The role of brand ambassador & consumer past technological behaviors on people's interpretation and representation of running activities.

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Abstract

Title: The role of brand ambassador & consumer culture on people's interpretation and representation of running activities.

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Despite the pandemic, we have observed an increase in the practice of running. As people added this activity to their routine, they also wanted to track each run, using multiple apps. Existing literature shows that through the scope of self-expansion theory individuals tend to seek a role model that has high social status and a greater number of resources. Through this logic, we wanted to determine how people will perceive an app depending on the type of skill of the ambassadors. The objective was to ensure that different stimuli, would be perceived somewhat differently, depending on the character presenting it. We introduced two independent variables in this study. The *type of brand ambassador* with one having a strong expertise in health (doctor) and the other one having a clear connection with running activities (athlete). On the other hand, we have the *goal of the app* which can be related to health or performance. It is important to note here that those two app were fictitious. This study adopted a 7-point Likert scale questions to really understand the tangible impact that brand ambassador has on runners. Testing our main hypothesis, we found a significant correlation between the app's goal and the ambassador's characteristics regarding adoption. Our control group also had lower trust in the app, whichs show how impactful the introduction of an ambassador can be on consumer response.

Keywords: Self-Expansion Theory, Brand Ambassador, Consumer Behavior, Running Application, Brand Image.

Resumo

Titulo: O papel do embaixador da marca e da cultura do consumidor na interpretação e representação da corrida.

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Apesar da pandemia, temos observado um aumento na prática de correr. Como as pessoas acrescentaram esta atividade à sua rotina, também quiseram seguir cada corrida, utilizando múltiplas aplicações. A literatura existente mostra que, através da teoria da auto-expansão, os indivíduos tendem a procurar um modelo que tem um elevado estatuto social e um maior número de recursos. Através desta lógica, quisemos determinar a forma como as pessoas irão perceber uma aplicação, dependendo do tipo de habilidade dos embaixadores. O objetivo foi assegurar que diferentes estímulos, são percebidos de forma um pouco diferente, dependendo do carácter que os apresenta. Introduzimos duas variáveis independentes neste estudo. O tipo de embaixador da marca, um com uma forte especialização em saúde (médico) e o outro com uma clara ligação com actividades de corrida (atleta). o objetivo da aplicação, que pode estar relacionado com a saúde ou com o desempenho. É importante destacar que estas duas aplicações são fictícias. Este estudo adoptou uma escala de 7 pontos de Likert para compreender realmente o impacto tangível que o embaixador da marca tem sobre os corredores. Testando a nossa hipótese principal, encontrámos uma correlação significativa entre o objetivo da aplicação e as características do embaixador relativamente à adoção. O nosso grupo de controlo também teve menor confiança na aplicação, o que mostra o impacto que a introdução de um embaixador pode ter na resposta dos consumidores.

Palavras-chave: Teoria da Auto-Expansão, Embaixador da Marca, Comportamento do Consumidor, Aplicação de Corrida, Imagem de Marca.

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LIST OF TABLES

1.Introduction

List of Abbreviations on the document:

HEAL: Health Goal App
PERF: Performance Goal App
ATL: Athlete Ambassador
DOC: Doctor Ambassador
NONE: None Ambassador

1.1. Introduction of the topic

Back in 2020, downloads of Fitness apps saw a crucial surge in Europe, rising by nearly 60% percent year-over-year. whereas user adoption was down in 2021 from numbers recorded throughout the peak of the pandemic in 2020, it remained considerably higher than pre-COVID levels. Fitness brands like Strava, Greek deity Run Club and Garmin, decided to increase their digital advertising budgets on Facebook as well as on mobile through mobile ads. In these ads several options and features were introduce to the users (e.g. social community, performance tracking...) through the prism of amateur & skilled athletes, boosting trust and self-expansion as we are going to see later in this paper. With users spending more time on their phones, fitness app might continue finance in creatives on mobile channels and need to determine the most effective way to do so to raise awareness and build brand trust & expertise.

While keeping those information's in mind, this thesis will try to answer clear research questions:

Research Question 1: What is the indirect impact of technological factors such as *Data Protection* on consumer appreciation and future adoption?

Research Question 2: Does an accurate presentation of an app (prior to the introduction of ambassadors) would impact the consumer's decision process afterwards?

Research Question 3: What is the overall impact of brand ambassador on people's interpretation and adoption of running app?

Before we proceed, it is important to define what we mean by ambassador. A brand ambassador is a person who contributes to the visibility and reputation of a brand, by putting forward its commitments and values in the best way. To have a positive impact, they must be credible in the eyes of the target audience and they must share common values with the proposed brand and product.

In this study we will explore relevant literature on several concepts examining clear concepts that directly impact consumer choices, from the self-expansion theory to brand trust & technological acceptance factor. Moreover, the methodology of the study will be clearly defined, followed by a deep analysis of the results of all studies carried on. Last but not least, this thesis will present its own discussions, limitations, future potential research, and main conclusions.

1.2. Main purpose of the thesis

As stated above a tremendous growth on the use of running apps has been observed the last few years, and with the growth of options in the market, few interesting challenges are now facing marketers. They have to find the primary elements that lead consumer X for choosing app A over app B, in order to gain market shares.

The purpose of this paper is to give insights into an unexplored topic that could redefine advertising in sport and affects consumer for the better. All along, the study we will try to determine and describe customer behavior when facing several types of situations & stimuli.

This paper is preceded by a thorough literature review from which hypotheses are derived. Then, the data collection procedure is explained, and the results are analyzed and evaluated. Finally, a conclusion and discussion of the topic follows.

1.3. Dissertation Structure

This paper is structured into 5 different chapters, where the first is an outline of the research problem and main research questions. The second chapter provides a summary of previous literature, while defining our main hypotheses. Chapter three describes the methodology and our main analysis during the data collection procedure. The fourth chapter provides an in-depth analysis of the findings while chapter five includes a complete conclusion and present the several implications of our findings, as well as limitations and recommendations for future research.

2. Literature Review

The adoption of running applications is complex and combines several influencing factors that deserve a comprehensive analysis. Thanks to this, we will be capable of concretely evaluating the impact of certain experts on the adoption of a brand while taking into account the particularities of mobile applications. All these analyses will provide us with a standard user profile (including their motivations & considerations) that will guide us later for the analysis of the effects that certain ambassadors can have on them.

This chapter is intended to provide some theoretical rationale into the problem. This theoretical exposure will point out the relevance of the topic under study and will present a better detail to future results.

2.1. The perception of sports athletes as a starting point for brand trust & human development (Self-expansion theory)

The self-expansion theory allows us to really understand the process of increasing somebody's potential efficacy in different ways. Nonetheless, this evolution is only possible through close relationships with others, using their resources for personal development (Gary W Lewandowski Jr. et al.,2013) One of the resources quickly identifiable in people's close interactions, is "social support", provided by family, peers and by supervisors (e.g. personal trainer, managers…) (Rob Franken et al.,2022) it simply shows that people are always seeking for motivation and inspiration coming from the outside, in order to give purpose to their commitments.

In the sport context this phenomenon could shape sport experiences both from a positive (e.g. athlete motivation levels, elite sport participation) and negative (drop-out) (Daragh Sheridan et al.,2014) With individuals always seeking a partner that has high social status and a greater number of resources, athletes can be an incomparable source of motivation, which will redefine our overall objectives (Johanna Vescio et al.,2005)

Athletes are becoming increasingly influential, having a significant impact on global consumers satisfaction & brand adoptions.

They act as a "source of credibility" which allow them to have an influential power on many aspects of the message transmitted to the audience "The variables found to interact with source credibility are categorized into 5 categories: source, message, channel, receiver, and destination

variables" (Pornpitakpan et al.,2004) However to have a significant impact, the ambassador as we choose to call them, must convey a meaningful message that matches their own profile "In two experiments, it is demonstrated that when people generate primarily positive thoughts in response to a message (e.g. because the message contains strong arguments) and then learn of the source, high source credibility leads to more favorable attitudes than does low source credibility." (Tormala et al.,2006)

The attractiveness, but also the expertise of those athletes can often craft the true identity of a brand/app leading to a change of behavior from their users (Fei Zhou et al.,2020). Understanding how they built their own "brand", and a strong storytelling around their image, helped us understand the persuasive mechanisms that are used to influence potential consumers. (Marie-Agnès Parmentier & Eileen Fischer, 2012)

On the other hand, analyzing the limits of their influence (ambassador) through the scope of specific objectives & the resistance to change (Marius Claudy et al.,2014), will help us define a clear consumer behavior model, which will be exposed to the promotion of technological progress (Tracking application)

2.2. The effects of expert and consumer endorsements

Several international brands like Strava, Nike Run... share one thing in common. They all use spokespeople to represent some of their products.

In 2022, in a world where we are constantly flooded with information and product suggestions, it's easy to think that having a well-known face to represent a brand is the best strategy to reach a large audience. However, it's not as simple as we might think. Basically, the idea of having a spokesperson is to personify a brand because it provides a retention force. It makes a brand more memorable.

The choice of the ambassador often depends on the message that the brand really wants to share, to be sure to remain in line with the values of the brand over time (long term vision). Behind a selection process, a whole strategy is put in place as the decision is key for the future of a brand. Often brands are looking for eloquent people with the ability to be authentic (Trust) and to share their own experience (Legitimacy lead to adoption). They will also look for someone who has lived a similar story, or someone who has a particular credibility in a domain (e.g. sport, music, entrepreneurship...) which will allow a more efficient transmission of the advertising message and will trigger a strong feeling of identification among consumers (i.e.

