources and circumstances. Sensory scientists can use the methodological changes discussed here to help

shape their research going forward. The following text will explain the rationale behind each deviation:

- Samples were evaluated by consensus as it was the most time- and resource-efficient option. Given the high experience level of all panelists, consensus was reached easily and consistently.
- Test areas were marked by indenting the skin with the opening of a small cup. This was chosen over the more traditional approach of using a skin-safe marker as it was easier for the panelists to do on their own and gave uniform results.
- Since the panel was conducted virtually, panelists were responsible for cleansing the test area prior to evaluation and refraining from using any products for the hours immediately before the session. As this is a highly trained panel with experience in personal care, they had previously done supervised cleansing for in-lab evaluations and were able to complete this step on their own; the author is confident that they followed through with the cleansing expectation.
- As panelists were completing the evaluations remotely from their respective homes, lighting, temperature, and air flow could not be standardized. Panelists were instructed to choose a spot with artificial lighting that would be unchanged throughout the multi-day test, have the room temperature be comfortable to avoid perspiration or significant changes in skin temperature, and choose an area free of lingering aromas that had acceptable air flow. Again, given the experienced nature of this panel, they have a good understanding of what constitutes a good testing location and were able to easily identify appropriate areas in each of their homes. The author does not believe the minor variations in environment impacted the results, especially since it was a consensus method.

- Instead of participants discussing attributes and intensities in-person, video conferencing was used. Aside from a few instances of delayed connection, this method allowed for open discussion and did not hinder communications in any significant way.
- Another change to the ASTM protocol was that participants measured and deposited their own samples throughout the evaluations. The researcher would instruct them exactly how much product they needed to pull into their syringe. All attributes were evaluated by consensus which allowed the researcher to talk through each step with the group ensuring everyone was on the same sample, understanding the attribute being evaluated, and were not falling behind. This was one way variation was controlled.
- Instead of a metronome, the researcher would count out loud to time the number of rubs each panelist performed. This kept everyone at the same pace and was easier to hear through video conferencing.
- Between samples, panelists washed the used test spot and their hands with mild, unscented soap and water to prepare themselves for the next sample. The test spots were washed for comfort and to prevent confusion over which test spot was being evaluated, however, the same test spot was never reused during a single session. Washing the hands allowed for the residual product or reference to be removed and prevent cross-contamination with the next sample. Hands were thoroughly towel dried and had the chance to air dry further for about 10 minutes before the next sample evaluation commenced. Panelists did not find that their hands or fingers held on to water or changed the application process across samples.
- Panelists used hot towels for clean-out between aroma samples.

- Panelists developed their own fragrance lexicon that was specific to the tested sample set during the orientation sessions. As this sample set had more male-oriented products, the fragrances did not fit well into the existing ASTM standard fragrance lexicon (ASTM International, 2012). To prevent from having too many non-applicable attributes, customizing the fragrance lexicon would be recommended for future research as well.
- Manual syringes were successfully used in place of an automatic pipette. These syringes were easy to use for all panelists, affordable, and did not require calibration or special knowledge to make them work. For future remote evaluations, these manual syringes would be recommended. Though there is more room for slight volume variation, when a consensus method is used the author does not feel this is of great concern.

These changes help demonstrate how descriptive analysis of personal care products can be adapted for the times to address resource restrictions and remote-work scenarios. The author recognizes that this method allows for less control over each step in the evaluation but feels it is an adequate method to get valid and useful results from panels working under untraditional conditions.

## **Analysis**

Consensus scores were collected and compared for all products and attributes. The attributes with numeric values (all but absorbency, color, and residue type) were subjected to further statistical analysis using XLSTAT (Addinsoft, Paris, France). The data were visualized using PCA via the correlation matrices. Second, hierarchical cluster analysis was performed based on the Euclidean distances and utilizing the Ward's method criterion, using automatic truncation (entropy) to identify the ideal number of clusters (XLSTAT Support Center, n.d.).



## Results and Discussion

These products demonstrated the diversity that can be seen in the lotion space. The complete dataset is presented in Appendix B. Appearance and skinfeel were evaluated first. Neutrogena (intensity=14) was highest in integrity of shape (initial) while Eucerin (4.5) was lowest; integrity of shape (10 seconds) had similar results. These attributes showed a large range in intensity across the products indicating they are highly differentiating attributes. Glossy appearance was the highest in Bulldog (12) and the lowest in Aveeno (8). All samples were opaque (0) except for Clean & Clear (2.5). Firmness was highest for Cerave (7.5), and lowest for Eucerin (2). Bulldog (6) was the highest for pick-up stickiness and Eucerin (2) was the lowest. Cohesiveness was highest for Eucerin (9) and lowest for Neutrogena (3). Vaseline and Bulldog (8) showed the greatest amount of peaking; Neutrogena (3) showed the least amount. Wetness was highest in Eucerin and Clean & Clear (12), and lowest in Aveeno (5.5); with a range of 6.5 this attribute showed strong differentiation across the sample set. Neutrogena, Eucerin, and Clean & Clear (12) were the most spreadable while Vaseline, Cerave, and Harry's (9) were the least spreadable. Thickness was highest for Every Man Jack and Bulldog (6) and lowest for Neutrogena (3). Neutrogena, Eucerin, and Clean & Clear (12) were the highest in oil and Bulldog (7) was the lowest. Wax was not perceived in any product (0). Most of the lotions tended to have an oily character from rub in through afterfeel whereas grease was perceived in just two products: Every Man Jack (2.5) and Cerave (3). Glossy afterfeel was highest in Neutrogena (12) and lowest in Aveeno (4). The greater range (8) demonstrates that the products were well differentiated by the glossy afterfeel attribute. Cerave (5) was the highest in afterfeel stickiness while Neutrogena, Eucerin, Aveeno, and Bulldog (2) were the lowest. Eucerin (10.5) was the highest in slipperiness while Cerave and Harry's (4) were the lowest. Cooling intensity

was the highest in Every Man Jack and Clean & Clear (2.5); Neutrogena, Vaseline, Eucerin, Aveeno, and Harry's were perceived at a cooling intensity of 2. All other samples were not perceived to be cooling (0). Every Man Jack and Harry's contain cooling ingredients – menthol and peppermint, respectively – which likely caused this cool perception (Leffingwell, 2010). Clean & Clear, Neutrogena, and Eucerin were all perceived as high in wetness; the evaporative effect of the water on the skin may have contributed to their cooling feel. The Vaseline product makes a claim of being “fast absorbing”; the perception of the fast absorption and water evaporation on the skin may lead to a cool feeling. Aveeno had no obvious cooling ingredients or characteristics; more research is needed to understand that phenomenon. Eucerin had the highest amount of residue (8.5) while Bulldog had the lowest (2). Neutrogena and Vaseline (8) had the most intense lasting feel and Bulldog (1) had the lowest. Lasting aroma was highest for Vaseline (10.5) and lowest for Neutrogena, Cerave, and Harry's (2), aside for the unscented samples (0).

Three appearance and skinfeel attributes were not measured on the 15-point scale: color, absorbency, and type of residue. All the products were white in color and opaque except for Clean & Clear which was pink in color and slightly translucent. The translucency can be attributed to its water-heavy, gel formulation. Cerave (80 rubs), Every Man Jack (90 rubs), and St. Ives (100 rubs) were found to be the most absorbent; all other products failed to absorb completely before the maximum number of rubs (120). In the case of Cerave and Every Man Jack, these products were perceived as greasy rather than oily; there may be a relationship between greasy feel and better absorbency, though more research is needed to clarify this association. Type of residue followed the perceptions of the oil and grease attributes; most products were perceived as having oily residues, except for Every Man Jack and Cerave, which were perceived to have greasy residues. Eucerin's residue profile was an outlier; it was

characterized as oily, but it also caused some pilling and a white cast on the skin. This is likely due to its physical sun protection ingredients such as zinc oxide which has low solubility and can precipitate out of formulations over time (Abendrot & Kalinowska-Lis, 2018).

The panel also evaluated the aroma profiles of all products. Several attributes were not perceived in any of the products (0): petroleum, fruity, hay-like, grassy/green, black pepper, brown spice, brown sweet, and vanillin. Some of these may be considered less desirable (petroleum, hay-like) or less masculine (fruity, brown spice, brown sweet, vanillin) which may help to explain their absence in this product set. These attributes were included in the evaluation as the panel perceived them in the orientation, but not in the final evaluation. Many of the products that target the male consumer tended to have strong, long-lasting aromas with stereotypically “manly” aroma attributes like musk, leather, and menthol. Vaseline was highest in overall aroma strength (7.5) while Eucerin (2) was the lowest. Neutrogena, Cerave, and Cetaphil were perceived as being unscented and had an overall aroma strength intensity of zero. Overall aroma strength showed moderate differentiation across the products. Since many of the aroma attributes were only perceived in a few samples, their presence or absence tended to show strong differentiation across the product set.

Soapy was perceived in all the scented samples. St. Ives, Vaseline, and Dove (4) were the highest in soapy while Eucerin (1.5) was the lowest. Vaseline (5), Dove (3.5) and Every Man Jack (2.5) had a musk note. The panel perceived a note of leather in Harry’s (3.5), Every Man Jack (3), Bulldog (2.5), and Vaseline (2). Medicinal was perceived in Harry’s (4) and Bulldog (3). St. Ives (4), Aveeno (4), Clean & Clear (2), and Eucerin (1) had a floral note. Spicy floral was the highest in Vaseline and perceived at an intensity of 3 in St. Ives, Every Man Jack, Harry’s, and Bulldog. Dove (4) and Aveeno (3) had a note of rose. Every Man Jack (3), Vaseline

(2.5), Harry's (2.5), Dove (2), and Bulldog (2) had a menthol note. Pine was perceived in both Dove and Bulldog (2.5). Harry's (4) was the highest in woody while Dove was the lowest (2); Bulldog (3), St. Ives (2.5), and Every Man Jack (2.5) also had a note of woody. Cucumber was only perceived in Clean & Clear (3). St. Ives (4) and Bulldog (2.5) had a note of citrus. Lime was perceived in five products: St. Ives (3), Vaseline (2.5), Harry's (2.5), Every Man Jack (2), and Dove (2). Melon was also only perceived in Clean & Clear (6). Finally, almond was perceived in St. Ives (3), Every Man Jack (2), and Eucerin (1.5).

Further analysis was performed, including both clustering and PCA. These techniques helped to better illustrate the similarities and differences across the products and show associations across the attributes. The clustering was performed using the entire numeric dataset, including both skinfeel and aroma attributes. The analysis returned four clusters, as shown in Table 3.4. The samples in cluster 1 – Neutrogena, Cerave, Aveeno, and Cetaphil – tended to have little to no aroma. Samples St. Ives, Harry's, and Bulldog were grouped together in cluster 2 and all showed somewhat thick textures and soapy aromas. Cluster 3, which included samples Vaseline, Every Man Jack, and Dove, had products that showed relatively high shape integrity, long-lasting aromas, and stereotypically “manly” scents with notes of things like musk and leather. These were all products that are marketed towards men. The fourth and final cluster was made up of two samples, Eucerin and Clean & Clear, that were characterized as being glossy, oily, slippery, spreadable, and wet.

**Table 3.4 Clustering Results (Number of classes = 4)**

Class	Sample
1	Neutrogena Hydro Boost Body Gel Cream
1	CeraVe Moisturizing Cream
1	Aveeno Positively Radiant Daily Moisturizer
1	Cetaphil Moisturizing Lotion
2	St. Ives Renewing Moisturizer

2	Harry's Face Lotion
2	Bulldog Original Moisturizer
3	Vaseline Men Fast Absorbing
3	Every Man Jack Natural Menthol Face Lotion
3	Dove Men+Care Face Lotion
4	Eucerin Daily Protection Face Lotion
4	Clean & Clear Watermelon Gel Moisturizer

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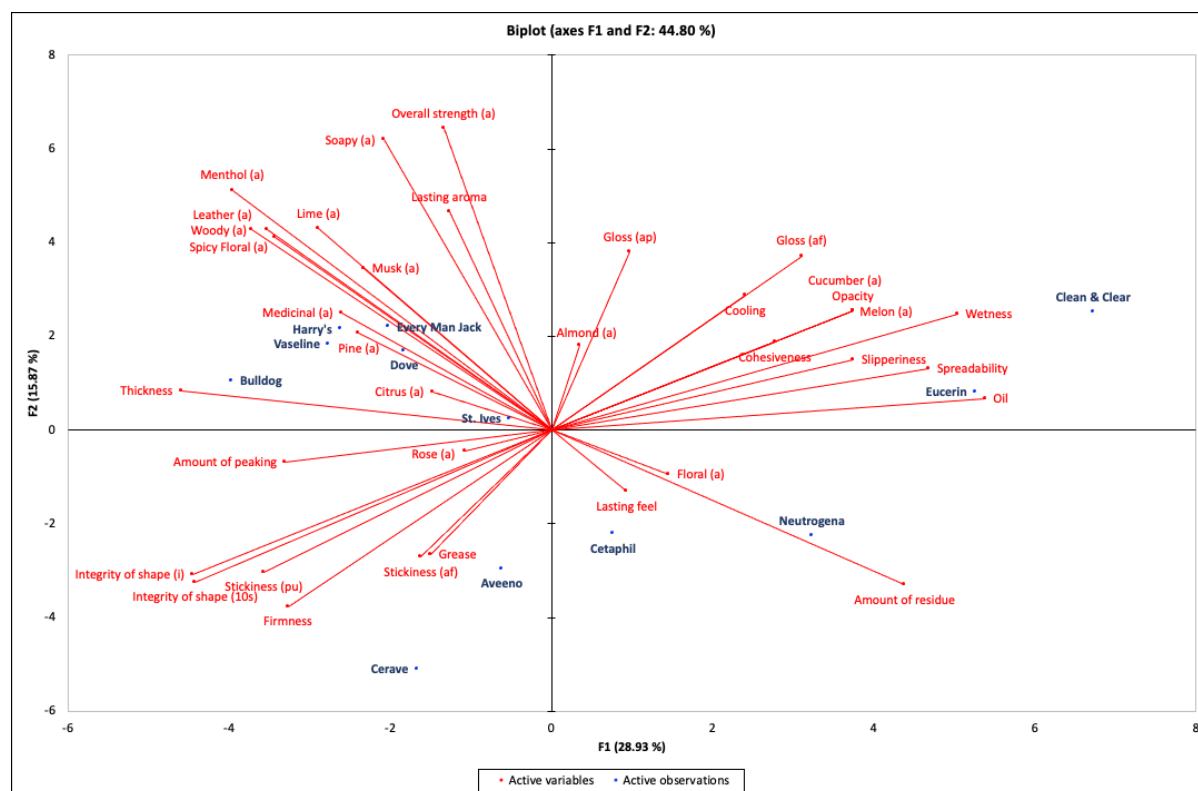
The PCA results (Figure 3.1 and 3.2) were consistent with the cluster analysis findings. The correlation matrix method was used instead of the covariance matrix as the data had a wide range of intensities that could skew the plot (Granato & Ares, 2014). The covariance matrix would have allowed the dominant attributes with high intensities to dictate the relationships shown on the plot and cause less-intense attributes to appear unimportant, while in reality the attributes with lower intensities still can have a significant effect on the product's perception (Granato & Ares, 2014). Since lotion products are so complex, the correlation matrix allowed for these more nuance characteristics to be represented. The full data plot (figure 3.1) explained 44.8% of the variability; the plot displaying the analysis for just the hand feel data (figure 3.2) explained 56.9% of the variability.

For the full data analysis (handfeel and aroma), the first dimension of the plot (28.93%) was characterized by lotion consistency. Wetness, oil, and spreadability were positively loaded on the right side of the plot representing thinner consistency; samples Clean & Clear, Eucerin, and Neutrogena were associated with this positively loaded, right end of the plot. Attributes like stickiness, firmness, and integrity of shape were negatively loaded on the left end of the plot representing thicker consistency. These attribute groupings are consistent with the sample study in the ASTM standard (ASTM International, 2012) which showed a similar first dimension. Additionally, it was also consistent with the first dimension discussed by Lee et al. (2005) in

their evaluation of aqua creams; the only exception here was that oiliness was more associated with the thicker consistencies of aqua creams. However, this difference can be explained by the different nature of products tested in that study compared to the current research. Aqua creams, as explained by Lee et al. (2005), tend to be wetter and less oily compared to traditional creams or lotions.

The second dimension (15.87%) was characterized by aroma. Samples with little to no aroma were negatively loaded and plotted on the bottom half while products with stronger aroma attribute intensities were positively loaded and plotted on the top half. This was consistent with the cluster results as all the samples plotted on the bottom half fall into cluster 1. There were no references in the literature with similar aroma profiles; this further shows the need for more published research on male-targeted skin care products. Finally, the third dimension (11.2%) was considered; this dimension describes the character of fragrance notes in the scented products. The lasting aroma and musk attributes were negatively loaded while aroma notes like citrus and almond were positively loaded. Lasting aroma and musk can both represent the base notes of the scents which are stronger and can typically be perceived longer whereas top notes, like citrus and almond, are typically lighter in character and not as long-lasting. Many products which target men, including skin care products and colognes, utilize strong base notes like musk to achieve their more traditional, masculine scents. An example of this can be seen by comparing the Vaseline product – which has a stereotypical manly aroma characterized by a strong musk note – with the St. Ives product – which has a lighter aroma with a more herbaceous, top-note heavy character.

