

USING BEHAVIOUR NUDGES TO INCREASE THE USE OF STAIRS AMONG UNIVERSITY STUDENTS.

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Abstract

Nudges may be understood as intentional manipulations done in the choice architecture that influence people to make certain choices over others in an automatic fashion (Lehner, Mont & Heiskanen, 2016). The following study intended to make use of nudges in a University building in order to increase staircase use as compared to the use of the lift. Studies indicate that there is a decrease in exercise level among individuals which in turn causes lifestyle illness. Further this sedentary lifestyle has been looked upon as a global challenge (Brymer & Davids, 2016). This study used a non-verbal pictorial cue to encourage individuals to use the staircase instead of the lift. Research suggested that placing signs which acted as nudges at the point of choice area; people were more likely to notice which in turn influenced behaviour (Nocon, Muller-Riemenschneider & Nitzschke, 2010). The following study did place the sign at the point of choice area keeping in mind previous study. Studies done in the past did show that interventions such as adding signs in the external environment did enhance exercise behaviour and in turn the well-being of people (Gorczynski, Faulkner, Cohn & Remington, 2013). However the present study was unable to show that the lift use decreased as compared to the stair use. However, differences were seen in the individuals who used the stairs for descend, yet these were not significant. Interestingly it was seen that a large number of people did observe the sign, changed their minds and chose the stairs; yet this number was not large enough. Further study is needed to understand the use of nudges in promoting healthy behavior.

Key words: Nudges, Point of Choice, Stair use, Mind change.

Introduction

In an increasingly industrialized world like ours, it comes as no surprise that physical inactivity is on the rise. Booth and colleagues define physical inactivity as “physical activity levels less than those required for optimal health and prevention of premature death”. Further this inactivity and the sedentary lifestyle adopted by many individuals have been looked upon as a global challenge (Brymer & Davids, 2016). In the year of 2009, the World Health Organisation noted that physical inactivity is regarded as the 4th leading cause of death and results in an approximate of 3.2 million deaths per year.

Behaviourally speaking, the fact that an individual does not see the importance of staying healthy is either because they do not have the necessary drive (establishing operation) or they do not see any incentive (reinforcement) as a consequence of performing a health related behaviour. Behaviour analysts may then need to manipulate certain antecedent events or consequent events or both to increase health related behaviours among people.

The governments of various countries have recognised the benefits of exercise for a long period of time. In the 1990’s the United Kingdom brought about programmes and policies in order to increase awareness among people about the importance of physical activity (Brymer & Davids, 2016).). Despite the fact that there are many policies as well as plans to help develop awareness about this issue, the World Health Organisation recognises that only 1 out of 4 persons actually indulge in appropriate amounts of physical activity.

What may be the reasons that people fail to carry out some kind of activity even though they understand the importance of the same. From a behavioural perspective the motivation may be absent and thus antecedent cues may have to be introduced to help people feel the drive. Further programmes must have immediate reinforcement at first so that people feel the rewards on a consistent basis.

It has further been seen that one major reason may be that people avoid physical activity is the environmental design that we have today, which is not suitable enough to encourage activity levels amongst all individuals from different backgrounds (Brymer & Davids, 2016).

There has been growing evidence to show that regular exercise is not only necessary but also beneficial to individuals. Physical activities as well as interventions have been found to have positive effects on the physical and mental health of individuals. Those who are in clinical trials have also shown greater health and an improved quality of life, when a physical intervention to increase physical activity was in place (Penedo, Frank, Dahn & Jason, 2005). This suggests that introducing health interventions to increase health related activities such as exercise behaviour does have an impact on individuals and in turn promotes wellness.

Seeing increasing physical activity merely from the clinical perspective may in fact be a narrow view. Enhancing the physical activity has been seen from a salutogenic approach where one attends to events that enhance overall wellbeing and not from an approach that may trigger development of illness. Also when there is physical activity automatically there is an increase in ones quality of life and thus this brings about overall health and a state of wellness (Brymer & Davids, 2016).

Nudges may be understood as intentional changes and manipulations done in choice architecture that influence people to make certain choices over others in an automatic fashion. This is often done by providing simpler and more understandable options or by providing default choices, such that people choose more appropriate ways of behaving (Lehner, Mont & Heiskanen, 2016).