Adoption). If we take the example of sports, athletes are the vehicle for values associated with positivism, performance and optimism. It also refers to notions of discipline and team spirit, which will modify the ambitions and objective set by the user. Moreover, athletes have a special status in society. They are adored by thousands, sometimes even millions of people. They can therefore provide almost instant visibility to a brand. (Yoon et al.,2015).

"Regular people" who serve as spokesmen, can be effective at humanizing a brand and arousing empathy. Many respondents looked up to well-known Doctors and business founders and saw them as role models or a source of legitimacy due to the context. (Fleck-Dousteyssier et al.,2014)

However, the characteristics of the spokesperson must be examined in parallel with those of the target audience. Choosing to use a person from an unpopular group (e.g. a doctor, nurses) with the target audience could have negative consequences, unless there is a congruence between the personality used as a spokesperson and the element being advertised (Park, 2015). Furthermore, a spokesperson who adheres to a cause in an altruistic and selfless manner is more effective than one whose participation is guessed to be related to financial or self-promotional motives. Park and Cho consider it essential that the target audience perceive that a spokesperson's involvement is linked to a genuine commitment to the cause and its values.

2.2.1. The concept of Brand Trust

Several conceptualizations of brand trust have been found in the existent branding literature. Brand trust is defined as perceptions and expectations that are based on beliefs that a brand has specific features and traits who are consistent, competent and also credible to the potential consumer. We can say that, it is the arbitrator for long-term relationships, which lead later, to brand loyalty. In fact, "brand trust is rooted in the result of past experience with the brand, and it is also positively associated with brand loyalty, which in turn maintains a positive relationship with brand equity" (Ballester et al.,2005)

To this end, (Garbine & Johnson.,1999) suggests that brand trust is an outcome of previous experiences and interactions and it mirrors the process of learning over time. (Morgan & Hunt.,1994) describe brand trust as an important factor in building loyalty as it establishes relationships that are considered with high value.

Brand trust is seen as a phenomenon based on the ability of the brand to continuously meet its own obligations. Consequently, high levels of trust in a brand enable customers to reduce perceived risk (S. Ramesh Kumar & Jai Advani.,2005).

2.3. The mobile application (design)

Mobile devices are no longer just for calling or texting, being used for a variety of nontraditional phone activities, from looking for a job to taking pictures. The smartphone has become essential for many users, as almost half of the owners said they "could not live without" it. (Melumad & Pham, 2021).

Compared to a normal mobile phone, smartphones have way more functionalities due to their ability to have and run mobile apps (Rakestraw et al., 2013). Mobile applications, or apps, are designed software programs, developed specifically to run on a device with specific functionality, and can be downloaded onto a phone via the internet (Cummings et al., 2013). It has become an indispensable part of our lives, as it facilitates a lot of parts of our lives.

In 2020, there were 218 billion global mobile app downloads (Statista, 2021b). By having different apps, and different app categories, it is also expected that there will be different capabilities to stimulate involvement, "due to their unique characteristics such as complexity, perceived risk, emotional appeal, and hedonic value" (He et al., 2019).

2.3.1. The running apps particularities

The market for sports applications is at the intersection of the e-health market, in other words it's all the technological innovations that allow people to stay in shape or assist health professionals in their work. The market is relatively young since it only appeared with the real emergence of the first smartphones - less than ten years ago - but it has become a particularly effective tool for athletes as well as amateurs.

In the last few years, a large number of sports applications for smartphones were developed for supporting a healthy lifestyle by not only encouraging people to follow a balanced diet but also to motivate them to engage in physical activities. In particular running applications received increasing attention in research in recent years. In fact, these types of apps include the "Quantified Shelf" tool, which allows you to track your performance for the sake of curiosity, health or performance. (Rita Kukafka,2021)

Most apps, among other things, track a user's jogging path and provide feedback on performance in terms of distance run and altitude variations (Bauer, 2013). The majority of these running apps' user interfaces rely on visual features to allow users to interact with them and learn more about their physical activity (Senin et al., 2019). Along with the numerous features, there are a lot of different running apps in the market.

Nowadays, the number of running apps is still increasing, with the features being constantly updated and improved. Adidas Running by Runtastic, Runkeeper by Asics, Nike Run Club, Map My Run by Under Armor and Strava are the current leaders of the market. (Men's Health, 2019; Google Play, 2020).

2.3.2 The running applications available on the market

It is not always easy to identify the comparative advantages of each of the apps available on the market, as each app seems to offer the same main features: distance covered, average time per kilometer, GPS location with details of your route, but also the tracking and details of your activity within the app. (Janssen et al., 2017)

However, each user has different goals, some are just starting to run or returning to the sport to get back in shape, in this case they prefer simple running applications with little data, but clear and motivating progress levels. On the other hand, the most complete applications will satisfy higher level runners, with higher performance objectives.

Here is a non-exhaustive list of the main running applications currently on the market, which will allow us to position our two new applications in the current global market (FunRun, Runtastic)

Nike+: an application to run comfortably

The Nike + Running application is rather for amateur runners. Fun, musical, it is also very oriented towards social networks, using the large community of runners to motivate users.

RunKeeper: The most accessible and most used application

The Asics Runkeeper application is easy to use. The app allows you to track your pace, energy expenditure, distance traveled and your progress live with audio commentary. Perfect for those who prefer to enjoy the scenery rather than have their eyes glued to their smartphone.

Adidas Runtastic: An application approved by the pros

Adidas Runtastic is more like a personal trainer that schedules training sessions, follows your progress and encourages you when you feel sluggish. The app is slightly less aesthetic than the previous applications, in fact Runtastic measures almost everything! (It is the most complete application) Between altitude, running speed and the usual pace per kilometer, it is easy to get lost as a beginner.

Strava: a social application to share your performance

Strava is all about social networking and competition. You create your community of friends with whom you measure yourself and compare your performances. It also sets challenges on segments of courses. The app is connected to major races (marathon, trails, etc.)

Note that applications like *Garmin Connect* will allow the user to synchronize its connected accessories, and will allow him to export his different data on the applications listed above.

2.3.3. The "Self-Tracking" function & limitation (technological acceptance)

By sharing data linked to their performances, users feel a strong social peer support. In addition of sharing, they can also compare and have the recognition of their own peers. These characteristics/possibilities completely change the sometimes-rigid behavior of users who will in turn be more open to sharing private data, and to their daily activities/movements. (Veera Ehrlén.,2021)

A clear link was also found between the tracking function and the overall motivation of the users, especially on goal-oriented objectives such as running a marathon at a certain pace... Fixing specific goal correspond to more experienced runners, who naturally fix milestones and have the desire to surpass their past performance when having access to multiple indicators (i.e. Data)

On the other hand, we only have a limited number of research who tried to determine the adoption of tracking measures when the user have no specific goal in mind. But we can assume that novice runners will be less attracted by this tracking system as fitness trackers seems to make the task feel more work-like (Etkin,2016) Prior research has also confirmed the effectiveness of fitness tracking technologies in increasing users' physical activity level (Cadmus-Bertram et al. 2015) which could benefits and reinforce goal directed activities.

It seems that people are more engaged and aware of their health (Tamar Sharon, 2017) with users significantly increasing their positive emotions, sense of accomplishment, or quality of

life (Well-being) but (Etkin, 2016) has found a negative impact of fitness trackers on subjective interpretation of feeling, own happiness and overall satisfaction. According to another research we found out that users have a high propensity to trust the features proposed (stair counting, workout tracking, goal setting, or social features) Even though measurements used in self-tracking tend to be relatively simple and limited compared to the real-world phenomena. An "over-trust" of the data can lead to a drastic change on the diet and lead to overtraining, or cheating if there is a reward system link to the app. (Elisabeth Kersten.,2015)

2.3.4. Impact of external actors on self-regulation

Participants pursued and transitioned between different running goals as their needs, abilities, and surrounding environment changed (Armağan Karahanoğlu.,2021). One can conclude that defining these specific goals is key to self-regulation. This way, the user will have a clear path to follow, allowing him to monitor and manage his own trainings.

However, this definition of goals is often defined by a third person who will raise awareness on different aspects related to well-being and performance and shape the behaviors that will lead to the achievement of that goal. "Fitness instructors, physical education (PE) teachers, and dieticians can use very different rationales to convince these individuals to maintain or increase their exercise behaviors. Some suggest that exercising contributes to physical fitness and health, so that individuals ultimately feel more physically active and energetic." (Vansteenkiste et al.,2007) With this logic, the ambassadors will adapt to the needs of each person by pushing them to achieve different goals.

Despite the use of the application that could guide them through high performances, the user wants to be guided by an external factor that could weight him to another "level" Overall, we can affirm that individuals have always seeking inspiration from other's person, that has been a way for them to get an incomparable source of motivation. This influence has been measured over time and used by certain brands to convey messages and change behaviors, notably by using renown athletes. However, each individuals seems to respond differently to those stimulus as they build up their own aim and goals over time, from staying in shape to running a full-marathon under a certain time for example. In addition to this, the arrival of technology and sports applications, makes the individual even more aware of his own performance and progress, so here we want to assess the new impact of brand ambassador and the logic behind the choice of a certain app goal by the user. Here the question is to determine if the impact of

qualified individuals (i.e. athletes, doctors) is still significant for those who embrace this technological shift.

2.3.5. Data and transparency, a necessity for the user

The data analysis features presented in several apps allows for the monitoring of running training according to volume, intensity, density, recovery, fatigue, sleep, mood or stress. (Peart et al.,2017) The objective is, this time, to optimize and individualize the programs according to the recovery capacities, but also to work on the prevention of injuries.

