Stability and Variability of Motivation to Change in Anorexia Nervosa

by

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Date 17/01/2012
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TITLE PAGE</td>
<td>I</td>
</tr>
<tr>
<td>ACCESS TO THESIS</td>
<td>II</td>
</tr>
<tr>
<td>CANDIDATE DECLARATION</td>
<td>III</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>IV</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>V</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>XIII</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>XV</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>XVII</td>
</tr>
<tr>
<td>CHAPTER ONE – OVERVIEW</td>
<td>1</td>
</tr>
<tr>
<td>1.1 Anorexia Nervosa</td>
<td>1</td>
</tr>
<tr>
<td>1.1.1 Ambivalence regarding recovery</td>
<td>2</td>
</tr>
<tr>
<td>1.2 The Transtheoretical Model</td>
<td>3</td>
</tr>
<tr>
<td>1.2.1 Key constructs of the TTM</td>
<td>4</td>
</tr>
<tr>
<td>1.3 The application of the TTM to anorexia</td>
<td>5</td>
</tr>
<tr>
<td>1.4 Limitations of the TTM</td>
<td>7</td>
</tr>
<tr>
<td>1.5 Overview of the thesis</td>
<td>8</td>
</tr>
<tr>
<td>CHAPTER TWO – ANOREXIA: CLINICAL FEATURES</td>
<td>11</td>
</tr>
<tr>
<td>2.1 Anorexia – description and diagnostic criteria</td>
<td>12</td>
</tr>
<tr>
<td>2.1.1 Issues with current diagnostic criteria</td>
<td>13</td>
</tr>
<tr>
<td>2.1.1.1 BMI</td>
<td>13</td>
</tr>
<tr>
<td>2.1.1.2 Amenorrhea</td>
<td>14</td>
</tr>
<tr>
<td>2.2 Anorexia – subtypes</td>
<td>14</td>
</tr>
<tr>
<td>2.3 Anorexia – prevalence/Epidemiology</td>
<td>15</td>
</tr>
<tr>
<td>2.4 Anorexia – course of illness</td>
<td>17</td>
</tr>
<tr>
<td>2.4.1 Anorexia – mortality</td>
<td>18</td>
</tr>
<tr>
<td>2.4.2 Anorexia – suicidality</td>
<td>19</td>
</tr>
<tr>
<td>2.5 Risk factors associated with anorexia</td>
<td>20</td>
</tr>
<tr>
<td>2.6 Medical complications of anorexia</td>
<td>23</td>
</tr>
<tr>
<td>2.6.1 Physical appearance</td>
<td>24</td>
</tr>
<tr>
<td>2.6.2 Dermatological issues</td>
<td>24</td>
</tr>
<tr>
<td>2.6.3 Metabolic/endocrine issues</td>
<td>24</td>
</tr>
<tr>
<td>2.6.4 Cardiovascular issues</td>
<td>26</td>
</tr>
<tr>
<td>2.6.5 Gastrointestinal issues</td>
<td>27</td>
</tr>
<tr>
<td>2.6.6 Neurological issues</td>
<td>28</td>
</tr>
<tr>
<td>2.6.7 Reproductive issues</td>
<td>29</td>
</tr>
<tr>
<td>2.6.8 Bone density</td>
<td>31</td>
</tr>
<tr>
<td>2.7 Co-morbidity</td>
<td>33</td>
</tr>
<tr>
<td>2.8 Ambivalence</td>
<td>35</td>
</tr>
<tr>
<td>2.9 Conclusion and implications</td>
<td>36</td>
</tr>
</tbody>
</table>
# CHAPTER THREE – THE TRANSTHEORETICAL MODEL

3.1 Description of the TTM ................................................................. 40
  3.1.1 Stages of change ................................................................. 41
  3.1.2 Processes of change ............................................................. 42
  3.1.3 Additional factors related to the TTM ...................................... 44
    3.1.3.1 Decisional balance ....................................................... 44
    3.1.3.2 Self-efficacy .............................................................. 45
  3.2 Issues related to the TTM .......................................................... 46
    3.2.1 Measurement issues ......................................................... 47
      3.2.1.1 Algorithms ............................................................. 48
      3.2.1.2 Self-report questionnaires ......................................... 49
    3.2.2 Stage conceptualisation issues ......................................... 50
    3.2.3 Stability of the TTM ........................................................ 51
    3.2.4 Treatment matching interventions .................................... 54
    3.2.5 Sequence of change ........................................................ 55
    3.2.6 Predictive ability of the TTM .......................................... 55
  3.3 Summary ................................................................................. 56
  3.4 Implications for the thesis ...................................................... 57

# CHAPTER FOUR – THE APPLICATION OF THE TTM TO ANOREXIA

4.1 Applicability of the TTM to anorexia .......................................... 59
  4.2 Moderator variables ................................................................ 62
    4.2.1 Processes of change ......................................................... 62
    4.2.2 Decisional balance .......................................................... 64
    4.2.3 Self-efficacy ..................................................................... 68
    4.3 Measurement issues ............................................................. 70
      4.3.1 Uni-dimensional (global) assessments ............................... 70
      4.3.2 Global self-report questionnaires ..................................... 71
      4.3.3 Algorithms .................................................................... 71
      4.3.4 Multi-dimensional assessments ....................................... 72
        4.3.4.1 Multi-dimensional self-report questionnaires ............... 73
        4.3.4.2 Interviews .............................................................. 75
  4.4 Stage stability ......................................................................... 77
  4.5 Treatment matched interventions ............................................ 78
  4.6 Cognitive and behavioural change .......................................... 79
  4.7 Predictive ability of the TTM ................................................... 81
  4.8 Summary ............................................................................... 84
  4.9 Implications for the thesis ....................................................... 84
CHAPTER FIVE – STUDY ONE: STABILITY OF READINESS TO RECOVER IN ANOREXIA NERVOSA CLIENTS: INDIVIDUAL PERSPECTIVES ................................................. 86

5.1 Rationale ............................................................................................................. 86
  5.1.1 Aims ............................................................................................................... 89
  5.1.2 Hypotheses .................................................................................................... 90

5.2 Method ............................................................................................................... 90
  5.2.1 Quantitative and qualitative research designs .............................................. 90
  5.2.2 Sample .......................................................................................................... 92
  5.2.3 Materials ....................................................................................................... 93
    5.2.3.1 ANSOCQ ................................................................................................. 93
    5.2.3.2 RSES ...................................................................................................... 93
    5.2.3.3 ANDB Scale ............................................................................................ 94
  5.2.4 Procedure ..................................................................................................... 96

5.3 Results ............................................................................................................. 97
  5.3.1 Plan of analysis ............................................................................................. 97
  5.3.2 Stage of change ............................................................................................ 98
    5.3.2.1 Readiness to change across symptom dimensions (individuals) .......... 98
  5.3.2.2 Readiness to change across symptom dimensions (stage) ....................... 100
  5.3.3 Self-efficacy .................................................................................................. 101
    5.3.3.1 Self-efficacy across symptom dimensions (individual) ......................... 101
    5.3.3.2 Self-efficacy across symptom dimensions (stage) ................................. 103
  5.3.4 Decisional balance ....................................................................................... 104
    5.3.4.1 Decisional balance across dimensions individual) .................. 104
    5.3.4.2 Decisional balance across symptom dimensions (stage) .................... 106
  5.3.5 Stability of readiness to change ................................................................. 110
    5.3.5.1 Stability of readiness to change across dimensions (individuals) ........ 110
    5.3.5.2 Stability of readiness to change across dimensions (stage) ................. 111
  5.3.6 Comparison of data collection methods ..................................................... 113
    5.3.6.1 Readiness for change ................................................................. 113
    5.3.6.2 Self-efficacy ......................................................................................... 116
  5.3.7 Processes of change ..................................................................................... 119
    5.3.7.1 Processes of change across dimensions (individuals) ......................... 119
    5.3.7.2 Processes of change across dimensions (stage) .................................. 122
      5.3.7.2.1 Pre-action stages .............................................................................. 122
      5.3.7.2.2 Post-action stages ........................................................................... 124
5.4 Discussion.................................................................................................................. 126
  5.4.1 Variability across dimensions – readiness to change, self-efficacy and decisional balance.......................................................... 127
    5.4.1.1 Readiness to change .............................................................................. 127
    5.4.1.2 Self-efficacy .......................................................................................... 129
    5.4.1.3 Decisional balance .............................................................................. 131
  5.4.2 Stability across dimensions – readiness to change ........................................ 133
  5.4.3 Processes of change........................................................................................... 135
  5.4.4 Comparison between self-report and interview assessment approaches oppressive........................................................................... 136
    5.4.4.1 Readiness to change .............................................................................. 136
    5.4.4.2 Self-efficacy .......................................................................................... 137
  5.4.5 Clinical and theoretical implications ................................................................ 138
  5.4.6 Limitations of the current study ....................................................................... 139
  5.4.7 Future directions .............................................................................................. 140
  5.4.8 Chapter summary/Conclusion ......................................................................... 141

CHAPTER SIX – STUDY TWO: THE USE OF ECOLOGICAL MOMENTARY ASSESSMENTS TO ASSESS THE STABILITY OF READINESS TO CHANGE AND SELF-EFFICACY IN ANOREXIC CLIENTS ........................................................................ 143
  6.1 Rationale............................................................................................................... 143
   6.1.1 Criticisms of traditional methodology ......................................................... 143
   6.1.2 Ecological momentary assessment ............................................................... 148
     6.1.2.1 Benefits of EMA.................................................................................. 150
  6.2 The current study (Study Two) ............................................................................ 154
   6.2.1 Aims ............................................................................................................. 154
   6.2.2 Hypotheses .................................................................................................. 155
  6.3 Method .................................................................................................................. 155
   6.3.1 Sample ......................................................................................................... 156
   6.3.2 Materials ...................................................................................................... 157
     6.3.2.1 ANSOCQ............................................................................................... 157
     6.3.2.2 RSES ................................................................................................. 157
     6.3.2.3 EDE-Q ............................................................................................... 158
     6.3.2.4 Demographics questionnaire ............................................................... 158
     6.3.2.5 EMA .................................................................................................. 158
       6.3.2.5.1 Readiness to change .................................................................... 160
       6.3.2.5.2 Self-efficacy ............................................................................... 160
       6.3.2.5.3 Influential event ......................................................................... 161
       6.3.2.5.4 Mood............................................................................................ 161
   6.3.3 Procedure ....................................................................................................... 161
  6.4 Results .................................................................................................................... 162
   6.4.1 Plan of analysis ............................................................................................. 162
   6.4.2 Participant demographics ............................................................................. 163
   6.4.3 Analysis of participants’ daily response data ............................................... 164
     6.4.3.1 Individual case studies ....................................................................... 165
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.4.3.2 Participant One</td>
<td>165</td>
</tr>
<tr>
<td>6.4.3.2.1 Readiness to change</td>
<td>165</td>
</tr>
<tr>
<td>6.4.3.2.2 Self-efficacy</td>
<td>166</td>
</tr>
<tr>
<td>6.4.3.2.3 Readiness to change: instability</td>
<td>167</td>
</tr>
<tr>
<td>6.4.3.2.4 Readiness to change: variability</td>
<td>168</td>
</tr>
<tr>
<td>6.4.3.2.5 Self-efficacy: variability</td>
<td>172</td>
</tr>
<tr>
<td>6.4.3.3 Participant Two</td>
<td>172</td>
</tr>
<tr>
<td>6.4.3.3.1 Readiness to change</td>
<td>175</td>
</tr>
<tr>
<td>6.4.3.3.2 Self-efficacy</td>
<td>176</td>
</tr>
<tr>
<td>6.4.3.3.3 Readiness to change: stability</td>
<td>177</td>
</tr>
<tr>
<td>6.4.3.3.4 Readiness to change: variability</td>
<td>178</td>
</tr>
<tr>
<td>6.4.3.3.5 Self-efficacy: variability</td>
<td>181</td>
</tr>
<tr>
<td>6.4.3.4 Participant Three</td>
<td>184</td>
</tr>
<tr>
<td>6.4.3.4.1 Readiness to change</td>
<td>184</td>
</tr>
<tr>
<td>6.4.3.4.2 Self-efficacy</td>
<td>185</td>
</tr>
<tr>
<td>6.4.3.4.3 Readiness to change: stability</td>
<td>186</td>
</tr>
<tr>
<td>6.4.3.4.4 Readiness to change: variability</td>
<td>187</td>
</tr>
<tr>
<td>6.4.3.4.5 Self-efficacy: variability</td>
<td>190</td>
</tr>
<tr>
<td>6.4.3.5 Participant Four</td>
<td>193</td>
</tr>
<tr>
<td>6.4.3.5.1 Readiness to change</td>
<td>193</td>
</tr>
<tr>
<td>6.4.3.5.2 Self-efficacy</td>
<td>194</td>
</tr>
<tr>
<td>6.4.3.5.3 Readiness to change: stability</td>
<td>195</td>
</tr>
<tr>
<td>6.4.3.5.4 Readiness to change: variability</td>
<td>196</td>
</tr>
<tr>
<td>6.4.3.5.5 Self-efficacy: variability</td>
<td>199</td>
</tr>
<tr>
<td>6.4.4 Grouped data</td>
<td>202</td>
</tr>
<tr>
<td>6.4.4.1 Readiness to change</td>
<td>202</td>
</tr>
<tr>
<td>6.4.4.2 Self-efficacy</td>
<td>204</td>
</tr>
<tr>
<td>6.4.4.3 Influence of mood</td>
<td>205</td>
</tr>
<tr>
<td>6.4.4.4 Influence of event</td>
<td>207</td>
</tr>
<tr>
<td>6.5 Discussion</td>
<td>211</td>
</tr>
<tr>
<td>6.5.1 Variability across dimensions</td>
<td>212</td>
</tr>
<tr>
<td>6.5.1.1 Readiness to change</td>
<td>212</td>
</tr>
<tr>
<td>6.5.1.2 Self-efficacy</td>
<td>213</td>
</tr>
<tr>
<td>6.5.2 Stability across time</td>
<td>214</td>
</tr>
<tr>
<td>6.5.2.1 Readiness to change</td>
<td>214</td>
</tr>
<tr>
<td>6.5.3 Influence of mood</td>
<td>215</td>
</tr>
<tr>
<td>6.5.4 Influence of event</td>
<td>216</td>
</tr>
<tr>
<td>6.5.4.1 Readiness to change</td>
<td>216</td>
</tr>
<tr>
<td>6.5.4.2 Self-efficacy</td>
<td>217</td>
</tr>
<tr>
<td>6.5.5 Comparison between retrospective recall and EMA assessment</td>
<td>217</td>
</tr>
<tr>
<td>6.5.5.1 Readiness to change</td>
<td>218</td>
</tr>
<tr>
<td>6.5.5.2 Self-efficacy</td>
<td>218</td>
</tr>
<tr>
<td>6.5.6 Clinical and theoretical implications</td>
<td>219</td>
</tr>
<tr>
<td>6.5.7 Limitations of the current study</td>
<td>220</td>
</tr>
</tbody>
</table>
6.5.8 Future directions ................................................. 221
6.5.9 Summary and conclusions .................................. 221

CHAPTER SEVEN – STUDY THREE: A PILOT INVESTIGATION INTO THE STABILITY OF READINESS TO CHANGE AND SELF-EFFICACY IN ANOREXIC CLIENTS USING A MULTIDIMENSIONAL, CONTINUOUS FORMAT ............................................. 223

7.1 Rationale ................................................................. 223
  7.1.1 Criticisms of current measurement tools ..................... 223
    7.1.1.1 Uni-dimensional scales .................................. 223
    7.1.1.2 Discrete scales .......................................... 224
  7.1.2 Aims ............................................................... 226
  7.1.3 Hypotheses ...................................................... 226

7.2 Method ................................................................. 227
  7.2.1 Sample ............................................................ 228
  7.2.2 Materials .......................................................... 228
    7.2.2.1 Previously described studies ......................... 228
    7.2.2.2 JAR-RTC Scale ......................................... 229
    7.2.2.3 JAR-SE Scale .......................................... 229
    7.2.2.4 Demographics questionnaire ........................... 230
  7.2.3 Procedure ......................................................... 230

7.3 Results ................................................................. 231
  7.3.1 Plan of analysis ............................................... 231
  7.3.2 Demographics results ........................................ 232
  7.3.3 Variability across dimensions ............................... 233
    7.3.3.1 Readiness to change .................................. 233
    7.3.3.2 Self-efficacy ........................................... 234
  7.3.4 Stability across time .......................................... 234
    7.3.4.1 Readiness to change .................................. 234
    7.3.4.2 Self-efficacy ........................................... 237
  7.3.5 Psychometric properties ..................................... 240
    7.3.5.1 JAR-RTC Scale ......................................... 240
      7.3.5.1.1 Concurrent criterion validity .................... 240
      7.3.5.1.2 Internal reliability ................................ 241
    7.3.5.2 JAR-SE Scale .......................................... 241
      7.3.5.2.1 Concurrent criterion validity .................... 241
      7.3.5.2.2 Internal reliability ................................ 242

7.4 Discussion .......................................................... 242
  7.4.1 Variability across symptom dimensions ...................... 243
    7.4.1.1 Readiness to change .................................. 243
    7.4.1.2 Self-efficacy .......................................... 245
  7.4.2 Stability across time .......................................... 245
    7.4.2.1 Readiness to change .................................. 245
    7.4.2.2 Self-efficacy .......................................... 246
  7.4.3 Psychometric properties ..................................... 247
    7.4.3.1 Psychometric properties: JAR-RTC scale .............. 247
CHAPTER EIGHT – SUMMARY, IMPLICATIONS AND CONCLUSIONS ................................................................. 251
8.1 Summary of the findings relative to the primary aims ................................................................. 251
8.2 Current findings relevant to previous findings ........................................................................ 255
  8.2.1 Variability of readiness to change and self-efficacy across symptom dimensions .......... 255
  8.2.2 Stability of readiness to change and self-efficacy across time ........................................ 255
8.3 Limitations and strengths of the current research methodology ............................................. 256
8.4 Implications of the current research ....................................................................................... 257
  8.4.1 Theoretical implications .................................................................................................. 257
  8.4.2 Clinical implications ...................................................................................................... 258
8.5 Future directions for research ................................................................................................. 260
8.6 Conclusions ............................................................................................................................. 260

References ................................................................................................................................... 262
Appendices .................................................................................................................................... 282

Appendix A
Study One Newspaper Advertisement .......................................................................................... 286

Appendix B
Study One Questionnaires ........................................................................................................... 287

Appendix C
Study One Ethics Approval ........................................................................................................ 300

Appendix D
Study One Practitioner Letter .................................................................................................... 301

Appendix E
Study One Plain Language Statement ........................................................................................ 304

Appendix F
Study One Consent Forms .......................................................................................................... 310

Appendix G
Study Two Retrospective Questionnaires .................................................................................. 315
Appendix H
Study Two Ethics Approval .................................................. 328

Appendix I
Study Two Newspaper Advertisement ...................................... 329

Appendix J
Study Two Flyer .................................................................. 330

Appendix K
Study Two Practitioner Letter ................................................ 332

Appendix L
Study Two Plain Language Statement ..................................... 335

Appendix M
Study Two Consent Form ....................................................... 338

Appendix N
Study Three Questionnaires .................................................. 339

Appendix O
Study Three Ethics Approval ................................................ 357

Appendix P
Study Three Practitioner Letter ............................................. 358

Appendix Q
Study Three Advertisements ................................................. 361

Appendix R
Study Three Plain Language Statement/Consent Forms ............. 364
LIST OF TABLES

Table 5.1 – Means and Standard Deviations for Major TTM Constructs (N=15) ...... 98

Table 5.2 – Readiness for Changing Each Dimension by Stage Allocation .................. 101

Table 5.3 – Self-efficacy Across Each Dimension by Stage Allocation .................... 103

Table 5.4 – Comparison of Individual Readiness to Change (Interview versus ANSOCQ) .......................................................... 115

Table 5.5 – Comparison of Individual Self-efficacy (Interview versus RSES) ........... 118

Table 6.1 – Demographic Results ........................................................................... 163

Table 6.2 – Quantitative Scale Results .................................................................. 164

Table 6.3 – Percentage of Prompt Times Which Reflected Readiness to Change Scores for Each Symptom Dimension (P1) ............................................................ 168

Table 6.4 – Summary Table Showing Descriptive Statistics for Readiness to Change Scores across Each Dimension (P1) ........................................................................ 171

Table 6.5 – Summary Table Showing Descriptive Statistics for Self-efficacy Scores across Each Dimension (P1) .......................................................... 174

Table 6.6 – Percentage of Prompt Times Which Reflected Readiness to Change Scores for Each Symptom Dimension (P2) .................................................. 178

Table 6.7 – Summary Table Showing Descriptive Statistics for Readiness to Change Scores across Each Dimension (P2) .................................................. 180

Table 6.8 – Summary Table Showing Descriptive Statistics for Self-efficacy Scores across Each Dimension (P2) .................................................. 183

Table 6.9 – Percentage of Prompt Times Which Reflected Readiness to Change Scores for Each Symptom Dimension (P3) .................................................. 187

Table 6.10 – Summary Table Showing Descriptive Statistics for Readiness to Change Scores across Each Dimension (P3) .................................................. 189

Table 6.11 – Summary Table Showing Descriptive Statistics for Self-efficacy Scores across Each Dimension (P3) .................................................. 192

Table 6.12 – Percentage of Prompt Times Which Reflected Readiness to Change Scores for Each Symptom Dimension (P4) .................................................. 196
Table 6.13 – Summary Table Showing Descriptive Statistics for Readiness to Change Scores across Each Dimension (P4) ................................................................. 198

Table 6.14 – Summary Table Showing Descriptive Statistics for Self-efficacy Scores across Each Dimension (P4) ............................................................................. 201

Table 6.15 – Readiness to Change across Symptom Dimensions .............................................. 203

Table 6.16 – Readiness to Change (stages) across Time ......................................................... 204

Table 6.17 – Self-efficacy across Symptom Dimensions ......................................................... 205

Table 6.18 – Influence of Mood on Readiness to Change ...................................................... 206

Table 6.19 – Influence of Mood on Self-efficacy ................................................................. 207

Table 6.20 – Influence of Event on Readiness to Change ...................................................... 208

Table 6.21 – Influence of Type of Event on Readiness to Change .......................................... 209

Table 6.22 – Influence of Event on Self-efficacy ................................................................. 209

Table 6.23 – Influence of Type of Event on Self-efficacy ...................................................... 210

Table 6.24 – Comparison of Different Methodological Approaches .................................. 211

Table 7.1 – Demographic Results (N=31) ............................................................................. 232

Table 7.2 – Means and Standard Deviations for Major TTM Constructs at T1 (N=31) ............. 233

Table 7.3 – Instability over Time for each Stage Group (Readiness to Change) ...................... 235

Table 7.4 – Instability over Time for each Symptom Dimension (Readiness to Change) .......... 236

Table 7.5 – Instability over Time – A Comparison between Central and Extreme Stages (Readiness to Change) ........................................................................... 237

Table 7.6 – Instability over Time for each Stage Group (Self-efficacy) .................................. 238

Table 7.7 – Instability over Time for each Symptom Dimension (Self-efficacy) ...................... 239

Table 7.8 – Instability over Time – A Comparison between Central and Extreme Stages (Self-efficacy) ......................................................................................... 240
Table 7.9 – Pearson Correlation between ANSOCQ and JAR-RTC Scale Items (N=31) ........................................................................................................................................... 241

Table 7.10 – Pearson Correlation between RSES and JAR-SE Scale Items (N=31) . 242
LIST OF FIGURES

Figure 3.1  Stages of change in which particular processes of change are emphasized .................................................. 40

Figure 3.2  Sample of four item algorithm for classifying stage of change .......... 48

Figure 5.1  Individual number of participants reporting being ready for change across each of the six dimensions ................................................................. 99

Figure 5.2  Self-efficacy across symptom dimensions (individual) .................. 102

Figure 5.3  Comparison of data collection methods for readiness to change .................................................................................. 114

Figure 5.4  Comparison of data collection methods for self-efficacy ............. 117

Figure 6.1  Overview of P1’s readiness to change ........................................ 166

Figure 6.2  Overview of P1’s self-efficacy .................................................. 167

Figure 6.3  Readiness to change scores for each symptom dimension across time (P1) .......................................................... 170

Figure 6.4  Self-efficacy scores for each symptom dimension across time (P1) .. 173

Figure 6.5  Overview of P2’s readiness to change ........................................ 176

Figure 6.6  Overview of P2’s self-efficacy .................................................. 177

Figure 6.7  Readiness to change scores for each symptom dimension across time (P2) .......................................................... 179

Figure 6.8  Self-efficacy scores for each symptom dimension across time (P2) .. 182

Figure 6.9  Overview of P3’s readiness to change ........................................ 185

Figure 6.10 Overview of P3’s self-efficacy .................................................. 186

Figure 6.11 Readiness to change scores for each symptom dimension across time (P3) .......................................................... 188

Figure 6.12 Self-efficacy scores for each symptom dimension across time (P3) .. 191

Figure 6.13 Overview of P4’s readiness to change ........................................ 194
Figure 6.14  Overview of P4’s self-efficacy ......................................................... 195

Figure 6.15  Readiness to change scores for each symptom dimension across time (P4) ............................................................................................................. 197

Figure 6.16  Self-efficacy scores for each symptom dimension across time (P4) .. 200
ABSTRACT

Anorexia is an eating disorder characterised by intentional self-starvation, morbid fear of weight gain and the physical consequences of starvation. The causes of anorexia are unclear but biological, psychological, social/cultural influences and family functioning factors have been implicated. Resistance to treatment is common among anorexic clients due to the ego-syntonic nature of symptoms. One framework used to conceptualise the process of intentional behaviour change in treatment resistant clients is the Transtheoretical Model (TTM). Although the TTM originated in the substance abuse area, due to anorexic clients’ high degree of ambivalence regarding recovery, it has recently been applied to individuals diagnosed with anorexia. The TTM postulates that behaviour change involves the movement through a series of five discrete stages, influenced by constructs such as self-efficacy and decisional balance. It has been proposed that this model has several theoretical and methodological limitations, including measurement and stage conceptualisation issues. However, research has indicated that the constructs of the TTM may enhance clinician’s understanding into the difficult process of behavioural change. Therefore, in order to provide an accurate framework for conceptualising ambivalence, fundamental limitations of the TTM (including both clinical and theoretical issues) need to be addressed. Three studies, each using different methodological techniques, were conducted to investigate the variability of readiness to change and self-efficacy across six distinct, but related anorexic symptom dimensions. These three studies also examined the degree of stability in readiness to change and self-efficacy over time. Study One consisted of both self-report questionnaires and qualitative interviews which explored anorexic clients’ (N=15) perceptions of readiness to change and self-efficacy. In the second study, the technique of Ecological Momentary Assessment (EMA) was used to further investigate the stability and variability of these constructs using a case series design (N=4). Finally, the third study examined the suitability of assessing readiness to change and self-efficacy in anorexic clients (N=31) using two modified scales, which were both multi-dimensional and continuous in nature. The findings from all three studies showed that readiness to change and self-efficacy vary across different elements of
anorexic symptomatology. Specifically, participants consistently reported higher readiness to change and self-efficacy regarding their emotional issues and the amount of food they consumed. In contrast, participants were least prepared to increase their weight and the variety of foods they were eating. Participants in the central stages of readiness also reported greater instability in their readiness to change and self-efficacy, compared to those in either the pre-contemplation or maintenance stages. Study Three indicated that a multi-dimensional, continuous format of assessing readiness to change and self-efficacy has the potential to measure these constructs in a more accurate, informative manner, evaluating variability across different symptom dimensions and stability over time. In conclusion, although readiness to change and self-efficacy are applicable to clients diagnosed with anorexia, these constructs demonstrate a large degree of variability dependent upon the symptom dimension being addressed. Furthermore, these constructs also show variability across time, primarily for individuals in the central stages of change. The final chapter of this thesis discusses the strengths and weaknesses of the research undertaken, in addition to the clinical and theoretical implications of the findings obtained. Finally, suggestions for future research are also described.
1.1 Anorexia nervosa (anorexia)

Eating disorders are a significant cause of physical and psychological morbidity in adolescent girls and young adult women (Fairburn & Harrison, 2003). Of these, anorexia is the third most common chronic illness affecting teenage females, after asthma and obesity (Lucas, Beard, O’Fallon & Kurland, 1991). In addition, epidemiological research has indicated that the lifetime prevalence of anorexia in Australian women may be as high as 1.9% (Wade, Bergin, Tiggemann, Bulik & Fairburn, 2006).

The criteria for the diagnosis of anorexia comprise three sets of related features (Beumont, 2002). Firstly, anorexia is a characterised by intentional self-starvation, sometimes to the point of death. The second feature entails a morbid fear of gaining weight, encompassing both an intense fear of becoming overweight and basing self-worth primarily on weight and shape (Garfinkel, 2002). Finally, individuals with anorexia experience physical consequences of their behaviour, including emaciation, disturbed endocrine function and other nutritional abnormalities (Garfinkel, 2002).

The estimated prevalence of anorexia is approximately 0.7% (Fairburn & Harrison, 2003) in Western developed countries, with only 5-10% of eating disorder clients being male (Hoek, 2002). The onset of anorexia usually occurs between the ages of 13 and 19 years, typically beginning with the onset of dietary restrictions, proceeding to an obsessive preoccupation with thinness (Patton, Selzer, Coffey, Carlin & Wolfe, 1999). Anorexia is associated with a variable course (American Psychiatric Association, 2000). Although a diagnosis of anorexia typically persists for between three and four years (van Son, van Hoeken, van Furth, Donker & Hoek, 2010), many anorexic clients grapple with elements of the disorder for more than a
decade (Keel & McCormick, 2009; Wentz, Gillberg, Anckarsater, Gillberg & Rastam, 2009), with very few achieving recovery within the first year of the illness.

The medical complications associated with anorexia affect virtually every body system. The most common consequences of caloric restriction and purging include electrolyte abnormalities, cardiovascular disturbances and endocrine imbalances (for reviews see Beumont, 2000; Patrick, 2002; Pomeroy, 1996). The overall mortality rate for anorexia is five times that of the same aged population with the risk of successful suicide being 32 times that expected (Beumont, 2000). Approximately 10% of all anorexic clients will die within 10 years of initial referral (Agras, 2001). This is the highest mortality rate of any psychiatric disorder, with death typically resulting from suicide or the medical complications of starvation (Sullivan, 1995). Therefore, whilst rare, anorexia is a serious disorder with significant morbidity and mortality.

### 1.1.1 Ambivalence regarding recovery

By clinical reputation, anorexia is characterised as a one of the most frustrating and recalcitrant forms of psychopathology; levels of motivation for recovery are often markedly deficient (Laségue, 1864-1973; Vitousek, Watson & Wilson, 1998) and sufferers are particularly disinclined to change their restrictive eating (Cockell, Geller & Linden, 2002). Individuals with anorexia rarely seek treatment voluntarily and most present under duress from alarmed relatives or friends, with denial and resistance to change being prominent features in most sufferers (Cockell, Geller & Linden, 2003). Of those starting treatment, fewer than half complete all recommended phases (Vitousek et al., 1998).

Increasing attention has focused on the valued role eating disorder symptoms perform in these individuals’ lives (Geller, 2002). The behaviours of food restriction and excessive exercise enable anorexic clients to maintain their goals of weight loss and self-control (Vitousek et al., 1998). As many ‘normal’ individuals struggle unsuccessfully to lose weight, anorexic clients may pride themselves in their ability to successfully achieve the difficult task of substantial weight loss. Therefore, they may view their disorder as an accomplishment which provides them with a sense of
distinctiveness (Vitousek et al., 1998). The ego-syntonic nature of anorexic symptomatology contributes to the high rate of treatment refusal, attrition and relapse (Vitousek et al., 1998). Furthermore, anorexic symptoms can be conceptualised as reinforcers that act as barriers to readiness to change (Cockell et al., 2002). As ambivalence regarding recovery is common in anorexic clients, recent research has investigated the applicability of established theoretical frameworks which conceptualise the complicated process of intentional behaviour change.

1.2 The Transtheoretical Model (TTM)

One framework for conceptualising ambivalence towards change in treatment resistant individuals is provided by the Transtheoretical Model (TTM; Prochaska & DiClemente, 1983). While the TTM originated in the substance abuse area, it has since been successfully applied to other disorders characterised by resistance to change. Therefore, it appears appropriate to apply this model to clients diagnosed with anorexia.

According to the TTM, intentional behaviour change involves movement through a series of discrete stages (Prochaska & DiClemente, 1983). There are five principal stages in the TTM: pre-contemplation, contemplation, preparation, action and maintenance. Pre-contemplation is the stage at which a person denies a problem or has no intention of changing their behaviour in the foreseeable future. During the contemplation stage individuals are aware that a problem exists and are seriously thinking about overcoming it, but have not yet made a commitment to take action. The preparation stage combines intention and some attempt at behaviour change. Although individuals in this stage may have made some reductions in their problem behaviour, they have not yet reached a criterion for effective action. Once in the action stage, a person will make a significant attempt to modify the target behaviour to an acceptable criterion; they are classified as being in this stage if they have successfully altered a problem behaviour for a period from one day to six months (Prochaska, 1995). Finally, maintenance is the stage in which people work to prevent relapse and consolidate gains attained during the action stage. For some problem behaviour, such as anorexia, this stage can be considered to last a lifetime.
While presented as a series of stages, the majority of individuals attempting to take action to cease problem behaviours do not successfully maintain their behavioural modifications following their first attempt. Although linear progression through the stages is possible, with many chronic behaviours, such as addictions, relapse and recycling through the stages is common (Prochaska, Velicer, Guadagnoli, Rossi & DiClemente, 1991). Therefore, the TTM postulates that the process of behaviour change is best conceptualised as a spiral model (Prochaska, DiClemente & Norcross, 1992b).

1.2.1 Key constructs of the TTM

The TTM postulates that an individual’s level of readiness to change is influenced by constructs such as self-efficacy and decisional balance. The concept of self-efficacy has featured predominantly in theorizing on the determinants of stage of change (Rieger et al., 2000). High self-efficacy refers to an individual’s expectation that s/he can successfully execute a particular behaviour (Bandura, 1977). One’s perceived ability to successfully complete a given task is hypothesised to mediate attempts to engage in that task (Rieger et al., 2000). The TTM proposes a linear relationship between self-efficacy and stage of change (Rossi, Rossi, Velicer & Prochaska, 1995); as self-efficacy increases, the individual will become more actively engaged in behaviour change and consequently progress through the stages (Treasure, Schmidt & Troop, 2000). It has been consistently proposed that many individuals attempting to cease problem behaviours demonstrate low levels of self-efficacy (Schneider, O’Leary & Agras, 1987), indicating that they doubt their ability to either alter their maladaptive behaviours or successfully sustain new healthy behaviours. Therefore, when helping individuals move from contemplation to action, it is essential to increase their sense of self-efficacy in regard to altering their problem behaviour (Treasure et al., 2000).

The second construct, decisional balance, refers to the balance between the pros (or gains) and the cons (or losses) associated with the problem behaviour (Prochaska & DiClemente, 1986). Decisional balance measures have been shown to be useful in assessing cognitive shifts that occur in pre-action stages of change.
(Cockell et al., 2002; Jones, 2003). For example, among smokers, motivation for change is marked by a crossing over of attitudes in which the negative consequences of smoking rise sharply between pre-contemplation and contemplation, while the positive consequences of smoking are maintained at a high level until the action stage, before they decline (Cockell et al., 2002).

In addition to stages of change, another core dimension of the TTM is the processes of change. Prochaska (1995) states that the processes of change can be conceptualised as either the covert or overt activities that individuals engage in to alter their emotions, cognitions, behaviours or relationships that predominate and are integral to the individual’s stage of recovery from specific problems or patterns of behaviour. Whereas the construct of stage of change refers to when particular attitudinal and behavioural shifts occur, processes of change attempt to describe how these shifts arise (Blake, Turnbull & Treasure, 1997). Different processes predominate at different stages of change (DiClemente et al., 1991), with cognitive/affective processes occurring early in the process of recovery and behavioural processes developing in the later stages of change (Prochaska & DiClemente, 1983). This is of clinical relevance, as knowledge regarding the specific processes that are crucial during particular stages can lead to an appropriate focus throughout treatment.

1.3 The application of the TTM to anorexia

The TTM was initially developed for use in the area of substance abuse (Cardoso, Chan, Berven & Thomas, 2003; Carey, Purnine, Maisto & Carey, 1999; Carney & Kivlahan, 1995; Velasquez, Maurer & Crouch, 2001). However, since its conception it has been applied to a variety of problem behaviours including smoking cessation (DiClemente et al., 1991; DiClemente, Prochaska & Gibertini, 1985; Etter & Sutton, 2002; Farkas et al., 1996; Schumann et al., 2005), exercise adherence (Guillot, Kilpatrick, Herbert & Hollander, 2004), alcohol abstinence (Carbonari & DiClemente, 2000; DiClemente & Hughes, 1990; Project Match Research, 1998; Willoughby & Edens, 1996), fruit and vegetable intake (De Vet, De Nooijer, De
Vries & Brug, 2005; Ma, Betts, Horacek, Georgiou & White, 2003) and condom use (LaBrie, Quinlan, Schiffman & Earleywine, 2005).

Due to the similarities between substance abuse and eating disorders (i.e., ego-syntonic nature of symptoms, ambivalence regarding recovery), several studies have evaluated the applicability of the TTM to conceptualise the process of behavioural change in eating disordered clients (Hasler, Delsignore, Milos, Buddeberg & Schnyder, 2004; Jones, 2003; P. Jordan, Redding, Troop, Treasure & Serpell, 2003; Touyz, Thornton, Rieger, George & Beumont, 2003; S. Wilson & Schlam, 2004). Furthermore, these studies have concluded that the TTM and its related constructs can be effectively assigned to individuals diagnosed with anorexia (Blake et al., 1997; Cockell et al., 2003; Hasler et al., 2004; Jones, 2003; Rieger, 2000; Rieger, Touyz & Beumont, 2002; Serpell, Neiderman, Haworth, Emmanueli & Lask, 2002; Ward, Troop, Todd & Treasure, 1996).

However, there are pertinent practical differences between substance abuse and anorexia, such as the multidimensional nature of anorexic symptomatology. Treating substance abuse involves addressing one, behavioural symptom. In contrast, anorexic symptomatology consists of many factors, including a combination of behavioural symptoms (e.g., restricting, purging, obsessive exercising) personality characteristics (e.g., perfectionism, need for control) and cognitive symptoms (e.g., excessive fear of weight gain, distorted body image).

The majority of measures designed to assess readiness to change have been developed for the application to individuals changing single-symptom behaviours. Therefore, as anorexia is a multidimensional disorder which encompasses both cognitive and behavioural symptomatology, the extent to which existing measurement techniques can accurately capture the complexity of readiness to change in anorexic clients is questionable. In addition, the current measurement tools may lack the sensitivity to accurately evaluate the variance across different elements of the disorder and the stability of readiness to change over time.
1.4 Limitations of the TTM

In recent years, researchers have criticised aspects of the TTM (e.g., Bandura, 1998; Blanchard, Morgenstern, Morgan, Labouvie & Bux, 2003; Carey et al., 1999; Davidson, 1992, 1998; Littell & Girvin, 2002; Sullivan & Terris, 2001; Sutton, 1996, 2001; S. Wilson & Schlam, 2004). Although the TTM is the predominant theory regarding behaviour change, current research provides only partial support for this model. In addition to definitional and measurement issues (Bandura, 1997b; Carey et al., 1999; Davidson, 1992, 1998; Joseph, Breslin & Skinner, 1999), concerns with limitations regarding treatment outcome relevance have been raised with respect to the TTM (Blanchard et al., 2003; Davidson, 1992; Littell & Girvin, 2002; Sutton, 1996). There has also been substantial scrutiny as to whether the model provides an accurate description and explanation of the complicated processes involved in behaviour change (Bandura, 1998; Davidson, 1992, 1998; Sutton, 1996).

In addition, the TTM demonstrates several conceptual and empirical limitations. It has been proposed that like all stage theories, it oversimplifies the complexities of behavioural change by imposing artificial categories on a continuous process (S. Wilson & Schlam, 2004). The practical utility of the TTM must undoubtedly be questioned if discrete stages cannot be accurately identified or reliably assessed (S. Wilson & Schlam, 2004). This suggestion fuels the controversial debate as to whether behaviour change is best represented as a continuous process or as discrete stages (Littell & Girvin, 2002; Prochaska & DiClemente, 1998).

While the underlying concept of stages of change has much to offer, reliance on a quick and easy measure of such complex issues may risk misclassifying and alienating clients (Sullivan & Terris, 2001). However, the limitations of the TTM could be reduced with new approaches implemented to improve the accuracy of stage of change assessments (Prochaska & DiClemente, 1998). Current research supports the additional evaluation and development of the application of stages of change in both clinical treatment and research. However, better measurement, more frequent assessments and increased understanding of the stage subtasks and their
relationship to readiness and successful behaviour change are required (Sutton, 2001).

Recently published research suggests that while the TTM demonstrates flaws in application and limitations in measurement techniques, there is an overwhelming indication that when adequately measured and assessed, the stages of change theory can be effectively applied to clients diagnosed with anorexia (Geller, Drab-Hudson, Whisenhunt & SriKameswaran, 2004; Rieger & Touyz, 2006). Furthermore, the TTM has also displayed the potential to provide a meaningful construct which may increase clinicians’ understanding of clients’ ambivalence and the complicated process of intentional behaviour change. Therefore, the TTM may prove useful in assessing anorexic clients’ readiness to implement behaviour change, and in implementing appropriate treatment interventions.

1.5 Overview of the thesis

This thesis has three primary aims: a) to evaluate the degree of variability in readiness to change and self-efficacy across different dimensions of anorexia symptomatology, b) to determine if readiness to change and self-efficacy are more accurately conceptualised as distinct stages or as a continuum, and c) to investigate whether readiness to change and self-efficacy can be reliably assessed using a multi-dimensional, continuous measurement technique.

The thesis examines the abovementioned aims in relation to the framework proposed by the TTM. Chapter Two provides a review of the current literature regarding anorexia. Initially, the clinical description and diagnostic criteria of anorexia are discussed. The current prevalence rates of the disorder, including the two prominent sub-types of anorexia, are then described. The typical course of anorexia is then considered, followed by a discussion of relevant medical and psychological complications which are consistent with a diagnosis of anorexia. Chapter Two concludes with an overview of the influence of ambivalence on the process of recovery from anorexia.

Chapter Three reviews the current literature relating to the TTM, in order to evaluate the current empirical support for the model and its related constructs. The
model and its constructs are described, followed by an overview of the primary criticisms of the TTM, including conceptualisation, measurement and stage stability issues.

Chapter Four describes the TTM as a framework for conceptualising the process of recovery from anorexia. Specifically, the current literature relating to the application of the TTM to anorexia clients is critically reviewed. Chapter Four concludes that while the theoretical constructs of readiness to change, self-efficacy and decisional balance can be effectively applied to anorexic clients, there are pertinent limitations with the theoretical conceptualisation and measurement tools available to accurately assess these constructs.

Chapter Five describes a qualitative individual interview study which examines the suitability of the TTM to conceptualise the process of intentional behaviour change in anorexic clients. Fifteen participants (fourteen females and one male) attended semi-structured individual interviews which examined their perceptions of their readiness to change, self-efficacy and decisional balance in relation to changing their anorexic symptomatology. Specifically these participants were asked to discuss the degree of variability they perceived in readiness to change, self-efficacy and decisional balance across different elements of their anorexic symptomatology. In addition, participants were also asked to evaluate the amount of instability in these constructs over time. A template analysis of the data revealed that readiness to change, self-efficacy and decisional balance varied across six distinct but related dimensions of anorexic symptomatology. Furthermore, participants’ perceptions of these constructs also fluctuated over time.

A second study is presented in Chapter Six. In order to reduce the biases related to retrospective recall, this study used the technique of Ecological Momentary Assessment (EMA) to further explore anorexic clients’ perceptions of readiness to change and self-efficacy. Four participants recorded their self-efficacy and readiness to change on an electronic Palm Pilot five times a day, for a duration of six days. A visual analysis of the individual data confirmed the findings of the first study. In addition, statistical analysis of the grouped data also showed that
readiness to change and self-efficacy varied across different symptoms and over time.

The results of the first two studies indicated that current measurement techniques may not be the most accurate methods of assessing readiness to change and self-efficacy in anorexic clients. Chapter Seven describes Study Three, which sought to further investigate the degree of variability and stability of readiness to change and self-efficacy through the modification of two existing measurement tools. Study Three consisted of pilot testing two continuous, multi-dimensional assessment tools which were designed to measure readiness to change and self-efficacy in clients diagnosed with anorexia. Thirty one participants completed an online quantitative questionnaire including the two newly developed scales. The findings of Study Three showed that readiness to change and self-efficacy vary across different anorexic symptom dimensions and fluctuate over time. During pilot testing the two new measurement scales demonstrate good psychometric properties. However, further research with a larger sample is required.

Finally, in Chapter Eight, a discussion of the findings of the three studies is presented. Specifically, a summary of the research findings regarding each of the aims, the implication of the findings for future research and clinical practice, and limitations of the research are discussed.
CHAPTER TWO

ANOREXIA NERVOSA: CLINICAL FEATURES

Eating disorders are serious chronic illnesses, associated with significant physical, psychological, and social impacts (Cockell, Zaitsoff & Geller, 2004; Fairburn & Harrison, 2003; Hoek & van Hoeken, 2003; Jacobi, Paul, de Zwaan, Nutzinger & Dahme, 2004; Klump, Bulik, Kaye, Treasure & Tyson, 2009; Mehler, Birmingham, Crow & Jahraus, 2010). They are one of the ten leading causes of non-mortality-related burden of disease for young Australian women (Australian Institute of Health and Welfare, 2007) and are the second leading cause of hospitalisation due to mental and behavioural disorders for Australian females aged 12 to 24 years (Australian Institute of Health and Welfare, 2007). Overall, the global economic cost of treating eating disorders is substantial; comparable or higher than that of treating schizophrenia (W. S. Agras, 2001; Lock, Couturier & Agras, 2008; Striegel-Moore, Leslie, Petrill, Garvin & Rosenheck, 2000).

The term ‘anorexia nervosa’ was first introduced into the psychiatric nomenclature by Sir William Gull in 1874 (Gull, 1874) to describe four adolescent females who experienced significant weight loss without any medically related explanation (Keel, 2010). However, historical accounts of an illness noticeably similar to anorexia nervosa (anorexia) have been reported as far back as the 14th century (Keel & Klump, 2003).

Eating disorders are more prevalent among females than males and are a significant cause of physical and psychological morbidity in adolescent girls and young adult women (Fairburn & Harrison, 2003). In Western societies, anorexia is the third most common chronic illness affecting teenage females, after asthma and obesity (Lucas et al., 1991) and is characterised by intentional self-starvation, morbid fear of weight gain and the physical impact of starvation. While the causes of anorexia are unclear, biological, psychological, social/cultural influences and family functioning factors have been implicated (Ghaderi, 2010; Jacobi, Paul et al., 2004; Peebles, Wilson & Lock, 2006).
The purpose of the current chapter is to provide an overview of pertinent clinical features of anorexia. Initially, the current diagnostic criteria of anorexia will be stated, followed by a description of the two clinical subtypes of anorexia. The prevalence and risk factors of anorexia will be discussed, followed by a description of the major medical complications. Finally, an overview of factors related to comorbidity and ambivalence regarding recovery will be evaluated.

2.1 Anorexia – Description and Diagnostic Criteria

The current classification system, the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition, Text Revision (DSM-IV-TR) of the American Psychiatric Association (2000), classifies eating disorders into three primary categories; Anorexia, Bulimia Nervosa, and Eating Disorders Not Otherwise Specified. The DSM-IV-TR stipulates that the criteria for the diagnosis of anorexia centre on three sets of related features (Beumont, 2000). Firstly, anorexia is characterised by intentional self-starvation, often to the point of death. This self-starvation can be defined as intentional weight loss to a point that a person weighs less than 85% of a weight considered normal or has a Body Mass Index (BMI; weight in kg per height in m$^2$) of 17.5 or less. While the normal BMI range is 20-25 for adults and adolescents (American Psychiatric Association, 2000) and below 20 indicates an individual is underweight, a BMI under 18 reflects severe malnutrition. This weight loss is achieved through severe restriction of food intake, excessive exercise and the misuse of laxatives and/or diuretics (Beumont, 2002; Fairburn & Harrison, 2003; Ghaderi, 2010; Gordon et al., 2010; Herzog & Delinsky, 2001; Peebles et al., 2006; Shroff et al., 2006).

The second feature of anorexia entails a morbid fear of gaining weight, which encompasses both an intense fear of becoming overweight and basing self-worth primarily on weight and shape (Fairburn & Harrison, 2003; Garfinkel, 2002). This fear of gaining weight is prominent even though the individual is significantly underweight (Keel & McCormick, 2009). In addition, the overemphasis placed on weight and shape typically involves a disturbance in the way in which one’s body weight or shape is evaluated (Fairburn & Harrison, 2003; Garfinkel, 2002; Ghaderi,
2010). This distortion leads to the denial of the seriousness of maintaining a very low weight (Ghaderi, 2010).

Finally, the DSM-IV-TR stipulates that a diagnosis of anorexia involves individuals experiencing significant physical consequences of their behaviour, including emaciation, disturbed endocrine function and other nutritional abnormalities (Garfinkel, 2002; Ghaderi, 2010; Keel, 2005). In postmenarcheal females, the physical consequences of anorexia are typically reflected in the absence of at least three consecutive menstrual cycles (amenorrhea).

2.1.1 Issues with current diagnostic criteria

Sound, reliable classification systems are the cornerstone of successful scientific progress (Gordon, Holm-Denoma, Crosby & Wonderlich, 2010). While both criticisms of the current conceptualisation, and suggested improvements, have been numerous (Fairburn & Bohn, 2005; Striegel-Moore & Franko, 2008; Waller, 2008; Wilfley, Bishop, Wilson, & Agras, 2007), it is important to review what is known about anorexia in the context of the current system. However, as it is likely that significant changes will occur in DSM-V when released in mid-2013, the proposed changes to the criterion for anorexia will now be discussed.

2.1.1.1 BMI

It has been proposed that the abovementioned criteria be amended to remove the specific numerical standard for weight related diagnosis (American Psychiatric Association, 2010). Despite the intention in the DSM-IV for this arbitrary figure to be used as a guideline, it is often interpreted as a standard for diagnosis (American Psychiatric Association, 2010). Therefore, it has been suggested that the new revision of the DSM-IV, the DSM-V, employ the term ‘markedly low body weight’ with an emphasis that weight be below that considered ‘minimally normal’ (Bravender et al., 2010). Moreover, the DSM-V will propose that the judgement as to whether an individual maintains a weight which is inappropriately
low is best made by a clinician in light of all relevant information for each particular client (American Psychiatric Association, 2010; Herzog & Delinsky, 2001).

2.1.1.2 Amenorrhea

The inclusion of amenorrhea as a diagnostic criterion is problematic. Many individuals exhibit all other symptoms of clinical anorexia, but also report at least some menstrual activity (American Psychiatric Association, 2010; Roberto, Steinglass, Mayer, Attia & Walsh, 2008). The criterion of amenorrhea cannot be applied to pre or post menarche females, females taking oral contraceptives or males. Therefore, it is proposed that in the DSM-V, the criterion of amenorrhea be removed (American Psychiatric Association, 2010; Mitchell, Cook-Myers & Wonderlich, 2005; Roberto et al., 2008).

2.2 Anorexia – Subtypes

According to the DSM-IV-TR, anorexia can be divided into two distinct subtypes; Binge Eating/Purging (ANBP) and Restricting (ANR; American Psychiatric Association, 2000; Keel & McCormick, 2009). ANBP describes individuals who regularly engage in episodes of binge eating (i.e., an episode where one senses a loss of control whilst eating and consumes an objectively large amount of food) and/or purging (i.e., self-induced vomiting or laxative use). In contrast, people with anorexia who do not engage in such bingeing or purging behaviours are classified into the restricting subtype.

Peat, Mitchell, Hoek and Wonderlich (2009) reviewed 11 previously published peer-reviewed articles relating to the clinical correlates of subtyping clients diagnosed with anorexia. While noting that sample sizes in the studies varied dramatically, ranging from 41 participants (Laessle, Wittchen, Fichter & Pirke, 1989) to 390 participants (Garner, Garner & Rosen, 1993), some consistent results were evident. A meta-analysis of the studies indicated that ANBP clients demonstrated a higher degree of psychopathology were more likely to be older and have a worse outcome than clients diagnosed with ANR (Peat et al., 2009).
Furthermore, a diagnosis of ANBP was shown to be highly associated with higher rates of impulsivity, higher frequency of stealing behaviour, suicide attempts and self-injurious behaviour (Peat et al., 2009). However, the validity of such subtyping diagnosis can be questioned.

Approximately 17% to 64% of all clients diagnosed with anorexia ‘cross-over’ between subtypes at some stage during the course of their illness (Eckert, Halmi, Marchi, Grove & Crosby, 1995; Kohn & Golden, 2001; Peat et al., 2009). Naturalistic, longitudinal research of the prevalence of cross-over from ANR to ANBP and indicated that between 30% (Strober, Freeman & Morrell, 1997b) and 64% (Eckert et al., 1995) of American clients diagnosed with ANR will also develop the diagnostic symptomatology of ANBP. In addition, between 17% (Anderluh, Tchanturia, Rabe-Hesketh, Collier & Treasure, 2008) and 44% (Eddy et al., 2002) of clients identified as ANBP have been shown to cross-over to a diagnosis of ANR. However, although this research reveals a large degree of cross-over between subtypes of anorexia, it is important to note that the descriptions as to what constitutes these subtypes have been inconsistent across the literature (Peat et al., 2009). Despite this limitation, due to the significant cross-over between subtypes, and the resultant difficulty in specifying subtypes, it has been proposed that in the DSM-V, a three month timeframe be used to determine the subtype for the current episode (American Psychiatric Association, 2010).

2.3 Anorexia – Prevalence/ Epidemiology

The estimated prevalence of anorexia amongst women has been reported as approximately 0.5% (American Psychiatric Association, 2000) in Western developed countries, indicating that 1 in every 200 females will be affected by anorexia over the course of their lifetime. However, more recent population based epidemiological studies have reported higher lifetime prevalence estimates for women, ranging from a prevalence of 0.7% in the United Kingdom (Fairburn & Harrison, 2003), 0.9% in the United States (Hudson, Hiripi, Pope & Kessler, 2007), 1.9% in Australia (Wade et al., 2006), to 2.0% in Italy (Favaro, Ferrara & Santonastaso, 2003) and 2.2% in Finland (Keski-Rahkonen et al., 2007). These differing incidence rates may reflect
detection of cases which are overlooked when ascertainment is based primarily on clinical referral (Keski-Rahkonen et al., 2007). Alternatively, it has been proposed that these different rates may be due to national variations in the detection and subsequent diagnosis of anorexia (Keski-Rahkonen et al., 2007; Kohn & Golden, 2001; Lucas et al., 1991). A comprehensive meta-analysis which evaluated 23 published anorexic incidence studies during the period 1945 to 1993 concluded that the number of new cases of anorexia per 100,000 population per year increased over the 20th century (Keel & Klump, 2003). However, despite being statistically significant, the size of the increase was modest (Keski-Rahkonen et al., 2007). Furthermore, eating disorders such as anorexia are becoming increasingly prevalent among children, defined as clients under the age of 13 years (Kohn & Golden, 2001).

Anorexia is 10 times more common in females compared to males (Hoek, 2002; Hudson et al., 2007; Keel & McCormick, 2009). This gender related difference in prevalence may be due to the differing gender body image ideals of developed Westernised cultures (Keel & McCormick, 2009). However, a number of previous studies which have investigated gender differences in anorexic epidemiology amongst children have concluded that between 19% and 30% of the sample were male (Bryant-Waugh, 1993; Fosson, Knibbs, Bryant-Waugh & Lask, 1987; Hawley, 1985; Jacobs & Isaacs, 1986). A preponderance of females diagnosed with anorexia is present in both cross-historical and cross-cultural descriptions of the disorder (Keel & Klump, 2003), suggesting that other, non-culturally bound ideals, may contribute to the observed gender difference (Keel & McCormick, 2009).

Although research investigating possible gender related factors is still only emerging, it has recently been hypothesised that gonadal steroid hormones may play a role in contributing to possible sex differences in the prevalence of anorexia (Culbert, Breedlove, Burt & Klump, 2008; Klump, Burt, McGue & Iacono, 2007). Specifically, the effects of pubertal genetic activation (Klump et al., 2007), and the protective role of prenatal testosterone exposure (Culbert et al., 2008) have recently been examined.

In addition, the markedly higher prevalence of anorexia among females provides evidence for differing causative influences between the genders (Strober et
al., 2006). While many manifestations of the disorder are similar across genders, some differences have been noted. Previous clinical observations suggest that anorexic males exhibit more atypical features such as psychosis and personality disorders than their female counterparts (Muise, Stein & Arbess, 2003). However, males diagnosed with anorexia show significantly less concern with their actual weight (Muise et al., 2003). However, due to the relatively low prevalence of anorexia in the community, the studies involved in this thesis will include both males and females.

2.4 Anorexia – Course of Illness

Onset of anorexia usually occurs between the ages of 13 and 19 years (American Psychiatric Association, 2000), typically beginning with the onset of dietary restrictions (Patton et al., 1999), before proceeding to an obsessive preoccupation with thinness. Although anorexia inevitably begins with some form of dieting behaviour, recent researchers have concluded that diet restriction may not directly precipitate anorexia (Bonne, Avraham, Bachar, Katz & Berry, 2003). In an experimental study of mice, Bonne et al. (2003) investigated the influence of dieting on the development of an eating disorder by restricting the amount of daily nutrients (to 40%) supplied to 300 young female Sabra mice over a duration of 12 days. At the conclusion of the dieting period, all mice regained their appetites and returned to a normal weight, indicating that diet restriction alone does not precipitate anorexia in mice (Bonne et al., 2003). This implies that other social or psychological factors, which pertain to humans, may influence the development of anorexia.

Anorexia is associated with a variable course and outcome (American Psychiatric Association, 2000). Several studies have investigated the short and long term outcome in anorexic populations, with inconsistent results. The findings from several studies have indicated that the long term outcome for anorexic clients in westernised societies is extremely poor (Keel, 2010; Keel & McCormick, 2009; Salbach-Andrae et al., 2009; Signorini et al., 2007), whereas others have concluded that the prognosis for teenage onset anorexia is favourable with respect to persisting eating disordered behaviours and mortality (Wenze & Miller, 2010). However,
methodological inconsistencies in the abovementioned research must be considered when evaluating the conflicting findings. The definitions of outcome varied across the studies, as did the sample of participants involved (e.g., inpatients compared to outpatients).

Only a small minority of individuals diagnosed with anorexia achieve recovery within the first year of the illness (Keel, 2010), with most clients struggling with their illness for more than a decade (Keel & McCormick, 2009; Wentz et al., 2009). Recent research undertaken by Salbach-Andrae et al. (2009) investigated the one year outcome of 57 German inpatient anorexic clients and found that 60% of clients had a poor outcome. Furthermore, a meta-analysis of anorexic outcome research involving 119 studies and 5590 participants (between 10 and 20 years after initial diagnosis) indicated that among surviving clients residing in Western countries, less than one-half reported recovering, one-third demonstrated some improvement and one-fifth remained chronically ill (Steinhausen, 2002). However, the worst prognosis was observed in clients first diagnosed at an older age (Wentz et al., 2009), whose weight was less than 35 kg at presentation (Berkman, Lohr, & Bulik, 2007) or those who experienced a substantial delay between onset of illness and treatment commencement (Berkman et al., 2007; Steinhausen, 2002).

In contrast, Wentz et al. (2009a) used a longitudinal research design to examine the long term (18 year) outcome of 51 adolescent and adult Swedish outpatients diagnosed with anorexia. Participants were interviewed at four independent time points, and results at Time 4 indicated that 12% of participants still met the clinical criteria for the diagnosis of an eating disorder. Wentz et al. (2009a) concluded that the outcome of teenage onset anorexia is favourable in respect to mortality and persisting eating disorder symptomatology.

2.4.1 Anorexia – mortality

Mortality rates in anorexia have been researched extensively. The standardised mortality ratio (SMR; the ratio of observed to expected deaths) for anorexia has varied dramatically in previous research, ranging from 0.0 to 17.8 (S. Agras, 2001; Berkman, Lohr & Bulik, 2007; Birmingham, Su, Hlynksy, Goldner &
Gao, 2005; Keel et al., 2003; Millar et al., 2005; Nielsen et al., 1998; Papadopoulos, Ekborg, Brandt & Ekselius, 2009; Signorini et al., 2007). This substantial variation can be explained by a multitude of methodological inconsistencies, including heterogeneity of inclusion criteria, diversity of the sample size, mean length of follow-up time, and differences in the treatment being offered (Papadopoulos et al., 2009; Reas et al., 2005). However, a systematic literature review conducted by Berkman et al. (2007), evaluating the findings of 32 relevant studies conducted in Westernised cultures, determined that the risk of mortality was significantly higher than that expected in the general population.

Recent studies have observed mortality in approximately 1 in 20 clients diagnosed with anorexia (Papadopoulos et al., 2009; Steinhausen, 2002; Sullivan, 1995), representing an SMR of approximately 10.0, or a 10-fold increase in risk of death (Keel et al., 2003; Lowe et al., 2001). According to Sullivan (2002), approximately 10% of all anorexic clients will die within 10 years of initial referral. This is the highest mortality rate of any psychiatric disorder and death typically results from suicide or medical complications of starvation (Nielsen et al., 1998; Sullivan, 2002). Similarly, Papadopoulos et al. (2009) examined the SMR rates in 6009 Swedish anorexic clients receiving in-patient treatment and concluded that the most prominent cause of death was due to complications of anorexic symptomatology. Approximately 20% of the sample died due to anorexic related complications, including cardiovascular (SMR=2.3), gastrointestinal (SMR=5.4), respiratory (SMR=11.5) and urogenital (SMR=10.8) causes. These medical complications will be discussed in further detail later in this chapter.

2.4.2 Anorexia – suicide
ty

Suicide accounts for between 20% and 30% of all anorexic deaths (Harris & Barracough, 1998; Papadopoulos et al., 2009; Sullivan, 1995). Keel et al. (2003) conducted a nine year longitudinal study to investigate the mortality ratios and predictors of fatality in a sample of 110 American anorexic inpatients. The study determined an SMR due to suicide in anorexic clients of 56.9 (Keel et al., 2003),
suggesting that individuals diagnosed with anorexia are 56.9 times more likely to die as a result of suicide than non-anorexic members of a similar community (once corrected for age and gender).

In a study of the prevalence of suicide attempts in 432 American anorexic clients, 17% of individuals with a lifetime anorexia diagnosis reported at least one suicide attempt (Bulik et al., 2008), consistent with other studies which have concluded that between 3% and 20% of anorexic clients had previously attempted suicide (Franko & Keel, 2006; Holm-Denoma et al., 2008).

Suicide attempts are significantly more prevalent in clients diagnosed with the AN-BP subtype than those diagnosed with the AN-R subtype (Bulik et al., 2008; Franko & Keel, 2006). Although to date research into the predictors of a fatal outcome is sparse, Keel et al. (2003) postulates that poor psychosocial functioning, longer duration of follow-up, and severity of alcohol use contribute to the probability of a negative outcome. Moreover, Holm-Denoma et al. (2008) propose that due to anorexic clients being accustomed to physically painful experiences (e.g., chest pain, starvation pain), the typical methods used for suicide attempts are often more extreme and fatal, whereas many other suicide attempts undertaken by non-anorexic individuals are not fatal, leading to treatment and possible recovery.

2.5 Risk Factors Associated with Anorexia

Risk factors and correlates of eating disorders include negative self-evaluation, sexual abuse, psychiatric co-morbidity, gender, race, childhood eating and gastrointestinal issues, and increased shape and weight concerns (Jacobi, Hayward, De Zwaan, Kraemer & Agras, 2004). No single conclusive cause of anorexia has been established (Bulik et al., 2006); instead multi-factorial causation has been postulated, with social/cultural, psychological, biological and family functioning factors (McDermott, Batik, Roberts & Gibbon, 2002) all contributing to the condition in varying degrees for different individuals.

Due to the relative rarity of anorexia, reliable investigation regarding the genetic contribution to the onset of the illness is problematic (Bulik et al., 2006). However, recent research has indicated that anorexia is familial; significantly more
prevalent among the biological relatives of anorexic probands than in the general population (J. Baker et al., 2009; Bulik et al., 2006; Strober & Bulik, 2002). It has been proposed that eating disorders are seven to 12 times more prevalent in direct relatives of anorexic probands compared to the general population (Lilenfeld et al., 1998; Strober, Freeman, Lampert, Diamond & Kaye, 2000). Previously conducted twin studies report hereditability estimates for anorexia to vary between 22% and 76% (Bulik et al., 2006; Klump et al., 2007; Klump, Miller, Keel, McGue & Iacono, 2001; Mazzeo et al., 2009; Wade, Bulik & Kendler, 2000). Discrepant heritability findings may be due to small sample sizes (Wade et al., 2000), differences in zygosity assignment (Walters & Kendler, 1995), or inconsistencies in findings from clinical (Treasure & Holland, 1990) versus population based (Wade et al., 2000; Walters & Kendler, 1995) samples.

Genetic concordance rates in the diagnosis of anorexia are substantially greater for monozygotic than for dizygotic twins, implicating a strong etiological role for genetic factors and therefore suggesting a significant contribution of heritability to the pathogenesis of anorexia (Fairburn & Harrison, 2003; Strober & Bulik, 2002). However, evidence for genetic transmission is not conclusive as disentangling genetic from environmental transmission is problematic (Polivy & Herman, 2002). Twin relationships have, in themselves, been recognized as a risk factor for the development of anorexia, as the close sibling relationship may restrict the development of personal identity (Polivy, Herman, Mills, & Wheeler, 2003). Furthermore, twin studies frequently suffer from assimilation effects, whereby monozygotic twins are treated more similarly by others, artificially inflating heritability estimates (Polivy et al., 2003). Although there is consistent empirical evidence to suggest that genetic factors influence an individual’s vulnerability to eating disorders, the actual role of these influences remain unclear (Polivy & Herman, 2002).

