Finding Kairos in Quitting Smoking: Smokers' Perceptions of Warning Pictures

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Abstract. This paper studies Kairos, i.e. the opportune moment to persuade, through a smoking cessation experiment. We approached 101 people, comprising of 81 smokers and 20 non-smokers, on the streets of Palo Alto, California. The participants were shown five warning pictures related to the dangers of smoking as well as a control picture. The people rated each picture based upon how strongly they felt they were affected by the pictures. The results indicate that the opportune moment to show these pictures is not when the people already are smoking but rather much earlier. Quite interestingly, the affect of this intervention was stronger on women than men. The fact that the opportune moment seems to vary between individuals complicates the design of applications leveraging Kairos to a great extent.

Keywords: Mobile persuasion, Kairos, smoking cessation.

1 Introduction

Kairos has been defined by Kinneavy [3] as "the right or opportune time to do something, or the right measure in doing something". It has always been an essential part of rhetorics and it can be traced back all the way to the works of Plato and Aristotle [4]. The concept of Kairos is applicable for many information processing situations. One of the interesting examples is knowledge creation, where support for knowledge-related processes such as comprehension (i.e. creation of new tacit knowledge) and communication (sharing of knowledge) [5] should be provided at a proper moment. Within persuasion it refers to the opportune moment to represent a persuasive message [2]. It is especially beneficial in mobile persuasion as "[mobile] technology can travel with users wherever they go" [2] allowing, by definition, to "intervene at the opportune moments" [2].

We investigated Kairos by showing warning pictures about the dangers of smoking to people at different settings to see how they felt they were affected by the pictures. Our particular interest was whether there is a difference in the affect when a smoker is just smoking a cigarette versus when he has not had a cigarette for some time.

2   Experiment

In the experiment people were shown five pictures related to the dangers of smoking as well as a neutral control picture (a house). The five pictures were picked up from the set of pictures that the European Union has intended to be used as warning pictures in the cigarette boxes affecting smokers within the EU. None of the pictures chosen for this study are particularly gender-dependent, e.g. pictures related to impotence or male infertility were dropped out. The respondents were asked to rate the pictures based on how strongly they felt they were affected by them.

Table 2 represents the hypotheses of this study. H9 is the key hypothesis and the other hypotheses relate to the opportune moment in stopping smoking.

Table 1. Hypotheses of the study

Hypotheses	Description
H1	The fewer cigarettes the smoker smokes per day, the stronger the pictures affect him.
H2	The less time the respondent has been a smoker, the stronger he is affected by the pictures.
H3	The pictures have a greater affect on those smokers who intend to quit.
H4	The pictures have a greater affect on those smokers who have quit before.
H5	The pictures have a greater affect on smokers who have a lit cigarette in their hands.
H6	Both genders are affected to the same extent through the pictures.
H7	The role of the opportune moment is greatest with pictures of an average affect.
H8	The affect of the control picture is independent from the opportune moment.
H9	Smokers close to an opportune moment are affected the most.

H1 and H2 have been derived from Webster [6], H3 and H4 from the theory of planned behavior [1], H5 from Fogg [2], and H6 from the fact that the selected pictures are not gender specific. H7 is based on the assumption that Kairos is not able to add the affect of those pictures which already are very affective or which are not affective at all. And finally, H9 is derived from Kinneavy [3], Kinneavy & Erskin [4], and Fogg [2].

47 females and 54 males participated in the survey (n=101). Most of the participants (n=88, 87.1%) were between the ages of 18 to 40. In general, both smokers and non-smokers perceived the pictures as affective. The mean of the five pictures on a scale of one to five was 3.46 for non-smokers (n=19) and 3.42 (n=81) for smokers.

Hypotheses 1 stated that the less the user smokes, the more he is affected by the pictures. Due to a low sample size we performed Independent Samples T-Tests by comparing those who smoked less than five cigarettes (n=20) to those who smoked more. Similar tests were performed to test the hypotheses H2 to H5. For H1 (how many cigarettes), H2 (how long the respondent had been a smoker), and H3 (the intention to quit) no statistical differences were found.