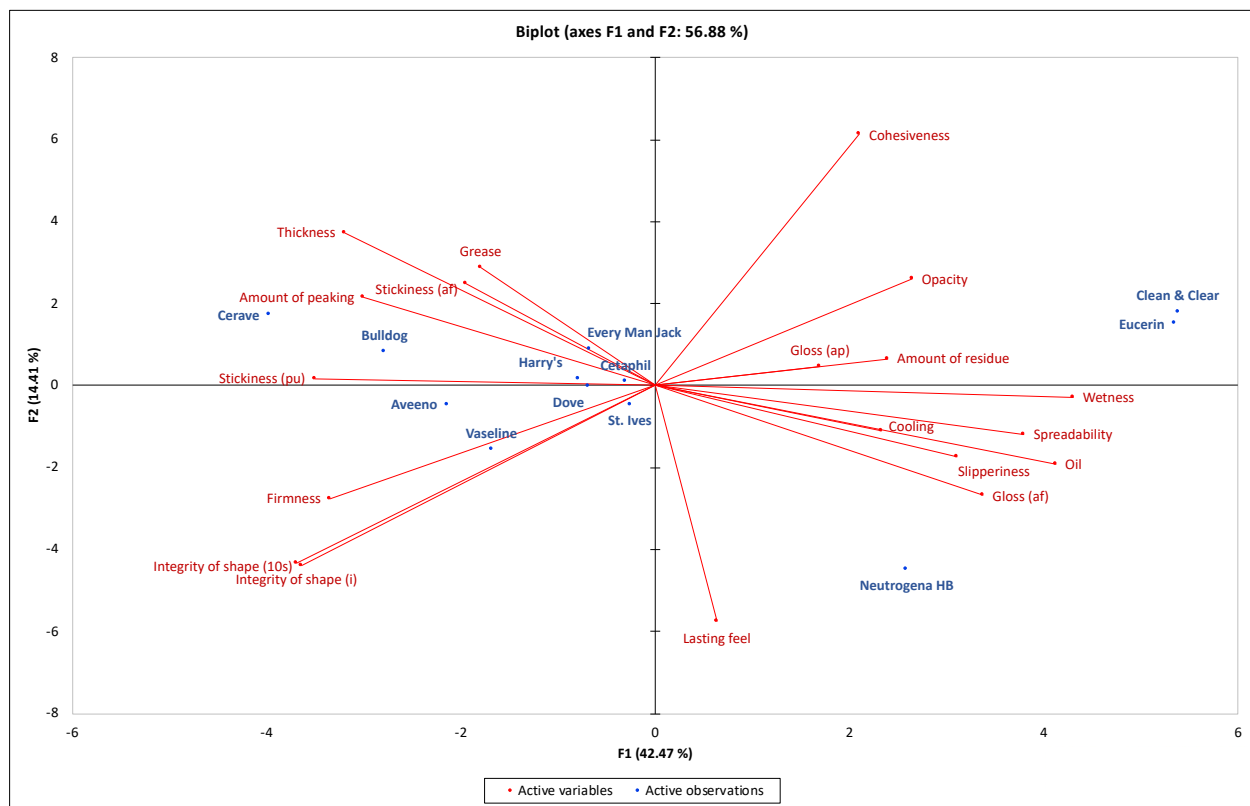
**Figure 3.1 Full Data (Handfeel and Aroma) PCA Result**



In general, the PCA plot in figure 3.1 can be broken down into three groups. The first group, plotted in quadrant II, consisted of samples Bulldog, Vaseline, Harry's, Every Man Jack, Dove, and St. Ives. These samples correspond with clusters 2 and 3 in the cluster analysis and can be characterized by their relatively thicker consistencies, strong and lasting aromas, and generally masculine scents except for St. Ives, which had a slightly sweet profile. St. Ives is marketed as a gender-neutral product which helps to explain its sweeter scent, while all other products in this group are targeted for male consumers. The second grouping spanned the lower half of the plot and consists of all the samples in cluster 1 – Cerave, Aveeno, Cetaphil, and Neutrogena. Again, these products shared a common characteristic of having little to no aroma. In terms of skinfeel, this grouping was split. Samples Cerave and Aveeno are a bit thicker and greasier, while Cetaphil and Neutrogena are a bit oilier with a thinner consistency. The final

grouping, consisting of Eucerin and Clean & Clear, is in quadrant I and represents products with more gel-like, thin consistencies and felt oily and wet on the skin. As noted above, this result was also in line with the ASTM standard (ASTM International, 2012) case study which shows the attributes oil (rubout), spreadability (rubout), wetness (rubout), and glass (appearance) being highly associated. Clean & Clear is a gel moisturizer which fits with these characteristics, while Eucerin is not marketed as a gel but instead a lotion and sunscreen. These two products are marketed to have such different functions, yet they share such similar skinfeel. These gel-like products are like the aqua creams tested by Lee et al. (2005) as well. Neutrogena in the second grouping also demonstrated some of these more gel-like qualities and is marketed as a gel cream, however its aroma profile kept it separated from the group in quadrant I.

**Figure 3.2 Handfeel PCA Result**



When looking at just the handfeel attributes, the first dimension (42.47%) can be described as a cream to gel spectrum. It is similar to the first dimension in figure 3.1 with



thicker, rich products like Cerave and Bulldog being negatively loaded along with attributes like thickness, stickiness, firmness, and integrity of shape. Products exhibiting more gel-like characteristics like Clean & Clear, Eucerin, and Neutrogena were positively loaded and associated with attributes like high wetness, spreadability, and oil. The second dimension (14.41%) was strongly associated with the cohesiveness (positively loaded) and lasting feel (negatively loaded) attributes. This dimension did not describe the products in a clear manner and is less useful in characterizing their handfeels.

Overall, the samples were differentiated by aroma, appearance, and skinfeel. Products specifically targeting men tended to have stronger aromas and thicker consistencies. They also tended to have less residue and be “drier” in feel (lower wetness). Based on these results, it seems there is a gap in offers for a thinner, possibly more gel-like, men’s targeted product. The skin feel could be more like Clean & Clear, but the color could be white (not pink) and the aroma more masculine (leather, musk, pine, etc.). This type of formulation would be lighter and thinner in texture; it would feel more oily and wet and be highly spreadable on the skin. However, consumer-based research would be needed to validate the prototype was acceptable to the men’s skin care consumer.

It is important to note the limitations of the research. First, twelve samples are a relatively small set – despite the variety, this cannot perfectly represent the category. Specifically, luxury lotions at high price points were not included in this study. This could be explored in future research. Second, the remote evaluation allowed for less control overall. While the author feels the method still did an adequate job profiling and differentiating the samples, future research could repeat this study and method in-person to compare the potential variability. Finally, the panel was made up of primarily white females, aside from one white male evaluator.

Additionally, all panelists were 60 years of age or older. A more diverse panel may have perceived products differently; again, future research could evaluate the repeatability of this data with different panelists.

## **Conclusion**

In summary, this research was able to characterize the lotion products and show the similarities and differences across the set. This information is useful for gaining a better understanding of the category offerings. The male-targeted products tended to be heavily scented, have lasting aromas, and be on the thicker end of the consistency spectrum. Of the products tested, the male-targeted products showed few distinctions from one another indicating room for innovation and differentiation in this space. Future research could be done with an expanded product set to help further identify gaps in the market. Additionally, it could be expanded to other subcategories such as hand or anti-aging creams. The data can be used for further research if associated with other values, such as analytical measures or consumer liking. The method utilized in this research helps to demonstrate that flexibility and adaptation is possible and sometimes required depending on the circumstances. Methodology deviations should be thought through to conduct the most efficient and highest quality research possible. The method discussed for the present research can help researchers working under various constraints get the data and information they desire while still focusing on sensory best practices.

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## **Chapter 4 - Men's Face Lotion: Drivers of Liking Across Cultures**

### **Abstract**

The men's skin care market is projected to continue growing in the coming years; however, little information exists on consumer perceptions and acceptance of men's skin care products. It is suspected that there may be cultural differences in perception and acceptance as well. This research aimed at filling those gaps in knowledge by conducting home use tests with men in the United States and Republic of Korea on eight commercially available men's face lotion products. This data was associated with descriptive analysis profiles from earlier evaluations to identify drivers of liking. Products specifically marketed towards men had the highest acceptance. Appearance and aroma characteristics, including integrity of shape and spicy floral aroma, were identified as key drivers of liking. Skinfeel and appearance attributes associated with absorption – like oil, cohesiveness, and amount of residue – were recognized to be significant drivers of disliking.

### **Introduction**

Collecting data on consumer perceptions of personal care products, such as lotions and creams, can be fairly challenging for sensory researchers. This research does not always neatly fit into the typical central location test (CLT) model that may work for foods and beverages. These products often have longer use periods – for example a face lotion may be worn throughout the day – that cannot be properly evaluated in a 60-minute sitting. Subsequently, home use tests (HUT) are often more practical for collecting feedback as consumers can evaluate the product in its normal use occasion and have the flexibility to provide feedback over a longer period.

Jaeger and MacFie (2010) recommended the use of HUTs for personal care research with consumers. Their reasoning was like that given above, however, they do note several limitations to HUTs including having less control, greater costs to field, longer fielding times, and the potential for more missing data points (Jaeger & MacFie, 2010). Sensory researchers must take these limitations into consideration when planning their research to limit variability and maximize their quality of research based on the available resources (financial, time, product, etc.).

In the literature, two comprehensive examples of model HUTs exist for makeup wipes and lotion products, respectively. Each study used vastly different approaches to meet their differing objectives. Xing et al. (2020) were looking at drivers of liking across a set of eighteen makeup wipe products developed from a 4-factor design of experiments. In total, 962 consumers evaluated six samples each over a 6-week testing period, answering weekly surveys on each product. With the high sample size and thorough extensive design, this HUT represents “gold standard” level research (Xing et al., 2020); in many cases resources would be much more restricted than in this example. Additionally, this study demonstrated how consumer data can be associated with other measures, such as product profiles from descriptive analysis, to help make the results more relevant for product development and optimization. Comparatively, the lotion study conducted by Blaak et al. (2018) used more attainable methods. First, their sample size was about 100 participants (Blaak et al., 2018). Second, they tested just three samples over three weeks (Blaak et al., 2018). Lastly, their samples were commercially available instead of being lab-made to fit into a design of experiments (Blaak et al., 2018). Though the purpose of this research differed from that of the makeup wipes – this work was testing methodology rather than

being concerned with the specific products – it helps to demonstrate a more approachable HUT that used fewer resources and still adequately addressed the project objective.

In conjunction with collecting product feedback, companies are often interested in learning more about their consumer's background. Demographics and psychographics are two methods used to profile and segment consumers. In the present research, two established psychographic scales were used to further explore consumer behaviors and habits: the List of Values (LOV) and Need for Touch (NFT) scales (Kahle et al., 1986; Peck & Childers, 2003). The List of Values survey is a relatively short, 9-item survey that assigns respondents to one of 8 value segments; this profiling helps researchers to understand some general traits about the individuals in each segment (Kahle et al., 1986). The Need for Touch survey is a 12-item scale that evaluates consumer buying behaviors specifically related to how they handle or manipulate products prior to purchase (Peck & Childers, 2003). These types of data, along with demographic data, can be used to segment consumers into different groups. These groups may demonstrate different use behaviors or preferences which can be useful for businesses trying to identify their target market.

Another concern to businesses is globalization; as the world becomes more and more connected and firms expand their reach across countries and continents, businesses desire to launch products in different markets. This requires cross-cultural research to ensure the consumer expectations are being met in all locations. The research discussed here addressed this concern, specifically focusing on the men's face lotion space, across two cultures: the United States and the Republic of Korea. The central objective of this research was to identify and compare the drivers of liking for men's face lotion between the two cultures.

## Materials and Methods

### Samples

Eight commercially available lotion products were chosen for the present research (Table 4.1). The products were selected to represent the range available in the marketplace based on their descriptive analysis results discussed in Chapter 3. In the United States, the products were purchased locally at Wal-Mart, Target, CVS Pharmacy, and/or Walgreens and stored away from direct sunlight at room temperature (~20 °C). In the Republic of Korea, products were purchased from online retailers and shipped to the testing center where they were stored at room temperature as well. Approximately 300 grams of each product were purchased in the USA and Republic of Korea, respectively. For the actual testing, approximately 6 grams of product was deposited in small, plastic, screw-top containers that were labeled with the corresponding three-digit codes. Product was prepared 24-48 hours prior to distribution.

**Table 4.1 Test Products**

<b>Lotion</b>	<b>Price</b>	<b>Gender</b>	<b>Scent Intensity</b>	<b>Use</b>
<b>Bulldog</b> Original Moisturizer (Bulldog Skincare For Men, London, UK)	\$\$\$	M	Medium	Face
<b>CeraVe</b> Moisturizing Cream (CeraVe LLC, New York, NY)	\$\$	N	Unscented	General
<b>Dove</b> Men+Care Face Lotion (Unilever, Trumbull, CT)	\$\$\$	M	Strong	Face
<b>Eucerin</b> Daily Protection Face Lotion & Sunscreen (Beiersdorf Inc., Wilton, CT)	\$\$	N	Light	Face
<b>Every Man Jack</b> Face Lotion Natural Menthol (Every Man Jack, Corte Madera, CA)	\$\$	M	Medium	Face
<b>Neutrogena</b> Hydro Boost Body Gel Cream (Johnson & Johnson Consumer Inc., Skillman, NJ)	\$	N	Unscented	Body
<b>St. Ives</b> Renewing Moisturizer (Unilever, Trumbull, CT)	\$	N	Light	Face
<b>Vaseline</b> Men Fast Absorbing (Unilever, Trumbull, CT)	\$	M	Strong	General



*Notes: Price point based on per ounce cost (\$\$\$\$ = \$5.00-7.99, \$\$\$ = \$3.00-4.99, \$\$ = \$1.00-2.99, \$ = <\$0.99); Gender (N = Neutral, M = Male). Throughout this paper, the products will be referred to by their brand name (bolded) instead of their full name.*

## **Participants**

Eighty male participants were recruited from each market using the testing center's respective, local, private consumer databases (Olathe, KS, USA and Seoul, Republic of Korea). Participants were between the ages of 18-55 and were current face lotion users, using the product at least three times a week. Participants had no known allergies to personal care ingredients and no severe skin sensitivities or health concerns (e.g., psoriasis, eczema, rosacea); acne and cold sores were allowed. Participants with a mix of skin types were recruited (normal, oily, dry, combination). Finally, all participants were open to trying new skin care products and were willing to participate in a two-week home use test on face lotion.

## **Fielding & Research Design**

This research was conducted in two locations: the Kansas State Sensory and Consumer Research Center (Olathe, KS, USA) and Sensometrics (Seoul, Republic of Korea). Following recruitment, participants were invited to pick up their samples from the testing center prior to fielding. At pick up, participants received their samples, the consent form, an instruction sheet, and a calendar detailing the key dates for the project. Participants were sent reminders and survey links via email and text message. Following successful completion of all parts of the study, participants were monetarily compensated for their participation.

**Table 4.2 Participant Home Use Test Schedule**

<b>Day</b>	<b>Direction</b>
Day 1, Sunday	Participants had a “clean-out” day where they refrained from using any of the test samples or their current face lotion.
Days 2 & 3, Monday, and Tuesday	Participants used Sample 1.
Day 4, Wednesday	Participants had a “clean-out” day where they refrained from using any of the test samples or their own face lotion. The first survey regarding their experience with Sample 1 was due.
Days 5 & 6, Thursday, and Friday	Participants used Sample 2.
Days 7 & 8, Saturday, and Sunday	Participants had two “clean-out” days where they refrained from using any of the test samples or their current face lotion. The second survey regarding their experience with Sample 2 was due.
Days 9 & 10, Monday, and Tuesday	Participants used Sample 3.
Day 11, Wednesday	Participants had a “clean-out” day where they refrained from using any of the test samples or their own face lotion. The third survey regarding their experience with Sample 3 was due.
Days 12 & 13, Thursday, and Friday	Participants used Sample 4.
Day 14, Saturday	The final survey regarding their experience with Sample 4 was due.

The study was set up as a balanced incomplete block design where each participant evaluated four of the eight products; it was conducted over a two-week period as described in Table 4.2. Evaluations took place only during weekdays as it was thought that participants would likely have more stable and comparable schedules on weekdays than on weekends where more variation could occur. The purpose of the clean-out days was to help participant’s skin return to a baseline so that each sample was starting from a similar point.

Participants completed four surveys throughout the study – one for each sample – using Compusense Cloud (Compusense Inc., Guelph, Ontario, Canada). The full screeners and surveys are presented in Appendix C. Themes and questions were developed based on the learnings from

previous research discussed in Chapters 2 and 3. Surveys were first written in English by the researcher and then translated into Korean by two native speakers using a team approach, as described by Slater and Yani-de-Soriano (2010). The first translator fully translated the documents and provided some recommendations to make questions more applicable to the Korean consumer. The second translator edited and perfected the language, further considered the recommended changes from Translator 1, made final recommendations to the researcher, and finalized the documents. This technique and the translators referenced here both have experience in sensory and consumer research and have performed translations successfully on previous research conducted by the Kansas State Sensory and Consumer Research Center.

Lotion samples were evaluated for acceptance, including overall liking and aroma and texture liking, using a 9-point hedonic scale (1 = “Dislike Extremely”, 9 = “Like Extremely”). Additionally, satisfaction was evaluated using a 5-point scale (1 = “Extremely Dissatisfied”, 5 = “Extremely Satisfied”). Several sensory attributes were measured using 5-point just-about-right (JAR) scales. These attributes included aroma, thickness, spreadability, absorption rate, moisturizing ability, and shininess. Two other sensory attributes, cooling effect and amount of residue, were also evaluated on 5-point scales from no perception to high amount/intensity. Participants were asked to identify the time of day they used the product and rate their purchase interest (1 = “Definitely would not buy”, 5 = “Definitely would buy”). The final product-related questions were a series of agreement statements regarding common consumer perceptions, both positive and negative, that may be felt when using lotion products such as “leaves my skin feeling calm”, “makes my skin feel tight”, and “is non-greasy”. A five-point Likert-type scale was used for these questions (1 = “Strongly disagree”, 5 = “Strongly agree”).

Following the product-related questions, each survey transitioned into non-sample-related questions that explored a variety of topics with the participants. The first survey included two psychographic measures: the List of Values (LOV) and “Need for Touch” (NFT) scales (Kahle & Kennedy, 1988; Peck & Childers, 2003). The second survey aimed at capturing the importance of different product traits measured on a 9-point scale (1 = “Very unimportant”, 9 = “Very important”). Sixteen characteristics were looked at such as “the product is vegan”, “the product is anti-aging”, and “the product is from a brand I trust”. For the third survey, participants were told to imagine their ideal face lotion product. They then picked from a list of pre-determined options of packaging, aroma, and texture characteristics to build what that “ideal” product might look like. An open-ended response was also included to collect any characteristics not covered by the questions. In the fourth and final survey, participants were asked a series of demographic questions; these responses are presented in Table 4.3.

**Table 4.3 Participant Demographics in USA and Korea**

<b>Demographics</b>	<b>% USA</b>	<b>% Korean</b>
<b>Age</b>		
18-25	14%	25%
26-35	26%	25%
36-45	33%	25%
46-55	28%	25%
<b>Employment Status</b>		
Full-time	85%	48%
Part-time	6%	14%
Homemaker	0%	0%
Student	8%	25%
Retired	0%	0%
Not currently employed	1%	9%
None of the above	0%	5%
<b>Household Income</b>		
Under \$25,000 / Under ₩15,000,000	4%	15%
\$25,000 to \$34,999 / ₩15,000,000 - 30,000,000	6%	14%
\$35,000 to \$49,999 / ₩30,000,001 - 45,000,000	6%	20%

\$50,000 to \$59,999 / ₩45,000,001 - 60,000,000	5%	25%
\$60,000 to \$69,999 / ₩60,000,001 - 75,000,000	3%	14%
\$70,000 to \$99,999 / ₩75,000,001 - 90,000,000	16%	3%
\$100,000-\$149,999 / ₩90,000,001 - 105,000,000	31%	4%
\$150,000 or more / ₩105,000,000 or more	29%	6%

#### **Ethnicity**

African American/Black	9%	0%
Hispanic/Latino	13%	0%
Asian	5%	100%
Pacific Islander	0%	0%
American Indian/Native American	1%	0%
Caucasian/White	70%	0%
Other (specify)	3%	0%

#### **Skin tone**

Very Light	1%	3%
Light	24%	20%
Light-Medium	43%	23%
Medium	18%	24%
Medium-Dark	14%	23%
Dark	0%	8%
Very Dark	1%	1%

#### **Skin type**

Dry	13%	18%
Normal-dry	31%	16%
Normal	20%	24%
Normal-oily	30%	29%
Oily	6%	14%

#### **Price Range of Current Lotion Product**

Less than \$10 / Less than ₩ 5,000	30%	3%
\$10.00-14.99 / ₩ 5,000 - 10,000	49%	4%
\$15.00-19.99 / ₩ 10,001 - 15,000	9%	29%
\$20.00-29.99 / ₩ 15,001 - 25,000	6%	33%
\$30.00-39.99 / ₩ 25,001 - 35,000	3%	23%
\$40.00 or more / ₩ 35,000 or more	4%	10%

#### **Where Current Lotion Product is Purchased**

Big box store (e.g., Walmart, Korean Supermarket)	59%	13%
Amazon / Internet Mall	14%	59%
Grocery store	4%	0%
Drug store	10%	0%

Department store	4%	8%
Beauty store	10%	21%

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## Analysis

All analyses were carried out using XLStat (Version 22.2.3, Addinsoft, Paris, France). First, the data was subjected to multivariate analysis of variance (MANOVA) (Wilks' Lambda) to determine any significant differences between the countries and across the sample positions ( $\alpha = 0.05$ ). There was a significant difference found between the two countries (USA vs. Republic of Korea), so all further analyses were completed separately. Consumer liking, satisfaction, purchase interest, cooling intensity, and residue intensity scores were analyzed by analysis of variance (ANOVA) ( $\alpha = 0.05$ ); Tukey's test was used as a post-hoc analysis. Specific product attributes were analyzed via penalty analysis where JAR data were compared to changes in overall liking. Penalties were considered significant if they showed a mean drop greater than or equal to 1.0 and were perceived as "not-JAR" by 20% or more of the participants. Cooling effect and residue amount were analyzed by ANOVA with Tukey's test post-hoc analysis ( $\alpha = 0.05$ ). Product-related agreement statements were visualized using principal component analysis (PCA) (correlation method). Non-product-related questions such as the importance of certain product characteristics and ideal product attributes were presented as means and percentages, respectively. Demographic and psychographic data were presented as counts and/or percentages where appropriate.

