Short Communication

Want, need and habit as drivers of smoking behaviour: A preliminary analysis

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HIGHLIGHTS

- A substantial proportion of smokers attending a clinic for help with quitting report that their dominant urges to smoke occur without any anticipation of pleasure or relief.
- The strength of the automatic urges predicts failure to sustain abstinence following a quit attempt.

ABSTRACT

Background and aims: Models of tobacco smoking behaviour propose that anticipated pleasure or satisfaction, the need to alleviate a nicotine-induced drive state and a stimulus-driven impulse potentially play an important role. This study aimed to provide a preliminary assessment of how far urges to smoke are reported by smokers and whether the strength of such urges prior to a quit attempt predicts short-term success at quitting.

Methods: In a prospective study, 566 smokers attending a treatment programme to help smokers quit completed a written questionnaire covering frequency of different types of urge to smoke (automatic impulse – 'automatic urges', anticipated pleasure – 'pleasure urges', and fulfilling a need – 'need urges'). They were asked to rate this for whichever of these urges was dominant for them. The questionnaire also assessed daily cigarette consumption, time to first cigarette of the day, age and gender. Carbon monoxide verified smoking status was recorded at 1 and 4 weeks after the target quit date.

Findings: A total of 47.9% (271) of smokers reported that automatic urges were dominant, 21.7% (123) reported pleasure urges to be dominant, and 30.4% (172) reported need urges to be dominant. The strength of automatic urges predicted abstinence at both 1 week (OR = 0.74, p = 0.005, 95%CI = 0.60–0.92) and 4 weeks (OR = 0.73, p = 0.008, 95%CI = 0.59–0.92). Associations between other urge types and abstinence were not statistically significant.

Conclusions: A substantial proportion of smokers attending a clinic for help with quitting report that their dominant urges to smoke occur without any anticipation of pleasure or relief and the strength of the automatic urges predicts failure to sustain abstinence following a quit attempt.

1. Introduction

Various psychological models of smoking behaviour propose that anticipated pleasure or satisfaction, the need to alleviate an abstinence-induced drive state and cue-driven impulses to smoke all potentially play an important role in people continuing to smoke (Shiffman et al. 2002; West 2009). The subjective experience of these has been characterised as the urge to smoke, and the strength of these urges to smoke has been found to be negatively associated with the ability to remain abstinent during a quit attempt (Fidler, Shahab, & West 2011; Shiffman et al. 2002; Ussher, Beard, Abikoye, Hajek, & West 2013; West & Hajek 2004). We do not know how prominent specific types of urge are, or whether the strength of these specific urges predicts a relapse following a quit attempt. This paper aimed to address these issues.

A widely used model proposes that smoking urges arise from two sources: reflective processes involving beliefs about consequences, and automatic processes arising from overlearned habits (Tiffany 1990). A key aspect of this model is that, through repetition, smoking becomes

strongly automatic and the experience of urges arises when the behaviour is blocked, either through conscious restraint or for some other reason. These automatic urges are distinguished from urges arising out of beliefs about the consequences of smoking in terms of pleasure or the functions that smoking may provide. This idea has been elaborated upon and placed within a broader theory of motivation, the PRIME theory (West 2009; West & Brown 2013). The PRIME theory *(Plans, Responses, Impulses and Inhibitions, Motives and Evaluations)* differentiates beliefs about positive and negative consequences ('evaluations') from feelings of attraction and aversion: specifically, feelings of 'want' (feelings of anticipated pleasure or satisfaction) and 'need' (feelings of anticipated relief from, or avoidance of, discomfort or a drive state) (West 2009; West & Brown 2013). PRIME also embodies the concept of 'automaticity' in the concept of 'impulses', which may arise from learned associations (habit) or unlearned associations (instinct) with environmental triggers. In this theory, the experience of urges to smoke can arise from wants, needs or automatic impulses. Thus, urges may arise from anticipation of pleasure or satisfaction relief from an unpleasant experience or a drive state, or from a direct association between smoking cues and the impulse to smoke (West 2009; West & Brown 2013).

It is unknown which, if any, of the different types of urge dominate in terms of prevalence, and whether these different types of urge have different implications in terms of relapse. This study assessed the prevalence of the different types of urge in a sample of smokers seeking help with a quit attempt, and assessed associations between the strength of different types of urge and the ability to achieve short-term abstinence.

2. Methods

2.1. Design

This was a prospective, observational study.