It must be remembered that by using nudges, attempts are not made to change/alter a person's innate value systems, yet subtly individuals are probed to think and thus choose a better mode of action that is beneficial not only to the individual, but to the society at large (Lehner, Mont & Heiskanen, 2016). Behaviour nudges may be seen as prompts that allow individuals to reconsider their decisions and in turn change the consequences of their behaviour.

Thaler and Sunstein came up with their book "Nudge" in 2008, where they speak about a choice architecture that exists in the environment, one which an individual may be unaware of. An individual's decisions seem to be moulded in a subtle fashion with guidance by external forces. Of course there are people who take up the role of the choice architects where they design environments in a manner such that individuals tend to choose one situation or stimulus over another (Arno & Thomas, 2016).

Taking into consideration the behaviour analytic perspective, it can be said that the environmental design may act as a discriminative stimulus or an establishing operation to some individuals and they may thus choose it as an option over another. If one visits a supermarket, one tends to notice things at the eye level as compared to those above or below (Arno & Thomas, 2016). Through this technique an individual may tend to buy something that he/she can readily see as compared to a cheaper alternative. In this way the supermarket is at a benefit.

The individual in turn may be rewarded through positive reinforcement where the individual may feel happy or content. The individual may also be reinforced negatively when feelings of guilt are reduced, as when an individual may use a revolving door following a sign that said the revolving door saved more electricity as compared to the automatic door mainly meant for individuals with disability.

These harmless manipulations in one's environment are referred to as "libertarian paternalism", where attempts are made to steer one's choices in a better direction without the person being forced.

The use of staircase has been seen as an environmental modification in order to increase the physical activity of individuals and thus promote wellness. Through research it has been noticed that the main interventions used to increase the use of stairs are point of choice signs such as posters (Nocon, Müller-Riemenschneider & Nitzschke, 2010).

By placing a sign at the point where an individual makes a decision, causes a change in context and thus a more conscious decision may be made (Aarts., Paulussen & Schaalma, 1997). Having a sign between the staircase and escalator may bring about a change in routine behaviour and may encourage development of alternate behaviour (Kerr, Eves & Carroll, 2001). The sign is thus an antecedent cue for people to re-consider their behaviour options.

It is true that there is an increase in staircase usage by using the point of choice prompts, yet this increase is modest (Andersen, Franckowiak, et al., 1998). Keeping this in mind, there is a need to make use of alternate interventions to increase the stair use. Research suggests that apart from health, there are other aspects of exercise behaviour that can be focussed on (Kerr, Eves & Carroll, 2001). However the messages used in point of choice prompts focus mainly on health, and such consequences need not be motivating to all (Dishman, Sallis & Orenstein, 1985).

Method

Participants and settings Building

In this particular study, there was 1 building chosen for the study. The Building A was a 6 storied building, 2 entrances on the ground floor and the lifts were in visibility and were highly accessible. Approvals were obtained from the various departments for the purpose of the study.

Participants

The participants for the current study mainly included students of Bangor University, in United Kingdom, between the age groups of 16 years to 30 years who attended lectures in the University on Mondays, Tuesday and Friday. To reach the university, they had to go via the building selected as the site for the study.

Inclusion Criteria: All student population, both male and female, within the ages of 16 years to 30 years without any obvious disability.

Exclusion Criteria: Students, both male and female, in the age bracket of 16 years to 30 years with an obvious disabilities.

Procedure

Experimental design

The Multiple Baseline design across settings was used in the study. There were 2 settings, ground floor and top floor, where 2 interventions were applied each.

Interventions

A visual display (non-verbal vinyl print) had been used in the study. This was a sign depicting upwards/downwards climb, with a heart at the top/down. The sign was unobtrusive and yet visible. The image aimed at encouraging the users to use stairs over lift for health benefits. Point of choice has also been measured to enhance the findings of the study. The image was such that the aesthetic style was taken into consideration.

Recording strategies

Covert recording was used in the study. Recording was discrete where patrons were unaware, but staff had been made aware of the same. It was anticipated that a change would be seen by keeping the recording discrete as if the public knew that recording was happening, the data would be skewed.

Inter observer Agreement

This was not possible due to lack of researchers, however contrived Inter-Observer Agreement (IOA) had been done on 5 occasions, once a day at 1pm. The IOA showed 87% agreement.