However, we must be aware of the limits of the data. There are human limits (cognitive bias), technological limits (measurement and restitution bias), conceptual limits (prediction errors), and even ethical limits. Here, we are going to focus on the last point.

The several running apps available on the market learn and already know a lot about the user over time. They collect information related to health data such as the height and weight of the person. These information's will then be used to calculate how many calories you burn for example. They can also track your workout route from door-to-door, thanks to precious information given by the GPS trackers (e.g. past and current position)

Millions of runners around the world regularly share information about their several activities with other users of sports apps such as Strava or NikeRun. The apps do allow users to hide certain privacy-sensitive information, such as the location of a place to live or running paths, but researchers have found that this option, called endpoint privacy zones, is not so foolproof after all.

The researchers analyzed more than a million Strava activities and were able to figure out up to 80 percent of the hidden locations, based purely on the additional data that was made public. 'The overview of your protected activity still contains so much data on, for example, distance traveled and route taken that, in combination with a street map, it still reveals your point of departure or arrival. (Karel Dhondt,2015)

The elements listed above cumulated with the recent scandals related to the involuntary disclosure of user data, have considerably upset the trust and goodwill that users had in these new technologies (running application, and connected tools)

Indeed, the non-profit organization Internet Society and the association Consumers International unveil with Ipsos Mori a study on how the general public apprehends the intrusion

of connected objects in everyday life. 86% of adults surveyed want the establishment of a "legal framework" by governments, "dedicated to the security and privacy for IoT", or connected objects. 73% of them "are afraid that their data will be exploited without their prior consent" This exposes the current context, and the need to take ethical initiatives to insure a new start. (Internet Society, 2019)

2.4. COVID-19 and its impact on app use

While the Covid 19 pandemic has had a negative impact on many parts of the economy, it has stimulated others. In particular the mobile application economy, as well as the practice of running. In fact, the health crisis and the confinements have changed many of our habits.

The Nike Training Club app (free access), is a perfect example, as it ranked second globally (worldwide) in terms of downloads (in the week following the first lockdown announcement). One can say that the increase in demand has pushed brands to develop their own applications, offering state-of-the-art technology that can differentiate themselves from the strong competition. Strava for example, implemented new features in order to be able to meet the current needs of customers while showing their Sens of innovation to prospects. The goal was to conquer the ultra-connected Millennials by building-up difficult barriers to entry for the new brands coming into the market.

The reason of this high demand during COVID period, can be easily explained by the fact that consumers were seeking to combat the anxiety and stress associated with this unprecedented situation of confinement (Julia Lee Romero & Qin Lv, 2022). The idea is to maintain these behaviors by trying to determine a profile of post-covid users taking into account the other external elements mentioned above:

Our first two hypotheses are exploratory. They will allow us to use a qualitative approach mainly based on our secondary research. For us it is a way to obtain a global picture (more insights) in order to analyze other factors that may alter users/respondents behavior.

(H1) Data Protection is the most considered *technological factor* when using an app, in fact a high consideration for Data Protection will often lead to a lower *Trust* for a new app.

(H2*)* *"Interaction with community"* and *"Individual dashboard of performance"* features will be considered equally by the respondents as they are already part of current app linked to performance and will then lead to a higher adoption of Performance Goal App.

Main hypotheses

Here are our 3 main hypotheses that we will be tested through the research in order to see the direct impact of ambassadors and app goals on application use.

(H3) A higher *Trust* for Health Goal App (FunRun) will lead to a higher *Trust* in the the ambassador presented.

(H4*)* We hypothesized that Athlete ambassador will lead to a higher *App Adoption* for the Performance Goal App and Doctor ambassador will lead to a higher *App Adoption* for the Health Goal App.

(**H5)** We also proposed that respondents having an ambassador (regardless of the type of ambassador) leads to higher trust than the no ambassador condition (control group).

3.Methodology and Data Collection

This chapter will describe the methodology applied for this dissertation. This part will include, procedure, materials research objectives and approaches, the research design, data preparation process. After having collected secondary data during our literature review, it is now, the time to collect primary data, in order to make concrete and feasible conclusions from this study.

3.1. Study design

In this experiment we are going to use an experimental design. so that precision is maximized and clear conclusions can be made regarding our hypothesis.

Concerning the design, it is a 2x3 Mixed-Subjects Design, with within-participants "Health Goal" and "Performance app" (repeated-measures), and between-participants with a randomly allocated ambassador presenting the apps, or nobody presenting them (*control group*)

Table 1:

Research design

Running App	Ambassador
Health Goal	Athlete
Running Goal	Doctor
	None

Using a randomizer, participants will be presented the two apps either by a professional athlete (Athlete ambassador), by a doctor (Doctor ambassador) or by nobody (None Ambassador). By combining within & between participants, we do not compromise our results and will be able to better understand the effect (i.e. causal relation) of the independent variables on our dependent variables.

This way three scenarios will then be randomly presented.

- - doctor/health goal app & doctor/performance goal app
- - athlete/health goal app & athlete/performance goal app
- - no ambassador (control group) health goal app & performance goal app

3.2. Materials

The present study used experimental quantitative research approach; the purposes here is to test the defined hypotheses. Here we are trying to determine the behavior of runners knowing their running habits, current use & technology acceptance (looking for relationships between variables) with the objective of establishing a cause-and-effect relationship.

The goal was to only keep the respondents who practice running, so a question was set at the beginning to properly filter our sample (Do you practice running?) Later on in this study we really tried to understand the judgments and identify the several behaviors of people depending on their frequency of running. As well as, understanding the role of brand ambassador in the running activity & app adoption. Taking into consideration that the current app used by the participant's (e.g. Strava, Nike Run…) could also have an important impact on the participants final decision as some of the features presented in the two apps, are somewhat similar to those applications.

In the experiment, the participants were presented with a scenario-based experiment, as explained above, the objective of this study was to ensure that different stimuli, meaning different running apps, would be perceived somewhat differently. In short, participants perceptions on the apps will depend on the type of ambassador and on the goal/frame of the app. All measures (i.e. No trust -Extreme trust / No considered - Highly considered...) were assessed through seven-point bipolar semantic differential scales.

It is also interesting to note that we have decided to also keep the runners who do not use a running application and/or connected object. (Are you currently using a smart watch / sports app to track your performance?)

Keeping those respondents is essential to identify the impact that ambassadors can have on them as well as determining the key elements that will allow brand adoption in the foreseeable future. Logically, this part of our sample will not be exposed to the questions related to current usage of apps / Technology acceptance.

Both independent and dependent variables were defined, as well as control variables, manipulation checks, and demographic variables. As the design will present different application to the same group of participants, it is important to make sure that the differences between conditions in the main study are due to the independent variables (i.e. through manipulations) and not due to other elements.

Independent variables

The first *independent variable* in this study is the type of **brand ambassador** (i.e. Athlete/Doctor/None) with the introduction of two individuals highly recognized in their respective fields. Participants received a quick description introducing the achievements & experiences of one of the ambassadors, so the responded could really identify their field of expertise and on the same time, assess their professionalism. This way we were able to add context to the study, so that participants could really determine the precise expertise and professionalism of the ambassador presented. The idea was to give both clear and strong credibility to these actors, before the introduction of the two distinctive applications. One group didn't receive any treatments, it was a way to define our "control group" that will allow us to enhance the internal validity of the study by reducing the influence of confounding and other extraneous variables (Scribbr, March 2021)

The second independent variable is the **goal of the app** (Runtastic/FunRun) These are non-existing running applications with two distinctive functions & use. On one side you had Runtastic, an activity-based social media platform, fully analytical focusing more on pure performance and achievement. On the other side you had FunRun an app focusing on wel fare, health & lifestyle with specific feature such as stress metrics.

During the study we are going to use other names to qualified those two variables, Runtastic will be called **Performance Goal App** while FunRun will be called **Health Goal App**. This way, it would be easier for the reader to properly interpret and understand the manipulation of the data.

Participants were asked to express their trust and willingness on the two apps presented knowing the specific context and brand ambassador representing it. In fact, the featured influencer was in charge of giving some personal opinion on the featured apps, by sharing his thoughts and honest opinions. The idea here was to really assess the impact of those combinations on the user's adoption & preferences.

Dependent variables

The *dependent variable* includes the complete analyze of technological acceptance factor, app trust app adoption as well as health importance. This way we were able to measure and build up customer behavior model that could condition their response afterwards.

To measure **technological acceptance,** we focused mainly on the "self-tracking" function, here we first wanted to determine the importance of this function in the overall use of a running application, as well as the key elements making this function a must. That could really allow us to identify which specific factors influence people's intention to take actions. In order to get this data, participants were asked to rate the importance of the Self-Tracking tool when using a sport running app. While considering the tool itself, participants had also to consider certain characteristics that implies this feature (Ease of use, data protection...) To better understand the use of this variable, please find more details below.

- **Self-Tracking Consideration**

  To evaluate this element, we firstly defined the notion of Self-tracking to enhance clarity and understanding of the whole survey. Then we asked the following question: To what degree do you consider/use this technological feature through the use of your running apps? Using a Likert Scale (7 point)

- **App Characteristics**

  To evaluate this element, we introduced 4 different characteristics that are key to user adoption when choosing a running app on the market. Ease of use, Data protection, Interaction with a community, individual dashboard of performance. We also use a Likert Scale (7 point) to collect answers.

This way, we could clearly assess precisely the limitation and the impact that technology could potentially have on our final decision. Here, we can except a very high score on data protection for all the users due to the several scandals related to data leakage.

