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The Effects of Perfume on Work Performance

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Abstract

This study investigates how fragrance could affect staff efficiency at work in the service industry, particularly insurance agents. Scent is recognised to affect human behavior and perception; nevertheless, the majority of study to date has overlooked scent's possible impact on job performance in favor of focusing on its relationship to confidence and beauty. We will explore whether wearing perfume improves work performance through a panel study with 100 insurance agents. Performance is gauged by the number of policies sold and the amount of premium generated. Our study proposes to investigate the potential significant impact of perfume, both positive and negative, on work performance by a two-tailed hypothesis test. The research will account for a number of control variables that could affect output, including age, gender, ethnicity, physical attributes such as height and weight as well as the length of employment. The gathered data will be analyzed, and conclusions will be drawn from the results of using regression analysis and T-tests. The purpose of this study is to enhance our knowledge of how smell affects productivity in service-oriented careers, which may have implications for future corporate tactics and marketing plans.

Keywords: Perfume, Work Performance, Service Industry, Insurance Agents, Scent

Introduction

Being one of the human body's five basic senses, smell plays an important role in the lives of many. Beyond merely detecting danger and enhancing flavor, our sense of smell is vital to many facets of human existence (Stevenson, 2010). Research draws attention to the impact of fragrance on arousal, mood, and even perceived beauty (Spence, 2021).

Particularly in business industries where first impressions matter a lot, attractiveness itself can have a big impact on how well employees perform at work (Geoffrey, 2010). Research indicates that consumers are more likely to do business with attractive people because they believe them to be more competent, even in the absence of hard proof of their credentials (Geoffrey, 2010). This is consistent with the frequency of ethnicity and color-based discrimination that has been seen in the workplace. Using perfume has grown in popularity due to the perception that attractive smells improve one's appearance. Of UK workers, 45% wear perfume to work every day (Kunst, 2020).

Though formal dress codes are set in place for many working within the service industry, the application of perfume is not an enforced requirement. Many still apply perfume to their line of work with the idea that it helps in their job. However, research in this aspect is extremely scarce, and there is little to no evidence that supports this notion. With most people working within the service industry applying perfume often, we hypothesize that applying perfume increases work performance.

Literature Review

Existing Work Performance Research

The acquisition of research on job efficiency that is now available highlights a number of critical elements that have a substantial impact on an individual's effectiveness at work with attractiveness being among the most important variables. Studies show that there is a significant correlation between perceived competence and beauty, especially in occupations requiring direct client contact (Geoffrey, 2010). This is further emphasized in the study done by Naut et al. (2020), where their findings show that the highly attractive earn roughly 20 percent more and are recommended for promotion more frequently compared to those who are not.

Nonetheless, it's critical to recognise that prejudice exists in the workplace. With the advantages of physical attractiveness boosting work performance, it opens up the issue of discrimination, where the less attractive are discriminated against due to the lack of opportunities given, which can negatively impact their working performance in comparison to the attractive employees.Hammer (2017) reinforces this point, where it is discovered that attractiveness positively impacts wages and hours of work, as well as reducing the likelihood of being terminated. Research also shows that prejudice regarding a person's race, ethnicity, or even weight can have a negative impact on their performance (Volker, 2015). This emphasizes the need of taking into account the potential interactions between these variables and the perceived efficacy of fragrance in work-related contexts.

Lastly, a key factor in work performance is employment experience. From a logical standpoint, it is a reasonable assumption, as an increased amount of time and experience in working will raise an employee’s level of proficiency and familiarity, which can lead to better

working performance over time. Research shows that worker performance and experience are positively correlated (Pamungkas, 2020). It's conceivable that experienced staff members have refined their abilities and developed client trust, which has enhanced performance metrics and raised sales.

The aforementioned research findings serve as a crucial foundation for the current investigation, which seeks to investigate the precise influence of scent on work performance in the service industry. A more nuanced understanding of how fragrance might affect an individual's success in client-facing professions can be provided by the study by taking into consideration the documented influence of attractiveness, discrimination, and expertise.

The Aroma's Power

Human behavior is significantly influenced by scent. Research has demonstrated that scents can elicit particular emotions and even change arousal levels, which may have an effect on how attractive people perceive someone (Spence, 2021). However, scent has two sides because it is a subjective perception. For example, an individual’s favorite smell might offend another due to differing opinions on scent. Scent and smell may alter the perception from others which can include trustworthiness and dominance. It has been noted that individuals exposed to” fishy” smells were trusted less often which leads to lower levels of cooperation (Varnum, 2023). This aspect of smell can also influence behavior in a working environment where employees are less likely to work with those who smell worse which can influence working performance. The application of perfume can negate this issue and the perceived more attractive smells may even raise the working performance of an employee.