Positioning

Researchers tried to be as invisible as possible and the stairs as well as lift were visible; however on the top floor this was not possible. Observer 1 was at the ground floor in view of stairs plus lift. Observer 2 was view of stairs and Observer 3 was on the 5th floor was in view of only the stairs again.

Dates and times

Days chosen for recording were Monday, Tuesday and Friday between 8.45am- 9.15am, 12.45pm-1.15pm and 4.45pm- 5.15pm. There were 2 baselines and 5 intervention phases.

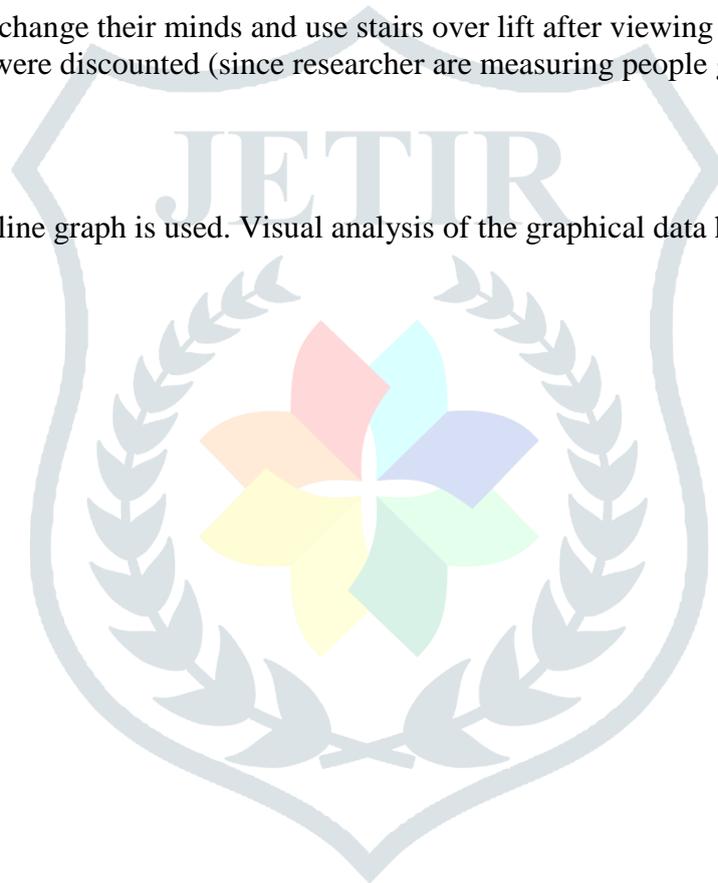
Measures

The quantitative observation model has been used in the study. Observer 1 counted people going up the lift, ones who came down and the ones who changed their mind and chose stairs over lift on viewing sign. Observer 2 measured people going up and down stairs and the ones who used the lift. Observer 3 measured the ones who climbed down the stairs

and the ones who chose to change their minds and use stairs over lift after viewing the sign. The people who entered and exited floor 3 were discounted (since researcher are measuring people going the entire building by stairs/lift).

Data Analysis:

Data has been collected in line graph is used. Visual analysis of the graphical data has been done.



Results and Discussions

The following are the results obtained in the research. A limitation of the research that may be noted is that the intervention phase was not a long phase and if circumstances were different, the nudge may have been highly successful.