Bulik et al. (2006) conducted a retrospective, quantitative study which explored the heritability of anorexia in 330 (165 pairs) Swedish monozygotic and dizygotic twins who were raised together, in the same environment. The heritability of narrowly defined anorexia (as specified by the DSM-IV) was found to be $a^2$.
\[=0.56, \text{ indicating that approximately 56\% of variance was attributable to genetic influences. Bulik et al. (2006) concluded that anorexia is a moderately heritable psychiatric disorder.} \]

In addition, Klump et al. (2001) undertook a population based twin study to investigate the genetic influences on broadly defined anorexia. Their study involved 672 (336 pairs) American female twins and results indicated that genetic effects accounted for 74\% of variance in the sample. Furthermore, they postulated that both genetic and non-shared environmental influences have a significant influence on broadly defined anorexia.

Although research has shown that both narrowly and broadly defined anorexia is influenced by genetic predisposition, more recent research has investigated the heritability of specific anorexic symptom dimensions. Mazzeo et al. (2009) used a genetic common pathway model to examine genetic and environmental contributions to the liability of anorexia in a sample of 896 (448 pairs) monozygotic and 526 (263 pairs) dizygotic Norwegian twins. At the completion of the study, Mazzeo et al. (2009) ascertained that the degree of heritability varied across specific symptom dimensions, with heritability estimates varying depending upon the symptomatology being addressed. Weight loss demonstrated a moderate degree of genetic influence \( (a^2=0.31-0.34), \) whereas the genetic influence on weight concerns were smaller \( (a^2=0.18-0.29). \) Mazzeo et al. (2009) concluded that anorexic symptoms are differentially heritable.

The influence of socio-cultural factors in the context of eating disorders can be conceptualised as the idealisation of thinness (Polivy & Herman, 2002). Although socio-cultural factors may increase an individual’s chance of developing anorexia, most people in affluent cultures do not develop anorexia, suggesting that these factors should be regarded as, at most, a background cause. Family functioning issues such as family dynamics, the process of separation-individuation of the adolescent and levels of family expressed emotion (EE) have also been hypothesised as causal constructs (Eisler, 1995; McDermott et al., 2002).

Women diagnosed with anorexia have reported significantly more critical comments concerning their weight, shape and eating behaviours than non-clinical
controls (Fairburn, Cooper, Doll & Welch, 1999; Kyriacou, Treasure & Schmidt, 2008; Wade, Gillespie & Martin, 2007), in addition to less parental contact and involvement, and higher levels of parental expectations (Fairburn et al., 1999; Karwautz et al., 2001). Furthermore, the influences of paternal factors are associated with disordered eating significantly more than maternal factors (Fairburn et al., 1999; Wade et al., 2007). Recent research has proposed a strong relationship between high paternal control and the development of anorexia (Wade et al., 2007).

Numerous multivariate etiological models (e.g., Cumulative Stressor Model; Spiral Model) have been proposed to explain how the above risk factors combine together to foster the development of eating pathology (Stice, 2001; Vitousek & Orimoto, 1993). Although many of these models are thoughtful integrations of current literature and theory, most research of multivariate etiological models has been descriptive in character (Bulik et al., 2006; Hoek, 2002; Yackobovitch-Gavan et al., 2009). Few models have been tested in a prospective design that provides evidence of temporal precedence for each of the relations (Stice, 2001).

2.6 Medical Complications of Anorexia

The medical complications associated with anorexia affect virtually every body system and, in extreme circumstances, can be severe and even life threatening (Mitchell & Crow, 2010). However, despite their obvious emaciation, many clients diagnosed with anorexia report no physical symptoms (Mitchell & Crow, 2010); denying or concealing medical conditions related to their eating disorder.

The most common consequences of caloric restriction and purging include electrolyte abnormalities, endocrine imbalances, cardiovascular disturbances, gastrointestinal complications and neurological deterioration (for reviews, see Beumont, 2000; Mehler et al., 2010; Mitchell & Crow, 2010; Patrick, 2002; Pomeroy, 1996).
2.6.1 Physical appearance

Anorexic clients typically exhibit prominent features of malnutrition, including loss of subcutaneous tissue, muscle wasting, and the prominence of bony protrusions (Kohn & Golden, 2001). Core body temperature is commonly below the normal range and extremities such as hands and feet, may be cold and have a bluish tinge (acrocyanosis) (Mehler et al., 2010). In addition, there may be evidence of generalised muscle weakness and peripheral neuropathy (Kohn & Golden, 2001).

2.6.2 Dermatological Issues

Individuals diagnosed with anorexia often present with dermatological issues. Dry, scaly skin is common in individuals diagnosed with anorexia (Leonard & Mehler, 2001; Mehler & Krantz, 2003), and is often reported in 50% to 70% of clients (Athey, 2003). Starvation associated pruritus and extremely dry skin typically result from decreased sebaceous gland activity (Mehler & Krantz, 2003), and usually resolve with adequate weight restoration (Kohn & Golden, 2001).

Anorexic clients often develop a yellow discolouration (carotodermia) which is thought to be attributable to increased circulating levels of beta-carotene (Mehler et al., 2010). In addition, their hair is frequently dry and split, and their nails are often brittle and cracked (Leonard & Mehler, 2001; Mehler & Krantz, 2003). Fine downy hair (lanugo) often develops over the client’s face, back, abdomen and extremities (Mehler et al., 2010; Mehler & Krantz, 2003; Yager & Andersen, 2008) in an attempt to prevent heat loss (Kohn & Golden, 2001). Typically, lanugo becomes increasing prominent during the period of greatest weight loss and is associated with low BMI (Athey, 2003).

2.6.3 Metabolic/ endocrine Issues

Research has consistently shown a correlation between anorexia and electrolyte abnormalities (Birmingham, Puddicombe & Hlynsky, 2004; Kohn & Golden, 2001; McCallum et al., 2006; Mehler et al., 2010; Milner, McAnarney & Klish, 1985), including hypocalcemia, hypokalemia, hypophosphatemia,
hypomagnesemia, hypochloremia, dehydration and metabolic alkalosis (Kohn &
These metabolic abnormalities typically result from excessive purging, bingeing and
laxative abuse. According to Mehler et al. (2010), all major endocrine functions are
dysregulated in anorexic clients.

Abnormal thyroid functioning is typically reported in anorexia due to
abnormalities of the hypothalamic–pituitary system (Laue, Gold, Richmond &
Chrousos, 1991; Patrick, 2002). In addition, elevated creatine levels (which partially
result from dehydration) have also been previously reported in anorexic clients

Adolescents diagnosed with anorexia reflect a state of possible hepatocellular
dysfunction, dehydration and ineffective growth (Milner et al., 1985). In a study
assessing the metabolic profile of 46 anorexic adolescents who were admitted to a
New York hospital, Milner et al. (1985) found that participants reported several
endocrine abnormalities, including high levels of serum glutamic oxaloacetic
transaminase, elevated levels of lactic dehydrogenase, abnormally high cholesterol,
unusually low serum alkaline phosphatise levels, elevated total protein, extremely
high albumin, elevated total bilirubin count, extremely high levels of blood urea
nitrogen, elevated creatine levels, and very low white blood counts.

Furthermore, the metabolic effects of anorexia are far reaching; altering the
structure and function of the brain. Proton magnetic resonance spectroscopy
demonstrated an interaction between changes in brain structure, brain metabolism
and psychopathological severity in 20 clients diagnosed with either anorexia or
bulimia nervosa. The findings suggested that several metabolic changes had occurred
in the participants’ brains, including a significant decrease in lipid compounds in
both the grey and frontal white matter (Roser et al., 1999). Furthermore, the
concentration of all metabolites (excluding lipids) in the cerebellum had dramatically
increased (Roser et al., 1999).
2.6.4 Cardiovascular Issues

Cardiovascular complications are a frequent occurrence in individuals diagnosed with anorexia (Casiero & Frishman, 2006; Senzaki et al., 2006), and are considered to be one of the most serious medical complications associated with the disorder (Winston & Stafford, 2000). Malnutrition, electrolyte abnormalities and severe fluid loss have been proposed to precipitate sinus bradycardia, sinus arrhythmias and hypotension (McCallum et al., 2006; Mitchell & Crow, 2010). The physiological effects of severe starvation on the heart include a loss of cardiac mass (primarily left ventricular), disturbances in systolic and diastolic function (Lands, Pavilanis, Charge & Coates, 1992; Panagiotopoulos, McCrindle, Hick & Katzman, 2000; Winston & Stafford, 2000), increase in heart rate variability (Bruce et al., 1984; Mangrum & DiMarco, 2000; Romano, 2003), enhanced parasympathetic tone (Galetta, Franzoni, Prattichizzo, Rolla, Santoro & Pentimoe, 2003; Schocken, Holloway & Powers, 1989; Winston & Stafford, 2000), decrease in maximum volume of oxygen (Biado et al., 2001; Moodie & Salcedo, 1983), and decreased work capacity (McCallum et al., 2006; Nudel, Gootman, Nussbaum & Shenker, 1984; Winston & Stafford, 2000).

Furthermore, clients diagnosed with severe anorexia may lose between 30% and 50% of left ventricular muscle mass (Winston & Stafford, 2000). This loss of cardiac muscle is not matched by a corresponding loss of valve tissue (Mehler et al., 2010), resulting in mitral and tricuspid valves becoming disproportionately large (ventriculo-valvular disproportion), and thus liable to prolapse (Mehler et al., 2010; Winston & Stafford, 2000).

A multitude of electrocardiogram (ECG) abnormalities have been associated with anorexia (Winston & Stafford, 2000). The most prominent ECG irregularities include bradycardia, tachycardia and electrolyte abnormalities (McCallum et al., 2006). Moreover, bradycardia may be profound in anorexic clients, with resting heart rates of <50 beats/minute reported (Kohn & Golden, 2001), becoming progressively more acute with increasing anorexic severity (Mehler et al., 2010). Research which has investigated the influence of the parasympathetic and sympathetic nervous systems on cardiac function has demonstrated a marked
reduction in both parasympathetic and sympathetic tone (Rechlin, Weis, Ott, Bleichner & Joraschky, 1998). However, other studies have indicated that only parasympathetic activity is affected in anorexic clients (Galetta, Franzoni, Prattichizzo, Rolla, Santoro & Pentimone, 2003). Therefore, the prevailing explanation for bradycardia in anorexia is the influence of increased parasympathetic tone (Mehler et al., 2010).

A further cardiovascular concern reported in anorexic clients is diminished heart rate variability (Melanson, Donahoo, Krantz, Poirier & Mehler, 2004). Recent research has established that lower heart rate variability can predict sudden death in clients, similar to the heart failure seen in coronary artery disease (Mehler et al., 2010). Despite anorexia affecting the structure and function of the heart in numerous ways, most of these changes appear to be reversible with adequate weight restoration (Winston & Stafford, 2000).

Cardiac failure is a prominent contributing factor in the morbidity and mortality associated with anorexia (McCallum et al., 2006). It is generally associated with the process of refeeding, and is thought to result from a combination of excessive salt, water and protein-calorie load combined with underlying cardiac dysfunction (McCallum et al., 2006; Schocken et al., 1989).

### 2.6.5 Gastrointestinal Issues

Gastrointestinal complications are common in anorexic clients (McClain, Humphries, Hill & Nicki, 1993; Patrick, 2002). The two most prominent gastrointestinal disturbances are slowed gastric emptying (gastroparesis) and constipation (Athey, 2003; Hadley & Walsh, 2003; Leonard & Mehler, 2001; Mehler et al., 2010; Mehler & Krantz, 2003; Nicholls & Stanhope, 2000; Yager & Andersen, 2008). Although these medical complications are significant problems in themselves, they may also play a significant role in perpetuating the behavioural disturbances characteristic of the disorder (Athey, 2003). Both constipation and delayed gastric emptying have been associated with symptoms such as severe bloating, abdominal distension, and the feeling of fullness (Hadley & Walsh, 2003; Leonard & Mehler,
2001). Gastroparesis is usually inevitable once weight loss of 20-30 kg has occurred (Mehler et al., 2010; Yager & Andersen, 2008).

The pathophysical processes involved in the delay in gastric emptying reported in anorexic clients remain ambiguous, although many theories have been proposed. It has been postulated that starvation and lack of food in the stomach results in the delayed gastric emptying (P. Robinson, 1989). It has further been suggested that anorexic clients develop protein malnutrition which results in the atrophy of smooth muscle in the gastrointestinal tract, therefore causing gastric and intestinal delay (DeCaprio, Pasanisi & Contoldo, 2001). It has also been proposed that the lack of food intake produces rectal distension, which via a reflex mechanism, inhibits the normal action of gastric emptying (Kamal, Chami, Rosell, Schuster & Whitehead, 1991).

The relationship between gastric emptying and weight gain is unclear; some research indicates an improvement in gastroparesis following sufficient weight gain (Kamal et al., 1991; Mehler et al., 2010), while other findings demonstrate little to no improvement (P. Robinson, 1989). However, as the abovementioned conclusions have been cross-sectional in nature, it still remains ambiguous as to whether improvement in gastric emptying is due to the physical presence of food in the stomach, improved nutritional conditions, rebalanced metabolic functioning, or generalised weight gain (Hadley & Walsh, 2003).

2.6.6 Neurological Issues

Brain atrophy associated with active starvation and malnutrition in individuals diagnosed with anorexia is well-documented (Bailer et al., 2005; Castro-Fornieles et al., 2010; Ehrlich et al., 2008; Fleta Zaragozano et al., 2005; Katzman et al., 1996; Kerem & Katzman, 2003; McCormick et al., 2008; Muhlau et al., 2007; Swayze et al., 2003). Furthermore, a positive relationship has been observed between the amount of weight loss and the degree of atrophic changes (Fleta Zaragozano et al., 2005; Katzman et al., 1996; Swayze et al., 2003). Primary symptoms and associated features of anorexia have a profound effect on neuroanatomical structures and function (Keel & McCormick, 2009; Roser et al., 1999; Sieg, Hidler, Graham,
Steele & Kugler, 1997). However, it remains unclear whether the brain changes reported in anorexic clients are related to the loss of neurons, glia, neurophil, or merely due to fluid shifts resulting from malnutrition (Ehrlich et al., 2008).

Various computed tomography (CT) and MRI studies have indicated that severely underweight anorexic clients have enlarged sulci and ventricles (Ehrlich et al., 2008), decreased volume of both white and grey matter (Castro-Fornieles et al., 2009; Katzman et al., 1996; Muhlau et al., 2007; Swayze et al., 2003), and cortical atrophy (Kerem & Katzman, 2003). This cortical atrophy is predominantly related to a volume reduction of the right dorsal anterior cingulate cortex (McCormick et al., 2008) and prefrontal cortex (Castro-Fornieles et al., 2007; Muhlau et al., 2007; Roser et al., 1999).

Structural abnormalities in the dorsal anterior cingulate cortex (ACC) have been linked to anorexic behaviour (Uher & Treasure, 2005), and abnormal blood flow to this region has been reported in anorexic clients (McCormick et al., 2008; Naruo et al., 2001). Although anorexia has been closely linked to global atrophic brain changes (Ehrlich et al., 2008; Keel, 2005), atrophy in the right dorsal ACC occurs in disproportionately large degrees in anorexic clients (McCormick et al., 2008; Muhlau et al., 2007). In addition, the ACC is the only area of the brain which has been shown to remain abnormally small once weight gain has normalised (Muhlau et al., 2007).

Although many of the reported morphological changes improve with adequate weight restoration (Castro-Fornieles et al., 2009; Ehrlich et al., 2008; Swayze et al., 2003), it remains unclear whether they are partially or completely reversible (Kerem & Katzman, 2003; Muhlau et al., 2007). However, some researchers postulate that there is evidence for persisting functional brain abnormalities in recovered anorexic clients (Bailer et al., 2005; Katzman et al., 1996; Kaye et al., 2005; Kojima et al., 2005; Muhlau et al., 2007).

### 2.6.7 Reproductive Issues

In order to meet the clinical diagnosis for anorexia (as specified by the DSM-IV), females must report a minimum of three consecutive months of amenorrhea.
The amenorrhea found in anorexic clients is a result of low circulating luteinizing hormone and follicle stimulating hormone (Leonard & Mehler, 2001; Mehler & Krantz, 2003), which is primarily due to the effects of starvation and malnutrition (Athey, 2003). Ultimately, the individual reverts back to a pre-pubertal state (Mehler & Krantz, 2003) with ovaries appearing small or undetectable, and being absent of follicles (Andolf, Theander & Aspengberg, 1997). However, with resumption of eating and adequate weight gain the ovaries grow and ovulation and menstruation resumes (Andolf et al., 1997).

In the short term, women with active or remitted anorexia may experience difficulties with fertility and reproduction (Bulik et al., 1999). Eating disorders can result in amenorrhea, decreased libido, and infertility (Stewart, 1992). It has been proposed that the reproductive system is profoundly altered in anorexic clients (Mehler et al., 2010), however, to date research investigating the effects of anorexia on long-term fertility and reproduction is inconsistent. Women who have recovered from anorexia are substantially more likely to experience delivery complications, such as infant prematurity, small size for gestational age, caesarean delivery, and perinatal death (Athey, 2003; Kouba, Hallstrom, Lindholm & Hirschberg, 2005; Micali, Simonoff & Treasure, 2007). It has further been proposed that women with a history of diagnosed anorexia are at increased risk of relapse during pregnancy (Bulik et al., 2007; Stewart, 1992). Women with a history of clinical anorexia have also been reported to have a significantly higher rate of miscarriage than that of a control group matched for age (Bulik et al., 1999; E. Wentz, I. Gillberg, H. Anckarsater, C. Gillberg & M. Rastam, 2009b).

However, contrasting research findings have concluded that there were no significant differences between anorexic and control groups in regard to premature deliveries, caesarean deliveries and pregnancy weight gain (Ekeus, Lindberg, Lindblad & Hjern, 2006; Wentz et al., 2009b). Furthermore, reproduction rates in anorexic groups have been found to be comparable to those of control groups (1.19 and 1.06 respectively) indicating that reproduction was not reduced in the anorexic sample (Wentz et al., 2009b). This finding contradicts earlier research which concluded that women with a history of anorexia, on average only gave birth to 0.6
children each, implying reduced reproduction (Brinch, Isager & Tolstrup, 1988). However, it is important to note that this earlier research was conducted over 20 years ago, and the advances in reproductive medicine have since been substantial.

### 2.6.8 Bone Density

Skeletal abnormalities have long been described in accounts of individuals diagnosed with anorexia (Hartman et al., 2000). Osteopenia is a medical condition where an individual has a bone mineral density (BMD) of more than one standard deviation below that expected of a population matched for age, gender and ethnicity (Winston, Alwazeer, & Bankart, 2008). Osteoporosis is an extreme form of osteopenia, where the individual’s BMD is greater than 2.5 standard deviations below the reference group (Mehler et al., 2010; Winston et al., 2008).

In females, peak bone mass occurs at approximately 20 years of age (Matkovic et al., 1994). However, during puberty growth rate increases and sex hormones dramatically alter bone structure, with 90% of total body mineral content accrued by the end of puberty (Jayasinghe, Grover, & Zacharin, 2008; Winston et al., 2008). The peak bone mass achieved during puberty is a major determinant of bone density and fracture risk (Leonard & Mehler, 2001; White, Hergenroeder, & Klish, 1992). Due to malnutrition during this critical stage of bone mass development, individuals diagnosed with anorexia prior to the completion of puberty have a significantly higher risk of developing osteopenia and osteoporosis (Leonard & Mehler, 2001).

Osteoporosis and osteopenia are common, serious short-term and long-term medical complications of anorexia (Katzman, 2005; Wentz, Mellstrom, Gillberg, Gillberg & Rastam, 2007; Winston, Alwazeer & Bankart, 2008; Zipfel et al., 2001). Anorexia has been proposed to be an important risk factor in the development of osteoporosis and osteopenia as it comprises several specific conditions which increase the risk of developing osteoporosis, such as prolonged amenorrhea (Rigotti, Neer, Skates, Herzog, & Nussbaum, 1991), hypo-estrogenism (Katzman, 2005;
Zipfel, Herzog, Beumont, & Russell, 2000), low BMI (Carmo et al., 2007; Katzman, 2005) and excessive levels of physical activity (Hartman et al., 2000).

Low BMD has been reported extensively in clients diagnosed with anorexia. The prevalence of osteoporosis in anorexic clients has been reported to be between 13% (Zipfel et al., 2001) and 50% (Becker, Grinspoon, Klibanski & Herzog, 1999; Golden et al., 1997; Grinspoon, Herzog & Klibanski, 1997; Leonard & Mehler, 2001). In other studies, osteopenia has been reported in 92% of women diagnosed with anorexia (Grinspoon et al., 2000; Winston et al., 2008). The risk of osteoporosis has been shown to increase with chronicity of anorexia (Carmo et al., 2007), with BMI significantly predicting BMD (Winston et al., 2008). Emerging research suggests that loss of BMD appears to be rapid and occurs early in the disorder (Katzman, 2005; Mehler et al., 2010) with 50% of individuals diagnosed with anorexia exhibiting osteopenia within 20 months of amenorrhea (Audi et al., 2002; Zipfel, Beumont, Russell, & Herzog, 2000), and a further 38% developing osteoporosis with amenorrhea of less than 24 months duration (Mitani, 2004).

Bone loss due to oestrogen deficiency may be severe, of long duration and result in reduced capacity for physical recovery (Jayasinghe, Grover & Zacharin, 2008).

Anorexia is associated with low BMD, especially in trabecular bone, found predominantly in the lumbar spine and hip regions (Grinspoon et al., 2000; Katzman, 2005; Mehler et al., 2010; Soyka, Grinspoon, Levitsky, Herzog & Klibanski, 1999). Moreover, severe early onset anorexia has been associated with a seven-fold increase in annual fracture rate compared with healthy women of the same age (Rigotti, Neer, Skates, Herzog, & Nussbaum, 1991).

Research findings regarding the long term effects of anorexia on BMD remain conflicting. Some authors suggest that once weight gain has improved and regular menstruation returns, poor bone density and severe damage to bone structure is still maintained (D. Baker, Roberts & Towell, 2000; Carmo et al., 2007; Compston et al., 2006; Hartman et al., 2000; Jayasinghe et al., 2008; Katzman, 2005; Mehler & Krantz, 2003; Rigotti, Neer, Skates, Herzog & Nussbaum, 1991). In contrast, other researchers have concluded that substantial increases in BMD are possible with short term weight restoration (Klibanski, Biller, Schoenfeld, Herzog & Saxe, 1995;
Orphanidou, McCargar, Birmingham & Belzberg, 1997), especially for clients who gain weight prior to completing the crucial growth stage of puberty (Nicholls & Stanhope, 2000). Understanding whether the deficit in BMD can be corrected requires further long-term prospective studies.

2.7 Co-morbidity

Eating disorders are often associated with significant co-morbid psychopathology. Many eating disorder clients present with multiple diagnoses such as co-morbid depressive, anxiety and substance abuse disorders (J. Jordan et al., 2008). The prevalence of personality disorders in anorexic clients is high – ranging from 22% to 87% (Rosenvinge, Martinussen & Ostensen, 2000). Borderline personality disorder is most prominent personality disorder associated with anorexia (Selby et al., 2010). In addition, these clients may demonstrate problematic personality styles and defence mechanisms, which produce difficulties during treatment (Cockell et al., 2004). Empirical research has consistently concluded that anorexic clients frequently exhibit high levels of anxiety, high levels of perfectionism, and low levels of autonomy, effectiveness and psychological integration (Cervera et al., 2003; Fassino et al., 2002; Halmi et al., 2000; J. Jordan et al., 2008; Karwautz, Troop, Rabe-Hesketh, Collier, & Treasure, 2003; Sohlberg & Strober, 1994; Tomotake & Ohmori, 2002). In addition, several studies have confirmed a relationship between low self-esteem and anorexia (Cervera et al., 2003; Jacobi, Paul et al., 2004; Lask, 2000). However, as low self-esteem is consistently associated with depression (Guillon, Crocq, & Bailey, 2003; Jacobi, Paul et al., 2004), it remains to be clarified as to whether the low self-esteem seen in anorexic clients is dependent on co-morbid depression or independently associated with the eating disorder (Jacobi, Paul et al., 2004; Silverstone, 1990; Wilksch & Wade, 2004).

Individuals diagnosed with anorexia routinely exhibit disturbances in affect, including depressed mood and anxiety (Keel & McCormick, 2009). According to Halmi (2010), affective disorders are the most prevalent co-morbid psychiatric disorder associated with a diagnosis of anorexia, with the prevalence of both mood
and anxiety disorders higher among individuals with anorexia compared to age-matched comparison samples (Hudson et al., 2007). Between 41% (Braun, Sunday & Halmi, 1994) and 80% (Halmi et al., 1991) of individuals diagnosed with anorexia also have a co-morbid diagnosis of a mood disorder. In addition, approximately 32% (Braun et al., 1994) to 40% (Halmi et al., 1991) of Caucasians diagnosed with anorexia have a co-morbid diagnosis of major depressive disorder. However, a study of Asian anorexic clients conducted in Singapore revealed that major depression was also highly prominent, affecting 25.4% of the Asian anorexic sample. This finding indicates that neither race nor ethnicity influence the predominance of depression as a co-morbid diagnosis of anorexia (Lee, Lee, Pathy & Chan, 2005). However, considering that only one study to date has examined the effect of race on the comorbidity of depression in anorexic clients, results should be interpreted with caution.

Anxiety disorders are also frequent in anorexic clients, with between 41% (Braun et al., 1994) and 72% (Godart, Flament, Lecrubier & Jeammet, 2000) of all anorexic clients receiving a co-morbid diagnosis with some form of anxiety disorder. A critical review of the literature which was conducted by Godart, Flament, Perdereau and Jeammet (2002) evaluated five international studies which investigated the lifetime prevalence of anxiety disorders in anorexic clients. Godart et al. (2002) concluded that the most common anxiety disorders reported in anorexic clients include obsessive-compulsive disorder (66%), social phobia (55%), and generalised anxiety disorder (31%).

Although the reported prevalence of mood and anxiety disorders are high, some characteristics of these co-morbid disorders may be due, or exacerbated, by the effects of low body weight and starvation (J. Jordan et al., 2008; Keel & McCormick, 2009). Specifically, anhedonia, insomnia, and depressed mood may directly result from malnutrition (Keys, Brozek, Henschel, Mickelson & Taylor, 1950). In addition, symptoms of anxiety may be intensified by the preoccupation with food and ritualistic behaviours which result from malnutrition (Keys et al., 1950).
2.8 Ambivalence

Anorexia is a disorder in which levels of motivation for recovery are markedly deficient (Lasègue, 1864-1973; Vitousek et al., 1998). It is one of the most frustrating and recalcitrant forms of psychopathology; sufferers often actively refuse assistance or are ambivalent about recovery (Goldner, Birmingham & Smye, 1997).

Initial engagement and treatment adherence are exigent obstacles in the care of individuals diagnosed with an eating disorder (Kahn & Pike, 2001; Ratnasuriya, Eisler, Szmukler & Russell, 1991; Treasure & Schmidt, 2001; Wolk & Devlin, 2001). Anorexic clients rarely seek treatment voluntarily; most present under duress, pressured by alarmed relatives and friends. Denial and resistance to change are prominent features in most sufferers (Cockell et al., 2003). As a result, increasing attention has focused on the valued role eating disorder symptoms perform in these individuals’ lives (Geller, 2002).

The strength of an individual’s readiness and motivation to change is an important factor in the early stages of recovery from an eating disorder (Geller, Cockell & Drab, 2001). Individual motivation to change is vital in problem recognition, treatment seeking and achieving and maintaining successful behaviour change (DiClemente, Schlundt & Gemmel, 2004). In addition, motivation to seek help has been shown to be an important predictor of treatment outcome among substance abusers (D. Simpson, Joe, Rowan-Szal & Greener, 1995). A client’s motivation is pivotal to the success of psychological treatment (S. Wilson & Schlam, 2004).

Of those clients starting treatment, fewer than half complete all recommended phases (Agras, Crow, Mitchell, Halmi & Bryson, 2009; Vitousek et al., 1998), which may be partly due to the ego-syntonic quality of anorexic symptoms (Bliss, 1982). Although clients may express an awareness of the physical and psychological costs of having an eating disorder, they may also experience their behaviours of food restriction and exercise as being fully consonant with fulfilling valued goals such as obtaining thinness and demonstrating self-control (Geller & Drab, 1999). Furthermore, people with anorexia may experience pride in being recognised as markedly discrepant from “average” individuals who struggle
ineffectually with weight control; viewing their condition as an accomplishment rather than an affliction, and perceiving themselves as extraordinary rather than anomalous. Three quarters of anorexic participants cite self-control as an asset, while one third enjoy being noticed for their thinness and their control over others (Bliss, 1982). The ego-syntonic quality of symptoms can also contribute to inaccuracy in self-report, avoidance of treatment and high rates of attrition and relapse (Vitousek et al., 1998). These functions of anorexia have been included in aetiological models (e.g., Vitousek & Orimoto, 1993) as reinforcers that maintain the disorder, and consequently as barriers to readiness to change (Cockell et al., 2002).

The greater the degree of an individual’s intrinsic motivation to change, the greater the person’s likelihood of sustaining successful behavioural change (Williams, Grow, Freedman, Ryan & Deci, 1996). Individuals who engage in behaviour change for themselves (intrinsically motivated) are more likely to successfully maintain the modifications in the absence of behavioural strategies implemented by an intensive treatment program (Geller et al., 2004). The degree of intrinsic motivation reported (as opposed to those making behavioural change to appease others) has also been shown to predict outcome at six month follow-up (Geller et al., 2004).

2.9 Conclusion and Implications

In conclusion, anorexia is a serious, multifaceted psychiatric disorder which is associated with significant physical, psychological, and social impacts. The diagnostic criteria for anorexia involve three related features; intentional, self-induced weight loss to a point where the individual is considered to weigh less than 85% of normal weight, obsession with weight and shape, and the physical consequences of starvation and malnutrition. Furthermore, the extensive severe self-engendered weight loss negatively impacts on nearly every physiological body system. The mortality rate amongst clients diagnosed with anorexia is extremely high, with approximately 10% dying within 10 years of initial diagnosis. Prevalence estimates for anorexia range between 0.5 and 2.2 in Western developed countries, with only 10% of clients being male.
Furthermore, ambivalence regarding recovery is a central feature of anorexia, and due to the ego-syntonic nature of anorexic symptoms, resistance to treatment is common. Understanding these conflicting feelings and ambivalence early in the assessment process ensures appropriate treatment recommendations that reduce the likelihood of dropout and treatment non-compliance (Treasure, Gavan, Todd & Schmidt, 2003). Furthermore, given that individuals differ in their readiness for change and consequently their engagement in treatment, identifying readiness status would enable treatment to be tailored to individual needs (Treasure & Schmidt, 2001).

As it is frequent for clients diagnosed with anorexia to be ambivalent towards commencing and sustaining change regarding their eating disorder symptoms (Geller et al., 2004; Tantillo, Nappa Bitter & Adams, 2001), recent research has focused on determining methods to assess an individual’s readiness and motivation for change (Geller et al., 2004; Geller & Drab, 1999; Geller, Williams & Srikameswaran, 2001; Rieger et al., 2000; Treasure & Schmidt, 2001; Vitousek et al., 1998). One such framework frequently used to conceptualise ambivalence in treatment resistant individuals is provided by Prochaska and DiClemente’s Transtheoretical (or Stages of Change) Model. This model will be critically discussed in the following chapter.
CHAPTER THREE

THE TRANSTHEORETICAL MODEL

The Transtheoretical Model (TTM) or Stages of Change Model, developed by Prochaska and DiClemente (1983) is frequently used to conceptualise ambivalence in treatment resistant clients. The TTM postulates that behaviour change is not a binary phenomenon, but rather a movement through a series of five discrete stages; Pre-Contemplation, Contemplation, Preparation, Action, and Maintenance (Prochaska & DiClemente, 1983). In addition to the central theory of stages of change, the TTM incorporates 10 processes responsible for movement through the various stages; Consciousness Raising, Dramatic Relief, Environmental Re-Evaluation, Social Liberation, Self-Re-Evaluation, Stimulus Control, Helping Relationships, Counter Conditioning, Reinforcement Management, and Self-Liberation. In addition to stages of change and processes of change, the TTM integrates several theoretical constructs such as decisional balance and self-efficacy into a single comprehensive framework (Sutton, 2001).

The prominent premise of the TTM is readiness to change. Readiness to change refers to the degree to which an individual is motivated to change problematic behaviour (Carey et al., 1999). As an index of motivation, readiness to change provides a willingness, or behavioural readiness, to initiate an attempt at behaviour change. For example, it would be expected that an individual in the stage of pre-contemplation would have very low readiness to change, being unprepared to change or acknowledge any problem behaviours. In contrast, a client in the stage of action or maintenance should demonstrate high readiness to change, being actively prepared to change problem behaviours or maintain successful changes already made. The TTM postulates that intentional behaviour change is a multi-dimensional process which originates at the establishment of a stable pattern of problem behaviour and concludes with the achievement of significant sustained behaviour change (DiClemente, 2003).

Over the past decade the construct of stages of change has demonstrated increasing popularity in the field of psychological research. Although the TTM
originated in the substance abuse area, it has since been successfully applied to other
disorders characterised by resistance to change. Searches of both Psychological Info
and Psychological and Behavioural Sciences Collection for two consecutive five
year periods (1994-1998 and 1999-2003) provide confirmatory support for this
assertion. The frequency of English language articles concerning this or closely
related constructs (i.e., ‘stage(s) of change’ or ‘motivation for change’) increased
102% from 339 in 1994 to 683 in 2003, indicating that the stage of change construct
has had a substantial influence on a diverse range of behaviours of interest to
psychologists over recent years.

The TTM has been applied to extensively a wide range of problem
behaviours, including smoking cessation (DiClemente et al., 1991; DiClemente et
al., 1985; Etter & Sutton, 2002; Farkas et al., 1996; Fava, Velicer, & Prochaska,
1995; Hughes, Keely, Fagerstrom, & Callas, 2005; Martin, Velicer, & Fava, 1996;
Norman, Velicer, & Fava, 1998; Prochaska & DiClemente, 1983; Prochaska,
Velicer, Prochaska, & Johnson, 2004; Schumann et al., 2005; Velicer, DiClemente,
Prochaska, & Brandenburg, 1985) exercise adherence (Guillot et al., 2004), condom
use (LaBrie et al., 2005), panic disorder (Beitman et al., 1994), fruit and vegetable
intake (Ma et al., 2003), alcohol abstinence (Carbonari & DiClemente, 2000;
DiClemente & Hughes, 1990; LaBrie et al., 2005; Project Match Research, 1998;
Willoughby & Edens, 1996), substance abuse (Cardoso et al., 2003; Carey et al.,
1999; Carney & Kivlahan, 1995; DiClemente, 1999; Hutchison, 1996; Joe, Simpson,
& Broome, 1998; D. Simpson et al., 1995; Tsoh, 1995; Velasquez et al., 2001;
Velicer, Hughes, Fava, & Prochaska, 1995), and eating disorders (Hasler et al.,
2004; Jones, 2003; P. Jordan et al., 2003; Touyz et al., 2003; S. Wilson & Schlam,

Assessment of stage of change has provided a method to accurately identify
the status of an individual in relation to the process of intentional behaviour change
(DiClemente et al., 2004). Furthermore, the use of the TTM has aided the
understanding of the process of behaviour change, identifying key features which
promote change and increase recruitment, retention and successful behaviour
change. This model has been used by many clinicians and researchers as a template
to view the process of change (DiClemente et al., 2004). The stages of change construct has aided both researchers’ and clinicians’ understanding of motivation and client readiness to adopt and to complete tasks required throughout the process of intentional behaviour change. Information provided by the TTM may further assist clinicians in focusing their assessments and increasing the effectiveness and appropriateness of treatment interventions applied (Geller et al., 2004).

3.1 Description of the TTM

The relationships between the principal components of the TTM, stages of changes and processes of change, are represented in Figure 3.1. Each of these components will now be described.

<table>
<thead>
<tr>
<th>Pre-contemplation</th>
<th>Contemplation</th>
<th>Preparation</th>
<th>Action</th>
<th>Maintenance</th>
</tr>
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<tbody>
<tr>
<td>Consciousness raising</td>
<td>Dramatic relief</td>
<td>Environmental re-evaluation</td>
<td>Self re-evaluation</td>
<td>Self liberation</td>
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<td>Reinforcement management</td>
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<td>Stimulus control</td>
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Figure 3.1. Stages of Change in Which Particular Processes of Change Are Emphasized.
3.1.1 Stages of change

The TTM argues that the process of intentional behaviour change is comprised of five principal stages (Prochaska & DiClemente, 1983). These are pre-contemplation, contemplation, preparation, action and maintenance.

Pre-contemplation is the stage at which a person has no intention of changing their behaviour; many individuals in this stage are unable to recognise or acknowledge that they have a problem. When clients in this stage present for treatment, it is usually due to pressure from others, such as family, friends or school teachers.

During the contemplation stage, an individual will become aware that a problem exists and seriously think about overcoming it, but they will not yet make a commitment to take action. An additional important element of the contemplation stage is the apparent cognitive struggle between the positive evaluations of the behaviour and the amount of effort, energy and loss the individual perceives will be required to overcome the problem behaviour (DiClemente, 1991; Prochaska & DiClemente, 1992; Velicer, DiClemente, Prochaska, & Brandenburg, 1985). Therefore, it is typical for a person to remain in the contemplation stage for a long period of time (i.e., months or years; Prochaska, 1995).

The preparation stage combines both intention and a limited attempt at behaviour change. Individuals in the preparation stage are intending to take action within the next month and have previously attempted (unsuccessfully) to alter the problem behaviour during the last two years (Prochaska et al., 1992b). Although they may report some small changes in their problem behaviour, individuals in this stage have not yet reached the criterion for effective action which is described below (Prochaska et al., 1992b).

Once in the action stage, a person will make a significant attempt to modify the problem behaviour to an acceptable criterion. The action stage involves the most overt behaviour changes and requires considerable time and energy to be invested (Prochaska et al., 1992b). Modifications achieved during the action stage are predominantly the most visible and, therefore, receive the greatest external recognition. Individuals are classified as being in the action stage if they have
successfully altered a problem behaviour for a period from one day to six months (Prochaska, 1995).

Finally, maintenance is the stage in which people are able to remain free of the problem behaviour for more than six months, and work to prevent relapse and consolidate gains attained during the action stage (Prochaska et al., 1992b). Furthermore, the maintenance stage can be described as a continuation, not an absence, of behaviour change. Stabilizing successful behaviour change and avoiding relapse are the primary goals of the maintenance stage. For some behaviours, however, such as anorexia, this stage may be considered to last a lifetime.

The majority of individuals attempting to take action to cease addictive behaviours do not successfully maintain their behavioural modifications following their first attempt, with many individuals regressing to an earlier stage during relapse. Within the TTM it is proposed that the process of behaviour change is best conceptualised as a spiral model; relapse and recycling through the stages occurs frequently as a person attempts to modify or cease problem behaviours (Prochaska et al., 1991). Linear progression through the stages is possible, but relatively rare, especially with many chronic problems such as addictions (Prochaska et al., 1992b).

3.1.2 Processes of change

In addition to the concept of stages of change, another core dimension of the TTM involves processes of change. According to the TTM, as individuals successfully complete tasks relevant to each stage, their focus shifts and their attitude and behavioural activities alter relevant to the different processes which occur as they progress through each stage of change. The processes of change within the TTM can be conceptualised as either the covert or overt activities that individuals engage in to modify emotions, cognitions, behaviours or relationships that predominate and are integral to the individual’s stage of recovery from specific problems or patterns of living (Prochaska, 1995). Whereas the construct of stage of change refers to when particular attitudinal and behavioural shifts occur, processes of change attempt to determine how these shifts arise (Blake et al., 1997).
The TTM incorporates 10 fundamental processes of change (See Figure 3.1). These are: 1) Consciousness Raising, 2) Dramatic Relief, 3) Environmental Re-Evaluation (hypothesised to occur between the pre-contemplation and contemplation stages), 4) Self-Re Evaluation, 5) Self-Liberation (occurring between the contemplation and preparation stages), 6) Contingency Management, 7) Reinforcement Management, 8) Counter Conditioning, 9) Helping Relationships, and 10) Stimulus Control (all proposed to occur during the action stage). Each of these processes can be viewed as a broad category encompassing various techniques, methods and interventions associated with different theoretical orientations (Prochaska, DiClemente & Norcross, 1992a).

Processes of change can be further divided into two independent but related groups; experiential (cognitive/affective) processes and behavioural processes (Prochaska & Velicer, 1997). Numerous studies (e.g., Fava, Velicer & Prochaska, 1995; Prochaska & Velicer, 1997; Treasure & Ward, 1997) investigating the construct of processes of change indicate that individuals are more inclined to apply cognitive/affective processes in the early stages of change and rely primarily on behavioural process in the later stages of change. These findings reinforce a fundamental postulation of the TTM, that different processes are utilized during different stages of change.

Consistent with the theory proposed by the TTM, research which has investigated readiness to change across various problem behaviours has incorporated both stages and processes of intentional behaviour change (D. Simpson et al., 1995; Velasquez et al., 2001). Therefore, the appeal of the TTM lies in not only its ability to identify a client’s stage of change, but, also in the acknowledgment of additional elements of behaviour change which influence an individual’s transition between the various stages.

However, it has been proposed that the processes postulated by the TTM demonstrate greater similarity to procedures than theoretical processes (S. Wilson & Schlam, 2004). Furthermore, psychological may be more accurately viewed as dynamic; entailing reciprocal interactions between cognitions, behaviours and
environmental influences rather than descriptive categories (S. Wilson & Schlam, 2004).

3.1.3 Additional factors related to the TTM

In addition to merely identifying clients’ current stage of change, it is fundamental to empirically establish factors which influence motivation, in order to enable practitioners to increase their understanding of the challenging course of behaviour change (Jones, 2003). Although research is yet to identify the factors which contribute to movement between the proposed stages of the TTM, numerous studies have focused on the constructs hypothesised to facilitate progression through the various stages of change (e.g., Blake et al., 1997; Cockell et al., 2003; Jones, 2003; Rieger et al., 2002; Sutton, 2001). It is currently theorised that stage progression is influenced predominantly by two causal constructs; decisional balance and self-efficacy (Cockell et al., 2003).

3.1.3.1 Decisional balance

The construct of decisional balance refers to the balance between the pros (or advantages) and the cons (or disadvantages) which an individual associates with the problem behaviour (Blake et al., 1997; Prochaska & DiClemente, 1986). Readiness to change will inevitably be compromised if an individual views their disorder as beneficial (Jones, 2003).

Decisional balance measures have been shown to be useful in assessing cognitive shifts that occur in pre-action stages of change (Cockell et al., 2002). According to Blake et al. (1997), transition between the stages is associated with a change in the ratio of perceived pros (benefits) and cons (burdens), which occurs between the pre-contemplation and contemplation stages (DiClemente et al., 1991). This is the point where the perceived benefits of changing the problem behaviour begin to outweigh the perceived burdens associated with changing the problem behaviour.
Progression from the contemplation to the action stage has been shown to be a function of approximately a one-standard-deviation increase in the pros perceived to be related to healthy behaviour change (Prochaska, 1994b). This finding is termed the ‘strong principle of progress’ (Prochaska, 1994b). In contrast, the ‘weak principle of progress’ suggests that between the contemplation and action stages the cons associated with changing the problem behaviour decrease as a function of approximately a one-half of a standard-deviation (Prochaska, 1994b). Therefore, movement into the action stage typically requires an individual to perceive the burdens of the problem behaviour to outweigh any perceived benefits (Prochaska, Norcross & DiClemente, 1994). For example, among smokers, motivation to change is marked by a crossing over of attitudes in which the perceived negative consequences of smoking rise sharply between contemplation and preparation, while the perceived benefits of smoking are maintained at a high level until the action stage, where they decline (DiClemente et al., 1991).

However, even once the perceived positives of the maladaptive behaviour cease to outweigh the perceived negatives, the individual must also believe that successful change can be achieved in order to develop the skills required to instigate positive behaviour change (Bandura, 1977; D. Wilson, 1989; S. Wilson, Rossiter, Kleifield & Lindholm, 1986). Self-efficacy has, therefore, been hypothesised to be fundamental in successful progression through the various stages of change.

### 3.1.3.2 Self-efficacy

The concept of self-efficacy is derived from the early work of Bandura (1977, 1978) and features predominantly in theorising on the determinants of stage of change (Rieger et al., 2000). The TTM hypothesises a linear relationship between self-efficacy and stages of change (Rossi et al., 1995). It is proposed that one’s perceived ability to successfully complete a given task is hypothesised to mediate further attempts to engage in that task (Rieger et al., 2002). Therefore, when helping clients advance from contemplation to action, it is essential to increase their feelings of self-efficacy in relation to altering their problem behaviour (Treasure et al., 2000).
High levels of readiness to change are associated with high levels of self-efficacy regarding modifying anorexic symptomatology (Rieger et al., 2002). In support of this postulation, a quantitative study conducted by Rieger et al. (2002) which investigated the psychometric properties of the Anorexia Nervosa Stages of Change Questionnaire (ANSOCQ) with a sample of 44 Australian inpatient anorexic clients found a large correlation between stage of change and self-efficacy, supporting the TTM's theoretical premise that higher levels of readiness to change are associated with higher levels of self-efficacy regarding changing maladaptive behaviour. Therefore, it has been argued that as self-efficacy increases, the individual should become more actively engaged in behaviour change and consequently progress to the next stage (Treasure et al., 2000).

Although there is substantial empirical support to suggest that self-efficacy and decisional balance influence movement through the stages, motivation for change may also be affected by other environmental factors, such as external stressors, competing demands, and practical constraints (W. Miller & Tonigan, 1996). The course of behaviour change may vary depending on whether motivation for change is intrinsically (for themselves) or extrinsically (in order to appease others) based and whether the problem behaviour is influenced by pharmacological dependence (Stotts, DiClemente & Carbonari, 1996).

3.2 Issues Related to the TTM

Clinicians have found both the concept of individual clients entering treatment at varying stages of readiness and the identification of stage processes to be both informative and beneficial (DiClemente et al., 2004). However, the TTM has been the focus of a number of recent empirical and conceptual critiques. The TTM demonstrates several conceptual and empirical limitations, including issues related to measurement (McConnaughey, Prochaska & Velicer, 1983), stage definition (Littell & Girvin, 2002), stage discreteness (Weinstein, Rothman & Sutton, 1998), and the lack of reliability regarding matching treatments to allocated stages (S. Wilson & Schlam, 2004). These limitations will now be discussed.
3.2.1 Measurement issues

A fundamental concern regarding the TTM involves the measurement of the stages of change construct. Assessment of stage status across various problem behaviours has caused considerable frustration for both clinicians and researchers (Carey et al., 1999; Joseph et al., 1999). There are serious flaws with the existing methods used to measure and assign stages of change; low rates of concordance between different measurement tools are a fundamental predicament affecting the TTM (Sutton, 1996).

Methods of assessing stage of change vary greatly; however, the two foremost techniques used to determine an individual’s stage allocation are simple algorithms and self-report multidimensional questionnaires. Participants may be placed in mutually exclusive categories (stages) via either method, although critics (e.g., Bandura, 1997b; Davidson, 1992, 1998; Littell & Girvin, 2002; Sutton, 1996) propose that these stage distinctions may only be artificial.

The proliferation of instruments purporting to measure readiness to change presents several challenges to clinicians and researchers who must decide amongst the various measurement approaches (Carey et al., 1999). To date, few studies have compared different methods of measuring stage of change (Sutton, 2001). However, those that have (i.e., Belding, Iguchi & Lamb, 1996; Farkas et al., 1996), suggest low concordance between the differing stage measurement techniques. Carey et al. (1999) reviewed the psychometric properties of 12 different methods of assessing readiness to change (including algorithms, self-report questionnaires and clinician ratings) in the area of substance abuse and concluded that there is little evidence of concordance between the various measurement techniques. No single measure emerged as the best measurement for use in clinical settings, with the most accurate assessment method being determined by the suitability to the target population (Carey et al., 1999).

Although algorithms and stage of change questionnaires claim to be assessing the same construct, they actually investigate very different paradigms (Littell & Girvin, 2002). In addition, different studies have applied various time
frames as reference points in their measures, resulting in an altered distribution of participants across stages (Weinstein et al., 1998).

### 3.2.1.1 Algorithms

Originally developed in the context of smoking cessation research, staging algorithms have since been adapted for use pertaining to a wide variety of behaviours including exercise (Guillot et al., 2004), condom use (LaBrie et al., 2005), cocaine use (Prochaska et al., 1994) and eating disorders (P. Jordan et al., 2003). Staging algorithms are designed to determine an individual’s stage of change as articulated by the TTM. Algorithms usually assign individuals to a specific stage based on their responses to a series of four or five forced-choice, self-report questions (Prochaska, 1995; Prochaska et al., 1994). An example of a four item algorithm previously used to determine an individual’s stage of change regarding safe sex practices is represented below in Figure 3.2.

![Algorithm Diagram](image)


*Figure 3.2.* Sample of Four Item Algorithm for Classifying stage of Change.
Algorithms are the simplest and most widely used method of measuring stage of change. The ease and speed of administration, flexibility across behaviours and populations, and their face validity are attractive features of this measurement technique (Carey et al., 1999).

However, despite their advantages, algorithms have been criticised for having reduced predictive power due to their complete reliance on retrospective recall regarding actual behaviour change and self-reported behavioural intentions (Farkas et al., 1996; Wilson & Schlam, 1996). Information regarding future intentions are considered less accurate in outcome prediction than behavioural measures (Carey et al., 1999). Furthermore, intentions to behave and actual behaviour are not closely related constructs, having different determinants (W. Miller, 1985).

Staging algorithms can also be censured on the basis of the arbitrariness of temporal cut-off points used to define stages and the logically flawed, circularity of reasoning which suggests that previous behaviours are exclusively responsible in predicting motivation to engage in similar behaviour in the future (Carey et al., 1999). For example, a commonly used algorithm (DiClemente et al., 1991) requires an individual in the preparation stage of smoking cessation to have unsuccessfully attempted to quit smoking for at least 24 hours during the past year. This stage requirement would therefore prevent any smokers reaching the preparation stage during their first quit attempt (Sutton, 2001).

Finally, due to variability in the implementation of algorithms across varying studies and problem behaviours, this measurement method remains unstandardised and therefore difficult to evaluate psychometrically (Carey et al., 1999; Jordan et al., 2003). Therefore, it should be concluded that the use of staging algorithms may result in substantial interpretive difficulties.

3.2.1.2 Self-report questionnaires

In contrast to algorithms, many studies have used multidimensional questionnaires. Several methods have been employed to identify an individual’s stage allocation based on stage of change scales. Some studies have assigned
participants to stages based on the highest raw score (e.g., Franko, 1997; Trigwell, Grant & House, 1997; Tsoh, 1995) while others have relied on standardised scores (e.g., Rollnick, Heather, Gold & Hall, 1992). There have been several methods for managing tied scores; by placing the individual in the more advanced stage (e.g., Rollnick et al., 1992), using ties to develop separate stages (e.g., Smith, Subich & Kalodner, 1995) or a combination of the two methods (e.g., Heather, Rollnick & Bell, 1993). These differing stage allocation methods produce very different results. For example, Hutchison (1996) concluded that between 13% and 43% of individuals seeking treatment for substance abuse could not be assigned to a specific stage, depending on the classification method used. In addition, between 0.3% and 26% of substance abuse clients can be allocated to pre-contemplation stage depending on the method used (Tsoh, 1995).

### 3.2.2 Stage conceptualisation issues

In addition to measurement issues, researchers have identified inadequacies in a five stage conceptualisation of readiness to change (Carey et al., 1999) as there are considerable inconsistencies across the stage definitions used (S. Wilson & Schlam, 2004). Therefore, without consensus on the constructs and criteria used to define stages, it is not clear what the stages actually represent, however, it is probably due to incompatible stage definitions (Sutton, 2001). This issue is a fundamental concern which must be resolved before further progress can be made in research using the TTM (Sutton, 2001).

Various measures of stage of change have successfully divided the targeted population into discrete subgroups which are consistent with the proposed five stages of the TTM (Biener & Abrams, 1991; Carney & Kivlahan, 1995; DiClemente et al., 1991; Isenhart, 1994; Willoughby & Edens, 1996). While the five stage model appears to adequately differentiate among change activities, current research (e.g., DiClemente & Velasquez, 2002; Velicer, Hughes, Fava & Prochaska, 1995) supports the assertion that each proposed stage of the TTM can be further sub-classified. Furthermore, the pre-contemplation stage currently amalgamates a number of heterogenous individuals. At least four subcategories of pre-contemplators have been
previously described in more recent literature (DiClemente & Velasquez, 2002; Prochaska, Redding & Evers, 2002). Included in this single stage are those who are unaware that a problem exists, those aware but unengaged by the problem, those undecided as whether to change, and also those who are aware of a problem but have decided not to act. Although assigned to the same stage, clients with these differing agendas may benefit from different treatment approaches.

Many processes postulated to facilitate change in the TTM appear incomplete and overly simplistic (S. Wilson & Schlam, 2004). For example, the process of stimulus control is incorporated into the stages of change model, although the complete range of self-regulatory processes such as problem solving and self-monitoring are not included.

3.2.3 Stability of the TTM

The TTM has received substantial criticism for its reliance on a staging metaphor (e.g., Bandura, 1997b; Carey et al., 1999; Sutton, 1996). One of the primary issues regarding the TTM is that, like all stage theories, it oversimplifies the complexities of behavioural change by imposing artificial categories on a continuous process (Bandura, 1997b, 1998; Davidson, 1992, 1998; Littell & Girvin, 2002; Sutton, 1996). This contention fuels the controversial debate as to whether behaviour change is best represented as a continuous process or by discrete stages (Littell & Girvin, 2002; Prochaska & DiClemente, 1998).

A fundamental assumption of any stage theory is that it is possible to assign an individual to one, and only one stage category (Bandura, 1997b; Weinstein et al., 1998). The practical utility of the TTM must undoubtedly be questioned if discrete stages cannot be accurately identified or reliably assessed (S. Wilson & Schlam, 2004). Furthermore, tailoring individual treatment interventions using a stage theory becomes problematic if the client cannot be accurately assigned to one discrete stage (Sullivan & Terris, 2001).

Individual stage status can change dramatically in a very brief period of time or persist for several years. Therefore, using a single assessment at any one point in time to predict behaviour change outcome may prove problematic.
Empirical evidence indicates that, with the exception of the pre-contemplation stage, the various stages proposed by the TTM are not discrete (Littell & Girvin, 2002). Furthermore, due to the interactive nature of the specific tasks and processes described in each stage, the concept of motivation to change and the process of intentional behaviour change can not accurately be represented by a linear, continually increasing single variable (DiClemente et al., 2004).

Literature (e.g., Carey et al., 1999; Sutton, 1996) indicates that readiness to change is best conceptualised as a multidimensional and continuous construct, with further research and theoretical development required to enhance knowledge of the complex process of behaviour change. The utility of readiness to change can be greatly enhanced if it is measured on a continuous scale; maximising sensitivity to change (Carey et al., 1999). Although research has only just begun to thoroughly investigate continuous measures of readiness to change (Lerdal et al., 2008), it has been proposed that this conceptualisation of behaviour change may prove a more accurate representation than the existing stage model (LaBrie et al., 2005).

Individual readiness to change is a dynamic, constantly fluctuating internal state (Treasure & Schmidt, 2001), suggesting that motivation is inconsistent with the concept of assigning individuals into discrete, artificially imposed stages. Rather than being a client-centred trait, readiness to change should be viewed as a fluctuating product of interpersonal interactions (Rollnick & Miller, 1995), involving complex relationships between cognition, behaviour and environmental factors (Bandura, 1997b; Carey et al., 1999).

Analyses of stage of change scales indicate that most participants (regardless of allocated stage) agree with items which are believed to represent at least two different stages, often endorsing items which reflect non-adjacent stages (e.g., Contemplation – Maintenance). This finding suggests that individuals cannot be assigned to a single stage (Littell & Girvin, 2002).

There is currently little empirical evidence to support the suggestion that individuals sequentially progress through discrete stages when altering problem behaviours, such as smoking or alcohol abuse (Littell & Girvin, 2002). Although a few previous studies have supported sequential stage progression (McConnaughy et
al., 1983), other researchers have concluded that non-adjoining stages are approximately equally correlated (McConnaughy, DiClemente & Prochaska, 1989). Furthermore, it has been proposed that non-adjoining stages are often more highly correlated than adjoining stages (Belding et al., 1996).

A total of more than 400 patterns of stability and movement between stages have been reported (Norman, Velicer & Fava, 1998), but there is currently a paucity of longitudinal research which has documented individual movement through the entire stage sequence. However, a longitudinal study by Prochaska et al. (1991) established 14 patterns of stability or movement between the various stages over a two year period. These patterns included regression followed by progress, progress then regression, progress-regression-progress and stage skipping. Another study by Martin, Velicer and Fava (1996) indicated that the action stage is the least stable (i.e., participants in this stage were more likely to be assigned to a different stage at the next point of observation). Furthermore, the maintenance stage was found to be the most stable, although this finding may be due to the restricting nature of the specific stage (i.e., participant's stage allocation could only move in one direction).

The search for a universal, underlying structure of successful behavioural change has resulted in unnecessary reductionism, reliance on categories that do not accurately reflect qualitatively different states, and adherence to assumptions regarding stage progression that have not been empirically supported (Littell & Girvin, 2002). The overly reductionistic nature of the TTM has obscured increased understanding of underlying constructs, the relationships between them, and their influence on successful behaviour change (Littell & Girvin, 2002).

However, regardless of this limitation, the stages of change construct continues to provide researchers and clinicians with assistance in understanding the process of intentional behaviour change (DiClemente et al., 2004). Furthermore, regardless of whether a stage based or continuous classification is used to assess motivation, research supports the assertion that individuals earlier in the change process differ reliably from those in the later stages on measurements of change process activities, decisional balance and self-efficacy (Carney & Kivlahan, 1995;
DiClemente, Carbonari, Zweben, Morrell & Lee, 2001; DiClemente & Hughes, 1990; DiClemente et al., 1985).

3.2.4 Treatment matching interventions

In addition to merely identifying clients’ current stage of change, factors which influence motivation must be established in order to enable practitioners to increase the efficacy of current treatment programs. To aid in the development of successful treatment interventions it is essential to identify and understand the underlying factors which contribute to motivational enhancement. Recent literature postulates that tailoring treatment approaches to specific stages of readiness to recover is successful in decreasing resistance to change, and therefore increasing compliance and successful behaviour change (Rieger et al., 2000).

The TTM hypothesises that stage-matched interventions should be more effective than mismatched or traditional action-orientated psychological treatments (Weinstein et al., 1998) suggesting that the likelihood of change will increase if interventions can be successfully matched to specific stages (Prochaska et al., 2002). However, practical utility of stage based interventions relies heavily on the researcher/practitioner identifying stages accurately and efficiently (Weinstein et al., 1998).

A vast amount of recent research (e.g., Project Match Research, 1997; Project Match Research, 1998; Rieger, 2000; Rieger et al., 2000) has proposed that in order to increase the effectiveness of treatment approaches, programs should attempt to match the nature of therapy to the individual’s degree of readiness for change. Furthermore, if there is a ‘mismatch’ between the goals of treatment and the client’s level of motivation to change, resistance will inevitably occur (Touyz et al., 2003).

Although there is an absence of empirical research relating to the benefits and limitations of treatment matching in eating disordered populations, The Project Match Research Group (1998) state that patient-treatment matching has shown prominence in recent research regarding alcoholism treatment programs. A study undertaken by The Project Match Research Group (1997), assessed the benefits of matching 1726 alcohol addicted outpatient participants to various treatment
interventions. Although matching effects were not found to be robust, specific variables, such as degree of anger and dependence, were established as significant when assigning clients to treatment interventions (Project Match Research, 1997).

3.2.5 Sequence of change

The sequence of stages proposed in the TTM suggests that cognitive change always precedes behavioural change. In addition, the TTM also postulates that intentional behaviour change (and therefore stage progression) is facilitated by various processes of change, further implying that cognitive or emotional change must precede behavioural change. However, current empirical evidence indicates that this pattern of stage progression may not be universal (Littell & Girvin, 2002). Behavioural modification may actually occur first, thereby resulting in a subsequent cognitive shift (O'Leary & Wilson, 1987). Furthermore, cognitive change can also occur without prior contemplation (Velicer, Rossi & Prochaska, 1996).

3.2.6 Predictive ability of the TTM

General levels of client motivational readiness has been shown to be one of the most influential predictors of intensity and frequency of drinking outcome in alcoholic clients (DiClemente, Carroll, Miller, Connors & Donovan, 2003). Motivational readiness scores have been reported to be predictive of drinking outcome at the one and three year follow-ups among alcoholic outpatients (Project Match Research, 1997, 1998). Therefore, motivation to change, as measured by TTM assessments at baseline, provides a reliable predictor of alcohol consumption at the one and three year follow-up period (DiClemente, 2003). As motivation to change has also been shown to be crucial in the process of recovery in anorexic clients (Rieger et al., 2002), readiness to change scores may provide a predictive indication of outcome in this sample.
3.3 Summary

The TTM postulates that behaviour change involves individual movement through five discrete stages, influenced by theoretical constructs such as self-efficacy and decisional balance. Both researchers and clinicians have adopted the TTM in order to increase their understanding of the individual process of intentional behaviour change for various problem behaviours including drug and alcohol abuse, smoking cessation and weight loss.

In recent years several researchers (e.g., Bandura, 1997b, 1998; Carey et al., 1999; Littell & Girvin, 2002; Sutton, 2001; Weinstein et al., 1998) have criticised several aspects of the TTM. Although the TTM is the predominant theory regarding behaviour change within the substance abuse area, current research provides only partial support for this model. Definitional and measurement issues (Carey et al., 1999), as well as concerns with limitations regarding treatment outcome relevance have been associated with this model (Blanchard et al., 2003; Davidson, 1992; Littell & Girvin, 2002; Sutton, 1996). There has also been substantial scrutiny as to whether the TTM provides an accurate description and explanation of the complicated process of behaviour change (Bandura, 1998; Davidson, 1992, 1998; Sutton, 1996).

While the underlying concept of stages of change has much to offer, reliance on a quick and easy measure of such a complex, multifaceted construct may be unsuitable (Sullivan & Terris, 2001). Although fundamental issues related to the TTM have been acknowledged (Prochaska & DiClemente, 1998), these limitations could be reduced with new approaches implemented to improve the accuracy of stage of change assessments. These include: determining a clear behavioural target; assessing problem recognition; identifying attitudes, evaluations and intentions toward changing the problem behaviour now and in the future; finding accurate and valid indicators of actual behaviour change; and the inclusion of a reliable measurement tool to determine the length of time the behaviour change has been maintained (Prochaska & DiClemente, 1998).

There is an overwhelming indication that when adequately measured and assessed the stages of change theory has the potential to provide a meaningful construct which can increase understanding of motivation and the process of
intentional behaviour change in both clinical treatment and research. However, better measurement, more frequent assessments and increased understanding of the stage subtasks and their relationship to readiness and successful behaviour change are needed.

3.4 Implications for this thesis

The TTM is a popular model for conceptualising the difficult process of intentional behaviour change, which is consistently applied to a broad variety of problem behaviours. Whilst the benefits of this model have been acknowledged, several pertinent limitations have also been documented. These limitations predominantly encompass definitional and measurement issues, including the stability of the stages and the consistency of available measurement techniques.

As ambivalence is common in anorexic clients, understanding the shifts in motivation to change is fundamental. The following chapter will critically examine the applicability of the TTM to anorexic clients. This will be done through a thorough review of relevant literature, in addition to the investigation of motivational issues specific to eating disordered clients. The primary aim of the ensuing chapter is to determine the suitability of applying the TTM (and its constructs) to the complicated process of behavioural change in clients diagnosed and recovering from anorexia. Specifically, the next chapter will discuss the ability of the TTM to accurately evaluate readiness to change and reliably predict outcome in this population, in light of relevant measurement issues raised in the current chapter.
CHAPTER FOUR

THE APPLICATION OF THE TTM TO ANOREXIA

Ambivalence regarding recovery is a key element of anorexic symptomatology; anorexic clients are difficult to engage at both the commencement and throughout the course of treatment (Geller, Zaitsoff, & Srikameswaran, 2005). Many clients actively refuse to acknowledge their behaviour as problematic, maintaining a reluctance to eat and gain sufficient weight (Cockell et al., 2003). Treatment drop-out can be defined as the unilateral decision to prematurely cease treatment before the planned completion date (Sly & Mountford, 2011). Treatment drop-out is a serious issue, with drop-out rates ranging from 32% (Zeeck, Hartmann, Buchholz & Herzog, 2005) to 51% (Woodside, Carter & Blackmore, 2004) for inpatient clients, and 31% (Fassino et al., 2002) to 51% (Button, Marshall, Shinkwin, Black & Palmer, 1997) for clients receiving outpatient treatment.

This reluctance to change may be due to the ego-syntonic nature of many anorexic symptoms, such as the experience of pride in obtaining thinness and self-control (Geller & Drab, 1999); anorexic clients perceive these symptoms as an accomplishment rather than an affliction, therefore hindering their desire to engage in progression towards successful recovery.

Enhancing client readiness to change is therefore an essential component of successful treatment for anorexic clients (Cockell et al., 2003). Increasing clients’ motivation to change is critical to efficacious treatment (Geller, 2002; Geller, Cockell et al., 2001; Serrano, Castro, Ametller, Martinez & Toro, 2004). Readiness to change scores, which assess readiness to change across different symptom dimensions, have been shown to predict clinical outcome in anorexic clients; affecting clients’ decisions to engage in treatment, to choose to remain or drop-out of treatment programs, in addition to the degree of symptomatic change at the conclusion of treatment (Geller et al., 2004; Gusella, Butler, Nichols & Bird, 2003).

The frequent occurrence of treatment resistance and drop-out in eating disordered clients may be due to the programmatic attempts to reduce symptoms in
individuals who are not yet prepared to change (Geller, Cockell et al., 2001). Recent research and clinical attention has shifted to focus on enhancing the match between the needs and personal resources of individual clients and the type of treatment provided (Kordy, Haug & Percevic, 2006). They argue that the process of matching individual clients to specific treatments can assist in reducing clients’ frustration, reducing treatment drop-out rates and ultimately conserving valuable clinical resources by limiting treatment to approaches which are likely to be efficacious (Kordy et al., 2006). Similarly, drop-out and treatment non-compliance in anorexic clients can be reduced by implementing treatment recommendations which take into account clients’ ambivalence regarding recovery (Treasure et al., 2003).