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Knowledge Deficits

Although the relationship between attractiveness and productivity at work has been studied, little is known about how perfume affects this dynamic. The majority of perfume-related studies to date focus on how it boosts one's beauty and confidence rather than improving one's performance at work. Studies related to working performance and attractiveness are instead focused on physical attributes such as weight and height instead of sensory attributes such as smell, which perfume is part of. By examining whether perfume usage has a direct impact on work performance measurements, this study aims to fill the gap between both types of studies mentioned above.

Research Methodology

Research Question

This study focuses on the effects of perfume and how it may impact the productivity of people wearing it to work. The research question aims to find out whether the application of perfume will positively increase the work performance of individuals compared to those who do not apply it. Though the application of perfume has become a norm in the service industry and client-facing jobs, there has been little to no research done on how it positively affects the work performance of employees. Rather, more attention has been paid to raising attractiveness and self-confidence instead which does not necessarily translate to better work performance. As such, the research question for this study would be: Does the application of perfume increase an employee's working performance?

Study Design

A panel study will be done to measure the work performance of insurance agents that are part of the service industry by the number of policies sold as well as how much insurance premium is generated. The test would be conducted on a group of insurance agents over a period of six months. Cross-sectional data will be collected in a survey format for the basic details of the test subjects while panel data will be collected for the experiment results.

Hypothesis

As perfume itself is highly subjective to preferences, it has equal chances of either positively or negatively affecting the work performance of individuals. A two-tailed hypothesis test will examine whether perfume has a positive or negative impact on a worker's performance.

The null hypothesis (Ho) states that perfume has no impact on a worker's performance.

The alternative hypothesis (Ha) implies that perfume has a significant impact on a worker's performance.

Population and Sample

The population for the experiment will consist of insurance agents where the main sample size would consist of 100 insurance agents that have at least 1 year of working experience in the field to increase the chances of obtaining results as inexperienced agents might not be able to gather clients to provide any significant data for the study. To maintain ethical standards, participation will be voluntary as some might not prefer the smell of perfumes or might not be comfortable with being part of an experiment.

The study will involve experimentation on participants to determine whether the perfume applied to them has a positive effect in work performance in comparison to those who do not. As such, voluntary sampling will be applied. Quota sampling will also be implemented to balance out the gender percentage of the total sample size to be equal where the gender quota for both males and females will be 50% each. This will ensure the data collected would be less likely to be skewed. In the event of having insufficient participants for the experiment, a tolerance of ±5% will be allowed where the gender quota can be altered to between 45% - 55% for males as an example.

To minimize any biases in the data, a large sample size is required where 100 participants would be selected to yield more accurate results. Stratified sampling will be applied to the 100 participants where the treatment group will be using perfume everyday when working while the control group will abstain from exposure to perfume of any sort which includes, but are not limited to, eau de parfum, eau de toilette etc. The experiment will then be conducted on the two groups where the total number of policies sold as well as the total amount of insurance premium generated during the six month period will be recorded as they are the main indicators of work performance in the insurance industry.

Variables and Measures

Independent Variable

The independent variable in this study will be the **presence and absence of perfume** as we are investigating whether its presence significantly affects our dependent variable which is the work performance. In this experiment, the control group will be abstained from perfume while the treatment group will be wearing perfume everyday to work. The presence of a control group (no perfume) will reinforce the findings of this study as it can serve as a benchmark to compare the findings of the treatment group (perfume) to determine if the treatment under investigation (perfume effects) has a significant impact.

It is important to note that the type of perfume and fragrance notes applied in the experiment needs to be standardized for all participants. Preferences for perfume fragrances are extremely volatile as it is highly dependent on individuals and different types of perfume used can have differing levels of concentration of perfume oil which can affect the strength and duration of the perfume(Insert source). This will ensure the accuracy of the data is maintained throughout the experiment.

Key Dependent Variable

The key dependent variable of this study will be the **work performance** of the insurance agents as it is the variable that is being measured in this study. Factors that constitute the work performance of insurance agents are the **number of policies sold** within the duration of the experiment as well as the amount of **premiums generated** from those policies. The units for the amount of insurance premium generated would be measured in Singapore Dollars.

