The Spillover Effects of Wearable Technology in Today's Society

A Thesis Presented for the Business Honors Program and Baccalaureate Honors Program
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Introduction

During a time where monitoring personal health has become so important, consumers seek devices that will improve their personal health without needing to leave their personal bubble. In a matter of days, health and fitness products can be delivered to their doorstep. These products can range from stationary bikes, to digital kitchen scales, to heart rate monitors. The device that this paper will specifically focus on is a group of fitness tracking devices that will be referred to as wearable technology. The question here is how beneficial can the usage of wearable technology be, and to explore their main spillover effects of improved health and eating habits.

A spillover effect refers to the impact that one event may have to a seemingly unrelated event. When looking at wearable technology, it is notable that their users may experience instant gratification from seeing their steps appear, calories burned, and resting heart rate decreasing on their wearable devices. This instant-gratification may lead to other health-conscious behaviors such as exercising more often and eating healthier foods. On top of these beneficial changes, consumers may find themselves in a healthier state of mental well-being.

Wearable technology on the market can be very similar in terms of what features they have and what services they provide. Regardless of the brand of the wearable technology, all of the products have some similar basic features. Wearable technology is beneficial to the consumer and brings about awareness to self-health monitoring. The purpose of this paper is to investigate and explore the spillover effects of using wearable technology on consumers. The specific research questions that I will explore are:

Q1. Does using wearable technology (e.g., smartwatches) help individuals monitor their health better?

Q2. Does using wearable technology help individuals engage in other healthy habits?

Q3. Does wearable technology have an overall impact on a person's overall health, happiness and well-being?

Smart Watch

For the purpose of this research I investigate smart watches as a wearable technology of interest. Smart watches are an item of wearable technology that have been on the rise and are becoming increasingly popular (Dong-Hee and Ki Joon, 527). The first digital wristwatch that originally appeared in 1972 was the Hamilton Pulsar P1, but the first smartwatch that had the capability to show more than the date and time was the Seiko Pulsar NL C01. This watch had user-programmable memory, which meant that users could store a small amount of data on the watch (Dong-Hee and Ki Joon, 528). Seiko eventually began to evolve their smartwatches, and throughout the 1980s they released the Data 2000 and RC-1,000. These two models had external keyboards which could allow for data transfer and entry from a computer through a cable (Dong-Hee and Ki Joon, 528).

Digital watches eventually evolved into the modern smart watch because manufacturers and designers mixed smart features with higher computing power. In 2003, Microsoft introduced it's SPOT watch which used FM radio broadcasting signals that would deliver information to the wearable technology (Dong-Hee and Ki Joon, 528). Although the technology that shaped the smart watches of the past was FM radio broadcast signals, the technology that shaped today's smartwatches is Bluetooth technology.

Through the usage of Bluetooth, users could use smartphones and smart watches in conjunction with one another. The wearable technology was not meant to replace smartphones, but instead to compliment it. Through Bluetooth connection, smartwatches are able to provide

"more convenient, faster, and substitutable access to information," which sets them apart from other wearable technology (Dong-Hee and Ki Joon, 528). When a user unboxes their smartwatch for the first time, it comes with instructions on how to connect it to their smartphone via Bluetooth and further information regarding any applications that might need to be downloaded onto the smartphone as well.

Smartwatches have a key strength in that they have the ability to give their user convenient, fast, and immediate access to information. Customers purchase smartwatches because they are not only utilitarian tools but "personalized, trendy items that reflect individual identities, emotions, and aesthetic values" (Dong-Hee and Ki Joon, 535). Based on these features, it can be possible that wearing smart watches can motivate an individual to lead an overall healthier life by incorporating healthier eating habits and exercising more.

Spillover Effects

We believe that people take cues from wearing wearable technology devices which motivates them to be more healthy overall. Few key features of wearable technology makes it unique with respect to the impact it might have on users. For example, a wearable technology device can be used to self-track. *Self-tracking*, also known as self-quantifying, is defined as "the act of collecting data about oneself to change behavior and improve personal outcomes" (Giddens, Gonzalez, and Leidner, 1). In addition, it can also help users *Self-quantify* because these wearable technologies typically come with applications on smartphones and computers to display the data. These applications track data from wearable technology "such as mood, physical activities, and sleep patterns" (Giddens et al., 1). It is based on these features that we believe wearable technology can produce spillover effects.

Spillover effect is defined as "where the adoption of one behavior causes the adoption of additional, related behaviors" (Galizzi and Whitmarsh, 1). We want to see if the usage of wearable technology creates a feedback loop that has a spillover effect on other healthy habits. According to a study, "the motivation that drives consumers to undertake self-tracking activities: improving the quality of health and everyday life like better sleep, physical fitness, or prevention of diseases" (Przegalinska, 65). It is important to also note that the utilization of these wearable technologies has the benefits of "decreasing stress levels, increasing productivity, enhancing cognitive abilities, better time management, and better work-life balance" (Przegalinska, 65).

Additionally, users are motivated by wearable technology due to instant gratification. For the purpose of this thesis, *instant gratification* is defined as "the habitual use of various information services [which] reinforces consumers' expectations of obtaining 'answers' immediately" (Nakayama and Wan, 11). In the case of wearable technology, this instant gratification derives from when a user checks their user data that is accessible through the display of the device or through the accompanying application. These displays aim to motivate users to reach their health and fitness goals through tracking various metrics that can be displayed in real-time.

