Fast-Food Consumption: Application and Extension of the Theory of Planned Behaviour to Incorporate Affective Responses and Implicit Associations.

Kirsten Dunn B Psych (Hons)

Supervisors
Dr Phil Mohr
Professor Carlene Wilson
Professor Gary Wittert

Doctor of Philosophy
School of Psychology and Discipline of Medicine
University of Adelaide
North Terrace
Adelaide South Australia

March 2008
Thesis Overview

Summary
Brief overview of thesis

Chapter One
Discussion of the issues surrounding obesity and links with fast food

Chapter Two
Overview of the Theory of Planned Behaviour

Chapter Three
Review of literature regarding beliefs about foods
Qualitative study investigating beliefs about fast foods

Chapter Four
Review of literature applying Theory of Planned Behaviour to consumption behaviour
Quantitative study applying Theory of Planned Behaviour to fast-food consumption

Chapter Five
Literature review regarding affect, dual attitudes, and Implicit Associations Test

Chapter Six
Review of literature applying Implicit Associations Test to examine implicit associations with food and beverages
Quasi-experimental study applying Implicit Associations Test to examine implicit associations with fast food

Chapter Seven
Summary chapter
# Table of Contents

Title Page  
List of Tables  
List of Figures  
Declarations  
Acknowledgements  
Dedication  
Thesis overview  

**Overview of Research**  

**Chapter One: Obesity, Fast Food, and Understanding Eating Behaviour**  
1.1 The Issue of Obesity  
1.2 Obesity in Contemporary Lifestyles  
1.3 Defining Fast Food  
1.4 The Effect of Fast-Food Consumption  
1.5 Explaining Food Choice  

**Chapter Two: The Theory of Planned Behaviour**  
2.1 Overview of the Theory of Planned Behaviour  
2.2 Predicting Intention and Behaviour  
  2.2.1 Direct and Indirect Measures  
  2.2.2 Behavioural Beliefs and Attitude towards the Behaviour  
  2.2.3 Normative Beliefs and Subjective Norms  
  2.2.4 Control Beliefs and Perceived Behavioural Control  
  2.2.5 Intention  
  2.2.6 Behaviour  
  2.2.7 Actual Behavioural Control  
  2.2.8 Principle of Correspondence
Chapter Three: A Qualitative Analysis of Beliefs Regarding Fast-Food Consumption

Introduction
3.1 Influence of Beliefs in Attitude Formation 25
3.2 Differences in Beliefs According to Food Group 25
3.3 Beliefs and the Theory of Planned Behaviour 27
3.4 Belief-Based Research within the Theory of Planned Behaviour Literature 30
3.5 Summary 29

Method
3.6 Design 32
3.7 Participants 32
3.8 Procedure 35
3.9 Instruments 35
   3.9.1 Letter of Introduction
   3.9.2 Questionnaire
3.10 Data Analyses – Content Analysis 36

Results and Discussion
3.11 How do People Define Fast Food? 37
3.12 A Prototype of Fast Food 38
3.14 Outcome Beliefs – Cognitive Reactions 41
3.15 Outcome Beliefs – Affective Reactions 42
3.16 Normative Beliefs – Social Influence 44
Chapter Four: Determinants of Fast-Food Consumption: An Application of the Theory of Planned Behaviour

Introduction

4.1 Meta-Analytic Research of the Theory of Reasoned Action and the Theory of Planned Behaviour Applied to Weight-Loss and Dietary Choices 49

