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First Impressions of Fitness-Tracking Devices: What Attributes Matter?

By [A. Pfannenstiel](#) & [B. Chaparro](#)

Summary. This study investigated first impressions of the usability and functionality of 6 different fitness tracking devices. While many previous studies assess the accuracy and behavioral effects of fitness tracking devices, limited research has been done to analyze the usability and desirability of these products. Participants were asked to rate their impressions of the Garmin Vivofit, Jawbone Up24, Fitbit One, Basis B1 Band, Misfit Shine, and the Tom Tom Multisport – before and after brief usage. Participants were also asked to describe the main factors contributing to their overall preference and likelihood to purchase and/or use each device. Results indicate that participants are initially more likely to favor small, lightweight devices that have a display.

Introduction

According to Comstock (2014), 19 million wearable fitness tracking devices are owned this year, a figure that is expected to triple in the next 3 years. Despite this success, it is suggested that the early appeal and fascination with the devices does not last. This leaves companies eager to discover what factors appeal the most to individuals in the market for fitness tracking devices. However, Quinlan (2013) suggests that this “one-size-fits all approach” is what limits the desirability of these products. In order to appeal to a greater number of users, Quinlan (2013) states that fitness devices need to be versatile and considerate of people with different, or limited abilities. Versatility is very important in terms of fitness devices as one third of the population is considered obese.

Kelly (2014) reports 6 trends that are becoming more popular and may even be necessary for a device's popularity:

1. Fitness trackers include instruction in addition to activity reports
2. Synced to the smartphone
3. Attractiveness
4. Integrated with social networks
5. Innovative, or new and unique features
6. Heart rate monitoring

Method

Participants

Nineteen college students (10 male, 9 female) ranging in age from 18 to 45 ($M = 27.63$) volunteered for the study for course credit. All of the participants were unfamiliar with any fitness tracking device; two had experimented with a step counting device not used in this study.

Materials

Six fitness tracking devices, and their packaging were evaluated. Participants rated their first impressions and final impressions using a paper 50-point scale.

Figure 1. Six fitness tracking devices studied.

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Procedure

Figure 2. Procedure followed by participants.

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Packaging. Before seeing or touching any of the devices, each participant rated the packaging of the devices using the 50-point scale. The participant was then allowed to touch and read the packaging. They were asked to explain what influenced their overall opinion of each package.

First Impressions. The packaging was removed and replaced with the 6 devices. Each participant was asked to rate the devices based on his/her first impressions. Again, they were not allowed to touch the devices and were asked to instruct the researcher where to place each device on the 50-point scale. They were asked to explain what factors influenced their overall first impressions of the devices.

Tasks. Each participant was asked to put on each device and completed the following representative tasks with each one (in random order):

1. Walk around/Get a feel for the device
2. Reach into a pocket while wearing device
3. Type on a laptop keyboard while wearing device
4. Remove the device

Final Impressions. After completing the tasks with all 6 devices, participants were asked to rate their final impressions of the devices using the 50-point scale. After rating each attribute, participants were asked to explain their ratings for the devices, specifically the highest and lowest rated device. The entire session took about 60 minutes per participant.

Results

Packaging. A one-way repeated measures ANOVA indicated significant differences for expense, $F(5, 85) = 6.82, p < .01, \eta_p^2 = 0.28$, quality, $F(3.38, 57.54) = 6.30, p < .05, \eta_p^2 = 0.27$, amount of features, $F(5, 85) = 16.42, p < .01, \eta_p^2 = 0.49$, and the likelihood to buy each device, $F(5, 85) = 14.74, p < .01, \eta_p^2 = 0.46$, when participants were asked their opinions about device packaging. Based on packaging, participants perceived Jaw bone as being significantly cheaper than the Garmin, Fitbit, and Tom Tom. Overall, the Jaw bone was believed to be lower quality than the other 5 devices. The Jaw bone was also thought to have fewer features and was rated significantly lower than the Garmin, Fitbit, Basis, and Misfit, when asked which device the participant would buy.