The hedonic data (dependent) and demographic and psychographic data (independent), respectively, were subjected to MANOVA ( $\alpha = 0.05$ ). If significant effects were identified, further analysis was performed. For the psychographic measures, cluster analysis was performed on the data, the number of clusters were identified, and then the overall liking scores across all

products were examined within each cluster. For the demographic data, if an effect was significant the participants were grouped by the variable (e.g. for age they were broken into their four age ranges) and again, the overall liking scores were examined across the groups.

The final piece of analysis was carried out to identify drivers of liking. Data from the previous chapter on descriptive analysis was used; more information regarding that data can be found in Chapter 3. The descriptive analysis and hedonic data were associated via correlation analysis and PCA to identify and visualize the drivers of liking. Pearson's correlation at  $\alpha = 0.1$  was evaluated; correlation coefficients are reported for all descriptive analysis attributes compared to overall liking. Coefficients above 0.6 and those identified as significant are reported as the key drivers of liking. The PCA (correlation method) was carried out on the descriptive analysis data for the 8 consumer-evaluated samples; liking and JAR means were included as supplementary variables.

## **Results and Discussion**

### **Product-Related Measures**

The results of the MANOVA by country against the five key measures (overall, aroma, and texture liking, satisfaction, and purchase interest) showed statistical differences between participants in the USA and Korea ( $p\text{-value} = <0.0001$ ). In response, all further data analysis was conducted separately for each country. The statistical differences between the two countries are explained by the substantial cultural differences between western and Asian countries; this finding was also noted by Xing et al. (2020).

The results of the hedonic measures – overall liking, aroma liking, texture liking, and satisfaction – are presented in Tables 4.4 and 4.5. All measures showed significant differences ( $p\text{-value} < 0.05$ ) across the samples aside from the aroma liking measure in Korea. In both

countries, the Every Man Jack, St. Ives, and Vaseline products received the numerically highest liking and satisfaction scores; Eucerin tended to be the least liked and least satisfying face lotion in both countries, though in Korea, Cerave also performed poorly across the measures. The overall liking and satisfaction scores were highly correlated in both countries ( $R = >0.85$ ); future research could remove the satisfaction measure to streamline the questionnaire. In the USA, Vaseline had the highest score for aroma liking while Eucerin scored the lowest. In Korea, Every Man Jack had the numerically highest aroma liking score and Cerave and Eucerin were the numerically lowest scores. For texture liking, many of the products in both countries showed statistically similar scores; but numerically, Every Man Jack and Vaseline received the highest scores in the USA and Korea, respectively. Eucerin and Cerave received statistically lower texture liking scores in the USA and Korea, respectively. In general, overall liking, aroma liking, and texture liking are important measures to include when evaluating consumer acceptance and would be recommended for future skin care research.















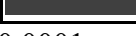

**Table 4.4 Overall, Aroma, and Texture Liking Results in USA and Korea**

Sample	USA			Korea		
	Overall Liking	Aroma Liking	Texture Liking	Overall Liking	Aroma Liking	Texture Liking
Bulldog	6.50 ab	5.43 ab	6.70 a	6.08 ab	5.43	6.25 a
Cerave	6.20 ab	5.45 ab	5.93 ab	5.20 ab	4.93	4.60 c
Dove	5.73 bc	5.63 ab	5.30 bc	5.93 ab	5.50	5.93 ab
Eucerin	4.65 c	5.38 b	4.58 c	4.98 b	4.93	5.00 bc
Every Man Jack	7.03 a	6.23 ab	6.93 a	6.15 ab	6.05	6.38 a
Neutrogena	6.18 ab	5.60 ab	5.93 ab	5.93 ab	5.28	6.30 a
St. Ives	6.90 ab	6.23 ab	6.73 a	6.23 ab	6.00	6.48 a
Vaseline	6.85 ab	6.78 a	6.55 ab	6.25 a	5.92	6.65 a
P-Value	<0.0001	0.015	<0.0001	0.010	0.066	<0.0001
Std Deviation	1.96	2.06	2.00	1.90	2.10	1.75

*Note: Means in the same column with the same letter designation are not statistically different at  $p < .05$ .*



**Table 4.5 Overall Product Satisfaction Results in USA and Korea**

		USA		Korea
Sample		Satisfaction		
Bulldog	3.93 a		3.60 abc	
Cerave	3.75 a		2.93 bc	
Dove	3.45 ab		3.48 abc	
Eucerin	3.00 b		2.90 c	
Every Man Jack	4.05 a		3.58 abc	
Neutrogena	3.63 ab		3.43 abc	
St. Ives	3.93 a		3.68 a	
Vaseline	4.03 a		3.63 ab	
P-Value	<0.0001		0.001	
Std Deviation	1.10		1.06	

*Note: Means in the same column with the same letter designation are not statistically different at  $p < .05$ . Satisfaction was evaluated using a 5-point scale (1 = “Extremely Dissatisfied”, 5 = “Extremely Satisfied”).*

The JAR and penalty analysis results are presented in Tables 4.6 and 4.7. Lesser liked products, such as Eucerin or Dove, tended to have more significant penalties and their attributes tended to not reach the JAR threshold of 70%. Eucerin was identified to be too strong in aroma, too thin, too thick, not spreadable enough, too spreadable, absorbs too slowly, not moisturizing enough, and too shiny by participants in the USA. Participants in Korea considered it to absorb too slowly, not be moisturizing enough, and appear not shiny enough. Dove was identified as being not spreadable enough and not moisturizing enough by participants in the USA. It was considered to be too strong in aroma, too thick, not spreadable enough, absorb too slowly, and not be moisturizing enough by participants in Korea. In contrast, well-liked products like Bulldog, Every Man Jack, or Vaseline tended to have fewer significant penalties and more attributes reaching the JAR threshold. For example, Bulldog was only identified as being too strong in aroma by USA participants and not shiny enough by Korean participants. This information is useful for understanding consumer’s product expectations and supporting drivers of liking analyses.

In comparing the two countries, the USA participants had more attributes identified as polarizing. This occurred when an attribute exhibited significant penalties for both “too little” and “too much”. An example of this would be for the Neutrogena sample in the USA which received significant penalties for being “too thick” and “too thin” and “not moisturizing enough” and “too moisturizing”. Eucerin also showed this phenomenon in the USA for thickness and spreadability; Cerave showed this in Korea for shininess. This phenomenon was seen 4 times in the USA evaluations and just once for the Korean evaluation. One explanation for this could be that Korean participants were assumed to be more knowledgeable about skin care and face lotion while the USA participants tend to have less experience with skin care. This may have led to confusion in attribute meaning for USA participants. Alternatively, this could indicate different consumer clusters; specifically for the Neutrogena sample, younger USA participants tended to really like this product – especially the texture – as compared to the older participants who did not like it as much (discussed below, Table 4.15). This may explain the polarizing nature of the responses for thickness and moisturizing ability.

**Table 4.6 Summary of Significant Penalties in USA and Korea**

<b>Samples</b>	<b>USA</b>	<b>Korea</b>
Bulldog	Aroma too strong, Absorbs too slowly, Not moisturizing enough	Too much aroma
Cerave	Aroma too weak, Too thick, Not spreadable enough, Absorbs too slowly, Too shiny	Absorbs too slowly, Not shiny enough, Too shiny
Dove	Not spreadable enough, Not moisturizing enough	Aroma too strong, Too thick, Not spreadable enough, Absorbs too slowly, Not moisturizing enough
Eucerin	Aroma too strong, Too thin, Too thick, Not spreadable enough, Too spreadable, Absorbs too slowly, Not moisturizing enough, Too shiny	Absorbs too slowly, Not moisturizing enough, Not shiny enough
Every Man Jack	Aroma too strong	Not shiny enough

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Neutrogena	Aroma too weak, Too thin, Too thick, Absorbs too slowly, Not moisturizing enough, Too moisturizing	Not thick enough, Absorbs too slowly
St. Ives	Aroma too strong, Absorbs too slowly	Not moisturizing enough
Vaseline	Aroma too strong, Absorbs too slowly, Too shiny	Aroma too strong

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*Note: Significant penalties were identified by 20% or more of participants and defined as a mean drop >1.0*

**Table 4.7 Full Just About Right & Penalty Analysis Results in USA and Korea**

USA	Aroma			Thickness			Spreadability		
	Too little	JAR	Too much	Too little	JAR	Too much	Too little	JAR	Too much
Bulldog	10%	38%	<b>53% (1.81)</b>	10%	75%	15%	8%	83%	10%
Cerave	<b>53% (1.07)</b>	35%	13%	5%	53%	<b>43% (2.41)</b>	<b>30% (1.58)</b>	68%	3%
Dove	15%	48%	38%	50%	28%	23%	<b>23% (1.21)</b>	50%	28%
Eucerin	30%	48%	<b>23% (1.94)</b>	<b>55% (1.26)</b>	20%	<b>25% (1.13)</b>	<b>23% (1.72)</b>	45%	<b>33% (1.08)</b>
Every Man Jack	15%	65%	<b>20% (1.75)</b>	20%	58%	23%	8%	83%	10%
Neutrogena	<b>53% (1.89)</b>	43%	5%	<b>25% (1.80)</b>	50%	<b>25% (2.30)</b>	15%	68%	18%
St. Ives	10%	65%	<b>25% (1.86)</b>	20%	70%	10%	0%	83%	18%
Vaseline	10%	65%	<b>25% (1.67)</b>	15%	68%	18%	8%	75%	18%

USA	Absorbing			Moisturizer			Shiny		
	Too little	JAR	Too much	Too little	JAR	Too much	Too little	JAR	Too much
Bulldog	<b>23% (1.05)</b>	70%	8%	<b>23% (1.49)</b>	75%	3%	8%	80%	13%
Cerave	<b>30% (2.50)</b>	58%	13%	10%	75%	15%	23%	58%	<b>20% (1.69)</b>
Dove	40%	55%	5%	<b>28% (1.28)</b>	68%	5%	10%	68%	23%
Eucerin	<b>58% (2.31)</b>	38%	5%	<b>38% (1.81)</b>	55%	8%	13%	68%	<b>20% (1.76)</b>
Every Man Jack	20%	75%	5%	8%	93%	0%	0%	85%	15%
Neutrogena	<b>45% (2.18)</b>	50%	5%	<b>23% (1.91)</b>	58%	<b>20% (1.54)</b>	8%	75%	18%
St. Ives	<b>23% (1.91)</b>	70%	8%	18%	75%	8%	5%	80%	15%
Vaseline	<b>25% (1.20)</b>	58%	18%	13%	80%	8%	13%	65%	<b>23% (1.19)</b>

Korea	Aroma			Thickness			Spreadability		
	Too little	JAR	Too much	Too little	JAR	Too much	Too little	JAR	Too much
Bulldog	0%	40%	<b>60% (1.65)</b>	8%	70%	23%	10%	73%	18%
Cerave	50%	35%	15%	10%	20%	70%	63%	28%	10%
Dove	5%	48%	<b>47% (1.79)</b>	18%	58%	<b>25% (1.32)</b>	<b>25% (1.32)</b>	55%	20%
Eucerin	28%	40%	33%	65%	13%	23%	33%	28%	40%
Every Man Jack	5%	63%	33%	18%	63%	20%	18%	63%	20%
Neutrogena	43%	40%	18%	<b>25% (1.06)</b>	58%	18%	5%	73%	23%
St. Ives	10%	48%	43%	8%	63%	30%	8%	80%	13%
Vaseline	0%	40%	<b>60% (1.98)</b>	8%	78%	15%	3%	80%	18%

Korea	Absorbing			Moisturizer			Shiny		
	Too little	JAR	Too much	Too little	JAR	Too much	Too little	JAR	Too much
Bulldog	10%	55%	35%	10%	83%	8%	18%	70%	13%
Cerave	<b>45% (1.28)</b>	38%	18%	15%	55%	30%	<b>30% (2.27)</b>	50%	<b>20% (1.10)</b>
Dove	<b>28% (2.12)</b>	53%	20%	<b>25% (1.48)</b>	63%	13%	25%	58%	18%
Eucerin	<b>45% (1.25)</b>	35%	20%	<b>30% (1.41)</b>	63%	8%	<b>23% (1.39)</b>	33%	45%
Every Man Jack	20%	48%	33%	18%	68%	15%	<b>23% (1.56)</b>	68%	10%
Neutrogena	<b>27.5% (1.01)</b>	53%	20%	10%	78%	13%	20%	65%	15%
St. Ives	13%	65%	23%	<b>20% (1.17)</b>	78%	3%	38%	55%	8%
Vaseline	10%	73%	18%	13%	80%	8%	20%	73%	8%

*Note: Green highlight denotes attributes that were rated as just about right by 70% or participants or more. Bolded values denote significant penalties; mean drops are presented for these attributes in parentheses.*

Cooling effect was evaluated by participants following lotion application (Table 4.8). Participants in the USA perceived the Bulldog and Every Man Jack samples to have a cooling effect (numerically highest mean values and <10% rating the sample as having no cooling effect). In Korea, the participants perceived Bulldog, Every Man Jack, St. Ives, and Vaseline to exhibit a cooling effect. The product's respective formulations can help explain this finding; Bulldog contains aloe and Every Man Jack contains menthol – both known for their cooling effects on skin. The Vaseline sample is marketed as fast absorbing. It is possible that the combination of water evaporating from the lotion when it is spread over the skin and the quick absorption leading to less residual effects on the skin which may be perceived as “cool”. Additionally, the descriptive analysis results (Chapter 3) also identified the Vaseline sample – along with Every Man Jack – as having a slight cooling sensation as well. In contrast, the St. Ives sample does not have any obviously cooling ingredients, was not perceived to have a cooling effect by the trained panel, and does not have any marketing claims that clearly support the cooling perception.

**Table 4.8 Cooling Effect Results in USA and Korea**









































USA	Bulldog	Cerave	Dove	Eucerin	Every Man Jack	Neutrogena	St. Ives	Vaseline	
Not at all cool	<div><div></div></div>	8% <div><div></div></div>	35% <div><div></div></div>	30% <div><div></div></div>	30% <div><div></div></div>	5% <div><div></div></div>	28% <div><div></div></div>	18% <div><div></div></div>	23%
Mildly cool	<div><div></div></div>	18% <div><div></div></div>	25% <div><div></div></div>	20% <div><div></div></div>	18% <div><div></div></div>	28% <div><div></div></div>	20% <div><div></div></div>	25% <div><div></div></div>	30%
Moderately cool	<div><div></div></div>	40% <div><div></div></div>	13% <div><div></div></div>	30% <div><div></div></div>	35% <div><div></div></div>	23% <div><div></div></div>	15% <div><div></div></div>	30% <div><div></div></div>	33%
Fairly cool	<div><div></div></div>	30% <div><div></div></div>	28% <div><div></div></div>	20% <div><div></div></div>	15% <div><div></div></div>	30% <div><div></div></div>	30% <div><div></div></div>	25% <div><div></div></div>	13%
Very cool	<div><div></div></div>	5% <div><div></div></div>	0%	0% <div><div></div></div>	3% <div><div></div></div>	15% <div><div></div></div>	8% <div><div></div></div>	3% <div><div></div></div>	3%
Mean	3.08 ab	2.33 b	2.40 b	2.43 b	3.23 a	2.70 ab	2.70 ab	2.43 b	

Korea	Bulldog	Cerave	Dove	Eucerin	Every Man Jack	Neutrogena	St. Ives	Vaseline	
Not at all cool	<div><div></div></div>	3% <div><div></div></div>	45% <div><div></div></div>	18% <div><div></div></div>	35% <div><div></div></div>	10% <div><div></div></div>	15% <div><div></div></div>	8% <div><div></div></div>	8%
Mildly cool	<div><div></div></div>	23% <div><div></div></div>	25% <div><div></div></div>	25% <div><div></div></div>	15% <div><div></div></div>	18% <div><div></div></div>	30% <div><div></div></div>	38% <div><div></div></div>	43%
Moderately cool	<div><div></div></div>	18% <div><div></div></div>	23% <div><div></div></div>	30% <div><div></div></div>	40% <div><div></div></div>	30% <div><div></div></div>	35% <div><div></div></div>	30% <div><div></div></div>	23%
Fairly cool	<div><div></div></div>	50% <div><div></div></div>	8% <div><div></div></div>	28% <div><div></div></div>	10% <div><div></div></div>	30% <div><div></div></div>	20% <div><div></div></div>	20% <div><div></div></div>	23%
Very cool	<div><div></div></div>	8% <div><div></div></div>	0%	0%	0% <div><div></div></div>	13% <div><div></div></div>	0% <div><div></div></div>	5% <div><div></div></div>	5%
Mean	3.38 a	1.93 d	2.68 abc	2.25 cd	3.18 ab	2.60 bcd	2.78 abc	2.75 abc	









































*Note: Means with the same letter designation are not statistically different at  $p < .05$ . Cooling was evaluated using a 5-point scale (1 = “Not at all cool”, 5 = “Very cool”).*

Participants evaluated the amount of residue left on their skin after wearing the product for several hours (Table 4.9). For men in both countries, the Eucerin sample was perceived to leave the most residue on the skin; this was in line with the descriptive analysis results from Chapter 3. The Dove (USA) and Cerave (Korea) products also had numerically high intensity scores for residue amount and were statistically similar to Eucerin. These results were also supported by the residue attribute results from the descriptive analysis research (Chapter 3). Higher perceptions of residue were associated with lower overall liking in both countries. A study from Van Reeth (2006) – which discussed the use of silicones in skin care products – reported findings stating that consumers tend to prefer products with low residue; this is in line with the present results.

**Table 4.9 Amount of Residue Results in USA and Korea**

USA	Bulldog	Cerave	Dove	Eucerin	Every Man Jack	Neutrogena	St. Ives	Vaseline
No residue	 43%	 33%	 25%	 10%	 40%	 48%	 50%	 43%
A trace amount of residue	 38%	 38%	 38%	 38%	 35%	 18%	 28%	 33%
A mild amount of residue	 15%	 23%	 20%	 20%	 13%	 20%	 15%	 20%
A moderate amount of residue	 5%	 8%	 18%	 30%	 13%	 10%	 5%	 0%
An extreme amount of residue	 0%	 0%	 0%	 3%	 0%	 5%	 3%	 5%
Mean	1.83 b	2.05 b	2.30 ab	2.78 a	1.98 b	2.08 ab	1.83 b	1.93 b

Korea	Bulldog	Cerave	Dove	Eucerin	Every Man Jack	Neutrogena	St. Ives	Vaseline
No residue	 33%	 23%	 23%	 23%	 20%	 30%	 45%	 35%
A trace amount of residue	 40%	 38%	 38%	 25%	 35%	 33%	 23%	 43%
A mild amount of residue	 25%	 10%	 25%	 23%	 30%	 23%	 23%	 15%
A moderate amount of residue	 3%	 25%	 13%	 20%	 15%	 10%	 10%	 5%
An extreme amount of residue	 0%	 5%	 3%	 10%	 0%	 5%	 0%	 3%
Mean	1.97 a	2.53 a	2.35 a	2.70 a	2.40 a	2.28 a	1.97 a	1.97 a

*Note: Means with the same letter designation are not statistically different at  $p < .05$ . Amount of residue was evaluated using a 5-point scale (1 = “No residue”, 5 = “An extreme amount of residue”).*

In the USA, men most often reported using the face lotions in the morning (78-90%), with fewer reporting using the products in the evening (30-45%), and a small number reporting

using the products mid-day (5-20%) (Table 4.10). In Korea, there was a greater mix in time of use. Men more often reported using the lotion products in the morning and the evening, instead of skewing towards the morning like in the USA sample. Additionally, a greater proportion of men reported using the face lotions at mid-day as well (35-50%). Some men were using the face lotions more than once throughout the day (e.g. in the morning and the evening) while others applied the product just once a day. There were no logical trends across the products to explain why men were choosing a certain time of day to apply the face lotion – this indicated the participants were likely using the product as they normally would and the results depended on how face lotion typically fits into their routine. Future research could utilize this question more efficiently for products specifically marketed for certain times of day such as daytime-focused sun protection products or night creams.