Control Variables

The Control variables in this experiment are other factors that may have an effect on work performance. Some of the few common variables are **gender** and **ethnicity** which are demographic variables which can play a part in influencing our results in the experiment. Due to the existence of gender and racial discrimination, potential clients may refuse to do business with the agents involved in the experiment which in turn may affect the results to a certain extent. (EEOC, n.d)

Factors that are related to physical appearances such as **height** and **weight** can affect attractiveness which can affect work performance as mentioned in the introduction. Cross et al. (2016) reported that weight status influences body attractiveness and their findings bear implications for weight bias and potential discrimination research. Participants with unideal weights can be discriminated against which can negatively affect their performance at work. Another study done by Shepperd and Strathman (2022) has also shown that height plays a part in attractiveness, especially with shorter women, which can also affect our experiment results. Female subjects who are shorter are more likely to secure insurance policies when dealing with male clients.

Lastly, **working experience** and **aging** are two factors that can be tied together. In most cases, older people tend to have more working experience than younger people, where the aforementioned experience can be a significant factor in improving their work performance. Efendi (2020) reinforces this point through reporting that work experience has a significant and positive impact on an employee's performance. An older and experienced insurance agent, having dealt with more customers before, would be able to secure more deals with customers in comparison to a younger inexperienced employee. This is such as they would have built up the

skills necessary to convince their clients through years of working in the industry. Another point concerning age can be related to the perspective of clients. Clients may agree to sign insurance policies from agents who are older as they are viewed to have more experience which leads to a higher level of trust compared to younger agents, which can also influence the results in our experiment.

Data Collection Methods

Companies that will be acting as collaborators in this experiment will be AIA Singapore Insurance Company and Bath & Body Works Singapore. The data obtained in our experiment will be shared with AIA to raise knowledge of attracting more clients to increase individual working performance, and will be shared with Bath & Body Works to be utilized in marketing advertisements to attract business-centric customers. A cross-sectional dataset will be collected through the form of a survey that will be initially distributed through the emails of the population of insurance agents working in AIA Singapore. The survey will gather information related to age and gender etc., but as previously mentioned, working experience of minimally a year will be the main eligibility criteria for this experiment. The survey question and options will be included in the appendix section.

The second dataset will be collected through the experiment in the form of panel data. The panel data will be collected from the insurance agents on a monthly basis throughout the duration of our experiment and will be chronologically ordered. Data will be compiled into a table to indicate the number of insurance policies sold, as well as the amount of insurance premium generated every month. A table with the recorded data for each participant in our experiment will be shown in the appendix section.

Test Procedures

In order to compare the performance of insurance agents wearing perfume against those who do not, their performance will be measured throughout the experiment. Certain policies that generate higher premiums can be more difficult to sell, which is why premiums are also taken

into account. Agents that sell a higher number of policies and higher generated premiums will be deemed to have a higher performance in our study. If an agent were to sell lesser policies but generated higher amounts of premiums, it would still be deemed as having a higher performance.

In our study, the 100 selected participants will abstain from any form of perfume while working for a period of three months and retaining their normal lifestyle throughout the first phase. This will ensure that participants who depend on perfume prior to the start of this experiment will start on approximately the same level as those who do not. This will also counteract the problem where the insurance company may not be willing to release data of the participants regarding their work performance prior to this experiment due to confidentiality. After the first phase, 25 males and 25 females will be selected on a random selection basis to be wearing perfume throughout the second phase of the experiment. The remaining 25 males and 25 females shall continue to abstain from any form of perfume.

The perfume fragrance provided from our collaborator company, Bath and Body Works, will be Chasing Fireflies as it is a relatively new flavor released in late 2023. It is also a gender-neutral fragrance, which can be suitable for both men and women. This perfume will be distributed to the treatment group, which will be worn everyday during working hours, in the second phase of this experiment.

Entering the second phase of our study, participants will continue with their work as per normal, similar to the first phase. The only difference will be the constant presence of perfume on the treatment group during working hours. Results from the number of policies sold and insurance premium generated will still be recorded every month from both groups. The collected results from the second phase will be compared to those of the first phase.

If the treatment group were to bring in a significant boost in work performance through selling more policies and generating higher premiums, the results will conclude the findings of the experiment. If no significant difference has been noted, it can be concluded that the hypothesis of perfume improving work performance is disproven due to the lack of evidence supporting it.