We also expect to see a high score for the factor "Ease of use" as we mostly interviewed amateur runners (i.e. running once a week) wanting to have as few complications as possible, even if it means not having certain performance indicators available (Daphne Menheere et al.,2020)

Thanks to our secondary research we discovered that athletes are becoming increasingly influential, having a significant impact on global consumers satisfaction & app adoptions. So, in order to measure **trust**, participants were asked to rate How much trust they have on both running apps & on the ambassador presented in a scale from 1 = No Trust at all to 7 = Extreme Trust. Also, to measure potential **app adoption** participants were asked to rate How much are they willing to use this app? in a scale from 1 = No willingness at all 7 = Extreme willingness.

Last but not least, to measure **heath role & importance**, participants were asked to rate How much are they concerned with their health currently, in a scale from 1 = Not at all to 7 = Extremely concerned. We assume here that the attractiveness, but also the expertise of both ambassadors could be significantly diminished by the user's own knowledge, awareness of their own feelings as well as their resistance to change (Marius Claudy et al.,2014).

<u>Manipulation checks</u>

In the survey, we also introduced two *manipulation checks*, the first one aimed to evaluate the understanding of both apps presented to the participants earlier (Performance Goal/ Health Goal) thus, we asked the respondent "What is the main goal of the app presented?". Participants had to answer "Improve Physical & Mental Health" after the introduction of Health Goal App

(FunRun), while later, the same questions were asked but this time about Performance Goal App (Runtastic), the expected answer was this time "Improve Sport performances" as the app was largely presented as such.

Moreover, in each of the scenarios - athlete or doctor ambassador (random and fair allocation through the use of a randomizer) Participants would have to identify the ambassador's actual and exact job title. Four different types of occupations were included in the multiple-choice format of the question (Doctor, Athlete, Influencer on Instagram or CEO) Indeed the right answer was crucial here, as the profession of the ambassador will have a key role on the adoption as well as on the trust given the respondent to the several stimuli of apps 1 & 2.

To evaluates the efficacy of our experimental variables and verifies that our manipulation affected the participants as intended, we tried to determine if the main goal of the apps presented were really understood by the different respondents of the survey. For that, we asked the participant to answer the following question: What is the main goal of the app presented?

Table 2:

Manipulation Check about the app presented

What is the main goal of the app presented?	
Right answers	93.78%
Wrong answers	6.22%

<u>Control Variable</u>

Based on our literature review, we identified one variable that could potentially influence our final outcomes of this survey. We decided that this variable would be the **running habits (**control variable) with participants asked to rate their frequency of running, the app they currently use (*Which app are you currently using?)* as well as defining their main objective when running, using a multiple-choice format. (See Table 3)

It is also important to note that the control group were only asked the two questions related to the presentation of the applications ("What is the main goal of the app presented?")

Table 3:

Participants objective when running (Control Variable)

What is your main objective when running?	
To maintain my shape & weight	23,07%
To feel better (mind-body)	43,95%
To surpass myself (goal-oriented)	31,86%
Other reason	1,12%

These behaviors can modify our propensity to adapt our own current behaviors, regardless of the other stimuli that may be presented to the respondent through our experiment (use of Brand Ambassador, description of apps, etc.) Those questions were precisely introduced before the introduction of the experiment, in order to not be affected by any dependent environmental inputs.

3.3. Procedure

Before starting the survey, to obtain their consent, participants were informed regarding the purpose of the study, and they were able to drop out any time; it was highlighted that by continuing the survey, they agreed with the consent form.

The data were collected using Qualtrics, which did not collect any personal data, and all participants received a random response ID. Data collection started on the 26th of October and finished on the 12 of November. The questionnaire was composed of 5 sections in total: Introduction (1), Control variables (2), Experimental condition (3), Manipulation Check (4) and lastly Demographics (5).

One of the two surveys created have been randomly and equally distributed among participants (30 for each group) Using a randomizer, participants will be presented the two apps either by an athlete ambassador or by a doctor ambassador. Participants were asked about running habits, technology acceptance factor & app adoption (including trust) It is important to note that the technological acceptance factor intervened before the introduction of the two ambassadors.

Then they were asked about the main goal/purpose of the app presented as a manipulation check, it was a way to determine the effectiveness of our previous manipulation.

Before finishing the survey, participants were asked their age, occupation, gender & age (demographics) At the end of the survey, participants were reached a thank you note with contact information in order to reach out and ask questions regarding the study.

The survey was spread and shared through social media channels. Beforehand, we conducted a trial run of both studies to make it as user-friendly and streamlined as feasible. At the end of the survey, participants could point out potential errors on the design or on the relevance of the questions presented. The several suggestions were then gathered and included into the design. Moreover, the questionnaire was based on the insights obtained through the literature review. Participants had to answer every question in order to process the other questionnaires and complete the survey.

Despite the fact that the result offers sufficient details to support plausible hypotheses and arguments. The scope of the study is still limited to an academic setting; therefore, it cannot be compared to a professionally done study.

All participants received a random answer ID. The Data was collected on online surveys suit Qualtrics and the results were gathered there as well, which did not collect any personal information. Data collection began on October 15 and was completed on November 10.

4.Result and analysis

The data was extracted and processed in Excel after the survey was closed. The data was then examined in SPSS (Statistical Package for the Social Sciences).

Before performing any statistical analysis, the data set was checked for anomalies by looking for outliers, filling in any missing values, and verifying any assumptions. Here, reducing their influence on the data set was the major objective.

4.1. Participants

122 participants completed the survey online over a two-week period. Out of the 122 participants, 108 were runners and completed the rest of survey after the triage. In order to reduce noise to the study (e.g. uncompleted and illogical answers) we decided to keep 91 answers in total which are fully reliable for further analysis. We used a strategy of convenience,

in which invitations were sent to people belonging to networks associated with sports and running on several platforms such as reddit, WhatsApp, Facebook groups.

Online data collection enables a cost-efficient, easy, and quick collection of data. These participants were volunteers, that could understand English, as the test was written in that language. Of the total of participants, 47 were male (51,65%) 43 were female (47,25 %), and 1 respondent didn't want to be identified. The average age of respondents was 28 years-old.

Out of these respondents 41 are currently employed (which correspond to 45% of the total sample), 15 are self-employed, 29 are student and the remaining 6 respondents are currently looking for a job. We decided not to collect the nationality of the respondents as it was not crucial for segmenting our audience as well for the analysis of our future results. However, it may be interesting to note that the questionnaire was shared at the European level via different channels mentioned above.

To test our hypotheses, we manipulated the app goal within subjects and the type of ambassador between subjects, we defined a sample size based on the minimum of 30 participants per group (3 groups in total) to ensure a normal distribution, as defined by the central limit theory. As two distinctives groups were introduced, we would need 90 participants in total.

4.2. Hypothesis Testing

After briefly mentioning our two exploratory hypotheses through the scope of the technological acceptance variable, we will explore our main findings, while taking into considerations our three mains hypotheses. For **H3** and **H4**, we are going to assess the impact that *ambassador* and *goal of the app* can have on consumer final decision (adoption/trust). While **H5**, we will focus our analysis on the control group by trying to determine their abilities to trust a new app, as they do not have any touchpoints with the two ambassadors presented. The goal here, is to test our hypothesis by considering the main effect that the app goal (Health or Performance focused) and ambassador can have on respondent's decisions.

To make the analysis relevant we are going to use two main techniques:

- The **paired-sample T-test** technique, will help us understand the main differences between the conditions, by testing their means.
- **The 2 by 3 repeated measures ANOVAS** technics will test potential interaction between the independent's variables and the dependents one's (interaction effect).

Technological acceptance

To better understand the effects of ambassador and app goal, we needed to make sure that participants in the three distinctive groups have the same acceptance level with technological features/functions. This way, we make sure that the differences found in the main variable cannot be explained by the use of different groups but by our manipulations.

First of all, it is relevant to compare doctor, athlete & no ambassador conditions here in a paired sample t-test, in order to test the homogeneity and coherence of our 3 groups. Ideally, they should answer in the same way, as they were assigning a questionnaire in a random way.

In order to make the analysis more relevant, we firstly grouped the 4 items (constituting the technological acceptance factor) in order to obtain an overall average for each surveyed respondent. This analysis revealed no significant difference between the conditions. In fact, we did not identify any significant difference in the average of the technological acceptance scores for the Athlete ambassador condition ($M_{ATL} = 5.02$, $SD_{ATL} = 0.82$) for the Doctor ambassador condition ($M_{DOC} = 4.96$, $SD_{DOC} = 0.719$) as well as for the none ambassador condition ($M_{NONE} = 4.85$, $SD_{NONE} = 0.484$) ; $t(26) = 25.33$, $p = < .001$.

We will now use the average of the 4 factors, to better understand the logic of the results that will occur after the introduction of the stimuli (presentation of app & ambassador) . It is important to mention here that this dependent variable operates before the presentation of the different stimuli (presentation of the applications). Having only one independent variable (ambassadors) the univariate analysis of variance was performed.

Table 4: Ratings of "Technological Acceptance" variable (4 items) ambassador condition.

	Technological Acceptance	
Ambassadors	*M*	*SD*
Athlete	5.01	0.82
Doctor	5.00	0.71
None	4.85	0.48

This table shows a consistent mean value of the technological acceptance factor around 5 (out of 7) on the three experimental scenarios, meaning that our sample have a tendency (from the user) to strongly consider each criterion of a running application in order to get an optimal user experience.

