

Body Image Beliefs: The Examination of Rational Emotive Behaviour Therapy (REBT) and
Assessment of Irrational and Rational Beliefs in Body Image

Leon Antonio Outar BSc (Hons), MSc, MBPsS

A thesis submitted in partial fulfilment of the requirement for the degree of Doctor of
Philosophy awarded by Staffordshire University

June 2022

Abstract

Rational Emotive Behaviour Therapy (REBT) is a psychotherapeutic approach based on the notion that in the face of adversity our responses are determined by the beliefs we hold.

REBT delineates between cognitive patterns known as irrational and rational beliefs.

Irrational beliefs precede unhealthy, maladaptive, and goal-destructive emotions, cognitions, and behaviours. Contrarily, rational beliefs precede healthy, adaptive, and goal-orientated emotions, cognitions, and behaviours. REBT provides a rich history of its efficacy and effectiveness in a host of psychological difficulties. However, an area of research that has received little attention is body image. Body image relates to the multifaceted psychological experience of embodiment, especially but not exclusively to one's appearance, it encompasses one's appearance-related perceptions, thoughts, behaviours, and feelings. There has been a profound proliferation of scientific inquiry into the psychological, social, and behavioural experiences of body image. Research indicates that body image disturbance is on the rise and is linked to a host of psychopathology including body dysmorphic disorder, muscle dysmorphia, anxiety, depression, and eating disorders. Therefore, it is critical to garner insights into key mechanisms that contribute to the onset and maintenance of body image challenges and disorders. Of the limited research on REBT and body image, results indicate that irrational beliefs are linked to negative body image. However, a key limitation of studies examining the theory of REBT in body image is a failure to accurately assess irrational and rational beliefs, thus, greatly impeding researcher's ability to provide the necessary support for its efficacy and effectiveness in body image. At present, no such psychometric exists that assesses irrational and rational beliefs in body image. Therefore, addressing previous empirical limitations, this thesis aims to advance the field of REBT in body image in the following ways. First, to conduct an examination of REBT upon negative body image, whilst

measuring both irrational and rational beliefs. Second, to develop and validate a reliable, valid, and contextually specific psychometric that assesses irrational and rational beliefs in body image. This thesis is covered over five studies which contributed to the effectiveness of REBT applied to body image, and the validity and reliability of the Body Image Beliefs Inventory (BIBI). Collectively, the findings provided partial support for the effectiveness of REBT for body image, and the validity and reliability of the BIBI. The application of REBT brought about reductions in negative body image, irrational beliefs and increases in unconditional self-acceptance (USA). Moreover, the BIBI reported associations with negative body image, depression, anxiety, and eating disorders via irrational beliefs, and positive body image and positive mental health via rational beliefs. The finding demonstrated that USA in particular played a key moderator in negative and positive body image and eating disorders symptomatology. This thesis supports the advancement of REBT by applying REBT to body image whilst capturing changes in beliefs and developing a valid and reliable psychometric for its assessment. Implications were considered for the practice and research of REBT in body image. Limitations and future recommendations were provided.

Content list

Abstract	2
Contents	4
Acknowledgements	9
Publications and Dissemination Based on Thesis Material	10
List of Tables	13
List of Figures	14
Chapter 1: Thesis Overview	15
1.1 Introduction	16
1.2 Thesis Organisation	17
1.3 Thesis Aims and Objectives	18
Chapter 2: Literature Review	19
2.1 Theory of Rational Emotive Behavioural Therapy	20
2.1.1 Historical development of REBT	20
2.1.2 Theoretical underpinning and assumptions of human nature	21
2.1.3 The ABC(DE) model	24
2.1.4 Conceptual underpinnings of irrational and rational beliefs	27
2.1.4.1. <i>Philosophical underpinnings of beliefs</i>	28
2.1.4.2. <i>Psychological underpinnings of beliefs</i>	29
2.1.4.3. <i>Multilevel analysis of beliefs</i>	31
2.1.4.4. <i>Cultural underpinnings of beliefs</i>	34
2.1.4.5. <i>Evolutionary underpinnings</i>	36
2.1.5 Irrational beliefs at the core of psychopathology	38
2.1.5.1 <i>Demandingness beliefs and disturbance</i>	41
2.1.5.2 <i>Awfulizing, Frustration intolerance, and Self-depreciation and disturbance</i>	42
2.1.6 Rational beliefs at the core of psychological health	44
2.1.6.1 <i>Unconditional self-acceptance and psychopathology</i>	47
2.1.7 REBT & other psychotherapeutic approaches	49
2.1.8 Empirical status of REBT	55
2.2 Body image	59
2.2.1 The history of body image	59
2.2.2 Defining body image	64
2.2.2.1 <i>Body dissatisfaction</i>	65
2.2.2.2 <i>Positive body image</i>	66
2.2.3 Theoretical perspectives of body image	67
2.2.3.1 <i>Sociocultural perspectives</i>	68
2.2.3.1.1 <i>Tripartite Influence Model</i>	69
2.2.3.3.2 <i>Objectification theory</i>	70
2.2.3.2 <i>Self-discrepancy theory</i>	72
2.2.3.3 <i>Cognitive-behavioural</i>	75
2.2.3.4 <i>Positive body image</i>	78

2.2.4 Body image and mental health	80
2.2.4.1 <i>Body dysmorphic disorder and Muscle dysmorphia</i>	81
2.2.4.2 <i>Eating disorders and disordered eating</i>	85
2.2.4.3 <i>Depression and Anxiety</i>	89
2.2.5 Body image prevention and treatment	94
2.3 REBT & body image	99
2.3.1 REBT applied to body image	99
2.4 Measurement of body image belief	104
2.4.1 Irrational and rational beliefs measurement	104
2.4.2 Body image measurement	107
2.4.2.1 <i>Perceptual body image measures</i>	108
2.4.2.2 <i>Attitudinal body image measures</i>	111
2.5 Rationale for the current program of research	114
Chapter 3: Methodology	117
3.1 Research design	118
3.2 The legitimization of mixed method design	120
3.3 Applied Phase	126
3.4 Scale Development phase	128
3.4.1 Step 1 Determine clearly what it is you want to measure	130
3.4.2 Step 2 Generate an item pool	131
3.4.3 Step 3 Determine the format of the measurement	132
3.4.4 Step 4 Have initial item pool reviewed by experts	133
3.4.5 Step 5 Consider inclusion of validated items	135
3.4.6 Step 6 Administer items to a development sample	135
3.4.7 Steps 7 & 8 Evaluate the items and optimize scale length	136
3.5 Data Collection	136
3.5.1 Sampling methodology and size determination	136
3.6 Data Analyses	138
3.6.1 Applied phase analyses	138
3.6.1.1 <i>Visual analysis</i>	139
3.6.1.2 <i>Statistical analysis</i>	140
3.6.1.3 <i>Social validation</i>	141
3.6.2 Scale development analysis	141
3.6.2.1 <i>Factor analysis</i>	145
3.6.2.2 <i>Factor scoring</i>	145
3.6.2.3 <i>Analysis of Validity</i>	145
3.6.2.4 <i>Analysis of Reliability</i>	147

Part I: Applied phase

Chapter 4: An Examination of the use of Rational Emotive Behaviour Therapy (REBT) upon exercisers at-risk of Muscle Dysmorphia. 151

4.1 Introduction 151

4.2 Method	158
4.2.1 Participants	158
4.2.2 Design	159
4.2.3 Measures	160
4.2.3.1 <i>Muscle Dysmorphia symptomology</i>	160
4.2.3.2 <i>Irrational beliefs</i>	160
4.2.3.3 <i>Unconditional self-acceptance</i>	160
4.2.3.4 <i>Social validation</i>	161
4.2.4 Data collection	161
4.2.5 Intervention	162
4.2.5.1 <i>Psychoeducation phase</i>	162
4.2.5.2 <i>Cognitive restructuring phase</i>	163
4.2.5.3 <i>Reinforcement phase</i>	164
4.2.6 Procedural reliability	165
4.3 Analytical strategy	165
4.3.1 Visual analysis	165
4.3.2 Statistical analysis	166
4.4 Results	167
4.4.1 Muscle Dysmorphia, Irrational beliefs, and Unconditional self-acceptance	167
4.4.1.1 <i>Participant 1</i>	167
4.4.1.2 <i>Participant 2</i>	167
4.4.1.3 <i>Participant 3</i>	168
4.4.1.4 <i>Participant 4</i>	168
4.4.2 Social validation	172
4.5 Discussion	172
4.5.1 Limitations	177
4.5.2 Conclusion	179

Part II: Scale Development Phase

Chapter 5: The development and validation of the Body Image Beliefs Inventory (BIBI) **181**

5.1 Introduction	182
5.2 Study 2	186
5.2.1 Method	186
5.2.1.1 <i>Participants</i>	186
5.2.1.2 <i>Procedure</i>	186
5.2.2 Results	189
5.3 Study 3	190
5.3.1 Method	190
5.3.1.1 <i>Participants</i>	190
5.3.1.2 <i>Measure</i>	191
5.3.1.3 <i>Procedure</i>	191
5.3.1.4 <i>Data analysis</i>	191
5.3.2 Results	192
5.3.2.1 <i>Main analysis</i>	192
5.4 Study 4	206
5.4.1 Method	206

5.4.1.1 <i>Participants</i>	206
5.4.1.2 <i>Measures</i>	206
5.4.1.2.1. Body image beliefs	206
5.4.1.2.2. Irrational and rational beliefs	206
5.4.1.2.3. Negative body image	207
5.4.1.2.4. Positive body image	207
5.4.1.2.5. Depression	208
5.4.1.2.6. Anxiety	208
5.4.1.2.7. Positive mental health	208
5.4.1.2.8. Eating disorder symptomatology	209
5.4.1.2.9. Body mass index (BMI)	209
5.4.1.3 <i>Procedure</i>	209
5.4.2 Data analysis	210
5.4.3 Results	211
4.4.3.1 <i>Confirmatory factor analysis</i>	211
4.4.3.2 <i>Criterion validity</i>	217
4.4.3.2.1 <i>Concurrent validity</i>	217
4.4.3.2.2 <i>Predictive validity</i>	220
5.5 Study 5	225
5.5.1 Method	225
5.5.1.1 <i>Participants</i>	225
5.5.1.2. <i>Measures</i>	226
5.5.1.2.1. Body image beliefs	226
5.5.1.2.2. Social desirability	226
5.5.1.3 <i>Procedure</i>	226
5.5.2 Data analysis	226
5.5.3 Results	227
5.5.4 Discussion	230
 Chapter 6: General Discussion	 237
 6.1 Summary of findings	 237
6.1.1 Applied Phase (Study 1)	237
6.1.2 Scale development phase (Studies 2 to 5)	239
6.2 Theoretical contributions and explanation of findings	243
6.2.1 REBT theoretical model of body image	243
6.2.2 Irrational beliefs and body image	245
6.2.3 Rational beliefs and body image	247
6.2.4 Positive body image and rational beliefs	252
6.3 Implications for practice	253
6.3.1 Measuring body image beliefs	254
6.3.2 Practitioners working with body image	254
6.3.3 Creating body image rationality	258
6.3.4 REBC and wider body image contexts	261
6.4 Limitations	264
6.5 Recommendations for future research	266
6.6 Conclusion	270
 Chapter 7: References	 273

Appendix

Appendix 4.1: Chapter 4 - Ethical approval

Appendix 4.2: Chapter 4 - Information sheet

Appendix 4.3: Chapter 4 - Informed consent

Appendix 4.4: Chapter 4 - Risk assessment form

Appendix 4.5: Chapter 4 - Debrief sheet

Appendix 4.6: Chapter 4 - Recruitment letter

Appendix 4.7: Chapter 4 – Social validation form

Appendix 4.8: Chapter 4 – Questionnaires

Appendix 5.1: Chapter 5 - Ethical approval

Appendix 5.2: Chapter 5 – Information sheet for expert and usability panels

Appendix 5.3: Chapter 5 - Informed consent sheet for expert and usability panels

Appendix 5.4: Chapter 5 - Information sheet study 3

Appendix 5.5: Chapter 5 - Informed consent 3-5

Appendix 5.6: Chapter 5 - Information sheet study 4

Appendix 5.7: Chapter 5 - Questionnaires

Appendix 5.8: Chapter 5 - Information sheet study 5

Appendix 5.9: Chapter 5 – Content areas sheet for expert panel

Acknowledgements

“Silent gratitude isn't much use to anyone” G. B. Stern

With special consideration to the quote above I would like to express my deepest gratitude to key individuals who have contributed to my ongoing development professionally and personally throughout my PhD journey.

First, I would like to express my innermost thanks to my primary supervisor Dr Martin Turner, who has been the most influential figure in my career since his inception in my master's studies. Your presence in my life provided the impetus to allow me to achieve professional heights I previously may have conceived unachievable. Your unparalleled work ethic, and theoretical and research insights have provided a perfect exemplary role model. This coupled with your compassionate, witty, humorous, calm, and composed disposition have made professional development and this PhD journey an enjoyable endeavour. For this, I am eternally thankful to have you as my mentor and I look forward to what are continued collaboration brings for the future.

Next, I would like to thank Dr Andrew Wood who has been an invaluable member of the supervisor team. I truly appreciate your sense of humour, grounded nature, and thirst for knowledge, you have provided a climate of challenge, excitement, insight, and depth to the PhD studies that is unquestionable. Furthermore, your supervisor practices are of the highest order, being a source of guidance, support, and knowledge irrespective of the time and competing demands, and for that, I thank you dearly.

Next, I would like to express my deepest appreciation to Helen O'Connor. As my QSEP supervisor and external supervisor of this PhD, your input professionally has been fundamental in shaping the practitioner implications of this research. You have instilled and engrained into my psychology the importance of this thesis for the practitioners and general population. Holding such a lens has provided a unique and imperative approach to my thesis as a researcher-practitioner. Finally, for your ability to challenge me, motivate me, support me, and instil a sense of unrelenting curiosity, I thank you.

Collectively, you have all made an unseizable contribution to my life professionally and personally, one that I will never forget.

I would like to also extend my thanks to all that have offered their time to participate in my research and contribute to the fields of body image and REBT, without your contributions this research would not exist.

Finally, I would like to thank key family members and friends who have supported me through this challenging period of my life, you have managed my lack of contribution socially, and endless talk about body image and its importance, you have encouraged me throughout and have never once doubted my pursuits. For that, I thank you all.

Leon

(June 2022)

Publications and Dissemination Based on Thesis Material

The research comprised in the present thesis has contributed to the following publication and dissemination activities:

Journal publications

Outar, L., Turner, M., Wood, A., O'Connor, H. (2020) Muscularity rationality: An examination of the use of Rational Emotive Behaviour Therapy (REBT) upon exercisers at risk of muscle dysmorphia. *Psychology of Sport and Exercise*. 52, pp.101813-101813.

Outar, L., Turner, M., Wood, A., O'Connor, H. (In press) The Development and initial validation of the Body Image Beliefs Inventory. *Manuscript submitted for peer review*

Dissemination

Outar, L. (2018). Muscularity rationality – An Examination of the use of Rational Emotive Behaviour Therapy (REBT) upon exercisers at-risk of Muscle Dysmorphia. Oral presentation delivered at Graduate school conference, Staffordshire University, Stoke-on-Trent

Outar, L. (2018). Muscularity rationality – An Examination of the use of Rational Emotive Behaviour Therapy (REBT) upon exercisers at-risk of Muscle Dysmorphia. Poster presentation delivered at the Inaugural Midlands Branch conference, Birmingham City University, Birmingham

Outar, L. (2019). Muscularity rationality – An Examination of the use of Rational Emotive Behaviour Therapy (REBT) upon exercisers at-risk of Muscle Dysmorphia. Poster

presentation delivered at the West midlands branch conference, Derby University,
Derby

Outar, L. (2019). Muscularity rationality – An Examination of the use of Rational Emotive Behaviour Therapy (REBT) upon exercisers at-risk of Muscle Dysmorphia. Poster presentation delivered at the Graduate school conference, Staffordshire University, Stoke-on-Trent

Outar, L. (2019). Muscularity rationality – An Examination of the use of Rational Emotive Behaviour Therapy (REBT) upon exercisers at-risk of Muscle Dysmorphia. Poster presentation delivered at the Coventry University Undergraduate Psychology society, Coventry University, Coventry

Outar, L. (2019). Body image crisis. Examining a Rational emotive perspective of body image. Article delivered to smarter thinking, Stoke-on-Trent

Outar, L. (2020). Appearance rationality – Understanding the role of irrational and rational beliefs in Muscle dysmorphia, and application of CBT approaches (REBT) in fitness settings. Oral presentation delivered to threesixnine, London

Outar, L. (2020). Appearance rationality – Understanding the role of irrational and rational beliefs in Muscle dysmorphia, and application of CBT approaches (REBT) in fitness settings. Oral presentation delivered to Unspoken (Taboo mental disorders), London

Outar, L. (2022). Appearance rationality – Understanding the role of irrational and rational beliefs in Muscle dysmorphia, and application of CBT approaches (REBT) in fitness settings. Podcast recorded for Comprehensive coaching, London

Outar, L. (2019-21). Muscularity rationality – An Examination of the use of Rational Emotive Behaviour Therapy (REBT) upon exercisers at-risk of Muscle Dysmorphia. Oral presentations delivered to University of Greenwich Level 6-7, Greenwich, London

List of Tables

Table 3.1. Overview of legitimization types and applications in the thesis.	125
Table 4.1. <i>Mean values, standard deviations of irrational beliefs, Muscle dysmorphia and Unconditional self-acceptance scores from pre- to post- and follow-up intervention phases.</i>	171
Table 5.1. <i>Participant characteristics (Studies 2, 3, 4, and 5).</i>	181
Table 5.2. <i>Fit indices for alternative factor models for the BIBI.</i>	195
Table 5.3. <i>CFA factor loadings for 2 x 4-factor model, Cronbach alpha, Mean, standard deviation and inter-item correlation statistics.</i>	196
Table 5.4. <i>2nd CFA factor loadings for 2 x 4-factor model, Cronbach alpha, Mean, standard deviation and inter-item correlation statistics.</i>	212
Table 5.5. <i>Means, Standard Deviations, and Correlations between BIBI, ABS-2, BAS, BSQ, PHQ, GAD, PMH and EAT.</i>	219
Table 5.6. <i>Interclass correlation and Pearson's correlation for the BIBI.</i>	229

List of Figures

<i>Figure 2.1.</i> A schematic of the ABCDE process.	26
<i>Figure 2.2.</i> REBT Model of Psychopathology.	39
<i>Figure 2.3.</i> REBT Model of Psychological Health.	45
<i>Figure 2.4.</i> Tripartite Influence Model of Body Image (Thompson et al., 1999).	69
<i>Figure 2.5.</i> Model of objectification (Fredrickson & Roberts, 1997).	72
<i>Figure 2.6.</i> The Self-discrepancy Theory Model (Higgins, 1987).	73
<i>Figure 2.7.</i> Cognitive-behavioural model of body image (Cash, 2002).	78
<i>Figure 2.8.</i> Cognitive behavioural model of Body Dysmorphic Disorder (Veale, 2001).	85
<i>Figure 2.9.</i> The Transdiagnostic model of eating disorders (Fairburn, 2008).	89
<i>Figure 2.10.</i> Becks cognitive model of depression (Beck, 1967).	91
<i>Figure 2.11.</i> Cognitive-behavioural model of social anxiety (Rapee & Heimberg, 1997).	94
<i>Figure 3.1.</i> Example of a Two-factor structural model for CFA.	144
<i>Figure 4.1.</i> Pre, Post, and 6-month follow up intervention phases scores in Muscle dysmorphia (MDDI).	170
<i>Figure 5.1.</i> Final CFA model of the 57-item BIBI (Model 5).	201
<i>Figure 5.2.</i> Irrational belief one-factor model (Model 4).	202
<i>Figure 5.3.</i> Rational belief one-factor model (Model 3).	203
<i>Figure 5.4.</i> Irrational and rational belief two-factor model (Model 2).	204
<i>Figure 5.5.</i> Beliefs one-factor model (Model 1).	205

Chapter 1

Thesis Overview

1.1 Introduction

Irrational and rational beliefs are core concepts in Rational Emotive Behaviour Therapy (REBT; Ellis, 1957), and refer to the cognitive patterns individuals hold in the face of adversity (e.g., rejection, failure, loss). REBT posits that it is the beliefs one holds about adverse events, rather than the adversity itself, that determines functionality and goal attainment. Irrational beliefs are extreme, rigid, illogical and goal hindering. Contrarily, rational beliefs are non-extreme, flexible, logical and goal-promoting (Dryden & Branch, 2008). As humans, we possess the capacity to hold both irrational and rational beliefs (David & DiGiuseppe, 2010). Indeed, much has been gleaned about the role of irrational and rational beliefs in psychopathology (Visla et al 2016; Otlean & David, 2017), however, very little is known about how they operate in body image.

Body image is a complex, pervasive and multifaceted psychological construct that encompasses one's perceptions, thoughts, feelings, and behaviours regarding appearance (Cash & Pruzinsky, 2002). It is a subjective and malleable construct, which is influenced by the access of new data (Grogan, 2021). Research indicates that body image is a critical component of psychological and physical health (Cash & Pruzinsky, 2002). Due to this, negative body image precedes a myriad of psychological, emotive, and behavioural challenges. At its apex, negative body image forms the core basis of key psychopathology disorders such as eating disorders (e.g., anorexia nervosa, bulimia nervosa), body dysmorphic disorder (BDD), and muscle dysmorphia (MD), as illustrated in the latest Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM– 5; American Psychiatric Association, 2013). Conversely, positive body image is associated with positive psychological, emotive, and behavioural outcomes such as improved engagement with physical activity, healthy

eating, and self-care (Tylka & Wood-Barlow, 2015). Thus, scholars' insights into mechanisms that contribute to the development and maintenance of negative and positive body image are greatly warranted.

Research in REBT and body image is scant, however, given the potential salience that appearance can have on one's self-concept and the pervasive and debilitating impact of irrational beliefs and the protective nature of rational beliefs, the examination and assessment of irrational and rational beliefs in body image provides a rich and pertinent empirical exploration.