Data Analysis Methods

Regression Analysis

Regression analysis will be done in order to determine if there is a relationship between both independent and dependent variables. More importantly, it can help us determine which control variables might have a profound impact on the work performance of the insurance agents. The coefficients can help us determine whether the independent variable (perfume presence) has a positive or negative impact on the dependent variable (working performance) and the degree of it to determine its real world significance.

In the case of this study, the regression analysis will mainly be carried out on the work performance and the presence of perfume as they are the main dependent variable and key independent variable respectively. This will determine if the presence of perfume has an impact on improving the working performance of an insurance agent. Due to the existence of other control variables involved in the experiment, they will also be analyzed as well since they may have a significant impact on the results collected from the experiment.

Being able to determine other factors that have a significant impact in the results of our experiments will improve the accuracy of our findings as perfume may not be the only factor that affects work performance. These factors should be taken into consideration if they pose a significant impact on work performance. The regression equation that will be used in our analysis will be shown below.

$$Y_{1,2} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \varepsilon$$

Legend:

Y_1 : Number of Insurance Policies Sold

Y_2 : Amount of Insurance Premiums Generated (SGD)

β : Coefficients

ε : Error terms / Residuals

X_1 : Presence or Absence of Perfume

X_2 : Age

X_3 : Gender

X_4 : Ethnicity

X_5 : Height

X_6 : Weight

X_7 : Years of Work Experience

The most important statistics to check after the regression analysis is done should be the adjusted R-square value, P-value and coefficients of each variable. Due to the presence of multiple control variables, there will be an increase of R-square value as the introduction of a new variable includes the possibility of explaining more variance. However, due to the dangers of overfitting, where the model captures too much noise within the data, the adjusted R-square value will be used instead. A value closer to 1 is desired as it shows the model being able to explain the variance in the data where a value closer to 0 shows the opposite. However, a perfect

value of 1 is undesired as it is impossible for the data to be completely perfect and may indicate some problems underlying the received data.

The next important statistic to check would be the P-value. A P-value of an independent variable shows whether it has a significant impact on the dependent variable. In most cases, including our experiment, the P-value threshold will be 0.05. For instance, if the P-value for Work Experience is below 0.05, we can derive that it has a significant impact on working performance as it can explain for at least 95% of the results observed.

The last statistic to check is the coefficient. It determines the magnitude of the impact, as well as whether an independent variable has a positive or negative effect on the dependent variable. So in our case, if age has a positive coefficient, that means it has a positive impact on working performance. However, if that coefficient were to be extremely small relative to the mean age like being 0.1 when the mean age is 30, that would mean the magnitude of age's impact is very little and can be concluded that it has no significant impact on working performance.

T-test

As the main objective of the study is to find out if working performance is enhanced when perfume is applied, the T-test will determine whether there is a difference between the means of our treatment group and control group. The type of T-test used will be a Two Sample test, where both groups are measured for their work performance with regards to the number of insurance policies sold and amount of premium generated from those policies. This test will be done using only results from the second phase of the experiment as both groups have to be

abstained from perfume during the first phase. Comparisons will be made to the treatment group and the control group after the end of the second phase of the experiment.

For the treatment group, a comparison will also be made on the results obtained at the end of the first phase and second phase to determine if there are any changes, as well as acting as a verification test to ensure the findings are similar to that of the first test. This is to ensure accuracy of the findings. The T-test used in this aforementioned comparison will be a paired test.

If the results show a significant difference in working performance between the treatment group and the control group, it shows that perfume has a positive impact on working performance. If the results from the paired test also show a similar difference in working performance before and after applying perfume, this is the most ideal scenario, which shows that perfume truly has a positive impact on working performance. However, if there is no significant difference between the treatment group and control group, it shows that perfume has no impact on working performance. In this scenario, if the paired test still shows a significant difference before and after applying perfume, then it can still be concluded that perfume has an impact on working performance and that the lack of difference in the first test may be due to control variables of the insurance agents in the treatment group.

In this study, the P-value threshold will be the same as the regression analysis done above, at 0.05. From the results of the T-tests, if the P-value is less than 0.05, then the null hypothesis of perfume not having a significant impact on working performance can be rejected and our results are statistically significant at 5%. This will conclude that perfume has a significantly positive impact on working performance. However, if the opposite were to happen, where the p-value is higher than 0.05, then the null hypothesis cannot be rejected and the results

are not statistically significant at 5%. This will conclude with perfume not having a significant impact on working performance.