4.2 Research using the Theory of Planned Behaviour to Understand Food Choice 52

4.2.1 Understanding Decisions to Choose Healthy Foods 52

4.2.2 Understanding Decisions to Choose Fast Food 57

4.3 Other Factors Contributing To the Explanation of Intention and Behaviour 59

4.3.1 Self-Identity 60

4.3.2 Affective Reactions 63

4.3.3 Consideration of Future Consequences (CFC) 66

4.3.4 Sensitivity to Reward (STR) 67

4.3.5 Fear of Negative Evaluation (FNE) 69

4.4 Possible Interaction Effects between Variables 69

4.5 Summary 73

Method

4.6 Design 75

4.7 Participants 75

4.8 Procedure 76

4.9 Instruments 77

4.9.1 Letters of introduction 77

4.9.2 Measures 78

4.9.2.1 Theory of Planned Behaviour 78

4.9.2.2 Consideration of Future Consequences 82
Results
4.10 Data Preparation and Preliminary Analyses 84
4.10.1 Variables 84
4.11 Descriptive Statistics
4.11.1 Sample Outcomes for all Variables 86
4.11.2 Relationships Between all Dependent and Independent Variables 88
4.13 Further Examination of the Two Measures of Behaviour 93
4.14 Constructing Direct and Indirect (Belief-Based) Measures 94
4.15 Predicting Intentions from Direct and Indirect Measures 95
4.16 Structural Examination of Attitudes and Perceived Behavioural Control 97
4.16.1 Behavioural Beliefs 97
4.16.2 Control Beliefs 98
4.17 Using the Factor-Based Variables to Predict Attitudes, Subjective Norm, and Perceived Behavioural Control 99
4.18 The Influence of Interaction Effects 101
4.18.1 Intention 101
4.18.2 Behaviour 103
4.19 Predicting Fast-Food Consumption: Application of the ‘Extended’ Theory of Planned Behaviour Models 103
4.20 Theory of Planned Behaviour and Fast-Food Consumption – The Effect of Body Mass Index and Consumption Frequency on Intention, Attitude, Subjective Norm and Perceived Behavioural Control 107
Discussion
4.21.1 Predicting Fast-Food Consumption (Behaviour) 110
Chapter Four: Predicting Intention to Consume Fast Food

4.21.2 Predicting Intention to Consume Fast Food

4.22 Comparative Utility of Direct and Indirect Measures as Predictors of Intention

4.22.1 Direct Measures of Attitude, Subjective Norm, and Perceived Behavioural Control

4.22.2 Indirect Measures of Attitude, Subjective Norm, and Perceived Behavioural Control

4.22.3 Summary Comparison between Direct and Indirect Measures

4.23 Structural Examination of Attitudes and Perceived Behavioural Control

4.23.1 Behavioural Beliefs

4.23.2 Control Beliefs

4.24 Predicting Attitude, Subjective Norm, and Perceived Behavioural Control

4.24.1 Attitude

4.24.2 Subjective Norm

4.24.3 Perceived Behavioural Control


4.25.1 Predicting Self-Reported Retrospective Intake of Fast Food

4.25.2 Predicting Intake of Fast Food as Captured by Fast-Food Diaries

4.25.3 Influence of Interaction Effects

4.25.3.1 Significant Interaction Effects

4.25.3.2 Non-Significant Interaction Effects

4.26 Group Differences - Effects of Body Mass Index and Consumption Frequency on Intention, Attitude, Subjective Norm, and Perceived Behavioural Control

4.27 Summary

4.28 Future Attitudinal Research

Chapter Five: Implicit Association Test as a Tool for Investigating Affective Reactions

5.1 The Role of Affect

5.2 Dual Attitudes

5.3 Measuring Implicit Attitudes
5.4 Validity of the Implicit Associations Test as a Measure of Implicit Associations 133
5.5 Implicit Associations Test and Health-Related Attitudes 137

Chapter Six: Implicit Associations with Fast Food: Applications of the Implicit Associations Test 142

Introduction
6.1 Research Applying the Implicit Associations Test to Examine Associations with Food and Beverages 142
6.2 Application of the Implicit Associations Test to Examine Associations with Fast Food 148

Method
6.3 Design 150
6.4 Participants 150
6.5 Procedure 150
6.6 Instruments 151
   6.6.1 Letters of Introduction 151
   6.6.2 Implicit Associations Test Tasks 152
      6.6.2.1 Valence Adjectives 152
      6.6.2.2 Arousal Adjectives 153
      6.6.2.3 Stimulus Images Used Across Both Implicit Associations Tests 153
      6.6.2.4 Implicit Associations Test Presentation Format 154
      6.6.2.5 Scoring the Implicit Associations Test 158
   6.6.3 Self-Report Measures 161
      6.6.3.1 Theory of Planned Behaviour 161
      6.6.3.2 Demographics 163
   6.6.4 Final Items 164