Long Term Goals

According to a study on wearable technology, any of these trackers can "measure physical activity in terms of calories burned, record daily activities, track sleep efficiency, and provide extensive information on these activities to the user" (Przegalinska, 7). This means that when a user views the data in their application, they can see what they have done and how it has affected their profile. For example, resting heart rate is a popular metric for fitness level and overall cardiovascular health. According to Nieca Goldberg, M.D., "Generally, a lower resting

heart rate indicates more efficient heart function and greater cardiovascular health—and research has connected a higher resting HR with a higher risk of cardiac events like stroke and heart attack" (Winderl). Therefore, healthy habits such as regular exercise and healthy eating can lower resting heart rate. From this information, one can make the assumption that when a user uses wearable technology, they may feel compelled to exercise more often in order to lower their resting heart rate. This study explores if users of wearable technology commit themselves to long term goals of staying fit or looking younger and therefore may engage in more healthy habits through a spillover effect.

Healthier Eating Habits

Most fitness tracking wearable devices are connected to phone applications that can track the users' food intake if users log their calories. Additionally, they track how many calories are burned daily by combining the user's basal metabolic rate or BMR, which is the rate at which the body burns calories at rest to maintain vital body functions. This gives the wearable technology's app the ability to display how many calories the user has eaten versus burned. According to an article published in Post and Courier, "Modern wearable devices and mobile apps allow you to track your weight, what you eat, and your activity fairly accurately" (Parr, 2). The analysis on these devices can be used to show what a consumer is really eating, because the applications will require its user to input the item eaten and "the app calculates calories, nutrients, sugar, salt and water intake based on standard databases" (Parr, 2). Parr also suggests that when consumers track what they consume, it helps them to learn about their eating patterns which results in developing healthier eating habits or meeting health goals. These capabilities of wearable technology may inspire their users to burn more calories than they consume in a day, or to reduce their caloric intake which over time would result in weight loss. While the applications are useful

for the consumers, it is not the application or fitness tracker that helps consumers to develop healthier eating habits, but it is the dedication and lifestyle changes that are a spillover effect of utilizing the technology.

Overall Wellbeing

Next we will explore the notion that utilizing wearable technology can lead to increased *self-awareness* of overall health. *Self-awareness* is defined as "monitoring, measuring, and recording the elements of one's body and life as a form of self-improvement or self-reflection," (Przegalinska, 7). In having this awareness and the data from their wearable technology, consumers are better able to understand their bodies and the actions they take that affect their health. The primary spillover effects of using wearable technology lead to changes in well-being, happiness, and state-of-mind. *Well-being* is defined as "a population‐based term targeting positive feelings about oneself and reflecting an inner capacity," (Barkham et al., 352). *Happiness* is defined as "often taken to mean something very close to an extended feeling of pleasure or an extended good mood or pleasant affect," (Michalos, 355). *State-of-mind* is defined as "a person's emotional state:mood" (Merriam Webster). The definitions of well-being, happiness, and state-of-mind all impact this thesis' research because they are all a result of the three spillovers. These definitions will help to identify the relationships between the previously stated primary spillover effects, wearable technology, and the consumer that uses it.

Along with the notion that wearable technology is capable of synchronization between other smart devices to display data, it is also utilized to share data with friends and others. According to existing research "...wearable fitness devices can affect how a person identifies himself or herself," (Giddens et al., 3). Therefore, it is possible to assume that wearable technology will affect a person's identity. *Identity* refers to the construct of "how people behave

and perform," (Giddens et al., 3). This is important to this thesis research because how consumers feel perceived by others may impact their identity in conjunction with wearable technology.

Research Design and Sample

Data was collected through a survey developed on Qualtrics, a web-based online survey platform and was distributed electronically via email, various social media platforms, and word of mouth. The survey was approved by the International Review Board at Rider University. The survey link recorded anonymous survey responses with no linkage of specific personal data (i.e. names, email addresses) connecting survey responses to the respondents. The survey was live between March 28 2021 and April 9 2021. The questions asked on the survey can be found in Appendix E.

Prior to the public distribution of the survey, a pretest of 5 participants was run to ensure flow, clarity, and to make suggestions for improvement before distribution. Of 339 participants who opened the survey link, 98 were excluded from further participation because they did not meet the screening criteria (i.e. participants had to currently own and use health tracking wearable technology such as wrist-wearables produced by Fitbit, Garmin, Apple, Google, etc., and be at least 18 years of age). If participants answered no to either of the screening questions they were brought to the end of the survey and deemed unable to participate. Ultimately only 241 respondents were eligible to participate, therefore the sample size will be known as n=241.

We found that the sample was primarily female with 166 female participants, and that the sample was predominantly caucasian with 183 caucasian participants. The highest age range represented was from 18-24 with 120 participants, followed by participants ages 35-44 with 36 participants. After that followed the age ranges of 25-34 with 28 participants, and 45-54 with 19

participants. The oldest age ranges of 65+ were not well represented with under 10 participants in total.

By generation, the generation with the highest participation was Generation Z (1997-2013) with 118 participants. This was followed by Generation Y (1981-1996) and Generation X (1965-1980) with 42 and 43 participants respectively. In the generations of Baby Boomers (1946-1964) and The Silent Generation (Elderly, 1928-1946) there were 18 and 3 participants respectively.

The majority of the participants selected “completed or currently enrolled in a 4-year degree” with 122 participants, followed by participants who have completed or are currently enrolled in a professional degree” with 43 participants and some college with 30 participants. The other categories of “high school graduate”, “2-year degree”, and “doctorate degree” combined had lower than 30 participants.

The majority of the annual income of participants was less than $10,000 with 61 participants, followed by $10,000-19,000 with 30 participants, then $100,000-$149,000 with 29 participants, then all other categories had less than 25 participants each.

The most preferred variable of technology was 152 using Apple Watch followed by Fitbit with 60 participants. The next brands were Garmin and Google with less than 10 participants together total. Respondents who said “Other” wrote-in brands such as Samsung, Whoop, and Withings.