1.2 Thesis Organisation

The present thesis examines the application of REBT on body image and the development of a contextually driven, valid, and reliable irrational and rational beliefs body image measurement. Chapter 2 (Literature review) comprises two sections relating to REBT and body image. The first section outlines the theoretical and historical underpinnings of REBT theory, the role of irrational beliefs in psychopathology, the role of rational beliefs in psychological health, the empirical status of REBT, the measurement of irrational and rational beliefs, and the role of irrational and rational beliefs in body image. The second section outlines the history of body image, conceptual models of body image, the role of body image in psychopathology, body image treatment and prevention, and the measurement of body image. Chapter 3 outlines the methodology approaches adopted throughout the thesis. Chapter 4 outlines the research undertaken in Study 1 and examines the application of REBT upon body image, irrational beliefs, and rational beliefs, amongst a mixed-sex cohort of exercisers. A single-case design is adopted to contribute to professional practice literature as well as scholarly insights. Chapter 5 is comprised of four studies (Study 2 – 5) and outlines the development and validation of the Body Image Beliefs Inventory (BIBI); a theory-driven

psychometric that measures irrational and rational beliefs in body image. More specifically, Study 2 outlines the generation of a pool of items reflecting irrational and rational beliefs in body image, that were examined by two expert panels and a usability panel. Study 3 conducts confirmatory factor analysis (CFA) to examine the factorial fit of the BIBI using key indices such as χ^2 statistic, the comparative fit index (CFI), tucker lewis index (TLI), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA) and Cronbach's alpha to assess internal validity. Study 4 conducts a second CFA among an independent sample to cross-validate the results found in Study 3. Additionally, criterion validity (concurrent and predictive) of the BIBI is examined. Study 5 examines the test-retest reliability of the BIBI. Chapter 6 discusses the key findings of the studies, theoretical contributions, implications in practice and research, limitations, and future research recommendations.

1.3 Thesis Aims and Objectives

1. To examine the effects of REBT upon negative body image (i.e., Muscle dysmorphia), irrational beliefs, and rational beliefs in a mixed-sex population of exercisers.
2. To develop a psychometric to assess irrational and rational beliefs concerning body image; the Body Image Beliefs Inventory (BIBI).
3. To examine the factor structure of the BIBI via confirmatory factor analyses.
4. To assess the criterion (concurrent and predictive) validity of the BIBI.
5. To determine the test-retest reliability of the BIBI.

Chapter 2

2.1 Theory of Rational Emotive Behavioural Therapy

2.1.1 Historical development of REBT. Rational emotive behavioural therapy (REBT) is a psychotherapeutic approach considered to be the original, and one of the main forms of, cognitive behavioural therapy (CBT) (David et al., 2005). In addition to Cognitive Therapy (CT) developed by Aaron Beck (1976), it serves as the foundation of the development of CBT. Similar to prominent CBT approaches (e.g., CT; Beck, 1976), REBT proposes that emotional disturbances are largely the result of dysfunctional thinking patterns (Dryden & Branch, 2008). In REBT, this relates to thinking patterns marked by rigidity, extremity, and dogma referred to as irrational beliefs (DiGiuseppe et al., 2014). Consequently, a key objective in REBT is to identify irrational beliefs as the primary component of disturbance and rational beliefs as the antidote and to promote psychological wellbeing.

REBT was founded by Albert Ellis in 1955 entitled “Rational Therapy” (RT), and primarily focussed on cognitions. RT was criticised by some scholars for overemphasising the role of cognitions, rather than behaviours and neglecting emotions (McMahon, 2011). Ellis attempted to rectify this misconception by highlighting the centrality of the connection between cognition and emotions in his approach: and in doing so, renaming it “Rational Emotive Therapy” (RET; 1962). RET faced another rename to Rational Emotive Behavioural Therapy (REBT) in the 1990s, this time influenced by Corsini (1994), who supported Ellis to acknowledge the salience of the behavioural component within treatment.

Initially trained in psychoanalysis, Ellis developed REBT as he became dissatisfied with the therapeutic effects of psychoanalysis, citing them as ineffective. Ellis began experimenting with different forms of therapy such as psychoanalytic psychotherapy and eclectic analytic therapy. Ellis began examining ancient, modern, and scientific philosophy

including the works of Epicurus, Epictetus, Marcus Aurelius, Confucius, Lao-Tsu, Gautama Buddha Kant, Spinoza, Schopenhauer, Popper (1959), and Russell (1965). These works profoundly influenced Ellis's conception that humans largely disturb themselves, articulately captured in the proverb "People are not disturbed by things, but by the view which they take of them" (Epictetus 1948, 55-135 A.D). Ellis believed that this premise provided the underpinning of an effective and efficient form of psychotherapy.

Whilst influenced by ancient and modern philosophy, REBT was also influenced by significant works in psychology such as Horney's (1950) concept of the "tyranny of shoulds", which provided the impetus for the focus on rigid, absolute, and dogmatic evaluative cognitions in the development and maintenance of psychological disturbance. Korzybski's (1933) works upon general semantics, which highlighted the impactful and pervasive influence of language upon cognitions, and Adler's (1927) work upon inferiority feelings, which provided the underpinning for one of REBT's central components – self-rating and ego anxiety. In addition, REBT primarily draws upon the epistemology of science to conceptualise human functionality and disturbance (Ellis, 1997). More specifically, it adopts Popper's proposition of falsifiability (1959), in which reality should be held tentatively, and examined empirically, thus, individuals should actively aim to falsify their proposed hypothesis regarding the world they operate in.

2.1.2 Theoretical underpinning and assumptions of human nature. The theory of REBT is based on a specific set of assumptions that underpin the complexity and fluidity of human nature. Ellis (1979a) proposed that we have an innate proclivity to be hedonistic in which we are predisposed to maximise our chances of survival and happiness, whilst simultaneously acknowledging the limits of our social milieu. Ellis stipulated that whilst self-interest is a primary objective, it is imperative to balance this goal by considering others that are involved, contrary to 'selfishness' in which the needs of others may be completely

disregarded (Ellis & Becker, 1982). REBT holds that we are typically goal-orientated, and the ‘rational’ in REBT refers to “that which helps us to achieve our basic goals and purpose” and ‘irrational’ refers to “that which prevents us from achieving our goals and purpose” (Dryden, 1984c, p.238). Therefore, rationality is not considered absolutist, but rather, is relative. Additionally, REBT postulates that individuality is central in human experience in that we greatly differ in what brings us happiness. In so, REBT is not an approach that navigates individuals to identify what makes them happy, rather, supports them to identify what thwarts their pursuit of happiness and how they can attenuate these barriers.

Ellis (1979b) remarked that humans are complex and fluid organisms with innumerable characteristics, facets, beliefs, values, emotions, and behaviours, predisposed to be fallible and imperfect, in a constant state of flux rather than immobile, and hold a capacity to change. Ellis (1979b) outlined two basic biological dispositions that were rooted in evolutionary processes. First, Ellis proposed that irrationality has a biological basis, and can be found in the vast majority of humans, irrespective of social and cultural groups (i.e., irrational beliefs are found in all genders and cultures) and intelligence (i.e., irrational beliefs are still found among the highly intelligent and educated). Second, Ellis proposed that humans have the capacity and potential to alleviate and manage this irrationality and in doing so promote self-actualization.

Ellis (1957) stressed the importance of cognition in human experience. REBT purports that human emotional experience is inextricably linked to other modalities of experience such as physical sensations, cognitions, and behaviours, with cognitions being central in this interaction. Therefore, in REBT the most effective way of creating long-term behavioural and emotional change is via cognitive reconstruction. Moreover, REBT elucidates the inferential nature of difficult events (known as Activating events/adversities) and illustrates how the way we perceive such events influences cognitions, emotions, and

behaviours (Ellis, 1994c). One of REBTs distinctive contributions to the field of CBT is the distinction between irrational and rational beliefs. Rational beliefs refer to evaluative cognitions that hold personal significance and are preferential in nature. They are characterised by expressions such as "desires", "preferences" "wants", "likes", and "dislikes." Humans typically experience emotions such as pleasure when they achieve what they desire and experience healthy negative emotions (e.g., frustration, sadness, concern) when they do not achieve what they desire. These negative emotions are moderated by the salience of the preference and are conceived as a healthy response when they do not significantly interfere with functionality or goal attainment. Conversely, irrational beliefs are typically absolute and characterised by expressions such as "musts" "shoulds" "oughts", and "needs" and they underpin unhealthy negative emotions that grossly interfere with human functionality and hinder goal attainment. As a consequence, rational beliefs tend to underpin adaptive behaviours (e.g., approaching challenges), whereas irrational beliefs tend to underpin dysfunctional behaviours such as withdrawal, procrastination, and substance misuse (Ellis & Knaus, 1977; Ellis, 1988; Ellis & Velten, 1992).

According to REBT, human disturbance can fall under two fundamental categories: ego disturbance and discomfort disturbance (Ellis, 1979a). Ego disturbance pertains to humans' tendency to make demands upon the self, others, and the world. If such demands are not met in the past, present or future, individuals tend to disturb themselves through depreciation. This occurs via two mechanisms. First, the individual provides themselves with a global negative rating. Second, the individual considers themselves as bad or less worthy (Dryden, 1984b). Discomfort disturbance or frustration intolerance includes placing demands upon the self, others, and the world, however, includes the addition that life and life conditions must be comfortable and not difficult. Consequently, to promote psychological

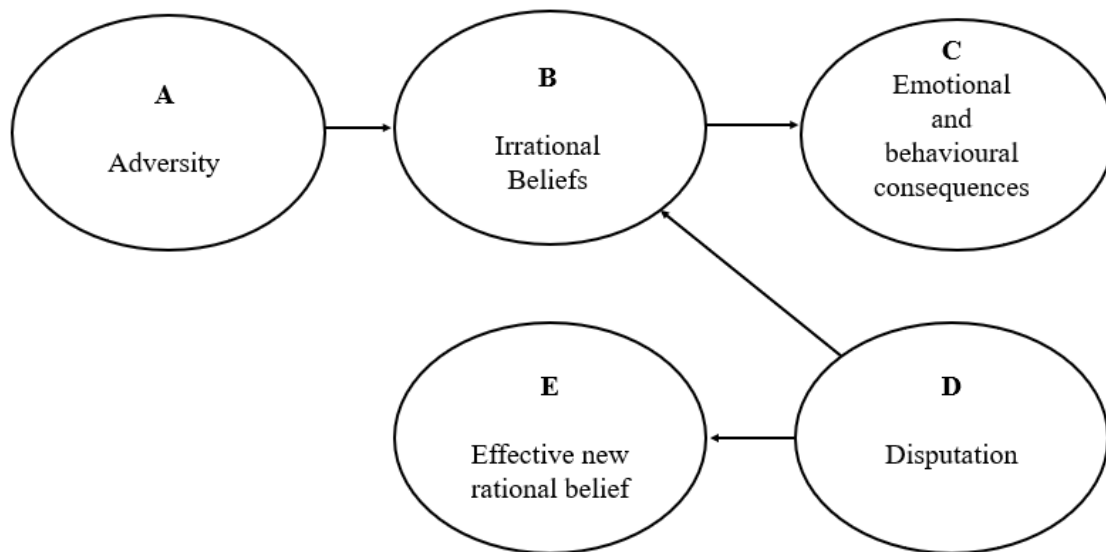
health, REBT advocates the importance of developing unconditional self-acceptance and high-frustration tolerance (Ellis, 1979a).

2.1.3 The ABC(DE) model. A central theoretical and practice component of REBT is the ABCDE framework (Ellis & Dryden, 1997). Akin to other prominent CBT approaches, REBT and by extension, the ABC (DE) framework works on the assumption that psychological disturbance is mainly a result of dysfunctional cognitive processes that are linked to our emotional and behavioural responses (Dryden & Branch, 2008). Thus, emotive (e.g., anxiety) and behavioural (e.g., avoidance) responses are a product of conscious and unconscious processes, in which manipulating cognitions can bring about changes in responses (e.g., concern rather than anxiety) (David et al., 2010). Cognitive behavioural approaches differ in their attribution, salience and type of cognitions involved in psychological disturbance. For example, REBT holds that irrational and rational beliefs are central in emotional and behavioural dysfunctionality, whereas CT (Beck, 1976) focuses on the role of automatic thoughts, schemas, assumptions, and Acceptance Commitment Therapy (ACT; Hayes et al., 1999) focuses on cognitive fusion.

The ABC (DE) framework (see figure 2.1) postulates that when individuals are presented with an adversity (A), such as poor treatment, failure, or setbacks, or - concerning body image – mistreatment or setbacks perceived as relating to appearance (e.g., appearance-orientated bullying) it is their beliefs (B) about A, rather than A itself, that underpins their subsequent behavioural, physiological, and emotional responses (C). A's comprise of 'descriptions' (My body is exposed in the room) and 'inferences' (People are going to judge me negatively) (Dryden & Branch, 2008) and typically start with the pursuit of personal and important goals (e.g., "I want to be desired, approved of physically"), which are compromised when encountering an A. A's are typically past, (e.g., childhood bullying), present (e.g., negative appearance-related comments), or future events (e.g., an important body exposing

event) or internal processes such as thoughts and feelings, or behaviours, which are embedded within memories or thoughts (conscious or unconscious). Humans have a proclivity to actively seek out and respond to A's due to their biological predisposition, interpersonal or social learning, and innate and established habits (Ellis, 1994). A's rarely operate in isolation and typically interact with B's and C's. To this end, humans bring their goals, cognitions, and physiological propensities to A's (Dryden, 2021). REBT asserts that unhealthy negative emotions (UNEs: anxiety, depression, anger) and maladaptive behaviours (e.g., avoidance, withdrawal, overindulgence) arise from specific irrational beliefs (demandingness, frustration intolerance, awfulizing, and self-other-, or world-depreciation). Contrarily, healthy negative emotions (HNEs: concern, sadness, assertiveness) and adaptive behaviours (e.g., preparation, approach, expression) arise from specific rational beliefs (preferences, frustration tolerance, anti-awfulizing, and self-, other-, or world-acceptance; Ellis & Dryden, 1997). Once generated, consequences can generate new activating events, producing secondary (meta) consequences (i.e., meta-cognitions: depressed about being anxious) through a series of secondary irrational beliefs. To abate this, REBT encourages individuals to actively dispute (D) (i.e., cognitively restructure) their irrational beliefs and formulate adaptive and effective alternatives (i.e., rational beliefs), consequently, fostering adaptive cognitive, behavioural, physiological, and emotional responses (Ellis, 1962; Diguiuseppe et al., 2014). In REBT, the ABC (DE) provides a psychological blueprint for identifying, challenging, and replacing unhelpful cognitions that hinder human functionality and quality of life (Maclaren et al., 2016).

Figure 2.1. A schematic of the ABCDE process



REBT postulates that humans can hold both irrational and rational beliefs. REBT typically operates in a non-bias manner towards A, in that A's may be valid or invalid (e.g., Description at A: "John ignored my wave in the street the other day"; Inference at A: "he ignored my wave because he hates me") and the primary objective is not to restructure or challenge the descriptions or inferences made at A, rather to work on the B's (e.g., "It is awful that Johns hates me, it must mean I am worthless") that largely contribute to the disturbance at A. This approach is referred to as the 'elegant solution' (Ellis, 1962), as tackling B's offers a pervasive and effective solution to emotional disturbance, as beliefs are often held deeply, and perceptions (i.e., descriptions and inferences) at A can often be fleeting in nature. Indeed, A's can often be valid and not suitable for disputation (Ellis, 1957). The disputation process (D) entails examining beliefs based on three fundamental criteria relating to the psychological composition of the belief's validity (Is there valid evidence to support this belief?), logic (does this belief make logical sense?), and utility (is this belief helpful?) with the goal to develop and internalise beliefs that meet these requirements (DiGiuseppe et al., 2014). When disputing irrational beliefs REBT deploys a vast array of techniques that are not limited to

only cognitive techniques. For example, REBT utilises experiential methods that are emotive (rational emotive imagery; Lipsky et al., 1980), behavioural (e.g., behavioural experiments, shame attacking; Ellis et al., 2010), to offer an effective and comprehensive method upon disputation (Dryden, 2009). REBT states that it is important to approach beliefs in such a manner, as beliefs may not always be readily accessible, and thus, can be held in the implicit rather than explicit memory systems (David et al., 2003), thus, a collective of emotional, cognitive, and behavioural techniques affords a thorough approach for appeasing their impact.

2.1.4 Conceptual underpinnings of irrational and rational beliefs. Irrational beliefs are marked by illogicality, lack of empirical support and are unpragmatic whilst rational beliefs are logical, have empirical support and are pragmatic. Within REBT, rational beliefs relate to psychological rather than philosophical definitions (Ellis et al., 2010). Thus, to be considered 'rational' a belief does not have to meet all three criteria but must meet at least one. Moreover, rational beliefs do not necessarily operate by rational approaches in epistemology (e.g., Popper's critical rationalism, Quine-Duhames thesis, postmodernism, constructivism).

Irrational and rational beliefs are typically utilised to define cognitions (i.e., hot cognitions, appraisals, evaluations) contrary to terms such as dysfunctional and functional thoughts ascribed by CT (e.g., automatic thoughts). Moreover, terms such as adaptive and maladaptive are typically used to depict behavioural manifestations of beliefs, whereas terms such as healthy and unhealthy pertain to emotions and physiological sensations derived from beliefs (Ellis et al., 2010). Terms such as positive and negative are less frequently used to describe irrational and rational beliefs: certain forms of 'positive thinking' have the potential to be harmful and therefore are not 'rational' (e.g., delusional positive thinking). Similarly,

‘negative thinking’ is not always necessarily irrational as it may be an accurate evaluation of a situation (e.g., realistic negative appraisals) (David et al., 2010)

2.1.4.1. Philosophical underpinnings of beliefs. The notion that humans can hold destructive and problematic beliefs but also can hold constructive and helpful beliefs originated from ancient philosophers. Indeed, Gautama Buddha highlighted “four noble truths,” which possessed characteristics of both irrational and rational beliefs. Greek and Roman Philosophers such as Plato, Aristotle, Socrates, Epicurus, Epictetus, Marcus Aurelius, and Seneca also emphasised the significance of beliefs in emotional disturbance (Ellis et al., 2010). Thus, the idea of irrational and rational beliefs dates back centuries and their theoretical conceptualisation would have not been conceived without Ellis’s connection with these philosophical foundations.

Ellis's conceptualisation (1962) of irrational and rational beliefs is underpinned by several hypotheses. First, humans are constructivist and have a relative degree of autonomy, which can often be diminished by intense innate or biological proclivities and by social internalisation to think, feel and behave in particular ways. There is a tendency to have several goals and purposes, typically to survive, minimize pain and maximize happiness. Cognitions are influential in electing goals and values and are intimately linked to behaviours and emotions. Desires are first marked by wishes and preferences such as "I want to be approved by important others." and "I want to lose weight.". People may also hold rigid, absolutist musts and demands such as "Because I want to be approved of by others, I absolutely must be." and "Because I want to lose weight, I absolutely must". Preferences typically underpin healthy responses when preferences are thwarted (e.g., frustration, sorrow, remorse), whereas demands often underpin unhealthy responses demands are not met (e.g., anxiety, rage, depression).

The notion that individuals can dispute and challenge (i.e., cognitively reconstruct) their cognitions (i.e., irrational beliefs) dates back over 2500 years to Gautama Buddha, who advocated our capacity to manage adversity, set goals and promote our desires. This started by acknowledging their role in disturbance by turning their desires and preferences into dogmatic musts. To counteract this, Buddha educated individuals to approach their disturbance by minimizing their cravings, emptying their desires, and consequently reaching Nirvana, conceived as a complete state of peace and desirelessness. Buddha advocated an action-orientated approach to life that was characterised by virtues of patience, practicality, self-discipline, and mindfulness of the labile nature of experiences. In 470 B.C Greek philosophers such as Socrates, Plato, and Epicurus began advocating the importance of examining social and political standards, and introspective thinking. Their postulations were met by Rome Stoics, such as Zeno and Chrysippus around the third century B.C. Later on, Epictetus (55 to 135 A.D) promoted Stoicism, as too did his pupil Marcus Aurelius (121 to 180 A.D.). It was at this point his renowned proverb was conceived "It is not the misfortunes that happen to you that upset you, but your view of them.". This quote embodied the notions depicted by modern constructivist philosophy upon human disturbance.

2.1.4.2. Psychological underpinnings of beliefs. In the late 19th century, psychologists including Pierre Janet (1889) and Robert Thorndike (1919), stressed the salience of the self in disturbance and theorised that people generate their irrational beliefs, as such they can reconstruct them and develop healthy and adaptive rational beliefs. However, as influential as their insights may have been, their work was later overshadowed by Sigmund Freud whose psychoanalytical approach purported that individuals' early childhood experiences were deeply rooted in unconscious processes, rendering them impenetrable to reason solely (Ellis et al., 2010). Creator of Behavioural therapy (BT; 1914) John B. Watson, focused on the behavioural adaption to feared stimuli as a mechanism of reconstructing

irrational thinking and maladaptive behaviours, rather than explicit conscious reflection and disputation. Furthermore, psychoanalysts such as Adler (1946), Horney (1950), and Fromm (1956) discussed the role of self-created ideas that contributed to the disturbance of humans, however, their conceptualisations, neglected clear mechanisms to attenuate and reconstruct dysfunctional cognitions. However, Rogers (1961) and Perls (1969), addressed this criticism, by disputing individuals' maladaptive beliefs, typically in implicit and indirect methods by employing emotion-eliciting and behavioural stratagems. In the 1950s Ellis developed REBT, an eclectic approach that integrated cognitive, emotional, and behavioural techniques. REBT presented irrational and rational beliefs as the core of human functionality.