As previously mentionned in the study, the *technological acceptance* was measured in two parts (4 items in total). In fact, we made the distinction between the "Ease of Use"/ "Data Protection" criteria's which are defined as *"Convenience factors"*. Those criteria are mostly considered by beginner runners due to a lack of knowledge and expertise in the field.

On the other side, we defined "Interaction with community" & "Individual dashboard of performance" as *"Motivational factors"* that were created to foster a healthy lifestyle by motivating individuals to achieve their greatest level of performance while also urging them to follow a balanced diet. (Bauer et al.,2015)

The Convenience factors

As Cronbach's alpha is commonly used when you have several items (including multiple Likert scale questions), we are now going to use the Pearson's Correlation analysis (Ahlgren et al., 2003) to calculate the correlation between these two items. We decided to report the results on the table below:

Table 5:

Reliability Analysis on "Convenience Factors"

Correlations	
Pearson Correlation	**Sig. (2-tailed) or p-value**
0,716	0,543

As we can see, the correlation for the convenience factors is not significant, which may indicate a large difference in consideration between Ease of use and Data protection.

On the other hand, we observed a high consideration for Data protection (M = 4.97) As this factor (Data Protection) can be a determining and a deterrent factor in some cases, it may be interesting to evaluate its impact on the trust that a user may have towards a new running application recently released on the market. In order to confirm our first hypothesis, we decided

to conduct a paired-sample t-test again. For that we decided to sort the answers related to data protection into two parts. On the one hand the answers ranging from 1 to 4 (Low Data Protection), on the other hand the answers ranging from 5 to 7 (High Data Protection). This would enable us to quickly determine whether the degree of importance of this criterion had or had not an effect on the user's trust for both apps.

Thanks to this analysis we can confirm now that there was a significant difference between the condition means. In fact, we identify a significant difference in the average Trust of the Health Goal App when the respondents considered highly the importance of data protection. (M_{HEAL} = 4.06, SD_{HEAL} = 1.300) compare to a respondent with a low consideration (M_{HEAL} = 4.20, SD_{HEAL} = 1.584); t(49) = 8.614, p = <.001

These outputs confirmed perfectly the elements listed on the literature review. Respondents' knowledge of past scandals combined with a lack of transparency from the brand constitute a major barrier for user final adoption. One can conclude that the recent involuntary disclosure of user data, have "considerably upset the trust and goodwill that users had in these new technologies (running application, and connected tools) "

The Motivational factors

According to Ahlgren et al. (2003), the Pearson Correlation r value, which ranges from -1 to 1, indicates how strong the association between two elements of a question is. In our experiment, the r-value is above 0.5, indicating a strong positive correlation between the variables according to Cohen study (1998). On the same time, the p-value is 0,000, indicating that there is a strong correlation between the two elements presented.

This shows that the motivational factors (one of our main variables) are correlated and can be aggregated. "Interaction with community" and "Individual dashboard of performance" features (motivational factors) will then be considered the same way by respondents. as those functionalities are already part of current app (Performance Goal App) with respondents considering them as a pair.

<u>App Trust</u>

Here we firstly compare the means of two measurements taken from the same individual, in order to determine if there is a main effect of the app goal on app trust. A paired samples t-

test revealed no significant difference in *App Trust* (M_{HEAL} = 3.95, SD_{HEAL} = 1.409; M_{PERF} = 3.95, SD_{PERF} = 1.156; t (90) = -1.567, $p < .001$), thus there is no main effect of App Goal on the participants' trust on the app. In fact, none of the two apps is considerably more trusted by participants overall.

Table 6:

Ratings of "App Trust" variable, Standard Deviation (SD) and Test's Results

Ambassadors	App Goals	M	SD	Values
Athlete	Health	4.00	1.633	t (90) = 1.009 < .001
	Performance	4.23	1.155	t (90) = 1.009 < .001
Doctor	Health	3.91	1.313	t (63) = -2.657 < .001
	Performance	3.80	1.157	t (63) = -2.657 < .001
None	Health	3.54	1.410	t (49) = 2,013 < .001
	Performance	3.65	1.095	t (49) = 2,013 < .001

ANOVA was also executed to test for potential interaction (between app Trust & Type of Ambassador presented). We found an effect of the ambassador presented on app trust. In fact, the ANOVA test revealed a significant main effect of the Choice of brand ambassador on the manipulation *(F(2, 88) = 1.015, p = .0315)* .

Here, it's the impact of ambassadors on overall trust that is statistically significant. In fact, we clearly see a variation of the means when an athlete presents the Health Goal App (FunRun) vs the Performance Goal App (Runtastic) confirming our 4th hypothesis. This makes a lot of sense as the athlete will be more legitimate to present/embody an app that they personally use (athlete endorser-product congruence and endorser credibility) introducing very advanced features related directly to tracking. (Kim et al.,2015). On the other hand, a doctor, like the one presented, will be a great ambassador for an app that is primarily concerned with wellness and health even though the legitimacy of a doctor seems less impactful in this scenario.

As predicted, we found an effect of the type ambassador on app trust. In fact, Doctor ambassador group led to a significantly higher levels of App Trust for Health Goal App (M_{DOC}

= 3.91, SD_{DOC} = 1.313, t (90) = -1.567, $p < .001$) than the control group (M_{NONE} = 3.87, SD_{NONE} = *1.410*). Moreover, the Athlete ambassador group led to significantly higher levels of App Trust for Performance Goal App (M_{ATH} = 4.23, D_{ATH} = *1.155,* t (90) = -1.567, $p < .001$) than the control group (M_{NONE} = 3.81, SD_{NONE} = *1.095*).

Lastly, as expressed in our fifth hypothesis, the control group will have a reduced tendency to trust a new app, in fact the data suggests tendencies that can be explained by the fact that "certain consumer review elements (i.e. review quality, review quantity and app ranking), peer influence and app developers' reputation — to varying degrees — influence the three perceived values, which subsequently affect users' app adoption intention" (Jiang et al.,2021)

Ambassador Trust

As our Control group were not introduced to any ambassador, we couldn't introduce this group to the analysis of this variable. However, it is interesting here to firstly compares the means of two measurements taken from the same individual, in order to determine if there is a main effect of the app goal on respondent trust.

Table 7:

Ratings of "Ambassador Trust"

Ambassadors	App Goals	M	SD
Athlete	Health Goal	3.63	1.650
	Performance Goal	4.30	1.664
Doctor	Health Goal	4.70	1.915
	Performance Goal	3.60	1.380

A paired samples t-test comparing ambassador trust in the two app goal conditions showed that Health Goal app led to a significantly higher levels of Trust in the ambassador when the ambassador was a doctor (M_{HEALTH}= 4.70, SD_{HEALTH} = 1.915 t (57) = -1.567, $p < .001$) compared to the Trust for Athlete ambassador (M_{HEALTH}= 3.63, SD_{HEALTH} = *1.650*). The opposite pattern of results is found for the app with a performance goal

In order to determine if there is a main effect of the type of ambassadors, a repeated measure ANOVA was then executed (between Ambassador Trust & Type of Ambassador presented). The ANOVA revealed a significant main effect of the Choice of brand ambassador on the manipulation *(F (1, 58) = 1.927, p <.001). (Appendix 4)*

As the ambassador presented have a significant impact on ambassador Trust & brand Trust, we can conduct a third analysis (between dependent variable) that may confirm our 3rd hypothesis**.** **(**Brand Trust score will have a significant impact on the Ambassador score)

We conducted two bivariate analyses, on one side we isolated the Trust of app (Health goal) with the Trust of Doctor ambassador. We decided to follow the results of our first analysis stating that doctor & athlete will be more legitimate to present/embody an app that they personally use, in this case a doctor presenting a health app for the user to feel better over time.

In the case of Trust Health Goal app X Trust Doctor results were not significant as, *p = .0833 (Appendix 5)* but when we put together Trust Performance Goal App X Trust Athlete, the results are very convincing. Pearson's r is equal to 1 which correspond to a **perfect positive correlation**. In other words, both variables follow the pattern of fluctuation (e.g. when variable x increases, variable y increases. As variable x decreases, variable y decreases)

In Appendix 7 you can find a scatter plot with a regression line showing a clear relationship between the two depend variables.

App Adoption

As in the previous analysis of our dependent variables, we want to determine if there is a main effect of the app goal on the final adoption. We found out (main effect) that Performance Goal app led to a significantly higher levels of Adoption overall. M_{PERF}= 3.63, SD_{PERF} *= 2.804)* compare to the adoption of Health Goal App (M_{HEALTH}= 3.10, SD_{HEALTH} *= 1.182).*

After noticing a higher adoption (overall) of the application related to performance, we can now test our 4th hypotheses. We try now to clearly determine if Athlete / Doctors have a greater impact on consumer decision when it comes to choosing a running app linked to performance/well-being. Note that here the third group (experimental) is also considered. It will be able for us, to evaluate the concrete impact that an ambassador can have on the choices of the people interviewed. Significant differences of results between our control group and our

experimental groups could help us draw major conclusions that can guide the brands in their future communications.

Table 8:

Ratings of "App Adoption"

Ambassadors	App Goals	M	SD
Athlete	Health Goal	3.43	1.755
	Performance Goal	3.83	1.712
Doctor	Health Goal	3.79	1.916
	Performance Goal	3.71	1.872
None	Health Goal	3.12	1.275
	Performance Goal	3.27	1.432

"There was a significant difference in the scores for the None Ambassador condition (M_{Health}=3.12 SD_{Health}= 1.275) and Doctor (M_{Health}=3.79, SD_{Health}=1.916) conditions. t (24) = 1.457, $p < .001$

Repeated measure ANOVA was then executed to test for potential interaction (between App Adoption & Type of Ambassador presented). The ANOVA have a significant main effect (F (1, 57) = 3.356, p > .001).

