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# 'Liking' Persuasion: Case studies in Social Media for Behaviour Change

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**Abstract**

Contemporary social media platforms such as Facebook and Twitter have seen huge growth in recent years with a respective 1 billion and 500m registered users. Given such large numbers of the global population are using online social networks regularly, tapping into this audience to raise awareness of, and bring about positive behaviour change in, societal issues such as energy consumption and healthier lifestyles has promising potential. This position paper describes three behavior change case studies in domestic energy and physical activity that fully integrated with online social networks. Participant engagement throughout the pilot interventions was high with measurable consumption/activity behavior change evident. We also discuss our current social media and sustainability research.

**Author Keywords**

Energy; Sustainability; Behaviour change

**ACM Classification Keywords**

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

**General Terms**

Design, Experimentation, Human Factors

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**Figure 1.** Wattsup user sketches and final design implemented



**Figure 2.** Ambient Power-aware cord

## Introduction

The idea of nudging people towards positive behaviour change has gained interest in recent years from academics, individuals, and even governments. Nudging can be explained in terms of social norming effects where we adjust our behaviour to align with our peers or what is perceived as a normative measure. Social-norm influencing can be communicated as feedback or messages. A *descriptive norm* message may be delivered for example on how much energy you and others are using, offering a comparative measure, while an *injunctive norm* message indicates if it is good or bad [10]. Social norms are an intrinsic attribute of online social networks (OSN), making them ideal platforms to communicate normative intervention messages. A combination of social norming and antecedent behaviour change strategies, such as goal setting, can be delivered on OSN's to create an effective environment in which nudging towards desirable behaviours can take place.

Previous work by the HCI community in the design of persuasive energy interventions has focussed on delivering feedback competitively or comparatively against other similar households [9][7].

The case studies described here are comprised of two social energy intervention studies [4][6], and one physical activity intervention study [5]. All were deployed to the Facebook application platform, exposing the platform's social features such as notifications, messaging, and commenting to engage participants throughout each intervention.

The remainder of this paper is as follows: i) brief description of each case study and findings, and ii)

findings summary with comment on our current work in social media and sustainability.

## Wattsup Case Study

The Wattsup study aimed to develop an understanding of householders' perceptions of energy use in the home. By employing participatory design methodologies, through workshops and focus groups, we designed the Wattsup Facebook application. The application provides live energy feedback using end-user interface designs, with the added benefit of social comparison to their friends' energy usage, see *figure 1*. A Wattson energy monitor, see *figure 2*, was installed in 8 households and collected energy data which could be consumed online via an API. Wattsup introduced a social context to participants' energy usage, facilitating banter, competition and engagement between friends to raise awareness of, and bring about reductions in their energy use patterns. Wattsup featured a rankings interface and a Facebook comments board, allowing friends to view and comment upon one another's energy usage.

The study ran in two conditions, one with Facebook's social features enabled such as sending messages and commenting and the other with no social features. Half of the households started in the social condition with the other half starting in the non-social condition, halfway through the study participants swapped conditions. This design allowed us to test our hypothesis of whether energy data delivered in a social context amongst a group of friends can motivate reductions in consumption. Our results indicated that 7 out of the 8 households reduced their energy consumption whilst in the social condition with a total of 130kWh units of energy saved.

### Power Ballads Case Study

Our second energy and social media experimental study – Power Ballads - was again centered on delivering energy feedback through Facebook, this time without using a social norm approach [6]. Work by other researchers in behaviour change technologies has previously suggested the use of aversive feedback should be avoided as it leads to a lack of engagement by users [3][1]. The Power Ballad’s study evaluated whether punishment of non-desirable behaviour discourages users from engaging with a persuasive application designed around end-user energy consumption.



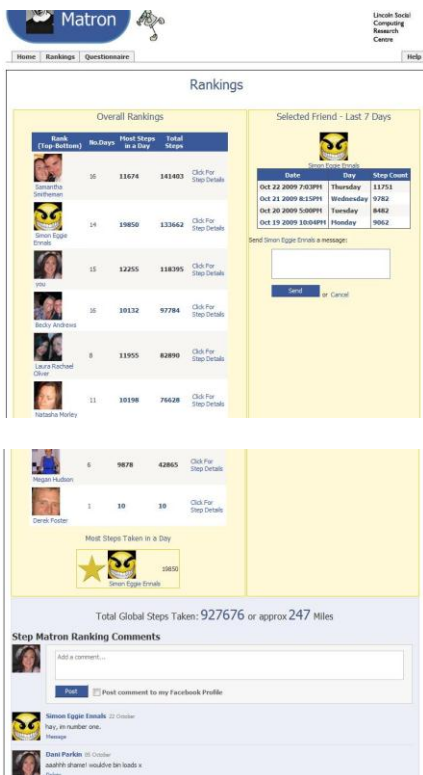
**Figure 3.** Power Ballads public aversive feedback post

Energy feedback was carefully crafted to playfully embarrass participants if they used more energy by comparing two time periods. If more energy was used then a public social media post would be automatically published to their timeline for all the participants’ friends and peers to view. The public post described, in a playful fashion, that they were using a lot of energy, see figure 3.

As energy usage is wrapped up in personal consumption practices in households, it was apparent that the publishing of aversive feedback about excessive usage on participants’ Facebook page may be undesirable and could lead to the type of disengagement discussed in [3][1]. We were interested in exploring whether presenting this information in a playful manner may avoid the problem of disengagement. To this end, we chose to present popular UK chart music as the aversive stimuli posted on participants Facebook wall, a tongue-in-cheek approach. Findings demonstrated aversive stimuli does not necessarily lead to participant disengagement, indicating that this type of feedback should not be simply ignored when designing energy interventions to change behaviour through social media platforms.

### StepMatron Case Study

Our Step Matron study carried out the design and in-the-wild evaluation of a Facebook application providing social and competitive context for daily pedometer readings. It was designed to motivate physical activity of employees in the working environment. Step Matron aimed to determine whether social interactions between users via the application more successfully motivated physical activity than simply recording daily step counts with no social interaction. Nurses in a UK hospital were recruited and used the application across two conditions over the course of the study. In the socially-enabled condition, participants could view each other’s step data and make comparisons and comments. In the non-social condition, participants could only view their own personal step data. A similar study by Chan et al [2], also in the organizational context, used pedometers to measure the effects of two types of motivational structures on physical activity. These two



**Figure 4.** Step Matron step count leaderboard and comments board

motivational structures were; health education (control group), and personal/team goal setting (intervention group). The main difference between this study and Chan et al is the integration of online social media as one of the control variables. A significant increase in step activity was observed in the socially enabled condition with 9/10 nurses increasing their step activity. Step Matron is shown in figure 4.

### Summary and Current Work

Findings from our case studies highlight the potential of social media as a means for generating positive behavior change. Key social features such as comments and friendly competition boards produced high engagement levels across all studies that support lower attrition rates. The Power Ballads study findings indicated that aversive stimuli need not be avoided, and could be successfully deployed as feedback in social media. Further work is necessary to understand the potential ethical implications of using this approach.

We are currently expanding our social media and sustainability work in the Killawhats project [8]. Killawhats is an energy intervention delivered through the Facebook platform targeted at students living in official halls of residence. It builds on previous work in designing cool sustainability technologies and investigates the design implications of energy interventions with users who are not responsible for paying utility costs. Our work is also investigating the use of 'Internet of Things' devices to develop open energy data platforms for large scale trials.

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