**Table 4.10 Time of Use of Face Lotions in USA and Korea**

Product Use Time		USA			Korea		
Sample	Morning	Mid-day	Evening	Morning	Mid-day	Evening	
Bulldog	83%	15%	43%	60%	38%	60%	
Cerave	88%	10%	40%	65%	45%	48%	
Dove	80%	5%	43%	48%	40%	63%	
Eucerin	88%	18%	30%	48%	35%	70%	
Every Man Jack	78%	20%	45%	53%	38%	65%	
Neutrogena	83%	20%	35%	45%	48%	50%	
St. Ives	88%	13%	38%	55%	35%	65%	
Vaseline	90%	13%	35%	58%	50%	53%	

When asked to rate their purchase interest towards each product (Table 4.11), participant's scores followed the overall liking and satisfaction results and were highly correlated to both ( $R = >0.8$ ). Well-liked products like St. Ives, Every Man Jack, and Vaseline had high purchase interest scores. Products that received lower liking scores – like Eucerin (both countries) and Cerave (just Korea) – showed lower purchase interest scores as well. Similarly to

satisfaction, this question did not provide unique product learnings and could be excluded from future surveys for efficiency.

**Table 4.11 Purchase Interest of Face Lotions in USA and Korea**

Sample	USA	Korea
Bulldog	3.10 ab	3.18 ab
Cerave	3.00 abc	2.58 bc
Dove	2.68 bc	3.03 abc
Eucerin	2.23 c	2.35 c
Every Man Jack	3.43 ab	3.25 ab
Neutrogena	2.93 abc	2.95 abc
St. Ives	3.60 a	3.35 a
Vaseline	3.50 a	3.25 ab
P-Value	<0.0001	0.0002
Std Deviation	1.21	1.14

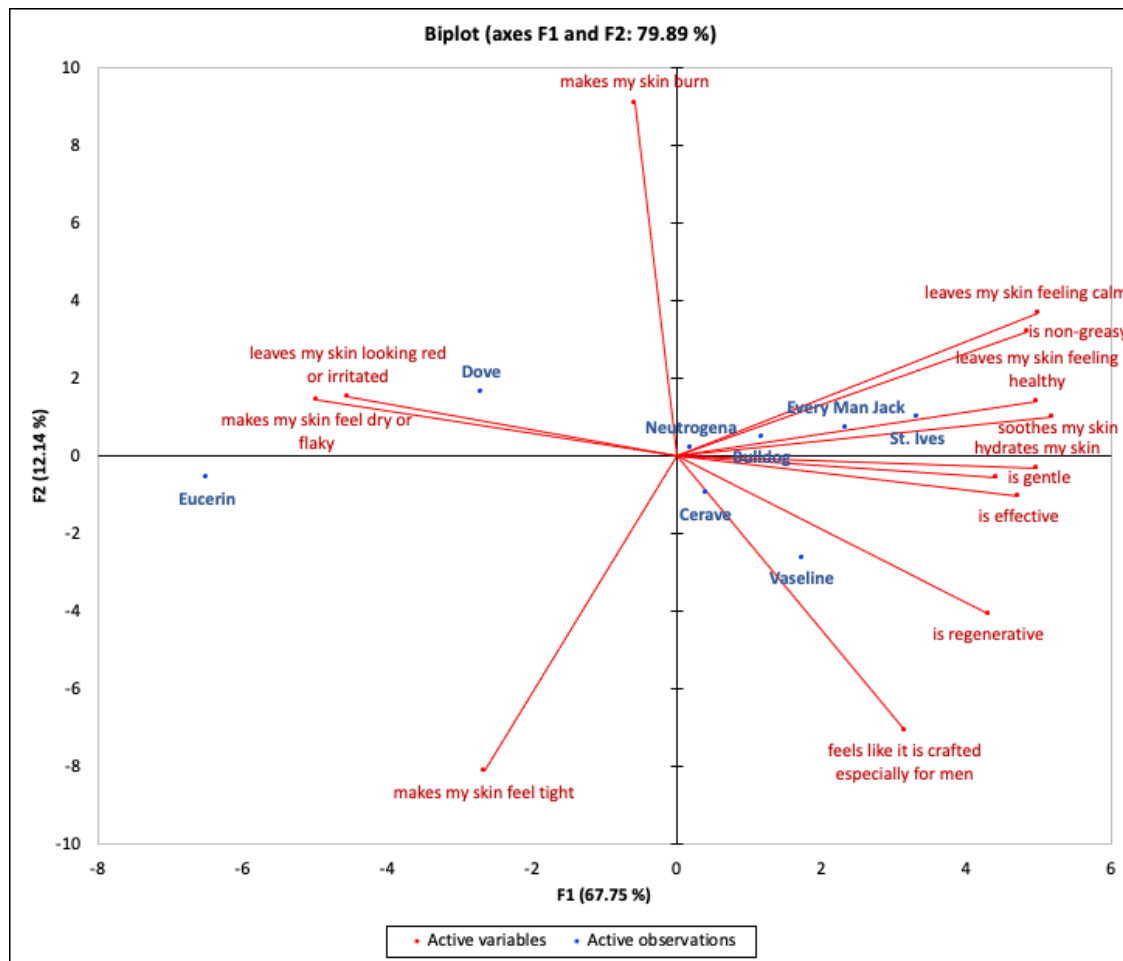
*Note: Means in the same column with the same letter designation are not statistically different at  $p < .05$ . Purchase interest was evaluated using a 5-point scale (1 = “Definitely would not buy”, 5 = “Definitely would buy”).*

The agreement statements (Figures 4.1 and 4.2) are visualized via their PCA outputs. The PCA on the USA data explained about 80% of the variability and the PCA on the Korean data explain 78%. For the USA results, well-liked products were typically associated with positive statements (e.g. “soothes my skin”, “is effective”) while the lesser-liked products were associated with the more negative statements like “makes my skin feel dry or flaky” and “leaves my skin looking red or irritated”. In Korea, participants also associated the well-liked products with positive statements except for “makes my skin feel tight”. In the USA, this was interpreted as a negative statement based on its association to other negative statements and less accepted products on the PCA plot. Conversely, Korean men may have interpreted this as a positive characteristic and associated it with anti-aging (e.g., fixing sagging skin or the appearance of fine lines). Surprisingly, the Every Man Jack product which was relatively well-liked by the Korean participants was associated with two negative statements (“leaves my skin looking red or



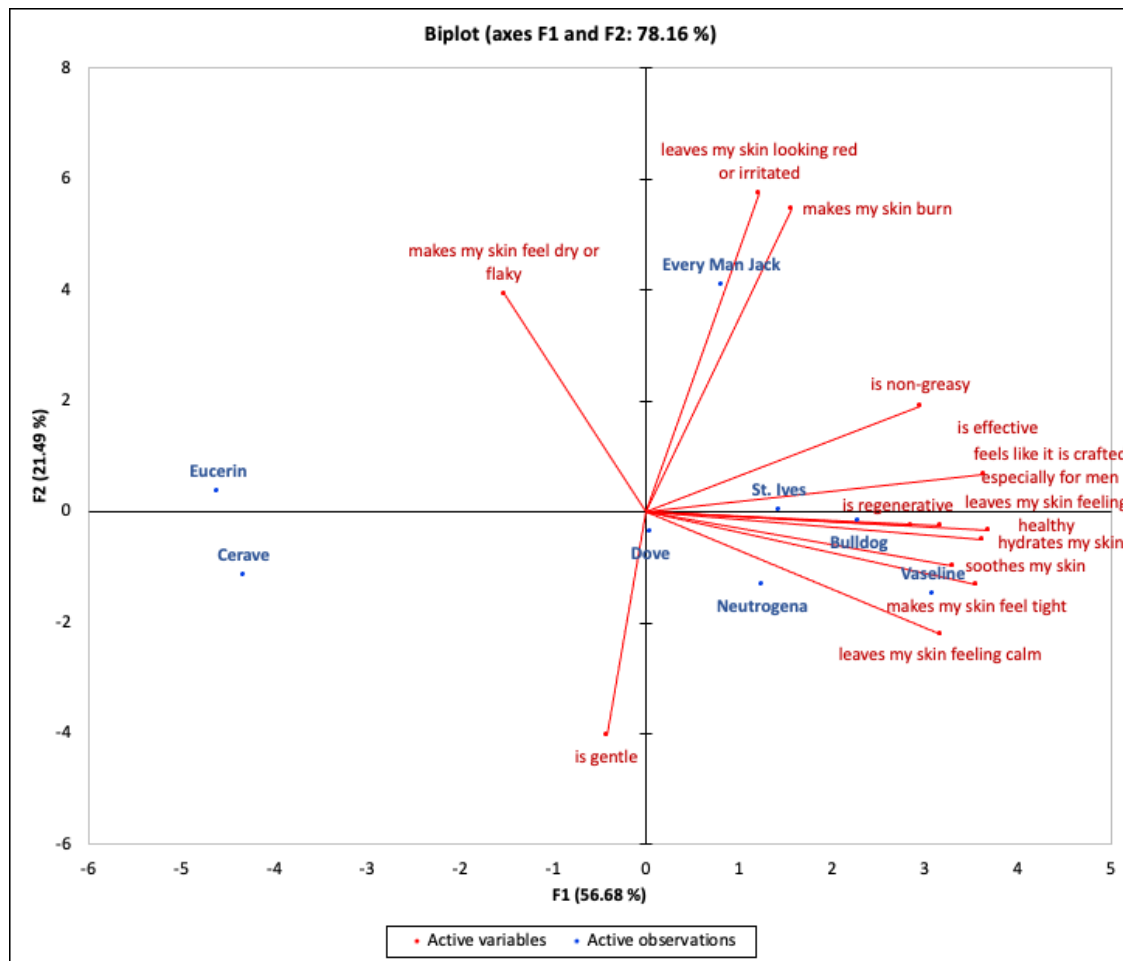
irritated” and “makes my skin burn”). The two least liked samples, Cerave and Eucerin, were not associated with the more negative statements, however, they were plotted opposite of the positive statements indicating a more negative perception by the participants. This may indicate that the drivers of liking were not related to the characteristics displayed in the agreement statements. Overall, this type of question set and analysis was an efficient way to characterize the lotion samples based on consumer perceptions. Future research could utilize a broader range of both positive and negative agreement statements to gain deeper product learnings on a variety of attributes that may be harder to measure using JAR or intensity scales.

**Figure 4.1 USA - Agreement Statements Analyzed via PCA**



*Note: Agreement statements were evaluated on a 5-point Likert scale (1 = “Strongly disagree”, 5 = “Strongly agree”).*

**Figure 4.2 Korea - Agreement Statement Analyzed via PCA**



*Note: Agreement statements were evaluated on a 5-point Likert scale (1 = “Strongly disagree”, 5 = “Strongly agree”).*

### **Psychographic, Demographic, and Non-Product Related Measures**

It was hypothesized that the two psychographic measures, List of Values (LOV) and Need for Touch (NFT), could be associated with the product-specific measures to help show different consumer clusters. For List of Values, it was hypothesized that the importance of certain values may help separate the consumers into different consumer groups. For example, if the consumer feels “excitement” or “fun and enjoyment of life” are the most important to them, they might show a preference towards products with strong, pleasing aromas that could introduce “little luxuries” into their days whereas someone who finds “security” the most important may

want a plainer, scent-free, and rich cream to protect their skin. In terms of Need for Touch, since face lotion is a tactile product that is typically applied with the hands and fingers, it was hypothesized that men with high NFT scores would have more specific texture expectations than those with low NFT scores. On the contrary, these were not the results. When MANOVAs were performed on the psychographic measures and hedonic data, the results were mostly not significant indicating there were no obvious differences in consumer liking based on their List of Values or Need for Touch results. For the few variables that were significant, the MANOVA was followed up by cluster analysis on the psychographic measure. Once clusters were identified, the hedonic scores were compared across clusters to look for differences and trends. Again, no useful results were found.

Due to these non-significant and ineffectual findings, the mean psychographic results are presented in Tables 4.12 and 4.13. From the List of Values results, “fun and enjoyment of life” received the highest importance score in both countries while “sense of belonging” and “excitement” received the lowest importance scores in the USA and Korea, respectively. When asked to identify the single most important value, participants in both countries selected “fun and enjoyment of life”. There is no other published data for the LOV scale evaluated by men in the USA or Korea or evaluated under a related context, however, a study done on Greek organic foods consumers also showed that “fun and enjoyment of life” was the most important value identified by participants and “sense of belonging” was less important (Chryssohoidis & Krystallis, 2005). These findings are in line with the current results.

From the Need for Touch results, USA participants most strongly agreed that they “feel more comfortable purchasing a product after physically examining it” and showed the lowest agreement towards the statement “the only way to make sure a product is worth buying is to

actually touch it”. Korean participants most strongly agreed that they “feel more confident making a purchase after touching a product” and showed the lowest agreement towards the statement “I find myself touching all kinds of products in stores”. When the mean scores were totaled, Korean participants were found to have a slightly higher “need for touch” than their USA counterparts. Again, there is no related research that shows typical results from the Need for Touch scale evaluated with men in the USA and Korea. In a study on touch behavior which compared men and women in the USA, Italy, and Czech Republic, participants in the USA were found to be the least touch oriented (Dibiase & Gunnoe, 2004). This is supported by the knowledge that the USA tends to be a “noncontact” (Dibiase & Gunnoe, 2004) and more individualistic culture. Comparatively, Korea has a more collectivist culture that may be more open to contact and touch. This would explain their slightly higher total NFT scores in the current research.

Overall, it is not recommended that researchers use these specific psychographic measures to gain learnings on consumer behaviors and preferences. The agreement statements discussed above may be a more effective method for segmenting or clustering consumers going forward. Alternatively, future research could focus on creating a psychographic survey or “typing tool” that could be used in skin care research to characterize different types of consumers.

**Table 4.12 List of Values Results in USA and Korea**

<b>Values</b>	<b>USA</b>	<b>Korea</b>
<i><b>Importance Score (mean value)</b></i>		
Sense of belonging	6.90	6.89
Excitement	7.23	6.78
Warm relationships with others	7.76	7.23
Self-fulfillment	7.76	7.79
Being well respected	7.58	6.91
Fun and enjoyment of life	8.15	8.14

Security	7.66	7.98
Self-respect	7.99	7.81
A sense of accomplishment	8.06	7.84
<b><i>Most Important Value (% participants)</i></b>		
Sense of belonging	4%	4%
Excitement	1%	0%
Warm relationships with others	19%	3%
Self-fulfillment	4%	16%
Being well respected	13%	4%
Fun and enjoyment of life	30%	31%
Security	5%	24%
Self-respect	9%	3%
A sense of accomplishment	16%	16%

*Note: Attributes were evaluated on a 9-point scale (1 = “Very unimportant”, 9 = “Very important”).*

**Table 4.13 Need for Touch Results in USA and Korea**

<b>Attributes</b>	<b>USA</b>	<b>Korea</b>
When walking through stores, I can't help touching all kinds of products.	3.70	3.56
Touching products can be fun.	4.55	4.46
I place more trust in products that can be touched before purchase.	4.93	5.38
I feel more comfortable purchasing a product after physically examining it.	5.55	5.14
When browsing in stores, it is important for me to handle all kinds of products.	4.18	4.79
If I can't touch a product in the store, I am reluctant to purchase the product.	3.66	4.39
I like to touch products even if I have no intention of buying them.	3.56	3.88
I feel more confident making a purchase after touching a product.	4.75	5.49
When browsing in stores, I like to touch lots of products.	3.88	4.31
The only way to make sure a product is worth buying is to actually touch it.	3.45	4.65
There are many products that I would only buy if I could handle them before purchase.	3.91	4.30
I find myself touching all kinds of products in stores.	3.53	3.51
Mean Total	49.64	53.85

*Note: Attributes were evaluated on a 7-point scale (1 = “Strongly disagree”, 7 = “Strongly agree”).*

When a similar MANOVA method was utilized to compare the demographic and hedonic results, several significant variables (bolded) were identified (Table 4.14). Age and Skin Tone\*Skin Type were found to be significant in both countries; Age\*Skin Tone was significant for the Korean data only. Based on these results, the hedonic data in both countries was sorted by

age and compared across groups (Table 4.15 and 4.16). In the USA, the youngest age group (18-25) liked the Neutrogena sample much more than the older groups. They especially liked the product's texture; the thin, gel-like consistency may have worked well on their oilier skin. The youngest group also showed lower acceptance to the Cerave product's texture. This is in contrast of the trends reported by Van Reeth (2006) which indicate consumers tend to prefer a thicker product, though the age of the panelists were not specified. Cerave is much thicker and richer and may have been too heavy on their younger, oilier skin. The oldest group (46-55) showed much lower aroma liking towards the Every Man Jack product than the other age groups. With notes of menthol, spicy floral, woody, lime, and more, this herbaceous scent may not have met their expectation for a men's face lotion. Both older age groups (36-45, 46-55) liked the Vaseline product's aroma more than the younger groups. It may be that Vaseline's aroma is more stereotypically "manly" with strong musk notes and is a better fit for the older age group's expectations of a men's face lotion. Comparatively, more traditional, musk-heavy scents may have been perceived as too old-fashioned to the younger age group. No age group liked the Eucerin product in the USA – it received low acceptance across all age groups – likely due to residue intensity and pilling.

In Korea, the oldest group (46-55) generally liked all the samples. They gave high scores across all products and showed less differentiation across products and attributes. They may tend to be "skin care generalist" in the sense that they use skin care products but are not as picky about the brand or formulation. Culturally, the older Korean men tend to be less interested in beauty and skin care than the younger generations which may help explain the lack of discrimination. Additionally, they may have scored samples high avoid being "rude". This cultural phenomenon of Korean participants, specifically the older generations, being

apprehensive to give negative perceptions has been reported in the literature (e.g. Muñoz and King, 2007). The youngest age group (18-25) especially liked the Bulldog product's aroma. In contrast to the oldest group, the youngest group tended to show more differentiation across the products and had more distinct likes and dislikes. The younger generations of Koreans tend to be more open in expressing their true feelings as reported by Muñoz and King (2007); these results are in line with the literature. Similarly to the USA results, all age groups in Korea disliked the Eucerin product.

Interaction variables were more difficult to compare because the groupings would be too small to perceive meaningful differences; however, this is an important point for future researchers to consider. If certain products are specifically targeted towards a particular skin tone or skin type, consumers who meet those specifications should be recruited. As an example, some newer sun protection products are being specifically marketed as appropriate for darker skin tones since they do not leave a harsh, white cast on the skin; to verify these claims, the products should be tested with consumers with dark skin tones.