Given that individual clients demonstrate differing degrees of readiness to engage in treatment, a reliable measurement tool which could allow clinicians to identify readiness status would enable treatment to be tailored to individual needs (Treasure & Schmidt, 2001). Although the TTM originated in the substance abuse area, given anorexic clients’ prevalent ambivalence towards commencing and sustaining change regarding their eating disorder symptoms (Geller et al., 2004; Tantillo et al., 2001), some eating disorder researchers have focused on the applicability of the TTM to anorexia (Blake et al., 1997; Geller et al., 2004; Geller & Drab, 1999; Geller, Williams et al., 2001; Rieger et al., 2002; Sullivan & Terris, 2001; Treasure & Schmidt, 2001).

This chapter will begin with a critical evaluation of the applicability of the TTM to clients diagnosed with anorexia. In addition, this chapter will also describe the current limitations of the TTM, with respect to conceptualising motivation to change in anorexic clients. Finally, this chapter will discuss the implications of these limitations and make suggestions for future research.

4.1 Applicability of the TTM to Anorexia

As discussed previously in Chapter Two, the applicability of the TTM as a framework to provide a meaningful construct to increase understanding of motivation and the process of intentional behaviour change has been demonstrated across a broad range of both clinical and research settings (Hughes, Keely,
Fagerstrom & Callas, 2005; Prochaska, Velicer, Prochaska & Johnson, 2004; Schumann et al., 2005; Segar, Borland & Greenwood, 2004). Due to the conceptual parallels between eating disorders and substance abuse (i.e., ambivalence regarding behavioural change, and ego-syntonic nature of symptoms), a significant amount of research has examined whether the stage construct proposed by the TTM can be reliably applied to clients diagnosed with eating disorders (Blake et al., 1997; Jones, 2003; Rieger et al., 2002; Ward et al., 1996). This research has examined the applicability of the TTM to anorexic clients within different clinical settings (e.g., both inpatient and outpatient treatment facilities).

In the earliest study of this nature (Ward et al., 1996), 35 inpatients receiving treatment at a specialised eating disorders unit completed the Stages of Change Questionnaire (Prochaska & DiClemente, 1983) which allocated participants into either the pre-contemplation, contemplation or action stage. Despite receiving the most intense treatment available, three participants (9%) were in pre-contemplation, 14 (40%) in contemplation and 18 (51%) in the action stage (Ward et al., 1996). Therefore, approximately half of the sample were in pre-action stages. However, the study had several methodological limitations; in addition to a small sample size, the participants were restricted to the more severe end of the eating disorder spectrum (Ward et al., 1996), restricting the generalisability of the study.

A non-specific stage of change measure was also used to determine the current stage of change of 51 male and female anorexic outpatients receiving treatment at a London hospital (Blake et al., 1997). The findings indicated that 30% of clients were in pre-contemplation, 20% were in contemplation and 50% were in the action stage. This outcome replicated and supported the earlier conclusions drawn by Ward et al. (1996).

In contrast, several studies have furthered the research by Ward et al. (1996) and Blake et al. (1997) by investigating stage of change using disorder specific measures. The first of these studies examined readiness to change in 115 anorexic inpatients (Rieger, 2000). At the commencement of treatment approximately 80% of clients could be assigned to the pre-action stages of change as assessed via the Anorexia Nervosa Stages of Change Questionnaire (ANSOCQ). At the conclusion of
treatment, 66% of participants were still refraining from actively altering their anorexic behaviours (Rieger, 2000).

In a second study, the ANSOCQ was also used to classify 44 anorexic inpatients into discrete stages of change as postulated by the TTM (Rieger et al., 2002). Consistent with the earlier study (Rieger, 2000), Rieger et al. (2002) ascertained that 9% of participants were assigned to the pre-contemplation stage, 43% to the contemplation stage, 28% to the preparation stage, 18% to the action stage and 2% to the action stage. Again, these two studies were limited to inpatient samples.

A study which involved a sample of 78 inpatient and outpatient clients was conducted to investigate of the applicability of the TTM to an anorexic population. Using the ANSOCQ, 14% of participants were classified into the pre-contemplation stage, 36% into the contemplation stage, 35% into the preparation stage and 15% into the action stage of change (Jones, 2003). Therefore, these findings were comparable to those of Rieger in two separate studies (Rieger, 2000; Rieger et al., 2002).

However, the results of Ward et al. (1996) and Blake et al. (1997) demonstrated inconsistencies with the later results reported by Rieger et al. (2000), Rieger et al. (2002) and Jones (2003). These discrepancies may be due to the different measurement tools used; both Ward et al. (1996) and Blake et al. (1997) used generalised stage of change measures to assign participants to one of only three stages (pre-contemplation, contemplation and action), whereas the studies conducted by Rieger et al. (2000), Rieger et al. (2002) and Jones et al. (2005) used disorder specific assessment tools to classify participants according to the five stage model (pre-contemplation, contemplation, preparation, action and maintenance). Furthermore, inconsistent methods of transferring raw stage of change scores into discrete individual stage allocations may have affected the findings. For example, Rieger et al. (2002) determined stage of change based on average item scores, whereas Blake et al. (1997) assigned participants into stages based on highest scores.
4.2 Moderator variables

As discussed earlier, in addition to identifying and acknowledging stage of readiness to change, the TTM offers a comprehensive description of moderator variables which are hypothesised to influence the transition between stages. These variables include processes of change (the covert or overt activities which individuals engage in when attempting to alter their cognitions, affect or behaviour), decisional balance (the identification and evaluation of the perceived advantages and disadvantages associated with the problem behaviour) and self-efficacy (confidence in the ability to change the problem behaviour; Prochaska & DiClemente, 1983).

Understanding the factors which influence a client’s movement through the stages toward successful behaviour change is considered crucial in ensuring appropriateness of treatment interventions (Prochaska & DiClemente, 1992). Each of these variables has been the subject of examination in prior research on eating disorders.

4.2.1 Processes of change

The TTM proposes that different processes predominate during different stages of change, with individuals being more inclined to apply cognitive/affective processes in the early pre-action stages and employ primarily behavioural processes in the later stages of change (Fava et al., 1995; Prochaska & Velicer, 1997). However, the majority of published research which has investigated the relationship between processes and stages of change has focused largely on smoking cessation and substance abuse (Rosen, 2000). Therefore, before attempting to tailor individual treatment interventions to various health behaviours, clinicians need to ascertain whether the sequencing of change processes observed in smoking cessation and substance abuse research can be reliably applied to other health problems, including the area of eating disorders.

Although 10 processes of change were originally identified by Prochaska and DiClemente (1983), it has been argued that only eight are relevant to the area of eating disorders (Blake et al., 1997; Ward et al., 1996). Despite both environmental
re-evaluation (evaluating the impact the problem behaviour has on the environment) and contingency management (managing craving associated with the problem behaviour) being relevant to the originally investigated behaviour of smoking, they are not deemed applicable to eating disorders (Blake et al., 1997; Ward et al., 1996).

The remaining eight processes can be divided into two distinct categories; cognitive/affective processes and behavioural processes. Cognitive/affective processes applicable to clients diagnosed with anorexia are consciousness raising, dramatic relief, self-re-evaluation and self-liberation. Relevant behavioural processes include reinforcement management, helping relationships, counter-conditioning and stimulus control.

Several studies have examined processes of change in anorexic clients. In Ward et al.’s (1996) study of inpatients, the Processes of Change Questionnaire (Prochaska, Velicer, DiClemente & Fava, 1988) indicated that self-re-evaluation, helping relationships and consciousness raising were the most frequently used processes of change reported (Ward et al., 1996), although, in accordance with the TTM, different processes were predominant during different stages of change (Prochaska & DiClemente, 1983).

Blake et al. (1997) extended the research by Ward et al. (1996) by investigating the relevance of processes of change in a larger sample (N=109) of eating disordered outpatients residing in the United Kingdom. The results supported previous research, with both the number and type of processes differing between the various stages. In addition to fewer processes being used in the contemplation stage, self-liberation was significantly lower in pre-contemplation compared to action, and self-re-evaluation was used significantly less in pre-contemplation than in the action stage. Furthermore, the congruency of these findings suggests that the construct of processes of change, as hypothesised by the TTM, can be effectively applied to eating disorder clients in both inpatient and outpatient settings.

In another study (Hasler et al., 2004), the processes undertaken by a sample of 88 anorexic and bulimic clients attending a specialised Swiss eating disorder outpatient clinic were evaluated. In partial accordance with the TTM, behavioural processes (such as stimulus control) were found to be positively correlated with the
later stages of change (Hasler et al., 2004). However, inconsistent with the TTM, a conflicting pattern of processes across the various stages was also found. For example, processes such as self-re-evaluation, helping relationships, consciousness raising, and reinforcement management were unrelated to stage of change.

Jones (2003) examined the processes used by 78 Australian anorexic females receiving either voluntary inpatient or outpatient treatment. Jones concluded that, in contrast to the earlier findings of Ward et al. (1996) and Blake et al. (1997), cognitive/affective processes were implemented significantly less often in the pre-contemplation stage. This pattern variation was consistent with Hasler et al. (2004). However, consistent with previous research, behavioural processes were employed more frequently during the later stages of change (Jones, 2003).

Although there are discrepancies in the literature relating the processes of change to clients diagnosed with an eating disorder, Ward et al. (1996) and Blake et al.’s (1997) findings were comparable to earlier research regarding processes of change in tobacco and drug use (e.g., Fava et al., 1995; Prochaska & DiClemente, 1983; Prochaska & Velicer, 1997). The use of different participant populations, such as inpatient and outpatient samples, and different measurement tools to assess processes, such as global and symptom specific questionnaires, however, reduce the ability to draw comparisons between the current literature. It is imperative to understand the processes which an individual uses during each stage of change (Ward et al., 1996), in order for therapeutic intervention to be relevant and complement the coping strategies which are already being undertaken by the client. Therefore, further longitudinal research is required to determine whether the pattern of utilisation of the processes of change is reliable across each of the stages of change. However, this longitudinal research will not be investigated as an element of the current thesis.

### 4.2.2 Decisional balance

According to the TTM, an individual’s perception of the advantages and disadvantages which they associate with their behaviour influences their degree of readiness for change (Prochaska & DiClemente, 1983). While clinicians primarily
focus on the negative health aspects of anorexia, it may prove more beneficial to increase client motivation by addressing the elements of the illness which the client perceives as positive (Cockell et al., 2003). This is because many anorexic clients place substantial value on what they perceive to be positive aspects of the eating disorder (e.g., sense of pride, feeling of self-control, and avoidance of emotional issues; Vitousek et al., 1998). While an eating disordered client may be prepared to actively work to relieve the psychological battle which accompanies anorexia, they may still aspire to preserve the maladaptive behaviours characteristic of the disorder (Jones, 2003). Furthermore, as the client’s and clinician’s views of the disorder are extremely subjective, acknowledging and understanding the positive perspectives of individuals diagnosed with anorexia may prove beneficial in encouraging successful behaviour change (Serpell et al., 2002).

Investigations of the application of decisional balance to the area of eating disorders indicates that this construct demonstrates relevance to the process of recovery in this population (Cockell et al., 2003; Treasure & Bauer, 2003). Blake et al. (1997) used the Stages of Change Algorithm and the Decisional Balance Inventory for Eating Disorders (DBIED) to examine the relationship between stage of change and decisional balance in 109 anorexic (51) and bulimic (58) outpatients. As expected, the perceived cons of having the eating disorder were significantly lower in the pre-contemplation stage compared to the contemplation and action stages. However, the pros associated with anorexia did not decline as a function of stage of change (Blake et al., 1997).

In a sample of 44 Australian anorexic inpatients, a significant negative correlation between stage of change and pros, and a significant positive correlation existed between stage of change and cons associated with the disorder (Rieger et al., 2002). These findings were discrepant from those of Blake et al. (1997) and may be the result of the different characteristics of the samples; Rieger et al. (2002) used an inpatient sample, whereas Blake et al.’s (1997) study involved outpatients who exhibited less severe anorexic symptoms. In addition, the earlier study conducted by Blake et al. used an algorithm to assess participants’ stage of change and the (DBIED) to determine decisional balance, whereas Rieger et al.’s study measured...
stage of change using a self-report questionnaire (the ANSOCQ) and decisional balance using the Decisional Balance Questionnaire (DB). These measurement differences may have resulted in inconsistent findings.

Furthermore, Serpell, Teasdale, Troop and Treasure (2004) used a heterogenous inpatient and outpatient sample of 233 female anorexic clients to develop and psychometrically evaluate a quantitative measure designed to assess the positive and negative aspects of anorexia. The Pros and Cons of Anorexia Nervosa scale (P-CAN) is a 50 item self-report questionnaire which requires the respondent to indicate their concordance with each item on a 5-point scale (ranging from Agree Strongly to Disagree Strongly). Serpell et al. identified 10 subscales; six relating to the pros and four relating to the cons associated with anorexia. The P-CAN demonstrated moderate to high internal consistency (.68-.89), and good test-retest reliability over a nine day period (N=86), indicating that it is a valid measure for assessing decisional balance in anorexic populations. Furthermore, this 10 factor structure was later replicated in a study involving a more diverse eating disorder sample, including participants diagnosed with bulimia nervosa (Gale, Holliday, Troop, Serpell & Treasure, 2006).

The relationship between decisional balance scores and pre-action stages of change has also been investigated in a sample of 80 female anorexic outpatients residing in Canada. Benefits subscale scores (pros) were positively correlated to eating disorder severity (Cockell et al., 2003). Furthermore, in partial accordance with the earlier findings of Blake et al. (1997), participants in the contemplation stage reported more disadvantages of suffering anorexia than those in the pre-contemplation stage. However, in contrast to the findings of Rieger et al. (2002), the perceived benefits associated with anorexia did not change between pre-action stages.

With regard to decisional balance, two principles have been proposed to be influential in the successful progression from the pre-contemplation stage to the action stage of change (Prochaska, 1994b). The strong principle hypothesises that movement from pre-contemplation to action is a function of approximately a one standard deviation increase in the perceived advantages related to behavioural
change. The weak principle states that progression from pre-contemplation to action is a result of approximately a half standard deviation decrease in the scores regarding the perceived disadvantages associated with behavioural change.

Several studies have investigated the strong and weak principles in eating disorders. Blake et al.’s (1997) study on 109 outpatient eating disordered clients, found the benefits of change increased by approximately one standard deviation between the pre-contemplation and action stages of change, supporting the strong principle. However, in contrast to the later findings of Jones (2003), the weak principle of change was not supported, as there was less than a one standard deviation shift in the perceived disadvantages associated with changing the problem behaviour.

Cockell et al. (2002) found that in a sample of anorexic outpatient clients assessed via the Decisional Balance Scale (Cockell et al., 2002), burden (of the disorder) scores differed between pre-contemplators and contemplators by approximately one standard deviation. However, in contradiction to the weak principle, benefit (of the disorder) scores were found to be comparable between participants in these two stages.

In Jones’ (2003) study, a decrease of approximately one and a half standard deviations in benefit (of the disorder) scores occurred across the stages of contemplation, preparation and action, demonstrating support for the weak principle of change. Furthermore, an increase of approximately one and a half standard deviations in burden (of the disorder) scores across the three stages was also found, supporting the strong principle.

Inconsistencies in the findings of current research investigating the strong and weak principles may be due to methodological differences between the various studies. For example, Cockell et al.(2003) and Blake et al. (1997) both used a sample comprising of outpatients only, whereas Jones (2003) used a combination of both outpatient and inpatient participants. In addition, the type of measurement tool used to evaluate the perceived balance between pros and cons may have affected the obtained results. Jones and Cockell et al. both used the Decisional Balance Questionnaire (Cockell et al., 2002), a 30 item self-report questionnaire specifically
designed to assess decisional balance in eating disordered populations. However, Blake et al. used the Decisional Balance Inventory for Eating Disorders, a 20 item questionnaire adapted from the Decisional Balance Inventory (Rossi et al., 1995), which was initially designed to evaluate the pros and cons associated with weight loss.

Incongruity in the findings reported by the above studies indicate that further empirical research is required to adequately determine if the proposed weak and strong principles can be reliably applied to anorexic clients.

4.2.3 Self-efficacy

Self-efficacy refers to the belief in one’s ability to successfully achieve a particular desired outcome or goal (Berman, 2006). Previous empirical research provides support for the assertion that an individual’s belief in their ability (or efficacy) to exercise control over health-related behaviour is an important determinant in their health status and functioning (AbuSabella & Achterberg, 1997; Bandura, 1998; A. O’Leary, 1985; Strecher, DeVellis, Becker, & Rosenstock, 1986). Furthermore, an individual’s self-efficacy determines whether they consider changing their behaviour, whether they develop the motivation and perseverance required to succeed, how well they maintain the new, healthy behaviour once change is achieved and their vulnerability to relapse (Bandura, 1978).

In accordance with the theoretical hypotheses of Bandura (1977, 1997a, 1997b, 1998), the TTM proposes that the concept of self-efficacy is a fundamental determinant of readiness for change. The TTM further theorises that as self-efficacy increases, an individual will become more actively engaged in treatment programs designed to facilitate behaviour change and subsequently progress through the stages of change (Treasure et al., 2000). Research has examined the relationship between self-efficacy and readiness to change in addictive problem behaviours, such as substance abuse and smoking (DiClemente, 1991; DiClemente et al., 1985; Prochaska, Velicer, DiClemente, Guadagnoli & Rossi, 1990).

Individuals diagnosed with an eating disorder demonstrate low levels of self-efficacy (Schneider et al., 1987), indicating that they doubt their ability to either alter
their maladaptive behaviours (e.g., starvation, excessive exercise) or successfully sustain new healthy behaviours (e.g., regular meals, caloric increase).

Therefore, although self-efficacy is the least investigated of the three moderator factors proposed by the TTM, the limited existing research into this area suggests that it may also be applicable to clients diagnosed with an eating disorder.

Rieger et al. (2002) found a positive correlation between readiness for change ratings and self-efficacy scores; concluding that high levels of readiness to change are associated with high levels of self-efficacy regarding modifying anorexic symptomatology. However, as the nature of Rieger et al.’s (2002) research did not allow for between group comparisons to be drawn, the degree of self-efficacy required to facilitate successful progression through the stages of change could not be determined.

The influence of readiness to change on perceived self-efficacy was evaluated using a combined sample of 78 anorexic participants receiving either inpatient or outpatient treatment (Jones, 2003). There was a significant difference in the level of self-efficacy reported for each of four stages of change (pre-contemplation, contemplation, preparation and action). Moreover, in accordance with Rieger et al. (2002), Jones also found a positive correlation between self-efficacy and readiness to change.

As discussed in the previous chapter, current techniques used to assess readiness to change demonstrate a variety of issues related to measurement, stage definition, stage discreteness, and the lack of support regarding the reliability of matching treatments to allocated stage. These methodological and conceptual issues are mirrored in the current literature regarding the use of the TTM approach in the area of eating disorders. Therefore it is necessary to examine their impact on previous eating disorder research.

The empirical research discussed above demonstrates the intransigent nature of anorexic clients’ ambivalence towards recovery and the need for increased understanding of the complex process of behaviour change. However, with further development of consistent, reliable measurement tools, current researchers suggest
that the application of the stages of change construct may be beneficial in the evaluation and treatment of eating disordered clients.

4.3 Measurement issues

Although recent research has supported the application of the TTM to clients diagnosed with eating disorders (e.g., P. Jordan et al., 2003; Rieger et al., 2002), there still remains considerable debate regarding the most accurate method of measuring stage of change in this population. The two most common techniques which have been developed to identify anorexic clients’ stage allocation are single symptom (global) and multidimensional assessments. Measurement issues related to each of these two assessment approaches will now be discussed.

Assessment tools used to measure stage of change in anorexic clients have developed primarily via two methods. Early studies adapted existing measures from other areas such as weight loss (e.g., Rossi et al., 1995) and tobacco use (e.g., Blake et al., 1997), whereas recent studies have developed measurement approaches specifically designed for clients diagnosed with anorexia (e.g., Cockell et al., 2002; Geller & Drab, 1999; Rieger et al., 2000).

4.3.1 Uni-dimensional (global) assessments

Global stage of change assessments allocate each individual a single readiness to change score, based upon the conceptualisation of the eating disorder as a single problem (Geller, Zaitsoff & Srikameswaran, 2005). This type of measurement technique offers both the clinician and researcher many advantages. The simple nature of global assessments ensures that they are fast and easy to both administer and interpret. However, a single system approach lacks the sensitivity to detect change in less readily defined behaviours, such as the complex standards which clients use to evaluate their bodies (Sullivan & Terris, 2001). In addition, it is difficult to ascertain exactly which symptom a client is considering, or the stance that the client is taking when completing a single symptom assessment. For example, a client may demonstrate their desire to take action regarding their current weight;
however, the intended action may be to further lose weight, rather to commence gaining weight. Uni-dimensional stage of change assessment tools can primarily be classified as either global self-report questionnaires or staging algorithms.

4.3.2 Global self-report questionnaires

Numerous studies have adapted global stage of change questionnaires, such as the Stages of Change Questionnaire (McConnaughey et al., 1983), for use in eating disorder clients. This questionnaire is a 32 item self-report questionnaire, which require respondents to indicate their agreement to each item on a five-point Likert scale ranging from 1=strongly disagree to 5=strongly agree (Tierney & McCabe, 2004).

Ward et al. (1996) used a brief version of the Stages of Change Questionnaire to apply the TTM to 35 inpatients receiving treatment at a specialised British eating disorder unit. This study included questions relevant to the stages of pre-contemplation, contemplation and action. Participants received a score for each stage, with the highest score indicating their allocated stage of change.

Participants were least characterised by the stage of pre-contemplation, however, mean scores indicated that they also endorsed features of all three stages of pre-contemplation, contemplation and action (Ward et al., 1996). Although this research was limited by a small sample size and its restriction to more severe eating disorder inpatients, the above finding illustrates the complex nature of eating disorder symptomatology.

4.3.3 Algorithms

As discussed in Chapter Three, stage of change algorithms are a fast and simple method used to assign individuals to a specific stage based on their responses to a series of four or five questions (Prochaska, 1995; Prochaska et al., 1994). The purpose of staging algorithms is to unambiguously classify individuals into one of the five stages proposed by the TTM (P. Jordan et al., 2003). The development of a staging algorithm in the area of eating disorders is hindered, however, by the fact
that there is currently no agreed upon definition for recovery in anorexia (Herzog et al., 1993), resulting in an ambiguous clarification of the maintenance stage.

An algorithm designed to determine stage of change in anorexic clients was applied to 278 predominantly female outpatients in the USA and UK (P. Jordan et al., 2003). The researchers concluded that the most meaningful staging measure was an algorithm which measured progression through the stages by readiness to cease bingeing/restricting/purging behaviours (P. Jordan et al., 2003). However, this study was limited by the exclusive use of voluntary participants which may have skewed the sample, causing the pre-contemplation and contemplation stages to be underrepresented. In addition, the cross-sectional nature of the study limited its predictive validity and prevented causal inferences from being made.

4.3.5 Multidimensional assessments

Despite both self-report questionnaires and algorithms having their own advantages, the use of a single symptom measure lacks the complexity to accurately evaluate more complex disorders which require the incorporation of both behavioural and cognitive change. Due to the multi-dimensional nature of anorexia, it is difficult for the researcher or clinician to ascertain which symptom the client is considering whilst completing the questionnaire. This may result in ambiguity and misunderstandings between the client and clinician, which may damage the therapeutic alliance and reduce the likelihood of a successful treatment outcome (Sullivan & Terris, 2001). Researchers propose that the use of a multi-dimensional measure may provide the most reliable stage assessment for eating disorder clients, as these measures provide both global and domain specific readiness scores (Geller et al., 2004). For this reason, the current research will conceptualise and assess readiness to change, self-efficacy and decisional balance as multi-dimensional constructs.

Although many global stage of change measures have developed from single-symptom behaviours, such as smoking or drug use, Geller, Cockell and Drab (2001) suggest that the extent to which these techniques can reliably capture the complexity of a multiple symptoms disorder such as anorexia is questionable. For example,
unlike the issue of nicotine addiction, where a client either continues or ceases smoking, an individual diagnosed with anorexia may increase the amount of food consumed each day, but still heavily restrict the types of food which he/she will eat. Clients diagnosed with eating disorders typically demonstrate differing degrees of motivation to change the various aspects of their disorder (Hasler et al., 2004). Therefore, given that some anorexic clients may be more prepared to change particular symptoms, whilst still highly reluctant to change others, assessment tools which capture individuals’ degree of readiness to change across different symptoms domains are required (Geller, Cockell et al., 2001). Multi-dimensional assessment techniques designed to determine symptom specific motivation for change can be divided into two distinct categories; self-report questionnaires and semi-structured interviews.

4.3.5.1 Multidimensional self-report questionnaires

The most popular TTM-based assessment tool designed to measure symptom specific readiness to change in eating disordered clients is the ANSOCQ (Rieger et al., 2002; Rieger et al., 2000). This 20 item, self-report questionnaire was developed to enable researchers and clinicians to assess readiness to change across various symptom domains including body weight and shape, eating behaviours, weight control strategies, emotional difficulties, problematic personality characteristics, social difficulties and treatment issues. Based on their responses, clients are allocated to one of the five TTM stages; pre-contemplation, contemplation, preparation, action or maintenance. Since its development, the ANSOCQ has been used to evaluate stage of change in both inpatient and outpatient participants (e.g., Ametller, Castro, Serrano, Martinez & Toro, 2005; Jones, 2003; Rieger et al., 2002; Rieger et al., 2000; Serrano et al., 2004).

Several studies have used the ANSOCQ to assess readiness to change in anorexic inpatient populations. A previously cited study conducted by Rieger et al. (2000), assessed the psychometric properties of the ANSOCQ and concluded that the measure constitutes a psychometrically sound instrument for the assessment of readiness to recover in anorexic clients. Another previously described study by
Rieger et al. (2002) concluded that nearly 80% of their participants were in the pre-action stages, with only 2% of the sample in the maintenance stage. Although these results are consistent with current theory regarding expected readiness to recover of anorexic inpatients, this study was correlational in design – therefore no causal inferences could be made.

Rieger and Touyz (2006) used the ANSOCQ to investigate the factorial structure of motivation to change in a sample of 115 inpatient anorexic clients. The results of this study indicated that motivation to change may comprise of three distinct factors, relevant to the ego-syntonic, ambivalent and distressing elements of anorexic symptomatology. Furthermore, participants reported varying degrees of motivation to change across each of the three factors, suggesting that this construct may be more complex than previously theorised (Rieger & Touyz, 2006).

In addition to research involving anorexic inpatients, many studies have investigated the applicability of the TTM to outpatient or a combined sample of inpatient and outpatient anorexic clients. A Spanish version of the ANSOCQ was administered to 70 anorexic clients receiving either inpatient or day patient care at a specialised eating disorder unit (Serrano et al., 2004). At the conclusion of the study, the researchers established the Spanish version of the ANSOCQ to be a psychometrically reliable instrument which had the potential to enable clinicians to accurately evaluate readiness to change in anorexic clients. The data obtained from the abovementioned 70 participants (both inpatient and outpatient clients), were further used determine if readiness to change during treatment (as measured with the ANSOCQ) is a reliable predictor of hospitalisation in adolescent anorexic clients (Ametller et al., 2005). The findings of this research suggested that low motivation to change, as measured by the ANSOCQ, is related to hospital admission in adolescent clients diagnosed with anorexia.

Although both global and multidimensional self-report measures of readiness to change have numerous benefits to both clinicians and researchers, they are also fraught with several measurement issues. Despite being widely used measurement tools, there is still considerable ambiguity regarding the process of transferring raw questionnaire scores into discrete stage allocations. For example, several differing
techniques have been employed to identify an individual’s stage allocation based on stage of change scales. Some studies have assigned participants to stages based on standardised scores (e.g., Rollnick et al., 1992), while others have relied primarily on participants’ highest raw score (e.g., Franko, 1997; Trigwell et al., 1997; Tsoh, 1995).

Furthermore, the method used for allocating stages for participants with tied scores varies dramatically; individuals may be placed in the more advanced stage (e.g., Rollnick et al.), ties used to develop separate stages (e.g., Smith et al., 1995) or a combination of the two methods (e.g., Heather et al., 1993). These differing stage allocation methods yield very different results.

These same issues exist with respect to eating disorder measures. For example, Ward et al. (1996) used a global stage of change questionnaire (SCQ) to assess 35 inpatients with anorexia and found that 15 participants recorded ties between the contemplation and the action stages. These participants were all subsequently assigned to the action stage, which may explain the inconsistencies with recent findings by Rieger et al. (2000) and Rieger et al. (2002) who found that their anorexic participants were predominantly in the pre-action stages of change.

Between 13% and 43% of individuals receiving treatment for substance abuse could not be assigned to a specific stage, depending on the classification method used (Hutchison, 1996). In addition, between 0.3% and 26% of substance abuse clients can be allocated to pre-contemplation stage, depending on the method used to determine stage of change (Tsoh, 1995). To reliably ensure accuracy regarding this measurement technique, the discrepancies mentioned above must be reduced.

### 4.3.5.2 Interviews

Another multidimensional measurement tool used to assess readiness to change in anorexic clients is the Readiness and Motivation Interview (RMI). The RMI is a semi-structured interview approach which is based on the TTTM and evaluates an individual’s motivation to change across four related eating disorder symptom domains: restriction, bingeing, compensatory strategies and
cognitive/affective symptoms (Geller & Drab, 1999) by exploring the motivational status for each symptom dimension. Furthermore, the RMI enables individual stage of change scores to be generated for each different eating disorder symptom dimension (Sullivan & Terris, 2001).

The psychometric properties of the RMI were assessed using 99 Canadian inpatient eating disordered clients (Geller, Cockell et al., 2001). The RMI profiles revealed differences in readiness and motivation across each of the symptom domains. Furthermore, the RMI demonstrated good reliability and construct validity whilst accurately predicting anticipated difficulty during recovery activities, completion of recovery activities, decision to enrol in an intensive, symptom reduction program, and treatment drop-out (Geller, Cockell et al., 2001). Therefore, the RMI may have essential clinical applications and may provide clinicians with increased understanding regarding client readiness for action-orientated treatment. The collaborative nature of this semi-structured interview provides the clinician with valid information and an increased understanding of the issues facing each individual client (Sullivan & Terris, 2001).

The RMI has also been used to evaluate and predict readiness for change in eating disordered clients (Geller, Cockell et al., 2001; Geller et al., 2004; Geller et al., 2005). Geller (2004) examined the relationship between clinical outcome and motivation to change in 64 eating disordered clients who were assessed and recommended for treatment in a residential setting. Participants’ lack of motivation to change their restricting behaviours (as measured by the RMI) was a consistent predictor of short term clinical outcome (Geller et al., 2004).

The psychometric properties of the RMI were further examined in a sample of 65 adolescents (aged 12 years to 18 years) who were diagnosed with an eating disorder (Geller et al., 2008). The results of this study were comparable to previous research conducted with adult samples (Geller, Cockell et al., 2001), suggesting that the RMI may be a suitable tool for measuring motivation to change in both adult and adolescent clients.

A recent German study conducted by von Wietersheim and Hoffmann (2011) used 44 anorexic inpatient to compare different methods of measuring readiness to
change. The data derived from the ANSOCQ was found to correlate with that of the RMI to a moderate, high degree. Wietersheim and Hoffmann concluded that ambivalence is more detectable when assessed via the RMI. Furthermore, the RMI also correlated higher than the ANSOCQ, when compared to previously obtained EDI-2 and clinical data.

It has been argued that interview measures are more appropriate than self-report questionnaires for accurately assessing the complex behaviours and cognitions which are prominent in anorexic clients (Geller et al., 2004). Furthermore, the difficulty of clearly identifying and articulating complex experiences and cognitions may make self-report questionnaires unsuitable to measuring the construct of readiness to change in an anorexic population (Geller, Cockell et al., 2001; Geller & Drab, 1999). However, factors such as time requirements and the financial expense of an interview method of stage assessment need to be evaluated prior to determining the applicability of this measurement tool to clients diagnosed with eating disorders.

4.4 Stage stability

According to the TTM, individuals who are in either the pre-contemplation or maintenance stage do not have the intention to change their behaviour, nor are they actively undertaking behavioural change. In contrast, during the central stages of contemplation, preparation and action, change is being considered or already implemented. However, researchers (e.g., De Nooijer, Van Assema, De Vet & Brug, 2005; De Vet et al., 2005; Hughes et al., 2005) have questioned the stability of the stages of change proposed by the TTM.

Although to date, very few studies have examined the stability of stage of change in eating disordered populations, recent researchers in other fields have focused on transitions between stages. De Nooijer et al. (2005) assessed the stability of stage of change across three different nutrition behaviours (fat, fruit and vegetable intake) among 739 adults who were unexposed to planned interventions. Consistent with the TTM, individuals assigned to either the maintenance or pre-contemplation stage demonstrated higher stability between baseline and follow-up measures (either three months or one year) than any of the other stages of change. In addition,
participants in contemplation, preparation and action stages reported frequent stage transitions in the absence of any interventions (De Vet et al., 2005).

De Vet et al. (2005) used this same sample to examine the stability of stage of change for fruit consumption (De Vet et al., 2005). Consistent with De Noojier et al. (2005), pre-contemplation and maintenance were the most stable stages of change (stability rate ranged from 74% to 90%). In addition, the preparation stage was found to be the least stable (stability rate ranged from 36% to 55%), with frequent transitions between different stages occurring over a short time period (De Vet et al., 2005). These results indicate that individuals may be moving rapidly between stages, this transition therefore questions the suitability of tailored stage-matched treatment interventions which target clients in specific stages.

4.5 Treatment matched interventions

Mahon (2000) has suggested that between 20% and 50% of all anorexic clients will prematurely drop-out within the first year of treatment. Furthermore, of those that do complete treatment, approximately 30% will relapse after treatment has ceased (Strober, Freeman & Morrell, 1997a; Woodside, Kohn & Kerr, 1998). If there is a ‘mismatch’ between the aims of the treatment program and the client’s current readiness for change, resistance will commonly occur (Touyz et al., 2003). Therefore, the implementation of treatment programs which aim to assess motivation and match the treatment provided to individual clients’ stage of change is being increasingly endorsed. Given that drop-out and relapse rates are so high amongst eating disordered clients, the ability to determine clients’ degree of motivation to change would allow clinicians to tailor treatment approaches to the current level of readiness for individual clients. Moreover, classification of individuals into discrete stages of readiness to change enables clinicians to tailor interventions which are focused specifically to that stage, likely resulting in more consistent and efficient treatment delivery (Geller et al., 2004). Theoretically, clients should be expected to benefit greater from a treatment program that better addresses their individual needs and requirements (Dijkstra, Conijn & De Vries, 2006).
Although there is an absence of empirical research relating to the benefits and limitations of treatment matching in eating disordered populations, Dijkstra et al. (2006) investigated the effectiveness of stage-matched interventions in a sample of 481 smokers. At two month follow-up, the matched interventions were significantly more effective in facilitating forward stage progression than the mismatched interventions, suggesting that stage matching is beneficial in advancing behaviour change.

4.6 Cognitive and behavioural change

Attempting to assess stage of change in individuals diagnosed with eating disorders is further complicated by the multi-dimensional nature of the disorders. Because of this, successful treatment of most eating disorders requires elements of both cognitive and behavioural change. For example, successfully changing anorexic symptomatology requires the client to change behavioural aspects such as caloric restriction and extreme exercise routines, in addition to cognitive elements of the disorder such as extreme fear of weight gain and an overemphasis on weight and shape as a means of defining one’s worth. The extent to which cognitive shifts precede, follow or occur concurrently with behavioural change is of both theoretical and clinical interest (Geller et al., 2005). Understanding the relationship between cognitive and behavioural change during recovery is crucial in developing optimal models of treatment. However, in the area of eating disorders, little is known regarding the optimum time to introduce behavioural change into treatment protocols (Geller et al., 2005).

Very few studies have investigated the relationship between domain specific motivation and clinical outcome in individuals diagnosed with eating disorders (Geller et al., 2004). However, previous research which has used the Readiness and Motivation Interview (RMI) to assess motivation to change in anorexic clients supports the assertion that readiness and motivation to change are not consistent across the various eating disorder symptom domains (Geller, Cockell et al., 2001; Geller et al., 2005), and that motivational changes in these domains occur at differential rates over time (Geller et al., 2005).
Symptom-specific readiness to change was evaluated in a sample of women commencing outpatient treatment at a Canadian eating disorder clinic; participants' motivation differed significantly depending on the symptom domain being addressed (Geller, Williams et al., 2001). Specifically, overall readiness to change behavioural domains, such as restriction and compensatory strategies, was, at the commencement of the program, significantly lower than readiness to change cognitive features, such as overvalued views regarding weight and shape and abnormal fear of weight gain (Geller, Cockell et al.). However, all participants made considerable attempts to alter the behavioural symptoms of their disorder during treatment.

Shifts in global and symptom specific readiness for change were also examined in 42 clients attending a 15 week intensive residential eating disorder treatment program (Geller et al., 2005). In accordance with the earlier conclusions drawn by Geller, Cockell et al. (2001), overall readiness for change scores (as measured by the RMI) in subscale scores differed significantly according to symptom domain. Motivation to change behavioural symptoms increased early in the treatment program, prior to increases in readiness to change cognitive symptoms. Further analysis revealed that readiness to change behavioural symptoms, such as restriction and compensatory behaviours, significantly increased over the first seven weeks of treatment, with no significant motivational changes occurring between weeks seven and 15. However, readiness to change for the cognitive domains increased more gradually over the course of treatment; motivation was significantly higher at the conclusion of the program compared to the commencement, although scores obtained after seven weeks did not differ significantly from scores at either the initial or final assessments (Geller et al., 2005).

The finding that behavioural change occurred early in the treatment program is not unusual given that for the duration of treatment, program guidelines restricted behavioural symptoms (e.g., dietary restraint, compensatory strategies and excessive exercise). Although the behavioural component of the eating disorder appeared to have improved post-treatment, the majority of participants continued to report varying degrees of cognitive symptoms (Geller et al., 2005).
The above findings strongly support the assertion that motivation to change behavioural symptoms occurs independently to readiness to change cognitive symptoms. In addition, Geller, Cockell et al. (2001) and Geller et al. (2005) suggest that, although motivation to change behavioural symptoms is lower at the commencement of treatment, eating disorder clients predominantly develop readiness to change their behavioural symptoms (i.e., dietary restraint, compensatory strategies) before their cognitive symptoms (i.e., perfectionism, excessive fear of weight gain etc.). However, the conclusions formed by Geller, Cockell et al. (2001) and Geller et al. (2005) should be regarded with caution. Firstly, it is possible that the differences occurred due to the personal nature of cognitive symptoms; cognitive changes may not have been targeted as strongly in the treatment approach. In addition, unlike the behavioural symptom domains, cognitions are private and can not be easily monitored or mandated by a treatment program. Therefore, readiness to change cognitive symptoms can only occur when the client has decided for themselves that change is both possible (i.e., increased self-efficacy) and desirable (i.e., pros of change begin to outweigh cons). Alternatively, the slower rate of change exhibited in the cognitive symptom domains may simply be a result of the beneficial effects of normalised eating on cognitive functioning, suggesting that nutritional stabilisation may be required before cognitive shifts can successfully occur.

4.7 Predictive ability of the TTM

The identification and acknowledgment of factors predictive of treatment drop-out and relapse, in addition to other clinical indicators of engagement and symptom change, would enhance both treatment planning and success (Geller et al., 2004). Given the high rate of ambivalence towards treatment amongst eating disorder clients, recent research has examined the relationship between readiness and motivation scores and clinical outcome (Amellier et al., 2005; Geller, Cockell et al., 2001; Geller et al., 2004; Pike, 1998; Rodriguez-Cano & Beato-Fernandez, 2005; Treasure et al., 1999; Wolk & Devlin, 2001).
Ametller et al. (2005) investigated whether readiness to change was a reliable predictor of hospital admission in a sample of 70 anorexic clients receiving treatment as outpatients at a specialist eating disorder unit. Ametller et al. found that clients who required hospitalisation after the conclusion of the program reported lower ANSOCQ scores at first evaluation.

Earlier research conducted by Geller, Cockell et al. (2001) also investigated the predictive ability of the TTM in a sample of 99 eating disorder clients entering a outpatient treatment facility. RMI scores reliably predicted anticipated difficulty regarding recovery activities, completion of recovery activities, decision to commence an intensive inpatient symptom reduction program, and premature drop-out of the current treatment program.

Geller et al. (2004) examined the contribution of motivation and readiness to change (using the RMI) in predicting clinical outcome in a sample of 64 eating disordered clients entering a residential treatment program. Lack of motivation to change dietary restriction at the commencement of the program was the most influential predictor of short-term clinical outcome. In addition, Geller et al. (2004) further concluded that clients reporting higher restriction pre-contemplation subscale scores and higher compensatory pre-contemplation subscale scores were less inclined to engage in treatment. As expected, participants who prematurely terminated treatment had higher pre-contemplation scores, and therefore less readiness to change, at the commencement of treatment than those who successfully completed all components of the treatment program (Geller et al., 2004). Those individuals who voluntarily chose to enter the program reported higher global action scores and lower global pre-contemplation scores than those who declined treatment (Geller et al., 2004). The pre-contemplation subscale was shown to be the most consistent predictor of clinical outcome at the conclusion of treatment, and the restriction domain was shown to be the most reliable in predicting both behavioural and cognitive symptom changes (Geller et al., 2004).

Rodriguez-Cano and Beato-Fernandez (2005) examined the attitudes towards change in 67 eating disordered outpatients, using the Attitudes Towards Change in Eating Disorders questionnaire (ACTA), a 59 item self-report questionnaire.
developed from staging algorithms previously applied to eating disorder clients. Maintenance stage membership was protective for eating psychopathology (as measured by the Eating Attitudes Test 40 – EAT-40 and the Eating Disorder Inventory 2 – EDI-2), while the action stage predicted subsequent weight changes and pre-contemplation was predictive of very little change.

Therefore, motivation to change, as assessed by various stage measures, accurately predicts clinical outcome in eating disorder clients. This is consistent with previous research, indicating that individual scores on the ANSOCQ can successfully predict weight gain in anorexic clients receiving inpatient treatment (Rieger et al., 2000), while individual RMI scores reliably predict treatment commencement and adherence (Geller, Cockell et al., 2001).

Despite these conclusions, the predictive utility of the TTM has been strongly criticised. Wilson and Schlam (2004) state that the TTM does not appear to reliably predict outcome in the treatment of clients with substance abuse problems. A recent study by Blanchard et al. (2003) investigated the predictive validity of motivational subtypes and continuous measures of readiness for change in a sample of 252 individuals receiving treatment for substance abuse. Neither stage of change subtypes (pre-contemplation versus contemplation/action etc.) nor continuous measures of readiness to change, predicted treatment outcome. Despite these findings, other studies (e.g., Beitman et al., 1994; Scott & Wolfe, 2003) have indicated that clients in the pre-contemplation stage show the highest rate of dropout and the least degree of behaviour change at the conclusion of treatment. However, Wilson and Schlam argue that the practical relevance of these findings must be questioned for clients voluntarily seeking treatment. In addition, the added predictive value of the TTM should be determined in comparison with other, well established, simpler predictors of outcome such as demographic information and previous history.

Prospective research regarding the predictive value of the TTM is relatively sparse, especially in the area of eating disorders (Wilson & Schlam, 2004). Of those studies which have examined the model’s predictive ability, the majority have not used an eating disordered sample, and have been cross-sectional in design.
(Blanchard et al., 2003; Weinstein et al., 1998). Therefore, further longitudinal research is required in order to establish the predictive validity of the TTM in regard to eating disorder clients.

4.8 Summary

As ambivalence toward treatment is a fundamental feature of anorexia, recent research has focused on the applicability of the TTM to anorexic clients. The above research suggests that the TTM can be effectively applied to clients with anorexia. Furthermore, as ambivalence is a key feature of anorexia, the TTM would prove useful in assessing a client’s readiness to recover, and in implementing appropriate interventions. However, as eating disorders comprise multiple cognitive and behavioural components, the use of reliable, multidimensional stage of change assessments need to be further investigated.

4.9 Implications for this thesis

Ambivalence regarding recovery is a fundamental feature of clients diagnosed with anorexia. This chapter has argued that the TTM can be effectively applied to gain a conceptual understanding of the complicated process of behaviour change in this population. However, two fundamental limitations of the TTM which are specific to changing anorexic symptomatology have been acknowledged. Firstly, anorexic symptoms are multidimensional in nature, consisting of both cognitive and behavioural elements. As anorexia is a complex, multifaceted illness, reliable methods of accurately determining readiness for change in this population need to be further investigated. The ability of currently available single symptom assessments (i.e., those developed for alcohol or substance abuse clients) to fully capture the multidimensional nature of anorexic symptomatology is questionable (Geller & Drab, 1999).

Furthermore, evaluating readiness to change across different anorexic symptoms would enable clinicians to determine which elements of the disorder motivation to change may be particularly low. This information would also enable
clinicians to direct their treatment approaches to target those symptoms where motivation is particularly deficient (Rieger & Touyz, 2006). However, further research is required to determine the degree of variability in motivation across different anorexic symptomatology.

In addition to variability across different anorexic symptom dimensions, a second important issue to consider is the stability of motivation over time. Critics (Davidson, 1998; Martin, Velicer, & Fava, 1996; Sutton, 1996, 2001; Wilson & Schlam, 2004) have postulated that the construct of readiness to change can be more accurately conceptualised as a continuous process, rather than a stage model which imposes artificial categories and oversimplifies the complex nature of behavioural change.

Stage models, such as the TTM, provide insight into the process of health behaviour change, however, if these models are to be theoretically and practically beneficial, readiness to change needs to be a relatively stable construct. Even if a client’s readiness for change is assessed with a multidimensional measure, there is little to guarantee that the client will remain in this stage when undertaking subsequent treatment. Therefore, further research is needed in order to establish how stable the TTM constructs are over time.

Given the abovementioned limitations, the following chapter will describe the first of three studies. Qualitative interviews and self-report questionnaires were used to evaluate both the stability of the TTM related constructs over time, in addition to the variability of these constructs across a variety of distinct but related symptom dimensions in a sample of anorexic clients.
CHAPTER FIVE

STUDY ONE: STABILITY OF READINESS TO RECOVER IN ANOREXIA NERVOSA CLIENTS: INDIVIDUAL PERSPECTIVES

5.1 Rationale

Due to anorexic clients’ high degree of ambivalence regarding change, recent research has focused on conceptualising the process of behaviour change and recovery in this population. The TTM has been effectively applied to individuals diagnosed with anorexia to assess clients’ readiness to recover, and to aid in the implementation of appropriate, stage matched interventions.

Motivation to change in anorexic clients is a multifactorial construct, with level of motivation fluctuating across differing anorexic symptoms (Vitousek et al., 1998). Eating disorders, such as anorexia, are distinct from other problem behaviours in that they consist of a range of symptoms, including both behavioural symptoms (e.g., restriction, bingeing, purging) and cognitive/affective symptoms (e.g., perfectionism, intense fear of weight gain). In addition, clients may be willing to change some symptoms, whilst still denying or valuing other symptoms. Therefore, assessing readiness to change with a global measure may be inappropriate in an eating disorder population (Geller & Drab, 1999).

However, to date there are few published studies which investigate this issue. Rieger and Touyz (2006) conducted factor analysis on the motivation to change scores (using the ANSOCQ) in 115 Australian anorexic inpatients at the point of hospital admission. The results of this study suggested that motivation in this population consists of three factors: Weight Gain (involving items relating to gaining weight, particularly a normal BMI); Eating, Shape and Weight concerns (body image and eating concerns); and Ego-Alien Aspects of Change (the subjectively distressing aspects of anorexic symptomatology; Rieger & Touyz, 2006). These findings would indicate that, contrary to most theorists considering readiness to change as a general construct, motivation in this population may best be conceptualised as multifactorial, fluctuating across different anorexia related symptom dimensions.
This proposal has both significant clinical and theoretical implications. If readiness to change anorexic symptomatology is more accurately conceptualised as a multifactorial construct, the current global assessment approaches may obscure the pattern of development of readiness to change and self-efficacy, being unable to indicate which elements of the anorexic symptomatology clients are prepared to change.

Although multidimensional readiness to change assessments take different elements of anorexic symptomatology into consideration, they do not allow for instability over time. Therefore, a further issue relevant to assessing motivation in anorexic clients is the stability of readiness to change, self-efficacy and decisional balance over time. Determining the stability of readiness to change and self-efficacy is imperative to understanding clients’ motivation to engage in treatment. Readiness to change may be better conceptualised as a dynamic, constantly fluctuating internal state (Littell & Girvin, 2002). This postulation would suggest that individual stage status may change dramatically over very brief periods of time, therefore questioning the adequacy of questionnaires which are designed to assess readiness to change at a single time point.

It has been argued that if readiness to change can be reliably measured with a continuous scale format, the use of stage allocations will result in a substantial loss of essential information (Martin et al., 1996). Continuous measures of readiness to change, self-efficacy and decisional balance are yet to be fully examined (Blanchard et al., 2003). Although research examining the applicability of a continuous readiness for change scoring method in anorexic clients is lacking, several studies have applied continuous scale measures with substance abuse clients. In an attempt to increase the clinical utility of readiness to change measures, Blanchard et al. (2003) assessed the concurrent and predictive validity of motivational subtypes (stages) in comparison to a continuous measure of readiness for change using the University of Rhode Island Change Assessment Scale in 252 individuals seeking treatment for a substance abuse problem. The continuous method of determining readiness for change exhibited as good or better concurrent validity than did the
allocation into motivational subtypes (Blanchard et al., 2003). However, neither method predicted treatment outcome (Blanchard et al., 2003).

Budd and Rollnick (1996) investigated stage of change in 174 alcohol addicted males and concluded that readiness to change is more reliably assessed as a continuous measure, rather than the allocation of patients into a discrete stage. Moreover, this continuous measure of readiness for change was correlated with both intention to reduce alcohol consumption and reported reduction in intake at the six month follow-up.

Forsberg, Ekman, Halldin and Rönberg (2004) investigated the reliability of three different methods of assessing readiness for change in a sample of 165 patients screened at a Swedish hospital emergency ward for risky alcohol consumption. The stage of change scoring methods used included a quick method, a refined method and a continuous scale (Forsberg et al., 2004). The continuous scale demonstrated higher construct validity than the quick method of assessment and could, therefore, be deemed a viable alternative to the existing method of assigning clients into one discrete stage of change (Forsberg et al., 2004).

Hughes, Keely, Fagerstrom and Callas (2005) evaluated the stability of intention to quit smoking in a sample of 115 US and Swedish smokers. The findings indicated that 12-17% of smokers changed their intentions over a seven day period, 15-25% changed over 14 days, and 17-34% changed over a 30 day time period, indicating that intentions to quit smoking often spontaneously change over short periods of time (Hughes et al., 2005). These findings question whether the constructs of readiness to change and self-efficacy are also unstable in anorexic clients over moderate periods of time, and, therefore, further empirical investigation is required.

The most common currently used readiness to change measurement tools demonstrate little evidence of concordance due to incompatible stage definitions and the fact they are tapping into theoretically different constructs (Fairburn & Cooper, 1993; Littell & Girvin, 2002). Without consistency amongst these techniques it is unclear what the stages actually represent and which type of assessment is the most valid (Sutton, 1996). Clinical interviews are generally regarded as the most reliable method of assessing clients diagnosed with anorexia (Wolk, Loeb & Walsh, 2005).
However, brief, inexpensive self-report questionnaires may effectively substitute for time-consuming and costly interviews (Rieger et al., 2000).

Incongruency in different assessment techniques calls into question the validity of the information which the measures identify. In addition, if different assessment methods yield inconsistent outcomes, the objectivity of the data obtained by these techniques becomes questionable. To date, the correspondence between the ANSOCQ and readiness to change interviews has yet to be empirically investigated.

### 5.1.1 Aims

The overall aim of Study One was to assess the variability and stability of the TTM constructs of readiness to change, self-efficacy and decisional balance for differing dimensions of anorexic symptomatology. The study also aimed to determine the degree of consistency between the two key methods of assessing readiness for change; self-report questionnaires and interview.

The specific aims of the study were to:

1. Determine if readiness for change, self-efficacy and decisional balance varied across six distinct, but related dimensions of anorexic symptomatology; weight gain, body dissatisfaction, avoidance of specific foods, skipping meals, weight control methods and cognitive/emotional issues;
2. Investigate the stability over time of readiness to change, decisional balance and self-efficacy across these six dimensions;
3. Examine differences in the processes of change used across the various stages of change; and
4. Compare the consistency of two different assessment methods (theory derived self-report questionnaires and a qualitative interview) for determining readiness for change, decisional balance and self-efficacy in clients with anorexia.
5.1.2 Hypotheses

Based upon earlier research findings (Rieger et al., 2002) it was hypothesised that participants:

1) Levels of readiness for change and self-efficacy will be higher in regard to cognitive/affective issues and amount of food consumed and lower with respect to weight gain and weight control measures;

2) Readiness for change, self-efficacy and decisional balance will be unstable and fluctuate over short periods (e.g., weekly) for those in the central stages of contemplation, preparation and action; and remain relatively stable for participants in the pre-contemplation or maintenance stages of change; and

3) Readiness to change and self-efficacy scores will demonstrate incongruency when assessed via the qualitative interviews and self-report measures. Specifically, consistent with the earlier findings of Wolk et al., (2005) it is expected that participants will report greater readiness to change and self-efficacy when assessed with the self-report measures.

In addition, consistent with previous research (Blake et al. 1997; Ward et al., 1996), it is hypothesised that participants would report using predominantly:

4) Cognitive/affective processes in the early, pre-action stages of change (pre-contemplation, contemplation and preparation); and

5) Behavioural processes in the later stages of action and maintenance.

5.2 Method

5.2.1 Quantitative and qualitative research designs

Quantitative and qualitative research methodologies represent two distinct approaches to conducting research in the social sciences, based on differing epistemological and ontological premises. The defining characteristics of each
method will be briefly described next, followed by a rationale for the multi-method approach used in the current study.

The quantitative method considers research from a positivist standpoint (Bryman, 2004), with social phenomena viewed as having an external objective reality which can be examined in a value-free manner through the testing of pre-determined hypotheses. In contrast, the qualitative approach to research is derived from an anthropological paradigm and aims to understand how different individuals interpret their world (Bryman, 2004). Qualitative data are analysed using techniques which explore the data emergent themes, concepts and theories, which lead to rich, deep, detailed information regarding the phenomenon of interest.

Both quantitative and qualitative methodologies have strengths and weaknesses. Although quantitative methods are generally easy and fast to administer, they may not provide the depth of information derived from a qualitative method. Therefore, the combination of these two approaches compliment and counterbalance the strengths and weaknesses of the other method. Adopting a mixed-method approach, which uses both quantitative and qualitative approaches, can overcome the limitations of using a single method.

In the current study, individual semi-structured interviews were used to qualitatively ascertain each participant’s perspective regarding their current readiness for change, self-efficacy and decisional balance. In addition, the qualitative interviews provided information regarding the variability of each participant’s stage of change, self-efficacy and decisional balance across the six various symptom dimensions being investigated, whilst it also enabled the stability of these TTM constructs to be evaluated.

To date, the most frequently used methods for assessing readiness for change in eating disordered populations are self-report questionnaires and semi-structured interviews. Each method of determining readiness to change has advantages and limitations. Self-report questionnaires are considered to be fast and inexpensive, whilst still being relatively easy to administer and interpret. However, this method has received criticism for its simplistic nature which may not provide the sensitivity to capture the complex nature of anorexic symptomatology (Sullivan & Terris,
In addition, self-report questionnaires may be problematic in regard to allocating participants into only one discrete stage. A semi-structured interview approach, such as the Readiness and Motivation Interview (RMI), offers clinicians valid information and an increased understanding of the issues facing each individual client (Sullivan & Terris, 2001). Despite the benefits of an interview measure, this approach can be lengthy, time consuming and financially expensive.

Quantitative, theory derived self-report questionnaires were used to numerically identify each participant's current stage of change, self-efficacy and decisional balance. Quantitative scores derived from the self-report questionnaires enabled participants to be allocated into discrete stages of change based on the theory proposed by the TTM. The degree of congruency between participants' verbal perceptions regarding their current readiness for change, self-efficacy and decisional balance (as measured by the semi-structured interviews) and their responses to the self-report questionnaires was established. The use of both methods (qualitative interviews and quantitative questionnaires) of measuring the TTM constructs enabled comparisons between the two types of assessments to be drawn.

5.2.2 Sample

This sample consisted of 15 participants, 14 females and one male, aged 18 to 58 years \((M = 29.27, SD = 10.51)\) who reported being currently diagnosed with or recovering from anorexia. The mean BMI (weight in kg / height in m²) score reported by these participants was 18.13, \((SD = 3.48, \text{Range} = 10.94 - 22.49)\) and the mean length of illness was 11.5 years \((SD = 10.68, \text{Range} = 1.50 - 43.00\) years).

Participants were recruited from numerous eating disorder support groups and associations within Victoria. In addition, recruitment was aided by the publication of several newspaper and newsletter advertisements (See Appendix A) and utilization of private practitioners (such as dieticians, psychologists and medical practitioners).
5.2.3 Materials

In addition to a brief demographics questionnaire, participants completed three theory derived self-report questionnaires (See Appendix B).

5.2.3.1 Anorexia Nervosa Stage of Change Questionnaire (ANSOQC)

The participants' current stage of change was measured using the ANSOQC, developed to assess clients' readiness to recover from anorexia (Rieger et al., 2002). The ANSOQC is a 20-item self-report questionnaire assessing a broad range of anorexic symptomatology including aspects of eating behaviours, body shape and weight, emotional difficulties, weight control strategies, problematic personality characteristics and interpersonal difficulties (Rieger et al., 2000). Item structure on the ANSOQC is based on the TTM, with each item containing five statements representing the stages of pre-contemplation, contemplation, preparation, action and maintenance, respectively (Rieger et al., 2002). An example of a pre-contemplation stage item is 'As far as I am concerned, I do not need to gain weight' and an example of a maintenance stage item is 'I am working to maintain the weight gains I have made'. For each item, the participant is asked to select the statement most accurately describing their current attitude or behaviour regarding the symptom. Scores on each item range from 1 (for the pre-contemplation stage response) to 5 (for the maintenance stage response) with a total score ranging from 20 to 100. Specific stage allocation is determined by dividing the total score by the total number of items. The ANSOQC demonstrates very good internal consistency (.90) and good test-retest reliability over a one-week period (.89; Rieger et al., 2002).

5.2.3.2 Rieger Self-Efficacy Scale

The Rieger Self-Efficacy Scale (RSES) was used to measure participants' perceived self-efficacy. This scale is a 20 item self-report questionnaire designed by Rieger et al. (2002) to assess self-efficacy in clients diagnosed with anorexia. This scale is based on original ANSOQC items with the wording of these items modified to 'can do' statements. For example, the first item on the ANSOQC was modified to
read ‘I can gain weight’. For each of the 20 items, individuals rate the strength of their belief that they can successfully complete the given task on a scale of 0 (not at all true) to 10 (very confident), with total scores ranging from 0 to 200. There is currently no data available with respect to this scale’s psychometric properties.

5.2.3.3 Anorexia Nervosa Decisional Balance Scale

The Anorexia Nervosa Decisional Balance Scale (ANDBS) is designed to assess both the pros (advantages) and cons (disadvantages) of anorexia and is used to understand the shifts that occur as motivation to change develops in individuals diagnosed with anorexia (Cockell et al., 2003). This measure is a 30 item (15 pro, 15 con) self-report questionnaire assessing perceived advantages and disadvantages of anorexia on a 5-point Likert scale from 1 (not at all true) to 5 (completely true).

The ANDBS consists of three distinct subscales; two pro factors (Functional Avoidance and Benefits) and one con factor (Burdens). The Functional Avoidance subscale consists of seven items reflecting ways of avoiding negative emotions and difficult challenges (e.g. ‘Anorexia allows me to avoid making decisions’). The Benefits subscale entails eight items which assess valued ego-syntonic symptoms of anorexia, such as self-control and thinness (e.g. ‘Anorexia gives me self-control’). In addition, the Burdens subscale highlights negative consequences such as social isolation and negative affect (e.g. ‘It bothers me that people monitor what I eat’).

Scoring of the ANDBS involves summing the individual item scores which comprise each of the three subscales. In addition, a global pro score can be obtained by adding both the Benefits and the Functional Avoidance subscale scores. High scores on the global pro scale indicate a high number of perceived benefits regarding the eating disorder. In contrast, high scores on the con scale indicate a high number of perceived disadvantages associated with the eating disorder.

The ANDBS demonstrates good internal consistency (.88). Test-retest reliability over an eight-day period ranged from .64 (Burdens) to .71 (Benefits), providing support for the stability of this measure (Cockell et al., 2003).
5.2.2.4 Demographics Questionnaire

Participants were asked to complete a general information sheet concerning demographic information such as age and height. In addition, current weight was required to enable the individual’s BMI to be calculated. Participants were asked to self-report their weight. Finally, participants were asked to provide information regarding the duration of their illness and their educational background.

5.2.3.5 Interview

In order to assess participants’ personal views regarding their experiences with anorexia, a semi-structured interview guide was constructed (See Appendix B). This guide divided the interview into two sections; the first section examining readiness for change, self-efficacy and decisional balance, and the second identifying which processes of change the participant was currently undertaking.

After lengthy consultation with a senior eating disorder clinician, six major dimensions of anorexic symptomatology which have featured predominantly in recent literature were identified as being distinguishable and crucial during the course of recovery. These dimensions were: willingness to gain weight, body dissatisfaction, avoidance of specific foods, skipping meals, weight control methods (both extreme fasting and compensatory measures) and cognitive/emotional issues. Open-ended questions were then developed to assess the constructs of readiness for change, self-efficacy and decisional balance for each dimension (e.g., Can you tell me how ready you feel in regard to increasing your weight?).

The style of the interview conducted was one of a semi-structured form with the interview schedule used in a flexible manner, to enable the exploration of new areas which the participants may have considered relevant. The qualitative interview took between one and three hours for each participant to complete, with the average duration being approximately two hours. In addition, participants were invited to briefly intermit the interview after the first hour.
5.2.4 Procedure

Initially, ethics approval for this study was sought from Deakin University - Human Research Ethics Committee (DU-HREC). Once ethics approval was received (Appendix C), recruitment of participants occurred via various eating disorder support groups and associations within Victoria. These agencies were contacted by letter and informed of the project. An introductory information letter (Appendix D), a copy of the plain language statements (Appendix E) and an institution/organisation consent form (Appendix F) were then provided to agencies which expressed interest in the study.

The organisations were asked to distribute these documents to potential participants and advise them to carefully read the plain language statement. If they were interested in being involved in the project, potential participants were asked to complete and return the appropriate consent form in a self-addressed, reply paid envelope. They were then contacted by the researcher by either telephone, email or post to arrange a suitable time to complete both the self-report questionnaires and the qualitative semi-structured interview. The recruitment of participants was undertaken until theme saturation became apparent in the qualitative data obtained.

In order to reduce the impact of priming effects, approximately half of the participants completed the self-report questionnaires prior to the commencement of the personal interview, whilst the remaining half completed the questionnaires after the interview was conducted. Both the interviews and the questionnaires were completed in a single session, on the same day, in a safe environment which ensured privacy. Depending on the participant’s situation, the interview and the questionnaire set was either completed at the appropriate agency/association or in a private room at Deakin University. Before commencing the interview, the researcher confirmed that the participant had thoroughly read through the plain language statement and previously returned the completed consent form (including the completed parental consent form if applicable).

Each interview was conducted by the researcher, who stressed their independence from participants’ treatment providers. The interviews lasted between approximately 60 and 180 minutes and were audio taped and transcribed verbatim.
All participants were assured of the anonymity and all identifying information was removed during the transcribing process.

Interview transcripts were then analysed using a template analysis design. The template used was derived from the theoretical framework of the TTM. Each column of the template was assigned one of the six symptomatic dimensions being investigated, while each row was divided into individual participants in increasing order of readiness to change (i.e., all pre-contemplators listed first). Participants’ comments regarding readiness for change, self-efficacy and decisional balance across each of the symptom dimensions were extracted and categorised as either high, moderate or low. These comments where then placed in the template to allow ease of interpretation. The validity of the qualitative analyses was checked by another researcher who was independent of the current study.

5.3 Results

5.3.1 Plan of analysis

The results from both the ANSOCQ and RSES were used to provide an indication of each participant’s readiness to change and self-efficacy scores respectively (see Table 5.1). Furthermore, each participant’s global score derived from the ANSOCQ was further used to assign them to a discrete stage of change as specified by the TTM. Participants’ total ANDBS score was calculated to determine their global perception of decisional balance. In addition, the number of pros and cons related to each of the three subscales were also calculated. Finally, the qualitative interview data for each participant were analysed using a template analysis design (Crabtree & Miller, 1999) to extract major themes relating to readiness to change, self-efficacy, and decision balance across each of the six symptom dimensions.

Table 5.1 presents the means and standard deviations for the ANSOCQ and RSES. In addition, subscale scores derived from the ANDBS are also presented. The range (lowest and highest scores) for each scale and subscale are also included.
Table 5.1

*Means and Standard Deviations for Major TTM Constructs (N=15)*

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage of Change</td>
<td>55.94</td>
<td>24.76</td>
<td>23 - 90</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>84.40</td>
<td>58.50</td>
<td>7 - 191</td>
</tr>
<tr>
<td>Decisional Balance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pros</td>
<td>43.40</td>
<td>14.30</td>
<td>7 - 66</td>
</tr>
<tr>
<td>Functional Avoidance</td>
<td>17.27</td>
<td>7.40</td>
<td>3 - 27</td>
</tr>
<tr>
<td>Benefits</td>
<td>26.13</td>
<td>10.53</td>
<td>4 - 41</td>
</tr>
<tr>
<td>Burdens</td>
<td>55.27</td>
<td>14.96</td>
<td>20 - 73</td>
</tr>
</tbody>
</table>

Participants were assigned to one of the five stages of the TTM based on their ANSOCQ score. Four participants were allocated into the pre-contemplation stage of change, two participants were considered to be in the contemplation stage, whilst three participants were assigned to preparation, four participants endorsed items representative of the action stage and two participants were allocated into the maintenance stage.