In addition, the majority of the sample, 142 individuals had used this wearable technology for over a year. Within the other categories of: for a year, within the last six months, and within the last three months, we found similarly equivalent answers with around 30

respondents for each. We can conclude that these participants were well-versed in how this technology works.

In a typical 7 day week, the respondents mostly use their wearable technology for 7 days of the week with 121 respondents. The other respondents use their devices between 5-6 days of the week with 18 respondents for 5 days and 17 for 6 days respectively. Following those days, the amount of days and the corresponding amount of respondents decreased. We can conclude that participants mostly utilize their wearable devices for 5 to 7 days of the week.

On a weekly basis, respondents explained how much exercise that they perform on a weekly basis. We defined exercise to the respondents as anything that includes intentional exercise such as brisk walks, home exercises, swimming, team sports, etc. Many participants reported Moderate Exercise (3-5 days per week) with 86 respondents, then Light Exercise (1-2 days per week) with 76 respondents, followed by Heavy Exercise (6-7 days per week) with 53 respondents. The lowest category was Sedentary (defined as office job) with 26 respondents.

Statistical Analysis

Data was collected through Qualtrics as mentioned in the previous section. We utilized IBM SPSS Statistics to analyze the data. In the following sections, we will discuss our findings of factor analysis, multiple regression, simple linear regression and one-way ANOVA.

Factor Analysis

The factor analysis will cover what questions were utilized to create the variables. The study questionnaire measured six variables: users' satisfaction with their fitness tracking device, users' perception of their self-image since using their fitness tracking device, long-term health and wellness goals, overall wellbeing, and users' spillover behavior since they have used wearable technology. A principal components analysis was run on construct items that measured

the study variables. The KMO Bartlett's test for all analysis were statistically significant at p= 0.05. Three items measuring users' satisfaction with their fitness tracking device all loaded on the same component, and explained 79.91% of the variance. Four items used to measure self-image also loaded on the same component (variance = 67.96%). All seven items measured long-term goals (Variance = 63.04%) and the seven items measuring spillover effect (variance = 52.43%) loaded on their individual components. However, the eight items used to measure overall wellbeing loaded onto two different components. Six items that loaded on the first component measured users' happiness, mood, motivation to work harder, etc. This component was called users' overall wellbeing (variance = 49.24%). Two other items measuring healthy cooking habits and eating at home loaded on its own component and were termed eating habits (variance = 25.26%). Please see Appendix A for items and item loadings. Based on the factor analysis, six new variables were created by calculating the mean of all items for each variable.

Multiple Regression

A multiple regression was then run to analyze the effect of users' 1) Satisfaction with their wearable technology device, 2) Perception of self-image as a result of using wearable technology, 3) Setting long term goals, 4) Perception of overall wellbeing since using the wearable technology, and 5) Eating habits since using the wearable technology, on their spillover effect on other healthy behavior. The overall model was statistically significant F (5, 218) = 29.63, p = .000, while also showing good predictive power, adj. R square = 0.391. The results show that satisfaction (b = .190, p = .004), long term goals (b = .342, p = .000), and eating habits (b = .243, p = .000) positively significantly impacted users' spillover behavior. In other words, the more satisfied that users were with their fitness tracking devices, if they had set long term health and wellness goals and were following healthy eating habits, the more likely they were to

indulge in the spillover of healthy behavior. The perceived self-image and their perception of overall wellness did not significantly impact the spillover behavior. With all of the independent variables in the model, eating habits (std. Beta = .303) had the strongest effect followed by long term goals (std. beta = .292) and satisfaction (std. Beta = .156). Please see Appendix B for multiple regression analysis.

Simple Linear Regression

We performed a simple linear regression to measure the effect of one independent variable on the dependent variable. As an ad hoc test, we ran simple linear regression to see if each variable, by itself, had any impact on the spillover behavior. Interestingly, each variable, by itself, had a statistically significant positive impact on the spillover behavior. The two variables that were not significant in the multiple regression analysis, overall wellbeing and self-image, also had a strong positive effect on users' spillover behavior. Please see Appendix C for simple linear regression results.

One-Way ANOVA

We then ran a one-way ANOVA to check for gender differences for all of the study variables. None of the variable means were statistically significant for male versus female. It should be noted that the gender representation in this sample is heavily skewed towards females. This could be a potential reason for no significant impact. However, some interesting trends were seen in the data. As seen in Appendix D, males had a higher mean than females on Image, Long Term Goals, and Spillover, while females had a higher mean than males on Satisfaction, WellBeing, and Eating Habit.

Discussion

From our research, we can infer that using wearable technology such as smartwatches does in fact help individuals monitor their health better because it gives them insights into their health metrics. This was indicated by the level of user satisfaction from our survey questions that were geared towards user overall satisfaction with their wearable technology. Our findings show that satisfaction with their wearable technology, long term goals, and eating habits all positively and significantly impacted the users' spillover behavior. Out of all of the independent variables, healthy habits had the strongest effect, then long term goals, and finally satisfaction.

Using wearable technology does help individuals engage in other healthy habits because it motivated respondents to lead an overall healthier life. Our findings show that the more satisfied that the users were with their wearable technology, and if they had set long term health and fitness goals, they were more likely to experience the spillover of healthy behaviors (healthier eating habits, long term fitness and health goals) to improve their health.

We also found that while the respondents' perceived self-image and their perception of overall wellness was not significant in the multiple regression analysis, they still had a strong positive effect on the respondents' spillover behavior when we looked at each independent variable by themselves. We find that wearable technology does have an overall impact on a person's overall health, happiness, and well-being. Our findings show that wearable technology's effect on respondent's perceived self-image and their perception of overall wellness had a strong positive effect on the respondents' spillover behavior.