**Table 4.14 Demographic MANOVA Results in USA and Korea (P-Values)**

Variables	USA	Korea
Age	<b>0.033</b>	<b>0.017</b>
Skin Tone	0.601	0.137
Skin Type	0.551	0.081
Age*Skin Tone	0.238	<b>0.001</b>
Age*Skin Type	0.136	0.129
Skin Tone*Skin Type	<b>0.024</b>	<b>0.006</b>

*Note: Bolded values are statistically significant ( $p < 0.05$ ). Analysis compared overall liking to the demographic data (age, skin tone, skin type).*



**Table 4.15 Overall, Aroma, and Texture Liking Results by Age – USA**

<b>18-25 N=11</b>	<b>Overall Liking</b>	<b>Aroma Liking</b>	<b>Texture Liking</b>
Bulldog	5.88	4.38	6.38
Cerave	5.00	4.67	2.67
Dove	6.86	6.00	5.86
Eucerin	4.60	4.20	4.60
Every Man Jack	7.00	6.43	7.29
Neutrogena	7.00	5.33	7.33
St. Ives	7.20	5.00	6.20
Vaseline	5.67	5.33	5.00
<b>26-35 N=21</b>			
Bulldog	6.88	4.63	7.50
Cerave	5.94	5.19	6.25
Dove	5.33	5.67	5.22
Eucerin	4.00	5.47	4.13
Every Man Jack	7.36	6.09	7.27
Neutrogena	5.50	4.75	4.38
St. Ives	6.57	5.86	6.86
Vaseline	6.30	6.60	6.40
<b>36-45 N=26</b>			
Bulldog	6.00	5.75	6.25
Cerave	6.30	5.80	5.50
Dove	5.69	5.46	5.62
Eucerin	4.91	5.09	5.00
Every Man Jack	7.08	6.92	6.83
Neutrogena	5.71	5.00	5.43
St. Ives	6.94	6.29	7.00
Vaseline	7.27	6.93	6.87
<b>46-55 N=22</b>			
Bulldog	7.17	6.33	6.83
Cerave	6.82	5.73	6.73
Dove	5.36	5.55	4.64
Eucerin	5.44	6.22	4.78
Every Man Jack	6.60	5.40	6.40
Neutrogena	6.75	7.00	6.83
St. Ives	6.91	6.91	6.45
Vaseline	7.08	7.08	6.67

*Note: Samples sizes were too small for statistical analysis; mean scores were compared. The color gradient visualizes the ranges in scoring; green highlighted values are the highest and red the lowest.*

**Table 4.16 Overall, Aroma, and Texture Liking Results by Age – Korea**

<b>18-25 N=20</b>	<b>Overall Liking</b>	<b>Aroma Liking</b>	<b>Texture Liking</b>
Bulldog	5.70	5.90	6.30
Cerave	4.20	4.10	3.00
Dove	5.10	5.00	5.30
Eucerin	4.56	4.67	4.78
Every Man Jack	5.67	5.56	5.44
Neutrogena	5.20	4.70	5.00
St. Ives	6.30	5.80	6.00
Vaseline	6.17	5.50	6.67
<b>26-35 N=20</b>			
Bulldog	6.40	4.90	6.30
Cerave	5.70	5.30	4.60
Dove	6.10	6.00	5.20
Eucerin	5.00	4.82	4.55
Every Man Jack	6.45	6.27	7.00
Neutrogena	5.30	5.20	6.50
St. Ives	6.10	6.80	6.90
Vaseline	6.50	6.25	7.00
<b>36-45 N=20</b>			
Bulldog	5.70	5.20	5.90
Cerave	4.70	4.70	5.10
Dove	6.00	5.20	6.40
Eucerin	4.78	4.89	5.44
Every Man Jack	6.22	5.89	7.00
Neutrogena	7.00	6.20	6.70
St. Ives	6.10	5.80	6.40
Vaseline	6.17	5.92	6.42
<b>46-55 N=20</b>			
Bulldog	6.50	5.70	6.50
Cerave	6.20	5.60	5.70
Dove	6.50	5.80	6.80
Eucerin	5.45	5.27	5.27
Every Man Jack	6.18	6.36	6.00
Neutrogena	6.20	5.00	7.00
St. Ives	6.40	5.60	6.60
Vaseline	6.25	6.25	6.63

*Note: Samples sizes were too small for statistical analysis; mean scores were compared. The color gradient visualizes the ranges in scoring; green highlighted values are the highest and red the lowest.*

Participants were asked a variety of non-product specific questions. One such group of questions presented the participants with a list of agreement statements that asked about various potential product characteristics (Table 4.17). There was a fair amount of agreement between the two cultures. For example, men in both countries did not feel it was important for their face lotion product to be vegan or cruelty-free, fragrance-free, or gender neutral. Both groups thought having a high-quality yet inexpensive product that was easily available where they normally shop and was from a brand they trust were all important – this was aligned with the findings in Chapter 2. Two statements that set the Korean men apart included their emphasis on the importance of recognizing all the ingredients in a product and having a product that is anti-aging. Overall, the men in Korea seemed more opinionated as it related to these statements since they scored most statements as more important than their USA counterparts. These types of questions do seem useful in understanding the consumer. Though outside the central objectives of the current study, this question type could be combined with demographic data in a larger-scale study as a possible method for consumer segmentation.

**Table 4.17 Importance of Various Product Characteristics in USA and Korea**

Characteristic	USA	Korea
I can recognize all the ingredients in the product.	4.30	6.88
The product feels high-quality.	7.38	6.83
The product is anti-aging.	5.31	7.19
The product is cruelty-free/not tested on animals.	5.00	5.00
The product is dye-free.	4.89	6.58
The product is easily available where I normally shop.	7.31	7.21
The product is fragrance-free.	4.65	4.38
The product is free of parabens, sulfates, and/or phthalates.	5.05	6.76
The product is free of silicones.	4.78	5.83
The product is from a brand I trust.	6.31	7.35
The product is gender neutral.	3.71	4.89
The product is inexpensive.	6.34	7.26
The product is made especially for men.	5.44	5.65
The product is vegan.	2.19	4.16

The product offers sun protection.

6.16	6.73
------	------

The product's brand resonates with me.

5.39	6.62
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*Note: Importance was measured on a 9-point scale (1 = "Very unimportant", 9 = "Very important"). The color gradient visualizes the ranges in scoring; green highlighted values are the highest and red the lowest.*

Participants were also asked to answer several questions that had them selecting product attributes – including packaging, aroma profile, and texture – to build their “ideal” face lotion (Table 4.18). The two countries were generally aligned. The most desired packaging was a bottle with a pump top. The open-ended responses varied but the most common learnings in both countries were the desire for fast absorption and low residue. Additionally, men identified that an unscented product was the most desired, along with having a standard lotion texture. The aroma result was interesting as it does not necessarily match with the other results in this study. In the previous group of questions, men rated “fragrance-free” as a product attribute of low importance. Further, they tended to like the scented products more than the unscented products based on their product evaluation scores. This inconsistency does not support the use of this question type in future research; it may have been too broad, fatiguing, or overwhelming of a task. Additionally, “fragrance-free” may have been interpreted as too feminine. Two potential alternatives for quantitatively exploring consumer’s ideal product would be using full-profile or max-diff conjoint analysis. This would give a more statistically sound result that researchers could have more confidence using to support business decisions. Another alternative would be to use a qualitative approach and hold focus groups to explore consumer’s ideal product. This way, they would see and/or manipulate different packaging options, smell different aroma profiles, and feel different product textures all while giving real-time feedback. From there, prototypes could be tested via central location test or home use test with a larger group of consumers. As another option, a hybrid qualitative-quantitative approach could be utilized. For example, a study

presented in the 2020 Society of Sensory Professionals Conference demonstrated a combination of qualitative and quantitative methods where a smaller group of consumers would come in and workshop products for one day – going back and forth with researchers who offer a variety of prototypes and allow participants to give numeric and verbal feedback that can be used for real-time optimizations – instead of doing more expensive and large-scale HUTs (Sabanos, 2020).

**Table 4.18 Ideal Face Lotion Results in USA and Korea**

Attribute	USA	Korea	Cumulative
<i>Packaging</i>			
Tube with screw top	26%	25%	26%
Bottle with flip top	14%	21%	18%
Bottle with pump top	<b>34%</b>	<b>33%</b>	<b>33%</b>
Pouch with screw top	1%	0%	1%
Jar with screw top	24%	21%	23%
Other	1%	0%	1%
<i>Aroma</i>			
Menthol/Mint	8%	16%	12%
Floral (rose, jasmine, etc.)	1%	6%	4%
Aromatherapy (eucalyptus, lavender, etc.)	21%	16%	19%
Fruity (apple, melon, etc.)	3%	6%	4%
Cologne/Musk	26%	13%	19%
Citrus	6%	15%	11%
Pine	4%	3%	3%
Unscented	<b>30%</b>	<b>23%</b>	<b>26%</b>
Other	1%	3%	2%
<i>Texture</i>			
Cream	40%	20%	30%
Lotion	<b>50%</b>	<b>66%</b>	<b>58%</b>
Gel	6%	4%	5%
Serum	4%	10%	7%
Other	0%	0%	0%

*Note: Participants selected their ideal variation from each category (packaging, aroma, and texture).*

### **Drivers of Liking**

Two methods were used to identify and visualize the drivers of liking. The drivers identified via correlation analysis are presented in Table 4.19. The drivers visualized via PCA are

presented in Figures 4.3 and 4.4. In both countries, integrity of shape (both initial and after 10 seconds) was a key driver of liking, along with spicy floral aroma. The integrity of shape variable, an appearance attribute, was lowest in intensity for two of the least liked samples, Eucerin and Dove. It may be that the consumer likes a product that is easy to apply, meaning it will dispense cleanly on to the fingers or hands without dripping or running and stays where it is applied on the face. This thinking is supported by the findings of Lee and Mitchell (1998) in their time-intensity evaluation of lotion and petroleum jelly products. Lee and Mitchell (1998) reported that consumers use perceptions from both the “applying surface”, like their fingers, and the “receiving surface”, like their skin, when evaluating a lotion product. Alternatively, this may be related to a trend reported by Van Reeth (2006) which stated that consumers tend to like “thicker products that have a well-bodied, nourishing feel”; this “feel” may be associated with higher integrity of shape. The spicy floral attribute was an identified aroma in the four most-liked products in both countries. This indicates spicy floral is a pleasing aroma to the participants and could also indicate they feel it is appropriate for them and are not interpreting it as too feminine.

Specifically in the USA, firmness was also a key driver of liking. The justification is like that of integrity of shape; the participants tended to prefer a product that had a more substantial consistency. In Korea, three other aroma-related attributes were identified as positive drivers of liking: soapy, overall aroma strength, and lime. This helps to show that the men in Korea do value a scented face lotion; additionally, the soapy and lime attributes, along with the spicy floral attribute, can all contribute to a pleasing aroma that is well-liked by this consumer group. Outside of the statistically significant, key drivers of liking, there were several moderate drivers that are still of value. In the USA, the aroma attributes leather and lime were identified as positive drivers; menthol, woody, and leather were also recognized as positive drivers in Korea.

In terms of negative drivers – those correlated to lower overall liking – cohesiveness was the only attribute both countries had in common. For the USA, it was a moderate driver, while in Korea, cohesiveness was a significant, key driver for disliking. The USA also recognized wetness and spreadability as moderate, negative drivers. It is hypothesized that all three of these attributes have related reasons for their negative associations – absorption. It may be that samples with higher intensities of these attributes were perceived as not absorbing as quickly into the skin which was disliked by the participants. These may also be related to the final two significant negative drivers – oil (USA) and amount of residue (Korea). All these attributes likely drive a perception of slow absorption and an uncomfortable residual feeling on the skin. These negative drivers are in line with what men asked for in the open-ended portion of the “ideal product” question.

As a secondary means of analysis and to visualize the results, PCA was used. In looking at the USA plot, there is a large cluster of positive variables on the left side including the overall and texture liking vectors plus several JAR attribute ratings (absorption, thickness, spreadability, moisturizing). The Bulldog product is plotted in the middle of this indicating it is strongly associated with these positive variables. Around the Bulldog product are also several texture-based descriptive analysis variables including thickness, amount of peaking, stickiness, and integrity of shape. All this information supports the conclusion that the Bulldog product had the most acceptable texture of all tested products when considering the available data.

In quadrant III of figure 4.3, there is another cluster of products and variables of significance including aroma liking, shiny JAR, aroma JAR, and “too much aroma” along with the Vaseline, Every Man Jack, and Dove products. This indicates that in general, these three samples have the most acceptable aroma profiles of the tested products. Near these samples lies

several aroma attributes including pine, woody, spicy floral, leather, menthol, soapy, lime, and rose. To maximize liking, men's face lotions should be formulated with scent profiles in this family; it also helps to show the USA consumer tends to like a more stereotypical "manly" aroma.

If this data were to be used by a product developer, they could essentially mix and match product attributes to create a more ideal prototype. By taking a texture similar to Bulldog, and an aroma profile in line with Vaseline, Every Man Jack, and/or Dove, the prototype would fill the gap in offerings and could be highly acceptable to the USA male consumer. However, additional consumer testing would be needed to confirm this result.

The PCA plot for the Korean data shows a cluster of relevant attributes in the third quadrant. The Dove, Every Man Jack, and Vaseline products are part of this cluster, along with the aroma attributes discussed from the USA plot. Overall liking, texture liking, and aroma liking all fall within close range, as well as the JAR attributes related to absorption, spreadability, thickness, moisturization, shine, and aroma. These associated variables are indicating that both the texture and aroma of the above mentioned products are the most acceptable to the male Korean consumer. Additionally, the proximity of the overall liking vector and the lasting aroma and overall aroma strength data points indicate that a stronger, long-lasting scent would be desirable. As with the previous example, a product developer could use this holistic view of the descriptive and hedonic data to optimize a prototype.

It should be noted that the presence of a significant positive or negative driver does not indicate the intensity level of an attribute should be maximized or minimized, respectively. For example, even though participants in both countries had the spicy floral aroma as a positive driver of liking, a product developer would be wrong to simply make that aroma as intense as



possible as at some point there would be diminishing or even negative returns. Instead, it is an indicator for the general direction of optimization. More research would be needed to identify a more precise intensity or concentration that maximizes liking. As an example, the present data could be used to produce several face lotion prototypes which could be evaluated via the Ideal Profile Method (Worch et al., 2013). This method was carried out with success on eye cream by Worch et al. (2014). The method uses consumers to perform descriptive analysis while they rate the intensity of select variables and simultaneously rate their “ideal” intensity along with overall liking (Worch et al., 2013). The results can be used to further optimize the most-liked product based on the consumer feedback (Worch et al., 2013).

The PCA plots explained a moderate amount of the variability in the descriptive analysis data (49%) and was a valuable method for showing the differences between the two countries in a more holistic sense. It allows a researcher to view multiple datasets in one. Both the correlation analysis and PCA were effective and useful methods for identifying key drivers of liking. They have been used in other drivers of liking research (e.g. Swaney-Stueve et al., 2019) and are widely accepted in the sensory community. Their usefulness is based on the quality of data analyzed.

The present work has several limitations which should be addressed. First, the sample size was less than 100 in each country. Though a smaller sample size is common for HUTs, a larger sample size may have allowed for more statistical analysis of different consumer groups in the data. Second, not all participants evaluated all samples – this prevented segmentation analysis from being performed. Third, the products were not highly diverse in cost – more expensive products were price prohibitive. Fourth, facial hair was not considered; future research should take this into consideration as it can affect how men utilize skin care products. Finally,

since an American descriptive analysis panel was used to collect the sensory results, the Korean perspectives may not have been well-represented. Future research could compare the perceptions of a Korean descriptive analysis panel to an American panel to determine if this would affect the drivers of liking.

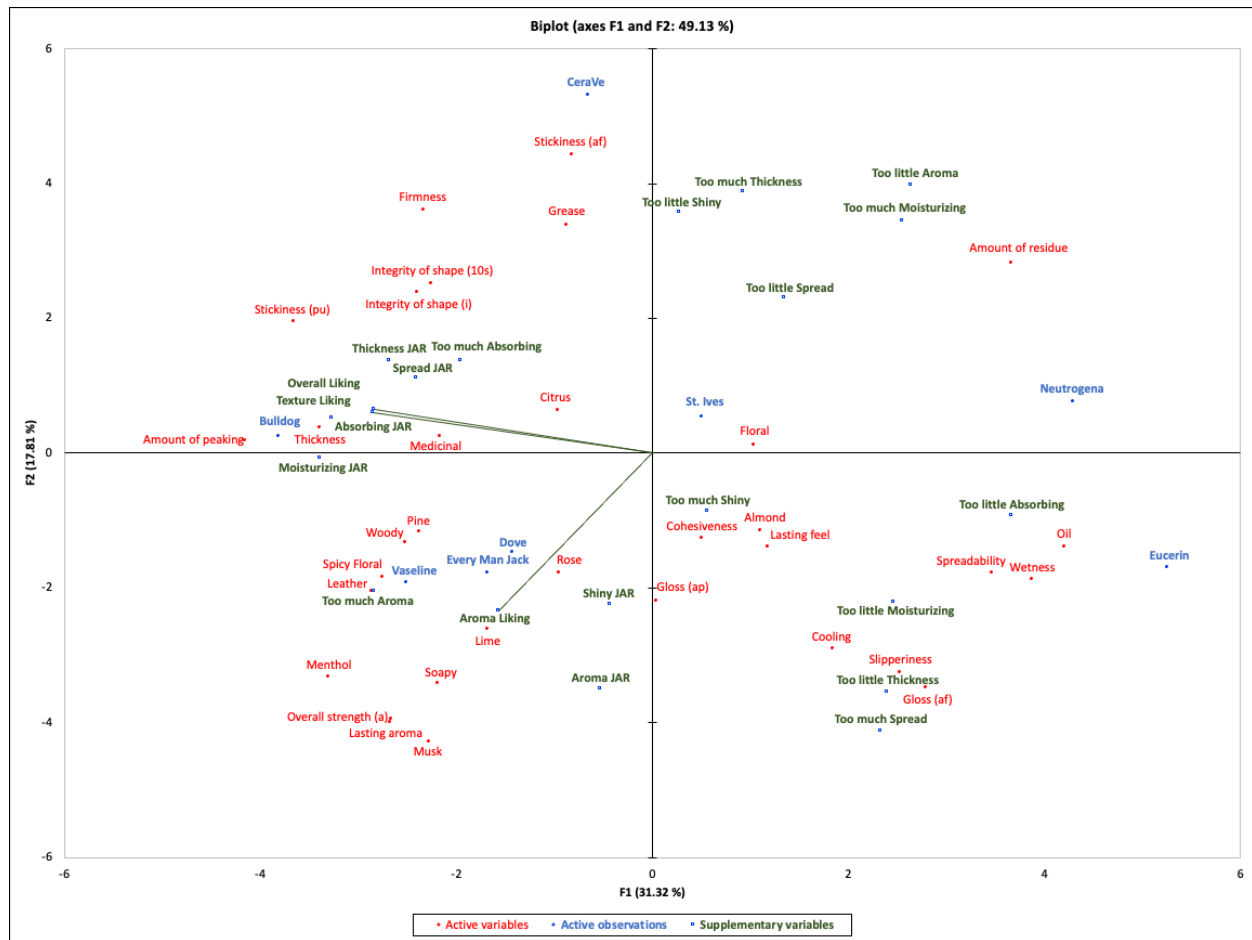
While this study offers many valuable insights and adequately addressed all objectives, future research could take these learnings and limitations to plan a larger, more thorough study. This could be accomplished by using the identified drivers to produce a variety of prototypes based on a formal design of experiments. Several factors, such as thickness, oiliness, or different aroma attributes could be varied at several levels in a balanced design; the prototypes would then be created and tested in a large HUT. Having a balanced design where consumers were examining samples that exhibited a variety of levels of each factor would hopefully allow for more precise drivers and ideal levels to be identified. It would also allow for segmentation analysis to be performed. A similar example exists in the literature for makeup wipes; this study was also performed in two countries (USA and United Kingdom), which is comparable to the present work (Xing, Vaught, & Chambers, 2020).