5.3.2 Stage of Change

5.3.2.1 Readiness for Change across Symptom Dimensions (Individual)

Figure 5.1 represents the number of participants who reported being ready for change in each of the six dimensions. These interpretations were based on the analysis of relevant comments which participants made during the personal interviews.
Figure 5.1 Individual number of participants reporting being ready for change across each of the various six dimensions.

As shown in Figure 5.1, there was a large degree of variance in participants’ readiness for change across the six symptom dimensions under investigation. Specifically, more participants were prepared to increase the amount of food which they were consuming ($N=7$) and work on any problematic emotional or personality issues which they perceived ($N=8$). In contrast, very few participants were willing to increase the variety of foods which they were eating ($N=3$), increase their weight ($N=4$) or reduce the methods which they were using to control their weight ($N=4$).

For example, Participant 012 (action stage) stated that her readiness to change varied depending on which symptom domain she was addressing. She was actively trying to eat three meals each day and reduce the amount of time she spent checking her weight, however, she was not prepared to gain weight and was continuing to limit the types of foods which she was consuming:

‘... I’m ok about eating regularly. Definitely three meals. Now it feels a little bit normal. I feel like I have come a long way... I’ve been trying so hard to reduce what I do, I’d like to stop checking myself... If I could stay around where I am (weight) I’d be happy... I’m still
weird around foods – the idea of eating hot chips just freaks me out, or eating a croissant or even eating at a dinner party where I don’t know what’s in it.’

In addition, participant 001 (preparation stage) also reported that her readiness for change wasn’t consistent across all of the six dimensions. She felt very unhappy about her weight, indicating that she actually wanted to continue to lose more weight; however, she was prepared to attempt to cease the methods which she was using to control her weight, in addition to reducing the strict standards which she used to evaluate her body:

‘... I still want to lose weight, I feel very unhappy about my weight. I constantly think that I should weigh less. I don’t feel very good about that at the moment... I feel 99% ready to change three of them: the vomiting, the taking drugs and the taking laxatives... The standards are not that important to me. At the moment they’re not really important to me, I try not to do them. I know now that that’s not a good place to be.’

5.3.2.2 Readiness for Change across Symptom Dimensions (Stage)

The transcripts were analysed to assess readiness to change across each of the six symptom dimensions, based on the stage which each participant was allocated via their global ANSOCQ score, as shown in Table 5.2.
Table 5.2

*Readiness for changing each dimension by stage allocation*

<table>
<thead>
<tr>
<th>Stage</th>
<th>Cognitive/Emotional</th>
<th>Amount of Food</th>
<th>Body Evaluation Standards</th>
<th>Weight Control Methods</th>
<th>Weight</th>
<th>Types of Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Contemplation (N=4)</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Contemplation (N=2)</td>
<td>✓</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Preparation (N=3)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Action (N=4)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Maintenance (N=2)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

*Note:* × indicates the participant was not prepared to change, and ✓ indicates the participant was prepared to change.

The degree of readiness to change reported across each dimension varied depending on participants’ current stage of change. Participants in the pre-contemplation stage consistently reported being unprepared to change across all six dimensions. Participants in the stage of contemplation were only prepared to change the cognitive/emotional issues related to anorexia. Participants in both the preparation and action stages reported being prepared for change in regard to their cognitive/emotional issues, the amount of food which they consumed daily and the standards which they used to evaluate their bodies. Finally, participants in the maintenance stage were ready for (or actively working on) change across all of the six dimensions.

5.3.3 Self-Efficacy

5.3.3.1 Self-Efficacy across Symptom Dimensions (Individual)

Figure 5.2 represents the number of participants who reported confidence in regard to their ability to change each of the six symptom dimensions. Analogous to readiness to change, self-efficacy showed variance across each of the six symptom dimensions under investigation. Participants reported a high degree of self-efficacy
regarding their ability to increase the variety of foods which they were consuming, in addition to altering any cognitive/emotional issues which may have been problematic. However, participants reported low self-efficacy in regard to increasing their weight, limiting the methods which they were using to control their weight and also reducing the methods used to evaluate their bodies.

![Symptoms Chart](image)

*Figure 5.2. Self-Efficacy across Symptom Dimensions (Individual).*

Participant 002 (action stage) suggested that she had confidence in her ability to stop using excessive methods to control her weight, although she perceived low confidence in her ability to maintain a normal body weight or consume a variety of foods:

‘I won’t over exercise, hopefully. I don’t think I’ll continue throwing up or using laxatives. And I think there will be days where I won’t have to restrict or anything like that... No (not confident). I’m just waiting for the point where I’m going to relapse because I don’t eat properly now... I don’t think that I’ll ever be OK with my body or able to eat fried food again. You just don’t want to think about eating those foods again.’
Participant 014 (contemplation stage) reported feeling confident that she could successfully increase the amount of food which she was consuming whilst still reporting low self-efficacy regarding her ability to gain weight:

'I don’t think that I would worry so much about the food or snacks or things like that. Yeah, I am (confident). Over time. So I’m fairly confident that over time I’ll be able to succeed (in increasing the amount of food consumed)... At the moment I’m probably not majorly confident in gaining weight.'

5.3.3.2 Self-Efficacy across Symptom Dimensions (Stage)

In addition to individual perceptions, the degree of self-efficacy was also analysed across each of the six symptom dimensions in regard to participant’s stage of change based on their global ANSOCQ score.

Table 5.3

<table>
<thead>
<tr>
<th>Stage</th>
<th>Cognitive/ Amount Emotional of Food Standards</th>
<th>Body Evaluation Standards</th>
<th>Weight</th>
<th>Weight Control Methods</th>
<th>Types of Foods</th>
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<tr>
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<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
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<td>×</td>
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<td>✓</td>
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<td>Action (N=4)</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>Maintenance (N=2)</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Note: × indicates that the participant was not prepared to change, and ✓ indicates that the participant was prepared to change.
As displayed in Table 5.3, the degree of self-efficacy reported by each stage group demonstrated a similar pattern across the six symptom dimensions as that of readiness for change. Participants in the pre-contemplation stage consistently reported having no confidence in their ability to change across all six symptom dimensions. In regard to the stage of contemplation, participants were only confident in their ability to change the cognitive/emotional issues related to anorexia. However, participants in both the preparation and action stages reported being prepared to work on changing their cognitive/emotional issues, the amount of food which they consumed daily and the standards which they used to evaluate their bodies. Finally, participants in the maintenance stage were ready for (or actively working on) change across all of the six dimensions.

5.3.4 Decisional Balance

5.3.4.1 Decisional Balance across Dimensions (Individual)

The qualitative analyses showed that overall, participants perceived specific anorectic symptom dimensions as primarily beneficial, while other symptoms dimensions were viewed predominantly as negative. Comments made during the semi-structured interview revealed that participants perceived more benefits associated with the strict methods which they were using to control their weight, such as excessive exercise, purging and laxative abuse.

For example, Participant 012 (action stage) reported that purging alleviated her fear of weight gain, while restricting provided her with a sense of control:

'It means I can eat crap and not get fat, the throwing up and biz. Some foods I could never eat if I thought that I couldn’t throw them up afterwards. Restricting what I eat makes me feel in control.'

Participant 007 (preparation stage) also perceived several benefits associated with the methods which she was using to control her weight:
'Burns calories, to control weight (exercise). It's not a chore, I get a buzz out of it. It's a great way to control your weight. The exercise does... alleviate anxiety and guilt. I'll get very uptight, if it's a few days that I go without doing it. The anxiety and the guilt and all that, if I do let it go, probably is much worse than trying to maintain.'

In contrast to the benefits reported, participants generally perceived more cons associated with both their health as a consequence of their weight control methods and restricting the types of foods which they were consuming. For example, Participant 002 (action stage) reported that disadvantages which she related to the methods which she was using to control her weight included the shame and the physical consequences of her behaviours:

'You always feel sick, you feel guilt and you have to hide it from everyone. You feel like a freak. It's just bad really... It just makes me thirsty (laxative abuse) and it doesn't get you anywhere.'

Participant 012 (action stage) also perceived several disadvantages which she associated with the health consequences of the weight control methods of purging and excessive exercise:

'Throwing up is just horrible, physically it makes me feel like crap. I get puffy eyes, I get bloodshot eyes, I just feel exhausted, my heart does funny things. I'll drive home if I've had too many drinks because I've thought that I've got to throw up. I put myself at risk. Its anti-social, it's just bad. I sometimes exercise if I've hurt myself, or if I'm exhausted or sick. If I'm away it freaks me out that I'm missing a session.'
Furthermore Participant 005 (contemplation stage) also perceived disadvantages related to excessive exercise:

'I hate walking. I hate all that. It’s monotonous and the fact that it controls your thoughts 90% of your day... disadvantage.'

Participant 014 (contemplation stage) reported health disadvantages which she associated with purging and laxative abuse:

'I really, really dislike throwing up and putting my body through so much trauma... It’s again very isolating as well, and it’s embarrassing still compensating... It’s painful, it’s sickly. It plays havoc with your electrolytes and you can’t go out anywhere – just a horrible way to live your life really.'

5.3.4.2 Decisional Balance across Dimensions (Stage)

Participants assigned to the early, pre-contemplation stage reported perceiving predominantly more benefits which they associated with their eating disorder. These advantages included gaining a sense of control and confidence, and receiving attention for being noticeably underweight.

In regard to perceiving a sense of control as an advantage of anorexia, Participant 006 (pre-contemplation stage) stated:

'It makes you feel confident for the rest of the day and that you’re in control, of that part of your life, anyway.'

In addition, Participant 009 (pre-contemplation stage) reported receiving attention due to her emaciated state as an advantage:

'I get more attention regarding my (emotional) pain and anxiety when I am looking unwell. It was the first time people noticed me.'
Furthermore, participants in the central stages of contemplation, preparation and action reported a combination of both advantages and disadvantages related to their anorexic symptoms. As with participants in the pre-contemplation stage, those in the central stages also identified a sense of control and attention as advantages. In addition, participants in the contemplation, preparation and action stages also perceived additional benefits of their anorexia including psychological advantages, quietening of the ‘anorexic voice’ and alleviation of guilt and anxiety.

Participant 005 (contemplation stage) perceived psychological advantages related to his anorexic symptoms:

'A lot of psychological benefits, feeling good, losing weight, feeling in control, keeping in control. Socially, it’s a benefit. It gives you a high, a buzz.'

Furthermore, Participant 014 (contemplation stage) and Participant 001 (preparation stage) both stated that an advantage to restricting their dietary intake was the reduction in the degree of mental ‘chatter’ of the ‘anorexic voice’:

'The benefit is just the mental chatter... the two voices, is that it’s a lot quieter in your head. There’s no fight over food cause there’s nothing being consumed.' (Participant 014)

'The anorexic voice, which is part of me, is happy and I will have a great day because of that. It (the anorexic voice) motivates me not to eat, to keep continually exercising.' (Participant 001)

In addition, Participant 007 (preparation stage), Participant 002 (action stage) and Participant 012 (action stage) indicated that they perceive their anorexia as an advantage in that it allows them to alleviate guilt and anxiety:
‘The exercise does (alleviate guilt). I’ll get very uptight if I go a few days without doing it (exercising). It’s probably a combination of both (guilt and stress). I’m sure there’s a lot of guilt in there because if I do go a few days in a row where I don’t exercise, then I will think that I can’t eat. The anxiety and the guilt and all that, if I do let it go, probably is much worse than trying to maintain.’ (Participant 007)

‘You don’t feel guilty and you don’t need to throw up (if restricting). I don’t have snacks, because they make me feel really guilty... To me, I’ll evaluate myself and my strength of myself in it. If I eat, I’m a failure. I feel so guilty and I’m a failure. If I’m hungry then everything’s ok... If I don’t do that (exercise) 7 days a week, the guilt, oh my god, I have to do 2 hours the next day.’ (Participant 002)

‘It stops me from being anxious, it’s something to think about. If I’m stressed about something at work, or something else in my personal life, if I think about weight and food, it’s just a lot easier than actually thinking about other things...’ (Participant 012)

In contrast, participants in the central stages of contemplation, preparation and action also reported disadvantages which they associated with their anorexic symptoms. These disadvantages primarily included health complications and social interactions. Participant 005 (contemplation stage), Participant 014 (contemplation stage) and Participant 002 (action stage) all reported perceiving the health consequences related to anorexic behaviour as a disadvantage:

‘Health would be the main disadvantage that I can think of... Health is a big one. I’ve still got a lot of health complications. I haven’t felt good physically for a very long time.’ (Participant 005)
'You get tired and low energy and probably you don’t sleep well, probably get dizzy, you get moody, yeah, short tempered.'

(Participant 014)

'I’ve done a lot to my body that I don’t like, I know my kidneys are stuffed and my pancreas is bad. So I don’t want my bones to be that way.'

(Participant 002)

In addition to the identified health consequences, Participant 014 (contemplation stage), Participant 001 (preparation stage) and Participant 012 (action stage) also perceived the social restrictions of their eating disorder as negative:

'Before you even go out to socialise ‘What am I going to eat?’ ‘What if I enjoy it?’ ‘What are the consequences of it?’ To go out to tea is still a bit hard. I’m frightened of it becoming a really traumatic experience before you even get out the door.'

(Participant 014)

'I always see it as a disadvantage in a social setting, I’m always very anxious about the whole situation... In social settings, going out for dinner or to a friend’s house for dinner or going out with a boy, it’s very hard to explain.’

(Participant 001)

'It pretty much affects my social life and my work life and everything, really. I say no to invitations or I lie and say that I’ve eaten, or I stress about it so much that I don’t have fun. Also my professional life, like, there’s lunches all the time at work with clients, or internally, that I just freak and I don’t think that I’m myself in. I’m trying to talk but I’m more worried about what my meal is going to come out looking like... There’s a lot of bad things about restricting my eating. It means that I can’t go to restaurants that I want to...'

(Participant 012)
Finally, participants allocated to the stage of maintenance reported perceiving notably more cons associated with their eating disorder. These disadvantages included damage to their health, social restriction and emotional distress, such as feelings of guilt. In addition, these participants also reported perceiving less anorexic related pros. For example, Participant 013 (maintenance stage) could not identify any benefits of being significantly underweight; however, she did perceive benefits to maintaining a normal weight:

‘Having boobs and hips. A top looks so much better when you’ve put some weight on. I think it’s nice to feel more sexy about yourself. Your skin is much better. I feel happy and free. Another benefit is now I don’t walk down the street and hear people talking about me...’

Participant 003 (maintenance stage) also identified benefits regarding maintaining a normal weight and eating a healthy diet:

‘I have a life again. I am loud again, I’m fun. I love going out, I’m sociable, like I get along with everyone. I’m just having the time of my life, I’m just having fun. No, there’s nothing bad about my weight at the moment (within the normal weight range).’

5.3.5 Stability of Readiness to Change

5.3.5.1 Stability of Readiness to Change across Dimensions (Individual)

The degree of stability reported regarding readiness for change varied across the six symptom dimensions examined. Participants reported instability in their readiness to change over time in regard to the types of foods which they were consuming and also the methods which they were using to control their weight. For example, Participant 012 (action stage) reported instability in her perceptions
regarding her readiness to cease using extreme methods to control her weight, and in her readiness to increase the variety of foods which she was consuming:

'It (weight control methods) rolls with the day to day changes a bit, depending on how I'm feeling... Yes, same thing, it kind of changes (variety of foods consumed) depending on what's going on in my life. How I eat is impacted by what's going on.'

In contrast, participants reported stability in their readiness to change in regard to their weight and the standards which they were using to evaluate their bodies. For example, Participant 011 (preparation stage) stated that there was stability in the standards which she uses to evaluate her body:

'I think that it's a constant thing that I'm doing (body evaluation standards).'

Participant 006 also reported that the standards which she uses to evaluate her body were stable over time:

'Nothing has changed since the age I was 15. I haven't changed those ideas at all.'

### 5.3.5.2 Stability of Readiness to Change across Dimensions (Stages)

The degree of stability reported regarding participants’ general level of readiness for change also varied across the different stages of change. Participants in either the pre-contemplation or maintenance stages consistently reported stability in their readiness to change. There was almost no fluctuation reported by participants in these stages across any of the six dimensions. For example, Participant 013 (maintenance stage) reported stability regarding her overall readiness for change:
'That's stable. There isn't a day where I don't think that it's nice to be healthy'.

Similarly, Participant 010 (pre-contemplation stage) stated that her perception regarding changing her anorexic behaviours was always constant over time:

'No. Never. It’s fairly stable (methods used to control her weight)... It’s pretty constant. It doesn’t ever go away (thoughts of wanting further weight loss)... All the time, all the time I think about food and weight loss. That doesn’t ever change.'

However, participants in the central stages of contemplation, preparation and action reported daily instability in readiness to change primarily dependant on other factors in their lives at that time. Factors including relationships with family, friends or partners, their mood, and their surroundings directly influenced their anorexic symptoms. Participant 005 (contemplation stage) stated that both his readiness to change and self-efficacy varied on a daily basis:

'My feelings of ever being able to get rid of the eating disorder comes and goes. Like, some days I think “yeah, I’ve come so far I can really see that I’ll be able to ditch this” and then other days I think “my God, I’m just going to have an eating problem for ever and ever”. My attitude towards ever being normal varies quite a lot. It changes like the wind, all the time. It chops and changes all the time.'

Participant 001 (preparation stage) also reported instability in regard to her readiness for change:
‘I’ll go through cycles and I’ll have really good eating for a while and then I’ll go right down bad and lose all the weight again and it will all go around’.

5.3.6 Comparison of data collection methods

5.3.6.1 Readiness for Change

Each participant’s readiness for change was assessed via both a self-report questionnaire (ANSOCQ) and personal interview. Participants who endorsed either the action or maintenance items on the ANSOCQ were deemed to be prepared to change that symptom dimension. In regard to the interview, comments relevant to readiness to change were extracted from the transcripts and classified as indicative of either representing readiness to change or resistance to change. The data collected from these two different measurement techniques were compared and are presented in Figure 5.3.
Figure 5.3. Comparison of data collection methods for Readiness to Change.

As shown in Figure 5.3, there was obvious incongruency between the two methods of assessing readiness to change. In general, more participants reported being prepared to change when using the ANSOCQ than during the personal interview. Although the different measures resulted in similar scores for the dimensions of cognitive/emotional issues, types of food and amount of food consumed, there was large difference in the number of participants who reported being ready to increase their weight and the methods which they were using to control their weight.
<table>
<thead>
<tr>
<th>Participant Number</th>
<th>Global ANSOCQ stage</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Body Evaluation Standards</th>
<th>Food Types</th>
<th>Food Amount</th>
<th>Weight Control Methods</th>
<th>Cognitive/Emotional Issues</th>
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</tbody>
</table>

*Note:* Quantitative data derived from specific ANSOCQ items. Qualitative data derived from interview. PC=Pre-contemplation, C=Contemplation, P=Preparation, A=Action, M=Maintenance stage. NR indicates participant was not ready to change this dimension, R indicates participant was ready to change this dimension, and – indicates that participant did not answer this question or that readiness to change was indeterminable.
Table 5.4 compares individual differences across each of the two measurement techniques. As can be seen in Table 5.4, individuals in the stages of pre-contemplation or maintenance showed consistency in their readiness to change across the two different assessment techniques; the ANSOCQ and the qualitative interviews. However, participants in the central stages of contemplation, preparation or action often reported higher readiness to change when assessed via the ANSOCQ, in comparison to their reports during the qualitative interviews. Where differences occur, quantitative scores seem higher than interview score. For example, participant 12 readiness to gain weight was in the action stage (quant) but reported in the interview that she wasn’t ready to gain weight. However, qualitative (interview) scores are never higher than ANSOCQ scores.

5.3.6.2 Self-Efficacy

In addition to the personal interview, self-efficacy was also assessed via a self-report questionnaire (RSES). Participants who reported a score over 5 (out of a maximum of 10) were considered to be confident in their ability to change that specific dimension. As with readiness for change, the results from these two measurement techniques were compared and are presented in Figure 5.4.
Figure 5.4. Comparison of data collection methods for Self-Efficacy.

As evident in Figure 5.4, the two methods of assessing self-efficacy produced differing results. Similar to the findings regarding readiness for change, participants generally reported a lower degree of self-efficacy during the interview than when completing the self-report questionnaire. Comparing the level of congruency between the two types of measurement techniques across the six symptom dimensions, participants reported higher degrees of confidence regarding their
ability to gain weight and increase the amount of foods which they were consuming when completing the self-report questionnaire than during the personal interview.

Table 5.5

*Comparison of Individual Self-efficacy (Interview versus RSES)*

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<tr>
<th>Participant Number</th>
<th>Global RSES Max=200</th>
<th>Weight</th>
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<th>Food Amount</th>
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</table>

*Note: NC indicates participant was not confident in their ability change this dimension, C indicates participant was confident they could change this dimension, and – indicates that participant did not answer this question or that self-efficacy was indeterminable.*
Table 5.5 compares individual differences across each of the two measurement techniques. Two main themes arise from the data in Table 5.5. Firstly, participants’ self-efficacy varied across the six different dimensions being investigated. In addition, individuals who reported very low, or very high global levels of self-efficacy showed consistency in their scores across the two different assessment techniques; the RSES and the qualitative interviews. However, participants who reported moderate global self-efficacy often demonstrated substantial differences in their RSES scores and qualitative interviews.

5.3.7 Processes of Change

5.3.7.1 Processes of Change across Dimensions (Individual)

In general, participants reported being more inclined to utilise the processes of stimulus control, consciousness raising and counter-conditioning. In contrast, the least used processes reported by participants were self-liberation, dramatic relief and reinforcement management.

Eleven of the 12 participants interviewed regarding processes of change stated that they removed stimuli which reminded them of weight and food issues (stimulus control). For example, Participant 015 (action stage) reported covering her mirrors to prevent focusing on her shape and size:

‘Mirrors, some days I just can’t cope with the mirrors. Maybe some clothes.’

In addition, several participants also indicated that they removed small sized items of clothing, to prevent being reminded of any weight which they may have gained:
‘I’ve thrown out my really skinny clothes, if they’re really skinny or if it’s just ridiculous to fit into those.’ (Participant 012 - action stage)

‘... the only thing I can think of is probably clothes that I don’t fit into now, so just get rid of them, forget it.’ (Participant 004 - action stage)

Nine participants reported that they regularly searched for information regarding anorexia or anorexic related symptoms (cognitive/ affective process of consciousness raising). The sources of this information included books, newspapers and the internet:

‘Yeah, yeah. I see a psychiatrist once a week and he gives me a lot of information. I read books. I’ve looked at a lot of websites, like the eating disorder foundation, Bronte foundation, stuff like that.’

(Participant 010 - pre-contemplation stage)

‘I’d read books and stuff like that, I’d research it in the library. That’s what I did, I just read books and stuff to find out all about it and what I was doing and stuff. So yeah, I do research it a lot. Yeah, information from the Internet. I’d always read about it because I’d just search for ways to stop it because I felt so out of control, I just wanted to stop it. So yeah, I needed that. I just wanted to know what they (medical team, psychologists) were talking about.’

(Participant 002 - action stage)

‘Yeah, sometimes I’ve searched the net and stuff. Yeah. I’ve always read books and thought that they’ve been helpful, but I do try to look for information about what else I can do to help. Usually it’s for more ideas on getting better.’

(Participant 012 - action stage)
In addition, nine participants also indicated that they engaged in other activities, such as art, television, and movies in order to distract themselves from focusing on issues and thoughts (behavioural process of counter conditioning):

‘Yeah, homework. I like to do ear-ring making, like jewellery making. Scrapbooking. Like I find that I actually have to DO something. I can’t just sit and watch the TV, I actually have to be doing something. Something that I actually have to sit still and concentrate on doing.’

(Participant 010 - pre-contemplation stage)

‘Oh yeah, watching a movie with my boyfriend. When I went to hospital he bought me a kitten, like a Tomkinese kitten, so that really helps because when I withdrew, I’d just sit in my room and play with her because that really helps. It may sound dumb, but walking and swimming.’

(Participant 002 - action stage)

‘Reading and stuff like that... drawing is good, just doing things with my hands to keep busy.’

(Participant 015 - action stage)

‘Yes, ringing my friends. Sometimes I feel the need to go and do something and get out of the house, like go down to the shops with mum or something. Yeah, I was trying to distract myself from the binge eating or maybe if my mood was a bit down.’

(Participant 004 - action stage)

Although the majority of participants reported regularly using the processes of stimulus control (e.g., removing scales and mirrors), consciousness raising (e.g., internet research) and counter-conditioning (e.g., friends or artwork), very few were actively undertaking processes involving reinforcement management, dramatic relief and self-liberation.
Only two of the 12 participants stated that they had established a reward system in order to encourage positive behaviour change (process of reinforcement management). Furthermore, only four participants indicated that they regularly considered the impact of their anorexic behaviours on their health (dramatic relief), with most participants denying the related health consequences and viewing them as not applicable to them (optimistic bias). Finally, only four participants perceived the process of recovery to be within their control (process of self-liberation).

5.3.7.2 Processes of Change across Dimensions (Stage)

5.3.7.2.1 Pre-Action Stages

Although participants in the pre-contemplation stage were using very few processes of change, participants in the early, pre-action stages reported using predominantly behavioural processes. Specifically, these participants stated that they were using other activities to distract them from thoughts of weight and food (counter-conditioning), removing stimuli which reminded them of weight and food such as scales and small sized clothing (stimuli control), and using a reward system to encourage positive behavioural change (reinforcement management). However, participants assigned to the stages of contemplation and preparation also reported using the cognitive/affective process of information gathering (consciousness raising).

Participant 014 (contemplation stage) and Participant 011 (preparation stage) both stated that they used other activities to distract themselves from anorexic thoughts:

'Yeah, sometimes it gets really painful so I’ll ride my horse or walk my dog to distract myself.' - Participant 014

'Yeah, mainly just spend time with my family. Music therapy is good. I also study. Just to distract myself from the thinking.' - Participant 011
Furthermore, Participant 005 (contemplation stage) and Participant 014 (contemplation stage) also reported removing stimuli which reminded them of issues related to food and weight:

‘... there is so much of it everywhere. Newspaper articles get rid of them. Things on TV I totally refrain from, walk out of the room if they’re on. People talking about weight loss; walk away, don’t talk about it. Diet things, diet ads, everything like that I remove or I remove myself from.’

- Participant 005

‘Scales. I gave mum my treadmill. Yeah, mainly my treadmill and my scales. And the curtains (placed over the mirrors).’

- Participant 014

In addition, participants in the early stages of change also stated that they were using a reward system in an attempt to modify their behaviour. In particular, Participant 010 (pre-contemplation stage) and Participant 014 (contemplation stage) explained the reward system which they were implementing:

‘I have a mental system. I think yeah, I’ll go and buy myself something if I have a good day.’

- Participant 010

‘At this stage it’s just a calendar with a smiley face. So it’s like, do we put a smiley face on today or a sad face on? At the moment, with mum, we just get together and have lunch and go and get a coffee and that’s quite enjoyable. I do that when I feel that I’m going good. It’s generally how I feel about myself and my eating. I look at my eating and go, whether I’ve eaten reasonably well for the day.’

- Participant 014
Participants in the early stages also consistently reported using the cognitive/affective process of information gathering:

'I do it all the time, as much as possible. Internet, books and the literature I receive in the mail, which are generally photocopies out of book and things like that. Depending on the situation I guess, depends what you reach for. General behaviours, general symptoms. It depends on mood really (what is searched for), it depends what you’re thinking at the time.'

- Participant 005 (contemplation stage)

'Yeah, I spend a lot of time on the Internet, researching, which helps.'

- Participant 014 (contemplation stage)

'Internet. I research treatment programs... Just a general search.'

- Participant 011 (preparation stage)

5.3.7.2.2 Post-Action Stage

Participants who were assigned to the later stages of action and maintenance based on their ANSOCQ scores reported using a combination of behavioural (helping relationships) and cognitive/affective (consciousness raising and dramatic relief) processes. Participants in the later, action and maintenance stages of change indicated that they felt that they had at least one person who they could rely on and discuss issues related to their anorexia (behavioural process of helping relationships). These relationships included family, friends and health care professionals and were viewed by the participants as crucial in the progression of recovery. For example, Participant 012 (action stage) considered talking to close friends to be extremely helpful and an important factor in her recovery:

'Two of my friends, my best friend David and my close friend Sue, they’re really good. I can talk to them about anything. Apart from my
dietician and my therapist, just friends that I can call anytime.
Absolutely really, really great. Picking the right people is an
important factor in my recovery.’

In addition, Participant 002 (action stage) and Participant 004 (action stage)
reported that they both felt that they had close, helping relationships with their
parents and their psychologist. Both participants found these relationships to be
highly beneficial:

‘My psychologist or my mum and dad because they learnt by the end
of it, they saw how much trouble... Now that I’m getting better they
can talk about it with me.’ - Participant 002 (action stage)

‘My mum, yeah. I don’t talk to her about everything but some things I
do. I’ve also got a psychologist so sometimes if I’m feeling really,
really down, which is rare, but if I do get really down, or feel a real
need to talk to someone about these issues I can ring her. That’s quite
helpful. I definitely think that my psychologist has helped.’
- Participant 004 (action stage)

Participants in the later stages of change also indicated that they regularly
searched for information regarding anorexia. This information related specifically to
associated health consequences and methods for enhancing recovery:

‘Internet, yeah. I actually didn’t look for stuff (when very ill) but
when I started gaining weight, recovering more. I did look at
gastrointestinal problems which is affected by anorexia because I’ve
had a lot of problems with that. It’s always been a concern for me
about children in the future and things like osteoporosis and bones
and stuff. Health issues.’ - Participant 004 (action stage)
In addition to helping relationships and information gathering, participants in the action or maintenance stages, unlike participants in the earlier stages, reported concern regarding the implications that their anorexic behaviours would have on their health (cognitive/affective process of dramatic relief):

*Yeah, it scares me. Particularly because I had a bone scan recently and I have a bit of osteoporosis and stuff, thinning of the bones, that scares me. The fact that I don’t get my period regularly and spots around my face which apparently is caused by hormonal imbalance, I do get scared. So I do get afraid, particularly with the osteoporosis.*

- Participant 012 (action stage)

*‘It does play on my mind. I do worry a bit, yep. Yeah, for sure, infertility is probably one of the main ones. Osteoporosis, definitely. And recently, premature ageing. I’m realizing now just how much damage I’ve done to myself. So yeah, I feel worried.’*

- Participant 004 (action stage)

*‘I get so scared that I’m going to end up like that. I don’t want that, so it’s scary. And kids, if I want to have kids or something like that, how’s that going to affect my bones? Will I be able to have kids? It scares the shit out of me, because I want to have a normal life now. I get really scared about this osteoporosis. It does worry me, I just wish that you could reverse it.’*

- Participant 003 (maintenance stage)

### 5.4 Discussion

This study had four primary aims. A fundamental aim of Study One was to determine if the constructs proposed by the TTM varied across six distinct but related dimensions of anorexic symptomatology. In addition, the current study also aimed to determine if these constructs demonstrated stability over time. Moreover,
the congruency between the two most prominent methods of assessing readiness for change (self-report questionnaires and semi-structured interviews) was also assessed. An additional aim of this study was to determine if anorexic clients use different processes depending upon the stage of change to which they were allocated.

The discussion section will evaluate the findings of Study One in relation to the hypotheses and literature presented earlier in this chapter. In addition, theoretical and clinical implications of the results will also be discussed. Finally, methodological limitations of the study will be acknowledged and the future direction for research considered. The TTM will be used as a framework to structure the discussion section, such that the findings relevant to each construct of the model will be evaluated, in turn, according to the hypotheses proposed.

5.4.1 Variability across dimensions – Readiness for Change, Self-Efficacy and Decisional Balance

5.4.1.1 Readiness for change

In the current study, it was hypothesised that readiness for change would vary across the six dimensions of anorexic symptomatology being investigated (weight, body dissatisfaction, avoidance of specific foods, skipping meals, weight control methods and cognitive/emotional issues) with higher readiness for change regarding cognitive/affective issues and amount of food consumed. A template analysis design was used to evaluate the qualitative data, with the template consisting of each dimension and perceived degree of readiness for change. Findings relevant to the abovementioned hypothesis will be discussed.

In regard to individual data, the qualitative results revealed that perceived readiness for change varied across each of the six anorexic dimensions. Specifically, participants reported readiness to change as being consistently higher in regard to both addressing any problematic emotional or personality issues, and increasing the amount of food consumed. This finding was consistent with the hypothesis, indicating that readiness for change is not a global construct which is consistent
across all aspects of anorexic symptoms, but rather varies depending on the element of the disorder being addressed.

Furthermore, after participants were allocated into one discrete stage based on the TTM, it was predicted that, consistent with earlier arguments (Rieger & Touyz, 2006), individuals in the early pre-contemplation stage would report being unprepared to change any dimensions, whereas participants in the central stages of contemplation, preparation and action would report only being prepared to change the cognitive/emotional dimension. Finally, those participants assigned to the maintenance stage would report being willing to change all six of the dimensions being investigated.

Study One partially supports the hypothesis; readiness to change demonstrated a distinct pattern across the various stages from pre-contemplation through to maintenance. Participants in the pre-contemplation stage were unprepared to change any of the six dimensions. This finding was not surprising as most participants in this stage either denied their illness or highly valued the ego-syntonic nature of their anorexic related symptoms. In respect to the stage of contemplation, participants generally stated that they were ready to work on changing cognitive/emotional issues related to their eating disorder although they still reported not being ready to change any of the remaining five dimensions. As predicted, participants in both the preparation and action stages demonstrated high perceived readiness for change regarding their relevant cognitive/emotional issues. However, in contrast to what was expected, these individuals also reported being prepared to increase the amount of food which they were consuming and also to attempt to alter the excessive standards which they were using to evaluate their own bodies. Further research is required to evaluate the basis for this result. Despite this unusual finding, these participants still reported being unwilling to acknowledge or consider changing the remaining three dimensions of weight, body dissatisfaction and avoidance of specific foods. Finally, as expected, participants who were assigned to the stage of maintenance stated that they were either already working on changing or prepared to change all of the six symptom dimensions being investigated. These findings partially support the hypothesis proposed and suggest that readiness to change
develops progressively at varied rates across the different dimensions of anorexic symptomatology. In addition, readiness for change develops initially with respect to cognitive/emotional dimensions before the behavioural symptoms.

The variability found in readiness for change is partially consistent with the earlier findings of Rieger and Touyz (2006) who concluded that motivation to change varied across three distinct factors (Weight gain, Ego-alien aspects, and Eating, shape and weight concerns). The current study chose to examine a broader range of dimensions so as to more fully explore variability across symptom dimensions, finding considerable inconsistency in readiness for change across these. However, due to the small sample size, the current study did not conduct factor analysis on the six dimensions.

The current findings indicate that readiness to change does not develop for all anorexic symptom dimensions simultaneously, with individuals being prepared to change some of their anorexic symptoms whilst still remaining unwilling to acknowledge or alter others. Although speculative, an explanation for this finding may relate to the fact that only some of the dimensions of this disorder are considered ego-syntonic, with sufferers viewing these specific symptoms as accomplishments which assist them in fulfilling valued goals (Serpell, Treasure, Teasdale & Sullivan, 1999). For example, externally observable elements of the disorder, such as maintaining a very low body weight, may result in an individual being recognised as markedly different from other individuals who struggle ineffectively to control their weight. Therefore, sufferers may resist changing the dimensions which they perceive as enabling them to be viewed as unique and extraordinary, whilst being prepared to change elements of the disorder which are not externally visible, such as cognitive and emotional issues. Confirmation of these interpretations would require further qualitative investigation to determine the reasons readiness for change varies across different dimensions.

5.4.1.2 Self-efficacy

According to the TTM, self-efficacy is a fundamental determinant of readiness for change. In the current study it was hypothesised that the findings
relating to self-efficacy would be similar to those of readiness for change, with self-efficacy exhibiting variability across each of the six dimensions. Furthermore, it was expected that individual perceived self-efficacy would be higher regarding cognitive/affective issues and the amount of food consumed. The results relevant to this hypothesis will now be considered.

Congruent to the individual results regarding readiness to change, the perceived degree of self-efficacy varied across the six symptom dimensions. Self-efficacy was high regarding cognitive/emotional issues, in addition to increasing the variety of foods being consumed. These findings supported the hypothesis. Interestingly, participants reported little or no confidence in their ability to gain weight, alter the methods which they were using to control their weight or evaluate their bodies. This suggests that self-efficacy varies depending upon the aspect of the disorder being addressed.

With respect to stage of change, it was predicted that self-efficacy would demonstrate a similar pattern to that of readiness for change, with individuals in the early pre-contemplation stage reporting not being confident in their ability to change any of the six dimensions being examined, whereas participants in the central stages of contemplation, preparation and action would report only being confident that they could successfully change the cognitive/emotional dimension. Finally, it was expected that those participants allocated into the maintenance stage would report being confident that if they chose to they could change all the dimensions.

As hypothesised, the variance observed in perceived self-efficacy did demonstrate a similar pattern across the six symptom dimensions as that of readiness for change. Self-efficacy initially developed regarding changing cognitive/emotional issues (in the stage of contemplation), before the dimensions of amount of food consumed and the standards used to evaluate their bodies (in the preparation and action stages). Finally, participants in the maintenance stage were confident that they could change all of the six dimensions. Although the hypothesis was partially supported, the finding that individuals in the central stages reported being confident that they could change the symptom dimensions regarding amount of food and the standards which they were using to evaluate their bodies was still unexpected.
Further empirical investigation is required to reliably determine the basis for this finding.

The current study found a linear relationship between readiness for change and self-efficacy, replicating earlier research conducted by both Rieger et al. (2002) and Jones (2005) which concluded that high levels of self-efficacy were associated with high readiness for change. The current results also support previous research which applied self-efficacy to other problem behaviours such as substance abuse and smoking (DiClemente, 1991; DiClemente et al., 1985; Prochaska et al., 1990). These findings also confirm a fundamental premise of the TTM; that readiness for change and self-efficacy are directly related (Prochaska, 1994b; Rossi et al., 1995). However, further research is required to determine the direction of this relationship.

An individual’s self-efficacy directly determines whether they consider changing their behaviour (Bandura, 1998). In accordance with this postulation, the current findings indicate that self-efficacy initially develops in the cognitive/emotional dimensions before clients are confident in their ability to alter their anorexic related behavioural dimensions. In addition, perceived self-efficacy was lowest in regard to the more valued, and observable behavioural aspects of the eating disorder, such as thinness and excessive exercise. Clients may be less confident in their ability to change these specific elements as they are more traditionally identified as ‘anorexic symptoms’ and may assist the individual in maintaining the perception of themselves as unique and special. Further qualitative investigations would be needed to support this speculation.

5.4.1.3 Decisional Balance

An individual’s perception of the advantages and disadvantages which they associate with their behaviour is influential to their degree of readiness for change (Prochaska & DiClemente, 1983). In the current study it was predicted that participants in the early, pre-action stages of change would identify predominantly more advantages related to their eating disorder, whereas participants in the later stages would report more anorexic related disadvantages. In respect to individual results, a global perception of the eating disorder as either positive or negative was
not found. Rather, the pros and cons of each of the six dimensions were considered independently. Therefore, the majority of participants could identify aspects of anorexic symptomatology which were predominantly positive, whilst still recognising negative elements. However, more benefits were associated with the strict methods used to control weight, such as excessive exercise, purging and laxative abuse. In contrast, more cons were associated with both the health-related consequences of the excessive weight control methods and restricting the types of foods consumed. These findings suggest that some elements of the eating disorder are generally perceived as negative, whilst others are viewed as positive, serving valued functions.

The balance of perceived pros and cons related to the anorexic symptoms shifted depending upon stage of change. As predicted, participants in the early stage of pre-contemplation reported predominantly benefits associated with their eating disorder. These advantages included gaining a sense of control and confidence, and receiving attention for being noticeably underweight. Also supportive of the hypothesis, participants assigned to the stage of maintenance perceived their anorexic related symptoms as predominantly negative. These disadvantages included damage to their health, social restriction and emotional distress, such as feelings of guilt.

The findings regarding decisional balance indicate that the balance between perceived pros and cons which individuals relate to their eating disorder symptoms shifts in the central stages of change. Although speculative, two possible explanations for these findings could be considered. Firstly, the increase in perceived cons of the eating disorder could be the result of increased education and awareness. As an individual engages in treatment and gains knowledge regarding their symptoms, they may become more aware of the negative aspects of their illness. In addition, the decrease in perceived pros may be a result of the corresponding shifts in readiness for change and self-efficacy. Confirmation of these interpretations would require further research.

The results of the current study support those previously reported by Jones (2003), who concluded that higher perceived pros were associated with low levels of
readiness for change. The present study replicated further findings of Jones (2003) who also found as the disadvantages began to outweigh the perceived advantages, readiness for change (and therefore also stage) increased.

Furthermore, the findings of Study One are consistent with earlier results obtained by Cockell et al. (2003) who reported that participants in the early stage of pre-contemplation reported fewer disadvantages associated with their anorexic symptoms than those participants in the contemplation stage. In addition, the current findings also supported the previous conclusions of Rieger et al. (2002), with fewer perceived benefits reported by participants assigned to the pre-action stages.

5.4.2 Stability across dimensions – Readiness for Change

A fundamental premise of any staging metaphor is that individuals can be reliably assigned to one discrete stage (Wilson & Schlam, 2004). However, a primary criticism of the TTM is that it is uses a discrete staging metaphor to oversimplify the complicated process of behavioural change. Many critics (e.g., Bandura, 1997b, 1998; Carey et al., 1999; Davidson, 1992, 1998; Littell & Girvin, 2002; Sutton, 1996) have argued that readiness to change may be more accurately conceptualised as a dynamic, continuous construct. Nonetheless, research investigating this premise in eating disordered samples is sparse.

On an individual basis it was hypothesised that more participants would report stability in their perception of readiness for change in regard to the symptom dimensions of weight and cognitive/emotional issues. In contrast, it was also expected that more participants would self-report that their perceived readiness fluctuated when considering the dimensions of weight control methods and the standards which they used to evaluate their bodies.

The results indicated that participants reported instability in their perceived readiness to change across the six symptom dimensions being examined. Specifically, an increased number of participants reported stability in their perception of readiness to change their weight and the standards which they were using to evaluate their bodies. Then finding that the symptom dimension of weight was perceived as stable partially supports the hypothesis. However, body evaluation
standards were not predicted to be viewed by participants as a particularly stable dimension. Although speculative, one explanation for this finding is that individuals diagnosed with anorexia become accustomed to relying on the rigid standards which they use to evaluate their bodies and depend on these methods to evaluate their success in other, unrelated aspects of their lives. Therefore, they find preparing to change these standards as particularly difficult. In contrast, more participants reported that their readiness for change fluctuated in regard to the types of foods which they were consuming and also the methods which they were using to control their weight. This finding partially supports the hypothesis. Although it was expected that the dimension of weight control methods would be perceived as unstable, it was not predicted that participants would report instability in regard to the types of foods which they were consuming.

In respect to each stage of change, it was proposed that more participants in the central stages of contemplation, preparation and action would report their readiness to change as unstable; fluctuating over short time periods (i.e., daily and weekly). Moreover, it was further hypothesised that individuals in the stages of pre-contemplation and maintenance would state that they perceived their readiness to change as relatively stable.

The degree of stability regarding readiness for change differed depending upon stage of change. Consistent with the hypothesis, relative stability was found in both the pre-contemplation and maintenance stages; there was almost no fluctuation reported by participants in these stages, across any of the six dimensions. However, perceived readiness for change fluctuated dramatically in the stages of contemplation, preparation and action, supporting the hypothesis. In addition, readiness to change fluctuated on a daily basis in these stages, primarily dependent on other influential internal and external factors such as relationships with family, friends or partners, their mood, and their surroundings. Although the construct of readiness to change is stable in the pre-contemplation and maintenance stages, the current results indicate that it fluctuates for individuals in the central stages. This finding also identifies the influence which other, external factors have on individual
readiness for change. However, it should be noted that, due to the cross-sectional nature of the current study, the findings should be interpreted with caution.

The results of the present study are relatively unique as there is currently a paucity of research which has examined the stability of readiness for change in eating disordered populations. The current findings support the limited amount of previous research which has investigated stability in readiness for change across other problem behaviours. Consistent with the findings of the current study, De Vet et al. (2005) concluded that readiness for change regarding fruit and vegetable consumption was most stable in the stages of pre-contemplation and maintenance. In addition, the present results replicate the findings of Hughes et al. (2005) who concluded that intentions to quit smoking changed spontaneously over time. However, in relation to the area of eating disorders, the current results support the theoretical assertion of Treasure and Schmidt (2001) who argue that individual readiness to change is a dynamic, constantly changing internal state.

5.4.3 Processes of Change

The TTM proposes that different processes predominate during different stages of change, with individuals being more inclined to apply cognitive/affective processes in the early pre-action stages and employ primarily behavioural processes in the later stages of change (Fava et al., 1995; Prochaska & Velicer, 1997). However, research which has investigated this premise has reported mixed findings (i.e., Hasler et al., 2005; Blake et al., 1997; Ward et al., 1996; Jones et al., 2004). Consistent with the assertion of Fava et al. (1995) and Prochaska and Velicer (1997), it was hypothesised that participants in the early, pre-action stages would report using predominantly cognitive/affective processes whereas participants assigned to the stages of either action or maintenance would apply mainly behavioural processes.

The results of the present study indicated that, in general, participants in the pre-contemplation stage reported using very few processes of change. Furthermore, in contrast to what was hypothesised, participants in the early, pre-action stages of change reported using predominantly behavioural processes. Specifically, these
participants stated that they were primarily using the processes of counter-conditioning, stimuli control and reinforcement management. However, participants assigned to the stages of contemplation or preparation also reported using the cognitive/affective process of consciousness raising.

Participants who were allocated to the later stages of action and maintenance based on their ANSOCQ scores reported using a combination of behavioural and cognitive/affective processes. This finding partially supports the hypothesis. Although it was predicted that these participants would use mainly behavioural processes, they were not expected to report using cognitive/affective processes. Furthermore, these participants predominantly adopted the processes of helping relationships, consciousness raising and dramatic relief. The results of the current study partially support previous research. The finding that participants in the early, pre-action stages utilise predominantly cognitive/affective processes replicates the conclusions drawn by Ward et al. (1996) and Blake et al. (1997).

The finding that participants in the later stages of change use behavioural processes also supports previous research (Ward et al., 1996; Blake et al., 1997; Jones et al., 2005; Hasler et al., 2004). However, contrary to previous findings (Ward et al., 1996; Blake et al., 1997; Jones et al., 2005; Hasler et al., 2004) the current study concluded that participants in the later, post-action stages of change also reported utilising cognitive/affective processes. This finding may be due to participants in the later stages having an increased awareness of their cognitive/affective states. However findings need to be interpreted with caution due to the small sample size and the limited representativeness of the sample.

5.4.4 Comparison between self-report and interview assessment approaches

5.4.4.1 Readiness for Change

It was postulated that both methods of assessing readiness for change, self-report questionnaires and semi-structured interviews, would demonstrate congruency
in regard to the stage of change which participants were allocated. Therefore, each participant's readiness for change was assessed via both the ANSOCQ (a self-report questionnaire) and personal interview. However, it is important to note that the interview conducted was not an empirically established interview such as the RMI, but rather a semi-structured interview developed specifically for the current study. The data collected from these two different measurement techniques were compared and will now be discussed.

In support of the hypothesis, the results of the current study indicated that there was obvious incongruency between the two methods of assessing readiness to change. In general, participants reported higher readiness for change when using the ANSOCQ than during the personal interview. Although the different measures resulted in similar scores for the dimensions of cognitive/emotional issues, types of food and amount of food consumed, there was a large variance in scores on the dimensions of current weight and methods which participants used to control their weight. Although this finding was unexpected, the symptom dimensions of weight gain and weight control methods were highly valued by the participants, who were generally less ready to change these dimensions compared to the other symptoms investigated. This resulted in a disparity between their global readiness to change score and their perceived readiness to change for these two abovementioned dimensions.

5.4.4.2 Self-Efficacy

In addition to the personal interview, self-efficacy was also assessed via a self-report questionnaire (RSES). As predicted, the two measures used to assess self-efficacy yielded differing results. Overall, similar to the findings regarding readiness for change, participants generally reported a lower degree of self-efficacy during the interview than when completing the self-report questionnaire. When investigating the level of congruency between the two types of measurement techniques across the six symptom dimensions, participants reported higher degrees of confidence regarding their ability to gain weight and increase the amount of foods which they
were consuming when completing the self-report questionnaire than during the personal interview.

The findings of the current study suggest that different techniques used to assess readiness for change may result in differing stage allocations. The degree of both readiness for change and self-efficacy varied dramatically between the two measurement tools, indicating that the type of technique used to determine readiness for change may influence the stage to which an individual is assigned.

5.4.5 Clinical and Theoretical Implications

The results of Study One have several important clinical and theoretical implications. The findings indicate that readiness for change and self-efficacy are not global constructs, but rather vary depending upon the symptom dimension being addressed. In addition, the current findings also provide an indication as to which eating disorder elements clients generally have low readiness for change and self-efficacy, allowing for treatment approaches to be tailored in order to either build upon dimensions with higher readiness to change or focus on increasing self-efficacy in the dimensions where it is lacking. Furthermore, self-efficacy has been hypothesised to be fundamental in successful progression through the stages of change (Prochaska & DiClemente, 1983, 1986). Therefore, it is critical that treatment approaches address the deficit in perceived self-efficacy apparent in the early stages in order to enable clients to successfully progress and alter their problematic health behaviours.

Most theorists currently refer to readiness for change as a general, global construct. In contrast, the results of Study One suggest that readiness for change and self-efficacy may be best conceptualised as multifactorial paradigms which may vary across different anorexia related symptom dimensions. The development of assessment tools to measure readiness for change and self-efficacy may have increased accuracy if they are designed to identify the complete variance in an individual's motivation, as it alters across all of the symptom dimensions. The findings of Study One question the applicability of global self-efficacy assessments,
indicating that this construct may be more accurately measured in this population by multi-factorial assessment tools.

Moreover, the results obtained in Study One further suggest that readiness for change is a fluctuating construct which is especially unstable for clients in the central stages of contemplation, preparation and action. The practical utility of the TTM depends markedly upon the constructs of readiness to change, self-efficacy and decisional balance remaining relatively stable. In order for clinicians to deliver a treatment approach that is consistent with client’s current readiness for change, the TTM constructs must remain stable to ensure that the client is still in the same stage of change when treatment is delivered. If clinicians are unable to ascertain that a client will remain in a designated stage whilst the appropriate treatment for that stage is implemented, the costly and time consuming process of assessment becomes futile.

5.4.6 Limitations of the Current Study

When interpreting the findings of the Study One, several design and methodological limitations should be considered. A fundamental limitation of the current study was the nature of the data collected. Although the data were both qualitative and quantitative, the basis of the interview questions required participants to primarily use retrospective recall. Despite this being a common form of data collection in the area of psychological research, there are fundamental biases related to the process of retrospective self-report. Two such issues include social desirability and motivation (Smyth et al., 2000). Furthermore, it has been shown that recall of events is consistently related to the participant’s current mood at the time of recall (Teasdale & Fogerty, 1979).

Considering the abovementioned biases, the accuracy and reliability of retrospective self-report recall may have affected the participants’ memory of their past behaviours and psychological states. This likelihood for inaccurate recall may have distorted the results found in regard to variability and stability of the TTM constructs. This methodological issue may have affected both data collection
techniques (self-report questionnaires and interview) as both methods relied on participants retrospectively recalling past thoughts and events.

An additional limitation that questions the generalisibility of the results obtained was the relatively small sample size. A total of 15 participants were involved in Study One, and although this factor limited the type of statistical analyses which could be undertaken, the fundamental objective was to reach theme saturation. After interviewing 15 participants it was noted that the same occurring themes were consistently presented.

5.4.7 Future Directions

As discussed earlier in Chapter Four, it is imperative that readiness for change and its related constructs demonstrate relative stability over time to ensure that an assessment remains valid whilst treatment is implemented. It is undoubtedly unrealistic for clinicians to re-evaluate each client each time they see them. Therefore, if anorexic clients are alternating between different stages over short time intervals, the practical utility of assessing stage of change must be questioned.

Although the results presented in this chapter indicate that the major theoretical constructs of the TTM are relatively stable for clients in the pre-contemplation or maintenance stages, the majority of participants who were allocated into the central stages of contemplation, preparation and action reported regular, rapid fluctuations in their perceived readiness for change and self-efficacy. However, the current study was limited by the nature of the methodological design and measurement strategies. Specifically, the reliance on participants’ retrospective recall of particular thoughts, events or conditions may have biased the results obtained. The accuracy and reliability of retrospective recall, particularly over long periods of time, may result in an inaccurate representation of participants’ behaviours and psychological states (Smyth et al., 2000). Therefore, complex theoretical models such as the TTM may not be accurately assessed using this method of data collection (Smyth et al., 2000).

A recently developed measurement technique, known as Ecological Momentary Assessment (EMA; Stone & Shiffman, 1994) enables researchers to
evaluate behaviour, cognitions and physiological states of participants in their natural environments (Smyth et al., 2000). The EMA approach involves participants completing the required questionnaire(s) on an electronic handheld device at predetermined or random times throughout the day, over a specified length of time. The introduction of EMA procedures provides a research methodology which is able to reduce retrospective recall whilst remaining relatively unobtrusive in participants’ natural settings. The use of EMA also allows for behaviours, thoughts and emotions to be monitored at fixed or random intervals.

Although the results of Study One indicate that readiness for change and self-efficacy vary across anorexic symptom dimensions and fluctuate over time (for clients in the central stages), the nature of retrospective recall limits the reliability of the findings. Therefore, it is suggested that the findings of Study One be confirmed by future research which employs the methodological technique of EMA. This will be discussed in further detail in the following chapter.

5.4.8 Chapter summary/conclusion

This chapter has described Study One, which investigated the variability and stability of the constructs proposed by the TTM (readiness to change, decisional balance and self-efficacy) in anorexia clients. This investigation is one of the first to examine the variability of the abovementioned constructs across different anorexic related symptom dimensions. In addition, this study also examined the stability of each of these constructs over time.

Study One involved interviewing 15 participants regarding their perceived readiness for change and self-efficacy. In addition, each participant also completed a set of self-report questionnaires (the ANSOCQ, the Rieger Self-Efficacy Scale, the ANDB Scale and a demographics questionnaire). Based on their individual ANSOCQ score, each participant was assigned to one of the five stages proposed by the TTM (four participants – pre-contemplation, two participants – contemplation, three participants – preparation, four participants – action, and two participants – maintenance stage).
Overall, the findings of Study One indicate that readiness to change and self-efficacy are not consistent across the varying dimensions of anorexic symptomatology. Furthermore, the current results suggest that readiness for change and self-efficacy fluctuate on a daily basis for individuals in the central stages of change. However, these constructs demonstrated stability for individuals assigned to the stages of pre-contemplation or maintenance.

These findings are of both clinical and theoretical importance. As readiness for change and self-efficacy demonstrated variance across the different dimensions of anorexic symptomatology, these constructs may be more accurately measured by utilising multi-dimensional assessment tools which would ascertain a client’s motivation to change in regard to each individual symptom dimension. Furthermore, the fluctuations of readiness to change and self-efficacy which were reported in participants from the central stages suggest that even a Likert-type, multi-dimensional discrete scale may not capture the variability of these constructs over time. Therefore, the reliability of determining readiness for change and self-efficacy may be improved by implementing multi-dimensional, continuous scales which account for change over time.
CHAPTER 6

STUDY 2: THE USE OF ECOLOGICAL MOMENTARY ASSESSMENTS TO ASSESS THE STABILITY OF READINESS TO CHANGE AND SELF-EFFICACY IN ANOREXIC CLIENTS

6.1 Rationale

As discussed previously in Chapter Four, recent research (e.g., De Nooijer et al., 2005; De Vet et al., 2005; Hughes et al., 2005) has questioned the stability of the discrete stages of change proposed by the TTM. The first study reported in Chapter Five suggests that readiness to change and self-efficacy are relatively stable for those in the pre-contemplation or maintenance stages. However, a large proportion of those assigned to the central stages of contemplation, preparation and action report daily instability in regard to both their readiness for change and self-efficacy. Therefore, as many anorexic clients fluctuate between different stages over short time intervals, the practical utility of allocating clients into a single discrete stage must be questioned.

In addition, the results of Study One showed that readiness to change and self-efficacy varied across different elements of anorexic symptomatology. This variability casts further doubt over the accuracy of assigning individuals into one discrete stage of change.

6.1.1 Criticisms of traditional methodology

Recent research regarding readiness to change in eating disorders has been limited by the nature of the experimental design and measurement strategies. For example, cross-sectional research is limited to detecting correlations between variables (Moskowitz & Young, 2006), and is, therefore, unable to determine temporal relationships. Furthermore, the majority of the research conducted to date has relied predominantly on data obtained through self-report measures using retrospective recall.
Self-report assessments are derived from the introspection of individuals in the form of either global ratings or responses to items on questionnaires (Moskowitz & Young, 2006). This measurement technique probes memory efficiency in everyday life, but is limited by several logical and methodological issues which result in ambiguous data interpretation (Rabbitt & Abson, 1990; Trull & Ebner-Priemer, 2009).

Techniques used to collect self-reported information can vary widely from paper and pencil questionnaires to qualitative interviews (Trull & Ebner-Priemer, 2009). Data collection methods based on self-report have many advantages; primarily that they are able to measure a range of moods, cognitions and behaviours in a variety of settings (Moskowitz & Young, 2006). Despite self-report techniques being used extensively in the social sciences as the basis of standardised measures of typical performance, it is widely recognised that there are fundamental biases related to the process of retrospective self-report (Levine & Safer, 2002; C. Miller, Newcorn & Halperin, 2010; Stone & Shiffman, 1994; Trull & Ebner-Priemer, 2009). These limitations include social desirability, accurate memory recall and motivation (Munsch et al., 2009; Smyth et al., 2000). Furthermore, the issue of misrepresentation (or subjective responses) remains one of the fundamental criticisms of this method of assessment (Huang, Liao & Chang, 1998; Paunanen & O'Neill, 2010; Rabbitt & Abson, 1990). In addition, self-report assessments have been criticised as fraught with problems that seriously undermine the construct validity of conventional measures (Paunanen & O'Neill, 2010). These issues will now be briefly discussed.

Most items in clinical self-report inventories are vulnerable to faking (Huang et al., 1998), with measures of typical performance vulnerable to misrepresentation (Paunanen & O'Neill, 2010). Furthermore, some individuals respond to self-report assessments in a manner to give either a socially desirable or undesirable impression, for the sake of appearance. This behaviour may be due to several different reasons, including self-protection, ego-protection, in order to avoid criticism, social conformity, or to gain social approval (Huang et al., 1998; Paunanen & O'Neill, 2010). Moreover, the abovementioned issues may also be related to the putative
absence, or distortion of an individual’s knowledge about themself (Paunonen & O’Neill, 2010).

To ensure a high degree of accuracy in participant reports, individuals must not be influenced by any perceived negative evaluations of their report. However, in sensitive areas of research, such as those concerned with eating thoughts and behaviours, there are often explicit or inferred expectations regarding what may constitute inappropriate behaviour (e.g., binge episodes, purging) which may influence self-reported recall, especially over long durations of time. In addition, a combination of cognitive and memory limitations may result in a variety of heuristics designed to conserve cognitive resources during recall that may systematically bias self-report data (Smyth et al., 2000).

Recent studies have been undertaken to examine the validity of self-report ratings (Cain, Epler, Steinley & Sher, 2010; Motl, McAuley & Suh, 2010; Rabbitt & Abson, 1990; Sanford, 2010; Simard, Stoll, Shadick, Karlson & Solomon, 2010; Vitousek, Daly & Heiser, 1991; Zhou, Dibley, Cheng, Ouyang & Yan, 2010). For example, the accuracy of self-reported height, weight and resultant BMI was examined in a sample of 1761 Chinese adolescents (aged 12-16 years; Zhou et al., 2010). Reported data on weight and height did not have an acceptable agreement with measured data, with the mean difference being 2.35kg for weight, 1.36 cm for height, and -1.23 kg/m² for BMI.

The second issue is that of accuracy of recall; studies often rely on participants’ retrospective recall of particular thoughts, events or conditions (Trull & Ebner-Priemer, 2009). The accuracy of retrospective recall is crucial in order to ensure validity in the assessment of clinical disorders over time (Ben-Zeev, Young & Madsen, 2009). However, psychological research is satiated with examples of the potential distortions and inaccuracies (Smyth et al., 2000) which frequently occur with recall-based methods of data collection (for review see Stone et al., 2000).

Several studies have compared data derived from real-time assessments and retrospective self-reports across a range of clinical problems, including mood disorders (Solhan, Trull, Jahng & Wood, 2009), coping (Stone et al., 1998), smoking patterns (Otsuki, Tinsley, Chao & Unger, 2008; Shiffman, 1993), sexual behaviour
(Horvath, Beadnell & Bowen, 2007), and bulimic symptomatology (Anestis, Selby, Crosby, Wonderlich & Engel, 2010) and concluded that there are significant discrepancies between the two methods of data collection (Refer to Fahrenberg, Myrtek, Pawlik & Perrez, 2007; Shiffman, 2009; Solhan et al., 2009; Stone & Broderick, 2007).

Furthermore, there is an abundance of empirical evidence that retrospective recall is confounded by a myriad of factors (Ben-Zeev et al., 2009), including contemporary beliefs (Levine, Prochaska, Burgess, Rice & Laulhere, 2001), cognitive styles (McFarland & Buehler, 1998), individual differences (Safer & Keuler, 2002), attributions (Levine & Safer, 2002), accessibility of contextual information (M. Robinson & Clore, 2002), and specific parameters of the affective experience (Fredrickson, 2000; Kahneman, 1999).

There are several possible sources of retrospective biases (Trull & Ebner-Priemer, 2009). For example, participants are more likely to recall and report experiences which they perceive to be more personally relevant (personal heuristics effect), are more salient and recent (recency effect), that are perceived as significant or unusual (novelty effect) or are consistent with the individual’s current mood state at time of recall (mood-congruent memory effect; Munsch et al., 2009; Teasdale & Fogerty, 1979; Trull & Ebner-Priemer, 2009). Retrospective accounts can be inaccurate in two ways. Firstly, they may be systematically biased by the participant tending to make an error in a particular direction (Shiffman, Stone & Hufford, 2008), or alternatively, their report may be inaccurate by exhibiting error in either direction (Ben-Zeev et al., 2009).

Traditional methods of data collection do not allow for the influence of recall associated with variation of time of day. Previous research has suggested that there are diurnal patterns in mood; suggesting that mood (and, therefore, response) fluctuates as a result of the time of day the data are collected (Stone, Smyth, Pickering & Schwartz, 1996; Trull & Ebner-Priemer, 2009). Assessments which are obtained on specific days only or at particular times during the day may be influenced by the timing of the measurement (Moskowitz & Young, 2006). Both time of day and day of week have been shown to influence binge/vomit behaviour,
mood and perception of stressful events in women diagnosed with bulimia nervosa (Smyth et al., 2009).

Substantial inaccuracies exist when utilising retrospective recall. Results of a longitudinal study of individuals diagnosed with ADHD during childhood have documented that approximately 20% of participants are unable to accurately recall childhood symptoms (C. Miller et al., 2010). A second study examined the retrospective recall of psychological distress in participants who had previously received a psycho-educational evaluation at a university psychological services clinic. Participants significantly overestimated their distress when using retrospective recall (Brennan, Stewart, Jamhour, Businelle & Gouvier, 2005).

A further limitation is that complex theoretical models cannot reliably be assessed via the usual methodological approaches such as cross-sectional data collection or retrospective recall based designs (Smyth et al., 2000). These approaches may either result in inaccurate recall of specific events or thoughts, or may limit the usefulness of the data obtained by obscuring crucial information such as fluctuations in mood, specific antecedents to thoughts and behaviours, or the trajectory of mood change before, during and after an important event (i.e., the mood of the participant leading up to, during and after excessive exercise).

Given the abovementioned biases, the accuracy and reliance of retrospective self-report recall, particularly over long periods of time, may result in an inaccurate representation of participants’ behaviours and psychological states (Smyth et al., 2000). Traditional methods of data collection do not provide a rich description and understanding of an individual and their daily life (Trull & Ebner-Priemer, 2009).

Assessments in clinical psychology typically involve global retrospective recall which is collected at research or clinic visits. This form of obtaining information is limited by recall biases and may not accurately characterise how behaviour changes over time and across different contexts (Shiffman et al., 2008). Therefore, recent research has endeavoured to introduce new data collection techniques which reduce or eliminate the degree of retrospective recall required from participants. One such method frequently used is that of Ecological Momentary Assessment (EMA).
6.1.2 Ecological Momentary Assessment

Ecological Momentary Assessment (EMA; Stone & Shiffman, 1994) is an assessment technique which enables researchers to evaluate behaviour, cognitions and physiological states of participants in their natural environments (Shiffman, 2009; Shiffman et al., 2008; Smyth et al., 2000) in near-real time (Trull & Ebner-Priemer, 2009).

Stone and Shiffman (1994) define EMA as characterised by four key features. These are a) collection of data in real-world environments; b) assessments that focus on current (or near current) mood states or behaviours; c) assessments that may be either event-based, time-based, or randomly prompted; and d) involve the completion of multiple assessments over time, allowing for examination of how experiences vary over time and across situations (Shiffman et al., 2008).

If a researcher is interested in how an individual thinks or behaves in a natural environment, there is no point in asking them how they feel in a clinical research setting. However, EMA enables researchers to obtain representative data, sampled in the context in which it naturally occurs. Moreover, as EMA provides data which are collected in participants’ natural environment, conclusions should be generalisable and applicable to real-world experiences (Shiffman et al., 2008).

EMA studies are designed to record momentary ratings of thoughts and experiences, making them particularly useful for investigating moods, symptoms or behaviours that are expected to fluctuate over time. Moreover, EMA aims to minimise recall bias and maximise ecological validity, while allowing for the investigation of microprocessors that influence thoughts and behaviours in real world contexts (Shiffman et al., 2008).

EMA data may be collected for a variety of purposes (Bolger, Davis & Rafaeli, 2003), however these can be categorised into four predominant classes: 1) characterising individual differences, 2) describing natural history, 3) examining contextual relationships, and 4) investigating temporal sequences (Shiffman et al., 2008). Furthermore, EMA can be conducted using a wide range of media devices including paper and pencil diaries, electronic diaries, or telephones (Trull & Ebner-
Priemer, 2009). As technology advances, EMA can be increasingly utilised on
devices such as portable computers, handheld personal digital assistants,
programmable watches, cell phones and sophisticated psychological monitoring
devices (Wenze & Miller, 2010).