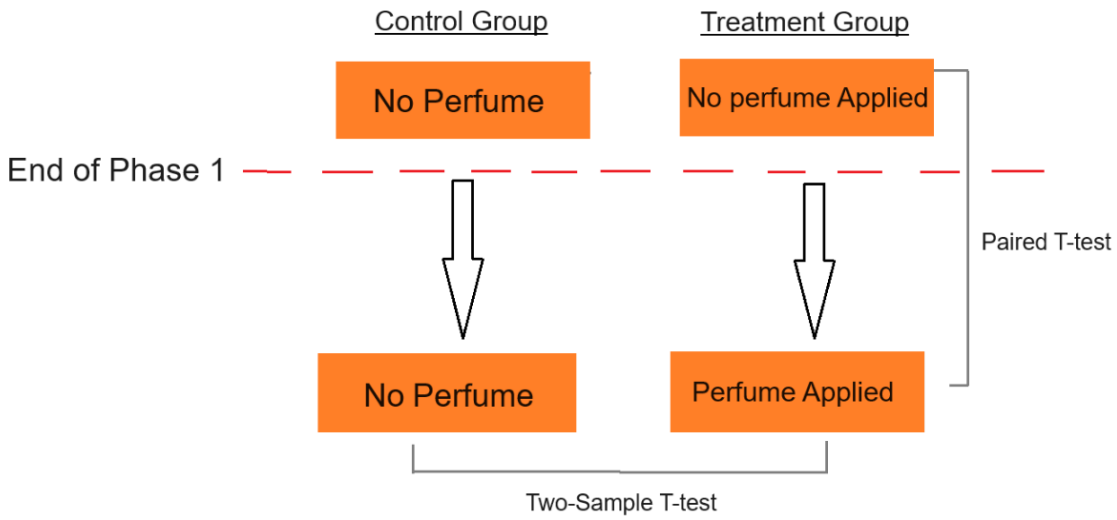

Figure 1. Diagram of how the T-test will be conducted.

Conclusion

In conclusion, the purpose of the research question was to find out if wearing perfume improves an employee's performance in comparison to those who do not. It uses a panel study design to gauge how well insurance representatives performed at work based on the amount of insurance policies they offered and how much money they brought in. The data of participants will be collected through voluntary quota sampling methods. These methods will give participants the choice to take part in the experiments should they be interested in the study. Over the course of the experiment, the first phase was devoted to ensuring that both groups began from an identical baseline. In the second phase, the control group did not wear any perfume, while the treatment group wore regular perfume. The data from both phases of the experiment was analyzed using regression analysis and T-tests to determine the significance of the correlation between the presence of fragrance and work performance.

Results will be shared with both collaborating companies of the experiment for their own benefits of improving employee performance and business-centric marketing. Assuming the findings show that perfume significantly improves productivity at work, this information could influence corporate policies and encourage fragrance use in service-oriented workplaces. Employees would be better equipped to make an informed choice when deciding on whether to purchase perfume for work-related purposes.

However, it is imperative to recognise the limits of this research investigation. One of the main limits of the investigation stems from self-selection bias due to voluntary sampling. The volunteers might have an opinion on perfume and knowing their participation has an effect on the results, might try to sway the experiment into their favor. Furthermore, the results of this study can only accurately explain for insurance agents and not for everyone working in the

service industry as a whole due to specific differences in the nature of each job. Future studies could investigate a greater variety of jobs and perfume types to understand the effects of perfume on working performance in different job scopes to a greater depth.

References

Cross, N. (2017, July-August). *Facial attractiveness, weight status, and personality trait attribution: The role of attractiveness in weight stigma*. PubMed. Retrieved May 30, 2024, from https://pubmed.ncbi.nlm.nih.gov/27079121/

Efendi, R. (2020, September). *The Effect of Work Motivation and Work Experience on Employee Performance*. ResearchGate. Retrieved June 2, 2024, from https://www.researchgate.net/publication/355191782_The_Effect_of_Work_Motivation_and_Work_Experience_on_Employee_Performance

Geoffrey, J. (2010, August). *Beauty Imagined: A History of the Global Beauty Industry*. EH.NET. Retrieved May 30, 2024, from https://eh.net/book_reviews/beauty-imagined-a-history-of-the-global-beauty-industry/