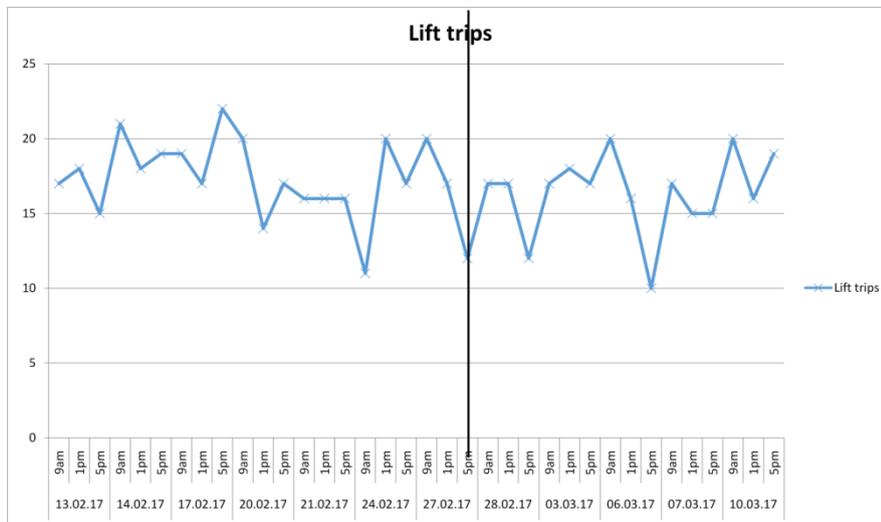


Figure 1

Figure showing the number of lift trips before and after intervention

The following graph depicts the lift trips during a day. This was measured since a lot of energy was consumed for lift usage and this led to the lift being overused. The research aimed at reducing the lift trips and thus conserving energy by adding the behavior nudge. However as depicted in the graph, the intervention did not prove to be successful in reducing the lift usage and the lift trips remained significantly high.

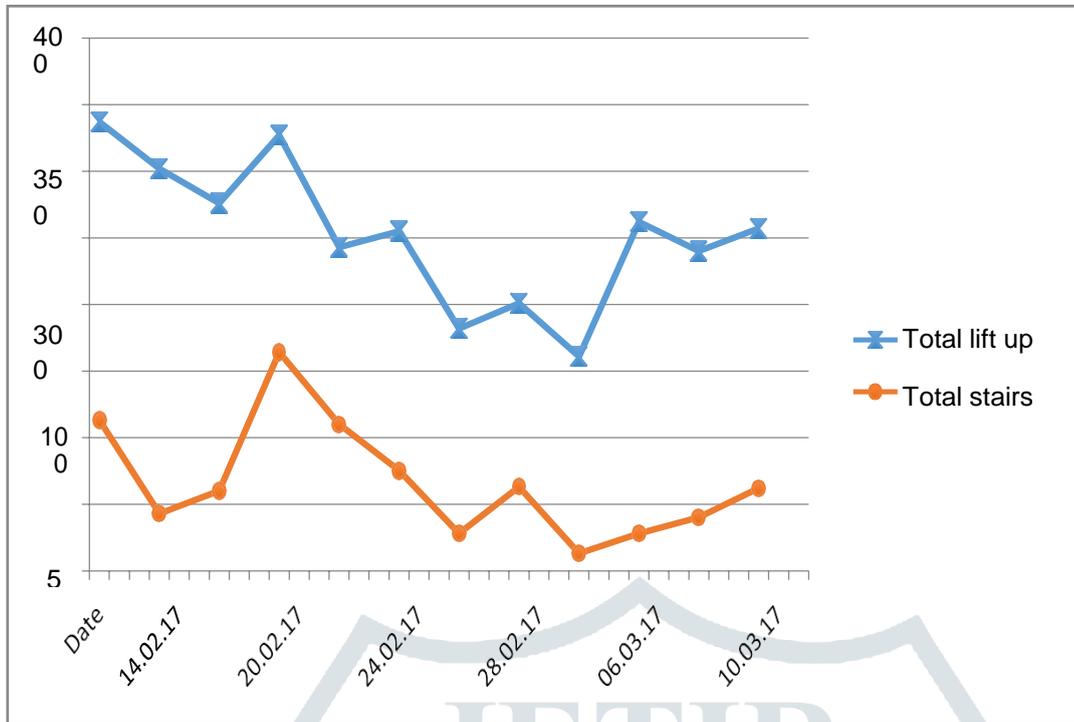


Figure 2.

Figure depicting the usage of lift and stairs for ascend per day.

It can be seen here that to go upstairs, the number of lift users is significantly higher than the number of stair users. This makes sense due to the considerably higher amounts of energy expended in travelling vertically upwards versus downwards, which in this case takes precedence over the time it takes to use a lift versus using the stairs. Research suggests that individuals often tend to choose lower effort options in their day to day lives (Anderson, Franckowiak, et al., 1998). It also should be noted that due to the cold weather in the United Kingdom, people were always with coats and thus preferred to use the elevator rather than climb up the stairs to save energy.