We ran gender differences to see if the study variables were perceived differently by males versus females. In none of the variables, the gender was not significant at all, but we found some interesting trends. For example, while this was not statistically significant, the mean of

satisfaction, well being, and engaging in healthy eating habits were all higher for female compared to male. Whereas the means for spillover effect, setting long term goals, and the self image as the result for using wearable technology was higher for males than for females.

These findings are important because they prove the positive effects of utilizing wearable technology.

Implications

The information that we have collected can help wearable technology businesses such as smartwatch businesses to understand what consumers look for in their wearable technology and the companion applications. From this study, it seems that consumers are satisfied with the current abilities of wearable technology. Additionally, we have learned that long-term goals impact satisfaction. Consumers would likely appreciate it if more wearable technology had the ability to set long term goals and to keep consumers more accountable for their healthy actions to become habits. Business could incorporate this information into their strategic plans if they aimed to highlight how smartwatches not only track data in real-time but that the usage of their products leads to longevity of life in the long run due to the healthy spillover effects in their promotional campaigns. Product packaging could also be improved and marketed to consumers as a life-changing device by highlighting the positive spillovers as observed in the currently available literature and the research from this study.

Society's benefit of wearable technology is that consumers can purchase the ability to actively work on their wellbeing. Current literature reflects that wearable fitness devices can affect how a person identifies themselves according to research,"...wearable fitness devices can affect how a person identifies himself or herself," (Giddens et al., 3). This study measured overall wellbeing in the users' answers regarding their happiness, mood, and motivation to work

harder. The relationship between wearable technology and the construct of human wellbeing are positively correlated as utilizing wearable technology, as displayed in this study's research, has been shown to positively impact wellbeing.

Research Limitations

A limitation of this study included limitation in time of the distribution of the study. If the survey had been distributed for a longer timeframe, then it is possible that the sample size would have been greater. Another limitation of the study was the difficulties in some participants completing the survey, as a handful of participants completed most of the questionnaire but then would not fill out the demographic questions at the end of the survey, likely out of not wanting to submit personal data. Sample size was also a limitation as there were 339 responses, but only 241 of them were viable making the sample size 241. If there were more responses there could have been a higher sample size making the data more representative of a larger population. Additionally, the sample size was predominantly female and caucasian. A more diverse sample would have been more representative of a larger population. Lastly, one more limitation was that respondents may have lied about how much they purposefully exercised or how often they ate healthy foods due to social desirability.

In regard to further research on the topic, if a larger population could be reached with the questionnaire then a larger viable sample could be produced that would be better indicative of a larger population. Additionally, if this larger population could be reached and the questionnaire had additional questions that covered topics such as hours slept, further spillover effects could be explored.

Conclusion

Utilizing wearable technology that has the capability to view health metrics in real-time results in a higher awareness of health and habits. These participants mostly utilize their wearable technology for 5 to 7 days of the week and have owned their wearable technology for more than a year, and from this we can conclude that they are well-versed in how this technology works. The more involved that the respondents were in overall health activities (such as working out at the gym, swimming, or monitoring their health overall) led to a higher satisfaction with using wearable technology. In addition, if they made more changes to their lifestyle such as eating at home more regularly or making more meals at home, this also had an impact on their satisfaction. Wearable technology from brand to brand can be very similar in terms of what features it has and what services it provides, so producers of these devices must create innovative marketing campaigns and packaging to highlight why their product is beneficial to spillover effects. From the results of the statistical analysis, we can conclude that wearable technology use is beneficial due to the positive spillover effects and that more consumers should utilize wearable technology when possible to gain insight into their health.

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Appendix A - Factor Analysis

I. Spillover Effect - Q13 to Q19 (% variance = 52.43%)

Component Matrix[a]

	Component 1
Engage in other physical activities like swimming, hiking, jogging, cycling, etc.	.827
Exercise More	.805
Take more responsibility for the state of your overall health	.802
Examine your health more frequently	.769
Eating healthier	.717
Join a gym	.552
Visit doctor's office more regularly	.531

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

II. Long Term Goal - Q28 to Q34 (% variance = 63.04%)

Component Matrix[a]

	Component 1
Stay healthier longer	.853
Stay fit longer	.832
Prevent ill health	.825
Maintain a healthy body weight	.818
Have more energy	.772
Project a positive image of yourself	.734
Look younger	.713

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

III. Self Image - Q23 to Q26 (% variance = 67.96%)

Component Matrix[a]

	Component 1
People who use wearable technology are admired by others	.860
Using my smart watch enhances the image that others have of me	.814
My wearable technology helps me show others what I am or would like to be (such as an athlete, health conscious, etc.)	.812
Others who use wearable technology have characteristics which I would like to have.	.811

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

IV. Overall Wellbeing: Q36 to Q41 (% variance = 49.24%) and Healthy Eating Habits: Q42 and Q43 (% variance = 25.26%)

Rotated Component Matrix[a]

	Component 1	2
Makes you feel inspired	.839	
Improves your mood	.834	
Motivates you to work harder	.829	
Makes you happier	.824	
Improves your self image	.719	
Makes you want to go outside more	.705	
Influences you to eat at home more often		.912
Causes you to cook healthier		.878

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

V. Satisfaction with using the wearable technology - Q9 to Q11 (%variance = 79.91%)

Component Matrix[a]

	Component 1
I truly enjoy using my wearable technology	.931
I am satisfied with my decision to use my wearable technology	.890
Using my wearable technology has been a good experience	.859

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Appendix B - Multiple Regression Analysis

I. Variables Entered/Removed[a]

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	EatingHabit, Satisfaction, Image, LongTermGoals, WellBeing[b]	.	Enter

a. Dependent Variable: Spillover

b. All requested variables entered.

II. Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.636[a]	.405	.391	.69400

a. Predictors: (Constant), EatingHabit, Satisfaction, Image, LongTermGoals, WellBeing

III. ANOVA[a]

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	71.351	5	14.270	29.628	.000[b]
	Residual	104.997	218	.482		
	Total	176.348	223			

a. Dependent Variable: Spillover

b. Predictors: (Constant), EatingHabit, Satisfaction, Image, LongTermGoals, WellBeing

IV. Coefficients[a]

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.220	.340		-.649	.517
	Satisfaction	.190	.066	.156	2.886	.004
	Image	.017	.061	.017	.278	.781
	LongTermGoals	.342	.090	.292	3.791	.000
	WellBeing	.082	.083	.077	.992	.322
	EatingHabit	.243	.053	.303	4.588	.000

a. Dependent Variable: Spillover

Appendix C - Simple Linear Regressions

I. Satisfaction

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.346	.359		3.749	.000
	Satisfaction	.345	.078	.278	4.411	.000

a. Dependent Variable: Spillover

II. Image

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.987	.182		10.925	.000
	Image	.334	.062	.338	5.397	.000

a. Dependent Variable: Spillover

III. Long Term Goals

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.556	.240		2.316	.021
	LongTermGoals	.655	.065	.556	10.044	.000

a. Dependent Variable: Spillover

IV. WellBeing

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.006	.231		4.356	.000
	WellBeing	.522	.062	.493	8.447	.000

a. Dependent Variable: Spillover

V. Eating Habit

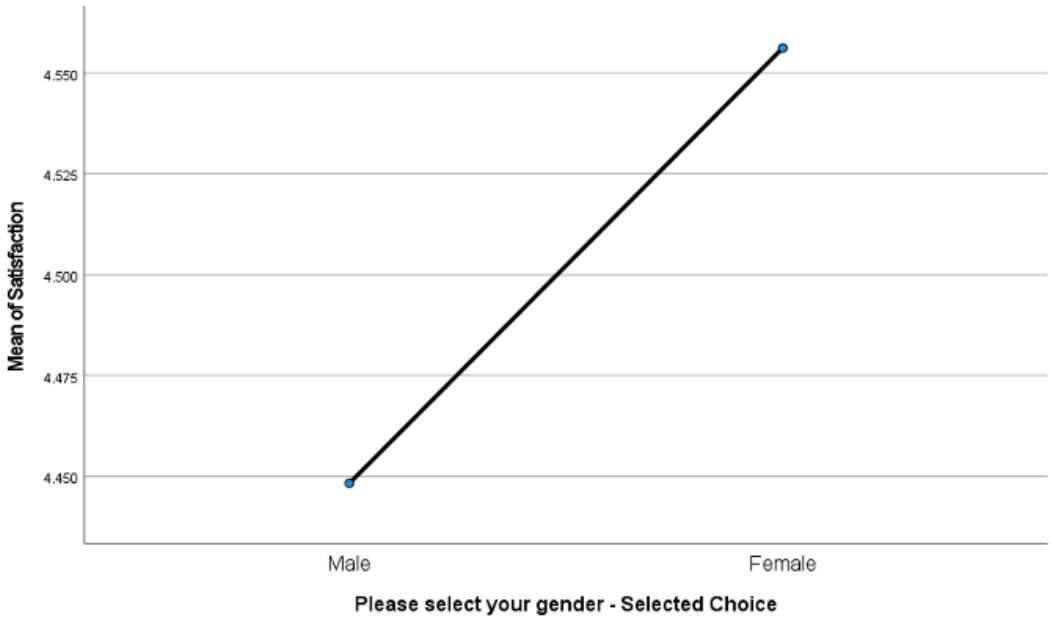
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.710	.140		12.204	.000
	EatingHabit	.421	.046	.524	9.172	.000

