Voice Activated Virtual Assistants Personality Perceptions and Desires: Comparing Personality Evaluation Frameworks

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Currently, Voice Activated Virtual Assistants and Artificial Intelligence technologies are not just about performance or the functionalities they can carry out, it is also about the associated personality. This empirical multi-country study explores the personality perceptions of current VAVA users regarding these technologies. Since this is a rather unexplored territory for research, this study has identified two well-established personality evaluation methodologies, Aaker's traits approach and Jung's archetypes, to investigate current perceived personality and future desired personality of the four main Voice Activated Virtual Assistants: Siri, Google Assistant, Cortana and Alexa. Following are a summary of results by each methodology, and an analysis of the commonalities found between the two methodologies.

Personality, Artificial Intelligence, Voice Activated Virtual Assistant.

1. INTRODUCTION

In 2000, Microsoft researchers Gene Ball and Jack Breeze wrote that "in twenty years (possibly much sooner)" humans would interact with computers via spoken conversation. As predicted, that moment has come already, much before than the year 2020. Actually, voice is now considered by experts as the key shift in human-machine interaction (Eadiciccio, 2017), and as Ball and Breeze (2000) note as well, it could become the preferred means to communicate with technological devices.

Following this evolution, a vast amount of technological companies have been developing artificial intelligence (AI) that are activated and interacted with by voice. Therefore, it seems assured that the technological challenges that Ball and Breeze (2000) reported as a barrier to get to this point, have been overcome.

However, there is a new common concern these technologies face: AI's personality. This subject requires to take into account not only the technological aspects but to be able to create a pleasant interaction that generates engagement with the users, so that they actually want to interact with the device, making a special focus on the user experience (UX) (McKay, 2017).

The personality the AI will project represents a key aspect that influences the effect that an AI interface, such as voice, will generate on the user. Leif Haven Martinson, lead designer of Botanic Technologies, highlights this importance at the Stanford University's Creating AI Conversations Panel Series (2018). He claims that personality is in itself the UX of AI, because AI not only broadcast information to users, it interacts with them; therefore, personality certifies that the value of the experience is received by them.

The main challenge in AI personality is to develop a character that is able to simulate the most effective human interlocutors: They must be natural and believable, but moreover, they must convey personality, mood, and expression (Mairesse and Walker, 2007). The importance of building an AI personality is a key aspect for generating trust in technologies such as Voice Activated Virtual Assistants (Perez and Saffon, 2018).

The objective of this study is to evaluate people's perceptions around personality under two different personality evaluation frameworks to help determine their suitability in AI products, more precisely in Voice Activated Virtual Assistants. It will also look at analysing the results obtained separately and then commonly to identify if they demonstrate convergent findings.

2   PERSONALITY FOR AI AND VAVAS

The definition of the term personality is not only varied, but also debated (Mayer, 2007). However, David Funder (2001) provides a definition that neither includes nor excludes humans, animals, robots or others from the possibility of having one, allowing to use the definition to approach the development of an AI personality. Funder expresses that personality "refers to an individual's characteristic patterns of thought, emotions, and behavior, together with the psychological mechanisms –hidden or not- behind those patterns" (p.2).

Before Funder's definition of personality, Dave Moffat remarked in 1997 that personality had not been "a serious topic in AI … [because] it is not easy to explain why a robot should need a personality". Nevertheless, as the same author states, further research has shown that psychological attributes in AI have an effect in the user experience and the resulting user satisfaction with the conversational agent. An AI personality improves the system performance (Reilly, 1996) and provides quality to the experience (Johnson, 2017). Additionally, Dr. Matashi Mori (1970) states that as an AI becomes more human-like there is an increase in the levels of acceptability and affinity with the device, and that giving the AI a personality is a step towards creating a more human-like dialogue and creates a more naturalistic conversation (Li et al., 2016). The development of a personality, then, influences the generation of trust, which has been shown to be an essential factor in the development and adoption of AI systems (Perez and Saffon, 2018).

As Short (2017) also describes, even though users are wise enough to know that behind the AI there are code and algorithms, they like to believe that it has real needs and desires. Furthermore, Cohen et al. (2004) state that as human beings we are unable to prevent ourselves from deducing personality attributes from a voice, regardless of its origin, even if it is a recording. A mental image is created with personal traits, attitudes, background information and even physical characteristics. This group of elements inferred by the user around the AI's language and voice is known as *persona* (Li et al., 2016). It is described as the constant character that the user attributes to the voice, a continual line that runs underneath the surface, even regardless of changes in the tone of voice (Stanford University, 2018).