**Table 4.19 Overall Liking and Sensory Attributes Drivers of Liking Correlation Results in USA and Korea**

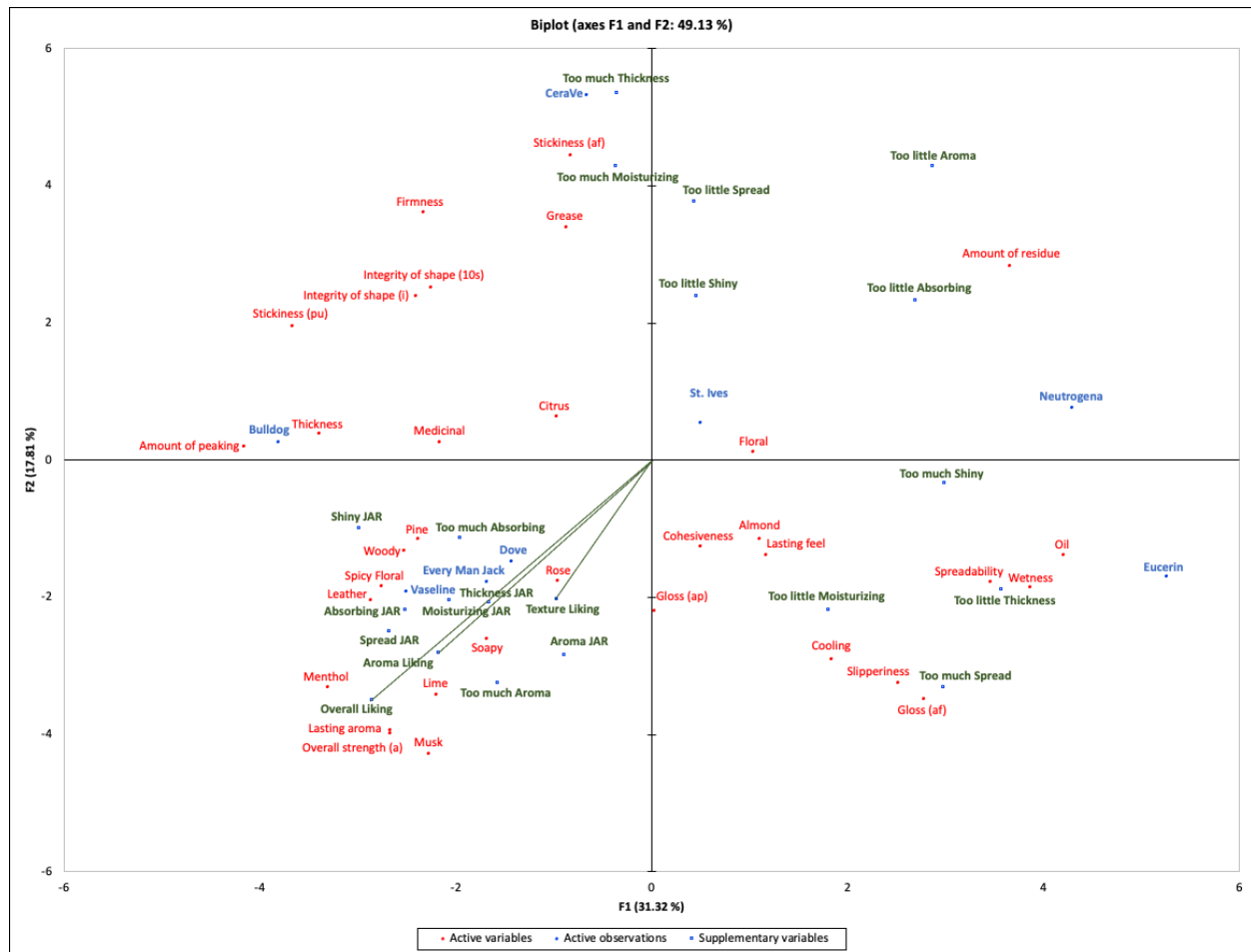
USA		
Variables	Correlation	P-Value
Integrity of shape (i)	<b>0.795</b>	<b>0.018</b>
Integrity of shape (10s)	<b>0.782</b>	<b>0.022</b>
Spicy Floral	<b>0.769</b>	<b>0.026</b>
Firmness	<b>0.630</b>	<b>0.094</b>
Leather	0.570	0.140
Lime	0.547	0.160
Spreadability	-0.510	0.197
Wetness	-0.525	0.181
Cohesiveness	-0.594	0.120
Oil	<b>-0.622</b>	<b>0.099</b>
Korea		
Spicy Floral	<b>0.740</b>	<b>0.036</b>
Soapy	<b>0.674</b>	<b>0.067</b>
Overall strength (a)	<b>0.673</b>	<b>0.067</b>
Lime	<b>0.668</b>	<b>0.070</b>
Integrity of shape (i)	<b>0.655</b>	<b>0.078</b>
Integrity of shape (10s)	<b>0.635</b>	<b>0.091</b>
Menthol	0.582	0.130
Woody	0.566	0.144
Leather	0.519	0.188
Cohesiveness	<b>-0.647</b>	<b>0.083</b>
Amount of residue	<b>-0.687</b>	<b>0.060</b>

*Note: Significance level 10%. Attributes marked in green are key drivers of liking as they are significant ( $\alpha < 0.1$ ) and have high correlation coefficients ( $>0.6$ ). Attributes marked in yellow are moderate drivers for both liking and disliking with moderate correlation coefficients between 0.5-0.6. Attributes marked in red are key drivers of disliking as they are significant and have high, negative correlation coefficients.*

**Figure 4.3 PCA – Overall, Aroma, and Texture Liking, Just About Right Attributes, and Drivers of Liking – USA**



**Figure 4.4 PCA - Overall, Aroma, and Texture Liking, Just About Right Attributes, and Drivers of Liking– Korea**



## Conclusions

As the men's skin care market continues to grow, a comprehensive understanding of consumer's product expectations is valuable for guiding product development efforts and business decisions. The present research adds to the dearth of knowledge around men's skin care preferences currently represented in the literature. In general, the products specifically marketed for men were the most liked. Product absorption and residue were two important characteristics that differentiated the most liked and least liked products. Though the countries were found to be significantly different across several key measures (overall liking, aroma liking, texture liking, satisfaction, and purchase interest), their drivers of liking and disliking showed similarities. The

key drivers of liking were found to be related to both appearance and aroma. Integrity of shape and spicy floral aroma were identified as key positive drivers in both countries. Firmness was identified as also a key positive driver for USA participants while soapy, lime, and overall aroma strength were key positive drivers for Korean participants. Oil (USA) and cohesiveness and amount of residue (Korea) were found to be significant negative drivers; these attributes should be held at lower levels to prevent hurting the overall product liking. Future research is needed to pinpoint the ideal levels of key drivers in order to create an optimized, highly acceptable product for men.

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## **Chapter 5 - Conclusion**

This research successfully examined the men's skin care space – specifically for face lotion – providing initial basic knowledge on the topic. Baseline information was gathered via interviews, product characterizations were established using descriptive analysis, and consumer perceptions were collected based on the results of a HUT. From this, drivers of liking were identified and contrasted between the two populations: USA and Korean men's skin care users.

Phase I (IDIs, N=18) revealed participant's perceptions on a wide variety of brands and products. It also gave insights on what is most important to men including having an easy and fast skin care routine, affordable and conveniently available products, and effective products that maintain the health and look of their skin. In Phase II, twelve face lotion products were profiled using a consensus-based modified flavor/texture profile method. The products were found to be differentiated across their aromas and textures; key similarities and differences were identified.

Pertinent learnings from Phase III included that aroma attributes and attributes related to the product's initial appearance and function were the key drivers of liking. Spicy floral was identified as a scent-based driver in the USA, while spicy floral, soapy, and lime were pinpointed in Korea. However, the overall trend was towards masculine-type scents in both countries. Integrity of shape was also singled out in both countries as a positive driver, indicating that more substantial products that are thicker and/or do not run when dispense are better perceived.

The data showed differences between the men in the two countries when viewed holistically. Using the learnings from the present research, future studies could be designed. The key drivers of liking could be established as variables with several different levels and a DOE could be created. Samples could be developed to represent different combinations of these variables and then tested again with a larger group of consumers. This could lead to a better

optimized men's face lotion product and could help to identify the most "ideal" levels of the various variables. It may also uncover synergies and/or negative relationships between the variables.

As referenced throughout this work, the available, published resources on the evaluation of men's skin care, and personal care as a whole, are few and far between. This dissertation provides three examples of common sensory and consumer research methodologies applied to the men's skin care category. The present work provides a realistic research plan for identifying drivers of liking and successfully achieved its objective.

## Appendix A - Chapter 2

### Moderator's Guide – Men's Skin Care

#### Purpose

To explore the perceptions, opinions, beliefs, and attitudes of men about skin care products.

#### Roadmap

Category	Approx. Time
Welcome/Introductions	5 minutes
Topic A: Baseline skin care information	12 minutes
Topic B: Brands & Products	20 minutes
Topic C: Consumer Terminology/Emotional Information	20 minutes
Closure	3 minutes
<b>Total</b>	<b>60 minutes</b>

#### Part 1 – Introduction [5 minutes]

##### 1. INTRODUCTION

Hello! My name is Grace Deubler and I am the Moderator for today's 60-minute discussion. Our purpose today is to talk about personal care. I am from Kansas State University and this interview is a part of my dissertation research so I want to thank you all for making time for today's session. I am excited to talk to you today so please share freely and remember there are no wrong answers.

##### 2. DISCLOSURE

Just so you are aware, I am recording this interview; this allows me to listen and not spend our time taking notes. Additionally, my advisor may listen in on the conversation as well.

##### 3. SELF INTRODUCTIONS

Since we will be talking about you today I would like to get to know you a little better so please tell me:

- *Your preferred name*
- *Something you like about living in your current city*
- *A guilty pleasure you would enjoy if you had \$100 to spend on yourself*

#### Part 2 – Topic A: Baseline Skin Care Information [15 minutes]

1. Tell me what comes to your mind when I say "skincare". [Listen for: women, health, product types]
  - a. PROBE: What about skin care makes you relate it to women?
  - b. PROBE: What about skin care do you relate to yourself?

- c. PROBE: Who do you think of when you think “skin care”?
  - d. PROBE: When do you think or use skin care?
  - e. PROBE: How does skin care relate to your health?
- 2. What types of skin care products do you personally use?
  - a. PROBE: What is the purpose of that product?
  - b. PROBE: When do you use it?
  - c. PROBE: How often do you use it?
  - d. PROBE: What types of lotion?
  - e. PROBE: How is face lotion and body lotion the same or different to you?
- 3. Who typically buys your skin care products? Yourself, someone else in your household, or something different?
- 4. Where do you typically buy your skin care or personal care products? [Listen for: Online, drug stores, big-box stores, department stores, beauty stores]
  - a. PROBE: What motivates you to buy products at X over Y?
  - b. PROBE: [if online or a specialty store] How did you hear about this website/store/brand?
  - c. PROBE: How do you learn about products? What methods would you use?

### **Part 3 – Topic B: Brands & Products [10 minutes]**

- 1. Following this link (in the chat), please sort these skin care/brands/products into groups according to your impressions of the similarities and differences you perceive from the appearance, branding, and anything you have seen, read, or heard about the brand or product previously. I am going to ask you to describe the characteristics that define each group after you finish. The groupings can be multidimensional, meaning you do not have to group them in terms of just one attributes or one dimension. There are 25 items in front of you – you may sort them in as few as two groups or as many as 24.
  - a. PROBE: What criteria set the groups apart?
  - b. PROBE: What is the reasoning behind the name of this group?
  - c. PROBE: Who is each group for?
  - d. PROBE: Where would you buy the products in certain groups?
  - e. PROBE: Call out certain brands, ask for what they have seen, heard, or read about each brand.
  - f. PROBE: What is appealing about X grouping?
  - g. PROBE: What is unappealing or confusing about X grouping?
  - h. PROBE: [look for men’s packaging similarities] I see this group has similar packaging, tell me more about that. How does that differ from other packaging? How does packaging effect your interest/purchase interest?
  - i. PROBE: What if you grouped the products by brands that are appropriate for men to use? What does that look like?

### **Part 4 – Topic C: Consumer Terminology [12 minutes]**

1. Now switching gears to a new activity, you will be thinking about your own personal care routine. Tell me your typical daily personal care regime on a normal work day... weekend day... special occasion.
2. Thinking about your routine, how do you feel AFTER you complete your routine?
  - a. PROBE: What benefits do you get or feel from your regimen?
  - b. PROBE: Have you ever felt a negative feeling?
  - c. PROBE: How is your regime different when you get ready for a special event?  
How do your feelings change during this regime?
3. Now think about how you feel when you break your routine or miss some of the steps. How do you feel then?
  - a. PROBE: What parts of your day, if any, does it affect?
  - b. PROBE: How do you feel at work?
  - c. PROBE: How do you feel in public?
4. So now thinking about your routine as a whole, what benefits do you expect when using skin care products?
  - a. PROBE: When would you expect the benefits to show?
5. Skin care products make many claims about benefits and ingredients. Now I will show you some examples of claims and ingredients and I want you to tell me what you think about them. (If unfamiliar - anything you have seen, read, heard, or been told about it)
  - a. Crafted especially for men
  - b. Korean skin care
  - c. Fragrance-free
  - d. Multi-purpose product (2-in-1, 3-in-1)
  - e. Non-greasy
  - f. Free-from (parabens, sulfates, silicones, phthalates, etc.)
  - g. For fine lines and wrinkles
  - h. Dermatologically tested
  - i. Allergy tested
  - j. For sensitive skin
  - k. Not tested on animals
  - l. Mattifying
6. What other claims about benefits or ingredients of skin care products have you been exposed to?
7. What other claims do you specifically look for in your products?

## **Part 5 – Closure [3 minutes]**

- **CLOSING QUESTION**  
We've been talking about men's skin care during our time together. Before we wrap up I want you to tell me three take-away words about men's skin care.
- **WRAP-UP**  
Thank you all for your participation today. I learned some things and got a lot of good information for my research.

## Appendix B - Chapter 3

This is the raw descriptive analysis data from the research discussed in Chapter 3.

Code	Sample Name	Integrity of shape (i)	Integrity of shape (10s)	Gloss (ap)	Opacity	Color
149	Neutrogena Hydro Boost Body Gel Cream	14	14	10.5	0	True white
291	St. Ives Renewing Moisturizer	12.5	12.5	10	0	True white
343	Vaseline Men Fast Absorbing	12.5	12.5	10	0	True white
438	Every Man Jack Face Lotion Natural Menthol	12	12	9	0	True white
499	CeraVe Moisturizing Cream	13	13	9	0	True white
591	Eucerin Daily Protection Face Lotion & Sunscreen	4.5	6	11	0	True white
627	Aveeno Positively Radiant Daily Moisturizer	13	13	8	0	Cream
659	Clean & Clear Watermelon Gel Moisturizer	5	5	11	2.5	Pink
675	Cetaphil Moisturizing Lotion	10	10	11	0	True white
761	Harry's Face Lotion	11	11	11	0	True white
852	Dove Men+Care Face Lotion	11.5	11.5	11	0	True white
907	Bulldog Original Moisturizer	13	13	12	0	Cream

Code	Firm-ness	Stickiness (pu)	Cohesive-ness	Amount of peaking	Wet-ness	Spread-ability	Thick-ness	Oil	Grease	Absorbency
149	6	3	3	3	11	12	3	12	0	>120
291	6	3	4	4	9	11.5	5.5	9	0	100
343	7	5	5	8	7	9	5	9	0	>120
438	4	3	6.5	6	8	10	6	8	2.5	90
499	7.5	5	6	7	6	9	5.5	8	3	80
591	2	2	9	3.5	12	12	4.5	12	0	>120
627	6.5	5	5	7	5.5	10	4.5	9	0	>120
659	4	3	8	5.5	12	12	3.5	12	0	>120
675	4	5	6	7	8	10	5	8	0	>120
761	4.5	3	4	4	7	9	5	8	0	>120
852	4.5	4	5.5	7	7	11	5	9	0	>120
907	6.5	6	6	8	8	10	6	7	0	>120

Code	Gloss (af)	Stickiness (af)	Slipperiness	Cooling	Amount of residue	Residue type	Lasting feel	Lasting aroma	Overall strength
149	12	2	10	2	7	Oily	8	2	0
291	8	4	9	0	7	Oily	2	2.5	6
343	8	2.5	9	2	3.5	Oily	8	10.5	7.5
438	9.5	3	9	2.5	3.5	Greasy	3	6	5.5
499	5	5	4	0	8	Greasy	2.5	2	0
591	10	2	10.5	2	8.5	Oily, Pill, Cast	3	5	2
627	4	2	6.5	2	6.5	Oily	2.5	3.5	4
659	10	2.5	10	2.5	8	Oily	2.5	5	7
675	8.5	2.5	10	0	4	Oily	6	2.5	0
761	8.5	3	4	2	4	Oily	1.5	2	6
852	10	2.5	5	0	3	Oily	3.5	8	7
907	6	2	7	0	2	Oily	1	5.5	4

Code	Soapy	Musk	Leather	Medicinal	Floral	Spicy Floral	Rose	Menthol	Pine	Woody	Cucumber	Citrus	Lime	Melon	Almond
149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
291	4	0	0	0	4	3	0	0	0	2.5	0	4	3	0	3
343	4	5	2	0	0	3.5	0	2.5	0	0	0	0	2.5	0	0
438	3.5	2.5	3	0	0	3	0	3	0	2.5	0	0	2	0	2
499	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
591	1.5	0	0	0	1	0	0	0	0	0	0	0	0	0	1.5
627	2.5	0	0	0	4	0	3	0	0	0	0	0	0	0	0
659	3	0	0	0	2	0	0	0	0	0	3	0	0	6	0
675	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
761	3	0	3.5	4	0	3	0	2.5	0	4	0	0	2.5	0	0
852	4	3.5	0	0	0	0	4	2	2.5	2	0	0	2	0	0
907	3	0	2.5	3	0	3	0	2	2.5	3	0	2.5	0	0	0

Note: The following attributes are not presented here as all samples received zero intensity: Wax, Petroleum, Fruity, Hay-like, Grassy/green, Black pepper, Black spice, Brown sweet, Vanillin.