There is a significant body of empirical literature that explores the role of dysfunctional beliefs in psychological disturbance in particular depression and anxiety (Otlea et al., 2017; Beck, 1976; Burns, 1980). In prominent CBT approaches (e.g., CT) these are better known as cognitive distortions coined by Beck (1979) and later expanded by Burns (1980). Cognitive distortions relate to faulty processing that leads to identifiable errors in thinking and includes distortions such as emotional reasoning, mental filtering, mind reading, and personalisation (Burns, 1980). Cognitive distortions are central to the conceptual framework of CT and are identified as being essential in the maintenance of emotional disturbance (Beck, 1979). Albeit cognitive distortions were first identified in patients with depression they have been found in other disorders such as sexual dysfunction (Leiblum & Rosen, 2000; Fisher et al., 1999), eating disorders (Shafran et al., 1999), and gambling addictions (Delfabbro & Winefield, 2000). REBT acknowledges and concurs with the centrality of faulty cognitions in emotional disturbance as posited in CT (Beck, 1979; Burns, 1980). However, REBT (Dryden, 2009) holds that such distortions almost exclusively derive from irrational beliefs, in particular primary beliefs (i.e., demandingness). Thus, some of the most prominent distortions such as all or nothing thinking (or dichotomous thinking), mind

reading, emotional reasoning, and labelling can be considered to be underpinned by irrational beliefs. For example, all-or-nothing thinking characterised by an inability or unwillingness to see shades of grey, with events being only perceived in extremes as wonderful or awful, perfection or a complete failure: "If I fail at any important task, *as I must not*, I'm a total failure and completely unlovable!"; Jumping to conclusions characterised by extending knowledge beyond the available data: "Since they have seen me dismally fail, *as I absolutely should not have done*, they will view me as an incompetent fool."; Mind reading characterised by the inaccurate belief that we know what other people are thinking: "Because they are laughing at me for failing, *as I absolutely should not have done*, they will despise me forever."; Emotional reasoning characterised by the belief that our feelings are indicative of reality: "Because I have performed so poorly, *as I absolutely should not have done*, I feel like a total failure, and my strong feeling proves that I am a failure!"; and Labelling characterised by overgeneralisation of the value of the self based on limited instances: "*Because I must not fail* at important work and have done so, I am a complete loser and failure!". To this end, REBT can be considered to operate alongside prominent conceptions such as automatic thoughts and cognitive distortions, however, implies that demandingness is at the core of their psychological disturbance and therefore pertinent in alleviating their impact (Dryden, 2009).

2.1.4.3. Multilevel analysis of beliefs. Irrational and rational beliefs are often examined under three varying levels: computational, algorithmic-representational, and implementational (David et al., 2003). Computational level theory pertains to the goal of any given computation and the logic in which it is carried out. Thus, a key question would be what is the goal/function of irrational and rational beliefs? Research consensus within the field of REBT (e.g., Ellis, 1994; Turner, 2017) indicates that IBs/RBs refer to evaluative or “hot” cognitions”, and therefore serve an evaluative functional purpose. The terms “cold” and

“hot” cognitions derive from Abelson and Rosenberg (1958) who distinguished between knowing (cold) and appraising (hot). Cold cognitions (Lazarus & Smith, 1988) pertain to an individual’s internal representation of events whilst hot cognitions pertain to how humans appraise and process cold cognitions (David & McMahon, 2001). Cold cognitions include surface level and deep cognitions, which are consciously accessible. Surface cognitions are often conceptualised as automatic thoughts, inferences, or assumptions by cognitive therapists, whereas deeper cognitions relate to core beliefs, schemas, and other semantic-based representations (Eysenck & Keane, 2000). Hot cognitions are commonly known as appraisal or evaluative cognitions and refer to the processing of cold cognitions in terms of their personal salience for wellbeing (Ellis, 1994; Lazarus, 1991). Thus, during adversities (e.g., receiving a negative appearance-related comment) there is a tendency to generate four distinctive outcomes moderated by the interaction of cold and hot cognitions: (1) distorted representation of the event/negatively appraised; (2) non-distorted representation/negatively appraised; (3) distorted representation/non-negatively appraised; (4) non-distorted representation/non-negatively appraised (David et al., 2003).

Lazarus’ (1991) appraisal theory of emotions holds that although cold cognitions contribute to cognitive appraisals, it is the appraisals (i.e., hot cognitions) that are fundamental in emotional responses, therefore, the impact of cold cognitions upon emotions are heavily moderated by hot cognitions. Research supports this indicating that when cold cognitions remain unevaluated that they are inefficient in generating emotions (Lazarus, 1991; Lazarus & Smith, 1988; Smith et al., 1993). Different approaches within CBT (e.g., REBT, CT, ACT) vary in the salience placed upon different levels of cognitions (David & Szentagotai, 2006; Wessler, 1982). REBT theory deals explicitly with evaluative/hot cognitions (i.e., irrational and rational beliefs) as key in emotional responses, instead of cold cognitions (assumptions, inferences, automatic thoughts – in REBT, these are the ‘A’), thus,

the theory can be conceived as congruent with more contemporary developments in cognitive psychology. Our internal representation of activating events (A's) heavily depends on the interaction between the activating events and our irrational and rational beliefs. Cold cognitions can produce varying operant behaviours (e.g., avoidance), which in turn can be appraised by an irrational and rational lens, consequently, generating emotional responses and physiological sensations. Indeed, research by Szentagotai & Freeman (2007) supports this interactive model of cold and hot cognitions by illustrating that patient's symptomology of major depressive disorder was generated by automatic thoughts (i.e., inferences at A) when associated with an irrational belief (e.g., demandingness).

The algorithmic representational level theory outlines the specifics of representations and the algorithms that derive from them. Initially, Ellis's seminal work (1962) postulated eleven core irrational beliefs, however, more contemporary manifestations of REBT have identified four prominent categories of irrational cognitive processes: demandingness (DEM), awfulizing (AWF), frustration intolerance (FI), and self-depreciation (SD) (DiGiuseppe, 1996). DEM pertains to extreme, absolutistic, and rigid requirements characterised by expressions such as "needs," "shoulds", and "musts." Additionally, they possess an evaluative facet (how desirable/undesirable is this?) and logic facet (what is expected?). AWF pertains to an evaluation that conditions are more than 100% bad and that the worst possible things could/have happened to him/her. FI pertains to the belief that one cannot (or envision) withstand, or endure a given condition, with the addition that life holds no joy or happiness if their demands of what should not occur, occurs. SD pertains to the proclivity for individuals to excessively, critically, and globally evaluate themselves, others, and living conditions. The four irrational beliefs are pervading and span across varying contextual areas (e.g., work, academia, relationships, appearance) about ourselves, others, and life. Ellis (1962), states that DEM is the core/primary irrational belief, whereas AWF, FI and SD are derivative/secondary

beliefs. Research has indicated the following information processing sequences for irrational beliefs: 1) DEM; 2) AWF, and/or FI, and/or SD, and 3) dysfunctional consequences (DiLorenzo et al., 2007). For example, the demandingness belief ("I need to have the perfect body") could be met by a secondary belief ("I need to have the perfect body and if I do not it's awful"), and as a result, lead to dysfunctional consequences (e.g., the adoption of extreme dietary practices to manipulate body composition). Research indicates that the algorithmic representational levels of irrational and rational beliefs in our cognitive systems can be represented in two ways. Firstly, beliefs occur as hot cognitions that are organized as propositional representations (Ellis, 1994). Propositional representations refer to the smallest unit of knowledge that can be utilised to appraise whether it is true or false (Anderson, 2000). Second, irrational beliefs represent evaluative cognitions that are stored as a type of schema (DiGiuseppe, 1996). Schemas are complex structures that represent a person's idiosyncratic conceptualisation of reality, and behavioural modalities fit for that reality (Anderson, 2000). David et al (2005) have highlighted that DEM and SD appear to be evaluative schemas, while AWF and FI are hot cognitions organized as propositional representations.

2.1.4.4. Cultural underpinnings of beliefs. Another important question relating to the development of irrational and rational beliefs is the role of culture and society. REBT holds that humans typically have motives and needs that determine and drive behaviour. Valence is placed upon facets of our social and physical milieus that satisfy our needs. To this end, valence determines whether something is hindering or facilitating our needs (Barrett, 2005). If this valence is held by a group of individuals, they generate a basis of values and social norms. Culture represents the internalisation of these values, and civilization represents the culture in motion. Thus, our culture can be conceived as a construct that holds varying beliefs, perceptions, behavioural patterns, and ideologies that are disseminated socially, resulting in in-group distinctiveness and outgroup differences (Buss, 2001; Cosmides &

Tooby, 1992). Thus, regarding body image, culture may determine the valence and centrality of appearance in one's life, identify norms of what this appearance should look like (e.g., the thin ideal), and may depict the responses we should take if we do not meet such norms and void such values (e.g., excessive exercise, rigid dieting, cosmetic surgery). Therefore, considering the social and cultural development, maintenance, and operations of irrational and rational beliefs is crucial.

According to social science models (e.g., Cosmides & Tooby, 2006), the human mind comprises information (beliefs, thoughts, attitudes, knowledge) that has primarily derived externally – that is, from our social-cultural environments. The architecture of our mind involves a variety of functional components associated with learning, that often have a biological basis (Cosmides & Tooby, 2006), the same mechanisms involved in these functions are involved in learning and internalising stimuli associated with beliefs (e.g., irrational, and rational beliefs). Thus, this model posits that irrational and rational beliefs develop from our social-cultural environment, in that our culture permeates irrational and rational ideas into our conceptualisation of ourselves and the world we reside in, and the brain has structures that are used to influence these ideas. Thus, our mind comprises a collective of representations of our social culture which are typically content-independent. In so, if an individual is exposed to an environment rich in irrational beliefs (e.g., "People need to look perfect, if they do not they are complete failures") they are likely to internalise and develop irrational beliefs, contrarily, an individual exposed to a rational belief rich setting is likely to primarily develop rational beliefs (e.g., "Not meeting an appearance ideal does not mean we are failures, just human"). This model provides a plausible case to understand the role of our social-cultural environment upon irrational and rational belief development. It allows us to understand that we become irrational and rational based on our education, social learning, and reinforcement of such teachings. Therefore, cultures that hold great importance

in the acquisition of beauty and permeate beliefs such as "I must look perfect" may predispose its inhabitants to irrational body image beliefs. Such ideologies are powerful as they are generated using the same mechanism used to develop other cognitive content such as "grass is green" and "the sky is blue" which can often go unchallenged. Research has supported this model indicating that children nurtured in environments rich in irrational beliefs (e.g., parents held high irrational beliefs) had a proclivity to displaying higher levels of irrational beliefs than their lower counterparts (Barlow & Coren, 2004). This line of research may also highlight why psychopathology in body image, such as eating disorders can typically have a hereditary element.

2.1.4.5. Evolutionary underpinnings. Examination of the biological/evolutionary basis of rational and irrational beliefs relates to the purpose (i.e., natural selection) of these beliefs. Accordingly, it would be conceived that both irrational and rational thinking, may have once had some form of adaptive purpose for our ancestors (Ellis et al., 2010). Given the functional and psychological benefits of rational beliefs, it is plausible that they may have had some adaptive utility, rather than irrational beliefs. Buss et al (1998) found that characteristics of psychological attributes are susceptible to evolutionary manipulation. Designs with evolutionary make-up are typically specialized in solving adaptive problems. Adaptive problems typically are highly ubiquitous within the historical evolution of the species, and solving these problems supports the reproduction of the organism (Gould, 2002). Based on this postulation, scholars have proposed that irrational beliefs may have evolved by design (Pelusi, 2003; Ruth, 1992). For example, demandingness beliefs, that when not granted may have invoked emotional and behavioural responses including anger and rage may have been adaptive for our ancestors at the time they evolved in our environment of evolutionary adaptiveness (EEA; the statistical composite of the kind of environments our ancestors faced during the past one million years, Pelusi, 2003). If status and successfully

vying against rivals were supported by demanding that it should not occur and using aggressive approaches to ensure this outcome, it may have served the purpose of solving this adaptive problem. Indeed, research indicates that homicides are typically carried out by men against other men, often concerning rivalry over status and female affection (Pelusi, 2003). However, in today's contemporary society such methods would unlikely equate to an adaptive response due to social, legal, and emotional problems. This notion is supported by the mismatch theory (i.e., the mismatch between the function of irrationality in the EEA and our current environment).

Such theories highlight the potentially evolutionary basis of irrational beliefs and support Ellis's (1994) contentions that irrationality is unlikely to appear by coincidence. Building upon this contention research (David et al, 2019) has indicated that irrational beliefs may have both prefrontal and subcortical (e.g., amygdala) implementation, whereas rational beliefs have primarily prefrontal implementation. This may allude to the difficulty of reconstructing irrational beliefs, due to their evolutionary coding origins, and suggests that rather than replacing irrational beliefs with rational beliefs, instead, it may be fruitful to manage irrational beliefs whilst strengthening rational beliefs. Although the biological basis requires further inquiry its interaction with culture offers insights. Culture can be assimilated and filtered by evolutionary functionality. In so, individuals can still develop irrational beliefs even within rational belief rich environments. This process is akin to the understanding of innate language programs, in which children who are not raised by adults develop a specific speech and language, despite limited exposure to linguistic stimuli (Pinker, 1994). It may be plausible that such findings can translate to the development of irrationality.

Evolutionary, beliefs relate to a special form of cognitive structure. Humans have a distinctive capacity to formulate cognitive structures. When considering other animals such as birds, they have a variety of sophisticated cognitive structures, but may not necessarily

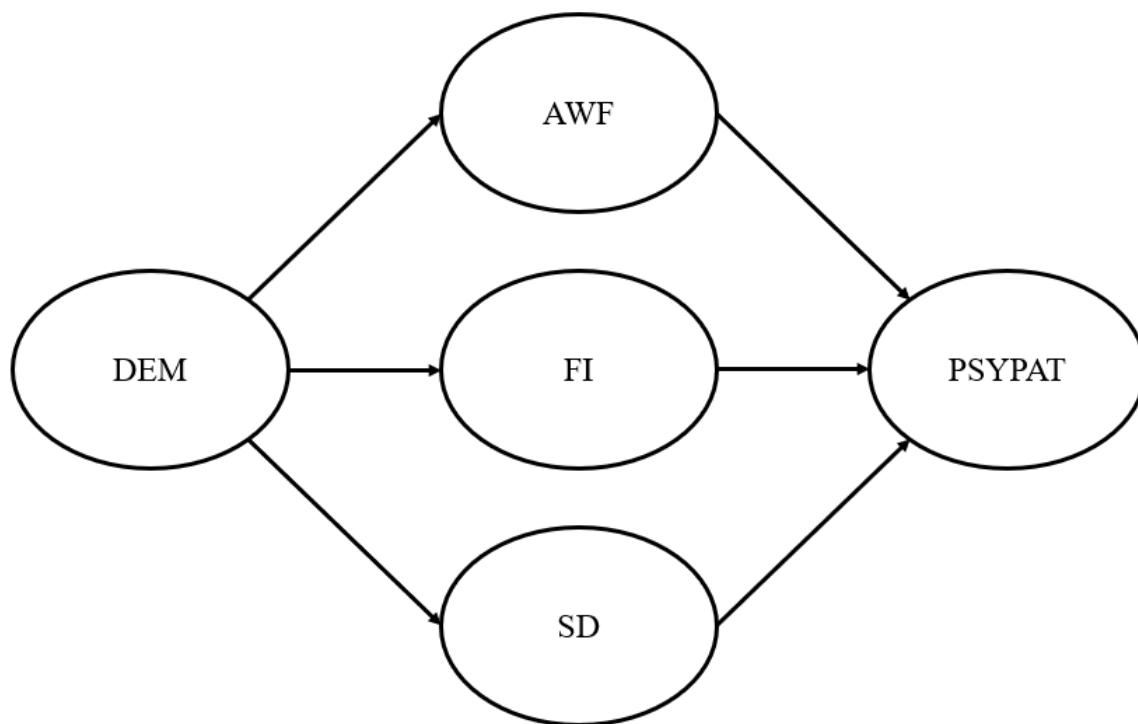
have beliefs. If we consider the process of classical conditioning, if we train a mouse to associate the word 'cheese' with cheese there will be a mental association, however, if we begin to unpair the stimuli with the association the link will be broken. Contrarily, with humans, we can present no cheese and say the word an innumerable number of times, and this association will remain present. Deacon (1998) referred to this phenomenon as symbolic thought. Irrational and rational beliefs can be considered as representing a form of symbolic thought, illustrating why they can be pervading and enduring (David et al., 2019). Within symbolic thought, the beliefs do not rely upon contextual dependency, as such are independent and liberated. Our fast-paced world is somewhat different to our slow-paced genetic evolutions (Richerson and Boyd, 2005), however, both are susceptible to adaptive distortions of valid reality. From an evolutionary standpoint, it can be conceived that sometimes it is adaptive to see reality as it is, and other times it can be adaptive to see reality distorted. For instance, it may for some be adaptive to conceive our enemy as a vile creature as being more motivating than regarding them as akin to ourselves. We see such distortions applied within sporting settings when matters of the game are paralleled with life and death (e.g., " This is a must-win game")(Turner, 2016). The same may be true when considering the acquisition of the ideal body, one may conceive the idea as absolutely necessary in which life would be completely miserable and insufferable if it did not happen.

In sum, irrational and rational beliefs represent evaluative, deep, complex, and pervasive cognitive constructs forged by culture and may hold a biological basis given their presence among varying individuals, cultures, and contexts. Importantly, irrespective of their conceptualisation both irrational and rational beliefs have been associated with different psychological outcomes and as such appear to be central to human functionality.

2.1.5 Irrational beliefs at the core of psychopathology. As a result of the increasing prevalence of mental disorders and the substantial economic impact associated with these, a

considerable body of research has contributed to identifying effective treatments that have long-term effects (Visla et al., 2016). However, establishing and disseminating a psychotherapeutic treatment modality requires not only validating and demonstrating its efficacy/effectiveness but also identifying specific psychological mechanisms that underpin its theory. Thus, all evidence-based psychological approaches have a distinctive way in which psychological disturbance is conceptualised and treated. REBT provides a model of psychopathology that conceptualises human disturbance (see figure 2.2).

Figure 2.2. REBT Model of Psychopathology



Note. REBT psychopathology model (Otlean et al., 2017). DEM, demandingness; AWF, awfulizing; FI, frustration intolerance; SD, self-depreciation; PYSCHPAT, psychopathology (e.g., anxiety and depression).

REBT theory holds that it is an innate feature for humans to have desires, in which we are orientated towards or away from things (Dryden & Branch, 2008). Thus, we do not merely hold inferences about the world we inhabit, rather we hold evaluations, and attitudes

about what we infer. These preferences (or desires) can vary in strength ranging from mild to intensely strong, with the stronger the preference the greater likelihood that it will become rigid and extreme (i.e., irrational) (Dryden & Branch, 2008). With body image, if I mildly want to lose/gain weight, I am unlikely to transform this belief into a rigid demand. However, if my desire to lose weight is intense and strong, then there is a greater proclivity (albeit not guaranteed) for it to transform into a rigid belief (e.g., "I really want to lose weight, therefore I must"). Typically, this is done in the attempt to making events more likely (i.e., losing/gaining weight). However, if this was how we operated it may be favourable to hold such rigid beliefs (i.e., "I want to lose weight, therefore, I must lose/gain weight" made me lose/gain weight). Instead, our rigid beliefs have very little impact upon reality, they only influence our response to reality (Ellis, 1957). It is this element that can contribute to disturbance as we attempt to wipe out all possibility of what must not happen. Irrational beliefs are deemed irrational due to their tendency (but not a confirmation) to diminish goal and purpose attainment (Diguiseppe et al., 2014). Moreover, the probabilistic nature of REBT proposes that irrational beliefs frequently lead to psychological disturbance, however, the claim that they do is not absolutistic. As such, REBT's view of human disturbance follows an anti-absolutistic lens.

Empirical evidence suggests a strong association between irrational beliefs and dysfunctional affective and behavioural outcomes (David, 2015). Dryden (2008) highlights a gamut of behavioural practices (or action tendencies) associated with holding irrational beliefs such as social isolation, avoidance, self-harm, reassurance-seeking, withdrawal, and physical and verbally attacking others. David et al. (2002) found that higher levels of irrational beliefs generated dysfunctional emotions (e.g., depressed mood and anxiety), whilst lower levels of irrational beliefs produced functional emotions (e.g., concern and sadness). Visla et al. (2016) meta-analysis found associations between psychological stress and

irrational beliefs. More specifically, irrational beliefs have been implicated as a key moderator in anxiety and depression. Additionally, irrational beliefs were also found to be a moderator between anger and age, with individuals from clinical populations increasing in anger with age. Finally, Papageorgiou et al. (2006) found that irrational beliefs were positively correlated with C-reactive protein, interleukin-6, tumour necrosis factor-alpha, and white blood cells, with results being preserved when controlling for sex, age, body mass index, physical activity status, and depression level. Therefore, the results may indicate that irrational beliefs are associated with higher levels of inflammation among healthy populations.

2.1.5.1. Demandingness beliefs and disturbance. Research has explored the association of specific beliefs with unhealthy emotions and maladaptive behavioural consequences in adult and child populations (David et al., 2002; David et al., 2005). Ellis (1994) conceived that there are three central types of demandingness that include: 1) "I must do well and win others' approval or else I am no good"; 2) "Others must treat me fairly and kindly and in the same way I want them to treat me. If they do not treat me this way, they are not good people and deserve to be punished"; and 3) "I must always get what I want when I want it. Likewise, I must never get what I do not want. If I do not get what I want, I am miserable". Demandingness beliefs have been associated with a variety of maladaptive behaviours such as comfort eating, aggression, interpersonal difficulties, social avoidance, and isolation (Bernard, 1998; Harrington, 2005; Watson et al., 1998). Moreover, REBT theory proposes that social anxiety may be underpinned by demandingness beliefs of meeting a socially acceptable standard set by our environments. Nicastro et al. (1999) research supported this notion, finding that those who endorsed higher levels of demandingness beliefs disclosed less about themselves when among audiences. Relating to body image, individuals with demandingness beliefs may experience social anxiety due to perceptions of failing to

meet societal body ideals. A large corpus of research has examined the association between demandingness and self-orientated perfectionism and maladaptive behaviour modalities including disordered eating (Pearsons & Gleaves, 2006), substance abuse (Hewit & Flett, 1991), diminished performance, unwillingness to share personal task results with others (Frost et al., 1995), suicide (Blatt, 1995), overspending and procrastination (Harrington, 2005a), relationship problems (Addis & Bernard, 2002), and a hostile dominant interpersonal style (Goldberg, 1990). In children, research from Silverman and DiGuiseppe (2001) indicated that children (aged 9-13) showed significant associations between demandingness beliefs and internalizing disorders (i.e., anti-social behaviour, depressive behaviour, fearful behaviour, and aggression). Overall, research indicates that demandingness beliefs are related to a broad range of behavioural challenges from eating disorders to interpersonal conflict, in both adults and children. Due to this, REBT endorses that demandingness beliefs are central to psychological disturbance.