Hammer, C. (2017). *Undergraduate Honors Capstone Projects.* A Look into Lookism: An Evaluation of Discrimination Based on Physical Attractiveness. Retrieved June 2, 2024, from https://digitalcommons.usu.edu/honors/207

House, D. M. (2011, October 3). *Cosmetics as a feature of the extended human phenotype: modulation of the perception of biologically important facial signals*. PubMed. Retrieved May 30, 2024, from https://pubmed.ncbi.nlm.nih.gov/21991328/

Kunst, A. (2020, January 6). *Usage of fragrances in the UK 2018*. Statista. Retrieved May 30, 2024, from https://www.statista.com/forecasts/919468/survey-on-the-usage-of-fragrances-in-the-uk

Nault, K.A.,Pitesa, M., & Thau, S. (2020) The attractiveness advantage at work: A cross-disciplinary integrative review. *Academy of Management Annals, 14* (2), 1103-1139. https://ink.library.smu.edu.sg/lkcsb_research/7003

Pamungkas, H. (2020, September). *(PDF) The Effect of Work Motivation and Work Experience on Employee Performance*. ResearchGate. Retrieved May 30, 2024, from https://www.researchgate.net/publication/355191782_The_Effect_of_Work_Motivation_and_Work_Experience_on_Employee_Performance

Shepperd, J. A., & Strathman, A. J. (1989). Attractiveness and Height: The Role of Stature in Dating Preference, Frequency of Dating, and Perceptions of Attractiveness. *Personality and Social Psychology Bulletin, 15*(4), 617-627. Retrieved May 30, 2024, from https://journals.sagepub.com/doi/10.1177/0146167289154014

Spence, C. (2021, June 26). *The scent of attraction and the smell of success: crossmodal influences on person perception - Cognitive Research: Principles and Implications*. Cognitive Research: Principles and Implications. Retrieved May 19, 2024, from https://cognitiveresearchjournal.springeropen.com/articles/10.1186/s41235-021-00311-3#Sec1

Stevenson. (2010). An Initial Evaluation of the Functions of Human Olfaction. Retrieved May 30, 2024, from https://watermark.silverchair.com/bjp083.pdf?token=AQECAHi208BE49Ooan9kkhW_Ercy7Dm3ZL_9Cf3qfKAc485ysgAAA0wwggNIBgkqhkiG9w0BBwagggM5MIIDNQIBADCCAy4GCSqGSIb3DQEHATAeBglghkgBZQMEAS4wEQQM5kiZj1O00NGfHoVjAgEQgIIC__PEWY2kJcH-woIkgHCC__EL1MHsayp5Szwk8zx6-_Y1XpCIQ

U.S. Equal Employment Opportunity Commission. (n.d.). Fact Sheet: Sexual Harassment Discrimination. Retrieved June 2, 2024, from https://www.eeoc.gov/laws/guidance/fact-sheet-sexual-harassment-discrimination

Varnum, M. E., & Varnum's, M. (2023, January 30). *What's That Smell? The Psychology of Scent*. Psychology Today. Retrieved June 2, 2024, from https://www.psychologytoday.com/us/blog/unserious-psychology/202212/whats-that-smell-the-psychology-of-scent

Voelker, D. K. (2015, August 25). Weight status and body image perceptions in adolescents: current perspectives. *Adolescent Health, Medicine and Therapeutics*, *6*, 149–158. https://www.tandfonline.com/doi/full/10.2147/AHMT.S68344?scroll=top&needAccess=true

Nault, K.A.,Pitesa, M., & Thau, S. (2020) The attractiveness advantage at work: A cross-disciplinary integrative review. *Academy of Management Annals*, *14* (2), 1103-1139. https://ink.library.smu.edu.sg/lkcsb_research/7003

Appendix

Questions from Qualtrics Survey

1. What is your gender? (Male/Female)

2. What is your age? (Fill in the blanks)

3. How many years of working experience do you have as an insurance agent? (Fill in the blanks)

4. What is your race? (Chinese, Malay, Indian, Others)

5. How tall are you in centimeters? (Fill in the blanks)

6. What is your weight in kilograms? (Fill in the blanks)

For Recording of Test Results

	A	B	C	D	E	F	G	H	I	J
1	Name	Premium Generated (SGD)	Policies Sold	Gender	Race	Years of Experience	Age	Height	Weight	Perfume (Y/N)
2										
3										
4										
5										
6										
7										