In this study, personality will refer to Funder's (2001) definition, which is based on a series of thought patterns rather than a wide range of attributes that might even include physical image (Li et al., 2016).

When developing a Voice Activated Virtual Assistant (VAVA) personality, there is a crucial challenge to be considered: How to transmit both affective and personalized qualities in the form of a consistent and realistic speech when embedded in a computational framework (Neff et al., 2010) that needs to adapt itself to the different types of interaction users might use (Li et al. 2016).

2.1 Measuring personality

The assessment of personality is credited to the field of psychology and can be dated back to the First World War. Psychologist Robert Woodworth developed the Personal Data Sheet in order to identify fragile draftees, assessment that was later on improved by Robert Bernreuter in 1931. This resulted in the most used basis for personality inventories, which have been applied to the Minnesota Multiphasic Personality Inventory (MMPI), Personality Assessment Inventory (PAI), and the NEO Personality Inventory (NEO-PI) (Weigner and Greene, 2017).

More than 60 years later, various marketers such as Joseph Plummer (1985) and Jeffrey Durgee (1988) started arguing that brands, as humans, had personality. Taking the latter premise into account, social psychologist Jennifer Aaker developed a model based on attributing human traits, such as honest, technical, reliable, cheerful, intelligent, and so on to a brand (Aaker, 1997) in order to determine its personality.

Aaker's model is nowadays one of the most well-established brand personality assessment methodology in marketing and branding research (Schlesinger and Cervera, 2009) as she defines brand personality as a "set of human characteristics associated with a brand" (Aaker, 1997). Moreover, different studies have run with the purpose of validating and adjusting personality characteristics to the context, regarding both cultural and brand category (Barrios and Massa, 1999; Koebel and Ladwein, 1999; Aaker et al., 2001; Supphellen and Grohaug, 2003; Olvarrieta et al., 2010). Many researchers have therefore explored using Aaker's methodology diverse groups of brands or even tourism destinations' personalities (Ekinci and Hosany, 2006), but none of them have tried the traits-approach to measure a VAVA personality.

More recently, another personality model based on Carl Jung's archetypical theory (Jung, 1954) has been used to assess brand personality by both brand research (Robert, 2010; Bechter et al., 2016) and brand practitioners, such as the communication giant WPP Group (Klarquist, 2010). For Jung, the Swiss psychiatrist, archetypes were intrinsic images that repeat themselves along cultures and generations, and are able to mold human

experiences (Jung, 1954). Currently, his theory "provides a sound, proven methodology for stablishing a memorable and compelling brand identity, one that can withstand the test of time, cross lifestyle and cultural boundaries" (Mark and Pearson, 2001, p.18).

The names, quantity and description of the archetypes varies along the literature (Jansen, 2006; Woodside et al., 2008; Roberts, 2010), but are based essentially in the same original Jungian theory. Mark and Pearson (2001) developed a twelve archetypes framework now widely used for brand personality assessment (Faber and Mayer, 2009; Munteanu et al., 2010; Bolhuis, 2011; Hoolwerff, 2014) and presented in Table 1.

Table 1: *Personality Archetypes*

Creator	Innocent	Ruler
Jester	Caregiver	Hero
Lover	Sage	Outlaw
Every Man	Wizard	Explorer

Even though both Aaker's traits and Jung's archetypes have been used in various frameworks in order to measure brand personality, in the literature just Bechter et al. (2016) have explored the link between them in the advertising context, where they found that there is common ground between the two approaches.

3. CONTEXT OF THIS RESEARCH STUDY

This study is undertaken in Telefonica, a multinational telecoms organization based in Spain but present in more than twenty countries. The reason behind it is that Telefonica has been developing its own AI, or more specifically a Voice Activated Virtual Assistant (VAVA), called Aura, which is currently available in six countries of its footprint: Chile, Argentina, Brazil, UK, Germany and Spain. Consequently, as with many other technology players already seen in the literature, the next step is not only focused on technology capabilities but on creating a personality that is embedded and able to transmit the desired user experience. Aura's team has set a new objective: bring Aura's personality to life.