2.1.5.2. Awfulizing, Frustration intolerance, and Self-depreciation and disturbance.

According to REBT, failing to meet demandingness requirements (regarding the self, other, or life) can lead to awfulizing, a perceived inability to cope (frustration intolerance), and self, other and life depreciation (Ellis, 1994). Awfulizing beliefs have received less attention in the field of overt behaviour. Of the scant research, awfulizing beliefs have been associated with anxiety (David, 2003), submissive interpersonal styles (Goldberg, 1990), social isolation (Watson et al., 1998), and unhealthy anger suppression and expression (Martin & Dahlen, 2004). It is hypothesised that the link between anxiety can be associated with individuals adopting a submissive, social avoidance strategy to try to abate difficult emotions (David et al, 2019).

Frustration intolerance beliefs are considered to prevent individuals from facing difficult circumstances, which prevents their ability to deal with inevitable obstacles in goal

attainment. Anger is often associated with frustration intolerance beliefs (Martin & Dahlen, 2004; Spielberger, 1999; Jones & Trower, 2004), in particular, Power and Dagleish (1997) reviewed literature in the field and concluded that anger is generated mostly in situations when the individual perceives that their goal has been intentionally blocked, which is considered to activate beliefs that this situation is intolerable (Ellis & Knauss, 1977). Visla et al. (2016) highlighted that frustration intolerance beliefs had the strongest association with psychological distress. Frustration intolerance beliefs have also been associated with exacerbating particular types of disorders, chiefly, those with self-control problems at the core such as addictive behaviours (Ellis & Knauss, 1977; Outar et al., 2018; Ellis, 2001; Bishop, 2001). Thus, self-control components such as delaying gratification, and effort expenditure can be compromised by frustration intolerance beliefs (Eisenberger, 1992). Moreover, frustration tolerance beliefs are linked to a range of maladaptive coping practices such as procrastination, comfort eating, self-harm, and overspending (Harrington, 2005a). Thus, REBT holds that maladaptive behaviours derive from frustration tolerance beliefs such as a) "I cannot cope with the discomfort of abstinence" (e.g., with substance, exercise, food), b) "I must not experience this discomfort", c) "I need to seek relief from this discomfort" (Ellis et al., 2010).

Ellis (1994) held that humans have a natural tendency to self-depreciate (i.e., to make global evaluations) regarding themselves, others, and living conditions. It is conceived that this proclivity may be a result of our cognitive system's innate capacity to generalize stimuli rapidly from limited occurrences, which derives from evolutionary requirements for efficient learning to promote survival. Accordingly, people tend to make global, enduring and less evidence-based conclusions based on rare behaviours or events (e.g., I failed this exam therefore I am a complete failure). Regarding logic, this cognitive process may render faulty appraisals, as no valid conclusion can be rendered based on inductive reasoning (David,

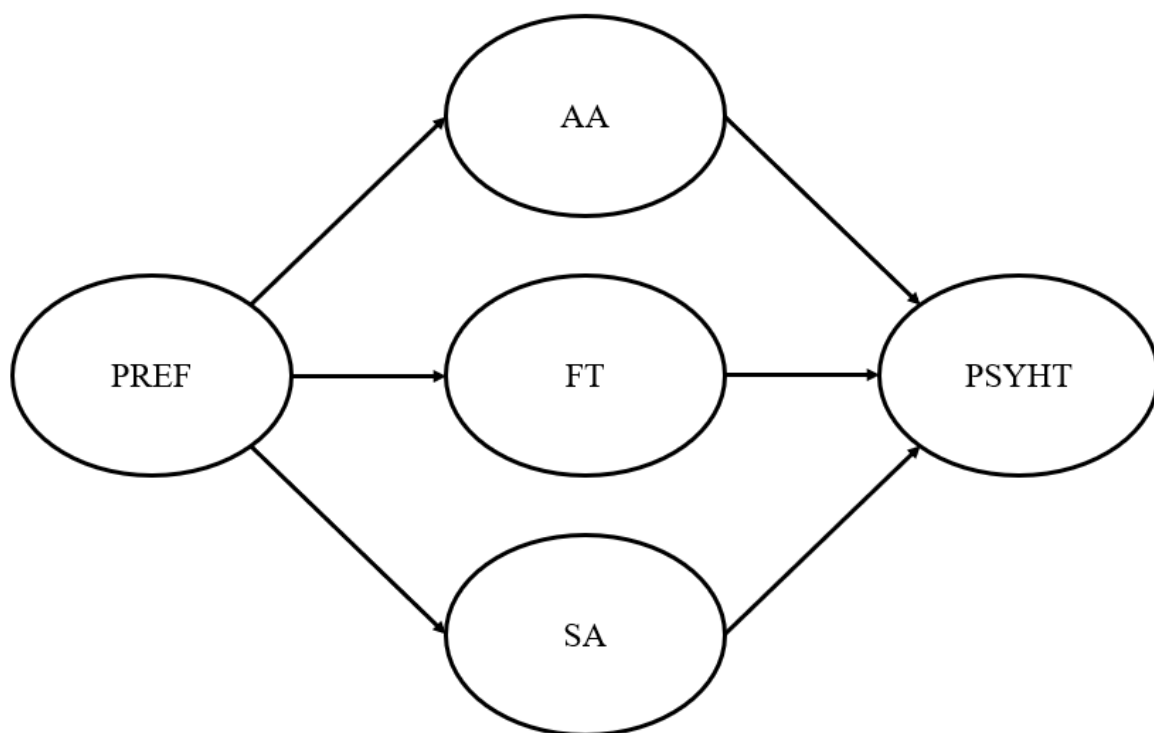
2006b; Ellis & Dryden, 1997). Self-depreciation has been associated with aggression and anger suppression and violent expression (Beck, 1999; Martin & Dahlen, 2004) and marital conflict (Addis & Bernard, 2002).

In sum, research indicates that irrational beliefs are associated with a range of psychological challenges supporting its core tenants. As such, REBT's principal aim is to support individuals to elucidate and attenuate their rigid, dogmatic and extreme desires (i.e., irrational beliefs) and instead develop and nurture flexible, non-extreme preferences (i.e., rational beliefs) to support psychological health (Bernard, 1991; David et al., 2019).

2.1.6 Rational beliefs at the core of psychological health. REBT theory also provides a model of psychological health. Analogous to the model of psychological psychopathology this model is structured around Ellis's ABC model. Flexible, preferential, and non-extreme, and pragmatic beliefs (B) are conceived as central in the development and maintenance of adaptive behaviours and functional emotions (C), when exposed to unpleasant, difficult, and goal-blocking situations (A). To this end, the dictum of psychological health can be considered as "People react healthily to things when they hold flexible and non-extreme attitudes towards these things." In REBT theory, four evaluative rational beliefs precede psychological health: preferences (non-absolutistic/flexible requirements), anti-awfulizing (or anti-catastrophizing), Frustration tolerance, and unconditional self-acceptance, other acceptance and/or the life situation. Unlike the model of psychological disturbance, the REBT model of psychological health has been less empirically examined (David, 2015; Hyland, et al. 2014), as such, the hypothesis of the role of rational beliefs as a protective factor against psychological distress and disorders is still under examination (Otlean et al., 2017). Moreover, as with irrational beliefs, there is incipient evidence suggesting that preferences are the primary appraisal mechanism, whilst anti-awfulizing, frustration tolerance, and unconditional self-acceptance are secondary appraisal

mechanisms (see figure 2.3), yet this proposed structure requires further enquiry (Otlean et al., 2017). Additionally, although previously considered as bipolar constructs in initial conceptualisation research via exploratory factor analysis (Bernard 1998), confirmatory factor analysis (Macavei, 2002), longitudinal research (DiLorenzo et al., 2011), and neuroscientific research (Tiba & Szentagotai, 2005) indicate that rational and irrational beliefs represent orthogonal and qualitatively distinct cognitive constructs (David et al., 2010).

Figure 2.3. REBT Model of Psychological Health



Note. REBT psychological health model (Otlean et al., 2017). PRE, preferences; AA, anti-awfulizing; FT, frustration tolerance; SA, self-acceptance.

The REBT model of psychological health does not merely postulate the endorsement of rational beliefs for mitigating the onset and maintenance of human disturbance, but rather, also considers them as operational to functional emotions, which can generate positive

emotional and behavioural responses and improved subjective wellbeing (Otlean et al., 2018). Research is growing on the role of rational beliefs in positive life outcomes and their association with positive psychology constructs (Otlean et al., 2018). Given the importance of positive constructs such as happiness, optimism, and positive affect largely, a great deal of empirical examination has been garnered to understand associated factors. Indeed, such constructs have been strongly correlated with facets of life such as income, relationships, autonomy, and social status (Otlean et al., 2018). Studies have found that rational beliefs had a weak-moderate positive association ($r = .25 - .33$) with life satisfaction and academic achievement (Balkis et al., 2012; Balkis, 2013). Otlean et al. (2018) examined the REBT model of psychological health and found that rational beliefs were associated directly and indirectly with optimism and happiness, with self-acceptance and preference beliefs being associated the strongest. The REBT model of psychological health provided an acceptable fit for predicting happiness and optimism ($\chi^2 = 407.54$, $df = 219$, $p < .001$; CFI = .91 ; TLI = .90; RMSEA = .05 [95% CI = .04 -.05]; SRMR = .06) and explained 33% of the variance in happiness scores, 40% in optimism scores. The parameter estimates found that preferences positively predicted anti-awfulizing, ($\beta = .83$, $p = .002$), frustration tolerance ($\beta = .85$, $p = .015$) and unconditional self-acceptance scores ($\beta = .43$, $p < .001$). In particular, self-acceptance beliefs positively predicted happiness ($\beta = .54$, $p < .001$), and optimism ($\beta = .58$, $p < .001$), with neither anti-awfulizing nor frustration tolerance predicting scores in happiness or optimism (Otlean et al., 2018). The authors proposed that greater flexibility (i.e., preferences) and acceptance may have a pertinent role in understanding the habitual cognitive styles in positive psychology that may bridge the gap between fields of psychology (Otlean et al., 2018).

Primarily research has examined the role of rational beliefs in psychological distress. Otlean et al. (2017) conducted a meta-analysis and found a medium negative association

between rational beliefs and psychological distress ($r = -0.31$). The data revealed that higher levels of rational beliefs were associated with lower levels of psychological distress, and contrarilywise. Moreover, these findings were found across a wide spectrum of negative emotions. As hypothesized, USA was a significant moderator, with a significantly larger effect size when compared to composite rational belief scores. Moreover, Hyland et al. (2014) examined the role of rational beliefs as a protective factor (i.e., psychological model of health) in posttraumatic stress disorder (PTSD). The REBT model of health provided a satisfactory fit of the data after modification indices were applied ($\chi^2 = 199.99$, $df = 94$, $p < .001$; RMSEA = .06 (CI 90 % = .05/.08); SRMR = .05; CFI = .93; TLI = .91). The model explained 76% of the variance in posttraumatic stress symptomology. All secondary rational beliefs were found to significantly predict posttraumatic stress levels, with self-acceptance beliefs being the strongest predictor ($b = -.61$, $p < .001$). Also, a moderate, negative direct effect was found between frustration tolerance and posttraumatic stress levels ($b = -.50$, $p < .001$). This research indicated the importance of acceptance beliefs, suggesting that when individuals internalise an acceptance view upon themselves that they can deal more adaptively in the face of adversities (Hyland et al., 2014).

2.1.6.1. Unconditional self-acceptance and psychopathology. A core tenant of REBT is the role of unconditional self-acceptance in psychological health (Ellis, 1962). This notion was supported and held by seminal theorists such as Carl Rogers, who hypothesized the role of conditional self-worth in psychological distress, in which unconditional self-acceptance (USA) was the solution that could foster wellbeing and functionality (Ellis, 1962; Rogers, 1951). Ellis (1962) proposed that any level of esteem predisposes individuals to vulnerability marked by conditional self-acceptance, and consequently, encouraged individuals to neglect their pursuit for esteem, and instead invest in USA. To this end, there is a growing corpus of literature examining USA's role in REBT's model of psychological health (Chamberlain &

Haaga, 2001a; Otlea et al., 2017; Oltea et al., 2018). Chamberlain and Haaga (2001a) developed the 20-item Unconditional Self-Acceptance Questionnaire (USAQ). Their research indicated that lower levels of USA were associated with anxiety, depression, and lower levels of self-esteem, life satisfaction and happiness. In a related study, Chamberlain and Haaga (2001b) highlighted that those who endorse USA beliefs were less inclined to depreciate others who provided negative feedback and held more evidence-based perspectives of their performance. Additionally, Popov (2018) examined the predictive power of USA against self-esteem and found that USA significantly contributed to mental health indicators such as anxiety, depression, and subjective wellbeing, unlike self-esteem, supporting one of REBT's key postulations.

Research in USA has also highlighted its association with perfectionism. Flett et al (2003) examined USA with all three trait dimensions of perfectionism including self-oriented, other-oriented, and socially prescribed perfectionism. The findings indicated that USA was negatively associated with all three dimensions of perfectionism. Moreover, path analysis highlighted that USA mediated the association between depression and socially prescribed and other-oriented perfectionism indirectly and directly. Scott (2007) provided further support for these results finding significant associations between all three traits and USA. Furthermore, in athletes, Hill et al (2008) found that USA partially mediated the relationship between socially prescribed and self-oriented perfectionism. Finally, Hall et al (2009) found that USA mediated the relationship between exercise dependence and self-oriented perfectionism. Currently, there is a paucity of research examining USA and physical health outcomes. However, of the limited research, Palos & Viscu (2014) found a significant difference in USA scores in a rheumatoid arthritis group compared to controls, as well as elevated levels of anxiety and automatic negative thoughts.

In body image, a handful of research has examined the role of USA. Astani (2016) examined the associations between perceived sociocultural pressures to be thin, USA and thin-ideal internalization. Results indicated that USA was significantly and strongly associated with perceived social pressures to be thin and thin-ideal internalization ($r = -.50, -.44$, respectively). Moreover, a mediating model indicated a significant, medium partial effect between perceived sociocultural pressures to be thin and internalizing this ideal ($z = -1.97, p = 0.05$; $K2 = .010$). More recently, Hasani et al., 2021 examined the USA levels among women applying for rhinoplasty. The findings indicate that USA, along with perfectionism, life quality was negatively associated with seeking out rhinoplasty. In a related construct, Kam and Prihadi (2021) examined the protective property of mattering (i.e., feeling like one matters to people) and USA on social comparisons. Regression analysis indicated that USA was a negative significant predictor of social comparison ($b = -0.34, t(368) = -6.92, p = .000$.)

Rational beliefs are at the crux of REBT's model of psychological health and have been negatively associated with psychological disturbance (David, 2015; Hyland et al., 2014) whilst being positively associated with psychological health indicators such as happiness, optimism, life satisfaction and achievement (Balkis, 2013; Balkis et al., 2012; Oltean et al., 2018). In particular, a body of literature suggests that USA beliefs may be fundamental in abating human disturbance and fostering adaptive responses generally, and in body image specifically (Chamberlain and Haaga, 2001b).

2.1.7 REBT & other psychotherapeutic approaches

The term cognitive behavioural therapy (CBT) relates to a family of psychotherapeutic interventions and techniques which as a collective are widely recognized and boast the most extensive empirical support (Dryden, 2021). Notably, CBT is not monolithic and has evolved through several waves. The first wave of CBT comprised

behaviour therapy (BT), which includes the application of learning models such as operant and classical conditioning designed to manipulate overt behaviours (Dryden & Mytton, 1999). The first wave of CBT was coined due to discontent with current psychoanalysis approaches to neurosis which had largely been defined by Sigmund Freud. By the 1970s BT was considered the gold standard treatment approach for several psychological challenges such as anxiety, and phobias (Dryden & Mytton, 1999). However, irrespective of such success BT appeared to be less effective with conditions such as depression, this brought about discontent from two prominent psychoanalysts, Albert Ellis and Aaron Beck which brought about the dawn of second-wave CBT and the term Cognitive behavioural therapy. The second wave of CBT, considered the classic era designed new conceptualisations and methods derivative of BT, however, centralised on the importance of maladaptive thinking patterns in the formation of dysfunctional emotions and behaviours. CBT didn't reach popularity until the 1970s, by this point research refuted the psychodynamic approach to depression, conceived as unexpressed unconscious anger directed internally. Instead, CBT highlighted the role of cognitions regarding the self, others, and the future that were extreme, unrealistic, and negative mannered, which was referred to as the 'negative triad' (Beck, 1976).

Almost two decades ago the arrival of a "third wave" of CBT was established. This change occurred due to the emergence of new conceptualisations of psychopathology that emphasized individual's relationship with their thoughts and emotion as central to human disturbance rather than the content of their thought. Third-wave therapy focuses on constructs such as acceptance, values, goals, meta-cognitions, and mindfulness (Hayes, 2004) and included new psychotherapeutic approaches such as Acceptance Commitment Therapy (ACT), Dialectical Behavioural Therapy (DBT), Mindfulness-Based Cognitive Therapy (MBCT), Functional Analytic Psychotherapy (FAP), and many others. In particular,

ACT differs from other second-wave approaches (i.e., REBT) in that the emphasis on cognitions is not only upon specific types, situations and meaning but also on the process of the appraisal, in which awareness and "mindfulness of "metacognitive" processes of events and thoughts are considered (Hayes, 2004b) Additionally, ACT postulates that psychotherapeutic change can occur not only from changes in faulty cognitions (i.e., cognitive reconstructing) but also through awareness and acceptance of distress and difficult situations, as such changing metacognitions. For example, shifting thoughts from " I can't stand this, it's unbearable, and I need to do something to change this" to "this feeling is a part of life, I can watch this experience and not get tangled in it nor change it directly". The latter is argued to reduce distress and pressure on the individual to chronically wrestle with their cognitions as with rumination and worry, and instead, engage in more meaningful and value-based activities in their lives. The third wave of CBT's was met with controversy as some conceived the idea of another wave suggested the demise of previous forms of CBT which its proponents advocated was not the intent nor result. However, concepts such as psychological flexibility, and cognitive defusion are now permanently part of the CBT tradition and garnering growing evidence-based research that largely indicates that such concepts can co-exist. CBT's irrespective of their wave and theoretical orientation share fundamental assumptions such as cognitive activity to a degree precedes and dictates human disturbance, and therapeutic change occurs from the manipulation of cognitive activity, and the application of behaviour principles and strategies.

Concurrently in the 1950s, the humanistic movement (i.e., third force) began its revolution in response to the growing dissatisfaction with psychoanalysis and behaviourism due to concerns that "none of the available psychological theories did justice to the 'healthy human being's functioning' and 'modes of living' or to the healthy human being's 'goals of life'" (Bühler 1971, p. 378). Founding advocates of humanistic approaches postulated that

previous approaches had marginalized consciousness and reduced the broader range of human experience and its proclivity for growth, creativity, spirituality, and autonomy (Rogers, 1961). Unlike psychoanalytic and behavioural approaches (i.e., first and second forces), humanistic approaches emphasised the centrality of individuality in optimal wellbeing and the relational conditions that are conducive to promoting healthy development. Moreover, personality formation is considered an ongoing process driven by needs for integration, choice, values, and expansion of conscious awareness. As such, this approach is characterised by the application of an intersubjective, empathetic approach to psychotherapy, in which comprehension of lived experiences of individuals as active ingredients in sociocultural and ecopsycho spiritual contexts are at the centre. Humanistic approaches derive from a concoction of ontologies including Existential psychology – which examines and explores the role of reflection, responsibility and freedom; Constructivist psychology – which examines the role of idiosyncratic meaning, culture, and political consciousness; and Transpersonal psychology – which examines the role of spirituality, compassion, and transcendence (Schneider et al. 2015). The convergence of these three provides the foundation for the humanistic approach that argues to have a holistic and whole-person approach to human experience, as such reconciling the dualities of objective/subjective, individual/species, dispositional/situational, and nature/nurture (Bland & DeRobertis, 2019).

The most recognised human approach utilised is Carl Roger's person-centred approach. The person-centred approach (formerly known as client-centred) was developed in the 1950s, and holds the philosophical stance that people are their own experts. It has been applied to a broad range of contexts and conditions (Rogers, 1961) and unlike other therapeutic approaches, person centred approaches are not concerned with "adjusting" "fixing" or "curing" human disturbance and dysfunctionality and do not adopt a "diagnostic" or medical model in which the practitioner is considered the expert (Rogers, 1951). Rather, it

is centralised around the facilitation of self-determination and optimal functionality of the individual (i.e., actualization tendency). This is achieved through the client-practitioner therapeutic relationship in which the right conditions are made that will elicit and enable individuals to become aware of thoughts, behaviours and resources to understand, alter and overcome problematic self-concepts, attitudes and behaviours (Rogers, 1961).

Another form of humanistic approach that has garnered much research and therapeutic attention is solution focussed therapy (SFT). Distinct from other psychotherapies, SFT emphasises the inherent strengths people possess and how these are fundamental and applicable to the change process. To this end, it is considered that individuals possess the resources to manage their problems, the rationale behind this stance being the successful times in which individuals have been able to independently cope with problems (de Shazer, 1994). Moreover, rather than the formation of a historical blueprint of the problem, it instead orients itself towards a future in which the problem is not present. Practitioners support individuals to visualise how they wish their lives to be and figure out what needs to take place to create and maintain this change (de Shazer, 1994). Moreover, the context is considered a pertinent mediator instead of the functionality within the individual (i.e., faulty cognitions). SFT is applicable to a diverse range of settings and problems including schools, social work, and crisis intervention (Corcoran & Pillai, 2009).

