Biological, Psychological and Social Bases of Health and Behavior

MSc Applied Psychology, University of Liverpool

Biopsychosocial Aspects of Smoking

By Joana Stella Kompa
Immediate and Long-term Effects of Smoking on Brain and Body

The unique signature effect of smoking is the seemingly paradoxical combination of creating relaxation by releasing the neurotransmitter dopamine (Domino et al., 2012) while simultaneously increasing the heart-rate (Karakaya et al., 2007), instilling a sensation of elevated excitement and rush which lasts up to 5-10 minutes. This dual experience perfectly overrules any negative moods and anxieties, fostering psychological dependency while nicotine as a psychoactive substance creates a physiological dependency by exciting the brain’s reward center (Huibert et al., 2002, Zickler, 2003).

Nicotine contributes significantly to the probability of developing lung cancer (Levy et al., 2012, Foy et al., 2012), with genetic cancer signatures clinically linked to respond to smoking behavior (Lan & Ying-Wooi, 2012). Smoking stimulates the development of coronary heart disease (CHD) posing women at a greater risk than men (Rachel & Mark, 2011). Even smoking a few cigarettes a day are regarded to constitute an increased risk, establishing that there is no safe level of smoking (Agewall, 2012). Few people know that smoking can also lead to blindness (Handa et al., 2011), apart from causing a whole range of cancers including breast cancer (Kosti et al., 2010), oral cancer (Anantharaman et al., 2007), pancreatic cancer (Al-Wadei et al., 2009) and bladder cancer (Alguacil et al. 2011) via chemical and radioactive carcinogens found in tobacco. Besides, smoking is a major factor to develop the risk of ischaemic and haemorrhagic stroke (Tse et al., 2012, O’Donnell et al., 2010) as well as Chronic Obstructive Pulmonary Disease (Bišanović, 2011). Osteoporosis leading to bone fractures is another potential side-effect of smoking (Hapidin et al., 2011) among a long list of other illnesses. Cardiovascular damages are attributed to the increased heart-rate after smoking combined with elevated carbon-monoxide levels in the blood resulting in a diminished ability to transport oxygen. Many ingredients in tobacco increase blood-cholesterol levels while narrowing the blood vessels themselves. This increases the probability of a blockage, leading to a heart-attack or stroke.

Why Smoking may not be considered Substance Abuse

According to the four main criteria set out in the DSM-IV TR for substance abuse, smoking does not fulfill any of them. The social, psychological, legal and biological arguments are as follows: Firstly, smokers can still fulfill major role obligations in their family, at work or at school which is the social argument. Secondly, smoking does not necessarily affect the ability to drive a car or to operate machinery - given that one does not operate machinery while smoking - since it has no major intoxicating effect. We may call this the psychological argument: smoking does not lead to significant cognitive impairment. Thirdly, cigarettes are a legalized social drug although many countries place restrictions on where people are allowed to smoke.
Legislation has a social psychological effect as it shuns smokers. And finally, the harmful biological effects of smoking are largely limited to the smoker himself or herself with the exception of passive smoking (Evans et al., 2012). Smoking however fulfills many criteria of substance dependency such as creating withdrawal symptoms and the difficulty to quit the addiction, clearly indicating physiological dependence.

**Smoking and the Significance of Promoting Health**

The biological effects of smoking aggregate over long periods of time and are not immediately visible leading to underestimating its danger. Carciogenesis as well as the development of cardiovascular diseases can pass undetected without manifestation for years and even decades. The social costs of smoking in terms of experiencing ill-health, personal loss as well as costs created for the public healthcare system are enormous. Allender and colleagues (2009) e.g., cite for the UK annual smoking-related health-care costs up to 1.7 billion pounds for 1991 and relate 19% of all deaths to smoking for 2005, posing a considerable public health burden.

Apart from biological and social arguments, psychological reasons equally count. The more smokers a population tolerate, the higher the probability of increasing its number due to inviting non-smokers to peer-smoking. This makes it also more difficult, if not impossible, for addicted individuals to quit smoking while staying among smokers. Smoking is thus not only based on the underlying beliefs we associate with it, but it is also a social number game.

(700 words not including title and references)

**References**