The main goal of this study was to explore what is the personality attributed by users to the four key VAVAs currently in the market (Siri, Google, Cortana and Alexa) as well as to identify what is their desired VAVA personality in the future. This would provide the team with a competitors' personality benchmark and a possible guideline into what territory could Aura's personality play in and how it could differentiate itself from others. Due to the size of the sample, it would be possible to discover variances by country and by VAVA to explore cultural and experiential differences.

4. METHODOLOGY AND SAMPLE

To explore personality perceptions and desires of current VAVA's users, a quantitative study was carried out with an online survey. The sample was comprised of a total of 3661 internet users, between 18 and 65 years old, in six different countries (Argentina, Brazil, Chile, Spain, Germany and UK) who used, at least, one of the main four VAVAs: Siri, Cortana, Google or Alexa. In the case they used several, they were asked about the one they used most frequently.

Based on the literature review, two brand personality assessment were chosen for the measurement of the VAVA personality: Aaker's and Jung's. The reason for this is the universality of Jung archetypes and the multiples studies made around the world in order to adapt Aaker personality-traits approach, which fitted best a multi-country study. Secondly, the AIs to be evaluated are conversational agents with no physical presence (Stanford University, 2018), and they are all associated to a brand (Alexa to Amazon, Siri to Apple, Cortana to Microsoft and Google Assistant to Google). Consequently, human traits linked to the brands could also be associated with the VAVAs. In this study, Aaker personality traits (1997) and Jung's archetypes (1954), were explored by two different group of users in the six countries of the study in relationship to the four VAVAs.

The reason to use these two different methodologies instead of only one was to be able to articulate a cross-methodology analysis of results. Both approaches are well established in literature but for the robustness of this exploratory study we wanted to test if users' choice of isolated attributes would match with the selected archetypes as these seem to have a more complex set of connotations and context associated to them. The objective was, therefore, to enable the team to validate more strongly the results acquired.

Personality evaluation methodology 1, based on Aaker's personality traits (1997), was applied to 3037 users. The construction of the attributes list was done through a methodology used in brand personality related research (Ekinci and Riley, 2003; Pirela et al., 2004; Sung and Tinkham, 2005; First and Grbac, 2007; Schlesinger and Cervera, 2009), in order achieve a number of attributes that did not generate respondents fatigue and that were the most relevant traits for the category being assed. From a list of 60 characteristics based on Aaker's 42 traits (1997) and on various adaptations mentioned in the literature review (Aaker et al., 2001; Schlesinger and Cervera, 2009; Olvarrieta et al., 2010; Bechter et al., 2016), an internal research team in Telefonica chose the 29 most relevant traits to the VAVAs context (Table 2).

Table 2: *Personality traits in survey to be attributed to current and desired VAVA personality*

Practical	Well-Mannered	Imaginative
Informed	Thoughtful	Considerate
Original	Helpful	Rugged
Intelligent	Friendly	Fun
Up-to-date	Kind	Feminine
Logical	Sincere	Cheerful
Technical	Genuine	Masculine
Objective	Reliable	Sentimental
Rational	Self-Confident	Sweet
Honest	Nice	

Table 3: *Archetypes descriptions offered on survey to be attributed to current and desired VAVA personality*

EXPLORER	OUTLAW
Likes to try new things, constantly looking for something better. With an independent and curious mind, wants to experience a satisfying and authentic life.	Disruptive force that violates rules and norms for the good of others, adventure or its own good.
LOVER	WIZARD
It has the ability of love, romance, and loyalty for the other. Its ambition is to have a relationship with people, work and the experiences that it loves.	Ability to change or transform circumstances by understanding the fundamental laws and applying them to make things happen.
JESTER	CAREGIVER
Characterized by the joy when working and living, it teaches us to relax, to live the moment and to enjoy others without thinking about what others think. Innovative thinking and out of the ordinary.	Concerned about helping others, motivated by compassion and generosity, anticipating the needs of others, seeing what will make them feel more secure and protected.
HERO	INNOCENT
Characterized by its competitive spirit, seeks to be the best to improve the world and protect it.	Evokes self-confidence and in others, seeking to make life simpler and reach happiness.
SAGE	EVERYMAN
Uses intelligence, analysis and critical thinking to understand the world, give opinions and make informed decisions.	Its underlying value is that everyone is important the way they are, have a value and are part of a group. Its goal is to belong.
CREATOR	RULER
Innovative spirit that has unique ability to imagine things in a different way through imagination and mental agility.	Take control of situations, especially when they seem to be getting out of control. Its job is to take responsibility for making life as predictable and stable as possible.