Quite interestingly, those who had quit smoking before (H4) were affected less than those who had not quit (t=-2.721, p<0.01). Perhaps those who had quit before knew they can quit (if they were able to quit before they can probably do it again). For this reason, H4 was not supported and in fact it could be just the opposite.

The hypothesis H5 stated that smokers are affected more when they have a lit cigarette in their hands. The results indicate that *smokers were affected more when they were not smoking than while they were smoking* (t=2.922, p<0.01). This finding is very interesting. Smokers may have felt disturbed as they were approached when smoking. Perhaps nicotine also plays a role in their answers. When they are smoking, i.e. they are under the influence of nicotine and dopamine rush, the smokers were not affected by the pictures. Nevertheless, H5 was not supported. Rather the case seems to be opposite to the hypothesis.

As opposite to hypothesis H6 (there should be no gender differences), gender seems to have a great effect on how people feel about the pictures. Women seem to be affected by them greater than men. Both male and female non-smokers seemed to be affected equally by the pictures. For male smoking seemed to decrease the affect of pictures (the affect of the pictures dropped from 3.400 to 2.916) whereas for female it increased it (from 3.520 to 4.0611).

H7 stated that Kairos effect is greatest with medium pictures (not too strong or not too mild). The greatest affect for smokers with one of the pictures was 4.14. The Kairos effect increased it to 4.55, but this increase was not statistically significant (p=0.307). However, there was a statistically significant increase on three other pictures: from 2.73 to 3.91 (p<0.05), from 3.10 to 4.09 (p<0.01) and from 3.69 to 4.64 (p<0.05). As the rating scale was from 1 to 5 we can easily see that these pictures were from the middle of the scale. As we do not have any pictures from the lower end of the scale (e.g. affect rated between 1 or 2) it is not possible to say how much they would have been affected. Thus, H7 is only partially supported.

H8 suggested that the control picture would not be affected by the Kairos moment. This was supported as there were no statistical differences between the groups.

The low sample size did not allow us to analyze H9 to the full extent. We wanted to find respondents close to Kairos, i.e. those participants who smoked only a few cigarettes per day (H1), had started smoking recently (H2), had the intention to quit smoking (H3), had quit before (H4), and who had a lit cigarette in his hands (H5). However, there were no such smokers among the respondents. So the results concerning H9 are only partial.

Hypothesis H5 suggested that the persuasive moment is when a smoker has a lit cigarette in his hand. In fact, it seems to be just the opposite. So to find a group closer to Kairos, we compared those who did not have a lit cigarette and who intended to quit smoking with the rest of the smokers. The size of this sample was still very low (n=11), and for a deeper analysis a bigger sample size would be needed. Nevertheless, the Independent Samples T-Test seems to indicate that the affect of the pictures to smokers in the Kairos group was much greater than to other smokers (4.16 in Kairos group vs 3.31 in other group, p<0.05). Thus, H9 is partially supported. The closer to the Kairos the smoker is, the stronger he is affected.

3   Conclusion

To some extent, the results from the experiment were surprising. It seems the smokers were affected more if they had not quit before, and when they were not smoking. This was exactly opposite to what was hypothesized. The study also provided some support to the hypotheses that smokers closest to Kairos should be affected the most and that Kairos effect is the strongest with pictures with medium affect. Also the affect of this type of intervention was stronger on women than men.

The Kairos moment for persuading smokers seems not to be when one has or is about to have a cigarette in one's mouth. In fact, this moment seems to be less effective than persuading in other times. The proper moment to persuade people to quit or reduce smoking may rather be when one is about to decide over going for a smoke. However, our data set did not enable us to investigate this at a deeper level.

This experiment studied whether the timing of showing warning pictures would have an effect on persuading the smokers. The results of this study demonstrate that *pictures do affect the smokers more in some moments than they do in other moments*. The relatively small sample limits the power of our study and makes it difficult to be more precise about the most proper moment for showing these pictures.

The key findings of this experiment are that smokers are not affected by warning pictures when they already are smoking. Rather they should rather be persuaded at other times. Moreover, the warning pictures seem to have a greater effect on women than on men.

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