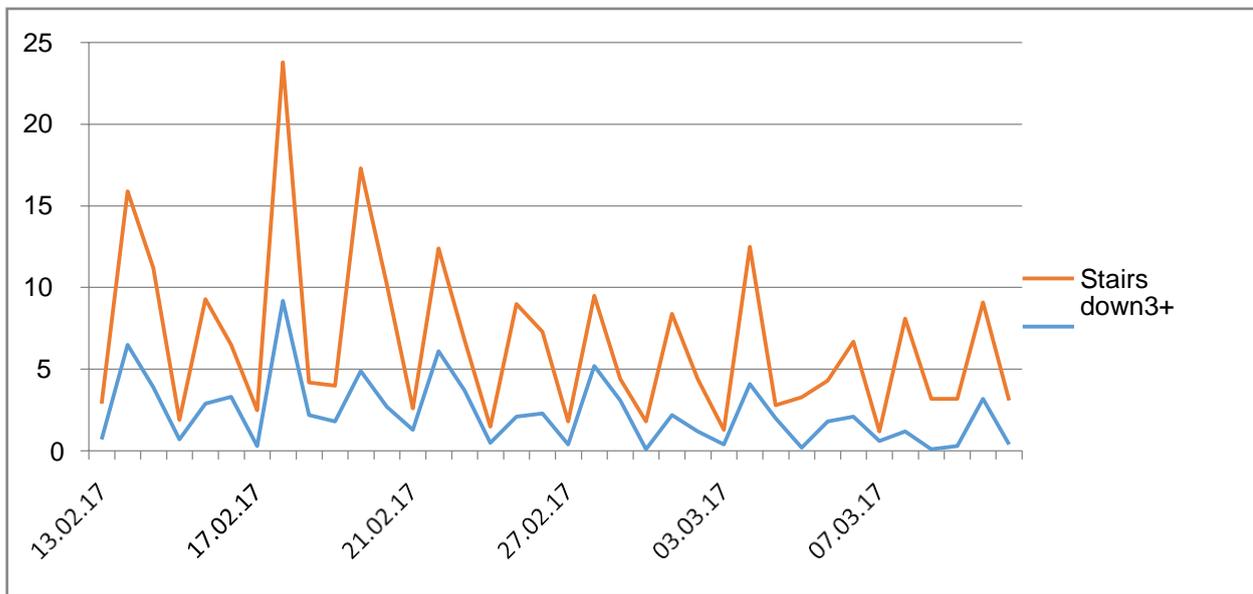


Figure 3

Figure depicting the usage of lift and stairs for descend per day.

As the energy required to travel down stairs is a lot lesser than to travel up, and because running down stairs can be considered a faster way to travel in buildings with fewer floors, the trends depicted in this chart, with more stairs users than lift users, makes sense.

From these two graphs, it can be seen that the energy expended is the deciding factor, and not the time of travel. The use of stairs is considered to be a vigorous activity (The & Aziz, 2002), and thus people may avoid to use them if they find a more convenient, low effort option (Anderson, Franckowiak, et al., 1998).



Figure 4

Figure depicting the usage of lift and stairs (total) for ascend and descend

This chart depicts a culmination of the number of stairs users and lift users, irrespective of the direction of travel. The number of lift users while moving up far outweighs the number of stairs users, and this outstrips the lead the stairs users have while moving down. Overall, the number of lift users is significantly higher than the number of stairs users. Following the intervention, there is a moderate rise in number of stairs users, but as such this is not a conclusive result. To further estimate the efficacy of the applied sticker, it would be suitable to carry out the study for a longer period of time.