More recently, in the early '00s Seligman and Csikszentmihalyi remarked that the field of psychology was not producing enough “knowledge of what makes life worth living” (2000, p. 5). Indeed, psychology has gleaned deep, evidence-based insights regarding psychological phenomena such as anxiety, depression, stress, self-esteem, and racism, but, by extension neglected areas such as strengths, virtues, and positive affect (Seligman & Csikszentmihalyi, 2000). The metaphor utilised to describe this was said to resemble moving individual from negative eight to zero, however, being ill-equipped to move people from zero

to positive eight (Gable et al., 2005). As such, positive psychology approaches are the examination and application of processes that contribute to the flourishing of people, groups, and institutions. These assertions aren't necessarily new and derive and expand upon works such as Aristotle's examination of eudaimonia, William James's literature on "healthy mindedness", and Allport's positive human characteristics, along with Rogers and Maslow. One of the most known models in positive psychological approaches is the PERMA model (Seligman, 2012) which presents five core components that reflect eudemonic and hedonic wellbeing including positive emotion, engagement, relationships, meaning, and accomplishments. A growing corpus of literature has examined its proponents and application to a variety of sectors and challenges ranging from physical health to job satisfaction (Kern et al., 2014).

2.1.8 Empirical status of REBT. In REBT theory irrational beliefs are the core mechanism of psychopathology and rational beliefs psychological health. Thus, examining whether irrational and rational beliefs bring about psychological changes (i.e., reduction in disturbance or increases in health) is a critical step in validating the theory of REBT (David et al, 2019). Early studies examining REBT had several methodological limitations including failing to assess changes in irrational and rational beliefs. However, recent meta-analysis data (David et al., 2017) relating to associations between irrational and rational beliefs and outcomes of REBT suggests significant associations between beliefs and outcome variables (i.e., emotional, behavioural, cognitive, psychophysiological) at post-intervention ($b = .38, p < .001$ – between groups; $b = .42, p = .001$ – within-group) and follow up ($b = .43, p = .008$ – between groups; $b = .74, p = .042$). Thus, meta-analysis data indicate that changes in beliefs are associated with changes in psychological consequences. An important note to make is that scholars suggest that a strong test of this association (i.e., beliefs and psychological

outcomes) should always be in presence of an activating event, which many studies neglected (Visla et al., 2016).

A secondary postulation of REBT theory is that changes through REBT occur through targeting irrational beliefs and rational beliefs (via disputation). Therefore, it is critical that REBT can demonstrate its success at changing irrational and rational beliefs to validate its claims to move towards greater evidence-based status. A meta-analysis conducted by David et al. (2017) synthesised data relating to the impact of REBT on changing irrational and rational beliefs in trial-based studies. The research indicated a significant medium effect size for the impact of REBT on irrational and rational beliefs when compared to several comparison groups (i.e., between groups effect size; $d = 0.70$ - post-intervention; $d = 0.57$ - follow-up) and when compared at baseline (i.e., within-group effect size; $d = 0.61$).

The efficacy and effectiveness of REBT have been examined across a broad range of psychological domains targeting varying recipients, including psychotherapy in clinical and counselling settings for psychiatric conditions, educational settings with children and adolescents (e.g., Rational emotive education), organization settings with employees, sports and exercise settings improving athletes wellbeing and performance and unhelpful exercise behaviours in exercisers (Turner & Bennett, 2018, Outar et al., 2018).

As mentioned, in its infancy, the application of REBT had not been rigorously examined (David et al., 2005) and focused on effectiveness-based studies in ecologically rich settings. Practitioners primarily utilised transdiagnostic outcome measures that did not pertain to specific symptomology of psychiatric conditions. Most of the research involved case studies or quasi-experiment designs. Despite this several qualitative reviews of REBT provided initial support for its efficacy (e.g., Haaga & Davidson, 1989a; Zettle & Hayes, 1980). However, there remained a scarcity of efficacy-based controlled studies (e.g.,

randomized control trials), which are considered pertinent for therapeutic approaches to be deemed evidence-based (David, 2015).

Since then, a series of randomised controlled trials (RCT) have been conducted that demonstrate the efficacy of REBT in a diverse array of psychiatric conditions and psychological difficulties including obsessive-compulsive disorder (Emmelkamp & Beens, 1991), depression (David et al., 2008), social phobia (Mersch et al., 1989), psychotic symptoms (Meaden et al., 2013), and disruptive behaviour (Gavița et al., 2012) encompassing a variety of age groups. To this end, research suggests that REBT demonstrates efficacy among children, adults and in both clinical and non-clinical populations (David et al., 2005). Consequently, REBT was deemed as “probably efficacious” treatment in the National Institute for Health and Clinical Excellence (NICE) Guidelines and in the Research Supported Psychological Treatments List of the 12th Division of the American Psychological Association (APA).

Several meta-analyses have evaluated REBT outcomes with adult and child populations (David et al., 2018; Engles et al., 1993; Gonzalez et al., 2004; Lyons & Wood, 1991; Trip & Popa, 2005). Engles et al. (1993) utilised a meta-analytic approach to examine 28 studies with adult populations comparing REBT against systematic desensitization, controls (no-treatment), placebo, and combination treatments (e.g., REBT and behavioural approaches). The results indicated that REBT had a large effect size at post-intervention when compared with controls ($d = 1.62$). REBT illustrated greater improvements than a placebo at post-intervention, however, this result was non-significant ($t(14.67) = 1.94, p = .07$). Moreover, REBT illustrated the same effect as other forms of treatment such as systematic desensitization and combination treatments ($p > .05$). Of the limited studies that reported a follow-up phase, REBT demonstrated an overall large effect ($d = 1.46$).

Lyons and Wood (1991) conducted another meta-analysis among an adult population comprising 70 studies. The results indicated a medium effect size among non-clinical adults ($d = 0.52$), and large effect sizes among clinical populations ($d = 0.95$). When comparing REBT to controls at post-intervention, the results indicated large effect sizes for non-treatment ($d = 0.98$) and waitlist controls ($d = 1.02$), and placebo controls ($d = 0.80$). However, when compared with other treatments such as behavioural therapy (BT) and cognitive modification, REBT demonstrated modest effect sizes ($d = 0.30$ and $d = 0.14$, respectively).

Two meta-analyses have examined the efficacy of REBT among children and adolescents (Gonzalez et al., 2004; Trip & Popa, 2005) highlighting significant and positive effect sizes. Gonzales et al. (2004) examined five outcome areas including anxiety, disruptive behaviours, irrationality, self-concept, and grade point average across 19 studies. The results indicated a large effect size when compared with no treatment and active controls (weighted mean $Z_r = 0.5$). The study highlighted that treatment length was a significant moderator of effect size, with longer treatment periods resulting in larger effect sizes. Trip et al (2007) results supported these findings illustrating medium effect sizes for reducing dysfunctional emotions ($d = 0.60$), and large effect sizes for reducing dysfunctional behaviours ($d = 0.85$) among children and adolescents across 26 research studies. Moreover, when compared with placebo or passive controls, REE (i.e., REBT) demonstrated medium effect sizes post-intervention ($d = 0.64$ and $d = 0.60$, respectively), and with active controls, the results indicated large effect sizes ($d = 0.85$). Follow-up data indicated maintenance of changes ($d = 2.69$).

More recently, David et al. (2018) conducted a meta-analysis on all published research in REBT up to 2015. The results indicated a medium effect size for REBT compared to all forms of control at post-intervention ($d = 0.58$) with a variety of types of intervention

approaches (i.e., REE, counselling) and among non-clinical and clinical populations and diverse age groups. The results indicated effect sizes ranging between 0.32 to 0.94 across several outcome categories including anger, anxiety, depression, behavioural challenges, health, physiology, academic performance, and quality of life. The data suggested factors that could moderate the efficacy of REBT including the length of therapy. Contemporary studies illustrated larger effect sizes than older studies, and studies that were deemed as high quality (less bias) indicated smaller effect sizes than lower quality studies. Neither year of publication nor length of sessions were a moderator at follow-up. However, a medium effect size was found when compared to controls at follow-up ($d = 0.66$). REBT demonstrated a smaller yet significant effect size against other types of controls such as placebo, treatment as usual, pharmacotherapy, other psychotherapies, and psychoeducation, at both post-intervention and follow-up phases.

In non-clinical populations, REBT has yielded results similar to pharmacology and other psychotherapy approaches and is more effective than other control conditions. Recent research published beyond this period have examined settings such as academia, organisations, and sports and exercise in reducing psychopathology (Ogbuanya et al., 2020; Sælid & Nordahl, 2017; Ugwoke et al., 2018; Outar et al., 2018), and improving performance and resilience (Deen et al., 2017; Wood et al., 2018), physiological markers (e.g., reduced baseline Systolic Blood Pressure; Wood et al., 2018), and objective markers of performance (Wood et al., 2017).

Lastly, David et al. (2021) examined the effectiveness of outpatient REBT over a decade. Results indicated that patients reported significant improvements in functioning, with medium effect sizes demonstrated at early dose (3 sessions), at intervention end (20 sessions) and the last session. The results indicated that the largest effect size occurred at the eighth

and eighteenth sessions. In those with clinical symptoms (75%), half the patients moved into a nonclinical range by the end of the therapy.

The body of research including RCTs, meta-analyses, case studies, and correlational studies suggests a promising foundation for REBT as an appropriate and efficacious evidence-based psychotherapeutic intervention across clinical and non-clinical issues (David & Montgomery, 2011). Nonetheless, there remains limited data regarding rational beliefs as a protective factor to psychological distress, albeit accumulating, it still requires further examination (David, 2015). Moreover, data regarding irrational and rational beliefs need to be considered with caution as conclusions derive mainly from correlations or experimental studies in which some have been compromised methodologically (David et al., 2021). Research has typically been heterogeneous in scope, outcome variables, and methodological approach adopted, thus, more rigorous approaches are warranted. A fundamental limitation and important step in advancing REBT are the development of more robust psychometrics that capture irrational and rational beliefs to measure mechanisms of change (David et al., 2021). Given that the majority of REBT research focuses on depression and anxiety, David (2021) has recommended that additional research should explore a wider range of clinical and non-clinical challenges and presenting issues. It is to these last two opportunities that this thesis turns – to exploring REBT as applied to disturbances based in body image.

following section.

2.2 Body image

2.2.1 The history of body image. There has been a profound proliferation of scientific inquiry into the psychological, social, and behavioural experience of human embodiment (Cash, 2004). In academia, scholars from a diverse array of disciplines including psychologists, behavioural scientists, physicians, neurologists, and philosophers have become

interested in the variables that affect an individual's experiences of embodiment, and its impact on feelings and behaviours (Grogan, 2021). A century of research suggests that our appearance, more specifically, our "inside view" of our appearance, can be complex, idiosyncratic, pervasive, permeating many facets of our lives including our interactions, relationships, employment opportunities, (dis) engagement with health behaviours, mental health, and quality of life (Grogan, 2021). Research indicates that this internal view, formally known as "body image", is highly subjective and often more psychosocially potent than objective "reality". The last five decades have seen continual growth of interest in the psychology of body image. This was captured by Cash (2004), who highlighted the rise in scholarly citations in PsycINFO's and PubMed's databases in body image and body (dis)satisfaction, rising from 726 and 1250 citations in the 1970s to 1428 and 1785 citations in the 1980s, and 2477 and 2766 citations in the 1990s. This coupled with the increase in referrals of cosmetic surgery, escalation in eating disorders and disordered eating, use and misuse of substances designed to reduce weight and increase muscularity (e.g., steroids), and engagement in unhealthy exercise practices have encouraged scholars to examine the psychological, social, and biological antecedents and experiences of body image.

A prerequisite of understanding contemporary perspectives of body image requires an examination of its key historical developments. Over a century ago in the early 20th century, the recognition of "body image" originated in the clinical examination of neuropathological forms of embodiment, including phenomena such as the "phantom limb," "anosognosia," "autotopagnosia," and "hemiasomatognosia,". Scholars found that patients with amputations or congenital limb deficiencies reported physiological sensations in their amputated or deficient limb (Head & Holmes, 1911). At this point, body image research was dominated by the concept of "body schema", a neurological representation of the body in the brain. Head and Holmes (1911), who coined this concept into scientific discourse, delineated between

"body schema" and "superficial schema" in which alterations in posture and locomotion are centrally coordinated, and the mapping of somatotopic information is processed.

In the 1920s, neurologist Paul Schilder almost exclusively advanced the scientific enquiry of body image, progressing from its parochial emphasis on distorted body perceptions induced by brain trauma to broader psychological and sociological conceptions of body image (Grogan, 2021). Schilder, presciently advocated a biopsychosocial approach to body image, pleading for the examination of its psychological and sociocultural components. Schilder provided one of the first definitions for body image referring to it as “The picture of our own body which we form in our mind, which is to say, the way in which the body appears to ourselves” (p. 7). Later on, psychologist Seymour Fisher who aligned with psychodynamic approaches coined the term “body boundary”, which examined the strength and permeability of body boundaries. Fisher (1970, 1986) advocated the multifaceted nature of body image, positing that we hold a set of body images that operate unconsciously to mediate our interactions with stimuli. Concurrently, Franklin Shontz became critical of the psychodynamic paradigm of body image. Shontz (1990) hypothesized that the shift from neurological to psychodynamic approach removed the “body image” from body image. Consequently, his works aimed to integrate theory and research to foster the expansion and integration of other theoretical fields such as gestalt and cognitive theory into body image.

Before the 1980s, most of the empirical examinations of body image were conducted with adolescent women, mostly due to its foundations in clinical psychology and psychiatry practice in eating disorders (Thompson, 1996). This line of enquiry served as a vital catalyst for body image in novel areas, however, it also reinforced the porous notion that body image concerns pertain only to girls and women, and solely reflect concerns of weight and shape. The 1990s was a decisive decade in the field of body image, in which key psychometric, psychotherapeutic, and conceptual developments took place. Furthermore, research began to

shift from its narrow attention of adolescent women to broader areas of body image research including boys, men, older women, and diverse cultural groups. A pertinent advancement in this decade was the development and assessment of cognitive behavioural treatment approaches (Cash & Prunzinsky, 1990). In the late 1990s, Sarah Grogan's (1999) timely text "body images" provided a thorough synthesis of body image research examining the far-reaching impact of body image upon women, men, children and in all cultures across multiple disciplines. Additionally, the 1990s brought about the examination of the sociology of body image. Sociologist Bryan Turner (1992) coined the term "somatic society" to explain the salience of the body in society, and its sociological underpinnings. The increased scholarly interest in the role of the body in relation to society was met by the development of the journal *Body and Society*, a home for research on sociological principles concerning the body.

The 2000s included one of the most significant milestones in body image research in the publication of the peer-reviewed scientific journal, *Body image: An international journal of research*. Founded in 2004, this journal provided a corpus of rich quality body image research from multiple disciplines from behavioural sciences to medical and health sciences. Until the 2000s, body image literature had been dominated by pathology examining the development and treatment of negative body image (Cash & Smolak, 2011). Discontent with the current status of body image research and theory grew, as scholars contended that the focus on elucidating and reducing the symptoms of negative body image without considering means to measure and promote positive body image had greatly limited the field by proscribing a comprehensive understanding of body image (Cash & Smolak, 2011). It was argued that such an approach had led to practitioners being ill-equipped to foster health, wellbeing, and means to prevent and treat body image disturbance. Thus, if body image interventions worked only to reduce symptoms of negative body image, but failed to enhance

positive body image, they may only instil neutral body image (e.g., "I don't hate my appearance anymore, I tolerate it"). To remedy this void in body image literature the last 15 years have witnessed a surge in the investigation of positive body image, its development and the mechanisms which support it (Tylka & Wood-Barcalow, 2015).

The 2000s witnessed the dawn of a new body image challenge centralising around muscularity. Harrison Pope and colleagues (2000) released their seminal book “The Adonis complex”, which explored the rise of muscularity concerns among men and women. Subsequently, this text and the research that followed resulted in the inception of a new body image psychiatric disorder known as Muscle dysmorphia (MD), a variant of Body dysmorphic disorder (BDD) which is characterised by a pathological preoccupation with muscularity and leanness. Since this, further research has explored individuals’ motivations for muscularity, new scales have been developed, and new concepts have arrived such as the drive for muscularity (DMF; McCreary & Sasse, 2000)

Over the last two decades, research has continued in the field of body image. Thomas Cash (2012a) edited the *Encyclopaedia of Body Image and Human Appearance*, a text that consolidates the key developments in the space of the psychology of body image. In sociology, work began with Fat Studies which examines fat embodiment and obesity politics. Sociologist Deborah Lupton released the second edition of her controversial text *Fat* (Lupton, 2018) and investigation of the socio-cultural influence of negative ideologies pertaining to larger bodies in western cultures. Prior to this, work from Samantha Murray (2016) examined the morality around the “obesity epidemic”, which highlighted the connection between medicine and morality, and the weight stigmatization of larger bodies. The proliferation of empirical interest in Fat Studies led to the publication of *Fat Studies*, an international journal that critically examines, research, theory, and practices regarding weight and appearance. Research areas in the journal include the representations of fat in health and medical sciences

and Health at Every Size. *Fat studies* promote equality for people of all body sizes, with its editor Esther Rothblum stating that the journal “seeks to challenge and remove the negative associations that society has about fat and the fat body” (Rothblum, 2021).

Among the populace, there has also been a rise in popular interest in body image. In the media, there has been an increase in literature on the harms of restrictive dieting, dangerous cosmetic surgery practices such as Brazilian butt lifts (BBL), the use of Synthol to mimic muscularity, and criticisms of shows that objectify men and women including ITV's *Love Island*. Additionally, high-profile initiatives have been developed to improve the public's body image, such as the *Dove® Be Real Campaign* in 2020, and the All-Party Parliamentary Group on Body Image. These initiatives have aimed to tackle societal influences of negative body image by collaborating with magazines and the fashion industry to diversify the representation of bodies in the media. Albeit promising, it appears that the vast majority of clothing brands and magazines have continued to present highly edited images of men and women, depicting narrow ideals, and continue to objectify and scrutinize the inherent fluctuation of celebrity bodies in articles (Grogan, 2021). Moreover, with the omnipresence of social networking sites (SNS) including Instagram and Facebook, research has explored the influence of these sites on body image, examining phenomena such as selfies, filters, social proofing, and social comparisons (e.g., Veldhuis et al., 2020). Finally, the COVID-19 pandemic restrictions encompassed a shift in our communication modalities from face-to-face means to virtual milieus such as Zoom and Microsoft Teams as a primary method. With this, the report and investigation of new forms of appearance challenges arose. One such phenomenon was "Zoom dysmorphia" which relates to the potential consequences of our excessive exposure to a distorted version of ourselves via video conferencing, which research suggests is associated with negative self-perceptions and has been linked to uptake in individuals seeking cosmetic surgery (Rice et al., 2021).

2.2.2 Defining body image. Body image is a multidimensional construct encompassing one's perceptions, attitudes, beliefs, feelings, and behaviours relating to our appearance (Cash, 2004). Scholars refer to this as perceptual, affective, cognitive, and behavioural body image (Cash, 2004). Perceptual body image refers to the accuracy with which individuals perceive their body size. Affective body image relates to feelings of satisfaction or dissatisfaction regarding one's appearance (e.g., anxiety, shame, guilt, disgust, happiness). Cognitive body image relates to thoughts, beliefs, and schemas concerning one's appearance (e.g., "Being overweight makes me a failure"). Finally, behavioural body image refers to specific behaviours that individuals engage in relation to their appearance such as repetitive body checking (e.g., frequently looking at shiny surfaces such as mirrors or windows to assess appearance), body fixing (e.g., excessive grooming, excessive exercise, and restrictive dieting), and avoidance (e.g., avoiding body exposing situations such as beaches and leisure centres) (Van den Berg et al., 2002). Body image in essence lacks objectivity, rather is highly subjective and permeable to change by the acquisition of new stimuli (Grogan, 2021). To this end, the "image" one holds in reference to appearance may be somewhat different to reality. Moreover, disparities between one's perceived body shape and size and his or her ideal are posited to result in body image dissatisfaction. Body image dissatisfaction operates on a continuum ranging from mild dislike of a particular body feature (e.g., arms, face, stomach, legs) to intense and debilitating distress and a preoccupation with perceived/or real defects, leading to a pursuit of 'fixing' or masking them. Research suggests that body image concerns are on the rise (Cunningham et al., 2017; Mental Health Foundation, 2019), specifically, research indicates that adults experience a host of mental health difficulties relating to their body image including suicidal thoughts (13%), depression (35%), anxiety (34%), self-disgust (19%), and shame (20%). Extant literature offers proximal

support for such statistics highlighting an increase in appearance-altering practices over the last two decades (Leone et al., 2011; Grogan, 2021).

2.2.2.1 Body dissatisfaction. Body image dissatisfaction has become so prevalent that some scholars consider it as "normative discontent" (Tantleff-Dunn et al., 2011).

Dissatisfaction often relates to weight and shape and is observed in a diverse range of ages, genders, races, and shapes and sizes, although research has typically highlighted that it is more common among women and obese populations (Voges et al., 2019). The orientation of this body dissatisfaction has a proclivity to lean towards body ideals of thinness for women, commonly referred to as the "thin ideal" (McCarthy, 1989). Research suggests that this discontent can emerge as young as 5 years of age and prevalence rates illustrate that as high as 70% of women and adolescent girls desire to be thinner, with many engaging in maladaptive behaviours aimed at acquiring this aesthetic (Cash & Smolak, 2011). For men and boys, a growing body of research suggests a body ideal orientated towards muscularity, leanness, and a V-shaped body (Crossley et al., 2017). Figures have indicated this dissatisfaction to be around 15-60%, with 13-48% of males applying strategies to lose weight and gain muscle (McCabe & Ricciardelli, 2004). However, unlike women, research indicates that men experience ambivalence between their aesthetic ideals oscillating between gaining muscle and losing weight and body fat. Akin to women's dissatisfaction, the onset can occur as early as 8-10 years of age, with 47% of boys reporting a desire to be thinner, whereas 21% desire to be larger (i.e., muscular) (McCabe & Ricciardelli, 2004). The scientific enquiry of body image hosts a rich history spanning over a century highlighting many correlates, consequences, and treatment protocols, however, as mentioned scholars have highlighted that much of this focus is pathology-based, thus, neglecting positive aspects of body image (Cash & Smolak, 2011; Tylka & Wood-Barcalow, 2015). Therefore, more recently body image

scholars have shifted their attention towards investigating and conceptualising positive body image.