In this methodology, respondents would choose what attributes (as many as they wanted) out of the 29 presented characterize their current VAVA. The five attributes with a higher percentage of choice were selected to define the personality of their current VAVA. Participants also had to choose attributes for their desired VAVA and from those chosen they then selected three that were indispensable. The five attributes with a higher percentage that participants have selected as indispensable for their future VAVA, were selected as the key desired personality attributes.

Personality evaluation methodology 2, based on Carl Jung's archetypes (1954), was applied to the remaining 624 participants. The archetype selection process was based on Betcher et al (2016) and the Pearson-Marr Archetype Indicator (Pearson and Marr, 2002). The description of each archetype was constructed by the team taking reference from various sources (Mark and Pearson, 2001; Faber and Mayer, 2009; Munteanu et al., 2010; Roberts, 2010), and are presented in Table 3. Nevertheless, archetypes names were not shown to the participants so they could only focus on the description with no label associated. Participants were presented the 12 personality archetypes in the form of a description (Table 3) and were asked to discard the six that would least represent the personality of their current VAVA. Secondly, they were asked to discard three more archetypes to finally rank the three descriptions remaining. Within these, they had to choose the one that most resembled their current VAVA personality. The same process was done for their desired VAVA personality.

In both methodologies, randomization of attributes and archetypes was used in order to avoid bias when choosing due to the same order.

5. FINDINGS

This empirical study has shed light onto various topics regarding the personality users perceive from their current VAVAs and what they would like it to be in the future. Moreover, differences between each of the VAVA's are reported. Finally, the two different methodologies are compared.

5.1 Personality evaluation methodology 1: Aaker's personality traits

From Methodology 1, an important finding is the selection of attributes that best represents the personality of the current VAVA's in the market. In general, the attributes most frequently associated with them by the total sample are: *Practical, Informed, Up-to-Date, Well-Mannered, Logical* and *Helpful*.

Figure 1 shows that these attributes do no differ significantly when split by each VAVA. What does change among them is the order of the ranking. For instance, Siri users selected as the first characterizing attribute *Well-Mannered*, while for Google it is *Practicality*, for Alexa it is being *Helpful*, and for Cortana it is being *Informed*. Each of these attributes appear among the most selected for all VAVAs, with the only difference being the ranking order. What draws attention is that in a list of 29 different personality attributes, these four VAVAs share the same ones. When it comes to differences highlighted in this analysis, it is worth considering that Alexa users attribute to this VAVA the trait of *Kind*, which no other VAVA got as a top representative trait.
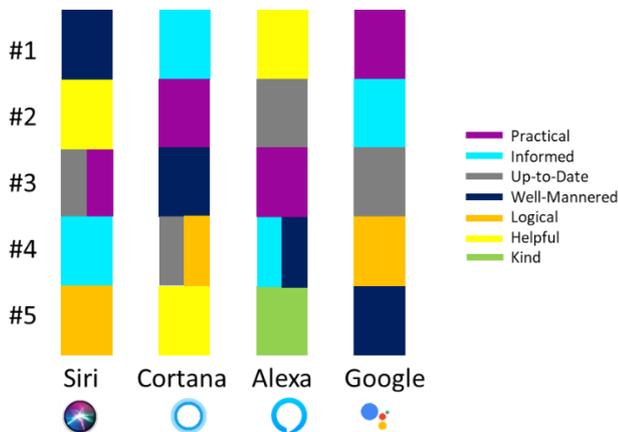

Figure 1: Ranking of most chosen attributes to describe current VAVAs

Furthermore, if these are the most chosen attributes, it is also relevant to highlight those ones that were the least chosen to represent their current VAVA's personality, regardless of the profile responding: *Cheerful, Sweet, Sentimental* and *Masculine*.

