The Role of Health Professionals in the Prevention of Smoking- and Alcohol-Related
Harms: Application of the Theory of Planned Behaviour to Work Behaviours
by
Toby Freeman BPsyc (Hons)
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### **ABSTRACT**

Professional practice change and the transfer of research into practice are critical issues for the public health field. The program of research presented here investigated the potential for practice change in dental hygienists' and Emergency Department nurses' provision of brief interventions targeting smoking (of tobacco) and alcohol consumption respectively. Smoking and risky alcohol consumption are two high prevalence public health issues that have a substantial impact on the burden of death and illness in Australia.

Research on dental hygienists' and nurses' uptake of these interventions is limited and has largely focused on descriptions of perceived barriers. Little research has been conducted on the attitudes and motivations of health professionals to engage in these interventions. The present research was designed to address that gap.

Specifically, two behaviours by dental hygienists and Emergency Department nurses were investigated: identification of patients at risk and provision of assistance to such patients.

The program of research applied the Theory of Planned Behaviour to these behaviours in order to:

- examine the role of dental hygienists and Emergency Department nurses in the provision of brief interventions for smoking and alcohol consumption respectively,
- 2) assess the ability of the Theory of Planned Behaviour to understand and predict health professionals' identifying and assisting behaviour,

- assess the ability of the theory to account for the influence of organisational factors on workers' behaviour, and
- 4) design and evaluate a Theory of Planned Behaviour-based professional practice change intervention.

This is the first research to apply the Theory of Planned Behaviour to these behaviours, to examine the potential of the theory to account for the influence of organisational factors on workers' behaviour, and to trial an intervention targeting behaviour in an organisational setting.

The four studies undertaken (see Figure 1) provided a comprehensive application of the Theory of Planned Behaviour.

#### Step 1 Step 2 Step 3 Study 1 Study 2a Study 3a Study 4 Qualitative Quantitative Randomised in-depth interviews controlled trial Metasurvey (362 analysis (22 Hygienists) Hygienists) of intervention (53 studies) (65 Hygienists) Study 2b Study 3b Qualitative Quantitative in-depth interviews survey (22 Nurses) (125 Nurses)

Fishbein and Ajzen's (1975) 3-step methodology

Figure 1. Diagram of studies conducted as part of the PhD program of research.

In the first study, a meta-analysis of published research examined the ability of the Theory of Planned Behaviour to predict behaviours in an organisational setting. This was the first meta-analysis of studies applying the Theory of Planned Behaviour applications to organisational settings. The findings were comparable to results of a meta-analysis of studies applying the theory to social and health behaviours, supporting the application of the theory to the organisational setting, and also highlighted the potential importance of perceived behavioural control for work behaviours. Studies 2 to 4 were designed to follow Ajzen and Fishbein's (1975) 3-step methodology for applying the theory.

In Study 2, the behavioural, normative, and control beliefs held by dental hygienists and Emergency Department nurses, and potentially relevant organisational factors, such as workload and available support, were identified through in-depth qualitative interviews.

Study 3 measured the ability of the Theory of Planned Behaviour to predict dental hygienists' and Emergency Department nurses' frequency of identifying and assisting. The theory was most successful in predicting dental hygienists' frequency of assisting patients who smoke. The self-efficacy dimension of perceived behavioural control was the strongest predictor of this behaviour. The findings for Emergency Department nurses indicated that subjective norms were an important predictor of intentions to identify and assist patients. The Theory of Planned Behaviour accounted for the influence of organisational factors on behaviour for both dental hygienists and nurses.

Study 4 involved a randomised controlled trial which evaluated a professional intervention targeting dental hygienists' assistance of patients who smoke. Trends

indicated potential benefits of the intervention, but overall no significant changes in dental hygienists' role adequacy, role legitimacy, and targeted control beliefs emerged. This outcome was attributed to ceiling effects and the influence of a media campaign that coincided with the intervention.

The research presented here provides partial support for the application of the Theory of Planned Behaviour to professional practice change efforts. Specifically, the ability of the theory to explain the impact of organisational factors and identify variables most predictive of behaviour may provide valuable insight for prioritising future professional practice change efforts.

# **DECLARATION**

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

**Toby Freeman** 

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## **RELATED PUBLICATIONS**

Skinner, N., Feather, N. T., <u>Freeman</u>, T., & Roche, A. M. (2007). Stigma and discrimination in health care provision to drug users: The role of values, affect and deservingness judgments. *Journal of Applied Social Psychology*, *37*, 163-186.

Edwards, D., <u>Freeman</u>, T., & Gilbert, A. (2006). Pharmacists' role in smoking cessation: An examination of current practice and barriers to service provision. *International Journal of Pharmacy Practice*, 14, 1-3.

Edwards, D., <u>Freeman</u>, T., Litt, J., & Roche, A. M. (2006). GPs' confidence in and barriers to implementing smoking cessation activities: Compared to dentists, dental hygienists and pharmacists. *Australian Journal of Primary Health*, *12*, 117-125.

Edwards, D., <u>Freeman</u>, T., & Roche, A. M. (2006). Dentists' and dental hygienists' role in smoking cessation: An examination and comparison of current practice and barriers to service provision. *Health Promotion Journal of Australia*, 17, 145-151.

Roche, A. M., <u>Freeman</u>, T., & Skinner, N. (2006). From data to evidence, to action: Findings from a systematic review of hospital screening studies for high risk alcohol consumption. *Drug and Alcohol Dependence*, 83, 1-14.

Skinner, N., Roche, A. M., <u>Freeman</u>, T., & Addy, D. (2005). Responding to alcohol and other drug issues: The effect of role adequacy and role legitimacy on motivation and satisfaction. *Drugs: Education, Prevention and Policy, 12*, 449-463.

Roche, A. M., & <u>Freeman</u>, T. (2004). Brief interventions: Good in theory but weak in practice. *Drug and Alcohol Review*, 23, 11-18.