2.2. Participants

Smokers were all attendees at a smokers' clinic in Argentina between October 2008 and March 2011. The clinic treated smokers who wanted help with stopping smoking. They were all aged 21 or over and were smoking at least five cigarettes per day.

2.3. Procedure

The participants attended an initial session while they were smoking. During this initial session, they were encouraged by a trained smoking cessation counsellor to set a target quit date and those who had set a quit date were followed up for 4 weeks after the date.

2.4. Measures

Measures were taken via a self-report questionnaire at the initial visit (baseline), and then at 1 and 4 weeks after the target quit date. The baseline self-report questionnaire asked smokers to identify which of three types of urge to smoke were dominant for them and then to rate the typical strength of these urges on a 6-point scale from no urges to extremely strong urges (Appendix 1, Table A). The scale was translated from a validated scale used in population-level and clinical research in the UK (Brose, Hitchman, Brown, West, & McNeill 2015; Fidler & West 2011; Fidler et al. 2011; Kotz, Brown, & West 2014; Riaz et al. 2016). If the participants were unable to identify a predominant urge type, then they could specify more than one type of urge. In addition, the questionnaire also assessed daily cigarette consumption, time to first cigarette of the day (Kozlowski, Porter, Orleans, Pope, & Heatherton 1994), age and gender.

At weeks 1 and 4, the participants reported whether they had

smoked at all since the target quit date. Expired-air carbon monoxide concentration was used to confirm abstinence with a threshold of 10 parts per million (ppm) (Brose, Tombor, Shahab, & West 2013; Brose et al. 2011; Shahab 2014; West, Hajek, Stead, & Stapleton 2005). The threshold of 10 ppm was used because previous research has shown that this threshold provides very similar results to use of lower thresholds except when these are below 5 ppm at which point they appear to lose accuracy (Brose et al. 2013).

2.5. Analysis

Means ± standard deviations (SD), proportions and 95% confidence intervals (CI) were used to describe the sample. Pearson's correlations and ANOVAs were used to determine the relationship between different types of urge to smoke (automatic urges, pleasure urges and need urges) and other baseline variables. Logistic regression analyses were used to determine the associations between the strength of different types of urge and success at 1 week and 4 weeks. The level of significance was set at $p < 0.05$, 2-tailed.

3. Results

A total of 566 participants were included in the study. Of these, 294 (51.9%) were women. The mean age of the participants was 51.8 years (SD 12.5) and the mean cigarette consumption per day was 24.4 (SD 10.4). Over half (n = 372, 65.7%) of the smokers reported smoking their first morning cigarette within 30 min of waking. A total of 271 (47.9%) smokers reported that automatic urges were dominant, 123 (21.7%) reported pleasure urges to be dominant and 172 (30.4%) reported need urges to be dominant (Table 1). Only 20 smokers identified more than one urge type.

At baseline, the three types of urge to smoke were significantly and positively correlated to the number of cigarettes smoked per day (automatic urges r = 0.30, p < 0.001; pleasure urges r = 0.27, p = 0.011; need urges r = 0.33, p < 0.001) but were not significantly related to age (automatic urges r = 0.01, p = 0.864; pleasure urges r = − 0.1, p = 0.290; need urges r = − 0.02, p < 0.779). Significant associations were observed between the different types of urge experienced and smokers who reported smoking their first cigarette of the day within 30 min of waking (automatic urges: F (1269) = 27.9, p < 0.001; pleasure urges: F (1119) = 8.9, p = 0.004; need urges: F (1169) = 8.1, p = 0.005), while no significant associations were observed between the different types of urge experienced and gender (Table 2).

The strength of automatic urges negatively predicted abstinence at both 1 week (Odds Ratio (OR) = 0.74, p = 0.005, 95%CI = 0.60–0.92) and 4 weeks (OR = 0.73, p = 0.008, 95%CI = 0.59–0.92). Associations between other urge types and abstinence (at 1 week and 4 weeks) were not statistically significant

Table 1
Baseline characteristics of study participants.

Characteristics	All participants (N = 566)
Female, n (%)	294 (51.9)
Age in years, mean (SD)	51.8 (12.5)
Cigarettes smoked per day, mean (SD)	24.4 (10.4)
Time to first cigarette of day, n (%)	
within 5 min	133 (23.5)
6–15 min	117 (20.7)
16–30 min	122 (21.6)
31–60 min	110 (19.4)
61 + min	84 (14.8)
Different types of urges experienced, n (%)	
Automatic urges	271 (47.9)
Pleasure urges	123 (21.7)
Need urges	172 (30.4)

SD: standard deviation.