A second stage of this quantitative study, using Methodology 1, was to identify the most indispensable attributes VAVAs should have. Users were asked to choose from the same list of 29 Aaker traits, which ones would they wish to have in their VAVA. They were then asked to prioritize them until they told us the top three that were essential for the VAVA to have. The analysis of this data revealed the indispensable personality attributes that participants

wished for their desired VAVA: *Reliable, Informed, Intelligent, Objective, Practical*.

As it happened with current personality traits, the variations that can be noticed among VAVAs are shown in Figure 2, which visualizes that differences are slight, similarly to what was noticed with the current traits. Only the order in which users of each VAVA position these five traits change. As in current traits, Alexa needs a special mention, as its users differ from the rest of the group: they chose as an essential attribute in their desired VAVA *Helpful* instead of *Objective* like the others' VAVA users.
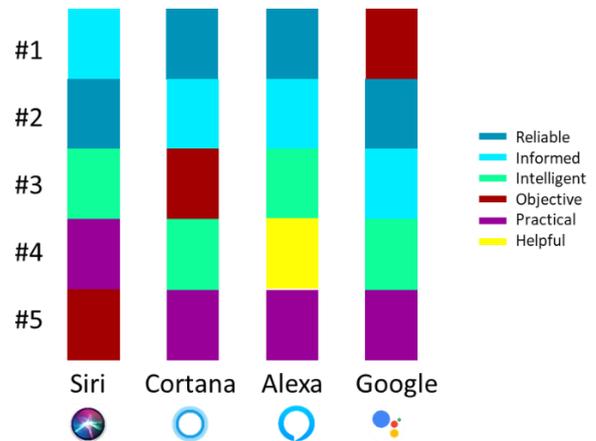

Figure 2: Ranking of Indispensable Attributes by VAVA

The results shown represent global results. However, when splitting the data by country, few cultural differences appear among the characteristics found as essential for a VAVA (Figure 3). In Germany, Spain and UK, as in the general average, *Reliable* is the most essential attribute. Instead, in Argentina and Chile, this attribute falls to the fifth position and the most indispensable attribute is *Informed*. Also, in Chile, instead of *Practical*, the desired VAVA should be *Original*, while in Brazil users also choose the latter over *Informed*, and placed it as their most indispensable characteristic for a VAVA. Major differences are observed in Germany and UK as they both add *Helpful* instead of *Objective*, and UK adds *Honest* instead of *Practical* to the top 5 essentials, although this is only by a small difference.
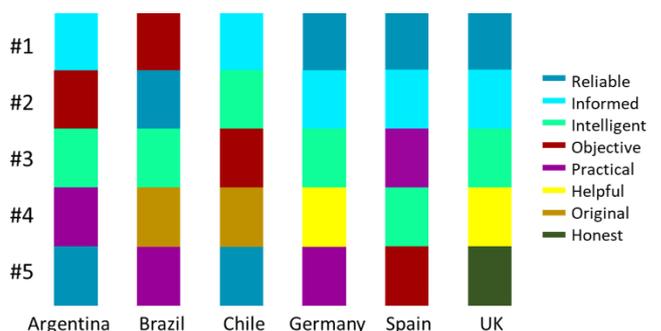

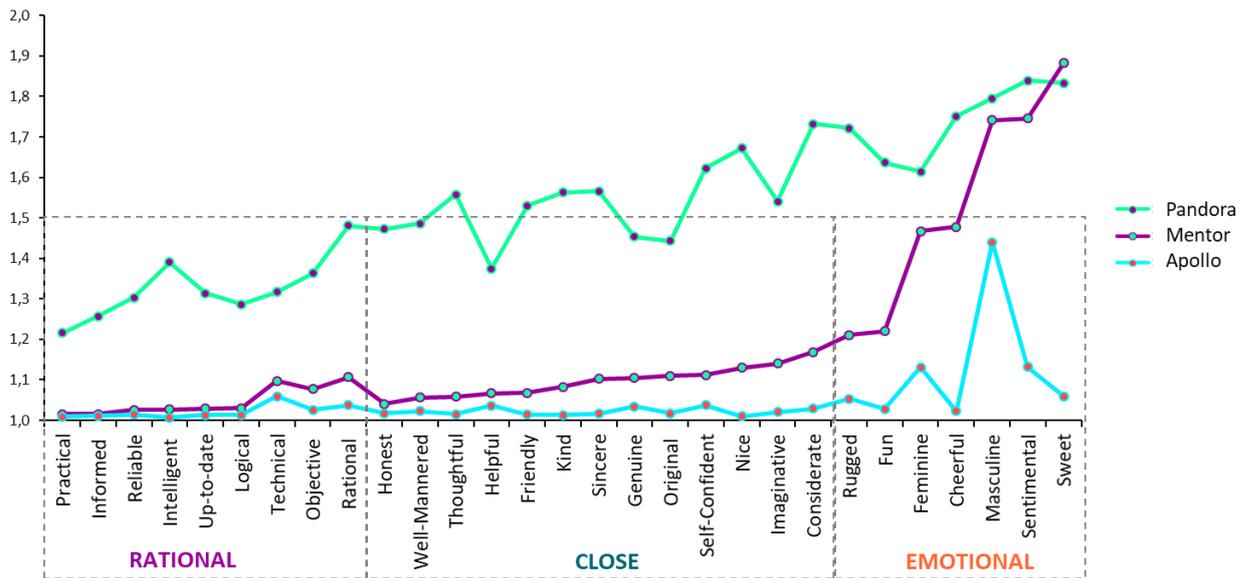*Figure 3: Ranking of Indispensable Attributes by country*