Results
6.7 Data Preparation and Preliminary Analyses 164
   6.7.1 Implicit Associations Test Variables 164
   6.7.2 Theory of Planned Behaviour Variables 164
6.7.3 Other Variables

6.8 Descriptive Statistics
  6.8.1 Sample Outcomes for All Variables
  6.8.2 Relationships Between all Dependent and Independent Variables

6.9 Group Differences in Mean Scores from Implicit Association Test

6.10 Differences in Arousal Implicit Associations Test Scores across Body Mass Index and Frequency of Fast-Food Consumption

6.11 Retrospective Fast-Food Consumption - Modelling the Relationship between Implicit Associations and Theory of Planned Behaviour Variables

6.12 Fast-Food Consumption Measured by Fast-Food Diaries - Modelling the Relationship between Implicit Associations and Theory of Planned Behaviour Variables

Discussion
  6.13 Implicit Associations with Fast Food
  6.14 Group Differences in Implicit Association Test Reaction Times
  6.15 Predicting Fast-Food Consumption from Implicit Associations

Chapter Seven: Conclusion
  7.1 The Relationship between Obesity and Fast Food
  7.2 Framework of the Theory of Planned Behaviour
  7.3 Framework of the Implicit Associations Test
  7.4 Overview of the Studies
  7.5 Key Findings from Application of Theory of Planned Behaviour and Implicit Associations Test to Fast-Food Consumption
  7.6 Possible Applications, Limitations, and Methodological Considerations
    7.6.1 General
    7.6.2 Attitudes
    7.6.3 Subjective Norms
    7.6.4 Perceptions of Behavioural Control
  7.7 Future Research
    7.7.1 Potential Contributions from the Developmental Approach
    7.7.2 Potential Contributions from the Psychophysiological Approach
List of Tables

Table 3.1  Comparison of Demographic Information between Study Participants and NWAHS Group 34
Table 3.2  Frequencies for Fast-Food Definition 38
Table 3.3  Frequency of Fast-Food Consumption by Age Group 40
Table 3.4  Primary Cognitive and Affective Outcome Beliefs Regarding Frequent Fast-Food Consumption 42
Table 4.1  Comparison of Demographic Information between Study Participants and NWAHS Group 77
Table 4.2  Means and Standard Deviations 87
Table 4.3  Bivariate Correlations of Predictor and Criterion Variables 89
Table 4.4  Multiple Regression Predicting Intention from Direct and Indirect Measures 96
Table 4.5  Factor Loadings for Behavioural Beliefs 98
Table 4.6  Factor Loadings for Control Beliefs 99
Table 4.7  Multiple Regressions of Belief Factors Predicting Direct Attitude, Subjective Norm, and Perceived Behavioural Control 100
Table 6.1  Comparison of Demographic Information between Study Participants and NWAHS Group 151
Table 6.2  Stimulus Words for Valence Implicit Associations Test and Arousal Implicit Associations Test Tasks 153
Table 6.3  Sequence of Trial Blocks for Both Implicit Associations Tests 158
Table 6.4  Mean Scores and Standard Deviations for Entire Participant Groups and Diary Sub-Group 166
Table 6.5  Bivariate Correlations of Predictor and Criterion Variables x
Table 6.6  Bivariate Correlations of Predictor and Criterion Variables for Diary Sub-Group
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 2.1</td>
<td>Schematic Representation of the Theory of Planned Behaviour</td>
<td>12</td>
</tr>
<tr>
<td>Figure 4.1</td>
<td>Path Analysis for the Theory of Planned Behaviour with Retrospective Behaviour</td>
<td>92</td>
</tr>
<tr>
<td>Figure 4.2</td>
<td>Path Analysis for the Theory of Planned Behaviour with Behaviour Captured by Fast-Food Diary</td>
<td>93</td>
</tr>
<tr>
<td>Figure 4.3</td>
<td>Path Analysis for the Extended Theory of Planned Behaviour Model with Retrospective Behaviour</td>
<td>104</td>
</tr>
<tr>
<td>Figure 4.4</td>
<td>Path Analysis for the Extended Theory of Planned Behaviour Model with Behaviour Recorded in the Fast-Food Diaries</td>
<td>105</td>
</tr>
<tr>
<td>Figure 5.1</td>
<td>Example of Sorting Task from Implicit Associations Test</td>
<td>132</td>
</tr>
<tr>
<td>Figure 6.1</td>
<td>Stimulus Images Used Across Both Implicit Associations Test Tasks</td>
<td>154</td>
</tr>
<tr>
<td>Figure 6.2</td>
<td>Schematic Illustration of Implicit Associations Test Format for Valence Outcome Expectancies</td>
<td>155</td>
</tr>
<tr>
<td>Figure 6.3</td>
<td>Schematic Illustration of Implicit Associations Test Format for Arousal Outcome Expectancies</td>
<td>156</td>
</tr>
<tr>
<td>Figure 6.4</td>
<td>Mean Effects for Arousal and Valence Implicit Associations Tests</td>
<td>169</td>
</tr>
<tr>
<td>Figure 6.5</td>
<td>Path Analysis for the Theory of Planned Behaviour with Arousal Associations</td>
<td>171</td>
</tr>
<tr>
<td>Figure 6.6</td>
<td>Path Analysis for the Theory of Planned Behaviour with Valence Associations</td>
<td>172</td>
</tr>
<tr>
<td>Figure 6.7</td>
<td>Path Analysis Predicting Actual Behaviour with Arousal Associations</td>
<td>173</td>
</tr>
<tr>
<td>Figure 6.8</td>
<td>Path Analysis Predicting Actual Behaviour with Valence Associations</td>
<td>174</td>
</tr>
</tbody>
</table>
— Declarations —