## **Appendix C - Chapter 4**

Screeners and questionnaires used in this research are compiled below in the following order:

- USA Screener
- USA Surveys (all four arranged into one file)
- Korea Screener
- Korea Surveys (all four arranged into one file)





**Welcome Panelist name!**

Click the **next** button to begin

**Are you male or female?**

☐ Male

☐ Female

**Which of the following ranges includes your current age?**

☐ Under 18

☐ 18-25

☐ 26-35

☐ 36-45

☐ 46-55

☐ 56-65

☐ 66 or above

**Do you, or does any member of your immediate family, work for any of the following types of companies?  
(select all that apply)**

<input type="checkbox"/>	Advertising or public relations ???
<input type="checkbox"/>	Market research ???
<input type="checkbox"/>	Broadcast or print media ???
<input type="checkbox"/>	Personal care manufacturer ???
<input type="checkbox"/>	Drug store ???
<input type="checkbox"/>	Retailer (clothes, beauty, etc.) ???
<input type="checkbox"/>	Auto manufacturing/sales ???
<input type="checkbox"/>	Credit card company ???
<input type="checkbox"/>	None of the Above

**Which of the following categories of personal care products do you currently use? (select all that apply)**

<input type="checkbox"/>	Hair ???
<input type="checkbox"/>	Skin (Face) ???
<input type="checkbox"/>	Skin (Body) ???
<input type="checkbox"/>	Foot ???
<input type="checkbox"/>	Hand (including nail/cuticle) ???
<input type="checkbox"/>	Oral ???
<input type="checkbox"/>	None of the above

**Which of the following facial skin care products do you currently use? (select all that apply)**

<input type="checkbox"/>	Face wash ???
<input type="checkbox"/>	Face lotion ???
<input type="checkbox"/>	Sunscreen ???
<input type="checkbox"/>	Exfoliator ???
<input type="checkbox"/>	Skin serum (vitamin C, anti-aging, etc.) ???
<input type="checkbox"/>	Eye cream ???
<input type="checkbox"/>	Cleansing pads/wipes ???
<input type="checkbox"/>	Toner ???
<input type="checkbox"/>	Spot treatment (for acne) ???
<input type="checkbox"/>	None of the above

**How often do you use face lotion?**

<input type="radio"/>	Daily
<input type="radio"/>	3-6 times per week
<input type="radio"/>	1-2 times per week
<input type="radio"/>	Every other week
<input type="radio"/>	I rarely use face lotion

**Which of the following brands of face lotion do you currently use? (select all that apply)**

<input type="checkbox"/>	Neutrogena ???
<input type="checkbox"/>	CeraVe ???
<input type="checkbox"/>	Dove ???
<input type="checkbox"/>	Vaseline ???
<input type="checkbox"/>	Bulldog ???
<input type="checkbox"/>	Harry's ???
<input type="checkbox"/>	Cetaphil ???
<input type="checkbox"/>	Clinique ???
<input type="checkbox"/>	Every Man Jack ???
<input type="checkbox"/>	Generic Store Brand ???
<input type="checkbox"/>	Other (please specify): <input type="text"/>
<input type="checkbox"/>	None of the above

**How would you describe your skin type?**

<input type="radio"/>	Normal ???
<input type="radio"/>	Oily ???
<input type="radio"/>	Dry ???
<input type="radio"/>	Combination ???

**Do you have any skin allergies or skin sensitivities that prevent you from using certain skincare products?**

☐ Yes

☐ No

Are you taking any medications that would that prevent you from using certain skincare products?

☐ Yes

☐ No

Which, if any, of the following skin conditions do you currently have? (select all that apply)

☐ Acne ???

☐ Eczema ???

☐ Psoriasis ???

☐ Cold Sore ???

☐ Rosacea ???

☐ None of the above


How willing or unwilling are you to try new skin care products?

Very unwilling      Slightly unwilling      Neither willing nor unwilling      Slightly willing      Very willing

☐ ☐ ☐ ☐ ☐

At this time, you have potentially qualified as a participant for an at-home men's face lotion study. As a participant, you must agree to the following study requirements:

**NOTE: You would be required to use the provided 4 face lotion products over 11 days, discontinuing use of your current face lotion product(s).**

1. You must come to the Sensory & Consumer Research Center to pick up your products January 14-15. We will require masks and social distancing; pick-up should take no more than 5 minutes.
2. You must use the assigned products at least once per day as instructed from January 18-29.
3. You must complete 4 online surveys about each product experience. Each survey should take no more than 10 minutes to complete. Surveys will be sent out via email.
4. You would be compensated with an  gift card for completing all parts of the study.

Based on these criteria, do you agree to follow the requirements?


☐ Yes, I agree.

☐ No, I do not agree.

**Are you be willing to receive text reminders throughout this study?**  
***Note - we would only use your phone number to contact you about this specific study.***

☐ Yes, my number is:

☐ No

**You have qualified for an at-home test on men's face lotion. Product pick up will be January 14-15 and the test will be January 18-29. You will be compensated with an  gift card for participating.**

**Are you willing to participate?**

*If willing, be sure to click "Next" to schedule your pick-up time.*

☐ Yes, I am willing.

☐ No, I do not want to participate.



**Thanks for completing this test.**

**If you are viewing this screen, you did not qualify for this particular study.**

**We look forward to your participation in future studies.**

Finished



**Welcome Panelist name!**

Click the **next** button to begin

Each survey will ask you specific questions on the face lotion you just tested and some general questions about yourself.

All surveys will ask a few different types of questions so do not worry if they are not identical.

You should be answering the questions based on **sample BC111** that you used for the past two days.

If this is the incorrect sample and you used a different sample number - **please indicate that below** so we can make sure we collect the right data.

Sample: BC111

☐ Yes, I used this sample number.

☐ No, I used a DIFFERENT sample number

You indicated that you DID NOT use sample BC111 for the past two days.

Please select the sample number that you **DID** use the past two days below before continuing:

*\*You are not penalized for this, we just want to make sure our data is accurate*

Sample: BC111

<input type="radio"/>	Sample 424
<input type="radio"/>	Sample 846
<input type="radio"/>	Sample 322
<input type="radio"/>	Sample 158
<input type="radio"/>	Sample 738
<input type="radio"/>	Sample 270
<input type="radio"/>	Sample 640
<input type="radio"/>	Sample 516

For the next part of this survey, please consider the FACE LOTION product you used the past two days.

Sample: BC111

Overall, how much did you LIKE or DISLIKE this face lotion?

Dislike Extremely	Dislike Very Much	Dislike Moderately	Dislike Slightly	Neither Like nor Dislike	Like Slightly	Like Moderately	Like Very Much	Like Extremely
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Overall, how SATISFIED were you with this face lotion?

Extremely dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Extremely satisfied
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

How much did you like or dislike the AROMA of this face lotion?

Dislike Extremely	Dislike Very Much	Dislike Moderately	Dislike Slightly	Neither Like nor Dislike	Like Slightly	Like Moderately	Like Very Much	Like Extremely
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

How much did you like or dislike the TEXTURE of this face lotion?



Dislike Extremely	Dislike Very Much	Dislike Moderately	Dislike Slightly	Neither Like nor Dislike	Like Slightly	Like Moderately	Like Very Much	Like Extremely
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

## Sample: BC111

R	PO	R	P	RO	PO	MN	PPO	M	P	H	GH	IK	IHF	H
R R		N PO		PO		M		P						
Much too weak		Slightly too weak		Just about right		Slightly too strong		Much too strong						
<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>						
R R		N PO		HF		PO		M		P				
Not at all thick enough		Not quite thick enough		Just about right		Slightly too thick		Much too thick						
<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>				
R R		N PO		G		H H K		PO		M		P		
Not at all spreadable enough		Not quite spreadable enough		Just about right		Slightly too spreadable		Much too spreadable						
<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>				
R R		N PO		H		PO		M		P		P		
Absorbs much too slowly		Absorbs somewhat too slowly		Absorption rate is just about right		Absorbs somewhat too quickly		Absorbs much too quickly						
<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>				
R F		I		PO		M		P						
Not at all cool		Mildly cool		Moderately cool		Fairly cool		Very cool						
<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>				
R	PO	R	P	RO	PO	MN	PPO	M	P		I	J		
R R		N PO		H		H H K		PO		M		P		
Not at all moisturizing enough		Not quite moisturizing enough		Just about right		Slightly too moisturizing		Much too moisturizing						
<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>				
R R		N PO		HG		P		N PO		M		P		
No residue		A trace amount of residue (tolerable amount)		A mild amount of residue (inconvenient but probably still tolerable amount)		A moderate amount of residue (quite inconvenient amount)		An extreme amount of residue (very inconvenient amount)						
<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>				

How would you describe the **SHININESS** of this face lotion on your skin?

Not at all shiny enough	Not quite shiny enough	Just about right	Slightly too shiny	Much too shiny
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

What time of day did you typically use this face lotion? (select all that apply)

Sample: BC111

<input type="checkbox"/>	Morning
<input type="checkbox"/>	Mid-day
<input type="checkbox"/>	Evening

Sample: BC111

If this face lotion was available to you at a reasonable price, how likely or unlikely would you be to buy it?

Definitely would not buy	Probably would not buy	Might or might not buy	Probably would buy	Definitely would buy
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

How much do you agree or disagree with the following statements?

This face lotion...

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
leaves my skin feeling calm	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
leaves my skin feeling healthy	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
is gentle	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
soothes my skin	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
makes my skin feel dry or flaky	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
is effective	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
makes my skin feel tight	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
makes my skin burn	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
leaves my skin looking red or irritated	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

feels like it is crafted especially for men	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
is non-greasy	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
is regenerative	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
hydrates my skin	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**You have answered all the questions about this face lotion sample.  
Please answer the following questions about you own behaviors, beliefs, and opinions.**

**The following is a list of things that some people look for or want out of life. Please study the list carefully and then rate each thing on how important it is in your daily life.**

	Very unimportant	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Very important
Sense of belonging		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Excitement		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Warm relationships with others		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Self-fulfillment		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Being well respected		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Fun and enjoyment of life		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Security		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Self-respect		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
A sense of accomplishment		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**Thinking about those same things, which item is the MOST IMPORTANT to you in your daily life?**

<input type="radio"/> Sense of belonging	<input type="radio"/> Excitement	<input type="radio"/> Warm relationships with others	<input type="radio"/> Self-fulfillment
<input type="radio"/> Being well respected	<input type="radio"/> Fun and enjoyment of life	<input type="radio"/> Security	<input type="radio"/> Self-respect
<input type="radio"/> A sense of accomplishment			

**For the following questions, please think about your own behaviors when shopping for skin care products:**

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
When walking through stores, I can't help touching all kinds of products.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Touching products can be fun.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
I place more trust in products that can be touched before purchase.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
I feel more comfortable purchasing a product after physically examining it.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
When browsing in stores, it is important for me to handle all kinds of products.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
If I can't touch a product in the store, I am reluctant to purchase the product.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
I like to touch products even if I have no intention of buying them.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
I feel more confident making a purchase after touching a product.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
When browsing in stores, I like to touch lots of products.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The only way to make sure a product is worth buying is to actually touch it.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
There are many products that I would only buy if I could handle them before purchase.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
I find myself touching all kinds of products in stores.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**Thank you for completing the your first survey!**

**Please refrain from using any face lotion samples on 1/20. This day is meant to "clean out" your skin before you evaluate the next sample.**

**On 1/21, please use your second sample. Email us at XXXXXXXXXXXX with any questions.**

**You have answered all the questions about this face lotion sample.  
Please answer the following questions about your own behaviors, beliefs, and opinions.**

How important are the following product attributes when you purchase skin care products such as face lotion?

	Very unimportant								Very important
The product is vegan.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The product is cruelty-free/not tested on animals.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The product is free of parabens, sulfates, and/or phthalates.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The product is free of silicones.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The product is anti-aging.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The product offers sun protection.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The product is easily available where I normally shop.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The product's brand resonates with me.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The product is inexpensive.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The product is fragrance-free.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The product is dye-free.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The product feels high-quality.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The product is from a brand I trust.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The product is made especially for men.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
The product is gender neutral.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
I can recognize all the ingredients in the product.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Thank you for completing the your second survey!






Please refrain from using any face lotion samples over the weekend, 1/23-1/24. These days are meant to "clean out" your skin before you evaluate the next sample.

On 1/25, please use your third sample. Email us at [\[REDACTED\]](#) with any questions.

You have answered all the questions about this face lotion sample.  
Please answer the following questions about you own behaviors, beliefs, and opinions.

**For the next several questions, please imagine your IDEAL face lotion.**

What would be your IDEAL PACKAGING for a face lotion? Imagine all packages pictured would contain 3 oz. of product.

<input type="radio"/>  Tube with screw top ???	<input type="radio"/>  Bottle with flip top ???
<input type="radio"/>  Bottle with pump top ???	<input type="radio"/>  Pouch with screw top ???
<input type="radio"/>  Jar with screw top ???	<input type="radio"/> Other (please describe): <input type="text"/>

What would be your IDEAL AROMA for a face lotion?

<input type="radio"/> Menthol/Mint ???	<input type="radio"/> Floral (rose, jasmine, etc.) ???
<input type="radio"/> Aromatherapy (eucalyptus, lavender, etc.) ???	<input type="radio"/> Fruity (apple, melon, etc.) ???
<input type="radio"/> Cologne/Musk ???	<input type="radio"/> Citrus ???
<input type="radio"/> Pine ???	<input type="radio"/> Unscented
<input type="radio"/> Other (please describe): <input type="text"/>	

What would be your IDEAL TEXTURE for a face lotion?

☐ Cream ???

☐ Lotion ???

☐ Gel ???

☐ Serum ???

☐ Other (please describe):

Are there any other attributes that would be important for your ideal face lotion?

**Thank you for completing the your third survey!**

**Please refrain from using any face lotion samples on 1/27. This day is meant to "clean out" your skin before you evaluate the next sample.**

**On 1/28, please use your last sample. Email us at [REDACTED] with any questions.**

**You have answered all the questions about this face lotion sample.  
Please answer the following questions about YOURSELF.**

**How would you describe your employment?**

☐ Full-time

☐ Part-time

☐ Homemaker

☐ Student

☐ Retired

☐ Not currently employed

☐ None of the above

**Which number range includes your total annual household income before taxes?**

☐ Under \$25,000

☐ \$25,000 to \$34,999

☐ \$35,000 to \$49,999

☐ \$50,000 to \$59,999

☐ \$60,000 to \$69,999

☐ \$70,000 to \$99,999

☐ \$100,000-\$149,999

☐ \$150,000 or more

**With which of the following ethnicities do you most closely identify?**

<input type="radio"/> African American/Black ???	<input type="radio"/> Hispanic/Latino ???	<input type="radio"/> Asian ???	<input type="radio"/> Pacific Islander ???
<input type="radio"/> American Indian/Native American ???	<input type="radio"/> Caucasian/White ???	<input type="radio"/> Other (specify) <input type="text"/>	



**How would you describe your skin tone?**

<input type="radio"/> Very Light	<input type="radio"/> Light	<input type="radio"/> Light-Medium	<input type="radio"/> Medium
<input type="radio"/> Medium-Dark	<input type="radio"/> Dark	<input type="radio"/> Very Dark	

**Which of the following best describes your skin type?**

<input type="radio"/> Dry
<input type="radio"/> Normal-dry
<input type="radio"/> Normal
<input type="radio"/> Normal-oily
<input type="radio"/> Oily

**What face lotion (brand and name) do you currently use?**

<div></div>
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**How much do you usually spend on your face lotion per container?**

<input type="radio"/> Less than \$10
<input type="radio"/> \$10.00-14.99
<input type="radio"/> \$15.00-19.99
<input type="radio"/> \$20.00-29.99
<input type="radio"/> \$30.00-39.99
<input type="radio"/> \$40.00 or more

**Thinking about the face lotion you usually use, where do you typically purchase this product?**

- ☐ Big box store (Walmart, Target)
- ☐ Amazon
- ☐ Grocery store
- ☐ Drug store (CVS, Walgreens)
- ☐ Department store (Kohl's, Macy's, etc.)
- ☐ Beauty store (Ulta, Sephora)

**Thank you for completing your final survey!**

**This research will be used for a PhD dissertation so we really appreciate your participation.**

**Your [REDACTED] gift card will be emailed to you as soon as we verify that you have completed all of the steps in this study. The gift card will be emailed to you using the same email address that was used to send the surveys. Thank you!**



**Thanks for completing the first survey.**

Finished

**Men's Skincare Home Use Test - Screener**  
**Markets: Kansas City & Korea**

**Korea (Product distribution: Week of Jan.18, 2021, Field Jan. 25-Feb. 5, 2021)**

N=75

Male

Age 18-55 (recruit a mix)

Face lotion users

Skin type - normal, oily, dry, combination (recruit a mix)

No severe skin sensitivities, allergies, or medication restrictions

Q1) Are you male or female?

- a) Male
- b) Female (DQ)

Q1) 귀하의 성별은 무엇입니까?

- a) 남성
- b) 여성 (DQ)

Q2) Which of the following ranges includes your current age?

- a) Under 18 (DQ)
- b) 18-25
- c) 26-35
- d) 36-45
- e) 46-55
- f) 56-65 (DQ)
- g) 66 or above (DQ)

Q2) 귀하는 다음 중 어느 연령대에 속합니까?

- a) 18 세 미만 (DQ)
- b) 18-25
- c) 26-35
- d) 36-45
- e) 46-55
- f) 56-65 (DQ)
- g) 66 세 이상 (DQ)

Recruit mix  
of ages

Q3) Do you, or does any member of your immediate family, work for any of the following types of companies? (select all that apply)

- a) Adverting or public relations (DQ)
- b) Market research (DQ)

- c) Broadcast or print media (DQ)
- d) Personal care manufacturer (DQ)
- e) Drug store (DQ)
- f) Retailer (clothes, beauty, etc.) (DQ)
- g) Auto manufacturing/sales
- h) Credit card company
- i) None of the above

Q3) 귀하나 귀하의 직계 가족이 근무하는 회사의 업종을 아래에서 골라주세요. (해당되는 모든 것을 고르세요.)

- a) 광고 또는 홍보 (DQ)
- b) 시장 조사 (DQ)
- c) 방송 또는 인쇄 매체 (DQ)
- d) 퍼스널 케어 제조업체 (DQ)
- e) 약국 (DQ)
- f) 소매 업체 (의류, 미용 등) (DQ)
- g) 자동차 제조 / 판매
- h) 신용 카드사
- i) 해당 사항 없음

Q4) Which of the following categories of personal care products do you currently use? (select all that apply)

- a) Hair
- b) Skin (Face) (Must choose)
- c) Skin (Body)
- d) Foot
- e) Hand (including nail/cuticle)
- f) Oral
- g) None of the above

Q4) 현재 사용 중인 퍼스널 케어 제품 종류를 아래에서 골라 주세요. (해당되는 모든 것을 고르세요.)

- a) 헤어케어
- b) 스킨케어 (얼굴) (Must choose)
- c) 스킨케어 (바디)
- d) 풋케어(발톱, 각질제거 등)

- e) 핸드케어(손톱/큐티클 포함)
- f) 구강용품
- g) 해당 사항 없음

Q5) Which of the following facial skin care products do you currently use? (select all that apply)

- a) Face wash
- b) Face lotion (Must choose)
- c) Sunscreen
- d) Exfoliator
- e) Skin serum (vitamin C, anti-aging, etc.)
- f) Eye cream
- g) Cleansing pads/wipes
- h) Toner
- i) Spot treatment (for acne)
- j) None of the above

Q5) 현재 사용 중인 페이스 케어 제품을 아래에서 골라 주세요. (해당되는 모든 제품을 고르세요.)

- a) 클렌징 워시(클렌징 폼, 오일 등)
- b) 페이스 로션 (Must choose)
- c) 선크림
- d) 각질제거제(필링젤, 스크럽 등)
- e) 스킨세럼 (비타민 C, 노화방지 등)
- f) 아이 크림
- g) 클렌징 패드 / 클렌징티슈
- h) 토너
- i) 스팟 트리트먼트 (트러블, 여드름 용)
- j) 해당 사항 없음

Q6) How often do you use face lotion?

- a) Daily
- b) 3-6 times per week
- c) 1-2 times per week (DQ)
- d) Every other week (DQ)
- e) I rarely use face lotion (DQ)

Q6) 페이스 로션은 얼마나 자주 사용하십니까?