2.2.2.2 Positive body image. Positive body image is defined as “An overarching love and respect for the body that allows individuals to (a) appreciate the unique beauty of their body and the functions that it performs for them; (b) accept and even admire their body, including those aspects that are inconsistent with idealized images; (c) feel beautiful, comfortable, confident, and happy with their body, which is often reflected as an outer radiance, or a “glow”; (d) emphasize their body's assets rather than dwell on their imperfections; and (f) interpret incoming information in a body-protective manner whereby most positive information is internalized and most negative information is rejected or reframed.” (Wood-Barcalow et al., 2010, p. 112). Research in positive body image is still in its infancy as such this “working definition” is still under development.

Positive body image is a distinct construct separate from negative body image and therefore not on the same continuum as negative body image, thus an individual reporting lower levels of negative body image does not confer higher levels of positive body image. This theoretical misconception of positive body image may have contributed to the paucity of its empirical examination. However, research has supported the theoretical delineation between positive and negative body image. Williams et al. (2004) conducted research examining body image evaluation, body image emotional experience, and the impact of body image on quality of life among a population of women. Cluster analysis indicated the emergence of distinctive groups of individuals. The three groups that emerged included: a positive body image group (54%), a negative body image group (24%), and a “normative body image discontent” group (23%). The negative body image group and the normative discontent group experienced similar levels of body dissatisfaction and reported high levels of body image dysfunction. However, the positive body image group reported higher

wellbeing, seldom experienced body image emotional distress, and found their body image favourably influenced their quality of life.

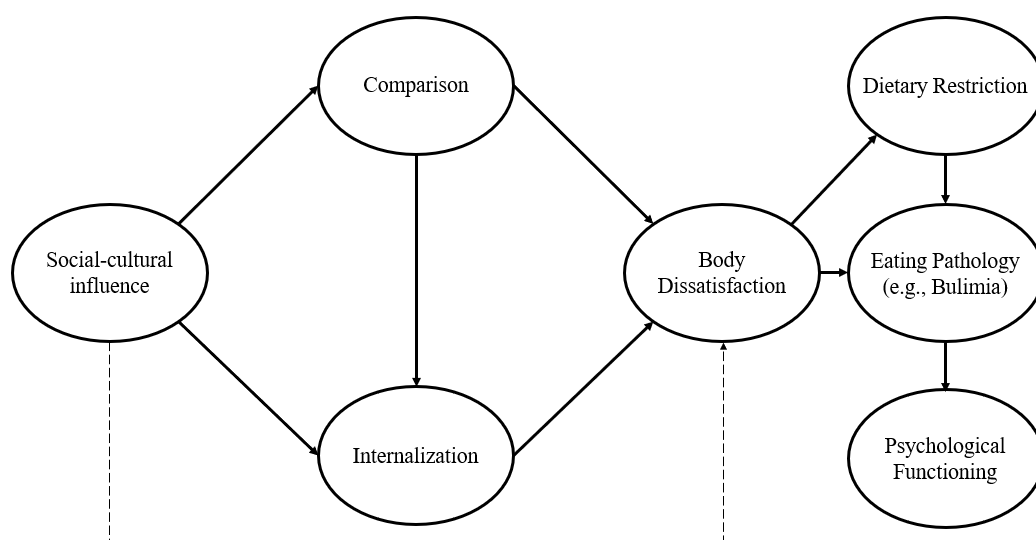
2.2.3 Theoretical perspectives of body image. Conceptual models have been fundamental in developing a broad and in-depth understanding of body image and its critical determinants. Several models of body image have been proposed over the decades from a range of theoretical perspectives (e.g., feminist, psychodynamic, evolutionary, cognitive-behavioural). Irrespective of the underpinning approach, emerging from these perspectives is a consensus that the development and maintenance of body image (negative or positive) derives from a complex combination of variables including sociocultural, biological, and psychological factors. Two prominent approaches that have contributed to the field include sociocultural and cognitive-behavioural approaches.

2.2.3.1 Sociocultural perspectives. Research suggests that appearance remains an important facet of one's life, as culture promotes and promises the benefits of aligning to cultural body ideals (Grogan, 2021). Historically, meeting cultural ideals has been synonymous with success, health, determination, and an array of desirable internal attributes (Grogan, 2021). Contrarily, being overweight and thus nonconformity is often associated with laziness, diminished willpower, and lack of control (Grogan, 2021). Researchers have traced the salience of appearance back to the end of the 19th century, in which excess body fat was conceived as being symbolic of low morality, and personal inadequacy (Bordo, 2003; Lupton, 2018). This has prevailed into the 21st century, however, in contemporary times, our society reinforces the salience of appearance in more sophisticated means, such as billboards, television, shop windows, and more recently SNSs (e.g., Instagram). In particular, this can be exemplified by content devoted to "fitspiration" or "thinspiration" presented on SNSs. Fitspiration and thinspiration are the synergies between "fitness/thinness" and "motivation" which are characterised by images promoting health, fitness, thinness, and empowerment

(Boepple & Thompson, 2015). Typically, fitspiration images entail slim and lean bodies that have been considered to increase the pressure on men and women to meet societal standards (Boepple & Thompson, 2015). Furthermore, image portrayals on such sites are often laden with filters, creating falsehoods and contribute to the permeation of the narrow and often unattainable "perfect body ideal" (Veldhuis et al., 2020). Consequently, in today's society, people are increasingly dissatisfied with their appearance. Sociocultural perspectives seek to explain the role of sociocultural influences on body image development and maintenance. Two fundamental contributions to sociocultural perspectives of body image include the Tripartite Influence Model and the Objectification theory.

2.2.3.1.1 Tripartite Influence Model. The tripartite influence model (Thompson et al., 1999) postulates that there are three primary socio-cultural mechanisms (i.e., parents, peers, and media) that influence (via mediation) the development of body dissatisfaction and eating pathology (see figure 2.4). The two mediating variables include social comparisons and internalization of societal appearance ideals, which determine the association between sociocultural mechanisms, body dissatisfaction and eating pathology (Thompson et al., 1999).

Figure 2.4. Tripartite Influence Model of Body Image (Thompson et al., 1999).



The model has received support from a diverse array of populations in western societies (Hazzard et al., 2019; Rodgers et al., 2011; Schaefer et al., 2021). Research upon the model has garnered support for the role of sociocultural factors as a predictor in negative body image including the differences illustrated between women's drive for thinness in comparison to men. This has been attributed to the ambivalence men face with a desire for thinness/leanness and muscularity and long history of thin ideals for women (Fernandez & Pritchard, 2012). Research offers support for the orientation of men's and women's body ideals, by highlighting that both a drive for muscularity and thinness as mediated by media pressures (e.g., magazines), which have been associated with body dissatisfaction and eating pathology (Rodgers et al., 2016). Thus, those individuals who have a proclivity to internalise media messages of body ideals are more likely to report greater endorsement of gender-specific ideals and body dissatisfaction.

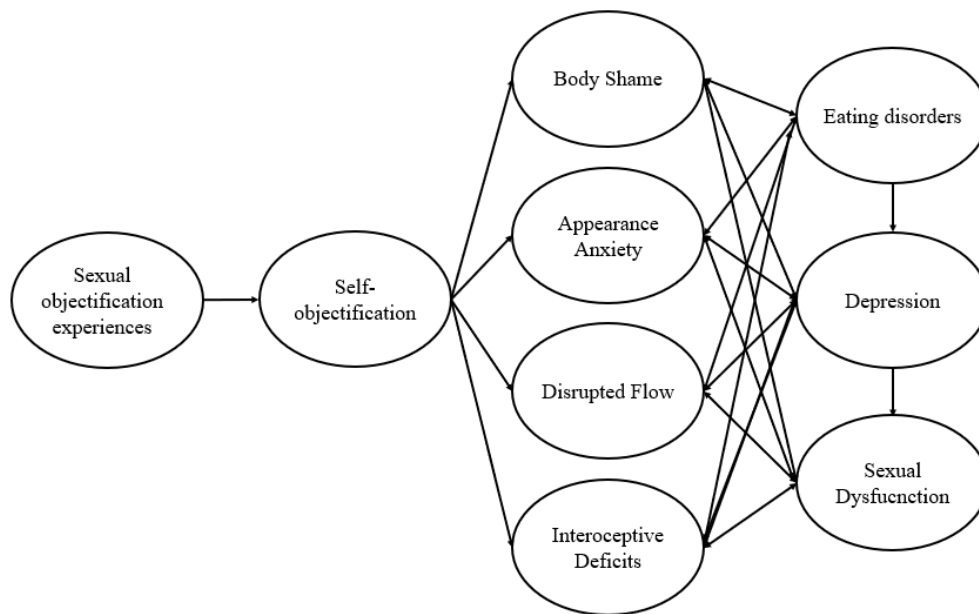
Peers are also a prominent force on body dissatisfaction, in particular, appearance-related comments and talk (formally known as "Fat talk") between peers is positively associated with body dissatisfaction (Rogers et al., 2019). Among men, research indicates that appearance-related teasing is significantly associated with maladaptive muscle-building practices, muscularity internalisation and body dissatisfaction (Xu et al., 2010; Nowell & Ricciardelli, 2008). Finally, parental influences are a vast contributor to body image, research indicates that weight commentary via parents is associated with negative body image and disordered eating among adolescent boys and girls, and female undergraduates (Rogers et al., 2019). The Tripartite model offers insights into the role of culture in the formation and internalisation of body ideals for men and women, however, another critical component in culture is the objectification of bodies, typically of the female body, which has a rich history.

2.2.3.1.2 Objectification theory. Objectification theory (Fredrickson & Robertson, 1997) examines the sexual objectification of women in westernized societies (see figure 2.5).

A large corpus of research indicates that women are targeted for sexual objectification daily. Scholars define sexual objectification as the fragmentation of a woman into its mere sexual properties and functions, consequently, stripping her of idiographic characteristics. This manifests in daily activities such as sexual comments, whistling or beeping the horn at female passers-by, erotic photos of women's bodies, pornography, and sexual harassment. This can occur in two primary ways including interpersonal encounters (e.g., family, friends, colleagues, employers, or acquaintances) and via the media (e.g., television, internet, music videos, music lyrics, video games, magazines and newspapers, social media). The theory identifies that the first consequence of sexual objectification is self-objectification. Self-objectification relates to the internalisation of a third-person perspective of the self rather than a first-person perspective, in which women and girls adopt a narrative that places greater emphasis on their appearance rather than personality or functional qualities. It is proposed that this internalisation results in women becoming the first critic of their bodies in anticipation of evaluations from others. For some, this evaluation of the self is accompanied by vigilant self-monitoring referred to as body surveillance which represents a behavioural manifestation of self-objectification. Body surveillance is a corollary of self-objectification and is predicted to lead to negative outcomes such as body shame, appearance anxiety, depression, eating disorders, and sexual dysfunction (Calogero, 2009). The theory has demonstrated utility for understanding the body image sequelae via a sociocultural lens. Research indicates that men and boys report lower levels of self-objectification, body surveillance, and body shame (e.g., Aubrey, 2006). However, several studies have indicated that homosexual men report higher levels of self-objectification, body surveillance, body dissatisfaction, and drive for thinness scores when compared to heterosexual men (Martins et al., 2017). This theory along with other sociocultural models has provided means and insights

to understand the role of culture in the development of body image, in men and women, however, another key part of body image theory is the role of the “self”.

Figure 2.5. Model of objectification (Fredrickson & Roberts, 1997).

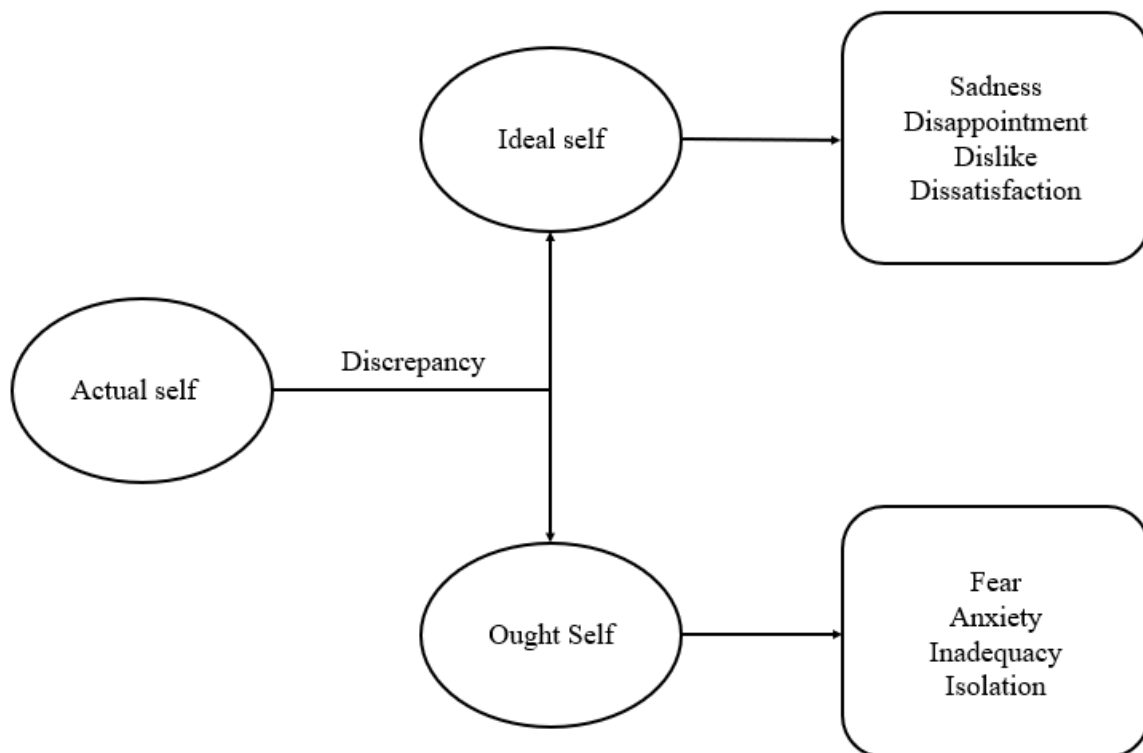


2.2.3.2 Self-discrepancy theory. The notion of the self is complex and multifaceted and encompasses a broad range of characteristics that define the self (e.g., I am a woman, I am a football fan, I am a vegetarian), and is temporal (who I am today, who I was in the past, and whom I aim to be in the future). A century of research indicates that people have a vast magnitude of selves. William James remarked, "In each kind of self, material, social, and spiritual, men distinguish between the immediate and actual, and the remote and potential, between the narrower and the wider view, to the detriment of the former and advantage of the latter." The essence of this passage are the principles that inform self-discrepancy theory (SDT; Higgins, 1987).

SDT (see figure 2.6) posits that comparing one self-state to another will yield a discrepancy. There are primarily three domains of the self. The "actual" (or present) self refers to an individual's perceptions of his or her characteristics. Notably, these self-

perceptions engender subjective appraisals and as such are not necessarily reflective of objective evaluations. The topic of the self is highly relevant to the context of body image, as appearance comprises an important feature of the self, and individuals often have poor insight of their shape and size. Secondly, Higgins conceived the "ideal" self which reflects characteristics an individual would like to acquire (e.g., I would like to have a six-pack), this self-dimension has potent motivational properties. Finally, the "ought" self relates to characteristics that individuals believe they should adopt as prescribed by society or parental influences (e.g., I should be thin). Furthermore, SDT proposes that the selves can be further operationalised from one's perspective, in addition to the significant others (e.g., friends, parents, peers). Consequently, this results in six dimensions of the self including actual/own, actual/other, ideal/own, ideal/other, ought/own, and ought/other.

Figure 2.6. The Self-discrepancy Theory Model (Higgins, 1987).



Body image literature has a proclivity to focus on the discrepancy between one's actual/own self and the ideal/own self. Typically, the ideal self exhibits an orientation toward society's standards of attractiveness (e.g., Thin/muscular ideal). SDT proposes that discrepancies perceived between one's actual self and one's ideal/ought self will result in emotional disturbance. According to SDT, when one perceives a discrepancy between their actual and ideal self (i.e., actual-ideal discrepancy) this is likely to produce dejection-based emotions such as dissatisfaction and depression, as the individual perceives that their desires and hopes have been thwarted (Vartanian, 2012). Discrepancies between the actual and ought self (actual-ought discrepancy) result in agitation-related emotions, such as guilt, shame, and anxiety, as the individual perceives that they have breached cultural standards (Vartanian, 2012). Consequently, these self-discrepancies, elicit behaviours aimed at reducing this discrepancy (e.g., exercise, dieting). SDT perspective of body image highlights the saliency of cultural norms in conveying standards of beauty. As mentioned, in western cultures, the typical standard prescribed includes thinness for women and muscularity for men. Notably, these standards tend to be unrealistic to achieve for the vast majority of the population without the adoption of maladaptive practices (e.g., excessive exercise, restrictive eating, steroid abuse, and cosmetic surgery). Consequently, if individuals internalise societal ideals and compare their actual self with the ideal prescribed by society, they will likely perceive a body-related self-discrepancy.

Body-related self-discrepancy is associated with psychological, emotional, and behavioural dysfunction (Vartanian, 2012). Research suggests that women who experience a discrepancy between their current self and how they would ideally wish to look are linked to body dissatisfaction and negative psychological outcomes (Vartanian, 2012). In particular, research illustrates that those who scored high in actual-ideal discrepancies experience greater body dissatisfaction and eating pathology when exposed chronically to thin ideals,

whereas those who scored low were unaffected (Vartanian, 2012). SDT proposes that there are two ways in which self-discrepancy can influence behaviour. First, it is conceived that it motivates individuals to engage in practices designed at minimizing the discrepancy such as exercise, dieting, cosmetic surgery, and bariatric surgery. Indeed, research illustrates that women high in actual-ideal discrepancy ate less than those low in actual-ideal discrepancy when exposed to thin ideals, this trend was also demonstrated among men who were exposed to muscular ideals, as the men high in actual-ideal discrepancy ate more (Vartanian, 2012). Self-discrepancies have also been associated with exercise motivations, in which those scoring high in actual-ideal discrepancies hold greater appearance reasons for exercise, and less autonomy for exercise (Vartanian, 2012). Secondly, self-discrepancies can influence behaviour through emotional disturbance of self-discrepancy. SDT holds that when individuals become aware of a discrepancy, they are confronted with an adversity that motivates them to escape this awareness via means such as drugs or self-harm. This contention relates to Baumeister's escape theory (Baumeister, 1990). A large corpus of research illustrates the use of food to appease difficult emotions, particularly in binge eating and bulimia in which food is considered as an affect-regulatory strategy. To this end, when individuals detect a discrepancy between their ideal and actual body this may activate a series of negative self-evaluations that underpin affect-regulating eating. SDT proposes that this strategy is ineffective as it perpetuates self-discrepancy and may exacerbate its impact. The SDT elucidates mechanisms in the self that contribute to body image, and a perspective that expands upon our knowledge of the self, by considering aspects such as beliefs associated with the self and others. Another theory that examines the self (e.g., thoughts, behaviours, and emotions) is cognitive behavioural therapy, a prominent approach to body image theory.

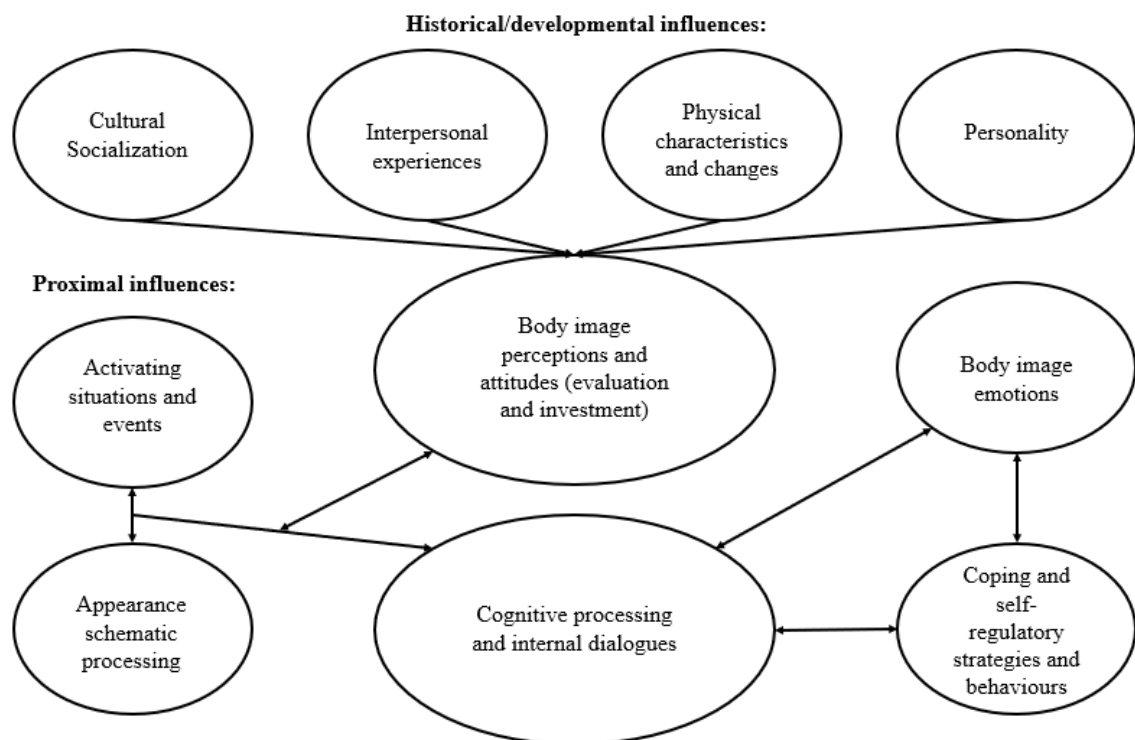
2.2.3.3 Cognitive-behavioural perspectives. Cognitive-behavioural approaches to body image have been the most influential approaches to the conceptualisation of body

image. Cash's cognitive behavioural model (2002) of body image is a comprehensive model which encompasses various inter-related factors underpinning body image development and maintenance (see figure 2.7). The model posits and delineates between historical factors and proximal/concurrent factors that influence the development of body image attitudes, which include body image evaluations and body image investment. Body image evaluation relates to an individual's beliefs (i.e., satisfaction or dissatisfaction) regarding their appearance. Body image investment reflects the cognitive, behavioural, and emotional salience of an individual's appearance to their sense of self-worth. Historical factors concern early childhood events, experiences, and individual characteristics that impact the individual's thoughts, feelings and behaviours regarding their body including cultural socialization, interpersonal experiences, physical characteristics, and personality (Cash. 2012). Cultural socialization relates to the dissemination of cultural ideals via media, social media and adverts that reinforce the importance of physical attractiveness and appearance "ideals," which are subject to the culture in concern. Interpersonal relations refer to appraisals, opinions and feedback concerning appearance from families, friends, and peers, this can occur directly through critical appearance-related comments (e.g., "you've gained weight") or indirectly through modelling (e.g., observing parents and peers in life or via media) and discussions (e.g., "fat talk). Physical characteristics include body weight, shape, and features (e.g., BMI, height, weight, body fat, scars, acne, hair colour). Personality factors play a key role in body image development, with it posited that traits such as perfectionism, low self-esteem, high self-objectification, high social comparison, and investment in traditional gender norms are likely to lead to negative body image, contrarily, high self-esteem/compassion/acceptance likely to support positive body image (Cash, 2002). Proximal factors refer to present-day events, which encompass precipitating and maintaining influences that shape body image experiences. This includes activating events, appearance schemas,

information processing and internal dialogues, body image emotions, and coping and self-regulatory actions.