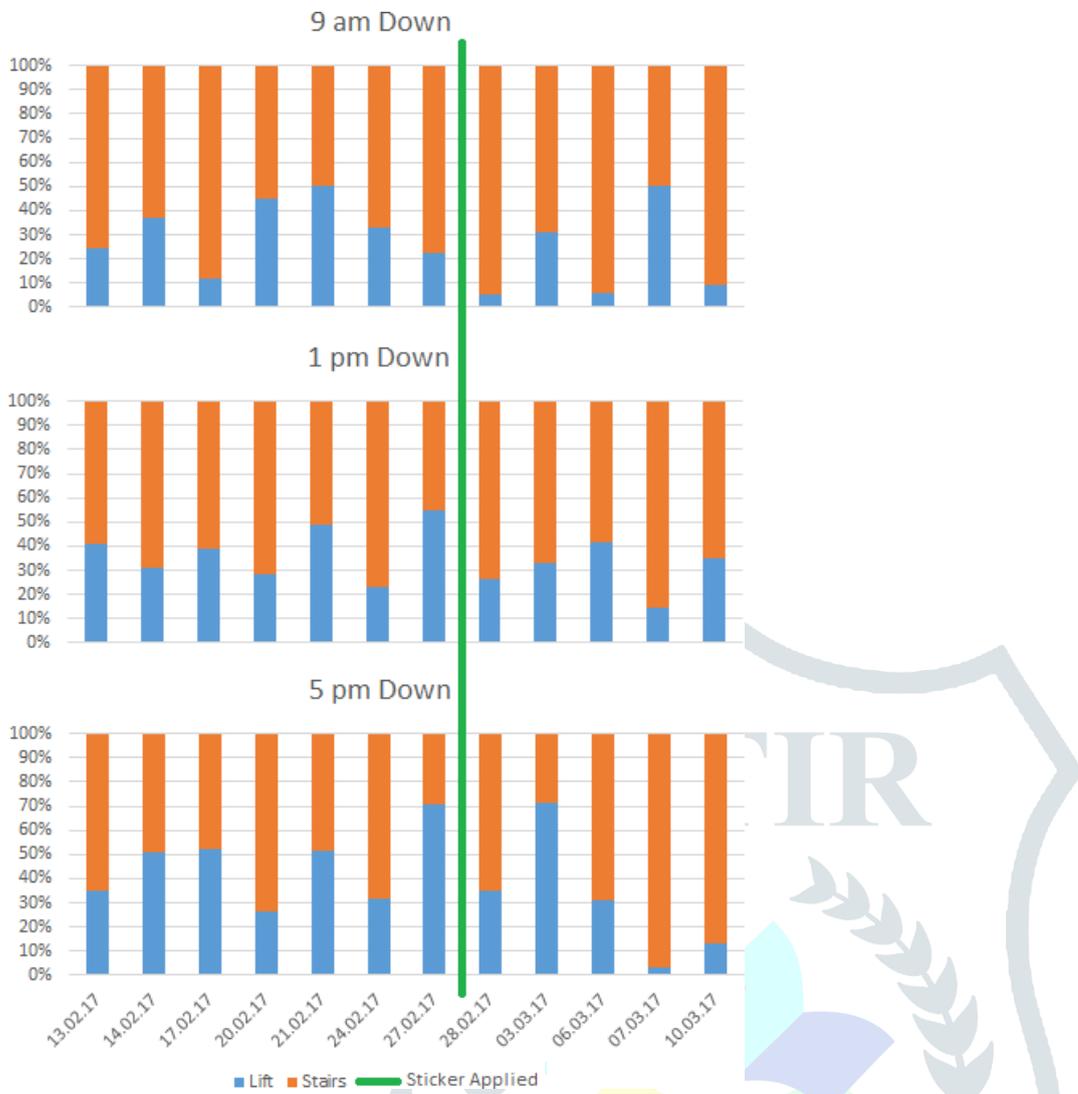


Figure 5

Graph depicting lift and stair use (descend).

This chart shows the proportion of the number of people who use the lift to that of the people who use stairs while travelling down. Earlier in the day, probably owing to higher energy levels, a larger proportion of people choose to use the stairs to go down. After the application of the sticker, during the intervention phase, the proportion of users who use the stairs to climb down increases. But the increase is not as dramatic and more so the increase in stair users is earlier in the day when they have energy. Further since classes begin at 9am in the University, students seem to use stairs as compared to the lift to get to their destination, as waiting in turn for the lift could make them late.