Earlier EMA methods of collecting data via paper and pencil diaries were
limited in that researchers couldn’t accurately determine if diary entries were made
at the times specified in the study methodology (Trull & Ebner-Priemer, 2009).
Participants may have failed to complete data entries at scheduled times, then ‘back-
fill’ their diaries before reporting back to the researcher (Trull & Ebner-Priemer,
2009). This limitation has been overcome by utilising modern, computerised
electronic devices which provide data entries which are time stamped to enable
researchers to accurately determine when a participant completed the assessment
(Wenze & Miller, 2010).

In addition, EMA techniques can be used to complete brief questionnaires at
various time intervals during the testing phase, based on pre-determined event
occurrence, or randomised prompts (Shiffman, 2009). For example, a participant
may be asked to complete each of the questionnaires at four different times each day,
for a total duration of one week. Typically, this means the questionnaires assessed
via EMA are relatively short and, therefore, rapid to complete.

Another form of EMA, signal-contingent recording, was developed to reduce
the reliance on memory recall by reducing the time between an event occurring and
the reporting of that event. This technique asks participants to complete the
electronic questionnaire in response to a signal which occurs at a fixed number of
times during a day (Moskowitz & Young, 2006). A major strength of this method is
that all participants are given the same number of signals, and therefore have the
same number of assessments (Moskowitz & Young, 2006). EMA is considered a
feasible, generally acceptable, and highly promising research technique (Wenze &
Miller, 2010).

The psychometric properties of an EMA approach were used to evaluate
eating disorder urges in a sample of 139 Canadian women seeking treatment for an
eating disorder (Tasca et al., 2009). This method of assessment demonstrated good
construct validity, good predictive validity, average criterion validity, and good test-retest reliability. In addition, continual EMA was a reliable indication of current eating disordered thoughts and behaviours, and useful in predicting outcome among eating disordered clients (Tasca et al., 2009).

In addition, the relationship between mood and binge eating behaviour was investigated in 27 American college students (Wegner et al., 2002). Information was collected from the sample in their natural environment via the use of a handheld computer (palm pilot) seven times daily, over the duration of two weeks. The results showed that participants reported significantly lower mood on binge days compared to non-binge days. Therefore, the affective experience of binge episodes, when assessed in the natural environment is negative.

6.1.2.1 Benefits of EMA

The use of EMA procedures provides a research methodology which is able to overcome many of the existing limitations associated with previously used research techniques. EMA was designed to reduce retrospective recall whilst remaining relatively unobtrusive in participants’ natural settings, while allowing behaviours, thoughts and emotions to be monitored at fixed or random intervals (Trull & Ebner-Priemer, 2009). In addition, unlike traditional assessment techniques, EMA approaches are idiographic in their focus (Trull & Ebner-Priemer, 2009).

Methods based on self-report techniques have many advantages in enabling researchers to measure a range of moods and behaviours in a variety of situations. However, there are three major advantages to using EMA over other forms of data collection. Firstly, participants have been shown to be enthusiastic and prepared to engage in EMA studies (le Grange, Gorin, Catley & Stone, 2001; le Grange, Gorin, Dymek & Stone, 2002; Norton, Wonderlich, Myers, Mitchell & Crosby, 2003; Smyth et al., 2000). Secondly, EMA allows for the collection of data which are not obtainable by any other data collection method (Smyth et al., 2000). Finally, the use of EMA enables complex theoretical models to be evaluated and analysed statistically (Shiffman et al., 2008; Smyth et al., 2000).
EMAs also have many advantages over more traditional methods of assessing clients in clinical studies. This technique provides participants with a method to report on symptoms, affect, behaviour and cognitions close in time to when they are experienced (Moskowitz & Young, 2006; Shiffman, 2009; Trull & Ebner-Priemer, 2009; Wenze & Miller, 2010). These assessments can be conducted many times over the course of a study, therefore providing a source of longitudinal data. Multiple measurements have many benefits over cross-sectional data; increasing the reliability of data, enabling the exploration of contextual and situational influences on thoughts and behaviours, and allowing for the examination of temporal relationships between variables (Wenze & Miller, 2010).

One of the most powerful applications of the EMA design is its ability to detect fluctuations in variables across time (Wenze & Miller, 2010). Single administration self-report questionnaires typically require the participant to report on their average, or typical experience. Cognitions, affect and behaviour are dynamic variables, which may fluctuate over relatively short time periods and be influenced by environmental stimuli and cues (Shiffman, 2009). Traditional, global assessments can prevent researchers and clinicians understanding dynamic changes in thoughts and behaviours which occur over time and across contexts (Shiffman et al., 2008).

However, when investigating variables which are not necessarily expected to be constant or stable, researchers are more interested in determining the degree to which these variables change (or how frequently/ readily they change), rather than their average levels (Wenze & Miller, 2010). Therefore, a major benefit of EMA is its capacity to assess the ebb and flow of thoughts and behaviour over time, recording life as it is lived; on an hour to hour, day to day basis (Shiffman et al., 2008).

Several previous studies have used the technique of EMA to examine variability in a range of psychological constructs, including diurnal mood variations (Golier, Yehuda, Schmeidler & Siever, 2001; Larsen, 1987; Peeters, Berkhof, Delespaul, Rottenberg & Nicholson, 2006), cortisol secretion in major depression (Peeters, Nicholson & Berkhof, 2004), self-esteem in bipolar disorder (Knowles, Tai, Jones, Highfield & Morriss, 2007), impulsivity in eating disorders (Engel et al.,
within-day variations in depressed individuals at high risk of developing cardiovascular disease (Conrad, Wilhelm, Roth, Spiegel & Taylor, 2008), and day of week and time of day variations in bulimia nervosa symptomatology (Smyth et al., 2009).

Another benefit of using EMA is that it enables participants to complete the data collection in their own environment (Trull & Ebner-Priemer, 2009). The ecological validity of data obtained by this method is undoubtedly beneficial. This factor is particularly important in the area of eating disorder research as eating behaviour can be significantly influenced by relatively transient emotional, psychological and social states difficult to emulate in a laboratory setting (Smyth et al., 2000).

Research designs which rely on retrospective self-report recall may lead to misinterpretations of participants’ actual states, behaviours or cognitions. This lack of reliability is particularly problematic in research which attempts to assess the application of complex theoretical models which are based primarily on relatively transient mood states to disordered eating.

Therefore, the ability to reduce retrospective recall biases, evaluate temporal relationships, record variability, and examine process variables (Wenze & Miller, 2010) all highlight EMA’s potential utility. In addition, EMA’s ability to assess participants within their natural settings where their symptoms are most problematic also provide support for its use as an effective measurement technique (Wenze & Miller, 2010). EMA is a useful technique for accurately monitoring and evaluating treatment progress (Trull & Ebner-Priemer, 2009).

The methodological technique of EMA has been utilised in many areas of psychological research, including substance use (Shiffman, 2009), schizophrenia assessment (Granholm, Loh & Swendsen, 2008), mood disorders (Peeters et al., 2006; Peeters et al., 2004; Solhan et al., 2009; Wenze & Miller, 2010), exercise behaviours (Fahrenberg et al., 2007), sexual experiences (Horvath et al., 2007), tobacco use (Otsuki et al., 2008), coping (Stone et al., 1998), and eating disorders (Anestis et al., 2010; Engel et al., 2007; le Grange et al., 2001; Munsch et al., 2009; Shroff et al., 2006; Smyth et al., 2009; Tasca et al., 2009).
The technique of EMA facilitates clarification between different variables (Smyth et al., 2000). Specifically, the relationship between relatively distal causal factors (e.g., personality traits), proximal causal factors (e.g., mood states) and outcome variables (e.g., eating disordered behaviour) can be closely examined with the use of EMA methodology (Smyth et al., 2000). As eating disorders constitute a collection of behaviours and cognitions which are hypothesised to be influenced by both proximal (e.g., emotional states, caloric deprivation) and distal (e.g., family/relationships, environment) factors, EMA methodology uniquely enables researchers to evaluate a vast range of causal variables, whilst significantly reducing response distortion (Smyth et al., 2000). Furthermore, eating disorders typically involve clearly discernable, small-scale episodic behaviours which incorporate many influencing factors, including the immediate situation, the immediate internal experience (e.g., thoughts, mood), and the external situation (e.g., eating related cues). The combination of the abovementioned dynamic factors suggests that EMA is well suited to study eating disorders, and may enhance researcher's ability to characterise, understand, and ultimately change, anorexic thoughts and behaviours in real world contexts.

Global assessments of event frequency may obscure the fluid fluctuations of thoughts, events and behaviours which occur in an individual's natural environment (Smyth et al., 2009). EMA was used to investigate the day of week and time of day effects on affect, stress, and binge-purge behaviours in a sample of 113 women diagnosed with bulimia nervosa. Bingeing, purging, positive and negative affect, and the severity of perceived stressful events fluctuated significantly across time of day and day of the week. As bulimic symptomatology varied across time, it is crucial to understand and document these fluctuations in order to focus appropriate clinical intervention.

No study to date has used the method of EMA to explore variations in readiness to change and self-efficacy. However, given the findings of Study One, which indicate that these constructs are both variable across different anorexic symptom dimensions and unstable over time, EMA would be a very useful technique
to enable further investigation in regard to these constructs. This is therefore the focus of the second study.

6.2 The current study (Study Two)

Study Two used a case-study format to allow for the possibility that each participant’s readiness to change and self-efficacy would differ. In addition, in an attempt to accurately record the variability of the constructs under investigation, a pragmatic time series design was used. This technique consists of a large series of consecutive observations being recorded in regard to the same variables (Shadish, Cook & Campbell, 2002). For the purpose of the current study, self-observations of each participant were recorded five times a day for a duration of six consecutive days. The variables investigated were the participant’s perceived readiness to change and self-efficacy, current mood, and incidence of influential events. Data obtained from each participant were analysed using a within-subjects case-study design. However, prior research (Campbell, 1988) has established that even a single, well designed, experimental case-study can provide crucial data not available in traditional pre-and-post type studies.

6.2.1 Aims

The overall aim of Study Two was to replicate and extend the findings of Study One, whilst eliminating the biases related to the methodological process of retrospective recall. Specifically, this study aimed to use the technique of EMA to evaluate the variability (across symptom dimensions) and stability (over time) of readiness for change and self-efficacy in individuals recovering from anorexia nervosa. Furthermore, this study also aimed to determine the congruency between two different methods of assessing readiness for change and self-efficacy; retrospective self-report questionnaires and EMA.
The specific aims of Study Two were to use the method of EMA to:

1) Determine if readiness for change and self-efficacy varied across six distinct, but related dimensions of anorexic symptomatology; weight, body dissatisfaction, avoidance of specific foods, skipping meals, weight control methods and cognitive/emotional issues;

2) Investigate the stability of readiness to change and self-efficacy across all six dimensions over time;

3) Evaluate the degree of congruency between information obtained via EMA and that of retrospective, self-report questionnaires; and

4) Using ecological momentary assessment, determine factors (proximal & distal) which may influence readiness to change and self-efficacy in regard to eating disordered behaviours and cognitions.

6.2.2 Hypotheses

Based upon the findings of Study One it was hypothesised that:

Participant’s readiness for change and self-efficacy would:

1) Vary across the six dimensions being evaluated (weight, evaluation standards, types of foods consumed, amount of food consumed, weight control methods, and cognitive/emotional issues).

   Specifically, it was hypothesised that higher readiness to change and self-efficacy would be reported in regard to the dimensions of cognitive/effective issues and the amount of food consumed, and lower readiness to change and self-efficacy would be reported for the dimension of weight gain;

2) Demonstrate instability (over time), with greater instability reported in regard to the methods used to control weight, the standards used to evaluate weight and shape, and the amount of food consumed;

3) Be negatively influenced by an increase in anxiety, depression, stress and sense of inadequacy/worthlessness, and positively influenced by an increased feeling of relaxation;
4) Be affected by the occurrence of an influential situational event, with readiness to change and self-efficacy decreasing if the event is considered negative (e.g., argument), and increasing if the event is considered positive (e.g., attending therapy); and

Based upon the findings of Anestis et al. (2010) it was hypothesised that participant’s readiness for change and self-efficacy would:

5) Differ dependent upon the assessment technique utilised, with participants reporting higher readiness to change and self-efficacy when using retrospective recall as compared to EMA.

6.3 Method

EMA was used to evaluate participants’ current perceptions of their readiness to change and their self-efficacy. In addition, the EMA enabled the researchers to longitudinally assess fluctuations in these constructs over a one week time period, therefore evaluating the stability of the TTM constructs.

Quantitative, theory derived, retrospective self-report questionnaires were used to identify each participant’s readiness to change (ANSOCQ) and self-efficacy (RSES) at their initial commencement of the study. Quantitative scores derived from the self-report questionnaires enabled participants to be allocated into one of the five discrete stages of change proposed by the TTM.

The use of both data collection methods (EMA and retrospective, self-report questionnaires) enabled comparisons to be drawn between the two types of assessments. The degree of congruence between participants’ real-time perceptions regarding their current readiness to change and self-efficacy (as measured by the EMA) and the retrospective self-report questionnaires could then be established.

6.3.1 Sample

Four females, aged 18 to 37 years ($M = 24.50$, $SD = 8.50$) who reported being currently diagnosed with, or recovering from anorexia acted as participants.
The mean BMI reported by these participants was 18.85, (SD = 1.55, Range = 17.02 – 20.73) and the mean length of illness was 10.2 years (SD= 12.67 years, Range = 1.2 – 29.0 years).

Based on their ANSOCQ scores, two participants were placed in the stage of contemplation, one participant in the stage of preparation and one participant in the action stage. The participants involved in Study Two were independent of the participants in Study One.

6.3.2 Materials

In addition to a brief demographics questionnaire, participants completed three theory derived self-report questionnaires. Furthermore, participants also completed a series of questions on a PDA/ Palm Pilot device using EMA (See Appendix G for all questionnaires). Each of these will now be described.

6.3.2.1 Anorexia Nervosa Stage of Change Questionnaire (ANSOQC)

The participants’ current stage of change was measured using the ANSOCQ, which is a 20-item self-report questionnaire assessing a broad range of anorexic symptomatology (Rieger et al., 2000). A detailed description of the ANSOCQ (including example items and psychometric properties) has been previously provided in the Materials section of Chapter Five.

6.3.2.2 Rieger Self-efficacy scale (RSES)

The RSES was used in Study Two to measure participants’ perceived self-efficacy. The RSES is a 20 item self-report questionnaire designed to assess self-reported self-efficacy in clients diagnosed with anorexia (see the Materials section of Chapter Five).
6.3.2.3 Eating Disorder Examination – Questionnaire

The severity of participants’ eating disorder symptoms was assessed using the Eating Disorder Examination – Questionnaire (EDE-Q). The EDE-Q is a self-report questionnaire version of the Eating Disorders Examination (EDE) developed by Fairburn and Cooper (1993) and consists of 28 items which focus on the occurrence of eating disorder related symptoms during the previous 28 days. The EDE-Q includes four subscales: Restraint, Eating Concern, Weight Concern, and Shape concern (Peterson et al., 2007). Items assessing eating disorder attitudes are scored using a 7-point, forced choice scale. Scores of four or higher are considered to be reflective of a clinical range (Mond, Hay, Rodgers, Owen & Beumont, 2004).

Luce and Crowther (1997) state that the EDE-Q exhibits excellent internal consistency (subscale ranging from .78 to .93) and test-retest reliability over a two week period (.81 to .92). In addition, the EDE-Q has demonstrated very good internal consistency coefficients which ranged from .73 to .93 (Mond et al., 2004), and high global internal consistency (.90) (Peterson et al., 2007).

6.3.2.4 Demographics questionnaire

Participants completed a general information sheet concerning demographic information such as age and height. In addition, current weight was required to enable the individual’s BMI to be calculated. Finally, participants were also asked to provide information regarding the length of their illness and their educational background.

6.3.2.5 Ecological Momentary Assessment

In order to record participants’ current views regarding their readiness for change and self-efficacy, an EMA technique was used to collect immediate reports of thoughts, behaviours and social interactions from each of the four participants. Prior research has indicated that approximately 70% of participants who were asked to complete pencil and paper EMA diaries ‘back-filled’ their responses after the actual time they were prompted to do so (Shiffman, 2000). In order to eliminate false
compliance and ensure the validity of the results obtained, Personal Digital Assistants (PDAs) were used in the current study. The PDAs electronically recorded the date and time of each data entry, enabling each participant’s compliance to be verified.

The electronic PDAs used in Study Two were Palm Z22 Handheld devices. This particular model of PDA was chosen for the study as it is easy to use, lightweight and compact in size. In addition, the battery installed in the Palm Z22 provides a long battery life and 32MB memory so that participants were able to complete the study without being required to recharge the battery or download data. The Palm Z22 has a 160 x 160 colour display screen and 32MB memory.

The PDAs were programmed using the Purdue Momentary Assessment Tool (PMAT; Weiss, Beal, Lucy, & MacDermid, 2004). This program was selected as it is readily available, provides a maximum amount of flexibility for designing and administering a study of daily experiences, and is relatively easy to navigate and install. The PMAT supports many different question formats, including multiple choice, forced choice, branching options, and sliding scales (Le, Hat Nim & Beal, 2006). Furthermore, the PMAT is highly flexible, allowing complex scheduling options and question patterns to be formulated. Finally, the PMAT provided participants with a ‘do not disturb’ option, which prevented signals from occurring for a pre determined amount of time.

A signal contingent design was employed, whereby each participant was asked to respond to the electronic questionnaires when an auditory cue was sounded. These cues were programmed to occur at semi-random, spaced intervals during each day. Without the constraint of spacing, the randomisation process may have created prompts too close together or too far apart in time. For the current study, the testing period each day ranged from 8 am until 10 pm, with five prompts occurring at a minimum spacing of 100 minutes apart.

Each EMA assessment consisted of four primary questionnaire sets; readiness to change, self-efficacy, occurrence of influential event, and mood. In total, it took the participants approximately two minutes to complete the entire EMA at each time prompt. Each of these will questionnaire sets will now be described.
6.3.2.5.1 Readiness to change

The original 20 ANSOCQ items were adapted to create six readiness to change questions, with each question representing one of six symptom dimensions being investigated; current weight, body dissatisfaction, avoidance of specific foods, skipping meals, weight control methods and cognitive/emotional issues.

At each EMA, participants were asked to indicate how ready they felt in regard to changing each of the six symptom dimensions by choosing a corresponding response ranging from A (not at all prepared to change) to D (currently working on changing). In addition, participants were then prompted to indicate what percentage of time (ranging from 0 to 100), since last completing a PDA entry, that they had felt that way.

An example of a readiness to change question presented to participants is: ‘The following refer to gaining weight: a) I do not need to gain weight, b) Sometimes I think that I might be better off if I gained weight, c) I have decided that I will try to gain weight, d) I am putting a lot of effort into gaining weight’.

6.3.2.5.2 Self-efficacy

Six questions designed to assess self-efficacy were created based on the original items on the RSES. As with readiness to change, each of the questions measured participants’ perceived self-efficacy in relation to one of the six symptom dimensions being investigated; current weight, body dissatisfaction, avoidance of specific foods, skipping meals, weight control methods and cognitive/emotional issues.

Participants were asked to report how confident they were that if they chose to they could change each of the symptom dimensions by rating their confidence on a scale from 0 (not at all confident) to 10 (completely confident). Furthermore, once completing each self-efficacy question, participants were asked to also indicate the percentage of time (ranging from 0-100) since last completing the last PDA entry
that they had felt that degree of confidence. An example of a self-efficacy question included in each EMA is: ‘I believe that if I chose to I could gain weight: 0-10’.

6.3.2.5.3 Influential event

In addition, participants were prompted via the EMA to describe events (including their perceived importance) which may have influenced their thoughts or behaviours. Participants were presented with nine options; weighed yourself, argument with family or friends, appointment with therapist, eaten a large meal, exercised, bought new clothes, received weight/shape related comments, other event, and no event, of which they could select one or numerous options. If they indicated that an event had occurred, they were then asked to rate the importance of that particular event on a scale ranging from 0 (not at all important) to 10 (extremely important).

6.3.2.5.4 Mood

In addition to readiness to change, self-efficacy and event occurrence, participants’ mood was also evaluated. Participants were asked to indicate (using a yes/no response) whether, at the time of completing each EMA, they felt anxious, depressed, stressed, relaxed or worthless. If participants reported ‘yes’ to any of the five mood options, they were then prompted to rate how strongly they felt that way (ranging from 0-10). Participants could endorse more than one mood option.

6.3.3 Procedure

Before commencement of this study, ethics approval was sought and granted from Deakin University - Human Research Ethics Committee (DU-HREC; See Appendix H). Participants were recruited from numerous eating disorder support groups and associations within Victoria. In addition, recruitment was aided by the
publication of several newspaper (See Appendix I) and newsletter advertisements (See Appendix J) and utilization of private practitioners (such as dieticians, psychologists and medical practitioners; See Appendix K).

If potential participants were interested in being involved in the research, they were instructed to contact the researcher, either by telephone or email, to arrange a suitable time and place to meet. During the initial meeting, participants were asked to thoroughly read through the plain language statement (See Appendix L) and sign a written consent form (See Appendix M).

Participants were then individually given a brief training session where they were provided with basic instructions regarding how to use the palm pilot, including functions to alter the volume and to locate the contact details of the researcher. In addition, prior to completing the EMA data collection phase of the project, participants were asked to complete a paper and pencil version of the ANSOCQ, RSES, EDE-Q and the brief demographics questionnaire. At the completion of the abovementioned questionnaires, the participant arranged another suitable time, to meet the researcher and return the PDA.

Participants completed the same four questionnaire sets at each time prompt. They were asked to respond to the audible prompts five times a day for six days. It was expected that it would take participants approximately two minutes to complete the entire EMA questionnaire set at each time prompt.

Once returned, the data were downloaded from the PDA directly into an excel file. All data were then transferred into a Statistical Packages for the Social Sciences (SPSS) file, before being cleaned and analysed.

6.4 Results

6.4.1 Plan of analysis

Prior to examining the individual daily time-series data obtained through EMA, all participants completed paper and pencil versions of the ANSOCQ, RSES, EDE-Q, and a demographics questionnaire. The demographic data were used to determine each participant’s age, length of illness and BMI. Furthermore, the results
from both the ANSOCQ and RSES were summed to provide an indication of each participant’s global readiness to change and self-efficacy scores, respectively. Each participant’s global score derived from the ANSOCQ was further used to assign them to a discrete stage of change as specified by the TTM. The total score reported by each participant on the EDE-Q was used to determine the degree of severity of their eating disorder.

The EMA data derived from each participant were initially treated as independent case studies and analysed using SPSS – Version 17 to compute the means and standard deviations for both readiness to change and self-efficacy across each of the six symptom dimensions being investigated. The data from all participants were then combined and further statistical analyses were conducted to explore the relationships between each of the variables.

### 6.4.2 Participant demographics

As mentioned earlier, four participants completed the current study. Three of the participants reported completing secondary school, whilst one participant had obtained a tertiary qualification. Refer to Table 6.1 for demographic data.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Age</th>
<th>Gender</th>
<th>BMI</th>
<th>Length of Illness (in months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>37</td>
<td>Female</td>
<td>20.73</td>
<td>348</td>
</tr>
<tr>
<td>2</td>
<td>21</td>
<td>Female</td>
<td>17.02</td>
<td>66</td>
</tr>
<tr>
<td>3</td>
<td>18</td>
<td>Female</td>
<td>18.43</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>22</td>
<td>Female</td>
<td>19.23</td>
<td>63</td>
</tr>
</tbody>
</table>

\[ M = 24.50 \quad 18.85 \quad 122.75 \]

\[ SD = 8.50 \quad 1.55 \quad 152.05 \]

Table 6.1

*Demographic Results*
As shown in Table 6.2, two participants were assigned to the TTM stage of contemplation, one to the preparation stage and one to the action stage. Furthermore, both of the participants in the contemplation stage reported relatively low global self-efficacy, while the participants in the preparation and action stages perceived moderate confidence in their ability to change.

Table 6.2
Quantitative Scale Results

<table>
<thead>
<tr>
<th>Participant</th>
<th>ANSOCQ (MAX=100)</th>
<th>Stage</th>
<th>SE (MAX=200)</th>
<th>EDE-Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>38.00</td>
<td>Contemplation</td>
<td>79.00</td>
<td>3.84</td>
</tr>
<tr>
<td>2</td>
<td>50.00</td>
<td>Preparation</td>
<td>108.00</td>
<td>3.25</td>
</tr>
<tr>
<td>3</td>
<td>70.00</td>
<td>Action</td>
<td>111.00</td>
<td>3.83</td>
</tr>
<tr>
<td>4</td>
<td>48.50</td>
<td>Contemplation</td>
<td>84.00</td>
<td>4.68</td>
</tr>
</tbody>
</table>

6.4.3 Analysis of participants' daily response data

Examining the individual data reported by each participant enabled the differences in their experiences to be assessed as they responded to the palm top computer over a duration of six days. The EMA data will be presented in two sections. Initially, the four individual case studies will be presented, followed by the grouped quantitative results.

The data obtained from each of the four participants will be presented in turn. The results obtained from each participant will begin with an overview of their readiness to change and self-efficacy, before describing the variation in these constructs across each of the six symptom dimensions under investigation. The percentage of time during the testing period that each participant endorsed their reported readiness to change score will also be presented.
The grouped data will be presented using the TTM as a framework, with results pertinent to readiness to change reported initially, followed by those of self-efficacy. Finally, the statistical comparison between the two methods of data collection (self-report questionnaires and EMA) will be reported.

6.4.3.2 Individual case studies

6.4.3.2.1 Participant 1 (P1)

P1 was a 21 year old female with a BMI of 17.02 (lowest BMI=14.56) who reported having anorexia for the past 5.5 years. Her total ANSOCQ score of 38 was consistent with the contemplation stage of the TTM. She also reported a self-efficacy score (using the RSES scale) of 79, indicating that she was not particularly confident that if she chose to she could change her anorexic symptomatology. Furthermore, P1’s total score on the EDE-Q (3.84) indicated that she was in the 95th percentile for eating disorder symptom severity (Mond, Hay, Rodgers & Owen, 2006). P1 demonstrated very good overall compliance in regard to completing the palm-top computer prompts; responding to 83% of prompts throughout the course of the six days.

6.4.3.2.1 Readiness to change – overview

The overall readiness to change reported by P1 varied dramatically across the six symptom dimensions being investigated. As can be seen in Figure 6.1, P1 reported relatively high readiness to change the dimension of Emotional Issues (M=3.68, SD=.56). In regard to the dimensions of Amount of Food (M=2.92, SD=.99) and Weight Loss Methods (M=2.16, SD=.94), she reported moderate readiness to change. However, P1 stated that she was unprepared to increase the types of foods which she was eating (M=1.48, SD=.59), change the standards which she was using to evaluate her weight and shape (M=1.16, SD=.37) or consider gaining weight (M=1.00, SD=.00).
Figure 6.1. Overview of P1’s readiness to change.

6.4.3.2.2 Self-efficacy – overview

Congruent with readiness to change, P1’s self-efficacy scores varied depending upon the symptom dimension. As shown in Figure 6.2, P1 reported moderate self-efficacy in her ability to consume more food ($M=6.72$, $SD=2.51$), refrain from using extreme methods to lose weight ($M=5.64$, $SD=2.38$), and actively work on changing her emotional issues ($M=4.80$, $SD=2.66$). However, P1 indicated that she believed that even if she chose to, she didn’t have the ability to change the standards which she was using to evaluate her weight and shape ($M=1.60$, $SD=1.38$), increase the types of foods which she was consuming ($M=1.04$, $SD=0.79$), or consider gaining weight ($M=0.00$, $SD=.00$).
Note: o represents data outlier >1.5xSD. * represents data outlier >3xSD. SE=Self-efficacy.

Figure 6.2. Overview of P1’s self-efficacy.

6.4.3.2.3 Readiness to change – instability over time

Participants were asked, at each EMA assessment, to indicate the percentage of time since the last prompt that their readiness to change and self-efficacy had remained constant. As can be seen in Table 6.3, P1 showed variability with respect to the degree of stability over time on readiness to change with respect to these symptom dimensions. Readiness to change weight remained stable across time; for 98.72% of the six day period, P1 stated she did not vary from the pre-contemplation stage between prompt periods. In addition, her readiness to change the standards which she was using to evaluate her weight also remained relatively stable over time,
only fluctuating between stages 24% of the time between prompts. Furthermore, the symptom dimensions of emotional issues (69.52%), amount of food consumed (64.40%), and the types of foods consumed (61.56%) all demonstrated moderate stability over time. However, P1 reported that her readiness to change the methods used to lose weight fluctuated between different stages 45% of the time between prompts. This indicates that the stage of change which she endorsed regarding her readiness to change the methods she was using to lose weight was inaccurate 45% of the time.

Table 6.3

<table>
<thead>
<tr>
<th>Amount of food</th>
<th>Evaluation standards</th>
<th>Types of foods</th>
<th>Weight loss methods</th>
<th>Emotional issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>98.72</td>
<td>64.40</td>
<td>76.00</td>
<td>61.56</td>
</tr>
<tr>
<td>SD</td>
<td>2.09</td>
<td>20.52</td>
<td>17.71</td>
<td>26.32</td>
</tr>
<tr>
<td>Min</td>
<td>90</td>
<td>26</td>
<td>31</td>
<td>14</td>
</tr>
<tr>
<td>Max</td>
<td>100</td>
<td>97</td>
<td>96</td>
<td>97</td>
</tr>
<tr>
<td>Range</td>
<td>10</td>
<td>71</td>
<td>65</td>
<td>83</td>
</tr>
</tbody>
</table>

6.4.3.2.4 Readiness to change – symptom dimensions

Figure 6.3 represents P1’s readiness to change scores for each dimension over the six day testing period. Two points are illustrated in Figure 6.3. Firstly, visual analysis revealed that P1’s readiness to change varied across the six symptom dimensions. Although her global ANSOCQ score assigned her into the discrete stage of contemplation, as can be seen, her readiness to change varied between the action stage (emotional issues dimension) and the pre-contemplation stage (weight gain
dimension). Therefore, P1 demonstrated a differing degree of readiness to change depending upon the symptom being addressed.

Furthermore, during the six day testing period only the dimension of weight gain remained stable ($M=1.00$, $SD=.00$) in the pre-contemplation stage. In contrast, visual analysis revealed that the dimensions of weight loss methods and amount of food consumed varied dramatically; with reported readiness varying across all stages of change.
Note: Breaks in lines indicate missing data. Where coloured lines overlap, only the darkest colour is shown.

Figure 6.3. Readiness to change scores for each symptom dimension across time (P1).
To facilitate further interpretation of P1's readiness to change, descriptive statistics were computed for each of the six symptom dimensions. These results are summarised in Table 6.4. In addition, the difference between each dimension mean score and her global ANSOCQ score was also assessed via a change parameter. The results of these comparisons are also presented in Table 6.4.

Table 6.4

*Descriptive statistics for readiness to change scores across dimensions for P1 (N=25)*

<table>
<thead>
<tr>
<th></th>
<th>Weight (Stage)</th>
<th>Amount of food</th>
<th>Evaluation standards</th>
<th>Types of foods</th>
<th>Weight loss methods</th>
<th>Emotional issues</th>
<th>Mean Δ (high-low)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>M</em></td>
<td>1.00 (1)</td>
<td>2.92 (3)</td>
<td>1.16 (1)</td>
<td>1.48 (1)</td>
<td>2.16 (2)</td>
<td>3.68 (4)</td>
<td>2.68</td>
</tr>
<tr>
<td><em>SD</em></td>
<td>.00</td>
<td>.997</td>
<td>.374</td>
<td>.586</td>
<td>.943</td>
<td>.557</td>
<td></td>
</tr>
<tr>
<td>Variance</td>
<td>.00</td>
<td>.993</td>
<td>.140</td>
<td>.343</td>
<td>.890</td>
<td>.310</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>.200</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>1.00</td>
<td>4.00</td>
<td>2.00</td>
<td>3.00</td>
<td>4.00</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>.00</td>
<td>3.00</td>
<td>1.00</td>
<td>2.00</td>
<td>3.00</td>
<td>2.00</td>
<td></td>
</tr>
</tbody>
</table>

Δ from global

| ANSOCQ       | -1.43         | +0.49          | -1.27                | -0.95          | -0.27               | +1.25            |

*Note:* Stage 1= pre-contemplation, Stage 2=contemplation, Stage 3=preparation, Stage 4 = action.

Table 6.4 reveals that P1’s perception of readiness to change was not consistent across all six symptom dimensions. Her mean readiness to change scores varied by 2.68, dependent on the symptom being addressed. In addition, the amount of variance in the scores reported for each dimension was not the same, ranging from no variance for the weight dimension to .993 for the amount of food consumed dimension. This variance represents the degree of movement which P1 reported across different stages. With respect to the degree of difference between P1’s global
ANSOCQ score and her mean readiness to change score on each dimension, her symptom specific readiness to change ranged from 1.43 below to 1.27 above her global ANSOCQ score. This further demonstrates the large degree of variability in her readiness to change between the dimensions.

6.4.3.2.5 *Self-efficacy – symptom dimensions*

Congruent with the findings relating to readiness to change, P1's perceived self-efficacy varied across the six symptom dimensions being investigated. Despite reporting moderately high global self-efficacy on the RSES, Figure 6.4 illustrates that her belief in her ability to increase her weight, increase the types of foods she was eating, and change the strict standards which she used to evaluate her body remained very low. Therefore, P1 reported differing degrees of self-efficacy depending upon the symptom being addressed.

Moreover, during the six day testing period only the dimension of weight gain remained stable \((M=0.00, SD=0.00)\). In contrast, P1's self-efficacy regarding changing all other symptom dimensions varied dramatically across time.
Note: Breaks in lines indicate missing data. Where coloured lines overlap, only the darkest colour is shown.

Figure 6.4. Self-efficacy Scores for each Symptom Dimension across Time (P1).
Descriptive statistics were computed to aid in the interpretation of P1's self-efficacy scores. These results are summarised in Table 6.5. In addition, the change between each dimension's mean score and P1's global RSES score was also determined. The results of these comparisons are presented in Table 6.5.

Table 6.5

*Descriptive statistics for self-efficacy scores across each dimensions for P1 (N=25)*

<table>
<thead>
<tr>
<th></th>
<th>Weight of food</th>
<th>Evaluation</th>
<th>Types of Foods</th>
<th>Weight loss methods</th>
<th>Emotional Issues</th>
<th>Δ change (high-low)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M</strong></td>
<td>.00</td>
<td>6.72</td>
<td>1.60</td>
<td>1.04</td>
<td>5.64</td>
<td>4.80</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>.00</td>
<td>2.51</td>
<td>1.38</td>
<td>0.79</td>
<td>2.38</td>
<td>2.66</td>
</tr>
<tr>
<td><strong>Variance</strong></td>
<td>.00</td>
<td>6.29</td>
<td>1.92</td>
<td>0.62</td>
<td>5.66</td>
<td>7.08</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>.00</td>
<td>3.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>2.00</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>.00</td>
<td>10.00</td>
<td>5.00</td>
<td>3.00</td>
<td>9.00</td>
<td>10.00</td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td>.00</td>
<td>7.00</td>
<td>5.00</td>
<td>3.00</td>
<td>9.00</td>
<td>8.00</td>
</tr>
</tbody>
</table>

| Δ from global RSES | -4.20 | +2.52 | -2.60 | -3.16 | +1.44 | +0.60 |

Table 6.5 reveals that P1's mean self-efficacy scores varied considerably across each dimension; from 0.00 with respect to the weight dimension, to 6.72 for her confidence in her ability to increase the amount of food she was consuming. Furthermore, the degree of variance within each symptom specific dimension ranged from 0 for weight to 7.08 regarding changing emotional issues, again reflecting the instability within these dimensions over time. Table 6.5 further demonstrates the lack of congruency between P1's global RSES score and her mean self-efficacy score for each dimension. As shown in Table 6.5, her dimension specific self-efficacy ranged
from 4.20 below to 2.52 above her global RSES score. As with readiness to change, this result also demonstrates the large degree of variability in self-efficacy between each symptom dimension.

6.4.3.3 Participant 2 (P2)

P2 reported having anorexia for the past one year and two months, and according to her overall ANSOCQ score of 50, could be assigned to the preparation stage of the TTM. Furthermore, her self-efficacy score (using the RSES) of 108 (range 0-200) indicates that P2 was moderately confident in her ability to change her anorexic symptomatology. In addition, P2’s total score on the EDE-Q (3.25) suggests that she falls into the clinical range for the diagnosis of an eating disorder (Mond et al., 2004). In regard to completing the PDA prompts, P2 displayed moderate compliance, responding to a total of 54% of prompts throughout the six day testing period. P2 was an 18 year old female with a BMI of 18.43 (lowest BMI=15.2).

6.4.3.3.1 Readiness to change – overview

A visual analysis showed that P2’s readiness for change varied noticeably across the six symptom dimensions under investigation. Although she reported low readiness to change in regard to the majority of anorexic symptoms, P2 indicated that she was actively attempting to change the amount of food she was consuming ($M=3.75$, $SD=.58$). In addition, P2 also reported moderate readiness to change in regard to her emotional issues ($M=2.25$, $SD=.45$) and the types of foods which she was allowing herself to eat ($M=2.13$, $SD=.81$). She reported that she was not prepared to change the standards which she was using to evaluate her weight and shape ($M=1.56$, $SD=.51$), her weight loss methods ($M=1.06$, $SD=.25$) or contemplate gaining weight ($M=1.00$, $SD=.00$). These findings are represented in Figure 6.5.
Note: * represents data outlier >3xSD. RTC=Readiness to change.

Figure 6.5. Overview of P2’s Readiness to Change.

6.4.3.3.2 Self-efficacy – overview

P2’s self-efficacy varied dependent upon the symptom dimension being addressed. As illustrated in Figure 6.6, she believed that even if she chose to, she couldn’t increase her weight ($M=.06$, $SD=.25$), or change the extreme methods which she was using to lose weight ($M=.37$, $SD=1.03$). However, P2 was moderately confident that she could refrain from using strict standards to evaluate her body ($M=2.75$, $SD=1.44$) increase the types of foods which she was eating ($M=3.06$, $SD=1.44$), and work on problematic emotional issues ($M=4.25$, $SD=1.13$). P2 also stated that she was extremely confident in her ability to begin consuming a larger amount of food ($M=9.29$, $SD=2.40$).
Note: o represents data outlier >1.5xSD, * represents data outlier >3xSD, SE=Self-efficacy.

Figure 6.6. Overview of P2’s Self-efficacy.

6.4.3.3.3 Readiness to change – instability over time

Table 6.6 demonstrates that P2’s readiness to change the symptom dimensions of weight (99.75%), weight loss methods (94.44%) and amount of food consumed (87.19%) all remained stable during the study. However, the dimensions of evaluation standards (63.50%), emotional issues (60.44%) and the types of foods consumed (56.69%) fluctuated moderately over time.
Table 6.6

Percentage of prompt times which reflected readiness to change scores for each symptom dimension (P2)

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Amount of food</th>
<th>Evaluation standards</th>
<th>Types of foods</th>
<th>Weight loss methods</th>
<th>Emotional issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>99.75</td>
<td>87.19</td>
<td>63.50</td>
<td>56.69</td>
<td>94.44</td>
<td>60.44</td>
</tr>
<tr>
<td>SD</td>
<td>0.78</td>
<td>23.44</td>
<td>25.58</td>
<td>24.5</td>
<td>12.51</td>
<td>13.34</td>
</tr>
<tr>
<td>Min</td>
<td>97.00</td>
<td>11.00</td>
<td>15.00</td>
<td>10.00</td>
<td>52.00</td>
<td>31.00</td>
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<tr>
<td>Max</td>
<td>100.00</td>
<td>100.00</td>
<td>91.00</td>
<td>93.00</td>
<td>100.00</td>
<td>80.00</td>
</tr>
<tr>
<td>Range</td>
<td>3.00</td>
<td>89.00</td>
<td>76.00</td>
<td>83.00</td>
<td>48.00</td>
<td>49.00</td>
</tr>
</tbody>
</table>

6.4.3.3.4 Readiness to change – symptom dimensions

Figure 6.7 illustrates the degree to which P2’s readiness to change varied across the six different symptom dimensions. According to her global ANSOCQ score, P2 was in the stage of preparation. However, as shown in Figure 6.7, her readiness to change varied between the action stage (dimension of amount of food consumed) and the stage of pre-contemplation (dimension of weight gain). P2’s readiness to change also varied depending upon the symptom dimension being evaluated.

P2’s readiness to change regarding the dimension of weight gain remained stable ($M=1.00$, $SD=.00$) in the pre-contemplation stage. However, her perceived readiness to change all other symptom dimensions fluctuated over time.
**Note:** Breaks in lines indicate missing data. Where coloured lines overlap, only the darkest colour is shown.

**Figure 6.7:** Readiness to Change Scores for each Symptom Dimension across Time (P2).
Descriptive statistics regarding P2’s readiness to change were computed for each of the six symptom dimension. Furthermore, the difference between her mean readiness to change score for each dimension and her global ANSOCQ score was also assessed via a change parameter (see Table 6.7).

Table 6.7

*Descriptive statistics for readiness to change scores across dimensions for P2

*(N=15)*

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Amount of food</th>
<th>Evaluation standards</th>
<th>Types of foods</th>
<th>Weight loss methods</th>
<th>Emotional issues</th>
<th>Mean Δ (high-low)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M (stage)</td>
<td>1.00 (1)</td>
<td>3.75 (4)</td>
<td>1.56 (2)</td>
<td>2.13 (2)</td>
<td>1.06 (1)</td>
<td>2.25 (2)</td>
<td>2.75</td>
</tr>
<tr>
<td>SD</td>
<td>0.00</td>
<td>0.58</td>
<td>0.51</td>
<td>0.81</td>
<td>0.25</td>
<td>0.45</td>
<td></td>
</tr>
<tr>
<td>Variance</td>
<td>0.00</td>
<td>0.33</td>
<td>0.26</td>
<td>0.65</td>
<td>0.06</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>1.00</td>
<td>2.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>1.00</td>
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<td>2.00</td>
<td>4.00</td>
<td>2.00</td>
<td>3.00</td>
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<tr>
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<td>1.00</td>
<td>3.00</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

Δ from global

ANSOCQ -0.90 +1.85 -0.34 +0.23 -0.84 +0.35

*Note:* Stage 1=pre contemplation, Stage 2=contemplation, Stage 3=preparation, Stage 4=action.

P2’s readiness to change was not congruent across all six symptom dimensions. Depending on the symptom being addressed, her readiness to change varied by 2.75. Furthermore, the variance regarding her perceived readiness to change differed across the six dimensions, ranging from 0.00 (for the dimension of weight) to 0.65 (in regard to the amount of food she was eating). P2’s symptom specific readiness to change ranged from 0.90 below to 1.85 above her global ANSOCQ score.
6.4.3.3.5  Self-efficacy – symptom dimensions

P2’s self-efficacy varied across the six dimensions being investigated. Despite reporting relatively high global self-efficacy (assessed via the RSES), Figure 6.8 demonstrates that her belief in her ability to increase her weight, and change the extreme methods which she used to lose weight remained very low. However, her confidence in her ability to consume more food remained high. In general, P2 reported differing degrees of self-efficacy depending upon the symptom being addressed. During the six day testing period P2’s self-efficacy regarding each of the dimensions varied across time, however the dimensions of weight and amount of food consumed remained relatively stable.
**Note:** Breaks in lines indicate missing data. Where coloured lines overlap, only the darkest colour is shown.

**Figure 6.8.** Self-efficacy Scores for each Symptom Dimension across Time (P2).
P2’s mean self-efficacy scores for each symptom dimension were also analysed via descriptive statistics. The difference between her mean self-efficacy score for each dimension and her global RSES score was also examined (see Table 6.8).

Table 6.8

Descriptive statistics for self-efficacy scores across dimensions for P2 (N=15)

<table>
<thead>
<tr>
<th></th>
<th>Amount of food</th>
<th>Evaluation</th>
<th>Types of Foods</th>
<th>Weight loss methods</th>
<th>Emotional Issues</th>
<th>Δ change (high-low)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M</strong></td>
<td>0.06</td>
<td>9.29</td>
<td>2.75</td>
<td>3.06</td>
<td>0.37</td>
<td>4.25</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>0.25</td>
<td>2.40</td>
<td>1.44</td>
<td>1.44</td>
<td>1.03</td>
<td>1.13</td>
</tr>
<tr>
<td><strong>Variance</strong></td>
<td>0.06</td>
<td>5.76</td>
<td>2.07</td>
<td>2.06</td>
<td>1.05</td>
<td>1.27</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.00</td>
<td>1.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>2.00</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>1.00</td>
<td>10.00</td>
<td>6.00</td>
<td>6.00</td>
<td>4.00</td>
<td>6.00</td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td>1.00</td>
<td>9.00</td>
<td>6.00</td>
<td>6.00</td>
<td>4.00</td>
<td>4.00</td>
</tr>
</tbody>
</table>

Δ from global

| RSES           | -5.34          | +3.89      | -2.65          | -2.34              | -5.03            | -1.15               |

As demonstrated in Table 6.8, P2’s mean self-efficacy scores varied dramatically across each dimension. Her mean self-efficacy ratings varied by 9.72, with her lowest score reported for the symptom of weight (0.06), and her highest score relating to her ability to increase the amount of food she was consuming (9.72). The degree of variance within each dimension also fluctuated, ranging from 0.06 (regarding her weight) to 5.76 (increasing the amount of food). Table 6.5 also compares P2’s global RSES score and her mean self-efficacy score for each dimension. Depending on the symptom being addressed, her self-efficacy ranged from 5.34 below to 3.89 above her global RSES score.
6.4.3.4 Participant 3 (P3)

P3 was a 22 year old female with a reported BMI of 19.23 (lowest BMI was unknown). She stated that she had been diagnosed with anorexia for the previous five years and her total ANSOCQ score of 70 suggested that she could be allocated into the action stage of the TTM. Furthermore, P3 also reported a total self-efficacy score (using the RSES) of 111 (range 0-200), indicating that she was relatively confident that if she chose to she could change her anorexic symptomatology. P3 scored 3.83 on the EDE-Q, revealing that she was in the 95th percentile in regard to eating disorder symptom severity (Mond et al., 2006). P3 established good compliance in completing the palm-top computer prompts, successfully recording 68% of all data prompts.

6.4.3.4.1 Readiness to change – overview

As shown in Figure 6.9, P3’s mean readiness to change varied dramatically across the six dimensions. P3 displayed high readiness to change in regard to the dimensions of amount of food consumed ($M=4.00$, $SD=.00$) and emotional issues ($M=3.94$, $SD=.24$). Furthermore, P3 indicated moderate readiness to change the standards which she was using to evaluate her weight and shape ($M=2.47$, $SD=.87$) and the methods which she was using to lose weight ($M=2.88$, $SD=.99$). However, she reported that she was not at all prepared to increase her weight ($M=1.00$, $SD=.00$), or the types of foods which she was eating ($M=1.00$, $SD=.00$).
Note: * represents data outlier >3xSD. RTC=Readiness to Change.

Figure 6.9. Overview of P3’s Readiness to Change.

6.4.3.4.2 Self-efficacy – overview

P3 reported that her confidence in her ability to change varied dependent upon the symptom being addressed. Figure 6.10 shows that she was very confident that if she chose to she could gain weight ($M=9.82$, $SD=.39$) and increase the amount of food which she was consuming ($M=10.00$, $SD=.00$). However, she was only moderately confident in her ability to refrain from using extreme methods to control her weight ($M=3.29$, $SD=2.26$) and work on relevant emotional issues ($M=5.59$, $SD=1.94$). P3 stated that she was not confident that she could change the strict standards which she was using to evaluate her body ($M=1.35$, $SD=1.58$), and start eating foods which she would usually avoid ($M=.00$, $SD=.00$).
Note: ○ represents data outlier >1.5x SD. * represents data outlier >3x SD. SE=Self-efficacy.

Figure 6.10. Overview of P3’s Self-efficacy.

6.4.3.4.3 Readiness to change – instability over time

P3’s readiness to change remained stable across the majority of the symptom dimensions being investigated (See Table 6.9). Specifically, her readiness to change the amount of food consumed (96.24%), types of foods consumed (95.94%), weight (95.06%), and emotional issues (94%) all remained stable across time. This suggests that the stage of change which P3 endorsed for these dimensions at each time point also remained consistent between the testing prompts. In contrast, her readiness to change the methods which she was using to lose weight (48.18%) and the standards which she was using to evaluate her body (41.06%) fluctuated dramatically across time, indicating that the readiness to change which she endorsed at the testing point may not have accurately reflected her readiness to change between prompts.
Table 6.9

*Percentage of prompt times which reflected readiness to change scores for each symptom dimension (P3).*

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Amount of food</th>
<th>Evaluation standards</th>
<th>Types of foods</th>
<th>Weight loss methods</th>
<th>Emotional issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>M (stage)</td>
<td>95.06</td>
<td>96.24</td>
<td>41.06</td>
<td>95.94</td>
<td>48.18</td>
<td>94.00</td>
</tr>
<tr>
<td>SD</td>
<td>6.35</td>
<td>4.01</td>
<td>15.41</td>
<td>4.66</td>
<td>5.79</td>
<td>16.21</td>
</tr>
<tr>
<td>Min</td>
<td>77.00</td>
<td>86.00</td>
<td>11.00</td>
<td>80.00</td>
<td>29.00</td>
<td>51.00</td>
</tr>
<tr>
<td>Max</td>
<td>100.00</td>
<td>100.00</td>
<td>76.00</td>
<td>100.00</td>
<td>54.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Range</td>
<td>23.00</td>
<td>14.00</td>
<td>65.00</td>
<td>20.00</td>
<td>25.00</td>
<td>49.00</td>
</tr>
</tbody>
</table>

6.4.3.4.4 *Readiness to change – symptom dimensions*

P3 showed inconsistent readiness to change across each of the symptom dimensions being investigated. Using her global ANSOCQ score, P3 was assigned to the action stage of the TTM. However, Figure 6.11 illustrates that her readiness to change varied between the action stage (dimensions of amount of food consumed, and emotional issues) and the stage of pre-contemplation (dimension of weight gain).

P3’s readiness to change regarding the dimensions of weight gain (pre-contemplation) and amount of food (action) remained stable. However, her perceived readiness to change all other symptom dimensions fluctuated over time.
Note: Breaks in lines indicate missing data. Where coloured lines overlap, only the darkest colour is shown.

Figure 6.11. Readiness to Change Scores for each Symptom Dimension across Time (P3).
To assist with the interpretation of P3’s readiness to change assessment, descriptive statistics were computed for each dimension. In addition, the difference between her mean readiness to change score on each dimension and her global ANSOCQ score was also assessed via a change parameter (see Table 6.10).

Table 6.10

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Amount of food</th>
<th>Evaluation standards</th>
<th>Types of foods</th>
<th>Weight loss methods</th>
<th>Emotional issues</th>
<th>Mean Δ (high-low)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M (stage)</td>
<td>1.00 (1)</td>
<td>4.00 (4)</td>
<td>2.47 (2)</td>
<td>1.00 (1)</td>
<td>2.88 (3)</td>
<td>3.94 (4)</td>
<td>3.00</td>
</tr>
<tr>
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<td>0.00</td>
<td>0.87</td>
<td>0.00</td>
<td>0.99</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>Variance</td>
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<td>0.77</td>
<td>0.00</td>
<td>0.99</td>
<td>0.06</td>
<td></td>
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<tr>
<td>Min</td>
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<td>4.00</td>
<td>2.00</td>
<td>1.00</td>
<td>2.00</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>1.00</td>
<td>4.00</td>
<td>4.00</td>
<td>1.00</td>
<td>4.00</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>Range</td>
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<td>0.00</td>
<td>2.00</td>
<td>0.00</td>
<td>2.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Δ from global</td>
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<td></td>
<td></td>
<td></td>
<td>-1.03</td>
<td></td>
</tr>
<tr>
<td>ANSOCQ</td>
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<td>+0.50</td>
<td>-2.50</td>
<td>-0.62</td>
<td>+0.44</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Stage 1 = pre contemplation, Stage 2 = contemplation, Stage 3 = preparation, Stage 4 = action

P3’s perception of readiness to change varied considerably across all symptom dimensions. Her mean readiness to change scores varied by 3.00, dependent upon the symptom being addressed. The degree of variance within each dimension also differed, ranging from 0.00 (for the dimension of weight) to 0.99 (weight loss methods). Table 6.10 also demonstrates the degree of difference between P3’s global ANSOCQ score and her mean readiness to change score on
each dimension. Her symptom specific readiness to change ranged from 2.50 below to 1.50 above her global ANSOCQ score.

6.4.3.4.5 Self-efficacy – symptom dimensions

P3 demonstrated very high global self-efficacy on the RSES, however, her symptom specific self-efficacy varied dependent upon the symptom dimension being addressed. As shown in Figure 6.12, P3 was extremely confident that she could consume a larger amount of food, and gain weight. However, P3 was not at all confident that she could start eating foods which she usually avoided. Figure 6.12 indicates that P3’s perceived self-efficacy varied dramatically across symptoms, ranging from 0 to 10.

Furthermore, P3’s self-efficacy remained stable over time in regard to her ability to consume more food ($M=10.00$, $SD=.00$) and her confidence that she could start eating foods which she usually avoided ($M=.00$, $SD=.00$). In contrast, her self-efficacy regarding the other four symptom dimensions fluctuated across time.
Note: Breaks in lines indicate missing data. Where coloured lines overlap, only the darkest colour is shown.

Figure 6.12. Self-efficacy Scores for each Symptom Dimension across Time (P3).
The descriptive statistics regarding P3’s self-efficacy scores for each symptom dimension and the change between her global RSES score and each dimension’s mean score were determined and are presented in Table 6.11.

P3’s mean self-efficacy scores varied noticeably across each dimension. Her mean self-efficacy ratings fluctuated by 10.00 (maximum difference possible). P3 reported having no confidence in her ability to increase the types of foods she was eating (0.00), but complete confidence that she could consume a larger quantity of ‘safe’ foods (10.00). The degree of variance within each dimension ranged from 0.00 (types of foods) to 5.10 (weight loss methods). Table 6.11 further reveals the lack of congruency between P3’s global RSES score and her perceived self-efficacy regarding changing each dimension; her dimension specific self-efficacy ranged from 5.55 below to 4.45 above her global RSES score.

Table 6.11

Descriptive statistics for self-efficacy scores across dimensions for P3 (N=17)

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Amount of food</th>
<th>Evaluation</th>
<th>Types of Foods</th>
<th>Weight loss methods</th>
<th>Emotional Issues</th>
<th>Δ change (high-low)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>9.82</td>
<td>10.00</td>
<td>1.35</td>
<td>0.00</td>
<td>3.29</td>
<td>5.59</td>
<td>10.00</td>
</tr>
<tr>
<td>SD</td>
<td>0.39</td>
<td>0.00</td>
<td>1.58</td>
<td>0.00</td>
<td>2.26</td>
<td></td>
<td>1.94</td>
</tr>
<tr>
<td>Variance</td>
<td>0.15</td>
<td>0.00</td>
<td>2.49</td>
<td>0.00</td>
<td>5.10</td>
<td></td>
<td>3.76</td>
</tr>
<tr>
<td>Min</td>
<td>9.00</td>
<td>10.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
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<td>5.00</td>
<td>0.00</td>
<td>10.00</td>
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<td>10.00</td>
</tr>
<tr>
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<td>0.00</td>
<td>5.00</td>
<td>0.00</td>
<td>10.00</td>
<td></td>
<td>7.00</td>
</tr>
</tbody>
</table>

Δ from global

RSES    | +4.27  | +4.45          | -4.20      | -5.55          | -2.26               |                  | +0.04               |
6.4.3.5  Participant 4 (P4)

P4 displayed poor compliance in regard to completing the PDA prompts. In total, she responded to only 43% of all palm-top computer prompts. Although there was no distinct pattern of missing data evident, P4 did not respond to any palm-top prompts on days two and three during the six day data collection period. P4 was a 37 year old female with a BMI of 20.73 (lowest BMI=12.80) who reported being diagnosed with anorexia for the previous 29 years. P4 had a total ANSOCQ score of 48.5, suggesting that she could be assigned to the contemplation stage of the TTM. Furthermore, she also reported a total self-efficacy score (as measured on the RSES) of 84 (range 0-200), indicating that she was not confident that if she chose to she could change her anorexic symptomatology. In addition, P4’s total score on the EDE-Q (4.77) suggests that she falls into the clinical range for the diagnosis of an eating disorder (Mond et al., 2004).

6.4.3.5.1  Readiness to change – overview

P4’s mean readiness to change varied noticeably across the six dimensions under investigation (See Figure 6.13). She generally reported relatively low readiness to change. However, her highest display of readiness for change was in regard to the dimension of emotional issues ($M=2.23$, $SD=.44$). Furthermore, P4 indicated that she was relatively low in readiness to change the dimensions of amount of food ($M=1.62$, $SD=.51$) and types of foods ($M=1.77$, $SD=.44$). In addition, she reported that she was not ready to change the standards which she was using to evaluate her weight and shape ($M=1.15$, $SD=.38$), her weight loss methods ($M=1.38$, $SD=.65$) or contemplate gaining weight ($M=1.00$, $SD=.00$).
**Note:** * represents data outlier >3xSD. RTC=Readiness to Change.

*Figure 6.13.* Overview of P4’s Readiness to Change.

**6.4.3.5.2 Self-efficacy – overview**

P4 generally reported relatively low confidence in her ability to change, which only varied slightly across the six dimensions being examined (See Figure 6.14). However, her highest perceived self-efficacy was in regard to the dimensions of weight loss methods ($M=2.77$, $SD=1.36$) and types of foods consumed ($M=2.77$, $SD=1.17$). Furthermore, P4 indicated that she was not confident that if she chose to she could gain weight ($M=1.84$, $SD=1.41$).
Note: o represents data outlier >1.5xSD. * represents data outlier >3xSD. SE=Self-efficacy.

Figure 6.14. Overview of P4’s self-efficacy.

6.4.3.5.3 Readiness to change – instability over time

As shown in Table 6.12, P4’s readiness to change fluctuated dramatically in each of the symptom dimensions. This finding indicates that the readiness to change score which she reported at the time of the prompt did not accurately reflect her readiness to change between prompts. For example, P4 stated that she was not prepared to increase her weight (corresponding with the stage of pre-contemplation), however, she further indicated that she only felt this way 40% of the time. Therefore, if her readiness to change was assessed again at a later time, it would be highly likely that she would endorse a different stage of change.
Table 6.12

*Percentage of prompt times which reflected readiness to change scores for each symptom dimension (P4)*

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Amount of food</th>
<th>Evaluation standards</th>
<th>Types of foods</th>
<th>Weight loss methods</th>
<th>Emotional issues</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M</strong></td>
<td>39.92</td>
<td>32.46</td>
<td>32.46</td>
<td>32.85</td>
<td>33.23</td>
<td>37.08</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>21.98</td>
<td>19.11</td>
<td>15.76</td>
<td>16.51</td>
<td>18.40</td>
<td>18.58</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.00</td>
<td>8.00</td>
<td>10.00</td>
<td>12.00</td>
<td>7.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>70.00</td>
<td>67.00</td>
<td>59.00</td>
<td>58.00</td>
<td>61.00</td>
<td>59.00</td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td>70.00</td>
<td>59.00</td>
<td>49.00</td>
<td>46.00</td>
<td>54.00</td>
<td>59.00</td>
</tr>
</tbody>
</table>

6.4.3.5.4 *Readiness to change – symptom dimensions*

Based on her global ANSOCQ score, P4 was assigned to the stage of Contemplation. Figure 6.15 demonstrates that although her readiness to change remained relatively low, it varied across each of the six symptom dimensions. P4’s symptom specific readiness to change ranged from the pre-contemplation stage (weight gain) to the action stage (emotional issues). In addition, her readiness to change fluctuated across time for all symptoms except weight gain, which remained stable (*M*=0.00, *SD*=0.00).
Note: Breaks in lines indicate missing data. Where coloured lines overlap, only the darkest colour is shown.

Figure 6.15. Readiness to Change Scores for each Symptom Dimension across Time (P4).
To assist in the interpretation of P4’s readiness to change scores, descriptive statistics were also computed for each symptom dimension. The difference between P4’s mean readiness to change score for each dimension and her global ANSOCQ score was also compared (see Table 6.13).

Table 6.13

*Descriptive statistics for readiness to change scores across dimensions for P4 (N=13)*

<table>
<thead>
<tr>
<th></th>
<th>Weight (M) (SD)</th>
<th>Amount of food (M) (SD)</th>
<th>Evaluation standards (M) (SD)</th>
<th>Types of foods (M) (SD)</th>
<th>Weight loss methods (M) (SD)</th>
<th>Emotional issues (M) (SD)</th>
<th>Mean Δ (high-low)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M (stage)</td>
<td>1.00 (1)</td>
<td>1.62 (2)</td>
<td>1.15 (1)</td>
<td>1.77 (2)</td>
<td>1.38 (1)</td>
<td>2.23 (2)</td>
<td>1.23</td>
</tr>
<tr>
<td>SD</td>
<td>0.00</td>
<td>0.51</td>
<td>0.38</td>
<td>0.44</td>
<td>0.65</td>
<td>0.44</td>
<td></td>
</tr>
<tr>
<td>Variance</td>
<td>0.00</td>
<td>0.26</td>
<td>0.14</td>
<td>0.19</td>
<td>0.42</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Max</td>
<td>1.00</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>3.00</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>0.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>2.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Δ from global</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.66</td>
</tr>
<tr>
<td>ANSOCQ</td>
<td>-1.43</td>
<td>-1.11</td>
<td>-1.28</td>
<td></td>
<td>-1.05</td>
<td>-0.20</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* Stage 1=pre-contemplation, Stage 2=contemplation, Stage 3=preparation, Stage 4=action.

P4’s readiness to change varied slightly across the symptom dimensions being examined. Her mean readiness to change scores fluctuated by 1.23, dependent on the symptom being addressed. Furthermore, the degree of variance in the scores reported within each dimension also differed, ranging from 0.00 (weight) to 0.42 (weight loss methods). Finally, Table 6.13 also reveals the degree of congruency between P4’s global ANSOCQ score and her mean readiness to change scores on
each dimension. As shown in Table 6.13, her symptom specific readiness to change was consistently below her global ANSOCQ score.

6.4.3.5.5 Self-efficacy – symptom dimensions

P4’s global self-efficacy score (as assessed by the RSES) was relatively low. As seen in Figure 6.16, her symptom specific self-efficacy also remained low (<6), however, fluctuated considerably over time. P4’s self-efficacy was unstable in each of the symptom dimensions being investigated.
Note: Breaks in lines indicate missing data. Where coloured lines overlap, only the darkest colour is shown.

Figure 6.16. Self-efficacy Scores for each Symptom Dimension across Time (P4).
P4’s self-efficacy descriptive statistics are summarised in Table 6.14. In addition, the difference between her global RSES score and the mean self-efficacy scores on each dimension were also determined. The results of these comparisons are presented in Table 6.14.

Table 6.14

Descriptive statistics for self-efficacy scores across dimensions for P4 (N=13)

<table>
<thead>
<tr>
<th></th>
<th>Amount of food</th>
<th>Evaluation</th>
<th>Types of Foods</th>
<th>Weight loss methods</th>
<th>Emotional Issues</th>
<th>Δ change (high-low)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M</strong></td>
<td>1.85</td>
<td>2.15</td>
<td>2.23</td>
<td>2.77</td>
<td>2.77</td>
<td>1.92</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>1.41</td>
<td>1.63</td>
<td>1.48</td>
<td>1.17</td>
<td>1.36</td>
<td>0.64</td>
</tr>
<tr>
<td><strong>Variance</strong></td>
<td>1.97</td>
<td>2.64</td>
<td>2.19</td>
<td>1.36</td>
<td>1.86</td>
<td>0.41</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>2.00</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>5.00</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td>3.00</td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td>5.00</td>
<td>6.00</td>
<td>6.00</td>
<td>4.00</td>
<td>6.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Δ from global RSES</td>
<td>-2.35</td>
<td>-2.05</td>
<td>-1.97</td>
<td>-1.43</td>
<td>-1.43</td>
<td>-2.28</td>
</tr>
</tbody>
</table>

Table 6.14 demonstrates that P4’s mean self-efficacy scores varied only slightly across each dimension. In total, her mean self-efficacy ratings changed by 0.92, with her lowest score reported for the symptom of weight gain (1.85), and her highest scores concerning her confidence in her ability to increase the types of foods she was consuming (2.77), and to work on relevant emotional issues (2.77). The degree of variance within each dimension ranged from 0.41 (emotional issues) to 2.64 (amount of food). Table 6.14 further demonstrates the lack of congruency between P1’s global RSES score and her mean self-efficacy score for each dimension. Similar to the finding related to her readiness to change, P4’s dimension specific self-efficacy remained consistently below her global RSES score.
6.4.4 Grouped data

The EMA data derived from each of the four participants was combined to provide an overall indication of readiness to change and self-efficacy. According to Louis (1988), after individual repeated measures data have been examined to ensure that they are not influenced by the presence of auto correlations, each time-point can be treated as an independent case. All data showed non-significant Durbin-Watson statistics, indicating that the data were independent and suitable for this type of grouped analysis.

6.4.4.1 Readiness to change

The combined grouped data indicated that readiness to change varied significantly dependent upon the symptom dimension being addressed. Participants perceived significantly higher readiness to change in regard to the dimensions of amount of food consumed and emotional issues. Furthermore, participants were significantly less prepared to change their weight. These results are illustrated in Table 6.15.
Table 6.15
Readiness to change across symptom dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1. Weight</td>
<td>71</td>
<td>1.00</td>
<td>.00</td>
</tr>
<tr>
<td>D2. Amount of food</td>
<td>71</td>
<td>3.13</td>
<td>1.08</td>
</tr>
<tr>
<td>D3. Evaluation standards</td>
<td>71</td>
<td>1.56</td>
<td>.77</td>
</tr>
<tr>
<td>D4. Types of food</td>
<td>71</td>
<td>1.56</td>
<td>.67</td>
</tr>
<tr>
<td>D5. Weight loss methods</td>
<td>71</td>
<td>1.94</td>
<td>1.04</td>
</tr>
<tr>
<td>D6. Emotional issues</td>
<td>71</td>
<td>3.15</td>
<td>.89</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>2.06</td>
<td>1.16</td>
</tr>
</tbody>
</table>

*p* .000

D2>D1, *p* .000

D2>D3, *p* .000

D2>D4, *p* .000

D2>D5, *p* .000

D3>D1, *p* .000

D4>D1, *p* .000

D5>D1, *p* .000

D6>D1, *p* .000

D6>D3, *p* .000

D6>D4, *p* .000

D6>D5, *p* .000

Participants were divided into two groups based on their stage allocation. Three of the participants were assigned to the central stages of contemplation and preparation, and one participant was allocated into the stage of action. These two groups were then compared to determine the congruency in regard to the stability (over time) of their perceived readiness to change. The higher the percentage of time each item was endorsed, the more stable the readiness to change was deemed. As shown in Table 6.16, the participant in the action stage reported significantly less fluctuation in her readiness to change regarding the dimensions of
weight gain, amount of food consumed, and weight loss methods, than did participants in the central stages.