We can also say that the most effective method (biggest mean difference) is when a doctor presents an application highlighting the health and fitness aspect without result pressure (Health Goal App) In fact, the legitimacy of this ambassador in his field seems to overshadow the knowledge and motivation transmitted by the athlete during the presentation of Performance Goal App (Runtastic).

Health Concerns

A paired sample t test revealed that health concerns indicated a statistically non-significant difference in mean value across Health Concern for respondent affected to Health Goal

Performance App and Performance Goal App. At first, we thought that the message related to well-being conveyed by the Health Goal application (in our experiment) could have the effect of a reminder to the respondents and affect his overall consideration.

Table 9:

Valence, Standard Deviation (SD) and Test's Results of Health Concerns

Ambassadors	App Goals	M	SD	Values
Athlete	Health Goal	5.20	1.581	t (89) = 0,464 > .001
	Performance Goal	5.13	1.729	t (89) = 0,464 > .001
Doctor	Health Goal	5.08	1.521	t (67) = -0,252 > .001
	Performance Goal	5.04	1.456	t (67) = -0,252 > .001
None	Health Goal	5.12	1.523	t (52) = 0,832> .001
	Performance Goal	5.13	1.411	t (52) = 0,832> .001

Repeated measure ANOVA was then executed to test for potential interaction between Health Concerns & Type of Ambassador presented. The ANOVA have a non-significant main effect (F (1, 88) = 3.356, p =.213). We can make the statement here, that none of the stimuli affected our dependent variable neither the app goal nor the choice of Ambassador.

In one of the studies from our literature review (Shipway et al.,2013) we found out the true meaning of health for the runners: "the body, especially the 'running body', is as a source of health and well-being and affirmation of their identity." This quote confirms our previous results and shows that even before using an application, the user constitutes his own interpretation of his health condition through running experiences.

4.3 Manipulation Checks & Control Variables

During the survey, two questions were asked to judge if the several manipulations of the independent variables had the right impact on participants, whether participants understood the context of the manipulation or not. These questions had an element of elimination because if answered incorrectly, it signified that participants did not accurately grasp or interpret the manipulation, and as a result, their responses should not be considered valid for this study. In

total, 10 respondents were eliminated in the data clearing phase, rounding the number of participants considered to 91, here no test need to be applied as “wrong answers” were an eliminatory factor.

However, it is interesting to note that 6 out of the 10 people eliminated (60%), were part of the control group (no ambassador). The presentation and advice of the ambassadors seems to have had a considerable impact on the understanding of the applications for the two experimental groups concerned.

One main *control variable* remains decisive for the continuation of the study in other to lessen the impact of extraneous variables and avoid research bias. For this purpose, we took into consideration the running habits with two precise questions related to the frequency of running as well as the different goals set by the runners over time. Two one-way Anova were conducted in order to check whether the running habits of participants had an impact on the overall experiment (Independent & Dependent variables) On one side we are going to check the frequency of runs and on the other the objective set by the respondent will also be considered here.

In order to have a better understanding of the control variables, the means of the three groups (Athlete ambassador; Doctor ambassador; None ambassador), as a between subject factor, were compared in a one-way Anova. This analysis was conducted for all the control variables.

Frequency of runs

A one-way Anova analysis revealed no significant difference in *frequency of runs*, between the experimental groups. (M_{ATL} = 2.00, SD_{ATL} = 0.871), (M_{DOC} = 2.13, SD_{DOC} = 0.776), t (88) = 0.205, p = 0.507) and the control group (M_{NONE} = 2.06 SD_{NONE} = *0.772*) (*t* (88) = 3.243, *p* = .123)”. *(Appendix 3, Table 1)*

This suggests that the frequency of runs do not play a role on the effect that both ambassadors have on the main dependent variables listed above.

Objective when running

A one-way Anova analysis revealed no significant difference in *objective when running*, between the experimental groups (M_{ATL} = 2.17, SD_{ATL} = 0.913), (M_{DOC} = 2.00, SD_{DOC} =

0.743), t (88) = 0.815, p = 0.083) and the control group (M_{NONE} = 2.35 SD_{NONE} = *0.709*) (*t* (88) = 0.815, *p* = 0.083). *(Appendix 3, Table 2)*

An independent sample t-test revealed a statistically insignificant difference in the objective when running (M_{ATL} = 2.17, SD_{ATL} = 0.913), (M_{DOC} = 2.03, SD_{DOC} = 0.765), t (58) = 0.613, p = .105)

This suggests that the objective when running do not determine directly the effect that both ambassadors; app manipulation, can have on the main dependent variables listed above.[1]

5.Main findings

This section lists our main findings, as well as the managerial implications of this research. Moreover, you will also find the limitations of this study combined with potential suggestions for future research on this topic.

5.1 Discussion and Conclusion

Thanks to the analysis of our primary data, we were able to determine the true impact that ambassadors and the goal of an app, can have on the respondent's final decision. Moreover, secondary data helped us consider other factors that could also alter our overall understanding and responses to these types of situations (*Technology acceptance variable*) .

First of all, it is interesting to note that the average number of runs per participant was higher than 2, showing that the sample had a tendency to run "2 to 3 times" per week. Through the various studies presented previously, one can argue that this suggests that our participants are experienced runners, which may allow us to infer that they were engaged in the study and they used their experiences and intuitions to reply. This statement was key, as we knew that our control variable was totally reliable and will help use establish a true relationships between the type of ambassadors with the Adoption or Trust that users can have on the app presented.

During the study we also make the assumption that past experiences with digital tools can played a central role and craft the true identity in the overall experiment. Therefore, we decided

[1] We know that if one-way ANOVA reports a P value of <0.05, we have to reject the null hypothesis that all the data are sampled from populations with the same mean, but in both scenarios the value is higher (Laerd statistics, 2022)

took a closer look to the application particularities and functionalities through the scope of *Technological acceptance.*

Factors such as the "Technological acceptance" really depended on previous uses. We quickly notice that a good part of the interviewed persons, were strongly using the self-tracking function (on Strava, Nike Run...), but had doubts/fears about the protection of their data, which considerably reduced their willingness to trust a new application. Thanks to our first exploratory hypothesis we found out that the high consideration for data protection can be justified by the fact that privacy and freedoms of individual users were recently threatened by the use of mobile applications. (Wottrich et al.,2018)

We also found out that the convenience factors are not significant, which indicated a large difference in consideration between Ease of use and Data protection. It can easily be explained by the fact that Generation Y and especially Z (≃62.6% of total participants are 27 years old or younger) are often defined by their relationship to technology, as they have always evolved in a wired world. According to the Sparks & Honey study, 41% of Generation Z spend more than 3 hours a day in front of a computer screen for non-academic activities.

This part of the population, have grown up with iPhones and iPads, so they are used to these systems, which they knew how to use at the age of 3 or 4 so they are not worried about learning how to use a new tool or new features compared to older generations. (Mccloskey & Donna.,2006).

However, the user also evaluates the importance of certain features in much the same way *(Motivational Factor).* This is not very surprising as the user is used to interact with a community of runners throughout the year, while having a super accurate dashboard to set new goals over time. Thanks to our second exploratory hypothesis, we can conclude that, the user is accustomed to this and considers it in the same way, because one does not go without the other (presence of both features on Strava, Nike Run ...)

After having evaluated the importance of different app functionalities, it was time to analyze the effect that the introduction of two brand-new running apps can have on respondent's response. As you know, these presentations have been made either by an athlete, by a doctor or by anyone. It was a way for us to see if their status and expertise could potentially modify the end-users' commitments (especially in view of their previous adoption of the current technology).

We found out a correlation between *Trust in the app* score and *Trust Ambassador* score reinforcing our third hypothesis. One can conclude here, that the commercial message/introduction of the app transmitted by the brand beforehand (inside the survey) is of major importance, allowing the ambassador message to be even more impactful afterwards. In fact, after reading this preliminary message, the prospect will already have a clear image of the application (feature and purpose. This way, he will be able to quickly associate it with the elements of his environment. The numerous brand associations will make the brand more memorable as well as making the ambassador's message even more impactful and relevant. (Crawford Camiciottoli et al.,2014)

The legitimacy of athletes presenting performance related applications will directly impact trust and also shorten the adoption process for the end user. As we have seen previously throughout our literature review, the phenomenon of self-expansion theory will be one of the factors of this trust, with users always looking for an inspiration, a role model, in order to achieve ever more ambitious goals (Gary W Lewandowski Jr. et al., 2013)

The use of a health expert as an ambassador is also relevant, but much riskier, as the person often does not have a strong reputation/ notoriety. For this to work, the brand message must be congruent between the personality used as a spokesperson and the element being advertised (Park, 2015). In our situation, the Doctor presented actually had an impact, because the application presented put forward criteria directly related to the expertise and knowledge of the person on health and wellness (Fleck-Dousteyssier et al., 2014) For those who have not experienced the presentation of any ambassador (control group) they obviously had a lower average adoption than the two experimental groups confirming our last hypotheses. In fact, the needed an individual that could act as a guide, while providing meaning to the sports activities. (Dusenberg et al.,2016).

However, according to the analysis on the main effect of app goal on adoption (Result section), we can also say that other factors can explain this difference in adoption (relevance of the message, interest in tracking, individual desire for performance)

5.2 Managerial Implications

The findings provide a deeper understanding regarding the type of ambassadors who can be use throughout advertising depending on the context and the app being presented. Theoretically, this thesis contributes to the work that has been already done on two main topics: The

Technological Acceptance factor through Mobile Application use & Impact of Spokeperson on Consumer behavior.