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

I give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying, subject to the provisions of the Copyright Act 1968 and existing CSIRO IP/SPPA embargo.

I acknowledge that copyright of published works contained within this thesis (as listed below) resides with the copyright holder(s) of those works.

Published works:


Note: This is the author's version of a work that was accepted for publication in Appetite. Changes resulting from the publishing process, such as peer review, editing, corrections, structural formatting, and other quality control mechanisms may not be reflected in this document. Changes may have been made to this work since it was submitted for publication.

Kirsten Dunn

March 2008
Acknowledgements

My sincerest thanks to:

My supervisors; Dr Phil Mohr, Professor Carlene Wilson, and Professor Garry Wittert.

I would like to thank Phil for his insights and for sharing his analytic mind, especially all those hours in the early days.

I thank Carlene for her enthusiasm, encouragement, and absolute confidence. I am also grateful for her great ability to provide perspective and a rational explanatory framework; Carlene brings theory to life.

Thanks to Gary for providing so many pillars of support and being a constant source of positive feedback; one enthusiastic “awesome!” would carry me through for months.

Although not a formal supervisor of mine, I owe much to Professor David Wilson for his generous and invaluable mentorship, his resolute support, his penchant for tackling and solving problems, and his outrageous Scottish charm.

“The Scots are steadfast - not their clime.” Thomas Crawford.

CSIRO Human Nutrition, the NOBLE Research Group, and School of Psychology, University of Adelaide for making so many excellent resources available to me.

The South Australian Department of Health and North West Adelaide Health Study for their invaluable assistance in recruiting and data gathering. Special thanks to Professor Anne Taylor, Janet Grant, and Alicia Montgomerie for everything they did (and always with a smile) as well as all the participants from the NWAHS who were so generous with their time.

Mr Robert Willson, for providing the technological genius required to set up an online Implicit Associations Test.

Kamelia Todorov, for being a fabulous research partner, a great travel companion, and my voice of reason for three long years.

Pat and David Vale, for instilling curiosity and scepticism.

Jed, for the wonderful balance and perspective he brings.

Jackson, for providing hours of unconditional Weimaraner companionship.

Finally, my thanks to Brenton, for all that he does and gives.
For Thandi and Louise Murada

Show the world what can be achieved through dedication and quiet determination.

The two bravest people I will ever meet.