

Why Do People Become Addicted: Towards a Theoretical Explanation for Eyal’s Experiment-Based Hook Model

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Addiction: bad and not so bad. The word “addiction” has a negative connotation: people get addicted to gambling, to drugs, to alcohol, to smoking; they try it first, and then they feel the urge to continue the corresponding habit. However, from the psychological viewpoint, the same habit-forming can have (and often has) positive effects as well: people get addicted to healthy lifestyle, like eating healthy food and exercising regularly, people get addicted to their creative activities ranging from art and music to scientific research, people fall in love with each other – which is usually a good type of addiction.

For bad addiction, we need to understand where it comes from so we can prevent it and – if it already happened – cure it. For good addition, we also need to understand where it comes from, so that we can have more people living healthy lives, we can have more people exploring their creativity, etc. In both cases, it is important to understand where addiction comes from, i.e., how we form the resulting habits.

Eyal’s experiments and the resulting Hook Model. Understanding can mean different things. We can discuss what physiological processes occur in the brain when a person becomes addicted. In the future, this may help us prevent the formation of bad habits and promote formation of good ones, but as of now, the results of such an analysis are somewhat far away from practical applications. In general, we are not yet able to use this knowledge to prevent or promote habit forming.

More practical results have reasonably recently come from a different study: an analysis of which situations cause addictions and which do not – without the physiological analysis of how exactly addiction is formed in the brain. Such studies have indeed been performed, they are describe in Nir Eyal’s book; see [1] and references therein. Eyal’s results can be best explained on the example of gambling addiction – since in gambling (as opposed to other bad addictions), rewards and risks can be clearly stated in objective numerical form.

Eyal started with a seemingly natural simple gambling model, in which a person gets a reward r with some probability p , and no reward at all with the remaining probability $1 - p$. This can be a simplified model of playing a lottery, this can be a simplified version of playing the slot machine at a casino, etc. Somewhat surprisingly, this seemingly natural arrangement did not lead to any serious habit forming – participants played a little bit, but did not form a habit of playing.

The situation changed drastically when he introduced a somewhat more realistic description of a gambling situation, in which there are two levels of rewards: a very large reward R that happens with a very low probability p_ℓ , and a medium-size (actually, small) reward r that happens with a medium-size probability p_m . For example, in a lottery where a lottery ticket costs 1 dollar, many people get a \$5 prize and very few get a very big, multi-million dollar prize. In simulated situations, a significant proportion of participants became addicted to playing this lottery: they eagerly participated in it again and again.

What we do in this talk. In this talk, we provide a natural explanation for this phenomenon: namely, we explain why lotteries with two levels of rewards are more addictive.

References

- [1] N. Eyal and R. Hoover, *Hooked: How to Build Habit-Forming Products*, Penguin, New York, 2014.