Table 6.16

*Readiness to change (stages) across time*

<table>
<thead>
<tr>
<th>Dimension</th>
<th>% Readiness to change</th>
<th>Central Stages</th>
<th>Action Stage</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
</tr>
<tr>
<td>Weight</td>
<td>83.69</td>
<td>26.97</td>
<td>99.75</td>
<td>.77</td>
</tr>
<tr>
<td>Amount of food</td>
<td>66.69</td>
<td>28.85</td>
<td>87.19</td>
<td>23.44</td>
</tr>
<tr>
<td>Evaluation Standards</td>
<td>54.91</td>
<td>25.54</td>
<td>63.50</td>
<td>25.58</td>
</tr>
<tr>
<td>Types of foods</td>
<td>65.40</td>
<td>30.50</td>
<td>56.69</td>
<td>24.05</td>
</tr>
<tr>
<td>Weight loss methods</td>
<td>47.75</td>
<td>17.94</td>
<td>94.44</td>
<td>12.51</td>
</tr>
<tr>
<td>Emotional issues</td>
<td>69.42</td>
<td>28.08</td>
<td>60.44</td>
<td>13.34</td>
</tr>
</tbody>
</table>

6.4.4.2 Self-efficacy

Consistent with the results obtained regarding readiness to change, perceived self-efficacy also varied significantly across the six symptom dimensions. As indicated in Table 6.17, participants reported significantly more confidence in their ability to consume more food, change the extreme methods they were using to control their weight, and work on their emotional issues. In contrast, they reported significantly less self-efficacy regarding changing the strict standards they were using to evaluate their bodies, and their ability to eat restricted food types.
Table 6.17

Self-efficacy across symptom dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1. Weight</td>
<td>71</td>
<td>2.70</td>
<td>4.13</td>
</tr>
<tr>
<td>D2. Amount of food</td>
<td>69</td>
<td>7.19</td>
<td>3.41</td>
</tr>
<tr>
<td>D3. Evaluation standards</td>
<td>71</td>
<td>1.92</td>
<td>1.53</td>
</tr>
<tr>
<td>D4. Types of food</td>
<td>71</td>
<td>1.56</td>
<td>1.54</td>
</tr>
<tr>
<td>D5. Weight loss methods</td>
<td>71</td>
<td>3.37</td>
<td>2.76</td>
</tr>
<tr>
<td>D6. Emotional issues</td>
<td>71</td>
<td>4.34</td>
<td>2.27</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>3.50</td>
<td>3.33</td>
</tr>
</tbody>
</table>

$p \quad .000$

D2>D1, $p=.000$
D2>D3, $p=.000$
D2>D4, $p=.000$
D2>D5, $p=.000$
D2>D6, $p=.000$
D5>D3, $p=.003$
D5>D4, $p=.000$
D6>D3, $p=.000$
D6>D4, $p=.000$

6.4.4.3 Influence of Mood

Two-tailed Pearson correlations were conducted to investigate the relationship between readiness to change and mood. Five different mood states were included: anxious, depressed, stressed, relaxed, and worthlessness. These five moods have been shown to be common in clients diagnosed with anorexia. As shown in Table 6.18, participants’ readiness to change significantly decreased when they also reported feeling stressed or worthless. Specifically,
participants reported that they were significantly less prepared to increase the types of foods they were consuming when they felt worthless, and significantly less prepared to work on emotional issues when they felt stressed.

Table 6.18

*Influence of mood on readiness to change*

<table>
<thead>
<tr>
<th>Mood</th>
<th>Symptom Dimensions</th>
<th>Weight of food</th>
<th>Evaluation standards</th>
<th>Types of food</th>
<th>Weight loss methods</th>
<th>Emotional issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxious (N=39)</td>
<td></td>
<td>N/A</td>
<td>.207</td>
<td>-.040</td>
<td>.178</td>
<td>-.210</td>
</tr>
<tr>
<td>Depressed (N=19)</td>
<td></td>
<td>N/A</td>
<td>.275</td>
<td>.071</td>
<td>.146</td>
<td>.165</td>
</tr>
<tr>
<td>Stressed (N=35)</td>
<td></td>
<td>N/A</td>
<td>.182</td>
<td>.127</td>
<td>.162</td>
<td>-.301</td>
</tr>
<tr>
<td>Relaxed (N=28)</td>
<td></td>
<td>N/A</td>
<td>-.079</td>
<td>-.079</td>
<td>-.311</td>
<td>-.024</td>
</tr>
<tr>
<td>Worthless (N=31)</td>
<td></td>
<td>N/A</td>
<td>.017</td>
<td>.084</td>
<td>-.486**</td>
<td>.224</td>
</tr>
</tbody>
</table>

*Note:*  *p < .05 (2-tailed), **p < .01 (2-tailed), N/A indicates variable remained constant.*

Furthermore, the relationship between mood state and self-efficacy was also examined using a two-tailed Pearson correlation. Table 6.19 illustrates that self-efficacy regarding their ability to gain weight increased significantly when participants reported feeling depressed or worthless. In contrast, self-efficacy significantly decreased when participants were feeling anxious, stressed or relaxed. Specifically, when participants reported feeling either anxious or stressed, they perceived significantly less confidence in their ability to cease using severe methods to lose weight. In addition, when they felt relaxed, they reported significantly less self-efficacy in regard to increasing the variety of foods they were eating and changing the strict standards they were using to evaluate their bodies.
Table 6.19

*Influence of mood on self-efficacy*

<table>
<thead>
<tr>
<th>Mood</th>
<th>Symptom Dimensions</th>
<th>Amount of food</th>
<th>Evaluation standards</th>
<th>Types of food</th>
<th>Weight loss methods</th>
<th>Emotional issues</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weight</td>
<td>-.034</td>
<td>.161</td>
<td>-.098</td>
<td>-.156</td>
<td>-.396*</td>
</tr>
<tr>
<td>Anxious (N=39)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depressed (N=19)</td>
<td></td>
<td>.456**</td>
<td>.305</td>
<td>-.099</td>
<td>-.304</td>
<td>-.031</td>
</tr>
<tr>
<td>Stressed (N=35)</td>
<td></td>
<td>.029</td>
<td>.217</td>
<td>.326</td>
<td>-.036</td>
<td>-.337*</td>
</tr>
<tr>
<td>Relaxed (N=28)</td>
<td></td>
<td>.286</td>
<td>-.048</td>
<td>-.482**</td>
<td>-.631*</td>
<td>.322</td>
</tr>
<tr>
<td>Worthless (N=31)</td>
<td></td>
<td>.402*</td>
<td>.053</td>
<td>-.068</td>
<td>-.199</td>
<td>.051</td>
</tr>
</tbody>
</table>

*Note:* *p < .05 (2-tailed), **p < .01 (2-tailed).

6.4.4.4 Influence of event

At each time point, participants were asked to indicate if an influential event had occurred during the previous EMA testing period. In particular, participants were asked to confirm whether any of the following events had occurred: 1) weighed themselves (or been weighed), 2) had an argument with family or friends, 3) met with therapist/healthcare provider, 4) eaten a meal, 5) exercised, 6) bought/ tried on new clothes, 7) received relevant comments, or 8) another unspecified related event. Despite very low sample sizes, the correlations between readiness to change and each of the events are presented in Table 6.20. Participants reported significantly less readiness to work on emotional issues when they had experienced an argument with family or friends. In contrast, they reported significantly more readiness to change emotional issues when they had received comments regarding their eating or weight.
Table 6.20

*Influence of event on readiness to change*

<table>
<thead>
<tr>
<th>Mood</th>
<th>Symptom Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amount of food Weight</td>
</tr>
<tr>
<td>Weighed (N=5)</td>
<td>N/A</td>
</tr>
<tr>
<td>Argument (N=8)</td>
<td>N/A</td>
</tr>
<tr>
<td>Therapy (N=5)</td>
<td>N/A</td>
</tr>
<tr>
<td>Eaten meal (N=31)</td>
<td>N/A</td>
</tr>
<tr>
<td>Exercised (N=10)</td>
<td>N/A</td>
</tr>
<tr>
<td>New clothes (N=3)</td>
<td>N/A</td>
</tr>
<tr>
<td>Comments (N=5)</td>
<td>N/A</td>
</tr>
<tr>
<td>Other event (N=11)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Note:* *p < .05 (2 tailed), ** p < .01 (2-tailed), N/A indicates variable remained constant.

After the influence of individual events on readiness to change had been examined, all events were categorised into either positive or negative events. Negative events included being weighed, having an argument, eating a meal, exercised, purchased new clothes, and receiving relevant comments. These events were deemed negative as it was expected that they would negatively impact on recovery from the disorder. In addition, participating in therapy was considered to be a positive event as it was regarded as positively influencing recovery in anorexia. However, as shown in Table 6.21, readiness to change did not differ dependent on the type of event which had occurred (positive or negative). Furthermore, this finding was consistent across all six symptom dimensions. It should be noted though, that the sample size in the positive event group was extremely small (N=13).
Table 6.21

*Influence of type of event on readiness to change*

<table>
<thead>
<tr>
<th>Mood</th>
<th>Symptom Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weight</td>
</tr>
<tr>
<td></td>
<td>$M$</td>
</tr>
<tr>
<td>Neg. event ($N=58$)</td>
<td>1.00</td>
</tr>
<tr>
<td>Pos. event ($N=13$)</td>
<td>1.00</td>
</tr>
<tr>
<td>$t$</td>
<td>.</td>
</tr>
</tbody>
</table>

Table 6.22 illustrates the Pearson correlations between self-efficacy and each of the events investigated. Participants reported significantly less confidence in their ability to increase the types of foods they were eating and change the standards they were using to evaluate their weight and shape, when they had received comments regarding their eating or weight. No other relationship was found to be significant.

Table 6.22

*Influence of event on self-efficacy*

<table>
<thead>
<tr>
<th>Mood</th>
<th>Symptom Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weight</td>
</tr>
<tr>
<td></td>
<td>$M$</td>
</tr>
<tr>
<td>Weighed ($N=5$)</td>
<td>.071</td>
</tr>
<tr>
<td>Argument ($N=8$)</td>
<td>.036</td>
</tr>
<tr>
<td>Therapy ($N=5$)</td>
<td>-.456</td>
</tr>
<tr>
<td>Eaten meal ($N=31$)</td>
<td>.075</td>
</tr>
<tr>
<td>Exercised ($N=10$)</td>
<td>-.024</td>
</tr>
<tr>
<td>New clothes ($N=3$)</td>
<td>.896</td>
</tr>
<tr>
<td>Comments ($N=5$)</td>
<td>.791</td>
</tr>
<tr>
<td>Other event ($N=11$)</td>
<td>.056</td>
</tr>
</tbody>
</table>

*Note:  $^*$ p < .05 (2-tailed), $^{**}$ p < .01 (2-tailed), N/A indicates variable remained constant.*
Subsequent to the events being categorised into either positive or negative groups, self-efficacy was found to be significantly higher in regard to changing the strict standards which the participants were using to evaluate their weight and shape in the sample that reported a positive event occurring. However, reported self-efficacy between the two groups did not significantly differ across any of the remaining symptom domains (See Table 6.23).

Table 6.23

\textit{Influence of type of event on self-efficacy}

<table>
<thead>
<tr>
<th>Mood</th>
<th>Symptom Dimensions</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weight</td>
<td>Amount</td>
<td>Evaluation</td>
<td>Types of</td>
<td>Weight loss</td>
<td>Emotional</td>
</tr>
<tr>
<td></td>
<td>of food</td>
<td>standards</td>
<td>food</td>
<td>methods</td>
<td>issues</td>
<td></td>
</tr>
<tr>
<td></td>
<td>\textit{M}</td>
<td>\textit{M}</td>
<td>\textit{M}</td>
<td>\textit{M}</td>
<td>\textit{M}</td>
<td>\textit{M}</td>
</tr>
<tr>
<td>Neg. event( (N=58) )</td>
<td>2.83</td>
<td>7.41</td>
<td>1.74</td>
<td>1.53</td>
<td>3.36</td>
<td>4.34</td>
</tr>
<tr>
<td>Pos. event( (N=13) )</td>
<td>2.15</td>
<td>6.23</td>
<td>2.69</td>
<td>1.69</td>
<td>3.38</td>
<td>4.31</td>
</tr>
<tr>
<td>\textit{t}</td>
<td>.549</td>
<td>.263</td>
<td>.042</td>
<td>.741</td>
<td>.979</td>
<td>.958</td>
</tr>
</tbody>
</table>

Participants’ perceptions regarding their readiness to change and self-efficacy were assessed through two different measurement techniques; self-report, retrospective questionnaires and EMA. The global scores obtained from each of these measures are presented in Table 6.24.
Table 6.24

*Comparison of different methodological approaches*

<table>
<thead>
<tr>
<th>Participant</th>
<th>RTC</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ANSOCQ</td>
<td>EMA</td>
</tr>
<tr>
<td>1</td>
<td>38.00</td>
<td>30.60</td>
</tr>
<tr>
<td>2</td>
<td>50.00</td>
<td>41.40</td>
</tr>
<tr>
<td>3</td>
<td>70.00</td>
<td>51.00</td>
</tr>
<tr>
<td>4</td>
<td>48.50</td>
<td>39.20</td>
</tr>
</tbody>
</table>

Table 6.24 demonstrates that both readiness to change and self-efficacy were perceived as higher when reported retrospectively via the self-report questionnaires. This finding was consistent for each of the four participants.

6.5 Discussion

The primary aim of Study Two was to replicate and confirm the findings of Study One using a methodological technique which eliminates the biases related to retrospective recall. Specifically, Study Two aimed to evaluate the variability (across distinct but related symptom dimensions) and stability (across time) of the two main constructs proposed by the TTM; readiness to change and self-efficacy, in a sample of recovering anorexic clients. In addition, Study Two aimed to compare the perception of readiness to change and self-efficacy assessed through two different methods; retrospective self-report recall (via the ANSOCQ and RSES) and EMA.

This section will commence with a description of the qualitative, case study results relevant to the initial hypotheses regarding the TTM constructs of readiness to change and self-efficacy. Initially, the degree of variability of readiness to change and self-efficacy across each of the six symptom dimensions will be evaluated; secondly, the amount of fluctuation of these variables over time will be discussed; followed by a description of the influence of mood and situational events on the perception of readiness to change and self-efficacy. The discussion section will then compare the results obtained through the different assessment techniques, self-report questionnaires and EMA, to evaluate the degree of congruency of these methods. Clinical
and theoretical implications of the findings will then be considered, before relevant methodological limitations are described. Finally, the direction for future research will be suggested. Consistent with the discussion section of Chapter Five, the TTM will be used as a framework to structure this section, with the findings relevant to each construct of the model discussed, according to each hypothesis proposed.

6.5.1 Variability across dimensions – Readiness to change and self-efficacy

6.5.1.1 Readiness to change

According to the TTM, readiness to change can be conceptualised as a global, general construct. This suggests that an individual can be assigned one readiness to change score (stage) which is reflective of their motivation to change their problematic behaviour. However, consistent with the findings of Rieger and Touyz (2006) and Vitousek et al. (1998), the results obtained from Study One indicated that in regard to changing anorexic symptomatology, readiness to change may be more accurately conceptualised as a multidimensional construct, which varies across different symptom dimensions.

Therefore, in Study Two it was predicted that readiness to change would vary across the six dimensions being evaluated (weight gain, body dissatisfaction, avoidance of specific foods, skipping meals, weight control methods, and cognitive/emotional issues). Consistent with the findings of Study One, it was expected that higher readiness to change would be reported regarding cognitive/emotional issues and the amount of food consumed. Furthermore, it was also predicted that readiness to change would be lower for the dimension of weight gain. A combination of visual analysis and descriptive statistics was used to evaluate the individual results in regard to the abovementioned hypothesis. Findings related to the abovementioned hypothesis will now be described.

A visual analysis of a diagrammatic representation of the results indicated that perceived readiness to change varied across each of the six symptom dimensions. Specifically, participants reported being more prepared to increase the amount of food they were consuming and work on problematic emotional or personality issues.

These findings were consistent with expectations. These results also replicate the findings of Study One; that readiness to change is more accurately conceptualised and measured as a multi-dimensional construct which varies across different anorexic symptoms. In addition,
the results of the current study support the earlier findings of Vitousek et al. (1998) and Rieger and Touyz (2006), who also concluded that readiness to change in anorexic clients is more accurately conceptualised as a multi-dimensional construct.

A comparison of readiness to change as measured by a global assessment and symptom specific assessments indicated that a global measurement of readiness to change does not accurately reflect the variation of readiness to change across symptom dimensions. For example, in the current study, a participant who obtained a global readiness to change score of 2.4 (indicating the stage of contemplation), also reported scores of 1 (pre-contemplation stage) and 4 (action stage) for different symptom dimensions. Therefore, determining readiness to change using only a global measure does not accurately reflect a client’s true motivation to change. Consequently, a more thorough method of determining readiness to change would be to evaluate each distinct symptom dimension independently, detecting the variability among different elements of anorexic symptomatology.

6.5.1.2 Self-efficacy

The TTM postulates that readiness to change and self-efficacy demonstrate a linear relationship. Therefore, consistent with the findings of Study One, it was expected that self-efficacy would demonstrate similar results to that of readiness to change. Specifically, it was proposed that self-efficacy would vary across each of the dimensions under investigation, with higher self-efficacy being perceived in regard to the dimensions of cognitive/emotional issues and amount of food consumed. In addition, it was also predicted that participants would report less confidence in their ability to gain weight.

Descriptive statistics were calculated for the degree of perceived self-efficacy in regard to each of the six symptom dimensions. A visual analysis of each participant’s data regarding their perceived confidence in their ability to change their anorexic symptomatology (if they chose to) revealed that their degree of confidence varied depending on the symptom being addressed. This finding was supported by an analysis of each participant’s descriptive statistics. Specifically, participants reported higher self-efficacy in relation to increasing the amount of food they were consuming and working on their cognitive/emotional issues. In contrast, they reported being least confident in their ability to increase the variety of foods they were eating and gain weight.
The current results indicate that, consistent with readiness to change, perceived self-efficacy is not universal across the different symptomatic elements of anorexia. Therefore, using a uni-dimensional self-efficacy scale would not accurately represent an individual’s perceived self-efficacy to address changing specific anorexic symptoms. To enable researchers and clinicians to identify the true extent of a client’s confidence, a multi-dimensional self-efficacy scale should be employed.

6.5.2 Variability across time

Numerous researchers (e.g., Bandura, 1997a, 1998; Carey et al., 1999; Davidson, 1992, 1998; Littell & Girvin, 2002; Sutton, 1996) have postulated that readiness to change may be more accurately conceptualised as a continuous, dynamic internal state. However, a fundamental premise of determining an individual’s stage of change is the assumption that they will remain in that stage across treatment visits. There is little point to assessing a client’s stage of change, if it is no longer relevant on the subsequent appointment. Therefore, it is crucial that clinicians are able to determine the degree of variability of readiness to change and self-efficacy over time.

6.5.2.1 Readiness to change

It was predicted that participants’ perception of readiness to change would fluctuate over relatively short time periods. To investigate this hypothesis, individual participants were asked to indicate, for each dimension, the percentage of time (since the last EMA entry) that they endorsed their reported readiness to change score. A visual analysis of each participant’s readiness to change scores across each EMA time prompt was conducted. Descriptive statistics were also evaluated, and the mean change scores across the six dimensions were calculated.

It was further predicted that participants in the central stages of contemplation and preparation would report that their readiness to change fluctuated significantly more frequently than those participants in the action stage. T-tests were conducted on the grouped data in order to investigate this proposition. Findings related to the abovementioned hypotheses will now be discussed.

Participants generally reported a large degree of instability in their readiness to change. Specifically, participants reported instability in regard to the dimensions of amount of food,
evaluation standards, types of foods, weight loss methods, and emotional issues. As EMA data were collected approximately every two hours during each day, this finding suggests that participants’ perceptions of readiness to change fluctuated over very short time periods. This finding is instability is consistent with earlier research which used EMA (Conrad et al., 2008; Golier et al., 2001; Smyth et al., 2009). However, participants indicated relative stability in regard to their readiness to gain weight. This finding partially supports the hypothesis proposed.

This finding may be explained due to the differing ego-syntonic qualities of the various elements of anorexic symptomatology. Although participants reported that their readiness to change the less ego-syntonic dimensions fluctuated over time, their readiness to gain weight remained stable. An extremely low weight is the primary external indicator of anorexia, and provides the individual with a means of assessing their accomplishment at being unique and successful at fulfilling desired goals. Many other anorexic symptoms (i.e., restriction of amount of food, types of foods, weight loss methods) may be viewed by the individual as a means to obtain an extremely low weight. Therefore, these individuals would be less likely to consider changing the dimension of weight gain.

### 6.5.3 Influence of mood

Mood is typically characterised as a relatively stable psychological arousal state, with dimensions related to energy, tension and pleasure (Matthews & Deary, 1998; Reid & Hammersley, 1999). Furthermore, eating has consistently been associated with mood and emotion (Vogele & Gibson, 2010). To date there is a paucity of research investigating the relationship between mood and readiness to change. Therefore, the current study sought to determine if mood influenced participants’ perceptions of readiness to change. It was predicted that readiness to change would be negatively influenced by an increase in anxiety, depression, stress and sense of inadequacy/ worthlessness. In addition, it was also predicted that readiness to change would be positively influenced by an increased feeling of relaxation.

A two-tailed Pearson correlation was conducted to investigate this hypothesis. Partially supporting the predictions stated, participants reported significantly less readiness to increase the types of foods they were eating when they felt worthless or inadequate. In addition, they also stated that their readiness to change decreased significantly when they were stressed. However, there were no significant correlations in regard to the remaining mood states of anxious, depressed, or relaxed.
Although no prediction was made regarding the influence of mood on self-efficacy, the results indicated that participants reported higher perceived self-efficacy when their mood was low. This is an interesting and rather unusual finding. Further investigation into the relationship between these two constructs is required, using a larger, more representative sample.

6.5.4 Influence of event

6.5.4.1 Readiness to change

The present study proposed that readiness to change would be influenced by events which the participants viewed as meaningful. At each EMA time prompt participants were asked to indicate if, since the last data entry, they had weighed themselves, had an argument with family or friends, received professional treatment, eaten a meal, exercised, or received comments regarding their weight or shape. Despite expectations, the only symptom dimension which was influenced by the occurrence of a situational event was cognitive/emotional issues. Participants reported that their readiness to work on emotional issues decreased significantly after an argument with family or friends, and increased significantly following receiving comments regarding their weight and/or shape. However, it is important to note that the content of these comments was not examined. Therefore, whether the participant viewed the comments as negative or positive could not be determined. Symptom specific readiness to change was not significantly correlated to any other event. These findings only partially support the hypothesis as it was expected that situational event would influence readiness to change across all six symptom dimensions.

In addition to investigating the influence of individual events on readiness to change, events were categorised as either positive or negative. Events which were considered negative included being weighed, having an argument with family or friends, eating a meal, exercising, trying on new clothes, and receiving comments related to weight and/or shape. In contrast, attending professional treatment was categorised as positive. It was expected that readiness to change would significantly decrease when participants simultaneously reported the occurrence of a negative event. In addition, it was also hypothesised that readiness to change would increase significantly when the participant also reported a positive event occurring.

Contrary to expectations, the results revealed that there was no significant difference in perceptions of readiness to change when either a positive or negative event was reported.
Although this finding was surprising, it may be the result of the small sample size in the positive event group. Participants indicated that 58 negative events had occurred; however, only 13 positive events were reported.

### 6.5.4.2 Self-efficacy

Congruent with the expectations of readiness to change, it was hypothesised that self-efficacy would vary in conjunction with a meaningful event occurring. This hypothesis was only partially supported. Participants reported significantly less confidence in their ability to increase the types of foods they were eating and to change the strict standards they were using to evaluate their bodies, when they had received weight and/or shape related comments from family or friends. However, no other type of event significantly influenced the participants’ perception of self-efficacy.

It was further proposed that events which were deemed (by the researcher) as positive would demonstrate a significant relationship with higher reported self-efficacy. Furthermore, it was expected that participants would express lower self-efficacy if a negative event had occurred. Again, the results only partially supported this assertion. A t-test analysis revealed that in the presence of a positive event, participants reported significantly more confidence in their ability to change the strict standards which they were using to evaluate their bodies. However, the type of event (positive or negative) did not significantly affect participants’ self-efficacy in regard to any other symptom dimensions.

This finding was surprising as previous research has shown a significant relationship between mood and eating behaviour (Vogele & Gibson, 2010). However, as mentioned earlier, the sample for the positive event group was exceptionally small (N=13) which may have restricted the statistical power to detect significant differences in participant ratings of self-efficacy. In addition, some error may have occurred in the allocation of events as all events were deemed to be either positive or negative by the researcher.

### 6.5.5 Comparison between retrospective recall and EMA assessment approaches

The accuracy of retrospective self-report recall, particularly over long periods of time and concerning complex, multi-faceted disorders, may result in an unreliable representation of individuals’ thoughts and behaviours. EMA reduces retrospective recall bias and maximise
ecological validity. In addition, EMA has been found to be particularly useful for investigating dynamic microprocessors that influence thoughts and behaviours in real world contexts (Shiffman, Stone, & Hufford, 2008).

6.5.5.1 Readiness to change

In the current study, it was expected that the degree of participants' perceived readiness to change would differ dependent upon the assessment technique utilised, with participants reporting higher readiness to change when using retrospective recall as compared to EMA. The findings relevant to this hypothesis will now be described.

The sum of each participant’s mean readiness to change scores for the six dimensions was calculated and compared to their global ANSOCQ score. A visual analysis revealed a large discrepancy between results obtained from the two methods of assessment. All four participants reported higher readiness to change when using the method of retrospective recall (ANSOQCQ). This finding supports the hypothesis proposed.

Previous research which compared data obtained via retrospective recall and EMA has concluded that there is relatively poor correspondence between the two methods of assessment (Ben-Zeev et al., 2009; Brennan et al., 2005; Motl et al., 2010; Sanford, 2010; Simard et al., 2010; Stone et al., 1998; Zhou et al., 2010). The results of the current study replicate the findings from earlier research. It has been argued that memory recall of past situational events and psychological states are especially susceptible to bias and error over time (Brennan et al., 2005). This is due to the ability for current mood to influence memory retrieval (Trull & Ebner-Priemer, 2009).

6.5.5.2 Self-efficacy

Consistent with previous research, it was expected that participants would report substantially higher self-efficacy when assessed using the RSES as compared to the method of EMA. Specifically, it was proposed that when participants were asked to retrospectively recall their perceived level of self-efficacy, they would overestimate their confidence to change.

A visual comparison between participants' self-efficacy scores obtained on the RSES and via the EMAs was conducted. Corresponding with the findings of readiness to change, each of the four participants reported higher scores when self-efficacy was assessed using the RSES.
This finding supports the hypothesis proposed. This finding also provides support for previous research which has shown a substantial discrepancy between the two forms of data collection (Ben-Zeev et al., 2009; Motl et al., 2010; Sanford, 2010; Simard et al., 2010). The findings related to this hypothesis indicate that biases occur between the relevant time/event and the point of recall. Although only speculative, this bias may be affected by mood, time of recall, or situational factors.

6.5.6 Clinical and theoretical implications

The Study Two findings have numerous theoretical and clinical implications. Congruent with the findings of Study One, the current results indicate that readiness to change and self-efficacy in anorexic clients are not global constructs, but rather vary across the different symptom dimensions of the disorder. The implications of this finding are two-fold. Firstly, the multidimensional nature of readiness to change and self-efficacy suggests that these constructs would be more accurately assessed using measures which can reliably determine independent scores for each of the distinct anorexic symptom dimensions. Secondly, clinical treatment approaches aim to establish clients’ level of motivation, in order to both enhance readiness to change and deliver staged matched interventions (Dijkstra et al., 2006). According to Geller and Dunn (2010), assessing readiness to change before determining a treatment approach enables clinicians to more accurately match clients to treatment modalities in the most time efficient and cost effective manner possible. A global assessment of this construct would inaccurately identify readiness to change for specific symptomatology. For example, a client who commences treatment may appear to have a reasonably high degree of readiness to change when measured with a global assessment, however, their willingness to gain weight or increase the types of foods which they are consuming may be very low. It is imperative for clinicians to be aware of clients’ readiness to change in order to focus treatment to symptomatic areas of the disorder where they are prepared to consider change, and prevent pushing for change in areas where the client is strongly resistant. For example, the results of the current study suggested that clients may be prepared to increase the amount of food consumed, but not the types of foods. Therefore, from a clinical perspective, setting a treatment goal of increasing the variety of foods may be met with ambivalence and resistance, whereas, encouraging clients to consume more of the foods which they are comfortable eating may further increase readiness to change and self-
efficacy. Understanding which elements of the eating disorder each individual client is prepared to change may enable more realistic achievable treatment goals to be set.

Furthermore, the results obtained in Study Two suggest that readiness to change and self-efficacy fluctuate over short time periods (<2 hours). This indicates that these constructs are not categorical, but rather that they are continuous, dynamic internal states which shift over time. Therefore, the clinical assessment of a client’s readiness to change and self-efficacy at any given time can not be reliably assumed to be analogous at a later appointment. It is impractical for clinicians to re-evaluate these dimensions every time they meet with a client. However, if they can not establish that the client will still remain in the allocated stage whilst stage appropriate treatment is delivered, the process of ascertaining readiness to change and self-efficacy becomes redundant. Therefore, it would be advantageous for a clinician to be able to make an accurate assessment of motivation to change, whilst also determining the stability of their assessment.

6.5.7 Limitations of the current study

The findings of Study Two should be interpreted in light of several design and methodological limitations. Firstly, results are based on a small sample size. Although there are five stages proposed by the TTM, only three stages were represented in the current study. Due to difficulties with recruitment, there were no participants representing the stages of pre-contemplation or maintenance. In addition, there was only one participant assigned to the action stage. Not only does this limitation reduce the statistical power of the study, it also questions the representativeness of the sample to the broader anorexic population. Furthermore, although identifying themselves as anorexic, two of the participants in the study were of normal weight.

An additional limitation of the current study was the repetitive nature of the EMA questionnaires. Participants were asked to complete the same electronic questions 30 times over the duration of six days. Although the items on the EMAs were brief, it is possible that the repetitive format of the study may have resulted in practice effects which influenced the data obtained (Portaccio et al., 2010). In addition, as participants were required to invest a substantial amount of time and cognitive energy in completing the study, mental fatigue may have resulted in a reduction in the capacity to accurately respond to each EMA entry, increasing errors due to the repetitiveness of the task (Gonzalez, Best, Healy, Kole & Bourne, 2010).
As it was deemed imperative to keep the EMA entries as brief as possible, a final limitation of Study Two involves the lack of depth of some items included in the electronic questionnaires. For example, participants were asked if an event had occurred, and were then asked to choose from a forced-choice series of six alternative responses. This provided the researcher with only limited insight into the circumstances surrounding the event, the participant’s perception of the event and the impact which the event had on the participant. Therefore, this affected the study’s ability to determine the impact of situational events on readiness to change and self-efficacy.

6.5.8 Future directions

Study Two was conducted with only four participants. Although the preliminary findings were congruent with previous research, these results need to be replicated using a larger, more representative sample of anorexic participants.

Corresponding with Study One, Study Two indicates that readiness to change and self-efficacy vary across anorexic symptom dimensions and fluctuate over time. Current measurement tools designed to assess these constructs rely on uni-dimensional, discrete cross-sectional scales. Therefore, it is suggested that future research investigates the applicability of a multi-dimensional measurement technique designed to assess fluctuations in readiness to change and self-efficacy over time. This will be discussed in further detail in the next chapter.

6.5.9 Summary and conclusion

The current chapter has described Study Two, which used the research technique of EMA to investigate the degree of variability of readiness to change and self-efficacy across six distinct but related dimensions of anorexic symptomatology. In addition, Study Two also examined the stability of each of these constructs across time. The method of EMA was used to reduce the influence of retrospective recall on participants’ perceptions of their current readiness to change and self-efficacy.

Both readiness to change and self-efficacy varied dependant upon the symptom dimension being addressed. Participants were more prepared (and confident) to change elements of the disorder related to cognitive/emotional issues and the amount of food they consumed. In
contrast, participants were least willing (or confident) to consider gaining weight. Furthermore, readiness to change the dimensions of amount of food, evaluation standards, types of foods, weight loss methods, and emotional issues fluctuated over short time periods (<2 hours). In contrast, participants indicated that their readiness to gain weight remained relatively stable across time. However, the findings of this study are limited by a number of factors including small sample size and repetitive nature of EMA items.

The findings of both Study One and Study Two indicate that there are theoretical and clinical weaknesses in conceptualising readiness to change and self-efficacy in anorexic clients as a global construct which is consistent across all elements of anorexic symptomatology. In addition, the results of the current study suggest that readiness to change fluctuates over short time intervals, and may therefore be more accurately assessed using a continuous, rather than discrete, scale. Based on these findings, the following quantitative study will investigate the assessment of readiness to change and self-efficacy using two modified scales, which are both multi-dimensional and continuous in nature.
CHAPTER SEVEN

STUDY THREE: A PILOT INVESTIGATION INTO THE STABILITY OF READINESS TO CHANGE AND SELF EFFICACY IN ANOREXIC CLIENTS USING A MULTI-DIMENSIONAL, CONTINUOUS ASSESSMENT FORMAT

7.1 Rationale

Chapter Four has described how the TTM can be applied to individuals diagnosed with anorexia, to understand the difficult process of intentional behaviour change. In order to study readiness to change in this population, it is necessary to be able to accurately measure it. The results from both Study One and Study Two indicate that readiness to change and self-efficacy vary across different elements of anorexic symptomatology. In addition, results from these studies suggest that readiness to change and self-efficacy fluctuate dramatically over short time intervals (<2 hours). Therefore, these constructs, which are pertinent to the process of recovery in anorexic clients, may be more accurately assessed via a multi-dimensional, continuous scale.

7.1.1 Criticisms of current measurement tools

7.1.1.1 Uni-dimensional scales

Both clinicians and researchers have used the TTM when attempting to facilitate behavioural change in unhealthy lifestyle behaviours (Forsberg et al., 2004). Uni-dimensional assessment approaches conceptualise the problem behaviour as one single issue; allocating one global readiness to change score across all elements of the problem. However, the high rates of relapse shown in current literature concerning anorexic populations (Cockell et al., 2004; Geller et al., 2005; Van Strien, Van der Ham & Van Engeland, 1992) suggest that motivation to change and actual change regarding anorexic symptomatology may be a more complex (and therefore variable) process than changing other problematic health behaviours, for example, smoking cessation (Lerdal et al., 2008). It is postulated that clients assigned to one stage of the TTM may also endorse items reflective of other stages (Lerdal et al., 2008) when addressing changing different elements of the disorder.
As mentioned earlier, although global readiness to change scales are quick and easy to administer (Sullivan & Terris, 2001), they may lack the sensitivity to accurately assess these constructs when addressing complex disorders, such as anorexia. For example, a client may be prepared to change one element of the disorder, whilst still adamantly denying or valuing another. Global readiness to change assessments obscure the variability in readiness to change which occurs across different symptoms.

### 7.1.1.2 Discrete scales

Current literature indicates that there may be theoretical weaknesses in a model which conceptualises readiness for change in terms of discrete stages (S. Wilson & Schlam, 2004). Readiness to change data which were obtained from 174 English male heavy drinkers was used to allocate each of the participants into one discrete stage of change. The data from these participants were then rescored to produce a continuous measure of readiness to change. After comparing the psychometric properties of both scales the researchers concluded that the construct of readiness to change is best conceptualised as a continuous construct (Budd & Rollnick, 1996).

A recent American study compared readiness to change using brief continuous change rulers to longer, discrete self-report questionnaires (LaBrie et al., 2005). Readiness to change concerning the single-symptom behaviours of excessive alcohol consumption and risky sexual behaviour was assessed in a sample of 96 American male college students. The results indicated that scores on the rulers significantly correlated with scores derived from the self-report questionnaires (r = .77 for alcohol; r = .77 for safer sex), however, for both domains, the rulers were more accurate in predicting behavioural intentions (LaBrie et al., 2005). Supporting the earlier proposal of Budd and Rollnick (1996), the researchers concluded that readiness to change may be more accurately conceptualised as a continuous process, rather than a series of discrete stages. However, it should be noted that the abovementioned study conducted by LaBrie et al. (1996) only investigated participants' intentions to change, which do not always equate to actual behavioural change.

The psychometric properties of two methods of determining readiness for change were compared in 165 Swedish excessive alcohol consumers (Forsberg et al., 2004). In addition to their readiness to change being determined using a continuous scale, each participant was also assigned into one discrete stage of change. The findings of this study indicated that the
continuous scale demonstrated higher construct validity (.82) and internal consistency (.88) compared to its discrete counterpart (Forsberg et al., 2004). Therefore, the researchers concluded that a continuous method of measuring readiness to change is a viable alternative to the existing method of assigning clients into one discrete stage (Forsberg et al., 2004). The psychometric properties of categorical stages of change measures have been extensively tested (Lerdal et al., 2008). Carey et al. (1999) conducted an extensive meta-analytical review of the psychometric properties of tools currently used to measure the construct of readiness to change and reported favouring a continuous method of assessment.

Although the ANSOCQ has been used extensively in anorexic research (e.g., Ametller, Castro, Serrano, Martinez, & Toro, 2005; Pauli, Winkler Metzke, & Steinhausen, 2010; Rieger & Touyz, 2006; Rieger, Touyz, & Beumont, 2002; Serrano, Castro, Ametller, Martinez, & Toro, 2004), recent findings have indicated that readiness to change may be more accurately conceptualised as a dynamic internal state which fluctuates over time (Pedrosa, Almeida, & Viana, 2010). The challenge of accurately measuring an individual’s movement back and forth between stages is crucial when considering the design and implementation of a successful treatment program (Lerdal et al., 2008).

Despite the recent development of continuous readiness to change scales across other problematic behavioural domains, such as alcohol consumption (Forsberg et al., 2004), safer sex (LaBrie et al., 2005), prescription drug use (Crackau et al., 2010; Hesse, 2006), and exercise adherence (Lerdal et al., 2008; Lippke & Plotnikoff, 2009), they have yet to be applied in the area of anorexia.

On the basis of the findings of Study One and Study Two, the author suggests that anorexia is a multidimensional disorder which may fluctuate across short time periods. Therefore, to accurately assess readiness to change and self-efficacy in this population, a measurement tool which is both multidimensional and continuous in nature is required. Although previous instruments have been developed to assess readiness for change and self-efficacy in anorexic clients (e.g., ANSOCQ and RSES) there is currently a paucity of measurement tools which are capable of capturing the multidimensional and continuous nature of the disorder.

Therefore, Study Three was designed to assess the variability and stability of readiness to change and self-efficacy using modified versions of the ANSOCQ and RSES. Both adapted
scales will be multi-dimensional in order to measure variance between symptom dimensions, and both scales will be continuous so as to assess fluctuations across time.

7.1.2 Aims

The overall aim of Study Three was to develop and evaluate two adapted self-report questionnaires; one modified from the original ANSOCQ and designed to measure readiness to change (Jacqui and Ross’ readiness to change scale; JAR-RTC), the other adapted from the existing version of the RSES and used to assess self-efficacy (Jacqui and Ross’ self-efficacy scale; JAR-SE) in anorexic clients.

From the results of Study One and Study Two, the researcher concludes that both readiness to change and self-efficacy vary across different anorexic symptoms whilst also fluctuating over time. Therefore Study Three was designed to evaluate the suitability of these two modified scales in clients diagnosed with anorexia.

7.1.3 Hypotheses

Based upon the findings of Study One and Study Two it was hypothesised that, when measured using the JAR-RTC and JAR-SE scales, readiness to change and self-efficacy would:

1) Be significantly higher in regard to changing cognitive/affective issues and amount of food consumed;
2) Be significantly lower in regard to increasing weight;
3) Will fluctuate over time for participants in the central stages of contemplation, preparation and action; and
4) Remain relatively stable for participants in either the pre-contemplation or maintenance stages.

It was further hypothesised that:

5) The JAR-RTC scale will demonstrate good psychometric properties (concurrent criterion validity and internal consistency); and
6) The JAR-SE scale will demonstrate good psychometric properties (concurrent criterion validity and internal consistency).
7.2 Method

Electronic, online self-report questionnaires were used to quantitatively determine participants' readiness to change and self-efficacy. In conjunction with an experienced eating disorder practitioner, the researcher amended the ANSOCQ and RSES to create the JAR-RTC scale and JAR-SE scale, respectively. Six items from the ANSOCQ, which represented the six symptom dimensions being investigated, were used to form the JAR-RTC scale. Consistent with the original version of the ANSOCQ, when completing the JAR-RTC questionnaire participants were asked to indicate their readiness to change on a scale of 1 (pre-contemplation) to 5 (maintenance). However, in addition to the traditional response method, the modified scale enabled participants to endorse more than one option. Participants were also asked to indicate on a visual analogue scale, the percentage of time over the previous seven days which they had endorsed each response item. For example, a participant may report that, during the previous seven days, their readiness to increase their weight was in the contemplation stage (score = 2) for 40% of the time, and in the preparation stages (score = 3) for the remaining 60% of the week. The development of the JAR-RTC scale is described fully in Section 7.2.2 and can be viewed in Appendix N.

The modification of the RSES to form the JAR-SE scale consisted of a similar process to that described above. However, consistent with the RSES, each JAR-SE scale response option ranged from 0 (not at all confident) to 10 (completely confident). The development of the JAR-SE scale is described fully in Section 7.2.2 and can be viewed in Appendix N.

Original versions of the ANSOCQ and RSES were used in conjunction with the two modified scales. These developed scales were included in the study in order to check the validity of the new questionnaires. Questionnaires were posted online in order to recruit a international representation of anorexic clients. In addition, as anorexia is a relatively rare disorder, it was expected that including participants from all over the world would enhance the likelihood of achieving a larger sample size.

The established quantitative questionnaires were used to determine participants' global stage of change (ANSOCQ) and global self-efficacy score (RSES). The inclusion of existing scales which have previously been psychometrically evaluated also provided a base from which the validity of the adapted scales could be appraised. Furthermore, the EDE-Q was used to provide an indication of participants' eating disorder severity.
7.2.1 Sample

The sample for Study Three consisted of 31 female participants, aged 19 to 53 years ($M = 26.90$, $SD = 8.02$) who reported being currently diagnosed with or recently recovering from anorexia. The mean BMI reported by the participants was 18.77, ($SD = 2.69$, Range $= 14.69 – 25.71$) and the mean length of illness was 8.64 years ($SD = 7.26$ years, Range $= 1.00 – 34.83$ years).

One participant had completed primary school, eight participants had completed secondary school, nine participants had completed a certificate or diploma, eight participants had completed a university undergraduate degree, and five participants had completed a postgraduate university degree.

Participants were recruited primarily via the internet. In addition, potential participants were also identified from numerous eating disorder support groups and associations and the utilization of private practitioners (such as dieticians, psychologists and medical practitioners).

7.2.2 Materials

In addition to a brief demographics questionnaire, participants completed five self-report questionnaires (see Appendix N to view all questionnaires), including two modified, multi-dimensional, continuous scales which were constructed specifically for Study Three. Three of these scales have been previously described in Chapter Five (Study One). The newly modified scales will now be described in detail.

7.2.2.1 Previously described scales

Consistent with Study One and Study Two, the participants’ current stage of change was measured using the ANSOCQ. In addition, the RSES was used in Study Three to measure participants’ perceived self-efficacy. A detailed description of these two scales, including example items and psychometrics properties, has been previously provided in the Materials section of Chapter Five. The severity of each participant’s eating disorder was assessed using the EDE-Q. Further information regarding the EDE-Q is provided in the Method section of Chapter Six.
7.2.2.2 Modified Readiness to Change Questionnaire (JAR-RTC scale)

The ANSOCQ was modified into a multi-dimensional, continuous readiness for change questionnaire specifically for use in Study Three. The Jacqui and Ross’ Readiness to Change Scale (JAR-RTC scale) consists of six items, one from each of the six distinct but related anorexic symptom dimensions identified previously in Study One and Study Two (current weight, body dissatisfaction, avoidance of specific foods, skipping meals, weight control methods and cognitive/emotional issues).

Each item on the JAR-RTC scale has fiveanchoring statements (e.g., ‘I do not need to gain weight’) which are derived from the answer options available on the ANSOCQ. Each of these answer option represents a discrete stage of change (i.e., pre-contemplation, contemplation, preparation, action, and maintenance). The individual is asked to indicate the percentage of time (ranging from 0 to 100) during the previous seven days that their feelings would correspond with each answer option (and therefore each stage). As the results of Study Two indicated that there is instability in readiness to change over time, participants are able to agree with more than one option (suggesting instability). However, in order to gain an indication of fluctuation across time, the total percentage of time must be equal to 100%.

Scoring of the JAR-RTC scale involves weighting each of the five response items from 0 to 4 (maximum 400) and dividing the total by four. For example, if a participants endorsed a 0 (pre-contemplation) for 60% of the time, a score of 1 (contemplation) for 20% of the time, and a score of 2 (preparation) for 20% of the time they would receive a total score of 15 (60x0 + 20x1 + 20x2)/4 for that symptom dimension. Therefore, individual scores obtained on each of the six dimensions could range from a minimum of 0 to a maximum of 100. High scores on each of the JAR-RTC subscales indicate a higher degree of readiness to change that particular symptom dimension.

7.2.2.5 New Self-efficacy Questionnaire (JAR-SE)

In addition to the readiness to change questionnaire, a new self-efficacy scale, the Jacqui and Ross’ Self-Efficacy scale (JAR-SE scale) was developed for Study Three. This scale was based on the RSES and involved participants completing six items on a continuous 0-10 scale. The items each reflect one of the six symptom dimensions described previously (current weight, body dissatisfaction, avoidance of specific foods, skipping meals, weight control methods and
cognitive/emotional issues). Similar to the JAR-RTC scale, participants are asked to indicate the percentage of time (ranging from 0 to 100) during the previous seven days that they consider their confidence to change would correspond with each answer option (ranging from 0=Not at all confident, to 10=completely confident).

Participants are able to endorse more than one score for each item (indicating instability), however the total percentage of time for that item must be 100%.

The JAR-SE scale is scored in a similar manner to the JAR-RTC scale. Each of the 10 response options was weighted from 0 to 10 (maximum 1000) and divided by 10. For example, if a participant reported a score of 4 for 50% of the time, a score of 5 for 30% of the time, and a score of 6 for the remaining 20% of time, she would receive a score of 

\[ \frac{50 \times 4 + 30 \times 5 + 20 \times 6}{10} \]

for the symptom being addressed. Each subscale score on the JAR-SE scale may range from a minimum of 0 to a maximum of 100, with higher scores indicating increased confidence in the participants’ ability to change that specific element of anorexic symptomatology.

7.2.2.6 Demographics Questionnaire

Participants were asked to complete a general information sheet concerning general demographic information such as age and height. This questionnaire was previously described in the Method section of Chapter Four.

7.2.3 Procedure

Prior to commencing Study Three, ethics approval was sought and granted from Deakin University – Human Research Ethics Committee (DU-HREC). Once notification of ethics approval was received (Appendix O), all questionnaires were posted online at a secure Deakin University web address. Local and international eating disorder support services were contacted, either by telephone (in Australia) or email (international), and informed of the study and participant requirements (Appendix P). Interested support services were then asked to advertise the project on their websites or in their regular newsletters (if applicable). On viewing the advertisement (Appendix Q), potential participants were guided to a direct link for the web address of the study.
Participants were then asked to read the plain language statement (Appendix R), before clicking on either a ‘participate’ or ‘do not participate’ icon. If participants chose to not participate, they were automatically directed back to the initial website.

Involvement in the project consisted of participants completing the ANSOCQ, the JAR-RTC scale, the RSES, the JAR-SE scale, the EDE-Q, and a brief demographics questionnaire. The completion of all six questionnaires took each participant approximately 30 minutes. All questionnaire data were coded using a computer generated random coding system. This ensured that participants’ completed data could be matched with their corresponding email address, to further enable the scores from T1 and T2 to be compared.

All data were recorded electronically in an excel file format. At the conclusion of the study, data were transferred into an SPSS file before being cleaned. All data were checked for uni-variate outliers, missing values and multi co-linearity. Two participants had missing data exceeding 10%, so these cases were removed from the analyses. The demographic data from international participants, such as weight and height, were converted from pounds into kilograms, and from inches into centimetres. This conversion ensured all data were consistent and comparable.

### 7.3 Results

#### 7.3.1 Plan of analysis

The data obtained from the ANSOCQ and RSES were used to calculate each participant’s global readiness to change and self-efficacy score respectively. In addition, global ANSOCQ scores were further used to allocate each participant into one discrete stage of change, as postulated by the TTM. Furthermore, data derived from the ANSOCQ and the RSES were correlated with the newly developed readiness to change questionnaire (JAR-RTC scale), and self-efficacy scale (JAR-SE scale) to evaluate the concurrent criterion validity of these new measurement tools.

Participants were asked to complete the EDE-Q to provide the researcher with an indication as to the degree of severity of their eating disorder. Global EDE-Q scores were compared to community norms (Mond et al., 2006) to establish clinical severity.

Data obtained from the JAR-RTC and JAR-SE scales were used to provide an indication of participants’ readiness to change and self-efficacy across each of the six distinct, but related
symptom dimensions. The variability in these constructs, across the different symptom
dimensions, could then be evaluated using a univariate ANOVA. In addition, the style of the
items on both new scales allowed for the researcher to determine the degree of fluctuation of
these variables across time.

### 7.3.2 Demographic results

Thirty one participants completed the questionnaire set. The demographic statistics for
these participants are presented in Table 7.1. The mean age of participants was 26.90 (SD=8.02)
years, and the mean BMI was 18.77 (SD=2.69). The average duration of anorexia in the sample
was 8.64 (SD=7.26) years.

<table>
<thead>
<tr>
<th>Table 7.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic results (N=31)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>26.90</td>
<td>8.02</td>
<td>19-53</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>51.24</td>
<td>8.34</td>
<td>40-70</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>165</td>
<td>0.72</td>
<td>150-170</td>
</tr>
<tr>
<td>BMI</td>
<td>18.77</td>
<td>2.69</td>
<td>14.69-25.71</td>
</tr>
<tr>
<td>Illness duration (yrs)</td>
<td>8.64</td>
<td>7.26</td>
<td>1-35</td>
</tr>
</tbody>
</table>

Table 7.2 presents the means and standard deviations of the ANSOCQ, RSES, EDE-Q,
JAR-RTC scale, and the JAR-SE scale at Time 1. In addition, the means and standard
deviations for each of the JAR-RTC and JAR-SE subscales are also included. Moreover, the
range (highest and lowest scores) for each construct is provided.
Table 7.2  
*Means and Standard Deviations for Major TTM Constructs at T1 (N=31)*

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>Range (Lowest - Highest)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSOCQ</td>
<td>2.68</td>
<td>0.91</td>
<td>1.45-4.65</td>
</tr>
<tr>
<td>RSES</td>
<td>4.66</td>
<td>2.41</td>
<td>0.65-9.75</td>
</tr>
<tr>
<td>EDE-Q</td>
<td>3.57</td>
<td>1.60</td>
<td>0.56-6.00</td>
</tr>
<tr>
<td>JAR-RTC scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>18.71</td>
<td>29.28</td>
<td>0.00-100.00</td>
</tr>
<tr>
<td>Evaluation standards</td>
<td>41.54</td>
<td>41.45</td>
<td>0.00-100.00</td>
</tr>
<tr>
<td>Types of foods</td>
<td>35.77</td>
<td>34.88</td>
<td>0.00-100.00</td>
</tr>
<tr>
<td>Amount of food</td>
<td>35.81</td>
<td>28.51</td>
<td>0.00-100.00</td>
</tr>
<tr>
<td>Weight control methods</td>
<td>49.44</td>
<td>36.38</td>
<td>3.75-100.00</td>
</tr>
<tr>
<td>Cognitive/emotional issues</td>
<td>52.74</td>
<td>26.13</td>
<td>12.50-100.00</td>
</tr>
<tr>
<td>JAR-SE scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>49.37</td>
<td>33.92</td>
<td>0.00-100.00</td>
</tr>
<tr>
<td>Evaluation standards</td>
<td>56.20</td>
<td>34.92</td>
<td>0.00-100.00</td>
</tr>
<tr>
<td>Types of foods</td>
<td>42.48</td>
<td>29.90</td>
<td>0.00-100.00</td>
</tr>
<tr>
<td>Amount of food</td>
<td>43.89</td>
<td>27.87</td>
<td>0.00-100.00</td>
</tr>
<tr>
<td>Weight control methods</td>
<td>53.29</td>
<td>33.47</td>
<td>0.00-100.00</td>
</tr>
<tr>
<td>Cognitive/emotional issues</td>
<td>43.69</td>
<td>27.71</td>
<td>0.00-100.00</td>
</tr>
</tbody>
</table>

7.3.3 Variability across symptom dimensions

7.3.3.1 Readiness to change

To determine if participants’ perceptions of readiness to change varied across the six symptom dimensions, a univariate ANOVA was conducted on the data derived from the JAR-RTC subscales. With an alpha level set at 0.05, the effect of symptom dimension was statistically significant, $F(5, 180) = 4.14, p=0.001$. Subsequent post hoc analyses revealed that
readiness to change the dimensions of weight control methods and cognitive/emotional issues was significantly higher than readiness to change weight ($p=.008$ and $p<.001$ respectively).

### 7.3.3.2 Self-efficacy

Scores on the JAR-SE subscales were used to examine whether participants' perception of self-efficacy varied across the different symptom dimension. To statistically evaluate this concept, another univariate ANOVA was performed.

Although self-efficacy scores demonstrated some variance across the six anorexic symptoms (see Table 7.2), the effect of dimension was not statistically significant, $F(5, 180) = 1.022, p>.05$.

### 7.3.4 Variability across time

#### 7.3.4.1 Readiness to change

Participants' ANSOCQ scores were used to assign them to one discrete stage of change. The numbers of different stages which each group reported were then calculated, and are presented in Table 7.3. As shown in the table, participants in either pre-contemplation or maintenance stages reported no instability in their perception of readiness to change over time. In contrast, participants in the central stages of contemplation and preparation indicated that their readiness to change fluctuated over time, often between three different stages. A chi-square analysis of these data indicated a significant relationship between stage allocation and degree of fluctuation over time ($\chi^2(8) = 17.319, p<.05$).
Table 7.3

*Instability over time for each stage group (readiness to change)*

<table>
<thead>
<tr>
<th>No. of stages</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-contemplation (N)</strong></td>
<td>1</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td><strong>Contemplation (N)</strong></td>
<td>.</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td><strong>Preparation (N)</strong></td>
<td>1</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td><strong>Action (N)</strong></td>
<td>3</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td><strong>Maintenance (N)</strong></td>
<td>1</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6</td>
<td>21</td>
<td>4</td>
</tr>
<tr>
<td><strong>(19.4%)</strong></td>
<td><strong>(67.7%)</strong></td>
<td><strong>(12.9%)</strong></td>
<td></td>
</tr>
</tbody>
</table>

For each symptom dimension, the number of different stages which each participant endorsed was calculated. Although this thesis has previously determined that individual readiness to change may be inconsistent across different symptom dimensions, to investigate whether this construct varied across time, it was assumed that the greater the number of stages which a participant endorsed, the more their readiness to change fluctuated over time. As can be seen from Table 7.4, most participants reported that their readiness to change fluctuated over two distinct stages of change. For example, ten participants reported that their readiness to change their emotional issues consistently remained in one discrete stage of change. In addition, 16 participants reported that their readiness to work on their emotional issues fluctuated between two different stages, and only five participants stated that their readiness to change fluctuated between three discrete stages of the TTM.
Table 7.4

*Instability over time for each symptom dimension (readiness to change)*

<table>
<thead>
<tr>
<th>No. of stages</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (N)</td>
<td>11</td>
<td>14</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Evaluation standards (N)</td>
<td>15</td>
<td>14</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Types of foods (N)</td>
<td>9</td>
<td>14</td>
<td>8</td>
<td>.</td>
</tr>
<tr>
<td>Amount of food (N)</td>
<td>7</td>
<td>17</td>
<td>7</td>
<td>.</td>
</tr>
<tr>
<td>Weight control methods (N)</td>
<td>10</td>
<td>16</td>
<td>5</td>
<td>.</td>
</tr>
<tr>
<td>Emotional issues (N)</td>
<td>10</td>
<td>17</td>
<td>4</td>
<td>.</td>
</tr>
</tbody>
</table>

To aid in further interpretation, participants who were assigned to either the pre-contemplation, action or maintenance stages (based on their global ANSOCQ score) were allocated into an ‘extreme stages’ group, whereas those participants who were assigned to the contemplation or preparation stages where allocated into a ‘central stages’ group. The data from these two groups were then statistically compared via an independent samples t-test to determine if the stability of their readiness to change over time was significantly different. As presented in Table 7.5, participants in the central stages consistently reported greater instability in their readiness to change across each symptom dimension. However, weight gain was the only dimension that revealed a statistically significant difference ($t (28) = 2.97, p = .006$).
Table 7.5

*Instability over time – a comparison between central and extreme stages (readiness to change)*

<table>
<thead>
<tr>
<th></th>
<th>No of stages endorsed</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Extreme stages (N=7)</td>
<td>Central stages (N=24)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>difference</td>
</tr>
<tr>
<td>Weight</td>
<td>1.14 (.38)</td>
<td>2.04 (.77)</td>
<td>.70</td>
<td>.006</td>
<td></td>
</tr>
<tr>
<td>Evaluation standards</td>
<td>1.28 (.49)</td>
<td>1.71 (.75)</td>
<td>.43</td>
<td>.173</td>
<td></td>
</tr>
<tr>
<td>Types of foods</td>
<td>1.57 (.53)</td>
<td>2.08 (.78)</td>
<td>.51</td>
<td>.114</td>
<td></td>
</tr>
<tr>
<td>Amount of food</td>
<td>1.71 (.76)</td>
<td>2.08 (.65)</td>
<td>.37</td>
<td>.214</td>
<td></td>
</tr>
<tr>
<td>Weight control methods</td>
<td>1.57 (.79)</td>
<td>1.92 (.65)</td>
<td>.35</td>
<td>.249</td>
<td></td>
</tr>
<tr>
<td>Emotional issues</td>
<td>1.43 (.53)</td>
<td>1.92 (.65)</td>
<td>.49</td>
<td>.082</td>
<td></td>
</tr>
</tbody>
</table>

### 7.3.4.2 Self-efficacy

When completing the JAR-SE scale participants were asked to indicate their perceived confidence on a scale ranging from 0 (not at all confident) to 10 (completely confident). For each symptom dimension, the number of different response items which each participant endorsed was calculated. Similar to readiness to change, it was assumed that the greater the number of different options which a participant endorsed, the more their self-efficacy fluctuated over time.

ANSOCQ scores were used to assign participants to one discrete stage of change. The number of different response items on the JAR-SE scale which each group reported was then calculated. This is presented in Table 7.6. This table shows that participants in the central stages of contemplation and preparation reported that their self-efficacy fluctuated between two or three different response options. In addition, the participant in the maintenance stage indicated that her confidence remained stable. However, a chi-square showed that there was not a significant relationship between allocated stage and fluctuation over time ($\chi^2 (8) = 12.55$, N.S.).
Table 7.6

*Instability over time for each stage group (self-efficacy)*

<table>
<thead>
<tr>
<th>Stages</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-contemplation (N)</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Contemplation (N)</td>
<td>.</td>
<td>12</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>Preparation (N)</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>Action (N)</td>
<td>2</td>
<td>3</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Maintenance (N)</td>
<td>1</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

Table 7.7 shows that most participants reported that their self-efficacy fluctuated over two different confidence response options. For example, eight participants reported that their confidence in their ability to gain weight remained stable on one response item (e.g., score of 3). However, 14 participants indicated that their self-efficacy fluctuated between two response items (e.g., scores of 3 and 4). Eight participants stated that their confidence regarding gaining weight varied between three response options (e.g., scores of 3, 4, and 5). Finally, only one participant suggested that her self-efficacy fluctuated over four different responses (e.g., scores of 3, 4, 5, and 6).
Table 7.7

*Instability over time for each symptom dimension (self-efficacy)*

<table>
<thead>
<tr>
<th></th>
<th>No. of participants endorsing each</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no. of stages (N=31)</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Weight (N)</td>
<td>8</td>
</tr>
<tr>
<td>Evaluation standards (N)</td>
<td>14</td>
</tr>
<tr>
<td>Types of foods (N)</td>
<td>11</td>
</tr>
<tr>
<td>Amount of food (N)</td>
<td>9</td>
</tr>
<tr>
<td>Weight control methods (N)</td>
<td>9</td>
</tr>
<tr>
<td>Emotional issues (N)</td>
<td>10</td>
</tr>
</tbody>
</table>

Participants were further divided into central and extreme stages, depending on their global ANSOCQ score. Participants who were allocated to either the pre-contemplation, action or maintenance stages were assigned into an ‘extreme stages’ group. In addition, participants who were deemed to be in the contemplation or preparation stages where allocated into a ‘central stages’ group. An independent sample t-test was then conducted to investigate whether the degree of instability reported by these two groups were statistically different. Congruent with readiness to change, participants in the extreme stages consistently demonstrated more stability in their self-efficacy over time (see Table 7.8). With an alpha level set at 0.05, the only significant difference was observed for the symptom dimension of weight gain (t (29) = 2.557, p=0.016).
Table 7.8
*Instability over time – a comparison between central and extreme stages (self-efficacy)*

<table>
<thead>
<tr>
<th></th>
<th>Extreme stages (N=7)</th>
<th>Central stages (N=24)</th>
<th>M (SD)</th>
<th>M (SD)</th>
<th>M Δ</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>1.43 (.53)</td>
<td>2.25 (.79)</td>
<td>.82</td>
<td>.016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation standards</td>
<td>1.43 (.79)</td>
<td>1.75 (.68)</td>
<td>.32</td>
<td>.294</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types of foods</td>
<td>1.43 (.53)</td>
<td>1.75 (.53)</td>
<td>.32</td>
<td>.170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount of food</td>
<td>1.43 (.53)</td>
<td>1.96 (.62)</td>
<td>.53</td>
<td>.051</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight control methods</td>
<td>1.71 (.76)</td>
<td>1.96 (.75)</td>
<td>.25</td>
<td>.456</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional issues</td>
<td>1.43 (.53)</td>
<td>2.04 (.77)</td>
<td>.61</td>
<td>.059</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7.3.5  Psychometric properties

7.3.5.1 JAR-RTC scale

7.3.5.1.1 Concurrent criterion validity

The ANSOCQ is a 20-item retrospective self-report questionnaire which is designed to assess a broad range of anorexic symptomatology (Rieger et al., 2000). Furthermore, the ANSOCQ is a popular measurement tool which has been used by various researchers to evaluate readiness to change in both anorexic inpatient and outpatient participants (e.g., Ametller et al., 2005; Rieger et al., 2002; Rieger et al., 2000; Serrano et al., 2004). At present, the ANSOCQ is the only self-report measurement tool designed to assess readiness to change in anorexic clients. For this reason, the ANSOCQ was used as a criterion measure to establish the concurrent criterion validity of the JAR-RTC scale. Items on the ANSOCQ were grouped, based on their content, to correspond with the dimensions investigated via the JAR-RTC scale. To determine the relationship between the two scales a set of Pearson correlations was computed. These results are presented in Table 7.9. As demonstrated in the table, strong significant positive correlations were found between the ANSOCQ items and the JAR-RTC items.
Table 7.9
*Pearson correlation between ANSOCQ and JAR-RTC scale items (N=31)*

<table>
<thead>
<tr>
<th>JAR-RTC Scale</th>
<th>ANSOCQ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1. Weight (D1)</td>
<td>.580**</td>
</tr>
<tr>
<td>2. Evaluation (D2)</td>
<td>.533**</td>
</tr>
<tr>
<td>3. Types of food (D3)</td>
<td>.658**</td>
</tr>
<tr>
<td>4. Amount of food (D4)</td>
<td>.823**</td>
</tr>
<tr>
<td>5. Weight control methods (D5)</td>
<td>.697**</td>
</tr>
<tr>
<td>6. Emotional (D6)</td>
<td>.501**</td>
</tr>
</tbody>
</table>

**p<.01 (2 tailed). *p<.05 (2 tailed).**

7.3.5.1.2  Internal reliability

The internal reliability of the JAR-RTC scale was .89 (Cronbach’s alpha). Item deletion did not increase reliability. The internal reliability of the ANSOCQ was .94 (Cronbach’s alpha). The average inter-item correlation of the JAR-RTC scale was .57.