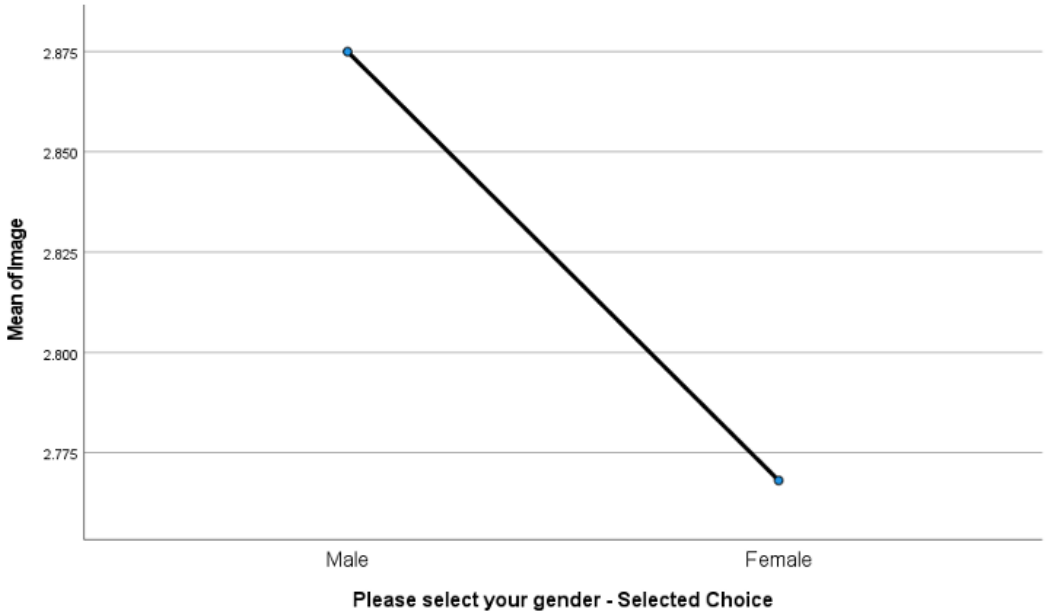
a. Dependent Variable: Spillover

Appendix D - One-Way ANOVA

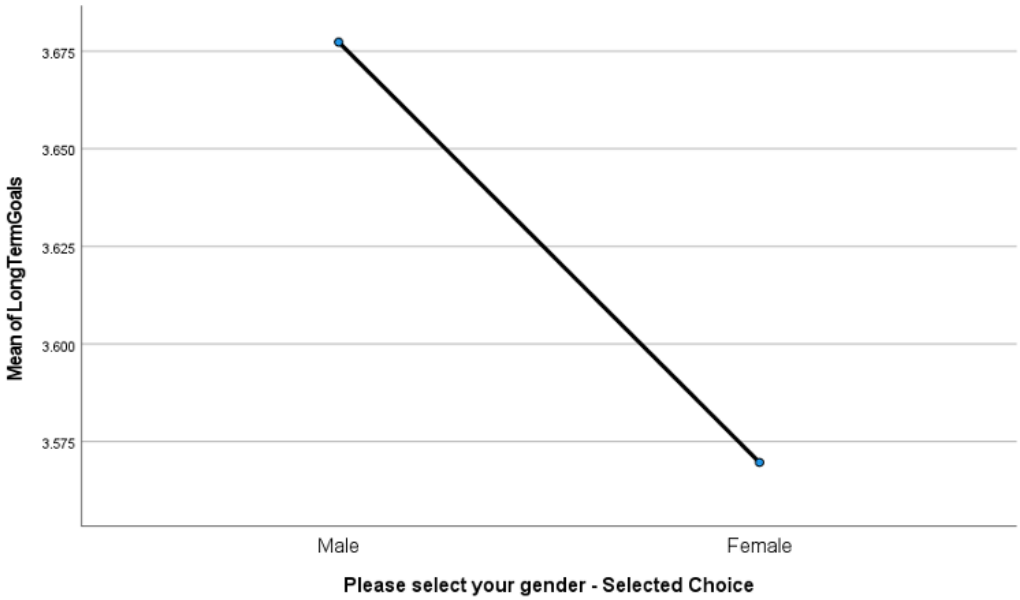
I. Mean of Satisfaction



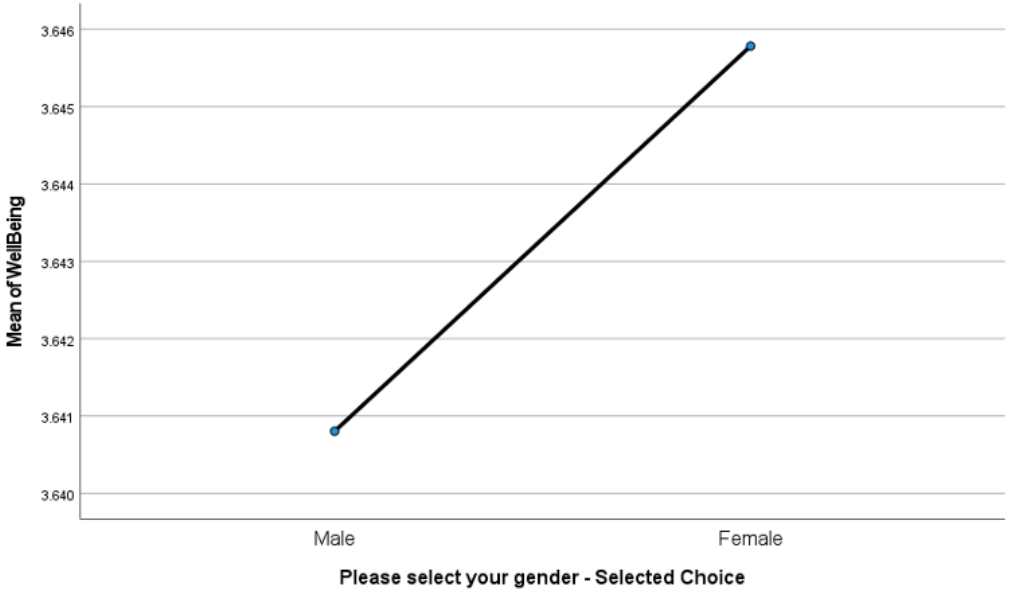
II. Mean of Image



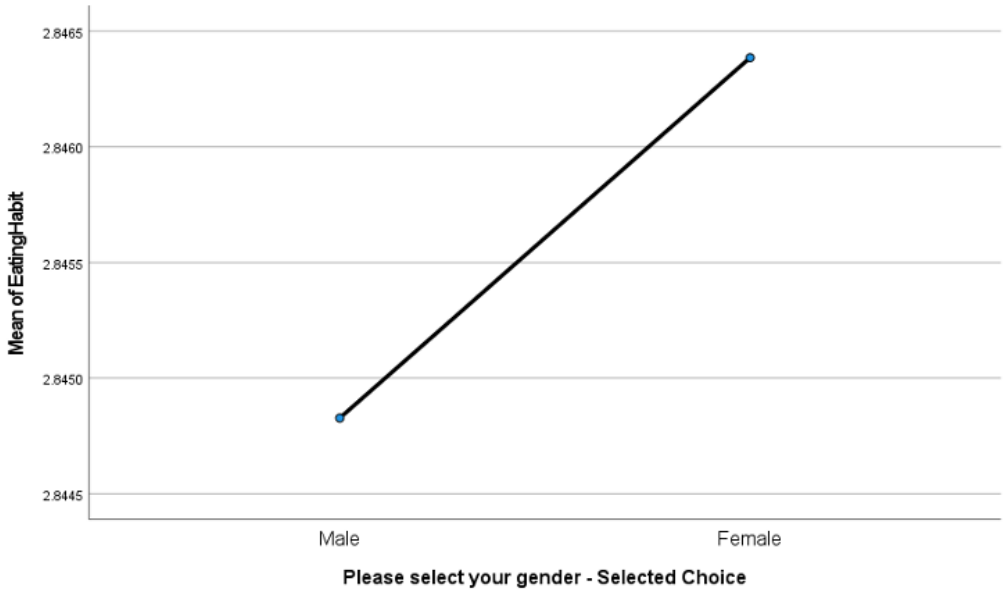
III. Mean of Long Term Goals



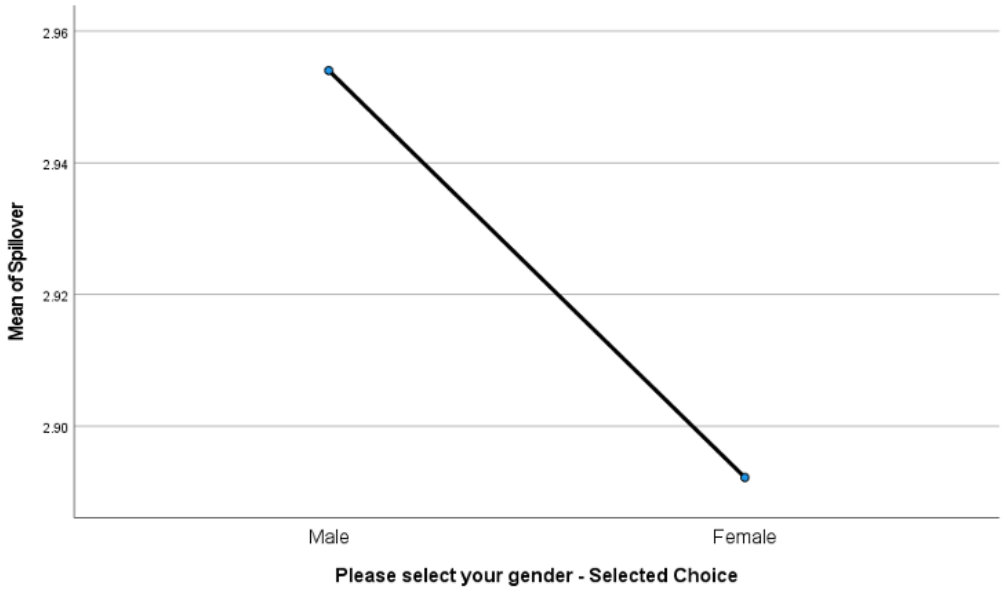
IV. Mean of Wellbeing



V. Mean of Eating Habit



VI. Mean of Spillover



Appendix E - Wearable Technology Survey

Q1 Thank you for participating in this important research on the use of wearable technology. We appreciate your time and feedback. In order to participate in this survey, you need to be 18 years or older and use wearable technology worn on the wrist such as Fitbit, Garmin, Apple, Google, etc.

The intent of this questionnaire is to assess the use of wearable fitness tracking technology such as Fitbit, Garmin, Apple, Google, etc. You will be asked to answer questions regarding the use of the technology and how do you share this information. The information you provide will be anonymous and will take around 10-15 minutes to complete. If you have questions about the project at any time, please ask for additional information at Rider University, Sarah Carbonaro, carbonaros@rider.edu.

Participation is completely voluntary. There will be no penalty if you decide not to participate. You may withdraw from the project at any time. By clicking the next button you are agreeing to participate in the survey.

Q2 Are you 18 years or older?

□ Yes (1)

□ No (2)

Skip To: End of Survey If Q2 = No

Q3 Do you currently own and use health tracking wearable technology? Examples of this are items worn on the wrist produced by Fitbit, Garmin, Apple, Google, etc.

□ Yes (1)

□ No (2)

Skip To: End of Survey If Q3 = No

Q4 Select by clicking the brand of wearable technology you are using

□ Apple Watch (1)

□ Fitbit (2)

□ Garmin (3)

□ Google (4)

□ Other, please specify (5)

Q5 How long have you had your current smartwatch?