The model posits that activating events or situational cues (e.g., body-image threats, body exposing situations, exposure to media, appearance changes) activate schema-driven processing regarding self-evaluations of appearance. Individuals with prominent appearance schemas relating to high salience and investment in appearance have greater attention to appearance-relating stimuli. This triggers a series of internal dialogue and cognitive processes (known as "private body talk") which are affect-laden beliefs and automatic thoughts pertaining to one's appearance. Those who hold maladaptive appearance schemas and body image attitudes may hold cognitive processes that include faulty cognitive distortions such as all or nothing thinking, magnification of defects, labelling, and social comparisons. Such internal processing underpins body image emotions such as anxiety, guilt, shame, and depression. Finally, to manage these difficult thoughts and emotions individuals adopt self-regulating strategies and behaviours which include body checking and fixing, avoidant behaviours (e.g., avoiding body exposing situations, camouflaging the body), reassurance seeking (e.g., "Do I look okay in this, are you sure?"), compensatory behaviours (e.g., excessive exercise, dietary restriction, purging). However, these behaviours reinforce and perpetuate the individual's distress and only offer temporary relief. Cognitive behavioural approaches have offered great insight into the conceptualisation of body image, however, there remains a paucity in the conceptualisation of positive experiences of body image, and more importantly what mechanisms induce such experiences, and how they measured and defined. Positive body image conceptualisations have partially filled this void, offering valence balance to the corpus of body image literature.

Figure 2.7. Cognitive-behavioural model of body image (Cash, 2002)



2.2.3.4 Positive body image perspectives. Positive body image emerged over 15 years ago and is grounded in positive psychology, humanistic, feminist and counselling approaches (e.g., Seligman & Csikszentmihalyi, 2000; Rogers, 1961; Gelso & Fretz, 2001; Bacon et al., 2005). Proponents of positive body image posit that positive body image is an independent construct from negative body image, rather than bipolar to or on the same continuum. As such, positive body image is a multidimensional construct, that includes body appreciation, broadly conceptualizing beauty, adaptive appearance investment, inner positivity, and filtering information in a body-protective manner.

Body appreciation encompasses the appreciation for features, functionality, and the health of the body. This is not merely an appreciation of how the body meets cultural ideals, but rather, an appreciation for what the body can do and its unique characteristics. Body

acceptance and love is expressing love and contentment with the body, even if not completely satisfied with all aspects of the body, however, this does not entail narcissism or vanity (Tylka & Wood-Barcalow, 2015). Thus, preoccupation with aligning to sociocultural ideals (e.g., thin models), being more attractive than others (e.g., body comparisons), and maladaptive practices to achieve and maintain an appearance ideal does not constitute body acceptance and love. Broadly conceptualizing beauty relates to maintaining a diverse perception of what engenders physical beauty and a broad conceptualization that derives beauty from other sources such as personality. Moreover, holding a broad conceptualisation is different from sexual attractiveness, therefore, a person may see that beauty derives from various sources but may not be sexually attracted to a person (Tylka & Wood-Barcalow, 2015).

Adaptive appearance investment consists of regular appearance-related self-care, such as personal styling, and grooming. Inner positivity relates to experiencing positive feelings such as happiness, confidence, and optimism whilst engaging in adaptive behaviours relating to appearance. Filtering information in a body-protective manner includes accepting information that fosters positive body image whilst scrutinizing and rejecting messages that may harm it. This is referred to as possessing a “protective filter” (Wood-Barcalow et al., 2010). Importantly, this protective filter is not invulnerable to all body-image threats, especially in challenging times (e.g., emotional distress, negative body-related comments from important others).

Research suggests that positive body image is associated with improved physical health and psychological wellbeing (Andrew et al., 2016; Augustus-Horvath & Tylka, 2011; Avalos & Tylka, 2006). A key misconception of positive body image is that it may be associated with poorer engagement with health behaviours, however, research indicates that positive body image is associated with engagement in health behaviours such as physical

activity, healthy eating, and self-care (Tylka & Wood-Barcalow, 2015). In sum, positive body image research is in its infancy, however, a consensus has emerged from its proponents indicating that it is multifaceted, holistic, stable yet malleable, and sculpted by social identities (Tylka and Wood-Barcalow, 2015). Further research is required to forge and validate its tenants.

Theoretical perspectives of body image have gleaned core mechanisms and provided measures, antecedents, and treatment approaches for body image. The space of positive body image offers a novel and compelling area for further investigation, moreover, as we navigate new horizons in our social milieus and appearance is becoming increasingly salient, more research is warranted to establish ways in which negative body image can be attenuated and positive body image cultivated. Given the negative physical and psychological consequences of negative body image and the positive and protective factors of positive body image, research that can glean such insights are critical.

2.2.4 Body image and mental health. Body dissatisfaction and body image disturbance have been implicated in a host of psychological challenges (Grogan, 2021; Cash, 2004). More specifically, body image disturbance has been implicated as a core mechanism in the diagnostic makeup of several psychopathological conditions including Anorexia Nervosa (i.e., “Intense fear of gaining weight or of becoming fat”) and Bulimia Nervosa (i.e., “Self-evaluation is unduly influenced by body shape and weight”) and Body Dysmorphic Disorder (i.e., “Preoccupied with one or more non-existent or slight defects or flaws in their physical appearance”), and Muscle Dysmorphia (i.e., “Preoccupied with the idea that his or her body build is too small or insufficiently muscular). Moreover, body image has frequently been associated with depressive and anxiety disorders (Phillips, 2004; Pritchard et al., 2020).

2.2.4.1 Body dysmorphic disorder and Muscle dysmorphia. Body dysmorphic disorder (BDD) relates to an individual's preoccupation with an "imagined" defect in his or her appearance (American Psychiatric Association, 1994). This defect may reflect a minor imperfection or can be non-existent objectively and can relate to a specific feature or the whole body (Phillips, 2004). This preoccupation precedes significant psychological disturbance and functional impairment within the individual's life. The most common preoccupations are with the skin, hair, nose, mouth, and chin (Phillips, 2004). Concerns typically involve perceived defects with the size of features (e.g., too large, or too small), acne, scars, and asymmetry (Veale, 2001).

In 1981, BDD was coined by psychiatrist Enrico Morselli as "dysmorphophobia" which derived from the Greek word "dysmorphia" meaning misshapeness or ugliness. Morselli remarked that 'Dysmorphia' first appeared in the Histories of Herodotus, referring to the myth of the "ugliest girl in Sparta.". After this, psychiatrist Pierre Janet referenced the disorder by describing a case study of a woman who was housebound for 5 years due to concerns about appearance. Janet described the nosology of BDD to be part of an obsessive-compulsive orientation which is referred to as "l'obsession de la honte du corps" (i.e., "obsessions of shame of the body"). Subsequently, Sigmund Freud and Ruth Brunswick described one of the most famous case of BDD referred to as the "Wolf man" who had a pathological preoccupation with a perceived defect with his nose. Dysmorphophobia was first featured in the *DSM-III* (1980) as an "atypical somatoform disorder" without any diagnostic criteria. The term "Body Dysmorphic Disorder" was first coined in the *DSM-III-R* (1987) and has remained in all future editions. The *DSM-IV* (2013; p. 345) includes BDD under the category "Obsessive-Compulsive and related disorders".

BDD can be distinguished from normative body dissatisfaction, by the significant disturbance experienced and functional impairment. Phillips (2004) states that BDD is

marked by excessive fixing and checking behaviours which can equate to 3-8 hours per day. Indeed, quality of life measures have indicated that BDD can present worse scores than individuals who have clinical depression (Phillips, 2004). Typically, individuals with BDD are unemployed, housebound, and often socially isolated due to their disorder. Due to this, BDD has a high rate of suicide and self-harm correlated with its severity and associated with "DIY" cosmetic surgery (Veale, 2001; Angelakis et al., 2016). BDD is often comorbid with major depressive disorder, social anxiety disorder, and obsessive-compulsive disorder (Angelakis et al., 2016; Frias et al., 2015). The onset of BDD usually occurs in childhood and adolescence and presents equally in both genders, however, gender differences tend to play a role in its symptomatology. Men, as with many psychiatric conditions are less likely to seek treatment. The prevalence of BDD is estimated to range from 1-2%, however, this may be underrecognized as proximal indicators such as having cosmetic surgery, indicate that 12.65% of dermatology patients and 15.04% of plastic surgery patients meet the diagnosis criteria for BDD (Higgins & Wysong, 2018).

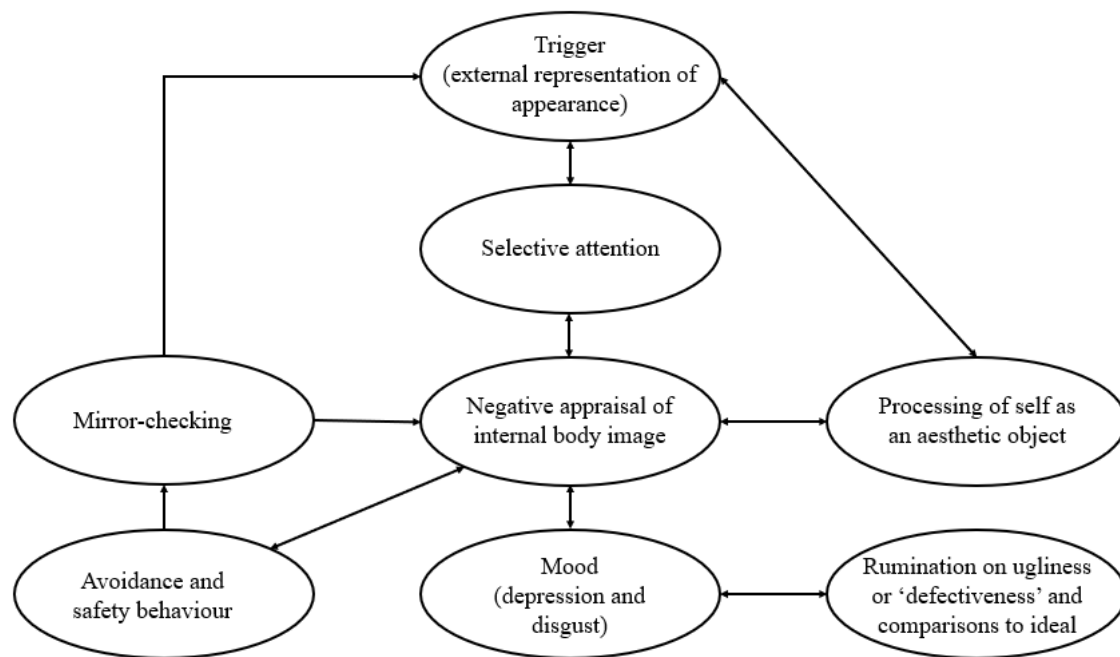
In 1993, Pope et al. observed a particular form of body dissatisfaction in a sample of male bodybuilders, which they called Reverse anorexia, subsequently changing it to Muscle dysmorphia (MD). MD is a condition characterised by a pathological preoccupation with one's perceived lack of muscularity and high adiposity levels. Typically, individuals who experience MD present hyper mesomorphic physiques with the desire to further enhance their muscularity and leanness. This preoccupation with muscularity and leanness can result in the individuals adopting maladaptive health practices such as excessive exercise, disordered eating, anabolic-androgenic steroid abuse, cosmetic surgery (e.g., Synthol application), and excessive supplementation use (e.g., Whey protein and creatine monohydrate), all of which may greatly impair the individual's functionality (Pope et al., 2000). Additionally, individuals with MD may exhibit avoidant behaviours such as evading social situations in which the

body is exposed (e.g., beaches), as well as checking behaviour, in particular related to muscularity (Olivardia et al., 2000). As with BDD, this preoccupation may greatly occupy the individual thinking (Cafri et al., 2008). Additionally, research suggests that a larger portion of individuals with MD are insufficiently attuned to their condition (Cafri et al., 2008). The estimated onset of MD is typically in late adolescence, but, its overall epidemiology is largely unknown, with prevalence rates indicative of 6.9% among young men (Compte et al., 2015). MD has been often considered to be a condition that afflicts men primarily, however, research has also indicated a rise in muscularity concerns among women (Grogan 2021; Homan, 2010). At present, MD resides as a sub-diagnosis of BDD in the *DSM- IV* (2013; p. 345). The criterion of MD is fulfilled by: a) preoccupation with being lean and muscular; b) negative beliefs about one's body and subsequent body avoidance or anxiety; c) interference of a) or b) in social, occupational, or other major areas of functioning. As with BDD, MD has comorbidity with a host of psychiatric disorders including anxiety disorders, bipolar disorder, and depression (Olivardia et al., 2000; Cafri et al., 2008), and among non-clinical populations social physique anxiety (Thomas et al., 2014), interpersonal sensitivity and paranoia (McFarland & Kaminski, 2009), and exercise dependence (Soler et al., 2013). Furthermore, the association between MD and eating disorders has received special attention. Indeed, a body of scholars argue that MD should be classified as an eating disorder (Cunningham et al., 2017; Santos Filho et al., 2016).

BDD and to a lesser degree MD have received a variety of research attention in areas such as nosology, aetiology, and comorbidity. Much of the literature on the treatment of BDD and MD relates to CBT approaches. Indeed, Veale (2001) developed a CBT model for BDD (see figure 2.8) The model depicts a trigger of an external representation of the individual's body image, which usually occurs in front of a mirror, or looking at photographs (Veale, 2001). Cognitive processes such as selective attention precede heightened awareness and

exaggeration of "flawed" features, consequently, leading to a distorted representation of his or her body. Behavioural manifestations such as mirror-gazing activate cognitions about the salience of appearance and symmetry or perfection, which can lead to negative aesthetic evaluations. Other cognitive processes such as comparisons occur among three different images – the external image (e.g., mirror or photograph), the ideal body, and the distorted body (Veale, 2001). Frequent comparisons can render the individual uncertain about their appearance, which encourages a desire to be certain about exactly what one looks like, which often leads to further reinforcement of the defect. If individuals avoid mirrors, their attention shifts internally typically to ruminations about one's defected appearance, which in turn can lead to a large discrepancy between the actual and ideal body, consequently leading to psychological disturbance. Another important component of the model is the view of oneself as an "aesthetic object" and the importance of external representation in social milieus. The "self as an aesthetic object" comprises four key components: a) mental imagery, b) self-focused attention, c) beliefs about the importance of self-focused attention, and d) the lack of a self-serving bias (Veale, 2004). In BDD, appearance is at the core of the self and represents the centre of a "personal domain" (Veale, 2004). Idealised values or cognitions in BDD will be about the importance of certain features (e.g., nose, hair, stomach), however, it may include symmetry, youth, and in MD muscularity. Such values reinforce the individual processing of the self as an aesthetic object (Veale, 2001). MD has received less research attention outlining specific models or preventative or treatment protocols. This scarcity may be due to nosological debates among scholars and the difficulties in recruiting clinical samples due to stigma (Cunningham et al., 2017; Murray & Griffiths, 2015). However, CBT has been proposed for MD in particular techniques such as cognitive reconstruction, exposure, and response prevention (Cunningham et al., 2017).

Figure 2.8. Cognitive behavioural model of Body Dysmorphic Disorder (Veale, 2001).



2.2.4.2 Eating disorders and disordered eating. Since the 1970s, research has indicated the presence of body image disturbance in eating disorders (Cash & Deagle, 1997). Eating disorders (ED) present psychiatric disorders marked by a persistent disturbance of eating that leads to manipulation in the consumption of food that vastly impedes individuals' physical health and psychological functioning (American Psychiatric Association, 2013). The current Diagnostic and Statistical Manual 5th edition (DSM-5) comprises several EDs including Anorexia Nervosa (AN), Bulimia Nervosa (BN), and Binge eating disorder (BED). Furthermore, contemporary research has examined the role of body image in disordered eating.

AN is characterised by restriction of energy input, which can lead to low body weight in comparison to societal norms in age, sex, and development. It is associated with a heightened fear of weight gain and body image disturbance, which leads to dietary restriction and the adoption of weight-loss behaviours such as excessive exercise and purging. Since its inception, AN has been associated with body image disturbance. Indeed, in the late 19th

century when researchers defined AN, it was characterised by marked weight phobia and a pathological preoccupation and investment in thinness (Habermas, 2015). Jean-Martin Charcot remarked that AN was captured by a young woman whose "body ideal was defined by excessive skinniness." (1883, p. 4, cited in Habermas, 2015). This factor of AN, particularly weight phobia, has been a central feature in the discussion of AN since the works of Bruch (1973). However, before this, early focus on the clinical definitions of AN reflected an emphasis on its emaciation. To this end, the *DSM-I* (1952) nor *DSM-II* (1968) included specific criteria or body image as an indicator of the disorder. Instead, the *DSM-I* diagnostic criteria of AN was conceived as a psychophysiological gastrointestinal reaction. Moreover, the *DSM-II* nosology shifted to a Feeding disorder under special symptoms not elsewhere classified. By the *DSM-III* (1980, p. 69) AN resided under Infancy, childhood, or Adolescence disorder section whose criteria highlighted "disturbance of body image" and weight phobia. This criterion has been present in all proceeding iterations of the *DSM* including the latest DSM-5, in which criterion C of AN reflects body image disturbance as "disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or persistent lack of recognition of the seriousness of the current low body weight".

BN is characterised by recurrent episodes of binge eating (i.e., at least once per week for three months) and compensation behaviour to remedy or abate weight gain such as purging, fasting, and excessive exercise. More specifically, these binges are marked by eating in a discrete period that is larger than the amount a typical person would eat in that given time, and an inability to control such eating. The nosology of BN has also been influenced by body image since its empirical inception. However, BN was not present in either the *DSM-I* (1952) or *DSM-II* (1968). BN was a largely under-recognized eating disorder until the 1970s when researchers Boskind-Lodahl (1976) and Russell (1979) conceptualised it. The initial

conceptualisation of BN had a central component of body image disturbance (i.e., fear of fat), furthermore, Boskind-Lodahl postulated the importance of fulfilling gender roles (e.g., thin ideals) in the development and maintenance of BN. Irrespective of this, the *DSM-III* (1980) did not feature body image disturbance nor any criteria for BN. However, its update the *DSM-III-R* (1987) addressed this and since then this has been a prominent feature in all iterations. Indeed, the most recent *DSM-5* (2013; p. 345) in criterion D reflects the role of body image disturbance in BN as “self-evaluation is unduly influenced by body shape and weight.”.