7.3.5.2  JAR-SE scale

7.3.5.2.1  Concurrent criterion validity

The RSES is a 20-item retrospective self-report questionnaire which is designed to assess anorexic clients’ confidence in their ability to change a broad range of anorexic symptomatology (Rieger, 2000). The RSES was used as a criterion measure to establish the concurrent criterion validity of the newly developed JAR-SE scale. RSES items were grouped, based on the element of symptomatology being addressed, to correspond with the dimensions investigated via the JAR-SE scale. To determine the relationship between the two scales Pearson correlations were computed. These results are presented in Table 7.10. Furthermore, items on the RSES showed moderate to strong significant positive correlations with JAR-SE items.
Table 7.10

*Pearson correlation between RSES and JAR-SE scale items (N=31)*

<table>
<thead>
<tr>
<th>RSES</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAR-SE Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Weight (D1)</td>
<td>.798*</td>
<td>.542**</td>
<td>.764**</td>
<td>.738**</td>
<td>.699**</td>
<td>.379*</td>
</tr>
<tr>
<td>2. Evaluation (D2)</td>
<td>.534**</td>
<td>.843**</td>
<td>.617**</td>
<td>.626**</td>
<td>.591**</td>
<td>.490*</td>
</tr>
<tr>
<td>3. Types of food (D3)</td>
<td>.636**</td>
<td>.539**</td>
<td>.904**</td>
<td>.714**</td>
<td>.669**</td>
<td>.564**</td>
</tr>
<tr>
<td>4. Amount of food (D4)</td>
<td>.671**</td>
<td>.585**</td>
<td>.777**</td>
<td>.792**</td>
<td>.724**</td>
<td>.600**</td>
</tr>
<tr>
<td>5. Weight control methods (D5)</td>
<td>.634**</td>
<td>.540**</td>
<td>.740**</td>
<td>.697**</td>
<td>.901**</td>
<td>.543**</td>
</tr>
<tr>
<td>6. Emotional (D6)</td>
<td>.546**</td>
<td>.320</td>
<td>.499**</td>
<td>.406*</td>
<td>.335</td>
<td>.810**</td>
</tr>
</tbody>
</table>

** p<.01 (2 tailed). * p<.05 (2 tailed).

7.3.5.2.2 Internal reliability

The internal reliability of the JAR-SE scale was .90 (Cronbach’s alpha). Reliability did not increase with item deletion. The internal reliability of the RSES was .97 (Cronbach’s alpha). The average inter-item correlation of the JAR-SE scale was .61.

7.4 Discussion

The primary aim of Study Three was to replicate the findings of Study One and Study Two using two modified measurement tools which are both multi-dimensional and continuous in nature. The two adapted scales were constructed in order to assess readiness to change and self-efficacy in anorexic clients. Furthermore, Study Three also aimed to evaluate the basic psychometric properties of the modified scales, including criterion validity and internal consistency.

Congruent with previous chapters, this discussion section will describe the findings of Study Three in light of the hypotheses proposed, and the literature presented earlier in this chapter. Following the evaluation of the hypotheses, theoretical and clinical implications of the results will be discussed. Limitations of the current study will then be acknowledged, and directions for future research proposed.

This section will begin with a discussion of quantitative results relevant to the first two hypotheses; that readiness to change and self-efficacy would be higher regarding changing cognitive/affective issues and amount of food consumed, and lower regarding readiness to gain weight. The discussion will then evaluate the findings relevant to the stability of readiness to change and self-efficacy over time. Firstly, it was expected that the TTM constructs would
fluctuate over time for participants in the central stages of contemplation, preparation and action. It was also proposed that readiness to change and self-efficacy would remain relatively stable for participants in either the pre-contemplation or maintenance stages. The results relevant to the hypotheses regarding the psychometric properties of the JAR-RTC scale and the JAR-SE scale will then be discussed. Specifically, concurrent criterion validity and internal consistency will be described. These findings will be presented initially for the JAR-RTC, followed by the JAR-SE scale.

7.4.1 Variability across symptom dimensions

7.4.1.1 Readiness to change

Current measurement tools which are designed to assess readiness to change in anorexic clients conceptualise this construct as uni-dimensional, providing one global rating of readiness to change for all anorexic related symptoms. However, the results of Study One and Study Two suggest that readiness to change varies across different elements of anorexic symptomatology, depending upon the symptom being addressed.

Consistent with the predictions of Study One and Study Two, in Study Three it was hypothesised that readiness to change would vary across different symptom dimensions. Specifically, it was expected that readiness to change would be significantly higher regarding the dimensions of emotional issues and the amount of food consumed. This hypothesis was partially supported. An ANOVA revealed that readiness to change emotional issues was significantly higher than other dimensions; however, readiness to change the amount of food eaten was not significantly higher than any other symptom dimension. Although unexpected, the results also revealed that participants’ readiness to change the dimension of weight control methods was also significantly higher than for the other symptom dimensions.

It was further proposed that participants would report significantly less readiness to change in regard to their willingness to gain weight. This hypothesis was supported, as the degree of readiness to change reported by participants was significantly less for the dimension of weight gain when compared to the other symptoms.

These findings are consistent with the earlier findings of Rieger and Touyz (2006), who concluded that readiness to change is not a global construct but rather varies across different elements of anorexic symptomatology. However, Rieger and Touyz (2006) postulated that
readiness to change can be divided into three distinct factors, whereas, due to the small sample size, the current study could not statistically determine factor loadings. The findings of Study Three are also partially consistent with the findings of Study One and Study Two. All three studies concluded that readiness to change varies across different elements of anorexic symptomatology. In addition, all three studies, using different methodological techniques, revealed that anorexic clients report less readiness to change when addressing the issue of weight gain. Although speculative, this finding is most likely to be due to the clients’ strong desire to maintain the most overt anorexic symptom, enabling them to retain their anorexic identity; providing them with a sense of uniqueness and accomplishment. As mentioned in Chapter Six, the primary goal of individuals diagnosed with anorexia to maintain an extremely low body weight. Participants may have reported their weight above the clinical cut-off for an anorexic diagnosis, however, they may not have been at their reported weight by choice, and may still desire to achieve a severely low weight. Therefore, it is understandable that this element of the disorder is the most valued, and consequently, most resistant to change.

The finding that participants reported more readiness to change in regard to working on their emotional issues was also consistent with the findings of Study One and Study Two. The element of relevant emotional issues, such as perfectionism and need for control, are the least overt of any anorexic symptoms. As this is an internal state which is not externally identifiable with anorexia, working on emotional issues does not directly affect the client’s weight or anorexic identity. This may suggest that anorexic clients are more prepared to change their emotional issues as they consider them to be unrelated to their goal of thinness.

Study One and Study Two found that participants’ readiness to change was higher in regard to increasing the amount of food which they were consuming. However, this finding was not replicated in Study Three. This discrepancy may be due to the differences in the samples used. Study One and Study Two both involved small, Australian samples, whereas Study Three utilised an international cohort. Further research, with a larger sample size, is required to determine if the JAR-RTC scale is applicable to participants of other cultures. In addition, Study One and Study Two both used a qualitative approach, whereas Study Three employed a quantitative design.
7.4.1.2 Self-efficacy

The TTM proposes that there is a linear relationship between readiness to change and self-efficacy (Prochaska & DiClemente, 1983). Therefore, it would be expected that perceived self-efficacy would demonstrate a similar pattern to that of readiness to change. In the current study it was hypothesised that self-efficacy would vary across the six symptom dimensions. Specifically, it was expected that participants would report significantly higher self-efficacy regarding their ability to change emotional issues and the amount of food they were consuming. This hypothesis was not supported. It was further proposed that participants would also report significantly less confidence in their ability to gain weight. Again, this hypothesis was not supported. The results indicated that there were no statistically significant differences in the degree of self-efficacy reported between each of the symptom dimensions.

This finding was unexpected and contrary to the theoretical assumptions of the TTM (Prochaska & DiClemente, 1983; Prochaska et al., 1992b). In addition, the current findings are contradictory to those obtained in Study One and Study Two. This discrepancy may be due to the different type of methodology used in Study Three, or the sample being too small to provide adequate power for the statistical analysis conducted. It would be beneficial to replicate this element of the study with a larger sample, which would enable greater confidence in the statistical procedures undertaken.

7.4.2 Stability across time

7.4.2.1 Readiness to change

There is currently a paucity of measurement tools which are designed to measure readiness to change in a continuous format. Previous research (Blanchard et al., 2003; Budd & Rollnick, 1996; Forsberg et al., 2004) has concluded that readiness to change may be more accurately conceptualised as a continuous construct, rather than by the allocation to discrete stages. Furthermore, the findings of Study One and Study Two both indicated that readiness to change in anorexic clients fluctuates rapidly across time.

Consistent with the findings of Study One and Study Two, it was expected, in the current study, that readiness to change would fluctuate across time. Specifically, it was proposed that participants in the central stages of change (contemplation and preparation) would report greater instability in their perception of readiness to change than those participants in the
extreme stages of pre-contemplation, action, or maintenance. This hypothesis was supported. In considering all symptom dimensions combined, a Pearson chi-square analysis yielded a significant relationship between allocated stage and reported instability in readiness to change. Furthermore, participants in either the pre-contemplation or maintenance stages reported that their overall readiness to change remained stable.

This finding extends earlier research which has investigated the applicability of a continuous conceptualisation of readiness to change to a range of problem behaviours such as excessive alcohol consumption (Budd & Rollnick, 1996; Forsberg et al., 2004), and substance abuse (Blanchard et al., 2003). In addition, the current results support the previous findings revealed in Study One and Study Two.

The degree of fluctuation in participants' readiness to change for each dimension was evaluated. The findings indicated that participants in the central stages reported significantly higher rates of instability in their readiness to gain weight than those in the extreme stages. Despite this finding being of clinical interest, no reliable conclusions can be drawn without further research being conducted using a larger, more representative sample.

7.4.2.2 Self-efficacy

The TTM theorises that fluctuations in an individual's self-efficacy should correspond with shifts in their readiness to change (Prochaska & DiClemente, 1983). To date, there is a paucity of empirical research which has examined the stability of self-efficacy over time. Therefore, the hypotheses in Study Three regarding the stability of self-efficacy were based on the expectations of readiness to change. In the current study it was proposed that self-efficacy would remain stable for participants in the extreme stages of change, while fluctuating over time for participants in the central stages of contemplation and preparation. This hypothesis was not supported. In contrast to expectations, a Pearson chi-square analysis showed that the two groups (central and extreme) did not report significantly different levels of instability in their perceptions of self-efficacy.

The findings of the current study did not support a major theoretical postulation of the TTM, which states that readiness to change and self-efficacy share a linear relationship (Prochaska & DiClemente, 1983). In addition, the results of Study Three are inconsistent with the findings of Study One, which concluded that self-efficacy fluctuated across time for participants in the central stages of change. The discrepancies in these findings may be due to
the technique implemented to determine stability over time (a percentage rating) not having been previously psychometrically evaluated. Therefore, there was no way to ensure that the inconsistent findings were not due to issues regarding measurement.

7.4.3 Psychometric properties

7.4.3.1 Psychometric properties of the JAR-RTC scale

The current measurement tools available to measure the constructs of the TTM in anorexic clients assess readiness to change (the ANSOCQ) in a uni-dimensional, discrete stage format. However, the current study aimed to evaluate the suitability of multi-dimensional, continuous scales to accurately measure these constructs in anorexic clients. It was expected that a continuous, multi-dimensional version of the ANSOCQ (the JAR-RTC scale) would demonstrate good internal reliability and good concurrent criterion validity with the original ANSOCQ scale.

In support of the hypothesis, the JAR-RTC scale demonstrated very good internal reliability (.89). This finding indicates that all six items on the scales are measuring the same general construct (readiness to change). The ANSOCQ has been shown to have very good psychometric properties when used to assess readiness to change in anorexic samples (Rieger et al., 2002). Therefore, the ANSOCQ was used as a criterion measure to determine the concurrent criterion validity of the JAR-RTC scale. Pearson correlations indicated that items on the two scales shared significant moderate to high positive correlations. This finding supports the hypothesis, and suggests that the adapted version of the scale was measuring the same constructs as the original ANSOCQ. Excluding the symptom dimension of weight, all JAR-RTC subscales demonstrated a higher correlation with the corresponding dimension items, in comparison to the other dimensions on the ANSOCQ. For example, the JAR-RTC emotional issues subscale demonstrated the highest correlation with the ANSOCQ scores also relating to the dimension of emotional issues.

7.4.3.2 Psychometric properties of the JAR-SE scale

The findings of Study One and Study Two indicated that self-efficacy varied between different elements of anorexic symptomatology. In addition, the findings of the earlier studies
suggested that self-efficacy fluctuated over relatively short timeframes. However, the current method of assessing this construct in anorexic clients (the RSES) involves a uni-dimensional, discrete scale. The current study hypothesised that a modified version of the RSES, which could assess self-efficacy across different symptom dimensions, and determine the degree of stability over time, would demonstrate very good concurrent criteria validity and good internal reliability.

This prediction was supported. The modified version of the RSES (the JAR-SE scale) showed very good internal reliability (.90), indicating that all six subscale items were measuring the same construct (self-efficacy). Due to the prominence of the RSES in recent eating disorder literature, it was used as a criterion scale to assess the concurrent validity of the JAR-SE scale. As expected, the subscale items on the JAR-SE scale showed strong significant positive correlations with the corresponding RSES items. This finding indicates that the modified format assesses self-efficacy consistent with that of the RSES.

7.4.4 Limitations of the current study

The findings of the current study should be considered in light of several major methodological limitations. The primary limitation of Study Three was the small sample size. Anorexia is a relatively rare disorder, and as most anorexic clients are ambivalent regarding recovery, recruiting them to participate in research is difficult. The current study did not include anorexic clients receiving inpatient treatment; therefore the findings may not be applicable to inpatient anorexic clients, with more severe symptomatology. Furthermore, the study included participants who were in recovery, which may have affected the representativeness of the sample. As the study involved only individuals receiving outpatient treatment, many participants reported a weight in the normal range. Moreover, participants’ height and weight were self-reported, and there was no way for the researcher to confirm the accuracy of these data. In addition, the current study used new measures which had not been previously evaluated for their psychometric properties.

Finally, the design of Study Three did not include questions relating to the participants’ country of residence. Therefore, it was not possible to ascertain whether culture influenced participants’ perceptions of readiness to change or self-efficacy. Although previous research has indicated that cultural influences may impact on anorexic symptomatology (Keel & Klump,
2003; K. Simpson, 2002), the current research was unable to draw conclusions regarding its impact on motivation to change.

### 7.4.5 Future directions

The findings of Study Three indicate that readiness to change and self-efficacy can be measured using a continuous, multi-dimensional format. However, as the current study had a small sample size, further replication using a larger, more representative anorexic sample is required. Further analyses of the psychometric properties of the amended scales, including test-retest reliability and predictive validity, are also needed.

In addition, future research regarding the cultural influence on readiness to change and self-efficacy should also be conducted. Although readiness to change and self-efficacy demonstrated distinct differences across the various symptom dimensions, further research is required to determine if this pattern of motivational shift is culturally specific or universal to all anorexic clients.

### 7.4.6 Chapter summary/conclusion

Study Three used a different methodological technique to investigate the stability of readiness to change and self-efficacy, and the results indicate that, congruent with the findings of Study One and Study Two, readiness to change and self-efficacy varied dependent upon the anorexic symptom being addressed. This finding provides further support for the results obtained in Study One and Study Two.

Current measurement tools for enable clinicians to determine a client’s global readiness to change and self-efficacy scores. The findings of Study One, Study Two, and Study Three all suggest that these constructs are not consistent across different symptom dimensions. Therefore, obtaining only one global score obscures the variability in these constructs, and prevents the clinician from gaining an accurate insight into the client’s readiness to change and self-efficacy. Using a multi-dimensional scale which has the ability to reliably measure readiness to change and self-efficacy for different elements of the disorder provides the clinician with a clear indication of which symptoms the client may be prepared to change and which symptoms they will show resistance to changing. This information will enable a clinician to tailor treatment which is appropriate for each client’s current level of motivation, and optimise the client’s
chance of successful behaviour change. In addition, clinicians can focus treatment on symptom dimensions which the client reports being prepared to change, and avoid forcing treatment approaches on the client which would result in increased ambivalence and resistance.

Furthermore, the results of Study Three indicate that a continuous measurement scale may assess the instability of readiness to change and self-efficacy over time. This would provide clinicians with an indication of how frequently a client’s readiness to change and self-efficacy fluctuate over time, allowing them to gauge how often to re-evaluate these constructs. In addition, assessing readiness to change and self-efficacy on a continuous scale would draw the clinician’s attention to elements of the disorder which are particularly unstable, allowing them to address these oscillations.

The findings of Study Three suggest that the constructs of the TTM; readiness to change and self-efficacy, may be more accurately conceptualised in anorexic clients as multi-dimensional. In addition, the findings of the current study also reveal that these constructs fluctuate across time, and should be theoretically viewed as continuous, dynamic states.
CHAPTER EIGHT

SUMMARY, IMPLICATIONS, AND CONCLUSIONS

This thesis had three primary aims: a) to use a variety of methodological techniques to assess the variability of the TTM constructs of readiness to change, self-efficacy and decisional balance across differing dimensions of anorexic symptomatology; b) to use EMA to evaluate the stability of these constructs over time; and c) to adapt existing measurement tools in order to investigate whether a different assessment format could reliably determine clients’ readiness for change across the various dimensions, whilst also taking into consideration instability between stages over time.

The current research investigated the abovementioned aims using three different methodological techniques; qualitative interviews, EMA and quantitative self-report questionnaires. Each of these methodologies have different strengths and weaknesses and the incorporation of the different methodologies within this series of studies provides a sound basis for exploring the aims outlined above.

As indicated in this thesis, although the TTM offers researchers and clinicians many benefits (DiClemente et al., 2004), it is also fraught with several conceptual and empirical limitations (Wilson & Schlam, 2004), including issues related to measurement, stage definition, stage discreteness, and the lack of reliable outcome predictability (Bandura, 1997; Littell & Girvin, 2002; Sutton, 2001; Weinstein et al., 1998; Wilson & Schlam, 2004). This thesis has, however, proposed and evaluated a different conceptualisation of motivation to change; one which is continuous and dynamic in nature.

This chapter is divided into four sections. Firstly, a summary of the main findings of the current research in relation to the three aims is presented. Secondly, the methodological limitations and strengths of the research are considered. Thirdly, the theoretical and clinical implications of the findings, including the researcher’s suggestions for future research are stated. Finally, the researcher’s conclusions will be provided.

8.1 Summary of the findings relative to the primary aims

Ambivalence regarding recovery is a primary feature of anorexia, with clients often valuing the egosyntonic elements of anorexic symptomatology. Ambivalence provides a
significant barrier in facilitating the process of recovery from anorexia; therefore, it is crucial for treatment professionals to understand the complex nature of readiness to change and self-efficacy in this population.

The first aim of the thesis was to evaluate the applicability of the TTM to conceptualise readiness to change and self-efficacy in anorexic clients. Specifically, the first aim investigated the variability of readiness to change and self-efficacy across the different dimensions of anorexic symptomatology. Study One, described in Chapter Five, used a combination of individual, retrospective qualitative interviews and self-report questionnaires to explore the degree of variability in readiness to change, self-efficacy and decisional balance in a sample of 15 females diagnosed with anorexia. These constructs were examined across six distinct, but related dimensions of anorexic symptomatology; weight, evaluation standards, types of foods, amounts of foods, weight control methods, and emotional issues. In addition, Study One evaluated the participants' perceived stability in the abovementioned constructs over time. A template analysis design used to evaluate the qualitative data revealed that participants' perceptions of readiness to change, self-efficacy and decisional balance varied dependent upon the dimension of the disorder being addressed. Specifically, participants reported higher readiness to change and self-efficacy in regard to the amount of food they were consuming and working on their emotional issues. In contrast, participants were least prepared and confident in their ability to gain weight, increase the variety of foods they were eating, and reduce the excessive methods that they used to control their weight.

In regard to the influence of stage allocation, participants in the pre-contemplation stage reported being unprepared to change any of the six symptom dimensions. Participants allocated into the stage of contemplation were only prepared to change the dimension of cognitive/emotional issues. Participants in both the preparation and action stages reported being prepared to change their cognitive/emotional issues, the amount of food they were prepared to consume and the standards which they used to evaluate their bodies. Finally, participants in the maintenance stage were ready for (or actively working on) change across all of the six dimensions.

Participants' perceptions of decision balance also varied dependent on the stage to which they were allocated. Participants in the pre-contemplation stage reported perceiving predominantly more benefits associated with their eating disorder. These advantages included gaining a sense of control and confidence, and receiving attention for being noticeably
underweight. In contrast, participants in the central stages of contemplation, preparation and action identified some disadvantages associated with their anorexic symptoms including health complications and social interactions. Finally, participants allocated to the stage of maintenance reported experiencing notably more disadvantages than advantages associated with their eating disorder. These disadvantages included damage to their health, social restriction and emotional distress such as feelings of guilt.

As a limitation of Study One was its reliance on retrospective recall, the second study was designed to replicate the findings of Study One using a different methodological technique, ecological momentary assessment (EMA), which reduces the biases related to retrospective recall. Using a case study design, four female anorexic participants independently completed a series of electronic questionnaires on a PDA device five times each day over a duration of six days. Based on their global readiness to change score on the ANSOCQ, two participants were allocated to the stage of contemplation, one participant to preparation, and one participant was assigned to the action stage. Visual analysis and descriptive statistics were used to examine the data. The results supported the findings of Study One – readiness to change and self-efficacy varied across the different symptom dimensions, with higher readiness to change and self-efficacy reported in regard to working on emotional issues, and increasing the amount of food they were willing to consume. In addition, congruent with the findings of Study One, participants also reported being least prepared, and least confident in their ability to gain weight.

The second aim of the thesis, to determine the stability of readiness to change and self-efficacy over time, was addressed in all three studies, via three different methodological techniques (qualitative interviews, EMA and self-report questionnaires). During Study One’s individual qualitative interview, participants were asked to indicate the amount of fluctuation they perceived in their readiness to change and self-efficacy. Through further template analysis, participant perceptions of readiness to change and self-efficacy were found to be unstable across time. Specifically, participants in the central stages of contemplation (as determined by their global ANSOCQ score), preparation and action reported greater instability, when compared to participants in either the pre-contemplation or maintenance stages of change.

Study Two also investigated the stability of readiness to change and self-efficacy across time. The EMA methodology provided repeated-measures data, which enabled the evaluation of the stability of each participant’s readiness to change and self-efficacy over numerous time points during the six-day testing period. A visual analysis of these data supported the findings of
Study One, indicating that readiness to change and self-efficacy fluctuated dramatically, even within a two-hour testing period. Study Two also revealed that the stability of these constructs was not consistent for all symptom dimensions; participants reported much greater stability in their readiness to gain weight and work on emotional issues as opposed to other symptom dimensions.

Study Three further investigated the stability of readiness to change and self-efficacy over time. Participants completed an online self-report questionnaire which required them to indicate the percentage of time that their readiness to change or self-efficacy remained stable over a specific time period. The data revealed that participants’ perceptions of readiness to change and self-efficacy fluctuated over time. Consistent with the findings of Study One, when compared to the other symptom dimension, greater stability was reported regarding the dimensions of weight gain and evaluation standards.

The results of both Study One and Study Two indicated that participants perceived increased instability in regard to expanding the types of foods that they were prepared to eat. In contrast, participants in Study One and Study Three reported that their readiness to change the strict standards that they used to evaluate their bodies, and their readiness to increase their weight remained relatively stable over time. In regard to allocated stage differences, Study Two revealed that participants in the central stages demonstrated much greater instability in regard to increasing their weight, the amount of food they were prepared to consume, and changing the methods they were using to control their weight. However, the results of Study Three indicated that, when compared to participants in the stages of pre-contemplation or maintenance, participants in the central stages reported significantly more instability in regard to increasing their weight.

Study Three examined the third aim of the thesis; to evaluate the applicability of multidimensional, continuous scales to accurately assess readiness to change and self-efficacy in individuals who self-identified as being diagnosed with anorexia. Two existing measurement tools were modified to provide questionnaires which were both multidimensional and continuous. These tools were then used to examine whether this assessment approach could reliably evaluate variations in readiness to change and self-efficacy over different elements of the disorder and across time.

Thirty one female clients, who self-reported a diagnosis of anorexia, participated in the third study. They completed an online questionnaire set which included the two existing scales
in addition to the two modified scales. Statistical analyses demonstrated that the adapted versions of the ANSOCQ (the JAR-RTC scale) and the RSES (the JAR-SE scale) both demonstrated good internal consistency and concurrent criterion validity. This finding suggests that multi-dimensional, continuous scales may be applicable to assessing readiness to change and self-efficacy in anorexic clients.

8.2 Current findings relevant to previous research

8.2.1 Variability of readiness to change and self-efficacy across dimensions

There is currently a paucity of published research examining the variability of readiness to change and self-efficacy across different dimensions of eating disorder symptomatology. Rieger and Touyz (2006) used the ANSOCQ to evaluate the factor structure of motivation to change in a sample of 115 Australian anorexic inpatients and concluded that motivation to change consisted of three distinct factors; Weight Gain, Eating, Shape and Weight concerns, and Ego-Alien Aspects of Change. The current research supports the theoretical premise postulated by Rieger and Touyz (2006); that readiness to change is more accurately conceptualised as a multi-factorial, rather than a global construct. While, the current research found that readiness to change varied across all six dimensions, rather than just the three factors proposed by Rieger and Touyz (2006), the results of the two studies may not be inconsistent. Due to the small sample size in the third study the current research did not conduct a factor analysis to determine the factor loadings for each distinct symptom dimension. Therefore, even though readiness to change varied between the six symptom dimensions being investigated, it was not possible to determine if these dimensions represented significantly distinct factors.

8.2.2 Stability of readiness to change and self-efficacy across time

To date, there is no published research investigating the stability of readiness to change or self-efficacy over time in an anorexic sample. However, previous research has examined the stability of these constructs in relation to smoking cessation (Hughes et al., 2005). The results of the current research indicate that despite the earlier study investigating a different problem behaviour, the finding that readiness to change fluctuates over time is consistent across both problem health behaviours. This instability also provides further support for the implementation of continuous assessment techniques.
8.3 Limitations and strengths of the current research methodology

Each of the three studies conducted as part of the current research used different methodological techniques, each of which have their own methodological strengths and limitations. The current research demonstrated consistent findings using qualitative, quantitative, and EMA approaches. Obtaining consistent findings using a range of methodology suggests that the conclusions drawn are replicable, and not affected by biases introduced through the chosen methodological technique.

Despite the abovementioned strength, the current research findings should be considered in light of several methodological limitations. The current research involved only small samples. As anorexia is a relatively rare disorder, and the majority of anorexic clients deny or value their anorexic symptomatology, recruiting participants from this clinical population is extremely challenging. However, it should be noted that the sample sizes in the current research were similar to those used in previous research (Geller et al., 2005; Rieger et al., 2002).

In addition, almost all of the participants involved in the current research were female, residing in westernised, English-speaking countries. Despite the prevalence of anorexia being substantially higher for women than in men in western developed countries, it is also a disorder which affects approximately 10% of males (Hoek, 2002; Hudson et al., 2007; Keel & McCormick, 2009), and is evident in non-westernised cultures (K. Simpson, 2002). Therefore, given the nature of the participants, the results of the current research may not be representative of the broader anorexic population.

The findings of Study Two were further limited in their capacity to be generalised to the broader anorexic population as only three stages of change (as proposed by the TTM) were represented in the sample. Only four participants were involved in Study Two, and these participants were assigned (using their global ANSOCQ score) to the stages of contemplation, preparation and action. Therefore, no inferences from the findings of that study can be made regarding the readiness to change or self-efficacy of individuals in either the pre-contemplation or maintenance stages of change.

Furthermore, the small sample size in Study Three reduced the power of the study; therefore, some non significant trends that were observed may have reached significance with a larger sample size. Furthermore, the small sample limited the range of statistical techniques that could be conducted. Although basic psychometric properties of the adapted scales were
examined, the sample size was inadequate to determine test-retest reliability or predictive validity.

8.4 Implications of the current research

8.4.1 Theoretical implications

The current research adds to the present body of literature concerning ambivalence regarding recovery in anorexic clients. Previous research that has applied the TTM to anorexia has concluded that it is an appropriate model to conceptualise the complicated process of behaviour change in this population (Geller et al., 2005; Jones et al., 2005; Rieger et al., 2002; Rieger et al., 2000). The current research extended this premise by examining the applicability of the TTM to different elements of anorexic symptomatology, and found that readiness to change and self-efficacy varied depending on which symptom dimension was being addressed. In addition, the current research demonstrated that readiness to change and self-efficacy fluctuated over very short time periods (Study Three), especially for individuals in the central stages of contemplation and preparation (Study Two and Study Three).

Readiness to change and self-efficacy are commonly theorised to be global constructs (Prochaska & DiClemente, 1986), suggesting that one score on these constructs can be applied to all of the symptom dimensions of the problem behaviour. However, the current research concludes that when applied to anorexia, readiness to change and self-efficacy are more accurately perceived as multidimensional constructs, which vary across different dimensions of anorexic symptomatology. This finding supports the assertion that clients diagnosed with anorexia may present with differing degrees of motivation to change the various aspects of their eating disorder (Hasler et al., 2004) and provide support for Rieger and Touyz’s (2006) finding of a three factor structure to the ANSOCQ. Furthermore, these findings suggest that although the TTM can be appropriately applied to anorexic clients, readiness to change and self-efficacy should be theoretically considered to be variable across each different symptom dimension of the disorder.

The TTM relies on a staging metaphor to assign individuals into one discrete stage of change (Prochaska & DiClemente, 1986). A fundamental theoretical premise of this model is that, like all staging models, clients can be allocated into a stage and will remain in that stage for a reasonable period of time, allowing stage appropriate treatment to be delivered. However, the findings of the current research calls into question the theoretical premise that individuals
can be reliably allocated into one discrete stage of change. The findings of the current research have indicated that when applied to anorexic clients, the constructs of readiness to change and self-efficacy fluctuate dramatically over time, especially for individuals in the central stages of contemplation and preparation. The fact that participants involved in the current research indicated that their readiness to change and self-efficacy demonstrated instability over time, suggests that the TTM may be more accurately theorised as a continuous model of change, rather than a series of discrete stages.

Previous research has investigated the stability of readiness to change and self-efficacy in a range of problem behaviours including excessive alcohol consumption (Forsberg et al., 2004), substance abuse (Blanchard et al., 2003) and risky sexual behaviours (LaBrie et al., 2005), and concluded that readiness to change and self-efficacy may be more accurately conceptualised as continuous, rather than discrete constructs. To the researcher’s knowledge, this issue had not been previously considered in regard to an anorexic sample. The current research suggests that, similar to the abovementioned problem behaviours, motivation to change in clients diagnosed with anorexia may be more appropriately theorized to be a dynamic, fluctuating internal state, rather than a series of discrete stages. Furthermore, although Study Three was preliminary in nature, the findings suggest that measuring readiness to change and self-efficacy in the abovementioned format may provide crucial information which would be obscured using a less sensitive method such as a uni-dimensional, global assessment tool.

8.4.2 Clinical implications

The clinical value in assigning clients into a discrete stage of change is provided by the insight and understanding that is gained from previous knowledge of that specific group. For example, recognising that a client is in the pre-contemplation stage automatically informs a clinician of several pertinent characteristics related to that client’s motivation to change. In addition, previous research has indicated that readiness to change predicts clinical outcome in clients diagnosed with anorexia (Ametller et al., 2005; Geller, Cockell et al., 2001; Geller et al., 2004). Therefore, the ability to accurately assess readiness to change and self-efficacy is imperative for clinicians attempting to facilitate change in treatment resistant clients.

As mentioned earlier, the current research concluded that readiness to change and self-efficacy are not consistent across the different elements of anorexic symptomatology. This finding has clinical implications. Firstly, an incorrect assessment of readiness to change or self-
efficacy could result in a clinician attempting to facilitate change in a client who is not prepared to acknowledge a problem or ready to consider change. This incongruency between the goals of the client and the clinician may result in alienation of the client and the development of further resistance to changing their anorexic symptomatology (Geller & Dunn, 2011; Miller & Rollnick, 2002). For example, if a clinician determines that a client’s global readiness to change score indicates that they have moderate readiness to change, any attempts to encourage the client to commence gaining weight will still be met with adamant resistance. Secondly, enabling a clinician to determine a client’s readiness to change for each distinct symptom dimension will provide them with valuable information regarding which elements of the disorder the client can be effectively encouraged to change, without alienation, and in which elements of the disorder the clients’ ambivalence should be addressed before attempting change.

The findings of Study Two indicated that participants’ perception of readiness to change and self-efficacy were related to the occurrence of situational events. Specifically, it was found that an argument with family and/or friends reduced the participant’s willingness (or confidence in their ability) to work on changing their emotional issues. This finding suggests that the ability to enhance client readiness to change and self-efficacy may also be affected by the client’s family or friends.

The finding that family and/or friends may influence anorexic clients’ perceptions of readiness to change and self-efficacy has two important clinical implications. Firstly, this information may enable a clinician to work directly with family or friends of the client to facilitate further development of readiness to change and self-efficacy by altering the manner in which they interact. By avoiding arguments or managing conflict with a more constructive approach, the family and friends of the client may encourage further development of readiness to change and self-efficacy. Secondly, a clinician may be able to enhance readiness to change and self-efficacy by providing skill building or workshopping programs to teach the client more appropriate methods of dealing with conflict.

The current research revealed that readiness to change and self-efficacy did not remain constant over time. This finding has pertinent clinical implications as there is usually some delay between the assessment of these constructs and the delivery of stage specific treatment approaches. It is impractical for clinicians to identify a client’s readiness to change at the commencement of each appointment. However, conceptualising readiness to change and self-efficacy as continuous, rather than discrete, will provide a clinician with an indication of the
stability of these constructs for each client in relation to each symptom dimension. In addition, this information will provide clinicians with an indication as to how frequently readiness to change and self-efficacy should be assessed. For example, it may be appropriate for clients in the central stages to be assessed more frequently than those in the stage of pre-contemplation or maintenance, who demonstrate comparatively less instability. Therefore, adapting current scales to evaluate readiness to change and self-efficacy into a continuous, multi-dimensional format may provide both clinicians and researchers with a greater understanding of the difficult process of behaviour change in anorectic clients.

8.5 Future directions for research

Further research investigating the variability of readiness to change and self-efficacy over time and between different elements of anorexic symptomatology is warranted. Due to the small sample sizes used in the current research, future research should aim to replicate the current findings using a larger, more representative sample.

In the current research anorexic symptomatology was divided into six distinct, but related dimensions. However, it would be beneficial for future research to investigate the suitability of this six-symptom model in assessing readiness to change and self-efficacy. A large sample factor analysis may indicate whether variability in these constructs is adequately conceptualised using six dimensions.

The small sample size of Study Three limited the statistical calculations that could be conducted. Further research evaluating the psychometric properties of the adapted scales, including the test-retest reliability and predictive validity, is needed.

In addition, Study Three examined the stability of readiness to change and self-efficacy over a period of six days. Although the results indicated that these constructs fluctuated rapidly during this timeframe, it would be beneficial to evaluate changes in instability over a longer period of time. For example, a testing period of one month may reveal a homeostatic effect which acts to stabilise readiness to change and self-efficacy over time.

8.7 Conclusions

Ambivalence towards recovery is a key feature of anorexia. Enhancing a clients’ motivation has been shown to significantly increase their likelihood of a positive outcome (Wade, Frayne, Edwards, Robertson & Gilchrist, 2009). One framework commonly used to
assess motivation in anorexic clients is the TTM. Previous researchers have investigated the applicability of the TTM to individuals diagnosed with anorexia and concluded that the model can be successfully applied to this population (Geller, 2002; Geller, Cockell et al., 2001; Gusella et al., 2003; Rieger et al., 2000; Serrano et al., 2004).

The current research used three diverse methodological techniques, each offering different strengths and weaknesses, to evaluate the stability of readiness to change and self-efficacy over time and between different aspects of anorexic symptomatology. All three studies indicated that readiness to change and self-efficacy varied across different symptom dimensions, depending upon the element being addressed. In addition, the current research also revealed that readiness to change and self-efficacy fluctuated over short time periods, especially for participants in the central stage of contemplation and preparation.

However, the conclusions of the current research should be considered in light of relevant methodological limitations. The sample sizes used in all three studies were small, and may not have accurately represented the general anorexic population. Furthermore, the division of symptom dimensions was not evaluated via a factor analysis; therefore a six-symptom dimension model could not be empirically validated. Future research is needed to replicate the findings of the current research using a larger and more diverse sample. In addition, further research could investigate the stability of readiness to change and self-efficacy over a longer duration than six days.
REFERENCES


APPENDICES
APPENDIX A

STUDY 1 NEWSPAPER ADVERTISEMENT

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Recovering From Anorexia
Individual Views on Recovery

Recovering from anorexia is difficult and each person's experience is very different. The School of Psychology at Deakin University would like to hear from both males and females over the age of 14 who are currently recovering (or recently recovered) from anorexia to learn about your experience. This study involves a 60min. confidential interview and completing three brief anonymous questionnaires.

If you are interested in hearing more please
contact Jacqueline Woerner on (03) 52278426
or email jowoerne@deakin.edu.au

Thankyou.
APPENDIX B

STUDY 1 QUESTIONNAIRES

Anorexia Nervosa Stages of Change Questionnaire

Each of the items below is made up of five statements. For each item, please read the five statements carefully. Then select the statement which best describe your current attitude or behaviour (not how you have been in the past or how you would like to be). Your answers are completely confidential. Thank you for your time.

1) The following statements refer to gaining weight:
   a) As far as I am concerned, I do not need to gain weight
   b) In some ways I think that I might be better off if I gained weight
   c) I have decided that I will attempt to gain weight
   d) At the moment I am putting a lot of effort into gaining weight
   e) I am working to maintain the weight gains I have made

2) The following statements refer to body weight:
   a) As far as I am concerned, I do not need to weigh at least ______ kg. (Insert your minimal normal weight).
   b) In some ways I think that I might be better off if I weighed at least ______ kg.
   c) I have decided that I will attempt to reach at least ______ kg.
   d) At the moment I am putting a lot of effort to reach at least ______ kg.
   e) I am working to maintain a weight of at least ______ kg.

3) The following statements refer to parts of your body which may particularly concern you in terms of weight gain (such as hips, thighs, stomach etc.):
   a) There is no way I would be prepared to gain weight on these body parts
   b) Sometimes I think I would be prepared to gain weight on these body parts
   c) I have decided that I am prepared to gain weight on these body parts
   d) I am presently trying to gain weight on these body parts
   e) I am working to maintain the weight I have gained on these body parts

4) The following statements refer to your appearance:
   a) I do not want to be a normal weight because I would be less satisfied with my appearance at a weight of at least ______ kg. (Insert your minimal normal weight).
b) I have occasionally thought about being a normal weight because in some ways I would be more satisfied with my appearance at a weight of at least ______ kg.
c) I have decided to reach a normal weight because I would be more satisfied with my appearance at a weight of at least ______ kg.
d) I am presently trying to reach a normal weight because I am more satisfied with my appearance at a weight of at least ______ kg.
e) I am working to maintain a normal weight because I am more satisfied with my appearance at a weight of at least ______ kg.

5) The following statements refer to your health:
   a) I do not need to be a normal weight because there are no risks to my health when I weigh below ______ kg. (Insert your minimal normal weight).
   b) I have occasionally thought about being a normal weight because of the risks to my health when I weigh below ______ kg.
   c) I have decided to reach a normal weight because of the risks to my health when I weigh below ______ kg.
   d) I am presently trying to reach a normal weight because of the risks to my health when I weigh below ______ kg.
   e) I am working to maintain a normal weight because of the risks to my health when I weigh below ______ kg.

6) The following statements refer to the importance of body shape and weight:
   a) I do not exaggerate the importance of my body shape or weight in determining my happiness and success
   b) Sometimes I think that I exaggerate the importance of my body shape or weight in determining my happiness and success
   c) I have decided that I need to reduce the importance that I place on my body shape or weight in determining my happiness and success
   d) I often try to challenge the importance that I place on my body shape or weight in determining my happiness and success
   e) I have succeeded in reducing my tendency to place too much importance on my body shape or weight in determining my happiness and success

7) The following statements refer to a fear of fatness:
   a) My fear of becoming fat is not excessive
   b) I occasionally think that my fear of becoming fat is excessive
   c) I have decided that I need to do something about the fear I have of becoming fat because it is controlling me
   d) I know that my fear of becoming fat has caused problems and I am now trying to correct this
   e) I have succeeded in reducing my fear of becoming fat and want it to stay this way

8) The following statements refer to weight loss:
   a) I would prefer to lose more weight
   b) Sometimes I think that it might be time to stop losing weight
c) I have decided that it is time to stop losing weight

d) I am trying to stop losing weight

e) I have managed to stop losing weight and hope to stay this way

9) The following statements refer to body fat versus muscle:
   a) I might think about gaining muscle on purpose, but I would never think about gaining fat on purpose
   b) Sometimes I think that I may need to gain some fat even though I would prefer to have only muscle
   c) I have decided that to be healthy I need to have some fat on my body
   d) I realise that I need to have some fat on my body and am working to achieve this
   e) I have managed to increase the level of fat on my body which I am trying to maintain

10) The following statements refer to the rate of weight gain:
    a) There is no way I would be prepared to gain at least 1 kg a week
    b) Sometimes I think I would be prepared to gain at least 1 kg a week
    c) I have decided that in general it would be best for me to gain at least 1 kg a week
    d) I am putting a lot of effort to gain at least 1 kg a week
    e) I am working to maintain my weight but would be prepared to gain at least 1 kg a week if necessary

11) The following statements refer to certain shape and weight standards which you may have for evaluating your body (such as only being satisfied with your body when your stomach is flat or when you are below a certain weight):
    a) The standards I use to evaluate my body are not too strict
    b) Sometimes I think that the standards I use to evaluate my body may be too strict
    c) I have decided that the standards I use to evaluate my body are too strict and need to be change
    d) I am putting a lot of effort to change the strict standards which I use to evaluate my body
    e) I have managed to let go of the strict standards which I used in the past to evaluate my body and am hoping to keep it this way

12) The following statements refer to certain foods which you may avoid eating (such as food high in calories or fat, red meat or dairy products):
    a) There are certain foods which I strictly avoid and would not even consider eating
    b) There are certain foods which I try to avoid, although sometimes I think that it might be okay to eat them occasionally
    c) I think that I am too strict in the foods which I allow myself to eat and have decided that I will attempt to eat foods which I usually avoid
    d) I am putting in a lot of effort to regularly eat foods which I usually avoid
    e) I used to avoid eating certain foods which I now eat regularly

13) The following statements refer to daily food consumption:
14) The following statements refer to time spent thinking about food and your weight (such as thought about becoming fat, counting the calories or fat content of food, or calculating the amount of energy used when exercising):
   a) There is nothing wrong with the amount of time I spend thinking about food and my weight
   b) the amount of time I spend thinking about food and my weight is a problem sometimes
   c) I have decided that I need to use strategies to help me reduce the amount of time I spend thinking about food and my weight
   d) I am using strategies to help me reduce the amount of time I spend thinking about food and my weight
   e) I used to spend too much time thinking about food and my weight which I have managed to reduce and am working to keep it this way

15) The following statements refer to certain eating behaviours (such as needing to eat food at a specific rate or time, moving food around on the plate, being unable to eat all the food on a plate, taking longer than others to eat meals, having difficulties eating with others, needing to chew food a certain number of times or needing to stick to the same food plan each day):
   a) There is nothing that I need to change about the way I eat my meals
   b) I sometimes think that I need to change aspects of the way I eat my meals
   c) I have decided that I will try to change aspects of the way I eat my meals
   d) I am putting in a lot of effort to change aspects of the way I eat my meals
   e) I have succeeded in changing aspects of the way I eat my meals and want it to stay that way

16) The following statements refer to feelings associated with eating (such as feeling guilty) and not eating (such as feeling in control):
   a) There is no need for me to change the feelings I associate with eating and not eating
   b) I sometimes think that I need to change the feelings I associate with eating and not eating
   c) I have decided that I will try to change the feelings I associate with eating and not eating
   d) I am putting in a lot of effort to change the feelings I associate with eating and not eating
   e) I have succeeded in changing the feelings I associate with eating and not eating and want it to stay this way

17) The following statements refer to methods which you may use to control your weight (such as restricting your eating, exercising, vomiting, taking laxatives or other pills). You may select more than one statement for the different methods that you use to control your weight. Please indicate which weight control method/s you are referring to in the blank space/s provided.
a) There is nothing seriously wrong with the methods (____________________) I use to control my weight
b) I have been thinking that there may be problems associated with the methods (____________________) I use to control my weight
c) I have decided that I will attempt to stop using certain methods (____________________) to control my weight
d) I am putting in a lot of effort to stop using certain methods (____________________) to control my weight
e) I have managed to stop using certain methods (____________________) to control my weight and I would like to keep it this way

18) The following statements refer to certain emotional problems (such as feeling depressed, anxious or irritable):
   a) I do not have any emotional problems which I need to work on
   b) I sometimes think that I may have certain emotional problems which I need to work on
   c) I have certain emotional problems which I have decided to work on
   d) I am actively working on my emotional problems
   e) My emotional problems have improved and I am trying to keep it this way

19) The following statements refer to certain characteristics (such as perfectionism, low self esteem or feeling a need for control):
   a) I do not have any problems in the way I approach life which I need to work on
   b) I sometimes think that I may have certain problems in the way I approach life which I need to work on
   c) I have certain problems in the way I approach life which I have decided to work on
   d) I am actively working on problems in the way I approach life
   e) The problems in the way I approach life have improved and I am trying to keep it this way

20) The following statements refer to relationship problems (such as relationships with family or friends):
   a) I do not have any problems in my relationship with others which I need to work on
   b) I sometimes think that I may have certain problems in my relationships with others that I need to work on
   c) I have certain problems in my relationships with others which I have decided to work on
   d) I am actively working on my problems in my relationships with others
   e) The problems in my relationships with others have improved and I am trying to keep it this way
Rieger Self-efficacy Scale

Please read the following statements and using the key below, circle your corresponding answer on the scale of 0 –10. Your answers are completely confidential. Thank you for your time.

0 = Not confident that I could do this
10 = Completely confident that I could do this

1) I can gain weight:

0 1 2 3 4 5 6 7 8 9 10

2) I can obtain a normal body weight:

0 1 2 3 4 5 6 7 8 9 10

3) I can gain weight on parts of my body which may particularly concern me in terms of weight gain (such as hips, thighs, stomach etc.):

0 1 2 3 4 5 6 7 8 9 10

4) I can be satisfied with my appearance at a normal weight:

0 1 2 3 4 5 6 7 8 9 10

5) I can be physically healthy:

0 1 2 3 4 5 6 7 8 9 10

6) I can determine my happiness and success without placing importance on my body shape or weight:

0 1 2 3 4 5 6 7 8 9 10
7) I can reduce my fear of becoming fat:

0 1 2 3 4 5 6 7 8 9 10

8) I can stop losing weight:

0 1 2 3 4 5 6 7 8 9 10

9) I can increase the amount of fat on my body:

0 1 2 3 4 5 6 7 8 9 10

10) I can gain at least 1 kg a week:

0 1 2 3 4 5 6 7 8 9 10

11) I can let go of strict standards that I have for evaluating my body:

0 1 2 3 4 5 6 7 8 9 10

12) I can regularly eat foods which I used to avoid (such as food high in calories or fat, red meat or dairy products):

0 1 2 3 4 5 6 7 8 9 10

13) I can eat 3 standard size meals and a snack each day:

0 1 2 3 4 5 6 7 8 9 10

14) I can spend less time thinking about becoming fat, counting the calories or fat content of food, or calculating the amount of energy used when exercising:

0 1 2 3 4 5 6 7 8 9 10
15) I can change the way I eat meals (such as needing to eat food at a specific rate or time, moving food around on the plate, being unable to eat all the food on a plate, taking longer than others to eat meals, having difficulties eating with others, needing to chew food a certain number of times or needing to stick to the same food plan each day):

0  1  2  3  4  5  6  7  8  9  10

16) I can change the feelings that I associate with eating (such as feeling guilty) and not eating (such as feeling in control):

0  1  2  3  4  5  6  7  8  9  10

17) I can stop certain methods which I use to control my weight (such as restricting my eating, exercising, vomiting, taking laxatives or other pills):

0  1  2  3  4  5  6  7  8  9  10

18) I can improve my emotional problems (such as feeling depressed, anxious or irritable):

0  1  2  3  4  5  6  7  8  9  10

19) I can improve certain characteristics which I may have (such as perfectionism, low self esteem or feeling a need for control):

0  1  2  3  4  5  6  7  8  9  10

20) I can improve my relationship problems (such as relationships with family or friends):

0  1  2  3  4  5  6  7  8  9  10
Anorexia Nervosa Decisional Balance Scale

Please read the following questions and using the key below, circle your corresponding answer. All answers are confidential. Thank you for your time.

<table>
<thead>
<tr>
<th>1 = Strongly disagree</th>
<th>2 = Disagree</th>
<th>3 = Unsure</th>
<th>4 = Agree</th>
</tr>
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</table>

1) It bothers me that anorexia keeps me from socializing
2) As long as I am anorexic, I do not have to make definite plans for the future
3) It bothers me that anorexia prevents me from sharing my feelings with others
4) Because of anorexia, I feel guilty a lot of the time
5) I am fed up with thinking about my weight and/or shape
6) Anorexia gives me self-control
7) It bothers me that my weight controls my mood
8) I worry about the effect anorexia is having on my health
9) Because of anorexia, I don’t have to deal with intimate relationships
10) I am tired of being sick with anorexia
11) Fitting into small sized clothes makes me feel good about myself
12) It bothers me that anorexia leaves me with no energy
13) Being a very low weight makes me feel good about myself
14) I worry that because of anorexia I will not be able to have children
15) I have lost my freedom to anorexia
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<tr>
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</thead>
<tbody>
<tr>
<td>16) Being a very low weight makes me feel confident</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17) Being thinner than others makes me feel good about myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18) Anorexia helps me obtain an immediate goal</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19) I don't like it that anorexia keeps me from eating out with others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20) Anorexia is my way of being perfect</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21) I hate the fact that anorexia controls my life</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22) Anorexia makes me feel accomplished</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23) Anorexia is my way of avoiding deeper, more serious problems</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24) When I focus on eating, shape and weight I do not have to deal with painful emotions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25) I spend too much time thinking about food, eating and calories</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26) It bothers me that because of anorexia I can't prepare a meal by myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27) Anorexia makes me moody</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28) Anorexia protects me from the difficulties of adult life</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>29) Anorexia allows me to avoid making decisions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>30) Because of anorexia, I can avoid my fears about sex and/or my sexuality</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Demographics Questionnaire

About You

Your age is ________ years and your height is ________ cm.
You currently weigh__________ kg. Your highest weight (excluding pregnancy) is ________ kg and your lowest adult weight is ________ kg. You have had anorexia for ______ years and ______ months. The highest level of education that you have currently completed is ____________________.

Thank you for your time.
Study 1 Interview Outline

1) Can you tell me how your concerns with your weight and food began?

2) What benefits and disadvantages did you associate with your behaviours relating to food, weight and exercise? (Decisional Balance-Behavioural)

3) What benefits and disadvantages did you associate with your thoughts relating to food, weight and exercise? (Decisional Balance-Cognitive)

4) Can you recall a specific ‘turning point’ where you realised that you had a problem with your food and weight patterns?

5) What were the first steps that you took in an attempt to change your eating patterns?

6) Did you initially attempt to change either your thoughts or your behaviours relating to food, weight and exercise?

7) What people or factors initiated treatment for you? (intrinsic V’s extrinsic motivation)

8) Which types of treatments have you received, and how would you evaluate the different types of treatments?

9) What were your thoughts and views regarding treatment when you first commenced treatment?

10) What are your thoughts and views regarding treatment now?

11) Can you recall a time after you began treatment when your thoughts and behaviours relating to food, weight and exercise became more intense? (Relapse)

12) What are/were your beliefs regarding your ability to change your behaviour relating to food, weight and exercise? (Self-efficacy-Behavioural)

13) What are/were your beliefs regarding your ability to change your thoughts relating to food, weight and exercise? (Self-efficacy-Cognitive)

14) What types of methods have you recently used to gather information on food, weight and eating habits? (Process #1-Consciousness Raising)
15) Can you tell me about a recent instance where you have read or thought about information from articles or advertisements, or information people have personally given you in relation to changing your weight and eating habits? (Process #1-Consiousness Raising)

16) What other things do you focus on to substitute dwelling on thoughts of food, weight and exercise? (Process #2-Counter Conditioning)

17) How do you feel when you hear about the health hazards of being substantially underweight? (Process #3-Dramatic Relief)

18) How do you feel when you see dramatic photographs of people who are substantially underweight? (Process #3-Dramatic Relief)

19) Can you tell me about a person who is close to you, with whom you can count on when you’re having problems with your eating? (Process #4-Helping Relationships)

20) What types of things do you do to reward yourself for not focusing on food, weight and exercise? (Process #5-Reinforcement Management)

21) What types of rewards do other people offer you when you are not focussing on food, weight and exercise? (Process #5-Reinforcement Management)

22) What are your thoughts about your ability to eat normally and gain weight ‘if you try hard enough’? (Process #6-Self-Liberation)

23) How does your weight and eating habits make you feel about yourself as a person? (Process #7-Self-Re-evaluation)

24) Can you tell me about a recent instance where you have removed things from around you which remind you of food, weight and exercise? (Process #8-Stimulus Control)

NOTE: Specific questions may not be asked of all participants.

E.g. Questions #3 through to #11 may not be applicable for participants in the very early stages of anorexia.
APPENDIX C

STUDY ONE ETHICS APPROVAL

MEMORANDUM

TO: Ms Jacqueline Woerner
   Psychology
   Geelong

FROM: Secretary, Deakin University Human Research Ethics Committee (DU-HREC)

DATE: 10 September 2004

SUBJECT: PROJECT: EC 160-2004 (Please quote this project number in future communications.) PROCEEDURES INVOLVED IN THE DEVELOPMENT OF READINESS TO CHANGE PROBLEM BEHAVIOUR IN ANORERXIA NERVOSA CLIENTS: PERSONAL PERSPECTIVES

This application was considered at the DU-HREC meeting held on 16 August 2004.

APPROVAL HAS BEEN GIVEN FOR MS JACQUELINE WOERNER, UNDER THE SUPERVISION OF DR ROSS KING, SCHOOL OF PSYCHOLOGY, TO UNDERTAKE THIS PROJECT FROM 10 SEPTEMBER 2004 TO 31 DECEMBER 2004.

The approval given by the Deakin University Human Research Ethics Committee is given only for the project and for the period as stated in the application and approval. It is your responsibility to contact the Secretary immediately should any of the following occur:

- Serious or unexpected adverse effects on the participants
- Any proposed changes in the protocol, including extensions of time.
- Any events which might affect the continuing ethical acceptability of the project.
- The project is discontinued before the expected date of completion.

In addition you will be required to report on the progress of your project at least once every year and at the conclusion of the project. Failure to report as required will result in suspension of your approval to proceed with the project.

Victoria Emery
Secretary, DU-HREC
(03) 9251 7123
APPENDIX D

STUDY 1 PRACTITIONER LETTER

Processes involved in the development of readiness to change problem behaviour in anorexia nervosa clients: personal perspectives.

A research project of the School of Psychology, Deakin University

8th November 2004

Dear ********,

Hello, my name is Jacqueline Woerner and I am currently enrolled in a Doctor of Philosophy (Psychology) at Deakin University, Geelong. As a component of my PhD I am undertaking a research project, supervised by Dr Ross King, Senior Lecturer in Psychology. I believe this project will be of interest to some members of the Geelong Anorexia Nervosa and Bulimia Support Group. I am writing to you in order to describe the project and to seek permission to invite your clients to participate.

As you would be aware, recovering from anorexia nervosa is frequently a difficult process. Those who are affected by anorexia initially do not see themselves as having a problem and are resistant to seeking help. Even when the person agrees that there is a problem, they struggle to remain motivated to recover typically because of fears of gaining weight, losing a sense of control, or a sense of uniqueness. There is now a lot of evidence to suggest that sufferers move through a series of stages as they recover but this rarely occurs in a straightline; rather, their degree of motivation waxes and wanes.

The aims of this research are:

- Explore and determine participants' individual views regarding their experiences with anorexia nervosa (particularly the onset of anorexia and the treatment which they have undertaken);
- Use the Transtheoretical Model to determine the client's current stage of change regarding their anorectic symptomatology (both cognitive/affective and behavioural);
- Use the Transtheoretical Model to determine which processes clients utilise throughout the various stages of change;
- Determine if these processes vary depending on current stage or type of change required (i.e. cognitive/affective changes compared to behavioural changes).

This study anticipates involvement of approximately 15 participants who are currently diagnosed or recently recovered (determined by self-report) from anorexia nervosa (actual number of participants will be dependent on saturation of themes during data analysis). It is expected that these participants will be in various stages of severity of AN, although due to physical health concerns, potential participants will be excluded from the study if they are currently receiving in-patient treatment in a hospital setting. Participants will also be required to be over the age of 14 (to ensure adequate maturity to provide accurate data).

Potential participants will be invited to participate in interviews to explore their perspectives on their experiences with anorexia nervosa. Specifically, participants will be asked to discuss their personal thoughts regarding their current cognitions and behaviours related to food and eating. Examples of questions which may be asked in the interview are:

- "What types of methods have you recently used to gather information on food, weight and eating habits?"
- "What types of things do you do to reward yourself for not focusing on food, weight and exercise?"

In addition, participants will also be asked to complete four brief questionnaires (The Anorexia Nervosa Stages of Change Questionnaire, the Anorexia Nervosa Self-Efficacy Questionnaire, the Decisional Balance Scale and an individual demographics sheet).

Examples of statements included in the Anorexia Nervosa Stages of Change Questionnaire are:
- "As far as I am concerned I do not need to gain weight."
- "Sometimes I think that I exaggerate the importance of my body shape or weight in determining my happiness and success."

Examples of statements included in the Anorexia Nervosa Self-Efficacy Questionnaire are:
- "If I chose to I could eat three standard-size meals and a snack each day."
- "I can determine my happiness and success without placing importance on my body shape or weight."

Examples of statements included in the Decisional Balance Scale are:
"It bothers me that anorexia keeps me from socialising."

"Being a very low weight makes me feel good about myself."

Examples of statements on the demographics sheet are:

"My age is .......years and my height is .......cm."

"The highest level of education that I have currently completed is..........."

Information collected from the interviews will be combined with that of other participants, before being analysed to find major themes. No participant will be personally identified in any manner in any reports, the final thesis or any academic publications that may flow from the research.

I would be extremely grateful if you were willing to agree to your organization assisting us. If you are willing to be involved, Dr Ross King will forward the relevant plain language statements and consent forms to your members. All members will be clearly informed that participation in the project is completely voluntary and declining to participate will in no way effect the level of treatment or support offered by professional services or practitioners.

I have attached a copy of the Plain Language Statements for you to view. I can also forward a copy of the questionnaires if you would like to see these. Approval for this study has been received from the Deakin University Human Ethics Committee.

If you have any queries, or for further information please contact my supervisor, Dr Ross King, Lecturer in the School of Psychology, Deakin University, on (03) 52272781 or myself (Jacqueline Woerner) on (03) 52272312 or alternatively email jrwoerner@deakin.edu.au.

Thankyou again,

Jacqueline Woerner
APPENDIX E

STUDY 1 PLAIN LANGUAGE STATEMENTS

DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE
PLAIN LANGUAGE STATEMENT (Contemplation +)

My name is Jacqueline Woerner and I am completing a Doctor of Philosophy in psychology under the supervision of Dr Ross King, senior lecturer, School of Psychology, Deakin University.

I would like to invite you to participate in the first phase of my research project. The aim of this phase of the research project is to explore individual views and opinions regarding current food and eating habits of people recovering from anorexia nervosa. Specifically, this study will look at how ready people are to change their behaviour and the thoughts and feelings people have about their recovery. We are also interested in what factors may contribute to recovery, such as type of change required. This information may help us to understand what influences the recovery process of anorexia.

Participation in this phase of the research project will require you to be involved in an anonymous personal interview and also to complete two anonymous brief questionnaires (approximately 1 hr 15 mins in total). The interview will explore your personal experiences and include topics such as positive relationships and methods of gathering information. Examples of questions which may be asked in the interview are:

"What types of methods have you recently used to gather information on food, weight and eating habits?"

"What types of things do you do to reward yourself for not focusing on food, weight and exercise?"

The first questionnaire will include questions relating to how you currently feel about your eating behaviour and your weight. Examples of questions on the first questionnaire are:

"As far as I am concerned I do not need to gain weight."

"Sometimes I think that I exaggerate the importance of my body shape or weight in determining my happiness and success."

The second questionnaire will include questions related to your belief in your ability to change. Examples of statements on the second questionnaire are:

"If I chose to I could eat three standard-size meals and a snack each day."
"I can determine my happiness and success without placing importance on my body shape or weight."

The third questionnaire will explore the advantages and disadvantages which you perceive with anorexia nervosa. Examples of questions on the third questionnaire are:

"It bothers me that anorexia keeps me from socialising."

"Being a very low weight makes me feel good about myself."

The fourth questionnaire will ask for general information about you. Examples of statements on the fourth questionnaire are:

"My age is .......years and my height is ......cm."

"The highest level of education that I have currently completed is........."

Notes will be made during the interview to capture the main ideas which you present. Interviews will also be tape recorded as a back up to the note taking process; however, the tape recorder can be turned off at any time at your request.

Information collected from your interview will be combined with that of other participants, before being analysed to find major themes. You will not be personally identified in any manner in any reports, the final thesis or any academic publications that may flow from the research.

Participation in this project is completely voluntary and declining to participate will in no way effect the level of treatment or support offered by professional services or practitioners. If you decide to participate in this study you are free to terminate the interview and withdraw your consent at any time, in which event your participation in the research study will immediately cease and any information obtained from you will not be used. You can also choose to take a break any time during the interview, at your request. Some of the questions ask for information that is personal and you may feel uncomfortable in answering these questions. If at any stage you feel distressed please contact The Eating Disorder Foundation of Victoria on 1300550236 and www.eatingdisorders.org.au or The Centre of Excellence in Eating Disorders on (03) 9342 7507 and www.ceed.org.au. In addition, if participation in this project does raise issues for you, you can contact your local medical practitioner or access specialist services in your region such as The Barwon Region Disordered Eating Service on (03) 5229 1922. These services provide free professional support for people whose lives are affected by eating disorders. Alternatively, contact Dr Ross King on (03) 52272781 to request access to these people be made on your behalf.
If you have any queries, or for further information please contact my supervisor, Dr Ross King, Lecturer in the School of Psychology, Deakin University, on (03) 52272781 or myself (Jacqueline Woerner) on (03) 52272312. In October, once the results have been collated, they can be made available upon request, from Dr Ross King on the above telephone number. Thank you for your time.

Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123 (International +61 3 9251 7123).
My name is Jacqueline Woerner and I am completing a Doctor of Philosophy in psychology under the supervision of Dr Ross King, senior lecturer, School of Psychology, Deakin University.

I would like to invite you to participate in the first phase of my research project. The aim of this phase of the project is to explore individual views and opinions regarding current food and eating habits. Specifically, this study will look at how ready people are to change their behaviour and the thoughts and feelings people have about their behaviour change. We are also interested in what factors may contribute to behaviour change, such as type of change required.

Participation in this phase of the research project will require you to be involved an anonymous personal interview and also to complete four brief anonymous questionnaires (approximately 1hr 15mins in total). The interview will explore your personal experiences and include topics such as positive relationships and methods of gathering information. Examples of questions which may be asked in the interview are:

“What types of methods have you recently used to gather information on food, weight and eating habits?”

“What types of things do you do to reward yourself for not focusing on food, weight and exercise?”

The first questionnaire will include questions relating to how you currently feel about your eating behaviour and your weight. Examples of questions on the first questionnaire are:

“As far as I am concerned I do not need to gain weight.”

“Sometimes I think that I exaggerate the importance of my body shape or weight in determining my happiness and success.”

The second questionnaire will include questions related to your belief in your ability to change. Examples of statements on the second questionnaire are:

“If I chose to I could eat three standard-size meals and a snack each day.”
"I can determine my happiness and success without placing importance on my body shape or weight."

The third questionnaire will explore the advantages and disadvantages which you perceive with your eating behaviour and your weight. Examples of questions on the third questionnaire are:

"It bothers me that anorexia keeps me from socialising."

"Being a very low weight makes me feel good about myself."

The fourth questionnaire will ask for general information about you. Examples of statements on the fourth questionnaire are:

"My age is .......years and my height is ......cm."

"The highest level of education that I have currently completed is........."

Notes will be made during the interview to capture the main ideas which you present. Interviews will also be tape recorded as a back up to the note taking process; however, the tape recorder can be turned off at any time at your request.

Information collected from your interview will be combined with that of other participants, before being analysed to find major themes. You will not be personally identified in any manner in any reports, the final thesis or any academic publications that may flow from the research.

Participation in this project is completely voluntary and declining to participate will in no way effect the level of treatment or support offered by professional services or practitioners. If you decide to participate in this study you are free to terminate the interview and withdraw your consent at any time, in which event your participation in the research study will immediately cease and any information obtained from you will not be used. You can also choose to take a break any time during the interview, at your request. Some of the questions ask for information that is personal and you may feel uncomfortable in answering these questions. If at any stage you feel distressed please contact The Eating Disorder Foundation of Victoria on 1300550236 and www.eatingdisorders.org.au or The Centre of Excellence in Eating Disorders on (03) 9342 7507 and www.ceed.org.au. In addition, if participation in this project does raise issues for you, you can contact your local medical practitioner or access specialist services in your region such as The Barwon Region Disordered Eating Service on (03) 5229 1922. These services provide free professional support for people whose lives are affected by eating disorders. Alternatively, contact Dr Ross King on (03) 52272781 to request access to these people be made on your behalf.
If you have any queries, or for further information please contact my supervisor, Dr Ross King, Lecturer in the School of Psychology, Deakin University, on (03) 52272781 or myself (Jacqueline Woerner) on (03) 52272312. In October, once the results have been collated, they can be made available upon request, from Dr Ross King on the above telephone number. Thank you for your time.

Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123 (International +61 3 9251 7123).
APPENDIX F

STUDY 1 CONSENT FORMS

DEAKIN UNIVERSITY HUMAN RESEARCH ETHIC COMMITTEE
CONSENT FORM:

I, ..............................................................................................................................
of ..........................................................................................................................
..............................................................................................................................

Hereby consent to be a subject of a human research study to be undertaken by Jacqueline Woerner,

and I understand that the purpose of the research is to explore individual views and opinions relating to current food and eating habits in people recovering from anorexia nervosa.

I acknowledge:

1. That the aims, methods, and anticipated benefits, and possible risks/hazards of the research study, have been explained to me.

2. That I voluntarily and freely give my consent to my participation in such research study.

3. I understand that aggregated results will be used for research purposes and may be reported in scientific and academic journals.

4. Individual results will not be released to any person except at my request and on my authorisation.

5. That I am free to terminate the interview and withdraw my consent at any time prior to returning the completed questionnaires, in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

6. That I can take a break any time during the interview, at my request.

7. That the interviews will be recorded on audio tape as a back-up to the note taking process; however, the tape recorder can be turned off at any time at my request.