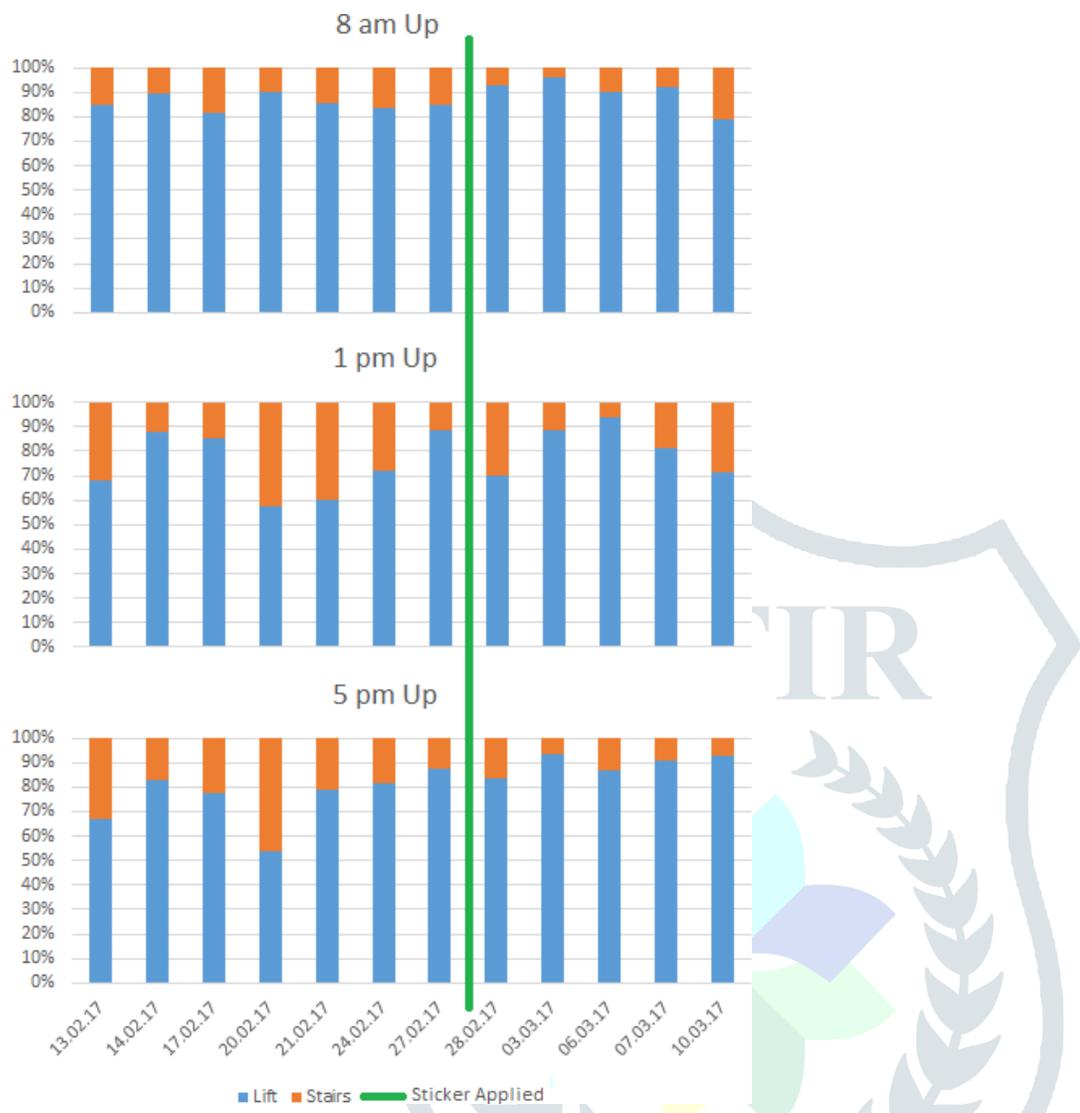


Figure 6

Graph depicting stair and lift users (ascend)

This chart shows the proportion of people who use the lift to go up to the number that uses the stairs. It can be seen that to go up, the large majority favors the use of a lift. A similar trend to the previous chart can be seen, whereby a larger proportion of individuals favour the stairs earlier in the day. Yet, this is only a tiny fraction, emphasizing how much harder it is to climb up rather than down a staircase.

The use of staircase is seen as an activity which is of vigorous intensity and is sufficient to improve cardiovascular conditions in people (Teh & Aziz, 2002). Keeping this in mind a study was conducted in 2007 in a hospital in Geneva. The sample included healthy individuals above the age of 18 years and who had low levels of exercise as per the criteria of the researchers. The intervention included using the stairs rather than the lift for a period of 2 weeks (Meyer, Kayesr, et al., 2010).

A campaign was carried out at the beginning to emphasize on the benefits of using stairs and messages and stickers were stuck at the point of choice between the lift and the stairs. This study used a pre intervention observation and then a post intervention observation. The results showed that the participants increased their usage of steps and after 12 weeks there was a reduction in the risk factor of cardiovascular diseases seen in these participants (Meyer, Kayesr et al., 2010). Through this study it may be noted that having a campaign prior to inserting the sign may be beneficial and this should be kept in mind for future research.