□ Recently, within the last week (1)

□ Within the last month (2)

□ Within the last 3 months (3)

□ Within the last 6 months (4)

□ For a year (5)

□ For more than a year (6)

Q6 In a typical 7 day week, how many days do you use your wearable technology?

	0	1	2	3	4	5	6	7
Week days ()								

Q7 How much exercise would you say that you get on a weekly basis? Exercise can include anything that is intentional exercise such as brisk walks, home exercises, swimming, team sports, etc.

□ Sedentary (office job) (1)
□ Light Exercise (1-2 days per week) (2)
□ Moderate Exercise (3-5 days per week) (3)
□ Heavy Exercise (6-7 days per week) (4)

Q8 Indicate your level of satisfaction of wearable technology with the following questions

Q9 I am satisfied with my decision to use my wearable technology

□ Strongly disagree (1)
□ Somewhat disagree (2)
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q10 I truly enjoy using my wearable technology

□ Strongly disagree (1)
□ Somewhat disagree (2)
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q11 Using my wearable technology has been a good experience

□ Strongly disagree (1)
□ Somewhat disagree (2)
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q12 Do you believe using your wearable technology has influenced your other health related decisions? In answering the following questions, think of the time since you have started using your wearable technology and indicate the extent to which it has impacted the following behaviors:

Q13 Eating healthier
□ Never (1)
□ Sometimes (2)
□ About half the time (3)
□ Most of the time (4)
□ Always (5)

Q14 Exercise More
□ Never (1)
□ Sometimes (2)
□ About half the time (3)
□ Most of the time (4)
□ Always (5)

Q15 Join a gym
□ Never (1)
□ Sometimes
□ About half the time (3)
□ Most of the time (4)
□ Always (5)

Q16 Visit doctor's office more regularly
□ Never (1)
□ Sometimes
□ About half the time (3)
□ Most of the time (4)
□ Always (5)

