

A Longitudinal Study of Pervasive Fitness Applications for Obese and Diabetic Patients

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Motivation

Diabetes: 382 million / Obese: 500 million

Situation: Emerging attention of technology for behavior change for healthy lifestyle

Lack of study that explores obese and diabetic patients' perception and acceptance of sensing technology for lifestyle management.

Research questions

1. How obese and diabetic patients **expect, use** and **adopt** sensing technology for physical activities?
2. How do they use such technology in the **long term**?
3. How **group interaction influence** their usage in such technology to promote physical activities?

User study

Fitbit experiment

21 participants

- 12 diabetics (5 obese)
- 6 obese and overweight
- 3 other pathologies

Material

- Fitbit One sensor
 - 8g / 4.5 cm long
 - Unobtrusive, convenient
 - Fitbit API

HealthyTogether experiment

HealthyTogether: Social fitness game that allow dyads to exercise together

16 participants

- N = 16 → 8 dyads
- 5 dyads: friends or couple
- 3 dyads: carefully assigned
- 11 females, 5 males

Materials

- Fitbit One sensor
- Android phone
- 3G simcard + 1Go internet

Data analysis

Data analysis



2460 mn



86956 words

target
Fun interesting Flower
small lack time fun glucose
Cool Motivation entertaining
sleep amusing training difficult easy
color steps
patterns

Procedure



4 interviews (I1: 60 min, I2: 30 min, I3: 30 min, I4: 30 min)

Obtain the approval from ethical committee to guarantee the patients' privacy

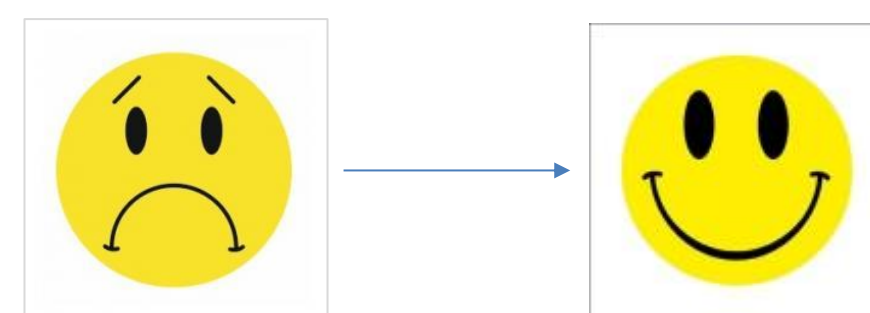
Results

Fitbit experiment

1. Behavioral changes



2. Emotional changes



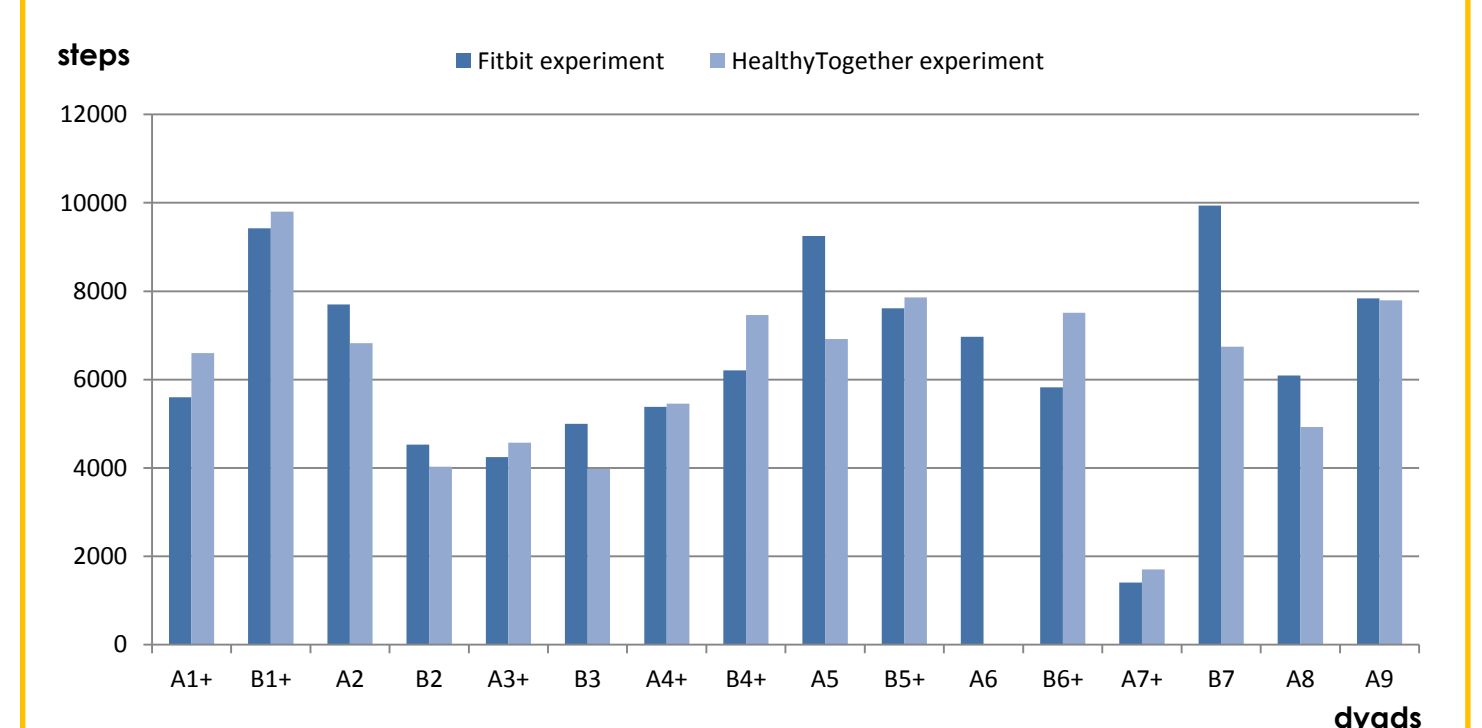
3. Usage intention



4. Social impact: Ripple Effect



HealthyTogether experiment



Improvement: 1/2 patients

3 people increased by > 1000 steps

6211 → 7462

5 people increased by > 300 steps

1309 → 1703

Conclusion

- Patient awareness → Small changes → New lifestyle
- Users introduced the tool to their social surroundings and persuaded others to exercise
- Positive emotional changes, visible weight loss, regular physical exercise
- 13/16 remained sustainable (after 4 month)
- Positive influence of group interaction under some conditions
- "monitoring glucose" → "monitoring lifestyle"