Please not that some of the results obtained go against the logic of some other studies (from our literature review), which can be explained by the fact that each study includes some uncertainties and operate in a different context which can affect main theories.

One can say that running applications are constantly evolving, both in terms of functionality as well as design (UX interface). This constant need for development and growth has pushed the different brands to innovate constantly. Not only in the programming of their applications but also through advertising. From a managerial perspective the significant impact of brand ambassador combined to the growing number of running app users should raise consideration and interest for marketers. Aside from the current technological improvement which are currently operated through Gamification and the development of social communities, innovation and progress must also come through advertising.

As we found out, a message is powerful, if it is delivered by someone, we are inspired by. But we didn't take into consideration the several interactions we can have through social media. Several studies have highlighted the fact that we identify and commit ourselves even more to people who share the same values and ideas as us. (Chopra et al., 2020). That is why, we truly think that influence marketing is perfectly adapted with the emergence of a generation of influencers (link to running) very active on social networks. As it would be the perfect opportunity for running applications to attract a young audience, by transmitting a message adapted to an audience with a very high engagement rate (micro-influence) App creators and marketeers will also have to improve their app design as well as features by adding tailor-made solutions linked to the segment they are targeting. Designing clear customer profiles (including frequency of runs, previous app use…)

As we have seen through the Internet Society study, the intrusion of technology in our lives has become considerable. Moreover, applications like Strava or NikeRun have features allowing users to hide certain privacy-sensitive information, but researchers have found that these features, called endpoint privacy zones, are not reliable at all. Our questionnaire allowed us to quantify the fear of users to share their data. Indeed, the most considered factor in the adoption of an application is by far the "data protection" (Mean = 4.97) . Therefore, intuitive solutions must be proposed as soon as possible. One solution would be to transparently

communicate concrete actions that users can take to limit data sharing. This would be a substantial advantage in the market.

The overall goal here is to conceptualize our findings in order to strengthened user confidence through design. As we were able to show for example that beginner runners will be more affected by the possibility of having an easy-to-use interface, we are sure that these findings are part of a larger picture that deserves to be studied

5.3 Future research and main limitations

Despite the fact that this study gives valuable academic insights on the modern role of brand ambassador in the sport field (running) and on consumer psychology, the study has limitations that can be used as inspiration for new projects.

One major limitation was the overall subject of this dissertation. In fact, this study was solely based on running apps, with only two apps presented. It could have been interesting to expand the descriptions of our Performance & Health goal app by adding more features, such as the presence of a voice coach or a content sharing interface. Moreover, 2 or 3 other applications could have been easily added (with the help of our randomizer), as running applications are complex and have subtle tones that differentiate them from each other. The goal would be to really immerse the consumers so that they can no longer make unconscious differences between our (fictional) applications and the current market leaders.

In the course of the analysis, we noticed that the people interviewed had sometimes very distinct profiles. For example, we noticed that performance-oriented users were looking for social support (by the community) much more than the other group. Exploring the needs of other users by establishing specific user profiles linked to the considerations of each one, would be an opportunity for brands to position themselves perfectly on the market. This would certainly deserve a study entirely dedicated to this psychological phenomenon within the framework of app use, as the conclusions can be both complex and diverse.

For this study we used the format of an online surveys in order to collect as much answers as possible. This format has some advantages (low cost, fast data collection, fewer data entry errors) but the difficulties associated with sampling control and the inherent limitations of sampling (representativeness, confidentiality, anonymity) can really be a problem in research (Andrade, Chittaranjan,2020).

Moreover, the researcher simply does not have any control over the participants when answering the survey (Ilieva et al., 2002). This way, some answers could have been answered without real awareness and honesty. Also, in the design of the survey, we could have been more precise in the workout/training plans when presenting the apps as well as on the self-tracking definition, to increase intelligibility.

As you can see in the *"Results and analysis"* sections, we didn't find any significant results one of our dependent variables (e.g Health Concern). With some prior searches on the subject, we could have easily determined in advance that the consideration of *Health Concern* is instinctively defined by the runner own experience and is in no way defined through a commercial offer (e.g presentation of an app) For example, analyzing the impact of design and other brand attributes (such as logo, content marketing through app description) would have been more relevant here, as they could potentially impact the final decision. (Walsh et al.,2012).

Last but not least, there was not enough emphasis on data protection in the app presentations. By simply introducing the functionalities and potential solutions proposed, the respondent would have felt even more confident. This would surely have increased user trust and adoption (for Health & Performance goal app). In fact, strong data protection is a considerable competitive edge that other apps like Strava do not offer currently. According to the well-known website TechCrunch, we found out that "Strava and Runkeeper are configured to publicly share user data by default. It is possible to change these settings in the application, but it takes some time to find them and set them correctly, which is probably not the first consideration for a regular user." We can then say that the growing reluctance among users when it comes to sharing their data, could have been significantly diminished by being transparent about current policies.

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7. Appendix

Appendix 1: Online survey (using randomizer)

Introduction:

Hello! The following survey is being conducted within the scope of a Master thesis regarding the role of Brand Ambassador on our adoption of Running mobile app.

Your participation in this study is completely anonymous and voluntary. The data will not be collected in such a way that will be allowed to identify the participant.

This survey should take around 5 minutes. Please read all the questions carefully, and answer them with total honesty. Thanks in advance for you participation!

Block 1: Screening question:

In this research, we are trying to understand the judgments & behavior of people who run on a daily basis.

Please answer the following question

1-Do you practice running?

o Yes

o No

No = "End of Survey"

Block 2: Running habits (control variables)

2-How often do you run (per week)?

o Once a week

o 2 to 3 times

o More than 3 times

3-What is your main objective when running?

o To maintain my shape & weight

o To feel better (mind-body)

o To surpass myself (goal-oriented)

o Other reason (4)

4-What is your main objective when running?

o To maintain my shape & weight

o To feel better (mind-body)

o To surpass myself (goal-oriented)

o Other reason (4)

Block 3: Current usage of apps / Technology acceptance

5-Are you currently using a smart watch / sports app to track your performance?

o Yes

o No

If **"No",** Skip to the beginning of the experiment (presentation of the apps)

6-Which app are you currently using?

☐ Nike Run Club

☐ Strava

☐ Adidas Running

☐ Runkeeper

☐ Runtastic

▢ Garmin Connect

▢ Others

Self-tracking is the practice of systematically recording information about one's diet, health, or activities, typically by means of a smartphone, so as to discover behavioural patterns that may be adjusted to help improve one's physical or mental well-being.

7-To what degree do you consider/use this technological feature through the use of your running apps?

o 1 (Not considered)

o 2

o 3

o 4

o 5

o 6

o 7 (Highly considered)

8-Please evaluate the importance of those characteristics when using a self-tracking tool (app)

o 1 (Not important)

o 2

o 3

o 4

o 5

o 6

o 7 (Very important)

Randomizer Action

Block 4: Overall Presentation

9.A-Presentation of the ambassador

You will be presented **two running apps** by **Mo Farah** is only the second athlete in Olympic Games history, to win both the 5000 meters and 10,000 meters titles at succesive Olympic Games. Farah racked up eighteen first place finishes in some of the world's most challenging marathons.

Both apps will soon enter the European market. They will be **FREE** on the Play store & App store.

9.B-Presentation of the ambassador

You will be presented **two running apps** by **Dr Mark. F. Aaron, M.D.** He is one of the best doctors in cardiology. His specialization is cardiovascular disease. He is a world-famous doctor known for curing various heart diseases.

Both apps will soon enter the European market. They will be **FREE** on the Play store & App store.

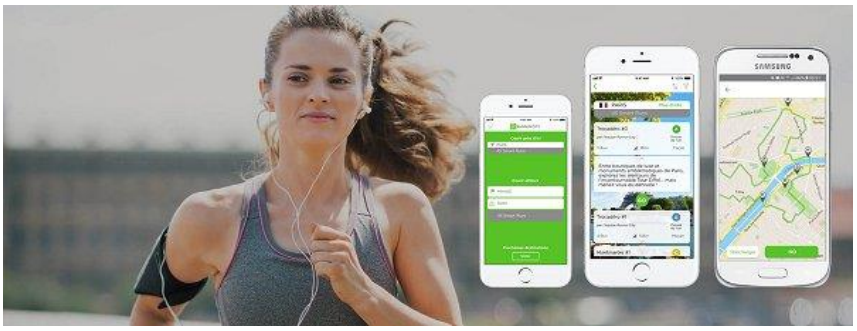
Block 5: Ind. Var.: Health app & Doctor ambassador / Dep.var. / Manipulation check

10-Introduction of Health Goal App (FunRun)

"FunRun" is a revolutionary app focusing on welfare, health & lifestyle with specific feature such as stress metrics & food diary that allows users to follow a personal diet.

With this app you do not have any peer pressure from the community while running. The goal is to put aside the stressful aspect of self-tracking to really focus on your body and mind. On top of that, there are guided meditation sessions, Pilates, yoga and walk function, in which trainers accompany you through global cities with coaching tips, playlists and photos.

FUNRUN



11.A-Presentation from Mo Farah (Athlete)

Before entering the market, **Mo Farah** decided to share with you his thoughts & honest opinion on this application. The athlete is recommending **"FunRun"** for beginner runners, not necessarily wanting to push their limits but having the desire to maintain a healthy lifestyle.