In another interesting study, colourful signs were used as prompts to encourage people at a shopping mall, train station and bus stand to use the stairs over escalator. In the first scenario it was noted that staircase use increased to a great extent for obese as well as non-obese people over a period of 2 weeks. The use of stairs remained higher for 15 days in the presence of the sign, yet follow up showed that there was a decrease in the levels of staircase within the 1 month period of removal of sign and the staircase use behaviour returned to baseline after 3 months of follow up (Jessar, Lee, Sachdev & Tuckerman, 1980).

Use of colourful signs and posters may have acted as discriminative stimuli for individuals who chose steps over escalator. The behavioural principle of stimulus discrimination may be at play in such a scenario. The sign used in the present study was colourful too (Appendices), However the significant differences were not obtained.

Owing to the data obtained in the research, it may be said that the nudge did not prove to be a powerful method to actually bring about an increase in stair use. Research points the same fact and although an increase may be seen in staircase use by the point of choice prompts, but this increase is modest (Anderson, Snyder, et al., 1998)

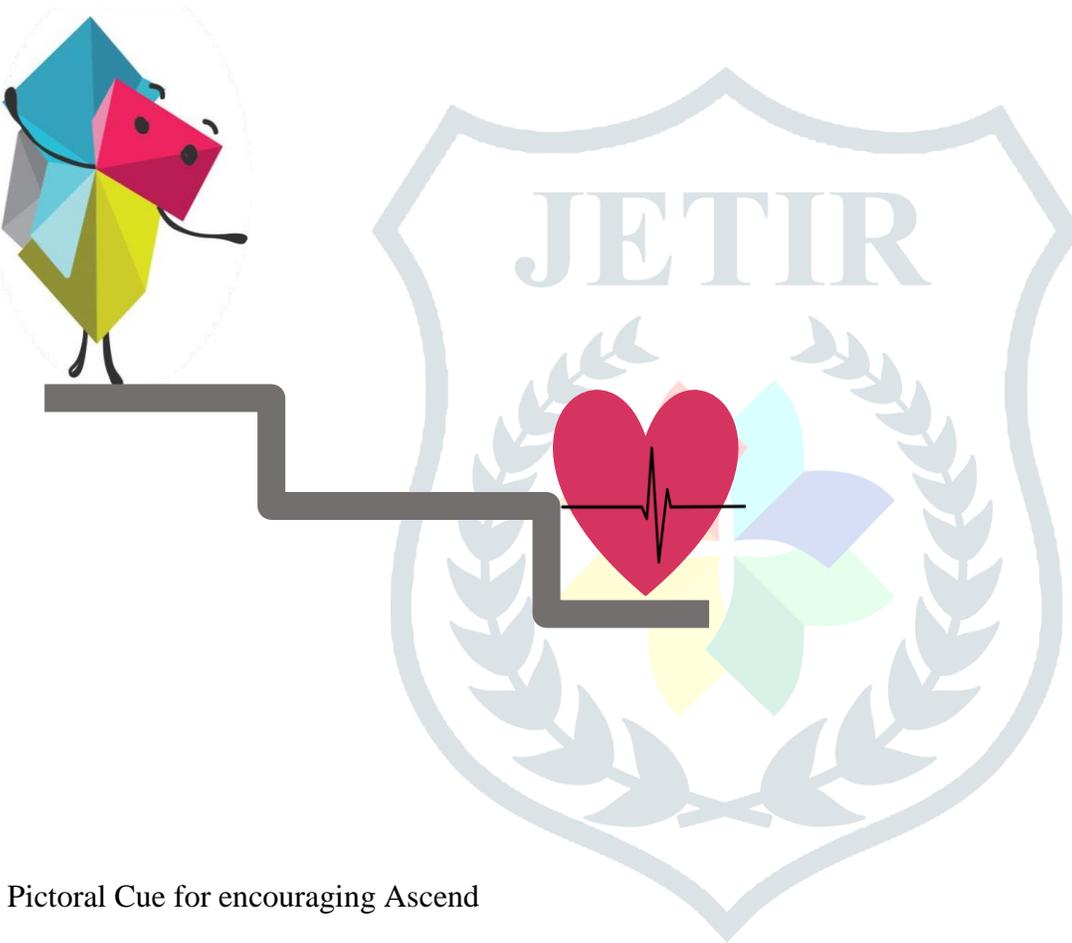
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Appendix

Pictorial Cue for encouraging descend



Pictorial Cue for encouraging Ascend