Q17 Engage in other physical activities like swimming, hiking, jogging, cycling, etc.
□ Never (1)
□ Sometimes
□ About half the time (3)
□ Most of the time (4)
□ Always (5)

Q18 Examine your health more frequently
□ Never (1)
□ Sometimes
□ About half the time (3)
□ Most of the time (4)
□ Always (5)

Q19 Take more responsibility for the state of your overall health
□ Never (1)
□ Sometimes
□ About half the time (3)
□ Most of the time (4)
□ Always (5)

Q20 Take more preventative measures for your health
□ Never (1)
□ Sometimes
□ About half the time (3)
□ Most of the time (4)
□ Always (5)

Q21 Overall, become more aware of your health
□ Never (1)
□ Sometimes
□ About half the time (3)
□ Most of the time (4)
□ Always (5)

Q22 Please answer the following questions regarding your perceptions of how others view your use of your wearable technology

Q23 Using my smart watch enhances the image that others have of me
□ Strongly disagree (1)
□ Somewhat disagree
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q24 People who use wearable technology are admired by others
□ Strongly disagree (1)
□ Somewhat disagree
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q25 My wearable technology helps me show others what I am or would like to be (such as an athlete, health conscious, etc.)
□ Strongly disagree (1)
□ Somewhat disagree
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q26 Others who use wearable technology have characteristics which I would like to have.
□ Strongly disagree (1)
□ Somewhat disagree
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q27 Do you believe using your wearable technology can help you achieve these goals?

Q28 Stay healthier longer
□ Extremely Unlikely (1)
□ Somewhat unlikely (2)
□ Somewhat likely (3)
□ Extremely likely (4)
□ Extremely likely (5)

Q29 Stay fit longer
□ Extremely Unlikely (1)
□ Somewhat unlikely (2)
□ Somewhat likely (3)
□ Extremely likely (4)
□ Extremely likely (5)

Q30 Look younger
□ Extremely Unlikely (1)
□ Somewhat unlikely (2)
□ Somewhat likely (3)
□ Extremely likely (4)
□ Extremely likely (5)

Q31 Have more energy
□ Extremely Unlikely (1)
□ Somewhat unlikely (2)
□ Somewhat likely (3)
□ Extremely likely (4)
□ Extremely likely (5)

Q32 Project a positive image of yourself
□ Extremely Unlikely (1)
□ Somewhat unlikely (2)
□ Somewhat likely (3)
□ Extremely likely (4)
□ Extremely likely (5)

Q33 Maintain a healthy body weight
□ Extremely Unlikely (1)
□ Somewhat unlikely (2)
□ Somewhat likely (3)
□ Extremely likely (4)
□ Extremely likely (5)

Q34 Prevent ill health
□ Extremely Unlikely (1)
□ Somewhat unlikely (2)
□ Somewhat likely (3)
□ Extremely likely (4)
□ Extremely likely (5)

Q35 Do you believe using your wearable technology does the following:

Q36 Makes you happier
□ Strongly disagree (1)
□ Somewhat disagree (2)
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q37 Improves your mood
□ Strongly disagree (1)
□ Somewhat disagree (2)
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q38 Improves your self image
□ Strongly disagree (1)
□ Somewhat disagree (2)
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q39 Makes you feel inspired
□ Strongly disagree (1)
□ Somewhat disagree (2)
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q40 Motivates you to work harder
□ Strongly disagree (1)
□ Somewhat disagree (2)
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q41 Makes you want to go outside more
□ Strongly disagree (1)
□ Somewhat disagree (2)
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q42 Causes you to cook healthier
□ Strongly disagree (1)
□ Somewhat disagree (2)
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q43 Influences you to eat at home more often
□ Strongly disagree (1)
□ Somewhat disagree (2)
□ Neither agree nor disagree (3)
□ Somewhat agree (4)
□ Strongly agree (5)

Q44 The following questions will ask you some questions about your demographics. We do not save this data or use it to identify participants. This data is strictly used for aggregate sampling information.
Q45 Please select your birth year range
□ 1928 – 1946 (1)
□ 1946 – 1964 (2)
□ 1965 – 1980 (3)
□ 1981 – 1996 (4)
□ 1997 – 2013 (5)

Q46 Please select your age range
□ 18 - 24 (1)
□ 25 - 34 (2)
□ 35 - 44 (3)
□ 45 - 54 (4)
□ 55 - 64 (5)
□ 65 - 74 (6)
□ 75 - 84 (7)
□ 85 or older (8)

Q47 Please select your gender
□ Male (1)
□ Female (2)
□ Other, please specify (3)

Q48 Please select the highest level of education attained
□ Less than high school (1)
□ High school graduate (2)
□ Some college (3)
□ Completed or currently enrolled in a 2-year degree (4)
□ Completed or currently enrolled in a 4-year degree (5)
□ Completed or currently enrolled in a professional degree (6)
□ Completed or currently enrolled in a Doctorate degree (7)

Q49 Please select your annual income
□ Less than $10,000 (1)
□ $10,000 - $19,999 (2)
□ $20,000 - $29,999 (3)
□ $30,000 - $39,999 (4)
□ $40,000 - $49,999 (5)
□ $50,000 - $59,999 (6)
□ $60,000 - $69,999 (7)
□ $70,000 - $79,999 (8)
□ $80,000 - $89,999 (9)
□ $90,000 - $99,999 (10)
□ $100,000 - $149,999 (11)
□ More than $150,000 (12)

Q50 How would you describe yourself?
□ American Indian or Alaska Native (1)
□ Hispanic, Latino, or Spanish origin (2)
□ Asia (3)
□ Black or African American (4)
□ Native American or other Pacific Islander (5)
□ Caucasian (6)
□Other (please specify) (7)