Figure 4: *Cluster analysis on desired attributes for a VAVA*

A cluster analysis was conducted with the selected attributes for the desired VAVA, to understand if user preferences revealed uniquely different sets of attributes for their desired VAVA. Three clusters emerged according to the attributes chosen for their VAVA, and while reviewing those attributes included in each cluster, logically three factors were created: (i) The first cluster group, named *Pandora*, wants all possible attributes in their VAVA. They do not disregard any attribute, neither from the rational nor from the emotional factors. (ii) The second cluster group are those users that who like their VAVA to be a Greek mythology's *Mentor*, wise but close, giving sage advice using rationality but still being agreeable and friendly. (iii) Finally, the third group wants their VA to resemble Greek god *Apollo*, a rational expert that uses technology to provide logical solutions with rigor and solvency, without empathic features. As it is shown in Figure 4, each cluster includes the characteristics of the rational factor, while the differences reside in the inclusion of more attributes of the emotional spectrum.

Almost all VAVA users (96%) incorporate in their choice of desired VAVA at least 2/3 of the proposed rational attributes, labeled as "Many" in Figure 5.
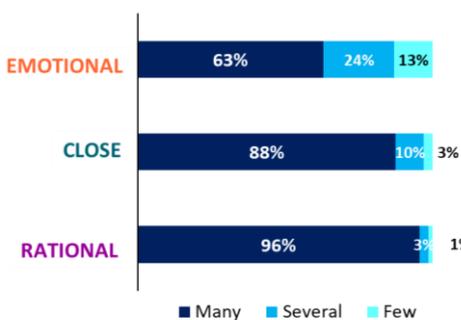

Figure 5. *Percentage of sample that selected proportion of attributes by factor*

This proportion is reduced with the incorporation of more emotional attributes.

As to cultural variances in this regard, few country differences were found around this aspect. The UK stands out for the low incorporation of emotional attributes, and Brazil stands out at the opposite side of the spectrum with many emotional attributes. While 76% of VAVA users in Brazil incorporate at least 2/3 of the proposed emotional attributes, only 32% of them do so in the UK. For the other two factors, *Rational* and *Close,* no relevant differences were detected.

When dividing the sample into the different VAVAs, it was noticed that Alexa users chose fewer emotional attributes than the other VAVA's users. It seems they look for a fair number of emotional attributes, not going into any extreme.
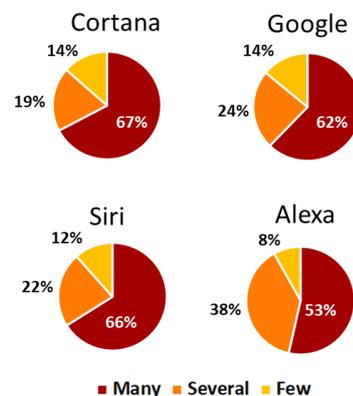

Figure 6. *Percentage of sample that selected proportion of emotional attributes by VAVA*

Differences between Alexa and other VAVAs have been observed already in other studies (Perez et al., 2018). For instance, Alexa users report using more use cases and a higher frequency of use than other

VAVA users. It would be possible to hypothesize that this may be having an effect on Alexa's personality, making it different from the other three current VAVAs.