- a) 매일
- b) 주 3-6 회
- c) 주 1 ~ 2 회 (DQ)
- d) 격주로 (DQ)
- e) 거의 사용하지 않음 (DQ)

Q7) Which of the following brands of face lotion do you currently use? (select all that apply)

- a) Neutrogena
- b) CeraVe
- c) Dove
- d) Vaseline
- e) Bulldog
- f) Harry's
- g) Cetaphil
- h) Clinique
- i) Every Man Jack
- j) Generic Store Brand
- k) Other (please specify):
- l) None of the above (DQ)

Some brands edited to  
better fit Korean offerings.

Q7) 현재 사용 중인 페이스 로션 브랜드는 무엇입니까? (해당 브랜드를 모두 골라 주세요.)

- a) 뉴트로지나(Neutrogena)
- b) 세라비(CeraVe)
- c) 도브(Dove)
- d) 바세린(Vaseline)
- e) 불독(Bulldog)
- f) 해리스(Harry's)
- g) 세타필(Cetaphil)
- h) 크리닉(Clinique)
- i) 에브리맨잭(Every Man Jack)
- j) 비오템(Biotherm)
- k) 랩시리즈(LAB Series)
- l) 클라란스(Clarins)
- m) 키엘(Kiehl's)
- n) 헤라(Hera)

- o) 설화수(Sulwhasoo)
- p) 보타닉힐보(Botanic Heal boH)
- q) 벨리프(Belif)
- r) 우르오스(ULOS)
- s) 로드샵 브랜드
- t) 기타 (구체적으로):
- u) 해당 사항 없음 (DQ)

Q8) How would you describe your skin type?

- a) Normal
- b) Oily
- c) Dry
- d) Combination

Q8) 귀하의 피부는 어떤 타입입니까?

- a) 중성
- b) 지성
- c) 건성
- d) 복합성

Recruit mix of  
skin types

Q9) Do you have any skin allergies or skin sensitivities that prevent you from using certain skincare products?

- a) Yes (DQ)
- b) No

Q9) 귀하는 특정 스킨 케어 제품에 대한 피부 알레르기 반응 또는 피부 민감성이 있습니까?

- a) 예 (DQ)
- b) 아니오

Q10) Are you taking any medications that would that prevent you from using certain skincare products?

- a) Yes (DQ)
- b) No

Q10) 귀하는 특정 스킨 케어 제품을 사용하지 못하게 하는 약을 복용하고 있습니까?

a) 예 (DQ)

b) 아니오

Q11) Which, if any, of the following skin conditions do you currently have? (select all that apply)

a) Acne

b) Eczema (DQ)

c) Psoriasis (DQ)

d) Cold Sore

e) Rosacea (DQ)

f) None of the above

Q11) 다음 중 현재 가지고 있는 피부 질환은 무엇입니까? (해당되는 모든 것들을 고르세요)

a) 여드름

b) 습진 (DQ)

c) 건선 (DQ)

d) 구순 포진

e) 주사(Rosacea) (DQ)

f) 해당 사항 없음

Q12) How willing or unwilling are you to try new skin care products?

a) Very unwilling (DQ)

b) Slightly unwilling (DQ)

c) Neither willing nor unwilling (DQ)

d) Slightly willing

e) Very willing

Q12) 귀하는 새로운 스킨 케어 제품을 써볼 의향이 얼마나 있습니까?

a) 매우 없음 (DQ)

b) 약간 없음 (DQ)

c) 있지도 없지도 않음 (DQ)

d) 약간 있음

e) 매우 있음

Q13) At this time, you have potentially qualified as a participant for an at-home men's face lotion study. As a participant, you must agree to the following study requirements:

NOTE: You would be required to use the provided 4 face lotion products over 11 days, discontinuing use of your current face lotion product(s).



- You must use the assigned products at least once per day as instructed from January 25-February 5.
- You must complete 4 online surveys about each product experience. Each survey should take no more than 10 minutes to complete. Surveys will be sent out via email.
- You would be compensated with a gift card for completing all parts of the study.

Based on these criteria, do you agree to follow the requirements?

- a) Yes, I agree.
- b) No, I do not agree. (DQ)

Q13) 본 평가에 참여하시려면 아래 내용에 동의하셔야 합니다.

- 1 월 18 일-22 일 사이에 평가 제품을 수령하기 위해 센소메트릭스 관능평가 센터에 방문하셔야 합니다. (4 종 제품수령 및 자세한 평가방법 안내드릴 예정)
- 제공한 평가 제품을 사용하는 기간(1 월 25 일~2 월 5 일)에는 현재 사용 중인 페이스로션은 중단하셔야 합니다.
- 1 월 25 일-2 월 5 일 동안 일정표에 따라 지정된 제품을 하루에 한 번 이상 사용하셔야 합니다. (기간 중 총 8 일 사용 예정)
- 4 종 제품에 대한 온라인 설문(약 10 분 소요)을 각 지정된 날짜에 완료하셔야 합니다. 설문링크는 문자로 전송해드립니다.
- 평가설문을 모두 완료하시면, 소정의 사례비를 지급해 드립니다.

위 내용대로 따르는 것에 동의하십니까?

- c) 예, 동의합니다.
- d) 아니요, 동의하지 않습니다. (DQ)

Q14) Are you be willing to receive text reminders throughout this study?

Note - we would only use your phone number to contact you about this specific study.

- a) Yes, my number is:
- b) No

Q14) 본 평가 기간 동안 평가 관련 사항을 문자로 전송해드릴 예정입니다. 문자알림을 받으시겠습니까? (전화번호는 본 연구를 위한 목적으로만 사용됩니다.)

- a) 네, (연락가능한 전화번호를 기입해주세요.)
- b) 아니오

Q15) You have qualified for an at-home test on men's face lotion. Product pick up will be January 18-22 and the test will be January 25-February 5. You will be compensated with a gift card for participating. Are you willing to participate?

- a) Yes, I am willing.
- b) No, I do not want to participate. (DQ)

Q15) 평가에 선정되실 경우, 제품 수령일은 **1 월 18 일 -22 일**이며, 제품 사용 및 평가는 **1 월 25 일 -2 월 5 일**동안 진행됩니다. 참여 하시겠습니까?

- a) 네, 참여하겠습니다.
- b) 아니요, 참여하고 싶지 않습니다. (DQ)

안녕하세요,

다음(Next) 버튼을 눌러 시작해주세요.

각 설문은 사용하신 페이스로션에 대한 설문과 본인에 대한 일반적인 질문으로 구성되어 있습니다.

모든 설문은 몇 가지 다른 유형의 질문을 하므로 동일하지 않더라도 걱정하지 마십시오.

지난 이틀동안 사용한 제품 BC111 에 대해 평가합니다.

만약 다른 번호의 제품을 사용한 경우 정확한 데이터를 수집할 수 있도록 표시하여 주세요.

Sample: BC111

- ☐ 예, 이 제품을 사용하였습니다.
- ☐ 아니오, 다른 제품을 사용하였습니다.

\$ {SAMPLEBC} 가 아닌 다른 번호의 제품을 사용하였다고 말씀주셨는데, 평가를 계속 진행하기 위해 지난 2일 동안 실제 사용한 제품 번호를 선택하여 주세요.

이로 인한 문제는 없으며 데이터의 정확성을 위해서 확인하는 것입니다.

Sample: BC111

- ☐ 제품 424
- ☐ 제품 846
- ☐ 제품 322
- ☐ 제품 158
- ☐ 제품 738
- ☐ 제품 270
- ☐ 제품 640
- ☐ 제품 516

지난 2일동안 사용하신 제품을 떠올리며 답해주세요.

Sample: BC111

전반적으로 볼 때, 이 제품은 얼마나 마음에 드세요?

대단히 싫음	매우 싫음	싫음	약간 싫음	좋지도 싫지도 않음	약간 좋음	좋음	매우 좋음	대단히 좋음
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

전반적으로 볼 때, 이 제품을 얼마나 만족하시나요?

매우 불만족	다소 불만족	만족하지도, 불만족하지도 않음	다소 만족	매우 만족
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

이 제품의 향은 얼마나 마음에 드세요?

대단히 싫음	매우 싫음	싫음	약간 싫음	좋지도 싫지도 않음	약간 좋음	좋음	매우 좋음	대단히 좋음
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

이 제품의 촉감은 얼마나 마음에 드세요?

대단히 싫음	매우 싫음	싫음	약간 싫음	좋지도 싫지도 않음	약간 좋음	좋음	매우 좋음	대단히 좋음
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**Sample: BC111**

제품을 바른 직후를 떠올리며 질문에 답해주세요.

제품의 향은 얼마나 강합니까?

너무 약함	약간 너무 약함	적당함	약간 너무 강함	너무 강함
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

제품의 점도는 어떻습니까?

전혀 되직하지 않음	다소 되직하지 않음	적당함	약간 너무 되직함	너무 되직함
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

제품의 발림성은 어떻습니까?

전혀 퍼지지 않음	다소 퍼지지 않음	적당함	약간 너무 퍼짐	너무 퍼짐
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

제품이 피부에 흡수되는 시간은 어떻습니까?

너무 느림

다소 느림

적당함

다소 빠름

너무 빠름

피부에서 느껴지는 제품의 시원한 느낌은 어떻습니까?

전혀 시원하지 않음

약간 시원함

적당히 시원함

꽤 시원함

매우 시원함

제품을 바른 다음, 몇 시간 뒤를 떠올리며 질문에 답해주세요.

제품의 피부보습력은 어떻습니까?

전혀 충분하지 않음

다소 충분하지 않음

적당함

약간 너무 강함

너무 강함

피부에서 느껴지는 잔여감은 어떻습니까?

잔여감 없음

아주 약간의 잔여감 (참을만 한 수준)

약간의 잔여감 (불편하지만 여전히 참을만한 수준)

중간정도의 잔여감 (꽤 불편 과도한 잔여감 한 수준)

(매우 불편한 수준)

피부의 광택은 어떻습니까?

전혀 반짝거리지 않음

다소 반짝거리지 않음

적당함

약간 너무 반짝거림

매우 반짝거림

제품을 하루 중 언제 사용하십니까? (해당되는 시간대를 모두 선택해주세요.)

Sample: BC111



아침



낮



저녁

다음 문장에 대해 본인이 동의하는 정도를 응답해주세요

이 페이스로션 제품은...

	강하게 동의하지 않음	다소 동의하지 않음	동의하지도 지도 않지도 않음	다소 동의함	강하게 동의함
내 피부가 차분해지는 느낌을 준다.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
내 피부가 건강해지는 느낌을 준다.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
순하다	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
내 피부를 진정시켜준다	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
내 피부가 건조해지거나 푸석해지게 한다.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
효과적이다.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
내 피부를 탄력있게 한다.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
내 피부를 화끈거리게 한다.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
내 피부를 붉게하거나 따갑게 한다.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
남성용으로 만들어진 것 같다.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
유분기가 없다	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
피부를 재생한다.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
내 피부에 수분을 공급한다.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**Sample: BC111**

이 제품을 합리적인 가격으로 구입할 수 있다면, 본인이 이 제품을 구입할 가능성은 어느 정도인가요?

확실히 사지 않을 것임	아마도 사지 않을 것임	구매할 수도 안할 수도 있음	아마도 구매할 것임	확실히 살 것임
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

이 페이스로션 제품에 대한 모든 질문에 답하셨습니다.  
다음은 귀하 본인의 행동, 신념, 의견에 관련된 질문입니다. 질문에 답해주세요.

다음은 사람들이 인생에서 추구하는 것들입니다. 각 항목을 주의깊게 살펴본 후 각 항목이 본인의 일상생활에서 얼마나 중요한지 평가해주세요.

	매우 중요하지 않음							매우 중요함
소속감	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

신남/흥분	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
친분 관계	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
자아실현	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
존경받는 것	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
삶의 즐거움	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
안정감	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
자기 존중	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
성취감	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

앞에서 평가한 항목들 중에서 본인의 일상생활에서 가장 중요한 것은 무엇인가요?

<input type="radio"/> 소속감	<input type="radio"/> 신남/흥분	<input type="radio"/> 친분 관계	<input type="radio"/> 자아실현
<input type="radio"/> 존경받는 것	<input type="radio"/> 삶의 즐거움	<input type="radio"/> 안정감	<input type="radio"/> 자기 존중
<input type="radio"/> 성취감			

스킨 케어 제품을 구입할 때 본인의 행동을 떠올리며 답해 주세요.

	강하게 동의하지 않음	동의하지 않음	다소 동의하지 않음	동의하지도 동의하지도 않음	다소 동의함	동의함	강하게 동의함
매장에서 걸어가면서, 모든 종류의 제품을 만져보게 된다.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
제품 만지는 것이 재미있을 수 있다.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
제품을 사기 전에 만져보면 더 신뢰가 간다.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
제품을 테스트해본 뒤 구입해야 마음이 놓인다	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
매장을 둘러볼 때, 모든 종류의 상품을 다뤄볼 수 있는 것이 중요하다.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

매장에 제품을 만져볼 수 없으면, 그 제품을 사기가 꺼려진다

구입할 생각이 없어도, 제품을 만지는 것을 좋아한다.

제품을 만져보면 더 자신있게 구입할 수 있다

매장을 둘러볼 때, 많은 제품을 만져보는 것을 좋아한다

제품을 구입할 가치가 있는지 확인하는 유일한 방법은 실제로 제품을 만져보는 것이다.

구입하기 전에 다루어 볼 수 있는 경우에만 구입하는 제품이 많다.

매장에서 온갖 종류의 제품을 만지고 있곤 합니다.

첫 번째 설문을 완료해주셔서 감사합니다!

1월 27일에는 페이스로션 제품을 사용하지 말아주세요. 다음 제품을 평가하기 위해 피부에 휴식을 취해주세요.

1월 28일부터 두번째 제품을 사용해주시기 바랍니다. 궁금하신 점이 있다 XXXXXXXXXX으로 이메일을 보내주세요.

이 페이스로션 제품에 대한 모든 질문에 답하셨습니다.  
다음은 귀하 본인의 행동, 신념, 의견에 관련된 질문입니다. 질문에 답해주세요.

페이스로션 등의 스킨케어 제품을 구입할 때, 다음과 같은 제품 특징은 얼마나 중요한가요?

매우 중요  
하지 않음

매우 중요  
함

비건(vegan) 제품

동물실험을 하지 않는 제품

파라벤, 황산염, 프탈레이트 성분이 없는 제품

무실리콘 제품

노화방지 제품

자외선 차단기능 제품



내가 평소 구입하는 곳에서  
쉽게 구할 수 있는 제품

마음이 끌리는 브랜드 제품

비싸지 않은 가격

무향 제품

염료를 사용하지 않은 제품

고품질 느낌의 제품

신뢰하는 브랜드 제품

남성용 제품

남녀공용 제품


        

모든 성분을 알 수 있는 제품

두 번째 설문을 완료해주셔서 감사합니다!

1월 30일부터 1월 31일까지 페이스로션 제품을 사용하지 말아주세요. 다음 제품을 평가하기 위해 피부에 휴식을 취해 주세요.

2월 1일부터 세 번째 제품을 사용해주시기 바랍니다.  
궁금하신 점이 있다  으로 이메일을 보내주세요.

이 페이스로션 제품에 대한 모든 질문에 답하셨습니다.  
다음은 귀하 본인의 행동, 신념, 의견에 관련된 질문입니다. 질문에 답해주세요.

**이상적인 페이스로션을 떠올리며 다음 질문에 답해주세요.**

(사진의 용기에 약 90ml의 제품이 들어 있다고 했을 때) 페이스로션의 이상적인 용기 형태는 무엇인가요?

<input type="radio"/>  <input type="radio"/> <p>스크루 탑 튜브 ???</p>	<input type="radio"/>  <input type="radio"/> <p>플립 탑 용기 ???</p>
<input type="radio"/>  <input type="radio"/> <p>펌프 탑 용기 ???</p>	<input type="radio"/>  <input type="radio"/> <p>스크루 탑 파우치 ???</p>
<input type="radio"/>  <input type="radio"/> <p>스크루 탑 병 ???</p>	<input type="radio"/> <p>기타(설명해주세요)</p> <input type="text"/>

페이스 로션의 이상적인 향은 무엇인가요?

<input type="radio"/> <p>멘솔/민트향 ???</p>	<input type="radio"/> <p>꽃향(장미, 자스민 등) ???</p>
<input type="radio"/> <p>아로마테라피향(유칼립투스, 라벤더 등) ???</p>	<input type="radio"/> <p>과일향(사과, 멜론 등) ???</p>
<input type="radio"/> <p>오드콜로뉴/머스크향 ???</p>	<input type="radio"/> <p>시트러스향 ???</p>
<input type="radio"/> <p>파인향 ???</p>	<input type="radio"/> <p>무향</p>
<input type="radio"/> <p>기타 (설명해주세요):</p> <input type="text"/>	

페이스 로션의 이상적인 촉감은 무엇인가요?

☐ 크림 ???

☐ 로션 ???

☐ 젤 ???

☐ 세럼 ???

☐ 기타 (설명해주세요):

이상적인 페이스 로션으로 고려해야 할 또 다른 중요한 특성이 있다면 무엇인가요?

세 번째 설문을 완료해주셔서 감사합니다!

2월 3일에는 페이스로션 제품을 사용하지 말아주세요. 다음 제품을 평가하기 위해 피부에 휴식을 취해주세요.

2월 4일부터 마지막 제품을 사용해주시기 바랍니다.  
궁금하신 점이 있다  으로 이메일을 보내주세요.

이 페이스로션 제품에 대한 모든 질문에 답하셨습니다.  
다음은 귀하 본인의 행동, 신념, 의견에 관련된 질문입니다. 질문에 답해주세요.

귀하의 직업은 무엇입니까?

- ☐ 직장인(풀타임)
- ☐ 직장인(파트타임)
- ☐ 전업주부
- ☐ 학생
- ☐ 은퇴
- ☐ 현재 고용되지 않음
- ☐ 해당사항 없음

귀하의 연간 총 가구 소득(세전 기준) 범위는 어떻게 되십니까?

- ☐ < ₩15,000,000
- ☐ ₩15,000,000 - 30,000,000
- ☐ ₩30,000,001 - 45,000,000
- ☐ ₩45,000,001 - 60,000,000
- ☐ ₩60,000,001 - 75,000,000
- ☐ ₩75,000,001 - 90,000,000
- ☐ ₩90,000,001 - 105,000,000
- ☐ > ₩105,000,000

귀하의 피부톤은 어떻습니까?

- |                              |                           |                              |                          |
|------------------------------|---------------------------|------------------------------|--------------------------|
| <input type="radio"/> 매우 밝은  | <input type="radio"/> 밝은  | <input type="radio"/> 약간 밝은  | <input type="radio"/> 중간 |
| <input type="radio"/> 약간 어두운 | <input type="radio"/> 어두운 | <input type="radio"/> 매우 어두운 |                          |

귀하의 피부타입은 어떻습니까?

- ☐ 건성
- ☐ 건복합성
- ☐ 중성
- ☐ 지복합성
- ☐ 지성

현재 어떤 페이스로션(브랜드 및 이름)를 사용하십니까?

보통 페이스로션 1개 구매하는데 얼마 정도 쓰시나요?

- ☐ > ₩ 5,000
- ☐ ₩ 5,000 - 10,000
- ☐ ₩ 10,001 - 15,000
- ☐ ₩ 15,001 - 25,000
- ☐ ₩ 25,001 - 35,000
- ☐ > ₩ 35,000

평소 사용하는 페이스로션은 어디에서 구입하시나요?

☐ 대형마트

☐ 인터넷쇼핑몰

☐ 식료품점/슈퍼마켓

☐ 약국, 편의점

☐ 백화점

☐ 로드샵

마지막 설문을 완료해주셔서 감사합니다! 조사가 모두 끝났습니다.  
본 조사는 박사 학위 논문에 사용될 예정입니다. 조사에 참여해주셔서 진심으로 감사드립니다.



Finished