Signature: .................................................. Date: .................................

NOTE:
In the event of a minor's consent, or person under legal liability, please complete the Ethics Committee's "Form of Consent on Behalf of a Minor or Dependent Person".
DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE
CONSENT FORM: QUESTIONNAIRES

I, ............................................................................................................................................................
of ..........................................................................................................................................................
..........................................................................................................................................................

Hereby consent to be a subject of a human research study to be undertaken by Jacqueline Woerner,
and I understand that the purpose of the research is to explore individual views and opinions relating to
current food and eating habits in people recovering from anorexia nervosa.

I acknowledge that:

1. Upon receipt, my questionnaire will be coded and my name and address kept separately from it.

2. Any information that I provide will not be made public in any form that could reveal my identity to an outside party ie. that I will remain fully anonymous.

3. Aggregated results will be used for research purposes and may be reported in scientific and academic journals.

4. Individual results will not be released to any person except at my request and on my authorisation.

5. That I am free to terminate the interview and withdraw my consent at any time prior to returning the completed questionnaires, in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

6. That I can take a break any time during the interview, at my request.

7. That the interviews will be recorded on audio tape as a back-up to the note taking process; however, the tape recorder can be turned off at any time at my request.

Signature: .............................................. Date: .........................

NOTE:
In the event of a minor's consent, or person under legal liability, please complete the Ethics Committee's "Form of Consent on Behalf of a Minor or Dependent Person".
DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE
CONSENT FORM – For Institutions/Organisations

I, ...........................................................................................................

of, .........................................................................................................

.................................................................................................

Hereby give permission for ................................................................
to be involved in a research study being undertaken by Doctor of Philosophy (Psychology) student
JACQUELINE WOERNER, and I understand that the purpose of this research is to explore individual
views and opinions relating to current food and eating habits in people recovering from anorexia
nervosa. This study also aims to use the Transtheoretical Model to determine the participant’s current
stage of change regarding their anorectic symptomatology (both cognitive/affective and behavioural) in
addition to determining which processes anorexic clients utilise throughout the various stages of
recovery. Finally this project aims to determine if these processes vary depending on current stage or
type of change required (i.e. cognitive/affective changes compared to behavioural changes).

and that involvement for the institution means the following:-

[Dependent on the organisation]
- Advertising the nature of the study in relevant newsletters
- Alerting suitable clients to the nature of the study
- Distribution of plain language statements and consent forms to clients expressing
  interest in participating in the study

I acknowledge:
1. That the aims, methods, and anticipated benefits, and possible risks/hazards of the research
   study, have been explained to me.
2. That participant’s interviews will be recorded on audio tape as a back-up to the note taking
   process; however, the tape recorder can be turned off at any time at my request.
3. That I voluntarily and freely give my consent for the institution/organisation to participate in the
   above research study.
4. That the participant is free to terminate the interview and withdraw their consent at any time
   prior to completion of the anonymous questionnaires, in which event participation in the
   research study will immediately cease and any information obtained through this
   institution/organisation will not be used if I so request.
5. That the participant can take a break any time during the interview, at their request.
6. I understand that aggregated results will be used for research purposes and may be reported in scientific and academic journals.

I agree that:

7. The institution/organisation MAY / MAY NOT be named in research publications or other publicity without prior agreement.

8. I / We DO / DO NOT require an opportunity to check the factual accuracy of the research findings related to the institution/organisation.

9. I / We EXPECT / DO NOT EXPECT to receive a copy of the research findings or publications.

Signature: ........................................ Date:..........................
DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE
CONSENT ON BEHALF OF A MINOR OR DEPENDENT PERSON

I, ..........................................................
of, ..........................................................

Hereby give consent for my son / daughter / dependent

..................................................................................

to be a subject of a human research study to be undertaken by Jacqueline Woerner.

I understand that the purpose of the research is to explore individual views and opinions relating
to current food and eating habits in people recovering from anorexia nervosa.

I acknowledge:

1. That the aims, methods, and anticipated benefits, and possible hazards/risks of the research study, have been explained to me.
2. That I voluntarily and freely give my consent to my child's/dependant's participation in such research study.
3. I understand that aggregated results will be used for research purposes and may be reported in scientific and academic journals.
4. Individual results will not be released to any person including medical practitioners.
5. That my child/dependant is free to terminate the interview and withdraw their consent at any time prior to returning the completed questionnaires, in which event their participation in the research study will immediately cease and any information obtained from them will not be used.
6. That my child/dependant can take a break any time during the interview, at their request.
7. That I am free to withdraw my consent at any time, during the study in which event my child's/dependant's participation in the research study will immediately cease and any information obtained will not be used.
8. That the interviews will be recorded on audio tape as a back-up to the note taking process; however, the tape recorder can be turned off at any time at my child's/dependant's request.

Signature: ............................................. Date: ......................

NOTE:
The parent or parent(s) having guardianship of the child must sign the consent form.
APPENDIX G

STUDY 2 RETROSPECTIVE SELF-REPORT QUESTIONNAIRES

Anorexia Nervosa Stages of Change Questionnaire

Each of the items below is made up of five statements. For each item, please read the five statements carefully. Then select the statement which best describe your current attitude or behaviour (not how you have been in the past or how you would like to be). Your answers are completely confidential. Thank you for your time.

1) The following statements refer to gaining weight:
   a) As far as I am concerned, I do not need to gain weight
   b) In some ways I think that I might be better off if I gained weight
   c) I have decided that I will attempt to gain weight
   d) At the moment I am putting a lot of effort into gaining weight
   e) I am working to maintain the weight gains I have made

2) The following statements refer to body weight:
   a) As far as I am concerned, I do not need to weigh at least ______ kg. (Insert your minimal normal weight).
   b) In some ways I think that I might be better off if I weighed at least ______ kg.
   c) I have decided that I will attempt to reach at least ______ kg.
   d) At the moment I am putting in a lot of effort to reach at least ______ kg.
   e) I am working to maintain a weight of at least ______ kg.

3) The following statements refer to parts of your body which may particularly concern you in terms of weight gain (such as hips, thighs, stomach etc.):
   a) There is no way I would be prepared to gain weight on these body parts
   b) Sometimes I think I would be prepared to gain weight on these body parts
   c) I have decided that I am prepared to gain weight on these body parts
   d) I am presently trying to gain weight on these body parts
   e) I am working to maintain the weight I have gained on these body parts

4) The following statements refer to your appearance:
   a) I do not want to be a normal weight because I would be less satisfied with my appearance at a weight of at least ______ kg. (Insert your minimal normal weight).
   b) I have occasionally thought about being a normal weight because in some ways I would be more satisfied with my appearance at a weight of at least ______ kg.
5) The following statements refer to your health:
   a) I do not need to be a normal weight because there are no risks to my health when I weigh below _______ kg. (Insert your minimal normal weight).
   b) I have occasionally thought about being a normal weight because of the risks to my health when I weigh below _______ kg.
   c) I have decided to reach a normal weight because of the risks to my health when I weigh below _______ kg.
   d) I am presently trying to reach a normal weight because of the risks to my health when I weigh below _______ kg.
   e) I am working to maintain a normal weight because of the risks to my health when I weigh below _______ kg.

6) The following statements refer to the importance of body shape and weight:
   a) I do not exaggerate the importance of my body shape or weight in determining my happiness and success
   b) Sometimes I think that I exaggerate the importance of my body shape or weight in determining my happiness and success
   c) I have decided that I need to reduce the importance that I place on my body shape or weight in determining my happiness and success
   d) I often try to challenge the importance that I place on my body shape or weight in determining my happiness and success
   e) I have succeeded in reducing my tendency to place too much importance on my body shape or weight in determining my happiness and success

7) The following statements refer to a fear of fatness:
   a) My fear of becoming fat is not excessive
   b) I occasionally think that my fear of becoming fat is excessive
   c) I have decided that I need to do something about the fear I have of becoming fat because it is controlling me
   d) I know that my fear of becoming fat has caused problems and I am now trying to correct this
   e) I have succeeded in reducing my fear of becoming fat and want it to stay this way

8) The following statements refer to weight loss:
   a) I would prefer to lose more weight
   b) Sometimes I think that it might be time to stop losing weight
   c) I have decided that it is time to stop losing weight
   d) I am trying to stop losing weight
e) I have managed to stop losing weight and hope to stay this way

9) The following statements refer to body fat versus muscle:
   a) I might think about gaining muscle on purpose, but I would never think about gaining fat on purpose
   b) Sometimes I think that I may need to gain some fat even though I would prefer to have only muscle
   c) I have decided that to be healthy I need to have some fat on my body
   d) I realise that I need to have some fat on my body and am working to achieve this
   e) I have managed to increase the level of fat on my body which I am trying to maintain

10) The following statements refer to the rate of weight gain:
   a) There is no way I would be prepared to gain at least 1 kg a week
   b) Sometimes I think I would be prepared to gain at least 1 kg a week
   c) I have decided that in general it would be best for me to gain at least 1 kg a week
   d) I am putting in a lot of effort to gain at least 1 kg a week
   e) I am working to maintain my weight but would be prepared to gain at least 1 kg a week if necessary

11) The following statements refer to certain shape and weight standards which you may have for evaluating your body (such as only being satisfied with your body when your stomach is flat or when you are below a certain weight):
   a) The standards I use to evaluate my body are not too strict
   b) Sometimes I think that the standards I use to evaluate my body may be too strict
   c) I have decided that the standards I use to evaluate my body are too strict and need to be change
   d) I am putting in a lot of effort to change the strict standards which I use to evaluate my body
   e) I have managed to let go of the strict standards which I used in the past to evaluate my body and am hoping to keep it this way

12) The following statements refer to certain foods which you may avoid eating (such as food high in calories or fat, red meat or dairy products):
   a) There are certain foods which I strictly avoid and would not even consider eating
   b) There are certain foods which I try to avoid, although sometimes I think that it might be okay to eat them occasionally
   c) I think that I am too strict in the foods which I allow myself to eat and have decided that I will attempt to eat foods which I usually avoid
   d) I am putting in a lot of effort to regularly eat foods which I usually avoid
   e) I used to avoid eating certain foods which I now eat regularly

13) The following statements refer to daily food consumption:
   a) There is no need for me to eat 3 standard size meals and a snack each day
b) Sometimes I think that I should eat 3 standard size meals and a snack each day

c) I have decided that I need to eat 3 standard size meals and a snack each day

d) I am putting in a lot of effort to eat 3 standard size meals and a snack each day

e) I am working to maintain a current eating pattern which includes 3 standard size meals and a snack each day

14) The following statements refer to time spent thinking about food and your weight (such as thought about becoming fat, counting the calories or fat content of food, or calculating the amount of energy used when exercising):

a) There is nothing wrong with the amount of time I spend thinking about food and my weight

b) the amount of time I spend thinking about food and my weight is a problem sometimes

c) I have decided that I need to use strategies to help me reduce the amount of time I spend thinking about food and my weight

d) I am using strategies to help me reduce the amount of time I spend thinking about food and my weight

e) I used to spend too much time thinking about food and my weight which I have managed to reduce and am working to keep it this way

15) The following statements refer to certain eating behaviours (such as needing to eat food at a specific rate or time, moving food around on the plate, being unable to eat all the food on a plate, taking longer than others to eat meals, having difficulties eating with others, needing to chew food a certain number of times or needing to stick to the same food plan each day):

a) There is nothing that I need to change about the way I eat my meals

b) I sometimes think that I need to change aspects of the way I eat my meals

c) I have decided that I will try to change aspects of the way I eat my meals

d) I am putting in a lot of effort to change aspects of the way I eat my meals

e) I have succeeded in changing aspects of the way I eat my meals and want it to stay that way

16) The following statements refer to feelings associated with eating (such as feeling guilty) and not eating (such as feeling in control):

a) There is no need for me to change the feelings I associate with eating and not eating

b) I sometimes think that I need to change the feelings I associate with eating and not eating

c) I have decided that I will try to change the feelings I associate with eating and not eating

d) I am putting in a lot of effort to change the feelings I associate with eating and not eating

e) I have succeeded in changing the feelings I associate with eating and not eating and want it to stay this way

17) The following statements refer to methods which you may use to control your weight (such as restricting your eating, exercising, vomiting, taking laxatives or other pills). You may select more than one statement for the different methods that you use to control your weight. Please indicate which weight control method/s you are referring to in the blank space/s provided.
a) There is nothing seriously wrong with the methods
   (_________________________________) I use to control my weight
b) I have been thinking that there may be problems associated with the methods
   (_________________________________) I use to control my weight
c) I have decided that I will attempt to stop using certain methods
   (_________________________________) to control my weight
d) I am putting in a lot of effort to stop using certain methods
   (_________________________________) to control my weight
e) I have managed to stop using certain methods
   (_________________________________) to control my weight and I would like to keep it
   this way

18) The following statements refer to certain emotional problems (such as feeling
    depressed, anxious or irritable):
   a) I do not have any emotional problems which I need to work on
   b) I sometimes think that I may have certain emotional problems which I need to work on
   c) I have certain emotional problems which I have decided to work on
   d) I am actively working on my emotional problems
   e) My emotional problems have improved and I am trying to keep it this way

19) The following statements refer to certain characteristics (such as perfectionism, low
    self esteem or feeling a need for control):
   a) I do not have any problems in the way I approach life which I need to work on
   b) I sometimes think that I may have certain problems in the way I approach life which I
      need to work on
   c) I have certain problems in the way I approach life which I have decided to work on
   d) I am actively working on problems in the way I approach life
   e) The problems in the way I approach life have improved and I am trying to keep it this way

20) The following statements refer to relationship problems (such as relationships with
    family or friends):
   a) I do not have any problems in my relationship with others which I need to work on
   b) I sometimes think that I may have certain problems in my relationships with others that I
      need to work on
   c) I have certain problems in my relationships with others which I have decided to work on
   d) I am actively working on my problems in my relationships with others
   e) The problems in my relationships with others have improved and I am trying to keep it
      this way
Rieger Self-efficacy Questionnaire

Please read the following statements and using the key below, circle your corresponding answer on the scale of 0 – 10. Your answers are completely confidential. Thank you for your time.

| 0 = Not confident that I could do this |
| 10 = Completely confident that I could do this |

1) I can gain weight:

0  1  2  3  4  5  6  7  8  9  10

2) I can obtain a normal body weight:

0  1  2  3  4  5  6  7  8  9  10

3) I can gain weight on parts of my body which may particularly concern me in terms of weight gain (such as hips, thighs, stomach etc.):

0  1  2  3  4  5  6  7  8  9  10

4) I can be satisfied with my appearance at a normal weight:

0  1  2  3  4  5  6  7  8  9  10

5) I can be physically healthy:

0  1  2  3  4  5  6  7  8  9  10

6) I can determine my happiness and success without placing importance on my body shape or weight:

0  1  2  3  4  5  6  7  8  9  10
7) I can reduce my fear of becoming fat:

0 1 2 3 4 5 6 7 8 9 10

8) I can stop losing weight:

0 1 2 3 4 5 6 7 8 9 10

9) I can increase the amount of fat on my body:

0 1 2 3 4 5 6 7 8 9 10

10) I can gain at least 1kg a week:

0 1 2 3 4 5 6 7 8 9 10

11) I can let go of strict standards that I have for evaluating my body:

0 1 2 3 4 5 6 7 8 9 10

12) I can regularly eat foods which I used to avoid (such as food high in calories or fat, red meat or dairy products):

0 1 2 3 4 5 6 7 8 9 10

13) I can eat 3 standard size meals and a snack each day:

0 1 2 3 4 5 6 7 8 9 10

14) I can spend less time thinking about becoming fat, counting the calories or fat content of food, or calculating the amount of energy used when exercising:

0 1 2 3 4 5 6 7 8 9 10
15) I can change the way I eat meals (such as needing to eat food at a specific rate or time, moving food around on the plate, being unable to eat all the food on a plate, taking longer than others to eat meals, having difficulties eating with others, needing to chew food a certain number of times or needing to stick to the same food plan each day):

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

16) I can change the feelings that I associate with eating (such as feeling guilty) and not eating (such as feeling in control):

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

17) I can stop certain methods which I use to control my weight (such as restricting my eating, exercising, vomiting, taking laxatives or other pills):

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

18) I can improve my emotional problems (such as feeling depressed, anxious or irritable):

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

19) I can improve certain characteristics which I may have (such as perfectionism, low self esteem or feeling a need for control):

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

20) I can improve my relationship problems (such as relationships with family or friends):

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
Demographics Questionnaire

About You

Your age is _________ years and your height is _________ cm.
You currently weigh__________ kg. Your highest weight (excluding pregnancy) is _____________ kg and your lowest adult weight is ____________ kg. You have had anorexia for ______ years and ______ months. The highest level of education that you have currently completed is ____________________

Thank you for your time.
EMA Questionnaires

EMA question key:

- Question 1:
The following refer to gaining weight:
  a) I do not need to gain weight
  b) Sometimes I think that I might be better off if I gained weight
  c) I have decided that I will try to gain weight
  d) I am putting a lot of effort into gaining weight

- Question 2:
The following refer to certain foods which you may avoid eating:
  a) I strictly avoid and would not even consider eating these foods
  b) Sometimes I think it may be okay to eat these foods occasionally
  c) I have decided that I will try to eat these foods
  d) I am putting a lot of effort in to regularly eating these foods

- Question 3:
The following refer to your daily food consumption:
  a) I do not need to eat 3 meals and a snack each day
  b) Sometimes I think that I should eat 3 meals and a snack each day
  c) I have decided that I will eat 3 meals and a snack each day
  d) I am putting a lot of effort into eating 3 meals and a snack each day
• Question 4:
The following refer to shape and weight standards which you may have for evaluating your body:
   a) These standards are not too strict
   b) Sometimes I think these standards may be too strict
   c) I have decided these standards are too strict and need to be changed
   d) I am putting a lot of effort in to changing these standards

• Question 5:
The following refer to methods you use to control your weight:
   a) There is nothing seriously wrong with these methods
   b) Sometimes I think there may be problems with these methods
   c) I have decided that I will try to stop using these methods
   d) I am putting a lot of effort in to not using these methods

• Question 6-10:

<table>
<thead>
<tr>
<th>0</th>
<th>Not confident that I could do this</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Completely confident that I could do this</td>
</tr>
</tbody>
</table>

If I chose to I could gain weight:
0 1 2 3 4 5 6 7 8 9 10

If I chose to I could regularly eat foods which I used to avoid:
0 1 2 3 4 5 6 7 8 9 10

If I chose to I could eat 3 meals and a snack each day:
0 1 2 3 4 5 6 7 8 9 10

If I chose to I could let go of strict standards which I have for evaluating by body:
0 1 2 3 4 5 6 7 8 9 10

If I chose to I could stop certain methods which I use to control my weight:
0 1 2 3 4 5 6 7 8 9 10
Additional EMA questions:

Have any of the following happened since you last completed the EMA (yes/ no):

- Weighed yourself
- Argument with Family/ friend
- Appointment with therapist
- Eaten a large meal
- Exercised
- Bought new clothes
- Received comment – weight/ shape
- Other event
- No event

How important was this event to you:

0=not at all important
1
2
3
4
5=moderately important
6
7
8
9
10=extremely important
How are you feeling at the current moment?

- Anxious
- Depressed
- Stressed
- Relaxed
- Worthless

How strongly are you feeling like this?

0=Not very strongly
1
2
3
4
5=moderately
6
7
8
9
10=extremely strongly
APPENDIX H

STUDY 2 ETHICS APPROVAL

MEMORANDUM

To: Dr Ross King
School of Psychology

cc: Ms Jacqueline Woerner

From: Deakin University Human Research Ethics Committee (DU-HREC)

Date: 18 December, 2009
Subject: 2009-200
The development of a readiness for change/self efficacy scale for use with anorexic clients

Please quote this project number in all future communications.

The application for this project was considered at the DU-HREC meeting held on 07/12/2009.

Approval has been given for Ms Jacqueline Woerner, under the supervision of Dr Ross King, School of Psychology, to undertake this project from 18/12/2009 to 18/12/2012.

The approval given by the Deakin University Human Research Ethics Committee is given only for the project and for the period as stated in the approval. It is your responsibility to contact the Human Research Ethics Unit immediately should any of the following occur:

- Serious or unexpected adverse effects on the participants
- Any proposed changes in the protocol, including extensions of time.
- Any events which might affect the continuing ethical acceptability of the project.

The project is discontinued before the expected date of completion.

Modifications are requested by other HRECs.

In addition you will be required to report on the progress of your project at least once every year and at the conclusion of the project. Failure to report, as required, will result in suspension of your approval to proceed with the project.

DU-HREC may need to audit this project as part of the requirements for monitoring set out in the National Statement on Ethical Conduct In Human Research (2007).

Human Research Ethics Unit
research-ethics@deakin.edu.au
Telephone: 03 9221 7123
APPENDIX I

STUDY 2 NEWSPAPER ADVERTISEMENT

Anorexia Nervosa
Individual Views on Change

Dealing with anorexia is difficult and each person's experience is very different. Deakin University is conducting an exciting new project looking at your experience. We are inviting both males and females over the age of 18 who are currently diagnosed with anorexia to be involved. This study involves 2 parts. Firstly, you will be asked to complete four brief confidential questionnaires (should take approx. 30mins). You will also be asked to complete some brief questions on an electronic personal palm pilot (which is supplied) over six days. The palm pilot will signal you to answer the questions 5 times a day and it is expected that it should take you about 2 minutes to fill out these questions, each time you do it.

If you are interested in hearing more please
contact Jacqueline Woerner on (03) 52278426

or email jwwoerne@deakin.edu.au

Thankyou.
APPENDIX J

STUDY 2 FLYER

Moment-by-Moment: ★
Daily thoughts about readiness to recover
A research project of the School of Psychology, Deakin University

Recovering from anorexia nervosa is difficult; it rarely occurs in a straight line and people’s motivation or readiness and confidence regarding change can go up and down.

We’re interested in learning about your experience of recovery; in particular, whether your readiness and confidence in your ability to change is stable or alters on a daily basis. In addition, we are also interested in learning about what types of things may affect motivation and confidence to recover (such as relationships, stage of recovery).

If you are currently recovering from anorexia and over 18 years of age, we would be keen for you to be involved in our project. We know anorexia is different for every person, so we are interested in hearing about your personal thoughts and experiences.

If you participate, you will be asked to do two things. The first is to complete a brief set of pencil and paper questionnaires about how ready and confident you feel about
changing your thoughts and behaviours associated with your eating, weight and self. This will take approximately 30 minutes. The second involves you carrying an electronic personal palm pilot (which we will supply) for six days. The palm pilot will signal you to answer some brief questions 5 times a day between 8am and 10pm. It should take you only about 2 minutes to fill out the questions each time. We will meet with you first for 15 minutes to show you how to use the palm pilot.

Anything you tell us on both the palm pilot and the written questionnaires will be completely anonymous. Your responses will be added to those of the other people taking part before it is analysed or reported.

If you are interested in being involved, and want to learn more, or if you have any further questions regarding this project, please contact Jacqueline Woerner on (03) 52278426 or email Jacqueline.Woerner@deakin.edu.au.

Thank you for taking the time to read this & we hope to hear from you soon.

Jacqueline

Please address correspondence to: School of Psychology, Deakin University, Geelong 3217, Attn: Jacqueline Woerner
APPENDIX K

STUDY 2 PRACTITIONER LETTER

The use of Ecological Momentary Assessments to Assess the Stability of Readiness to Change in Anorexic Clients

A research project of the School of Psychology, Deakin University

13th August 2009.

Dear *******,

Hello, my name is Jacqueline Woerner and I am currently enrolled in a Doctor of Philosophy (Psychology) course at Deakin University, Geelong. In addition, I am also undertaking a research project, supervised by Dr Ross King, Senior Lecturer in Psychology.

I believe this project will be of interest to some members of your practise. I am writing to you in order to describe the project and to ask for your help by letting your clients know of what we are doing.

As you would be aware, recovering from anorexia nervosa is frequently a difficult process. Those who are affected by anorexia initially do not see themselves as having a problem and are resistant to seeking help. Even when the person agrees that there is a problem, they struggle to remain motivated to recover typically because of fears of gaining weight, losing a sense of control, or a sense of uniqueness. There is now a lot of evidence to suggest that sufferers move through a series of stages as they recover but this rarely occurs in a straightline; rather, their degree of motivation waxes and wanes.

Readiness for change and self-efficacy are both crucial constructs needed in the process of engaging clients in treatment. Fluctuations in readiness to change can result in increased ambivalence and frustration. Understanding how frequently clients’ self-efficacy and readiness
to change may fluctuate, as well as the factors likely to influence these changes may assist in delivering motivational appropriate treatment interventions.

**What we are interested in finding out.**

The aim of this project is to investigate whether readiness to change and self-efficacy are relatively stable in anorexic clients, or if they fluctuate on a daily basis. In addition, we are also interested in determining which factors (such as personal relationships, stage of recovery as proposed by the Transtheoretical Model) may affect the stability of motivation in clients recovering from anorexia nervosa.

We are interested in hearing from males and females aged over 18 years who are currently recovering from anorexia. We were hoping that this project would be of interest to the people using your services.

**What we are asking people to do.**

Being involved in this project will include two parts. Firstly, they will be asked to complete a brief set of pencil and paper questionnaires which will take approx. 30 minutes. These questionnaires will enable us to evaluate the person’s current stage of change, self-efficacy and eating disorder severity. The second part of this research will require them to complete some brief questions on an electronic personal palm pilot (which is supplied) over the duration of six days. These questions will be asked approximately 5 times a day between the hours of 8am and 10pm and it is expected that it should take them about 3 minutes to fill out the questions on the palm pilot, each time they do it. Before commencing the study, each person will be given a brief, individual training session to ensure they know how to use the palm pilot. These longitudinal assessments will provide an indication of whether their readiness to change and self-efficacy does fluctuate, and the degree of any fluctuation occurring.

**How you can help.**

We would be extremely grateful if you were willing to agree to assist us with our project. I have attached some copies of the general information letter to you which you can provide to any interested clients so as to inform them of the study.
I have attached a copy of the Plain Language Statement for you to view. I can also forward a copy of the pencil and paper questionnaires and palm pilot questions if you would like to see these. Approval for this study has been received from the Deakin University Human Ethics Committee.

If you are interested in assisting me, or if you have any further questions or comments regarding this study, please contact Jacqueline Woerner on (03) 52278426 or email jacqueline.woerner@deakin.edu.au.

Thankyou again,
Jacqueline Woerner
APPENDIX L

STUDY 2 PLAIN LANGUAGE STATEMENT

THE USE OF ECOLOGICAL MOMENTARY ASSESSMENTS TO ASSESS THE STABILITY OF READINESS FOR CHANGE IN ANOREXIA NERVOSA CLIENTS

My name is Jacqueline Woerner and I am currently completing a Doctor of Philosophy in psychology under the supervision of Dr Ross King, senior lecturer, School of Psychology, Deakin University.

I would like to invite you to participate in the second phase of my research project. The aim of this phase of the project is to explore individual views and opinions regarding how ready people feel about changing their eating and weight, as well as how confident people are that if they chose to they could change.

An earlier study has shown that confidence and readiness to change fluctuate as people recover from anorexia. We are now interested in how rapidly these changes occur and what type of factors (such as personal relationships, stage of recovery etc.) may influence these fluctuations. Therefore, this study will ask people to monitor their behaviour and the thoughts and feelings that they have about their recovery over the course of one week using a simple recording device called a palm pilot.

If you decide that you would like to be involved in this project, your participation will include two parts. Firstly, you will be asked to come in to Deakin University and meet with me for approx. 1 hour which would involve you learning how to use a palm pilot and also to ask you to complete 4 brief, anonymous questionnaires.

It is expected that the 4 pencil and paper questionnaires should take you about 30 minutes to complete in total. However, you will only be asked to complete these questionnaires once when you complete the palm pilot training. The first questionnaire will include questions relating to how you currently feel about your eating behaviour and your weight. Examples of questions on the first questionnaire are:

“As far as I am concerned I do not need to gain weight.”
“Sometimes I think that I exaggerate the importance of my body shape or weight in determining my happiness and success”

The second questionnaire will include questions about how confident you feel about changing your eating behaviour and weight:

“I believe that if I chose to I could regularly eat foods which I used to avoid (such as foods high in calories or fat, red meat or dairy products)”

“I believe that if I chose to I could eat 3 standard size meals and a snack each day”

The third questionnaire will involve questions about your current eating and exercise patterns. Examples of questions which may appear on this questionnaire include:

“How dissatisfied have you felt about your shape?”

“How have you tried to avoid eating any foods which you like in order to influence your shape or weight?”

The fourth questionnaire will ask for general information about you. Examples of statements on the second questionnaire are:

“Your age is …… years and your height is …… cm.”

“The highest level of education that you have currently completed is ……..”

As well as completing the questions on the pencil and paper questionnaires, the second part of this research project will require you to complete some brief questions on a personal palm pilot (which is supplied) over the duration of six days. Palm pilots (also called PDA’s or personal organisers) are small, hand-held computers. An alarm will sound on the palm pilot approximately 5 times a day between the hours of 8am and 10pm to remind you to complete the questions. When this happens you will be asked to answer simple questions about how you feel at that time regarding issues concerning how ready you are to change your weight and eating, and how confident you are that you can change your weight or eating patterns at that moment in time. You will also be asked about any events (e.g., arguments etc.) or factors (e.g., eating a meal etc.) which may have affected how you feel at that time. It is expected that it should take you about 3 minutes to fill out the questions on the palm pilot, each time you do it. We realise though that this is a lot to ask and if you are prompted to complete the palm pilot questionnaire at a time which is inconvenient or embarrassing (e.g., during an appointment, while you are with friends etc.) you can fill it in at a later, more suitable time.

Examples of questions which may appear on the palm pilot are:

“Sometimes I think that I should eat 3 standard size meals and a snack each day”

“I believe that if I chose to I could gain weight”
Your responses on both the palm pilot and the questionnaires will be completely anonymous. On commencing the project you will be given a numeric code to enable us to later match your electronic and paper responses, but your name will not be used in any manner on the completed data. Therefore, you will not be able to be identified; your responses will be combined with that of all other participants before it is analysed so that you will not be personally identified in any manner in any reports, the final thesis or any academic publications that may flow from the research.

Participation in this project is completely voluntary and declining to participate will in no way effect the level of treatment or support offered by professional services or practitioners. If you do decide to participate in this study you are free to withdraw your consent at any time (either during the questionnaire or palm pilot phase), in which event your participation in the research study will immediately cease and any information obtained from you will not be used.

We realise that this topic is a difficult and challenging one for many people. Therefore, some of the questions asked may be hard to deal with. If you are interested in participating but find that some of questions cause you to become uncomfortable you are free to withdraw and stop participating at any time. If this happens though, please contact your healthcare clinician to discuss these issues raised. If at any stage you do feel distressed you can also contact The Eating Disorder Foundation of Victoria on 1300550236 and [www.eatingdisorders.org.au](http://www.eatingdisorders.org.au) or The Centre of Excellence in Eating Disorders on (03) 8387 2673 and [www.ceed.org.au](http://www.ceed.org.au). These services provide free professional support for people whose lives are affected by eating disorders and the Eating Disorder Foundation of Victoria also offers a crisis telephone service for those who are in immediate need of assistance. Alternatively, contact Dr Ross King on (03) 52272781 to request access to these people be made on your behalf.

If you have any queries, or for further information please contact my supervisor, Dr Ross King, Senior Lecturer in the School of Psychology, Deakin University, on (03) 52272781 or myself (Jacqueline Woerner) on (03) 52278426 or email [jacqueline.woerner@deakin.edu.au](mailto:jacqueline.woerner@deakin.edu.au). In May, once the results have been collated, they can be made available upon request, from Dr Ross King on the above telephone number. Thank you for your time.
APPENDIX M

STUDY 2 CONSENT FORM

DEAKIN UNIVERSITY HUMAN RESEARCH ETHIC COMMITTEE CONSENT FORM:

I, ..............................................................................................................................
of, ..............................................................................................................................
..............................................................................................................................

Hereby consent to be a subject of a human research study to be undertaken by Jacqueline Woerner,
and I understand that the purpose of the research is to explore individual views and opinions relating to current food and eating habits in people recovering from anorexia nervosa.

I acknowledge:
1. That the aims, methods, and anticipated benefits, and possible risks/hazards of the research study, have been explained to me.
2. That I voluntarily and freely give my consent to my participation in such research study.
3. I understand that aggregated results will be used for research purposes and may be reported in scientific and academic journals.
4. Individual results will not be released to any person except at my request and on my authorisation.
5. That I am free to withdraw my consent at any time prior to returning the completed questionnaires, in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

Signature: ................................................. Date: .................................

NOTE:
In the event of a minor's consent, or person under legal liability, please complete the Ethics Committee's "Form of Consent on Behalf of a Minor or Dependent Person".
APPENDIX N

STUDY 3 QUESTIONNAIRES

Anorexia Nervosa Stages of Change Questionnaire

Each of the items below is made up of five statements. For each item, please read the five statements carefully. Then select the statement which best describe your current attitude or behaviour (not how you have been in the past or how you would like to be). Your answers are completely confidential. Thank you for your time.

1) The following statements refer to gaining weight:
   a) As far as I am concerned, I do not need to gain weight
   b) In some ways I think that I might be better off if I gained weight
   c) I have decided that I will attempt to gain weight
   d) At the moment I am putting a lot of effort into gaining weight
   e) I am working to maintain the weight gains I have made

2) The following statements refer to body weight:
   a) As far as I am concerned, I do not need to weigh at least ______ kg. (Insert your minimal normal weight).
   b) In some ways I think that I might be better off if I weighed at least ______ kg.
   c) I have decided that I will attempt to reach at least ______ kg.
   d) At the moment I am putting in a lot of effort to reach at least ______ kg.
   e) I am working to maintain a weight of at least ______ kg.

3) The following statements refer to parts of your body which may particularly concern you in terms of weight gain (such as hips, thighs, stomach etc.):
   a) There is no way I would be prepared to gain weight on these body parts
   b) Sometimes I think I would be prepared to gain weight on these body parts
   c) I have decided that I am prepared to gain weight on these body parts
   d) I am presently trying to gain weight on these body parts
   e) I am working to maintain the weight I have gained on these body parts

4) The following statements refer to your appearance:
   a) I do not want to be a normal weight because I would be less satisfied with my appearance at a weight of at least ______ kg. (Insert your minimal normal weight).
b) I have occasionally thought about being a normal weight because in some ways I would be more satisfied with my appearance at a weight of at least _____ kg.

c) I have decided to reach a normal weight because I would be more satisfied with my appearance at a weight of at least _____ kg.

d) I am presently trying to reach a normal weight because I am more satisfied with my appearance at a weight of at least _____ kg.

e) I am working to maintain a normal weight because I am more satisfied with my appearance at a weight of at least _____ kg.

5) The following statements refer to your health:

a) I do not need to be a normal weight because there are no risks to my health when I weigh below _____ kg. (Insert your minimal normal weight).

b) I have occasionally thought about being a normal weight because of the risks to my health when I weigh below _____ kg.

c) I have decided to reach a normal weight because of the risks to my health when I weigh below _____ kg.

d) I am presently trying to reach a normal weight because of the risks to my health when I weigh below _____ kg.

e) I am working to maintain a normal weight because of the risks to my health when I weigh below _____ kg.

6) The following statements refer to the importance of body shape and weight:

a) I do not exaggerate the importance of my body shape or weight in determining my happiness and success

b) Sometimes I think that I exaggerate the importance of my body shape or weight in determining my happiness and success

c) I have decided that I need to reduce the importance that I place on my body shape or weight in determining my happiness and success

d) I often try to challenge the importance that I place on my body shape or weight in determining my happiness and success

e) I have succeeded in reducing my tendency to place too much importance on my body shape or weight in determining my happiness and success

7) The following statements refer to a fear of fatness:

a) My fear of becoming fat is not excessive

b) I occasionally think that my fear of becoming fat is excessive

c) I have decided that I need to do something about the fear I have of becoming fat because it is controlling me

d) I know that my fear of becoming fat has caused problems and I am now trying to correct this

e) I have succeeded in reducing my fear of becoming fat and want it to stay this way

8) The following statements refer to weight loss:

a) I would prefer to lose more weight

b) Sometimes I think that it might be time to stop losing weight
c) I have decided that it is time to stop losing weight

d) I am trying to stop losing weight

e) I have managed to stop losing weight and hope to stay this way

9) **The following statements refer to body fat versus muscle:**
   a) I might think about gaining muscle on purpose, but I would never think about gaining fat on purpose
   b) Sometimes I think that I may need to gain some fat even though I would prefer to have only muscle
   c) I have decided that to be healthy I need to have some fat on my body
   d) I realise that I need to have some fat on my body and am working to achieve this
   e) I have managed to increase the level of fat on my body which I am trying to maintain

10) **The following statements refer to the rate of weight gain:**
   a) There is no way I would be prepared to gain at least 1 kg a week
   b) Sometimes I think I would be prepared to gain at least 1 kg a week
   c) I have decided that in general it would be best for me to gain at least 1 kg a week
   d) I am putting in a lot of effort to gain at least 1 kg a week
   e) I am working to maintain my weight but would be prepared to gain at least 1 kg a week if necessary

11) **The following statements refer to certain shape and weight standards which you may have for evaluating your body (such as only being satisfied with your body when your stomach is flat or when you are below a certain weight):**
   a) The standards I use to evaluate my body are not too strict
   b) Sometimes I think that the standards I use to evaluate my body may be too strict
   c) I have decided that the standards I use to evaluate my body are too strict and need to be change
   d) I am putting in a lot of effort to change the strict standards which I use to evaluate my body
   e) I have managed to let go of the strict standards which I used in the past to evaluate my body and am hoping to keep it this way

12) **The following statements refer to certain foods which you may avoid eating (such as food high in calories or fat, red meat or dairy products):**
   a) There are certain foods which I strictly avoid and would not even consider eating
   b) There are certain foods which I try to avoid, although sometimes I think that it might be okay to eat them occasionally
   c) I think that I am too strict in the foods which I allow myself to eat and have decided that I will attempt to eat foods which I usually avoid
   d) I am putting in a lot of effort to regularly eat foods which I usually avoid
   e) I used to avoid eating certain foods which I now eat regularly
13) The following statements refer to daily food consumption:
   a) There is no need for me to eat 3 standard size meals and a snack each day
   b) Sometimes I think that I should eat 3 standard size meals and a snack each day
   c) I have decided that I need to eat 3 standard size meals and a snack each day
   d) I am putting in a lot of effort to eat 3 standard size meals and a snack each day
   e) I am working to maintain a current eating pattern which includes 3 standard size meals and a snack each day

14) The following statements refer to time spent thinking about food and your weight (such as thought about becoming fat, counting the calories or fat content of food, or calculating the amount of energy used when exercising):
   a) There is nothing wrong with the amount of time I spend thinking about food and my weight
   b) the amount of time I spend thinking about food and my weight is a problem sometimes
   c) I have decided that I need to use strategies to help me reduce the amount of time I spend thinking about food and my weight
   d) I am using strategies to help me reduce the amount of time I spend thinking about food and my weight
   e) I used to spend too much time thinking about food and my weight which I have managed to reduce and am working to keep it this way

15) The following statements refer to certain eating behaviours (such as needing to eat food at a specific rate or time, moving food around on the plate, being unable to eat all the food on a plate, taking longer than others to eat meals, having difficulties eating with others, needing to chew food a certain number of times or needing to stick to the same food plan each day):
   a) There is nothing that I need to change about the way I eat my meals
   b) I sometimes think that I need to change aspects of the way I eat my meals
   c) I have decided that I will try to change aspects of the way I eat my meals
   d) I am putting in a lot of effort to change aspects of the way I eat my meals
   e) I have succeeded in changing aspects of the way I eat my meals and want it to stay that way

16) The following statements refer to feelings associated with eating (such as feeling guilty) and not eating (such as feeling in control):
   a) There is no need for me to change the feelings I associate with eating and not eating
   b) I sometimes think that I need to change the feelings I associate with eating and not eating
   c) I have decided that I will try to change the feelings I associate with eating and not eating
   d) I am putting in a lot of effort to change the feelings I associate with eating and not eating
   e) I have succeeded in changing the feelings I associate with eating and not eating and want it to stay this way

17) The following statements refer to methods which you may use to control your weight (such as restricting your eating, exercising, vomiting, taking laxatives or other pills).
    You may select more than one statement for the different methods that you use to control your weight. Please indicate which weight control method/s you are referring to in the blank space/s provided.
a) There is nothing seriously wrong with the methods
__________________________ I use to control my weight
b) I have been thinking that there may be problems associated with the methods
__________________________ I use to control my weight
c) I have decided that I will attempt to stop using certain methods
__________________________ to control my weight
d) I am putting in a lot of effort to stop using certain methods
__________________________ to control my weight
e) I have managed to stop using certain methods
__________________________ to control my weight and I would like to keep it this way

18) The following statements refer to certain emotional problems (such as feeling depressed, anxious or irritable):
a) I do not have any emotional problems which I need to work on
b) I sometimes think that I may have certain emotional problems which I need to work on
c) I have certain emotional problems which I have decided to work on
d) I am actively working on my emotional problems
e) My emotional problems have improved and I am trying to keep it this way

19) The following statements refer to certain characteristics (such as perfectionism, low self esteem or feeling a need for control):
a) I do not have any problems in the way I approach life which I need to work on
b) I sometimes think that I may have certain problems in the way I approach life which I need to work on
c) I have certain problems in the way I approach life which I have decided to work on
d) I am actively working on problems in the way I approach life
e) The problems in the way I approach life have improved and I am trying to keep it this way

20) The following statements refer to relationship problems (such as relationships with family or friends):
a) I do not have any problems in my relationship with others which I need to work on
b) I sometimes think that I may have certain problems in my relationships with others that I need to work on
c) I have certain problems in my relationships with others which I have decided to work on
d) I am actively working on my problems in my relationships with others
e) The problems in my relationships with others have improved and I am trying to keep it this way
# JAR Readiness to Change Questionnaire

The following items refer to how you have felt during the last week (7 days). There are two parts involved in completing each question:

1. Please indicate your response by **drawing a line** along the scale to correspond with the statements which reflect how you have felt during this time. It is ok for the line to go across more than one statement.

2. Please indicate **in the spaces below the scale** the percentage of time during the last week which you have felt this way. **This should total 100%**. Two examples are given below:

**Example 1:**
During the last week, Jill has mainly thought that she does not need to gain weight. However, about 1/5 of the time, Jill has started to think that maybe she might be better off if she gained weight. Jill would complete the item relating to weight and shape as follows:

<table>
<thead>
<tr>
<th>I do not need to gain weight</th>
<th>Sometimes I think that I might be better off if I gained weight</th>
<th>I have decided that I will try to gain weight</th>
<th>I am putting a lot of effort into gaining weight</th>
<th>I am working to maintain the weight that I have gained</th>
</tr>
</thead>
<tbody>
<tr>
<td>80%</td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Percentage of time (100%)**

**Example 2:**
Ebony has spent most of the last week thinking that she will definitely attempt to gain weight. However, she has also spent sometime (30%) unsure, still thinking about the possible benefits of gaining weight. Ebony has also spent a small amount of time (10%) during the last week putting effort into gaining weight. Jill would complete the item relating to weight and shape as follows:

<table>
<thead>
<tr>
<th>I do not need to gain weight</th>
<th>Sometimes I think that I might be better off if I gained weight</th>
<th>I have decided that I will try to gain weight</th>
<th>I am putting a lot of effort into gaining weight</th>
<th>I am working to maintain the weight that I have gained</th>
</tr>
</thead>
<tbody>
<tr>
<td>30%</td>
<td>60%</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Percentage of time (100%)**
All answers are completely confidential. Thankyou for your time.

1. The following question refers to how you feel about your weight and shape:

| I do not need to gain weight | Sometimes I think that I might be better off if I gained weight | I have decided that I will try to gain weight | I am putting a lot of effort into gaining weight | I am working to maintain the weight that I have gained |

Percentage of time (100%)

2. The following question refers to how you feel about the amount of food which you usually eat each day:

| I do not need to eat 3 meals a day | I might be better off if I ate 3 meals a day | I will attempt to eat 3 meals a day | I am putting a lot of effort into eating 3 meals a day | I am working to continue eating 3 meals a day |

Percentage of time (100%)

3. The following question refers to how you feel about certain foods which you may usually avoid eating (such as foods high in fat or calorie content):

| I strictly avoid, and would not consider eating these foods | Sometimes I think it may be ok to eat these foods occasionally | I have decided that I will try to eat these foods | I am putting a lot of effort into regularly eating these foods | I am working to continue eating these foods |

Percentage of time (100%)
4. The following question refers to how you feel about shape and weight standards which you may have for evaluating your body:

| These standards are not too strict | Sometimes I think these standards may be too strict | I have decided these standards are too strict and need to be changed | I am putting a lot of effort into changing these standards | I am working to continue not using these standards |

Percentage of time (100%) 

5. The following question refers to methods you may use to control your weight (such as restricting, excessive exercise, laxatives, vomiting etc.):

| There is nothing seriously wrong with these methods | Sometimes I think there may be problems with these methods | I have decided that I will try to stop using these methods | I am putting a lot of effort into not using these methods | I am working to continue not using these methods |

Percentage of time (100%) 

6. The following statements refer to certain characteristics and emotional problems (such as perfectionism, need for control etc.):

| I do not have any characteristics/ emotional problems which I need to work on | Sometimes I think I may have characteristics/ emotional problems which I need to work on | I have decided that I will try to work on characteristics/ emotional problems | I am putting a lot of effort into working on characteristics/ emotional problems | I am working to continue addressing characteristics/ emotional problems |

Percentage of time (100%)
Rieger Self-efficacy Questionnaire

Please read the following statements and using the key below, circle your corresponding answer on the scale of 0 – 10. Your answers are completely confidential. Thank you for your time.

0 = Not confident that I could do this
10 = Completely confident that I could do this

1) I can gain weight:

0 1 2 3 4 5 6 7 8 9 10

2) I can obtain a normal body weight:

0 1 2 3 4 5 6 7 8 9 10

3) I can gain weight on parts of my body which may particularly concern me in terms of weight gain (such as hips, thighs, stomach etc.):

0 1 2 3 4 5 6 7 8 9 10

4) I can be satisfied with my appearance at a normal weight:

0 1 2 3 4 5 6 7 8 9 10

5) I can be physically healthy:

0 1 2 3 4 5 6 7 8 9 10

6) I can determine my happiness and success without placing importance on my body shape or weight:

0 1 2 3 4 5 6 7 8 9 10
7) I can reduce my fear of becoming fat:

0 1 2 3 4 5 6 7 8 9 10

8) I can stop losing weight:

0 1 2 3 4 5 6 7 8 9 10

9) I can increase the amount of fat on my body:

0 1 2 3 4 5 6 7 8 9 10

10) I can gain at least 1kg a week:

0 1 2 3 4 5 6 7 8 9 10

11) I can let go of strict standards that I have for evaluating my body:

0 1 2 3 4 5 6 7 8 9 10

12) I can regularly eat foods which I used to avoid (such as food high in calories or fat, red meat or dairy products):

0 1 2 3 4 5 6 7 8 9 10

13) I can eat 3 standard size meals and a snack each day:

0 1 2 3 4 5 6 7 8 9 10

14) I can spend less time thinking about becoming fat, counting the calories or fat content of food, or calculating the amount of energy used when exercising:

0 1 2 3 4 5 6 7 8 9 10
15) I can change the way I eat meals (such as needing to eat food at a specific rate or time, moving food around on the plate, being unable to eat all the food on a plate, taking longer than others to eat meals, having difficulties eating with others, needing to chew food a certain number of times or needing to stick to the same food plan each day):

0 1 2 3 4 5 6 7 8 9 10

16) I can change the feelings that I associate with eating (such as feeling guilty) and not eating (such as feeling in control):

0 1 2 3 4 5 6 7 8 9 10

17) I can stop certain methods which I use to control my weight (such as restricting my eating, exercising, vomiting, taking laxatives or other pills):

0 1 2 3 4 5 6 7 8 9 10

18) I can improve my emotional problems (such as feeling depressed, anxious or irritable):

0 1 2 3 4 5 6 7 8 9 10

19) I can improve certain characteristics which I may have (such as perfectionism, low self esteem or feeling a need for control):

0 1 2 3 4 5 6 7 8 9 10

20) I can improve my relationship problems (such as relationships with family or friends):

0 1 2 3 4 5 6 7 8 9 10
**JAR Self-Efficacy Questionnaire**

The following items refer to how you have felt during the last week (7 days). There are two parts involved in completing each question:

1. Please read the following statements and using the key below, indicate your response by **drawing a line** along the scale to correspond with the numbers which reflect how you have felt during this time. It is ok for the line to go across more than one number.

   $$0 = \text{Not at all confident that I could do this}$$
   $$10 = \text{Completely confident that I could do this}$$

2. Please indicate **in the spaces below the scale** the percentage of time during the last week which you have felt this way. **This should total 100%**. Two examples are given below:

   **Example 1:**
   During the last week, Jane has mainly thought that even if she wanted to, she couldn’t gain weight. However, about 1/4 of the time, Jane has started to think that if she tried really hard she may be able to gain some weight. Jane would complete the item relating to weight and shape as follows:

   ![Line diagram](chart1.png)
   
   75% _______ 25% _______ Percentage of time (100%)

   **Example 2:**
   Sue has spent most of the last week feeling really confident that she could stop exercising excessively. However, she has also spent sometime (30%) only moderately confident and occasionally (10%) during the last week she has only felt slightly confident that she could do this. Jill would complete the item relating to weight and shape as follows:

   ![Line diagram](chart2.png)
   
   10% _______ 30% _______ 60% _______ Percentage of time (100%)

*All answers are completely confidential. Thank you for your time.*
1. The following scale refers to how confident you are that if you chose to you could gain weight:

[Scale with bars indicating percentage of time (100%)]

2. The following scale refers to how confident you are that if you chose to you could regularly eat 3 standard size meals and a snack each day:

[Scale with bars indicating percentage of time (100%)]

3. The following scale refers to how confident you are that if you chose to you could regularly eat certain foods which you may usually avoid (such as foods high in fat or calorie content):

[Scale with bars indicating percentage of time (100%)]
4. The following scale refers to how confident you are that if you chose to you could change the shape and weight standards which you may have for evaluating your body:

[Scale with 10 points]

Percentage of time (100%)

5. The following scale refers to how confident you are that if you chose to you could stop using certain methods to control your weight (such as restricting, excessive exercise, laxatives, vomiting etc.):

[Scale with 10 points]

Percentage of time (100%)

6. The following scale refers to how confident you are that if you chose to you could improve certain characteristics and emotional problems (such as perfectionism, need for control etc.):

[Scale with 10 points]

Percentage of time (100%)
# EATING QUESTIONNAIRE

The following questions are concerned with the past four weeks (28 days) only. Please read each question carefully. Please answer all the questions. Thank you.

Questions 1 to 12: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days).

<table>
<thead>
<tr>
<th>On how many of the past 28 days........</th>
<th>No days</th>
<th>1-5 days</th>
<th>6-12 days</th>
<th>13-15 days</th>
<th>16-22 days</th>
<th>23-27 days</th>
<th>Every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Have you tried to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Have you tried to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Have you had a definite desire to have an empty stomach which the aim of influencing your shape or weight?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Have you had a definite desire to have a totally flat stomach?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Has thinking about food, eating or calories made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Have you had a definite fear of losing control over eating?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Have you had a definite fear that you might gain weight?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Have you felt fat?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Have you had a strong desire to lose weight?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Questions 13 to 18: Please fill in the appropriate number in the boxes on the right. Remember that the questions only refer to the past four weeks (28 days).

<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over the past four weeks (28 days).......</td>
<td></td>
</tr>
<tr>
<td>13. Over the past 28 days, how many times have you eaten what other people would regard as an unusually large amount of food (given the circumstances)?</td>
<td></td>
</tr>
<tr>
<td>14. ........On how many of these times did you have a sense of having lost control over your eating (at the time that you were eating)?</td>
<td></td>
</tr>
<tr>
<td>15. Over the past 28 days, on how many days have such episodes of overeating occurred (i.e., you have eaten an unusually large amount of food and have had a sense of loss of control at the time)?</td>
<td></td>
</tr>
<tr>
<td>16. Over the past 28 days, how many times have you made yourself sick (vomit) as a means of controlling your shape or weight?</td>
<td></td>
</tr>
<tr>
<td>17. Over the past 28 days, how many times have you taken laxatives as a means of controlling your shape or weight?</td>
<td></td>
</tr>
<tr>
<td>18. Over the past 28 days, how many times have you exercised in a “driven” or “compulsive” way as means of controlling your weight, shape or amount of fat, or to burn off calories?</td>
<td></td>
</tr>
</tbody>
</table>

Questions 19 to 21: Please circle the appropriate number. Please note that for these questions the term “binge eating” means eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating.

<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over the past 28 days, on how many days have you eaten in secret (i.e., furtively)? .......do not count episodes of binge eating.</td>
<td></td>
</tr>
<tr>
<td>19. Over the past 28 days, on how many days have you eaten in secret (i.e., furtively)?</td>
<td></td>
</tr>
<tr>
<td>20. On what proportion of the times that you have eaten have you felt guilty (felt that you’ve done wrong) because of its effect on your shape or weight? .......do not count episodes of binge eating.</td>
<td></td>
</tr>
<tr>
<td>21. Over the past 28 days, how concerned have you been about other people seeing you eat? .......do not count episodes of binge eating.</td>
<td></td>
</tr>
</tbody>
</table>
Questions 22 to 28: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days).

<table>
<thead>
<tr>
<th>On how many of the past 28 days.......</th>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Markedly</th>
</tr>
</thead>
<tbody>
<tr>
<td>22. Has your weight influenced how you think about (judge) yourself as a person?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>23. Has your shape influenced how you think about (judge) yourself as a person?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>24. How much would it have upset you if you had been asked to weigh yourself once a week (no more, or less, often) for the next four weeks?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>25. How dissatisfied have you been with your weight?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>26. How dissatisfied have you been with your shape?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>27. How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>28. How uncomfortable have you felt about others seeing your figure (for example, in communal change rooms, when swimming, or wearing tight clothes)?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

What is your weight at present? (Please give your best estimate) ..............................................

What is your height? (Please give your best estimate) .............................................................

If female:

Over the past three-to-four months have you missed any menstrual periods? .......................

If so, how many? ..............................................

Have you been taking the 'pill'? ..............................................
About You

Your age is ________ years and your height is ________ cm.
You currently weigh__________ kg. Your highest weight (excluding pregnancy) is ________ kg and your lowest adult weight is ________ kg. You have had anorexia for ______ years and ______ months. The highest level of education that you have currently completed is ____________________.

Thank you for your time.
APPENDIX O

STUDY 3 ETHICS APPROVAL

Memorandum

To: Dr Ross King  
School of Psychology

cc: Ms Jacqueline Woerner

From: Deakin University Human Research Ethics Committee (DU-HREC)

Date: 18 December, 2009

Subject: 2009-200  
The development of a readiness for change/self efficacy scale for use with anorexic clients

Please quote this project number in all future communications.

The application for this project was considered at the DU-HREC meeting held on 07/12/2009.

Approval has been given for Ms Jacqueline Woerner, under the supervision of Dr Ross King, School of Psychology, to undertake this project from 18/12/2009 to 18/12/2012.

The approval given by the Deakin University Human Research Ethics Committee is given only for the project and for the period as stated in the approval. It is your responsibility to contact the Human Research Ethics Unit immediately should any of the following occur:

- Serious or unexpected adverse effects on the participants
- Any proposed changes in the protocol, including extensions of time
- Any events which might affect the continuing ethical acceptability of the project
- The project is discontinued before the expected date of completion
- Modifications are requested by other HREC’s

In addition you will be required to report on the progress of your project at least once every year and at the conclusion of the project. Failure to report as required will result in suspension of your approval to proceed with the project.

DU-HREC may need to audit this project as part of the requirements for monitoring set out in the National Statement on Ethical Conduct in Human Research (2007).

Human Research Ethics Unit
research-ethics@deakin.edu.au
Telephone: 03 9251 7123
APPENDIX P

STUDY 3 PRIVATE PRACTITIONER LETTER

The Development of a Readiness for Change/ Self-efficacy Scale for the use with Anorexic Clients
A research project of the School of Psychology, Deakin University, Australia

Thankyou for your prompt reply to my recent email enquiring about advertising our research project with your organisation. I believe this project will be of interest to some users of your service. I am writing to you again in order to describe the project and to ask for your help by letting your clients know of what we are doing.

As you would be aware, recovering from anorexia nervosa is frequently a difficult process. Those who are affected by anorexia initially do not see themselves as having a problem and are resistant to seeking help. Even when the person agrees that there is a problem, they struggle to remain motivated to recover typically because of fears of gaining weight, losing a sense of control, or a sense of uniqueness. There is now a lot of evidence to suggest that sufferers move through a series of stages as they recover but this rarely occurs in a straightline; rather, their degree of motivation waxes and wanes.

Readiness for change and self-efficacy are both crucial in the process of engaging clients in treatment. Most theorists currently refer to readiness for change as a general, global construct. However, the results of a previous study conducted as part of the current PhD indicated that the components of the Transtheoretical Model (readiness for change and self-efficacy) may be best conceptualised as a continuous, multifactorial paradigm which may vary across both time and different anorexia related symptom dimensions.
The practical utility of the Transtheoretical Model depends markedly upon the constructs of readiness to change and self-efficacy remaining relatively stable. Otherwise, when undertaking tailored interventions, clients may already have shifted into a different stage, especially in situations where delays occur between stage assessment and treatment intervention. If clinicians are unable to ascertain that a client will remain in a designated stage whilst the appropriate treatment for that stage is implemented, the costly and time consuming process of assessment becomes futile.

Therefore, it is proposed that the development of an assessment tool to measure these constructs may have increased validity if they are designed to capture the complete variance in an individual’s motivation, as it alters across various symptom dimensions and fluctuates over time.

**What we are interested in finding out.**
We are interested in hearing from males and females aged over 18 years who are currently recovering from anorexia.

Given the abovementioned limitations, two new self-report questionnaires have been developed. Both of these scales, the JAR-RTC scale (used to evaluate readiness for change) and the JAR-SE scale (designed to assess self-efficacy), are both continuous and multidimensional in nature. We are now interested in finding out if these two new scales can reliably and accurately evaluate readiness to change and self-efficacy in an anorexic population. We are also interested in determining if the newly constructed scales can provide clinicians with more information than currently available assessment tools.

**What we are asking people to do.**
Participation in this project will involve people completing a brief set of five online questionnaires which will take approx. 30 minutes. These questionnaires will include both the traditional and new measures of assessing readiness for change and self-efficacy. In addition, participants will be asked to complete these same questionnaires again after two weeks, to enable us to evaluate test-retest reliability.
I have attached a copy of the Plain Language Statement for you to view. I can also forward a copy of the questionnaires if you would like to see these.

Approval for this study has been received from the Deakin University Human Ethics Committee.

If you are interested in assisting me, or if you have any further questions or comments regarding this study, please contact Jacqueline Woerner on (+613) 52278426 or email jacqueline.woerner@deakin.edu.au.

Thankyou again,

Jacqueline Woerner
APPENDIX Q

STUDY 3 ADVERTISEMENTS

The development of a readiness for change/self efficacy scale for use with anorexic clients

A research project of the School of Psychology, Deakin University

As you would be aware, recovering from anorexia nervosa is frequently a difficult process; it rarely occurs in a straight line and people’s motivation or readiness and confidence regarding change can go up and down.

I would like to invite you to participate in an exciting new research project. The aim of this project is to explore your individual views and opinions regarding how ready you feel about changing your eating and weight, as well as how confident you are that if you chose to you could change. In addition, we are also interested in seeing if there is a better way of measuring these constructs, other than what have previously been used.

If you are interested in being involved in this project, you will be asked to complete 5 brief, anonymous online questionnaires. It is expected that it will take you approximately 30 minutes to do all 5 questionnaires. Your responses on the questionnaires will be completely anonymous.
Participation in this online study is completely voluntary and declining to participate will in no way effect the level of treatment or support offered by professional services or practitioners. If you do decide to participate in this study you are free to withdraw your consent at any time, in which event your participation in the research study will immediately cease and any information obtained from you will not be used.

Taking part in this project is simple: Just click on the link below.

www.deakin.edu.au/psychology/research/jackmaster

Alternatively, if you’d like to learn more please contact Jacqueline Woerner on (03) 52278426 or email jacqueline.woerner@deakin.edu.au.

Thankyou for taking the time to read this and we hope to hear from you soon.

Jacqueline.
Recovering From Anorexia
Views on Recovery

Recovering from anorexia is difficult and each person's experience is very different. Deakin University is conducting a project looking at your experience. We are inviting both males and females over the age of 18 who are currently recovering from anorexia to be involved. This study involves you completing five brief confidential online questionnaires now (should take approx. 30 mins) and again in two weeks.

If you are interested in hearing more please contact Jacqueline Woerner on (03) 52278426 or email jnwoerne@deakin.edu.au

Thankyou.
APPENDIX R

STUDY 3 PLAIN LANGUAGE STATEMENT/ CONSENT FORM

DEVELOPMENT OF A READINESS FOR CHANGE/SELF-EFFICACY SCALE

DEAKIN UNIVERSITY
PLAIN LANGUAGE STATEMENT

School of Psychology
Deakin University

Title: The development of a readiness for change/ self-efficacy scale

Principal Researcher: Dr Ross King

Student Researcher: Ms Jacqueline Woerner

My name is Jacqueline Woerner and I am currently completing a Doctor of Philosophy in psychology under the supervision of Dr Ross King, senior lecturer, School of Psychology, Deakin University.

I would like to invite you to participate in the third phase of my research project. The aim of this phase of the project is to explore individual views and opinions regarding how ready people feel about changing their eating and weight, as well as how confident they are that if they chose to they could change. In addition, we are also interested in seeing if there is a better way of measuring these constructs, other than what have been previously used.

An earlier study has shown that confidence and readiness to change fluctuate as people recover from anorexia. We are now interested in trying a new way of measuring these changes and seeing what types of factors (such as personal relationships, stage of recovery etc.) may influence these shifts. Therefore, this study is asking people to tell us about their experience with the challenging process of their recovery. We want people to do this in two different ways, to see which one works better.
Participation in this online study is completely voluntary. You are not obliged to participate. If you decide to be involved, you are free to withdraw at no consequence to you.

If you decide that you would like to be involved in this project, your participation will include two parts. Firstly, you will be asked to complete 5 brief, anonymous online questionnaires. It is expected that it will take you approximately 30 minutes to do all 5 questionnaires. You will then be asked to complete the same online questionnaires 2 weeks later. You will be asked to provide a valid email address so that we can send you a reminder 2 weeks after you complete the first questionnaires. However, this information will be coded and stored separately to your questionnaires to ensure that your confidentiality is maintained. The questionnaires will cover the following areas:

- The first questionnaire will ask you to circle one answer for each question. The questions relate to how you currently feel about your eating behaviour and your weight. Examples of questions on the first questionnaire are:

  'As far as I am concerned I do not need to gain weight.'
  'Sometimes I think that I exaggerate the importance of my body shape or weight in determining my happiness and success.'

- The second questionnaire will also include questions relating to how you currently feel about your eating behaviour and your weight. However, to answer these questions you will be asked to indicate the amount of time which you have felt this way. Examples of questions on the second questionnaire are:

  'The following question refers to how you feel about the amount of food which you usually eat each day.'
  'The following question refers to the methods you may use to control your weight (such as restricting, excessive exercise, laxatives, vomiting etc.).'

- The third questionnaire will include questions about how confident you feel about changing your eating and weight. You will be asked to answer these questions from 0-10:

  'I believe that if I chose to I could regularly eat foods which I used to avoid (such as foods high in calories or fat, red meat or dairy products).'
  'I believe that if I chose to I could eat 3 standard size meals and a snack each day.'

- The fourth questionnaire will also include questions about how confident you feel about changing your eating behaviour and weight. However, to answer these questions you will be asked to indicate the amount of time which you have felt this way. Examples of questions on the fourth questionnaire are:

  'How confident are you that if you chose to you could change the shape and weight standards which you may have for evaluating your body?'
  'How confident are you that if you chose to you could improve certain characteristics and emotional problems (such as perfectionism, need for control etc.)?'

- The last questionnaire will ask for general information about you. Examples of statements on the final questionnaire are:

  'Your age is .......years and your height is ......cm.'
  'The highest level of education that you have currently completed is.........'

Your responses on the questionnaires will be completely confidential. On commencing the project you will be given a numeric code to enable us to later match your two sets of responses, but your name will not be used in any manner on the completed data. Therefore, you will not be able to be identified; your responses will be combined with that of all other participants before it is analysed so that you will not be personally identified in any manner in any reports, the final thesis or any academic publications that may flow from the research. Storage of data collected will adhere to University regulations and be kept in secure storage for a period of six years. Any identifying information will be securely destroyed (by shredding) on the completion of the research project.
Participation in this project is completely voluntary and declining to participate will in no way effect the level of treatment or support offered by professional services or practitioners. If you do decide to participate in this study you are free to withdraw your consent at any time, in which event your participation in the research study will immediately cease any information obtained from you will not be used.

We realise that this topic is a difficult and challenging one for many people. Therefore, some of the questions asked may be hard to deal with. If you are interested in participating but find that some of the cause you to become uncomfortable you are free to withdraw and stop participating at any time. If this happens though, please contact your healthcare clinician these issues raised. If at any stage you do feel distressed you can also contact The Eating Disorders Foundation of Victoria on 1300 550 236 and www.eatingdisorders.org.au or The Centre of Excellence in Eating Disorders on (03) 8387 2673 and www.ced.org.au. These services provide free professional support for people whose lives are affected by eating disorders and the Eating Disorder Foundation of Victoria also offers a crisis telephone service for those who are in immediate need of assistance. Alternatively, contact Dr Ross King on (03) 5227 8481 to request access to these people be made on your behalf.

If you have any queries, or for further information please contact my supervisor, Dr Ross King, Senior Lecturer in the School of Psychology, Deakin University, on (03) 5227 8481 or myself (Jacqueline Woerner) on (03) 5227 8426 or email jacqueline.woerner@deakin.edu.au. In July, once the results have been collated, they can be made available upon request from Dr Ross King on the above telephone number.

Please indicate that you have read and understand the terms of the Plain Language Statement and that you confirm that you are over the age of 18 years by clicking the button below:

I Wish To Participate In This Study

If you do not wish to participate in this project, you may click on the following button to return to the Deakin University homepage:

I Do Not Wish To Participate In This Study