An analysis of the gaps between current and desired personality attributes was carried out shedding light onto a series of findings: (i) Most participants have claimed they want more of the same attributes their VAVAs currently have: *Reliable, Intelligent, Objective, Original* and *Thoughtful.* The previous are the atributes where greater gaps were found based on the evaluation of the complete sample. Neverthless, when doing an analysis per VAVA users, some differences emerged. Siri users, as the general sample present its major differences between desired and current in *Reliable, Intelligent and Objective, while* Cortana users emphasized wanting a *Reliable* VAVA, and a big gap was identified in *Sincere* and *Rational.* The evaluation of Alexa is more adjusted to what its users want because the current and desired top ranking attributes are very similar, therefore they are receiving from their VAVA what they desire from its personality. The only attribute that stands out is *Reliable*, ranked 10th in the evaluation of the current VAVA, while it is 4th in the ranking of desired attributes. Google users also seem to be very satisfied with the attributes of their VAVA because there are few differences between current and desired VAVA attributes ranking.

5.2 Personality evaluation methodology 2: Jung's archetypes

When exploring the current personality based on Jung's archetypes, using the second methodology, some themes emerged. As Figure 2 shows, the four VAVAs have very similar perceived personalities. They all have a high evaluation on the *Sage* archetype. However, Siri is the one that is mostly characterized as this archetype and it also has a high mark for *Innocent*, while Alexa scores higher on *Jester*, Google on *Explorer* and Cortana on *Creator*.
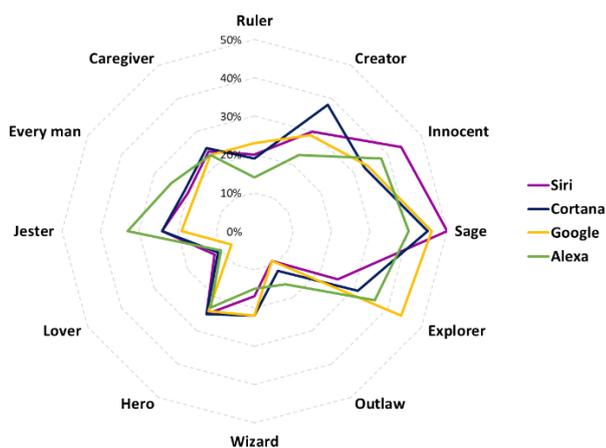

Figure 7: *Personality Archetypes for current VAVAs*

Regarding their desired VAVA, an interesting observation was that no matter the current VAVA users were using, their most desired archetype was unanimously the *Sage*. However, it is important to highlight the difference among another highly indispensable archetype choice for Alexa's users, the *Explorer*, which differed from the other VAVA users. Once more, Alexa users' answers generate questions about how the experience of this VAVA is changing the perception of desired personality for the category.
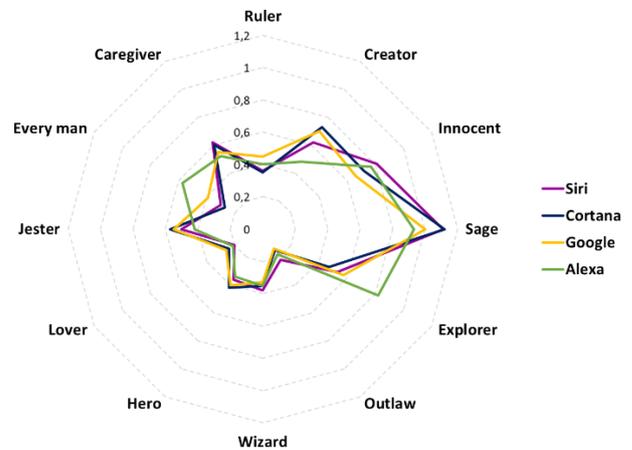

Figure 8: *Summary of averages from archetypes chosen as indispensable, divided by VAVA most frequently used*

5.3 Blending results from the two personality evaluation methodologies

Once the results were analyzed separately, the objective of the study was also to cross-analyze the data of both methodologies to identify if results were similar, or if some differences arose between the attributes and archetypes chosen. The relationship and comparison between the two methodologies is an interpretation of the research team, therefore subjective.