As the athlete says "Everyone has their own personal goals, the important thing is to flourish during the effort, and to feel good in your body"

11.B-Presentation from the Doctor ambassador

Before entering the market, **Dr Mark. F. Aaron, M.D**. decided to share with you his thoughts & honest opinion on this application. The doctor is recommending **"FunRun"** in order to run regularly while maintaining an average pace. As the doctor says "FunRun" is the ideal companion for a runner wanting to improve his overall lifestyle"regularly while maintaining

an average pace. As the doctor says **"FunRun"** is the ideal companion for a runner wanting to improve his overall lifestyle"

12-How much trust do you have on this brand/app?

- o 1 (No Trust at all)
- o 2
- o 3
- o 4
- o 5
- o 6
- o 7 (Extreme Trust)

13-Considering the context, how much trust do you have of this ambassador?

- o 1 (No Trust at all)
- o 2
- o 3
- o 4
- o 5
- o 6
- o 7 (Extreme Trust)

14-How much are you willing to use this app?

- o 1 (No willingness at all)
- o 2
- o 3
- o 4
- o 5
- o 6
- o 7 (Extreme willingness)

15-How much are you concerned with your health currently?

- o 1 (Not at all)
- o 2
- o 3
- o 4
- o 5
- o 6
- o 7 (Extremely concerned)

16-What is the main goal of the app presented?

- o Improve Sport performances
- o Improve Physical & Mental Health
- o Improve Nutrition Habits

17-To what extent was your decision influenced by the influencer himself?

- o 1 (Not at all)
- o 2
- o 3
- o 4
- o 5
- o 6
- o 7 (Totally)

18-What is the occupation of the ambassador presented?

- o Doctor
- o Athlete
- o Instagram Influencer
- o CEO of a running company

19-Presentation of Runtastic

"Runtastic" is an activity-based social media platform and fully analytical. On top of the common run tracking features – distance, pace, heart rate, cadence etc. The **Runtastic** app offers training plans that helps you achieving your race goal. In fact, audio-guided runs will help you during all the process, from getting started to speed sessions and long runs. In order for you to stay motivated a rewarding system has even been implemented!

20.A-Ambassador advice (Athlete)

Before entering the market, Mo Farah decided to share with you his thoughts & honest opinion on this application. The athlete recommends "Runtastic" to reach heights in no time. As the athlete says "There is nothing more important than a good preparation, with this tool you will have no more excuses thanks to a follow-up (detailled tracking) and a professional expertise"

20.B-Ambassador advice (Doctor)

The doctor is recommending **"Runtastic"** in order to reach tremendous objectives over next month's such as completing a marathon! As the doctor says, "With **Runtastic** everything is faster, whether it's your speed, your training time but also your performance on the fateful day"

Same question from Q12-18

Attention Check

21-Select the right answer

Please select "Strongly agree" to show you are paying attention to this survey.

Block 6: Demographics

22-What is your current occupation?

- o Employed
- o Self-employed
- o Student
- o Currently looking for a job

23-What is your gender?

- o Male
- o Female
- o non-Binary

o I prefer not to identify

24-What is your age?

_____

Block 7: Acknowledgments

Thank you for participating to this survey!

If you have any comments regarding the survey, please comment in the space below.

Appendix 2: Online survey (Control Group)

A control group is a group of people in a scientific experiment who do not receive the treatment being tested. The effectiveness of the treatment will be assessed after the experiment by contrasting the participants in the control group with those in the experimental group (presentation both applications by an athlete/doctor). Without a control group, it would be impossible to draw any concrete conclusions related to the treatment's effects. Here we really want to assess the true impact of ambassador on daily runners' choices.

For this group of participants, we conducted the same questionnaire, removing the presentation and the questions trying to assess the impact and influence, the ambassadors can have on the participants' final choice.

Compared to *(Appendix 1)* Online survey (using randomizer) we removed the following questions: 9 – 11 – 13 – 18 and 20.

Appendix 3 : Control variables sample T Test

One-way Anova – Frequency of runs (1st Control Variable)

Frequency of runs?

Ambassador	N	Mean	SD	Std. Error	t	df	Sig.
Athlete	30	2.00	.871	.159	0.205	88	0.507
Doctor	30	2.13	.776	.142	0.205	88	0.507
None	31	2.06	.772	.139	0.205	88	0.507
Total	91	2.07	.800	.084	0.205	88	0.507

One-way Anova – Objective when running (2nd Control Variable)

Objective when running?

Ambassador	N	Mean	SD	Std. Error	t	df	Sig.
Athlete	30	2.17	.913	.167	0.815	88	0.083
Doctor	30	2.00	.743	.136	0.815	88	0.083
None	31	2.35	.709	.127	0.815	88	0.083
Total	91	2.18	.797	.084	0.815	88	0.083

Appendix 4 : Dependant variable Technological Acceptance

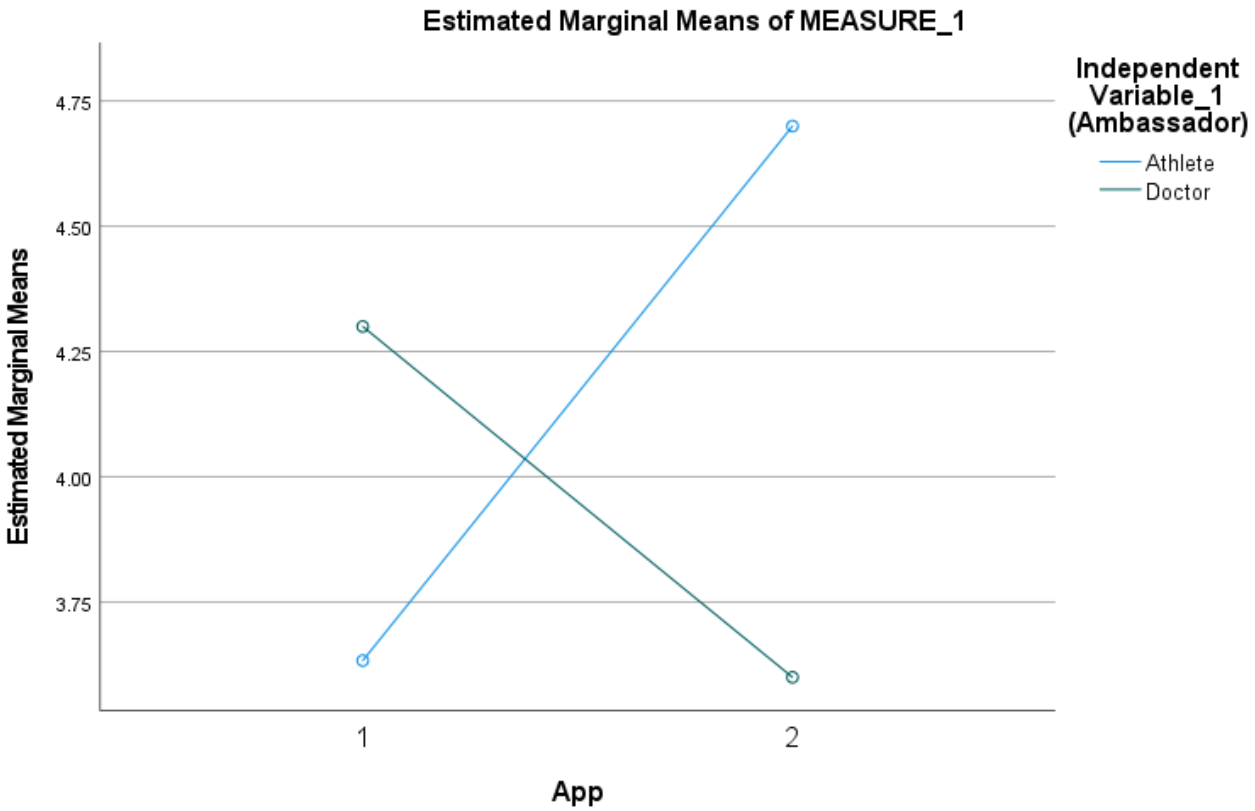
"Convenience factors" criteria's

	Pearson Correlation (r)	**Sig**
Convenience factors (No Ambassador)	.345	0.416
Convenience factors (Athlete)	.416	0.345
Convenience factors (Doctor)	.456	0.214

"Motivational factors" criteria's

	Pearson Correlation (r)	**Sig**
Motivational factors (No Ambassador)	.805	$p < .001$
Motivational factors (Athlete)	.784	$p < .001$
Motivational factors (Doctor)	.678	$p < .001$

Appendix 5: Profile Plots/Trust (Health Goal/FunRun, Performance Goal/Runtastic) x 2 (Athlete, Doctor) ANOVAs



Appendix 6: Bivariate Correlations/Trust: Health Goal X Doctor Ambassador

Correlations

		TrustApp_HealthApp	TrustAmbassador_HealthApp
TrustApp_HealthApp	Pearson Correlation	1	.028
	Sig. (2-tailed)		.833
	N	91	61
TrustAmbassador_HealthApp	Pearson Correlation	.028	1
	Sig. (2-tailed)	.833	
	N	61	61

Appendix 7: Bivariate Correlations/Trust: Performance Goal X Athlete Ambassador

Correlations

		TrustApp_PerformanceApp	TrustAmbassador_PerformanceApp
TrustApp_PerformanceApp	Pearson Correlation	1	.350**
	Sig. (2-tailed)		.006
	N	91	60
TrustAmbassador_PerformanceApp	Pearson Correlation	.350**	1
	Sig. (2-tailed)	.006	
	N	60	60

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 8: Scatter Plot/ Trust: Performance Goal X Athlete Ambassador