Figure 3. Mean (SD) Ratings of Fitness Tracking Devices, Based on Packaging

First Impressions. A one-way repeated measures ANOVA indicated significant differences for weight, $F(5, 85) = 58.91, p < .01, \eta_p^2 = 0.77$, and comfort, $F(2.82, 48.82) = 7.91, p < .01, \eta_p^2 = 0.31$, when participants were asked about their first impressions of the devices. Overall the Basis and Tom Tom were perceived to be significantly heavier than all the other devices. The Basis was perceived as less comfortable than the Garmin and Misfit, while the Tom Tom was believed to be less comfortable than Garmin, Fitbit, and Misfit.

Figure 4. Mean (SD) Ratings of Fitness Tracking Devices, Based on First Impressions

Final Impressions. A one-way repeated measures ANOVA indicated significant differences for comfort, $F(5, 85) = 11.92, p < .01, \eta_p^2 = 0.41$, masculinity/femininity of the device, $F(2.55, 43.36) = 18.17, p < .01, \eta_p^2 = 0.51$, and the likelihood to buy each device, $F(5, 85) = 3.32, p < .05, \eta_p^2 = 0.16$, when the participants were asked about their final impressions. After trying on and performing tasks with each device, the Basis and Tom Tom were considered less comfortable than the Garmin, Fitbit, and Misfit. Overall, the Basis and Tom Tom were viewed as more masculine than

the other 4 devices. Similarly the Misfit was rated more feminine than all the devices except the Jaw bone. When asked which device they would buy, the Fitbit was rated significantly higher than the Basis.

Figure 5. Mean (SD) Ratings of Fitness Tracking Devices, Based on Final Impressions

Figure 3. Likelihood to Buy Each Device Based on packaging, before use, and after use.

Figure 6. Likelihood to Buy Each Device Based on packaging, before use, and after use.

A one-way repeated measures ANOVA indicated significant differences for the likelihood to wear each device while exercising, $F(5, 85) = 4.35$, $p < .01$, $\eta_p^2 = 0.20$, during one's daily routine, $F(3.55, 60.40) = 7.02$, $p < .01$, $\eta_p^2 = 0.29$, and while sleeping, $F(3.22, 54.84) = 5.66$, $p < .01$, $\eta_p^2 = 0.25$. Participants indicated they were more likely to wear the Fitbit than the Basis while exercising. During their daily routine, they were more likely to wear the Garmin and Fitbit than the Basis. They also indicated that they would be more likely to wear the Garmin than the Basis or Tom Tom while sleeping.

Figure 4. Likelihood to Wear each Device During Activities

Figure 7. Likelihood to Wear each Device During Activities

At the end of the study, participants were asked to rate the importance of the fitness tracking features. The features rated "important" or "very important" most often included the aesthetic/attractiveness of the device, the amount of battery life, being waterproof, containing a heart rate monitor, and having separate modes for different activities such as running, swimming, biking, etc. The features most often considered "not important" or "not important at all" included sleep tracking, smartwatch capabilities (i.e. smart alarms, social media notifications, etc.), having an accompanying phone app, GPS, food logging, and the ability to wear the device in different ways (versatility).

Figure 5. Importance Rating of Each Feature

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Discussion

The results indicate that participants are less willing to purchase a device if the packaging looks "cheap". Although there were significant differences in the perceived weight and comfort of the devices, initially this did not create a significant difference in the likelihood to buy each device. After trying on the devices, participants believed they would be more likely to buy the more gender neutral, inconspicuous device (Fitbit or Garmin) over the more uncomfortable, "masculine," device that presented the most difficulty while completing the tasks (Basis or Tom Tom). In addition, they would also be more likely to wear the device while exercising, during their daily routine, and while sleeping.

The results imply that these particular individuals would be more drawn to devices that would not interrupt their daily lives or attract any outside attention. Although the participants frequently commented that the small, lightweight devices, particularly the Fitbit, would be easy to lose, this did not seem to affect the overall preference. In addition, the most frequent positive comment made about the heavier, bulky devices was the fact that they had a display.

In summary, the most favored devices were small, lightweight devices that also had a digital display (Fitbit and Garmin). Participants also indicated a desire for simplicity and rated the more complex features such as food logging, sleep tracking, smartwatch capabilities, etc. as less important.

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