Firstly, the fact that the personalities between the four VAVA's had so few differences in the general view of the attributes and archetypes for the current VAVAs, was a first indication that a relationship may exist between the two methodologies. The *Sage*, as the most prominent archetype in all VAVAs, connects to attributes most chosen for the VAVA's current personality sample such as *Practical, Informed and Logical.* However, other attributes that could be associated to the *Sage* archetype, such as *Intelligent, Rational* and *Objective* were not in the most chosen traits. At the other end of the spectrum, the least chosen attributes for the VAVAs, like *Sweet* and *Sentimental*, could also be linked and endorsed to the least chosen archetype, the *Lover.*

Secondly, when splitting results into the different VAVAs some aspects have also drawn our attention.

Siri, for example, is the VAVA that stands out as the closest to the *Sage* and *Innocent* archetypes, yet the attributes chosen by its users are *Well-Mannered* and *Helpful*, which stray from the core traits of the previous mentioned archetypes. For Cortana, a similar case occurs, as Figure 6 shows, when it is linked to the *Creator* archetype, although more *Sage*-like attributes are at the top of its user's list, for instance *Informed* and *Practical*. In the case of Alexa, a relationship between both methodologies can be appreciated. In comparison with the other VAVA's, Alexa has the least selection of the *Sage* archetype, even though is still the most chosen. When reviewing the attributes selected, it is the only VAVA which does not include *Logical* in its top selection, while *Informed* drops down to 4th compared to 1st and 2nd position in Cortana and Google. Nonetheless, the most chosen trait, *Helpful,* and the one Alexa has than none of the others do, *Kind*, are not characteristics included in the various descriptions of the Jester, where Alexa stands out from the rest of the VAVAs. Lastly, Google peaks on the *Explorer* archetype and, even though by very few, surpasses the other VAVAs in *Ruler*. This could be related to its top traits *Practical* and *Informed*.

When comparing the attributes chosen as indispensable and the archetypes that described the desired VAVA, the two methodologies seem to converge on similar results. Once again, the *Sage* was the most selected archetype by the complete sample, which relates closely to all of the top five attributes selected as indispensables for the desired VAVA: *Reliable, Informed, Intelligent, Objective, and Practical.*

Additionally, as it happened with the attributes methodology, in the archetype methodology the differences between VAVAs varied much less than in the current personality perception. In a more detailed view of each VAVA, other aspects strengthen the linkage between the two methodologies. For example, Siri's users, as with the current personality, chose *Sage* as its more prominent archetype, which can be linked to all of the top five attributes chosen. This shift of *Sage*-like attributes could also be related to the fact that, differently from their current personality choice, the *Innocent* archetype was less selected as a desired archetype. Alexa's respondents, in both methodologies, show a connection between attributes and archetypes. They included an attribute that is part of the *Close* factor, such as friendly or amiable, in the top 5 indispensable, which may be linked to other Alexa users that chose less *Sage* as the desired personality and more *Explorer* and *Every Man's* archetype, compared the other VAVA users.

6. CONCLUSIONS

People are used to interacting with technology and expect it to perform well. However, as time passes and VAVA adoption is escalating in society, it becomes more important for organizations to start considering that their VAVAs are not just neutral technologies. Precisely because they use a type of interaction, voice, that is only related to human beings, emotional connections start to arise. This study was aimed at exploring people's perceptions around personality of VAVAs from two different personality evaluation perspectives, and the methodology of this study has helped to identify a series of learnings and considerations. Firstly, this study has demonstrated that brand focused personality evaluation frameworks, such as Aaker's and Jung's, are perfectly suitable to evaluate artificial intelligence applications such as VAVAs. Secondly, it has also shown that, no matter the framework used, results appear rather similar, which strengthens the idea that, when interacting with technology, personality traits always come across rather clearly to the user. Consequently, this study has demonstrated that it is not only important to perform well but to transmit a suitable personality that meets users' needs and desires both for the present and the future.

7. FURTHER RESEARCH

This research study has suggested potential applications of personality perceptions and desires in general voice activated virtual assistants so it becomes of interest to explore its application in more complex interactions, such as what should the behavioral change for emotional health and wellbeing.

This research study is crucial for developing a future suitable systems design that can meet users requirements not only for the UX but also for marketing, design, cognitive, product and delivery point of view.

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