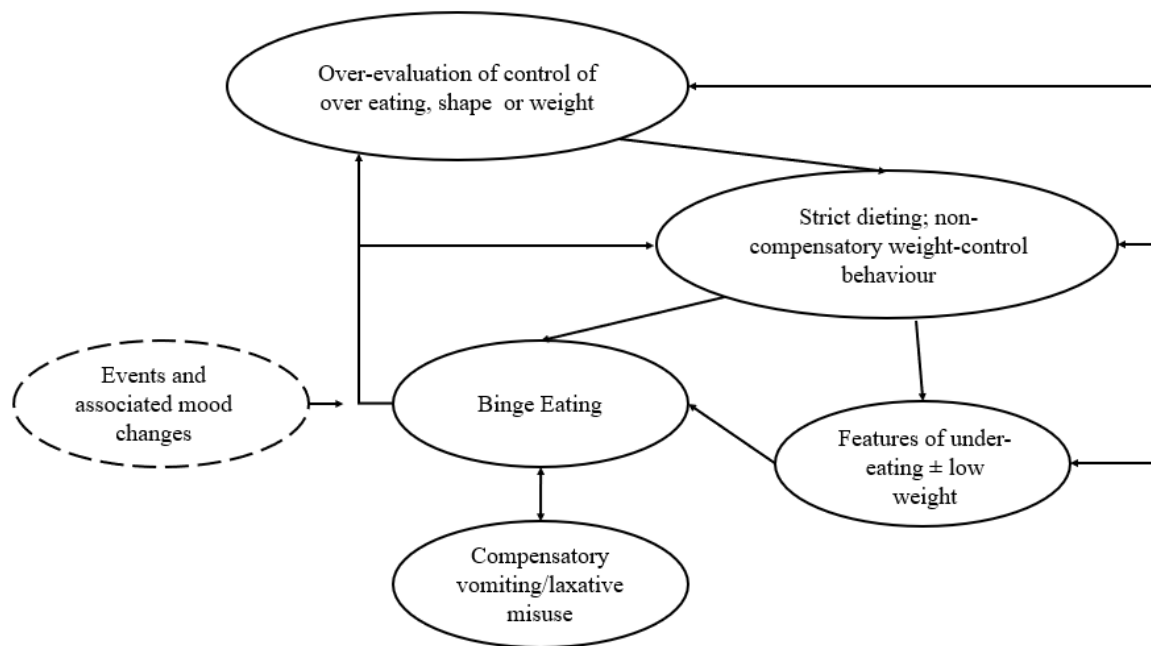
BED was identified in 1994 as a research category in the DSM-5. However, since its inception BED has established itself as an independent ED (Lewer et al., 2017). BED is characterised by disturbing recurrent episodes of binge eating (at least once a week for three months), however, unlike BN bingeing does not precede compensatory weight management behaviours to abate weight gain. Binge eating comprises three or more of the following: eating faster than usual, eating until uncomfortably full, eating copious amounts when physical hunger is absent, eating in isolation due to embarrassment with the quantities of what one is eating, and feeling intense shame, disgust, guilt, or depression after an episode. Unlike AN and BN body image disturbance is not at the core of BED, however, research indicated that body image disturbance may be a feature of BED, as individuals with BED have illustrated heightened levels of body checking and avoidance akin to AN and BN (Lewer et al., 2017).

The full threshold of ED presents a relatively low albeit growing prevalence, in particular among males (Swanson et al., 2011). Indeed, prevalence rates for AN, BN, and BED are approximately 0.9%, 1.5% and 3.5% among women and 0.3%, 0.5% and 2.0% for men respectively (Hudson et al., 2007). However, several decades of research have indicated that disordered eating (DE) appears to be more common among the population and includes

behaviours such as fasting, self-induced vomiting, laxative and/or diuretic abuse, restrictive dieting and binge eating (Swanson et al., 2011). As with EDs, DE compromises the physical and psychological health of individuals and is associated with mouth ulcers, digestive and urinary abnormalities, delayed puberty, depression, anxiety, low self-esteem, substance abuse and suicide (Dae et al., 2002; Garner & Keiper, 2010; Kotler et al., 2003; Nunes et al., 2003; Preti et al., 2011; Tylka & Subich, 2004). Furthermore, similar to ED's disorder eating has been positively correlated with negative body image, in particular, internalisation of the thin ideal and weight-related anxiety (Rakhkovskaya & Warren, 2014).

CBT is a core psychotherapeutic approach in the prevention and treatment of EDs. Indeed, the core pathology of eating disorder ("an over-evaluation of shape and weight") is considered a cognitive structure and CBT is widely accepted as the gold-standard treatment for BN. The transdiagnostic theory of eating disorders (Fairburn et al., 2008) extends the original theory across all EDs (see figure 2.9). This has indeed led to the development of enhanced cognitive behavioural therapy (CBT-E), which has been proved as effective as a transdiagnostic treatment for EDs (Fairburn et al., 2015). Specifically, looking at the role of cognition, cognitive distortions have been frequently associated with the acquisition and perpetuation of eating disorders (Rawal et al., 2010). In REBT specific research, a limited examination has been undertaken, however, research suggests that higher levels of irrational beliefs have been associated with higher eating disorder symptomology (Mayhew & Edelmann, 1989; Ruderman 1985; Lohr & Parkinson, 1989), poorer diet (Vassou et al., 2021), food addiction and emotional eating (Nolan & Jenkins, 2019) and eating problems (Tomotake et al., 2002). Albeit limited, research suggests that irrational beliefs may have a role in eating pathology and warrants further examination. Moreover, the role of rational beliefs has received no if little attention, given its centrality in the REBT model of health, this a critical in REBT research.

Figure 2.9. The Transdiagnostic model of eating disorders (Fairburn, 2008).



2.2.4.3 Depression and Anxiety. Depressive disorders are one of the most prevalent psychiatric disorders experienced in people of all ages, genders, and cultures (Guatam et al., 2020). Approximately, 280 million across the globe are impacted by a depressive disorder. The onset can occur at any time throughout the life span, however, typically occur during adolescence and early adulthood, with diagnostic rates tending to be higher in females than males (Guatam et al., 2020). Depressive disorders can range from transient mild symptoms to severe and debilitating clinical conditions that impede social and occupational functioning. Typically, this manifests in a constellation of cognitive, emotive, behavioural, and physiological symptoms including low or depressive mood, low energy, or fatigue, anhedonia, sleep disturbances, psychomotor disturbances, low self-esteem, suicidal proclivities, and food-intake and body-weight dysregulation. Usually, depressive disorders recur in sufferers, in which individuals go through periods of recovery and episodes of symptoms. Moreover, depression is highly comorbid with various psychiatric conditions

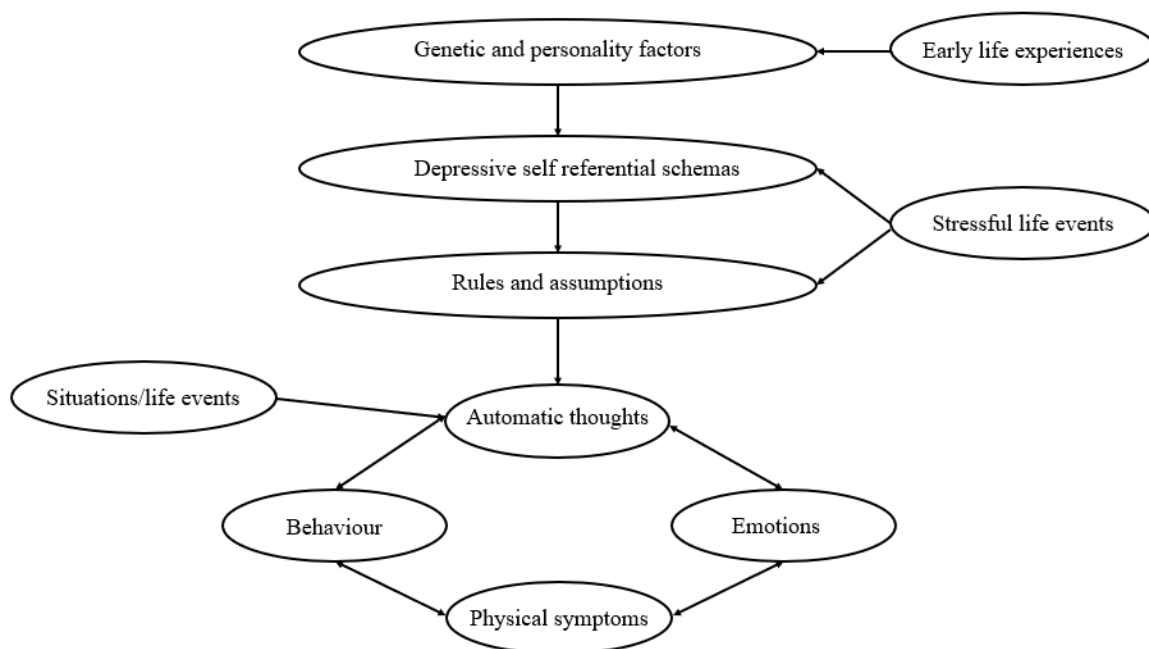
including anxiety disorders, substance abuse, and obsessive-compulsive disorders (Guatam et al., 2020). Data suggests that depressive disorders accounted for 8.2% of global years lived with disability in 2010, being the second leading cause of years lived with disability. In 2008, the world health organization (WHO) found depressive disorders the third cause of the burden of disease globally, projecting it to be first by 2030. Depressive disorders often have challenges in identification, diagnosis, and management due to the diversity in presentations and variability in response to treatment (Malhi & Mann, 2018).

Body image disturbance has frequently been associated with depression (Phillips et al., 2010). In BDD research, scholars have advocated that BDD may be a form of "affective spectrum disorder" (Phillips & Strout, 2006). Depressive symptomatology in BDD dates back over a century ago in 1891, Morselli remarked that those with BDD were "veritably unhappy". Research examining the prevalence of major depressive disorder (MDD) in BDD has indicated high lifetime rates of 68% (Hollander et al., 1993), 36% (Veale et al., 1996), 41% (Perugi et al., 1997), 76% (Gunstad & Phillips, 2003). In more contemporary research, Ching (2021) examined the degree to which body weight contingent self-worth predicted depressive symptoms among a sample of adolescent females. The data indicated a positive association between depression and body weight contingent self-worth, which was moderated by interpersonal sexual objectification. In a related study, Decker et al (2018) examined the relationship between internalized weight stigma between self-perceived weight and depressive symptomatology. The results highlighted that internalized stigma mediated the relationship between depressive symptoms, in that higher scores in internalizing stigma were associated with greater depressive symptoms.

CBT is one of the most evidence-based psychological treatment approaches for depressive disorders (Guatam et al., 2020). A large corpus of research has demonstrated its efficacy including a meta-analysis of 115 studies that found that CBT was effective as a

standalone intervention and was a more effective treatment approach than sole psychopharmacology methods (Fennell, 2012), with lower relapse rates than psychopharmacology also (American Psychiatric Association, 2010). CBT approaches for depression adopt a similar approach to other disorders, in that cognitions are central to the development and maintenance of depression. Beck's cognitive model (1967) of depression highlights the role of cognition in depression. In particular, the role of core beliefs, assumptions, schemas, and negative automatic thoughts (see figure 2.10)

Figure 2.10. Becks cognitive model of depression (Beck, 1967).



Anxiety disorders are one of the most prevalent psychiatric disorders and a leading cause of illness globally (Thibaut, 2017). Anxiety disorders include generalized anxiety disorder (GAD), panic disorder, agoraphobia, social anxiety disorder, phobias, and separation anxiety disorder. Of the anxiety disorders, isolated phobias present the highest prevalence (10.3 %), followed by panic disorder (6.0%), social anxiety disorder (2.7%), and GAD (2.2%) (Thibaut, 2017). Anxiety disorders are characterized by thoughts of worry in the face of perceived threats, that can lead to maladaptive cognitive, emotive, physiological, and

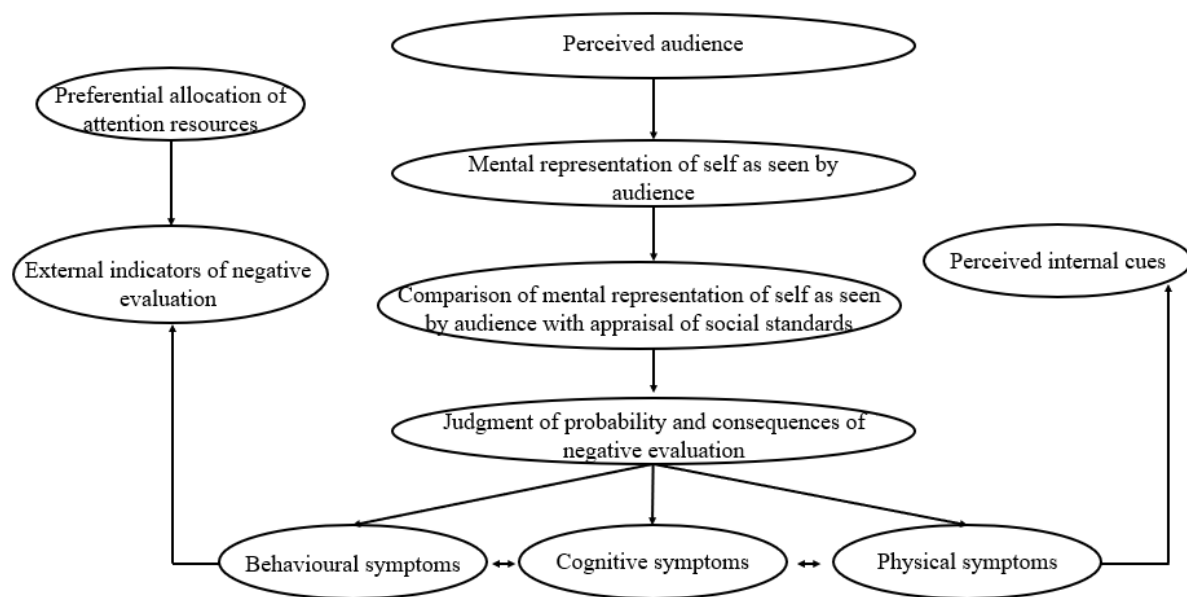
behavioural outcomes (Angst et al., 2009). Typically, women are 1.5 times more likely to receive an anxiety disorder diagnosis than men (Dodds, 2017). The onset of anxiety disorders varies by type of disorder, yet ranges between 7-20 years of age, with a marked reduction in prevalence after the age of 50 (Kessler et al., 2005). Similar to depression disorders, anxiety disorders often follow fluctuation periods of relapse and remission (Angst et al., 2009).

With body image, anxiety has been posited as a core mechanism in which body dissatisfaction may lead to eating disorders, disordered eating, and BDD (Aspen et al., 2013; Pallister & Waller, 2008). It is postulated that actual and perceived negative evaluations of one's physical appearance can pose threats to one's sense of self-worth, in particular, in those that internalize sociocultural body ideals (Aspen et al., 2013; Pallister & Waller, 2008). Researchers tend to disagree on which types of anxiety disorders influence body image dissatisfaction the most, however, a large body of literature suggests that social anxiety may be key in the development of body image disturbance. It is postulated that those who perceive themselves as unattractive tend to have greater social anxiety (Leary & Kowalski, 1995), and negative body image has been associated with self-consciousness (Theron et al., 1991) and social introversion (Archer & Cash, 1985). In BDD research, findings indicate that among those individuals that are suffering from BDD, between 12-68.8% also have a social anxiety disorder, and 4.8-12% of those with social anxiety disorder have BDD (Coles et al., 2006; Gunstad & Phillips, 2003; Menezes et al., 2005). Indeed, the relationship between social anxiety and body image has brought about a construct known as Social Physique Anxiety (SPA; Hart et al., 1989). Social physique anxiety is defined as "a subtype of social anxiety that occurs as a result of the prospect or presence of interpersonal evaluations involving one's physique" (p. 96). SPA is based on the notion that it is innate for individuals to be concerned with other peoples' evaluations of their physical selves. For some individuals, the perceived, or actual evaluation in particular negative evaluations can cause

heightened distress. This is particularly a concern in body-exposing situations such as exercise classes and gymnasiums due to the emphasis on the physical self (Gray, 1977). Research in SPA began by examining clinical populations with neural or physical defects (Hart et al., 1989; Leary & Kowalski, 1990). However, six decades of body image research have indicated that nonclinical populations can experience body image disturbance, in particular in adolescence which is evidenced as a vulnerable period for body image (Sabiston et al., 2007). SPA has been linked to a variety of health behaviours and psychological constructs such as self-esteem (Gargari et al., 2010), self-concept (Hagger et al., 2010), body dissatisfaction (Crawford & Eklund, 1994; Sabiston et al., 2007), eating disorders (Haase et al., 2002; Hausenblas & Mack, 1999), exercise motivations (Brunet & Sabiston, 2009; Hausenblas et al., 2004). Additionally, SPA has been positively associated with anthropometric measures such as body mass index (BMI), weight and body fat (Yaman, 2017).

Models of social anxiety disorder (see figure 2.11) emphasize the central role of cognitions in the maintenance of the disorder (Clark & Wells, 1995; Leary & Kowalski, 1995; Rapee & Heimberg, 1997). CBT techniques are frequently utilised in the treatment of social anxiety disorder that supports individuals to identify and change cognitive factors associated with maintaining the disorder. For example, Rapee & Heimberg's (1997) model supports individuals to examine cognitions relating to social standards, faulty perceptions of others' evaluations, and the consequences of negative evaluations from others.

Figure 2.11. Cognitive-behavioural model of social anxiety (Rapee & Heimberg, 1997).



In sum, body image is a pervading construct that can compromise the mental health of individuals, ranging from its core feature in eating disorder pathology and body image disorders to its association and comorbidity in depressive and anxiety disorders (Phillips & Strout, 2006; Aspen et al., 2013). Given the burden, such disorders have upon the individual's lives, any mechanisms that can contribute to our understanding and support the prevention and treatment of body image disturbance and by extension their associated disorders are pertinent.

2.2.5 Body image prevention and treatment. At present, there exists a diverse range of empirical-based body image prevention and intervention approaches. Most of these approaches derive from cognitive-behavioural conceptualisations of body image. The pioneering works of Cash (2002) have influenced the field of body image intervention practice and research. His seminal work extended upon the contributions of Schilder and Fisher by providing the first conceptual model of body image, and interventions aimed at

addressing body image dissatisfaction and disturbance. Since this point, several approaches have emerged including cognitive dissonance, media literacy, and third-wave cognitive behavioural therapy.

Cognitive behavioural therapy (CBT) is the most evidence-based approach utilised to address body image problems. The principal aim of CBT is to change maladaptive and dysfunctional cognitions, emotions, and behaviours, via techniques such as cognitive reconstruction, exposure and response prevention, psychoeducation, and self-monitoring. Cash et al. (1987) were among the first researchers to employ a cognitive-behavioural approach to deal with body image disturbance. They conducted a randomised controlled trial (RCT) comprising six one-to-one sessions with a cohort of women. Results indicated a decrease in body image dissatisfaction which was upheld for two months. Since this point, CBT approaches have been utilised in a variety of mediums such as audio-recorded and self-help books (e.g., Cash, 2008). Research supports the efficacy of CBT (Cash & Smolak, 2011), a meta-analysis of 19 CBT interventions found a large, positive effect ($d = 1.00$) on body image (Jarry & Ip, 2005). Moreover, a meta-analysis of techniques used within body image programmes has indicated that those including CBT techniques (e.g., self-monitoring, cognitive reconstruction) illustrated greater effects when compared to other methods such as bolstering self-esteem (Alleva et al., 2015).

Cognitive dissonance interventions have demonstrated effectiveness in eating disorder approaches in non-clinical settings (Watson et al., 2016). Cognitive dissonance interventions are based on the premise that holding cognitions incongruent with one's behaviour will evoke discomfort, which provides motivational potency to amend one's cognitions to match their behaviour to re-establish congruence (Festinger, 1957). It is conceived that this reconstruction in attitudes is the central mechanism that leads to a reduction in body dissatisfaction and eating pathology (Stice, 2002). Cognitive dissonance approaches can be

mapped onto Cash's cognitive body image model. For example, cognitive dissonance approaches typically target cultural socialization (e.g., the salience of thin ideals, historical influences) and body image investment (e.g., investment in thin-ideal). Furthermore, the approach looks at activating events/situations (e.g., viewing media), beliefs (e.g., appraisals of appearance) and emotive and behavioural consequences (e.g., anxiety in appearance exposing situations and avoidance), and encourages behaviour change (i.e., exposure) through tasks such as going to a gymnasium irrespective of fears of negative evaluation. Research indicates that cognitive dissonance approaches demonstrate large effects on body dissatisfaction, and thin-ideal internalization, with effects, maintained up to three years post-intervention (Stice et al., 2015; Stice et al., 2008). Unfortunately, much of the research conducted with cognitive dissonance overlooks and excludes males. Given, the increase in body image concerns among men (Olivardia et al., 2000), approaches examining males are greatly warranted. Research has begun to address this issue by examining the application of cognitive dissonance approaches among mixed sex-cohorts (Kilpela et al., 2016). Additionally, an adapted approach known as *The PRIDE Body Project* for homosexual men has demonstrated significant improvements in self-objectification, drive for muscularity, body dissatisfaction and eating pathology (Brown & Keel, 2015).

Another approach for dealing with body image challenges is Media Literacy. Media literacy is a didactic approach that teaches individuals skills to critically appraise media content. Thus, individuals learn how to identify, analyse, and challenge unrealistic, harmful, and unhealthy portrayals and messages via the media (Levine & Smolak, 2006). This approach can also be mapped onto cognitive behavioural approaches as it aims to reduce investment in appearance and unhelpful cognitive processes such as social comparison. In particular, this is achieved by creating scepticism about the salience, and accuracy of media portrayals. Furthermore, it teaches individuals to be critical of society's narrative of deriving a

sense of self-worth from our appearance. It is these ingredients which are conceived as central to reducing body dissatisfaction and appearance-fixing behaviours. Media literacy has demonstrated its effectiveness among adolescents and adult women (McLean et al., 2016). Additionally, given the rise of social media, adaptations of this approach have been made, for example, *Boost Body Confidence and Social Media Savvy* (BOOST; McLean et al., 2017).

Over the last decade, third-wave CBTs including Acceptance and Commitment Therapy (ACT), and Dialectical Behavioural Therapy (DBT) have been used as approaches to prevent and treat body image concerns. Third-wave approaches typically aim to instil and improve psychological flexibility, which is underpinned by present awareness (i.e., non-judgemental awareness of beliefs, emotions and physiological sensations), experiential acceptance (i.e., acceptance of difficult and painful internal states), cognitive defusion (i.e., detachment of thoughts as a part of oneself), values (i.e., clarifying idiosyncratic purpose and meaning), and committed action (i.e., behaving in a manner that aligns to one's values) (Hayes, 2004). Research indicates the efficacy of DBT to reduce body dissatisfaction among women (Mazzeo et al., 2016). However, the majority of studies conducted have examined eating disorder populations, so, it is yet known whether DBT-based interventions among non-clinical populations yield the same results. Comparably, ACT-based interventions hold similar findings illustrating reductions among adult women (Weineland et al., 2012a). However, the populations were often bariatric patients or in weight-management programmes.

Other approaches developed to reduce body dissatisfaction include mindfulness and positive body image programmes. Mindfulness approaches encourage body awareness and present awareness. Research indicates that single-session mindfulness exercises have demonstrated reductions in body dissatisfaction (Margolis & Orsillo, 2016). However, scholars have raised concerns that general mindfulness programmes may be too simplistic to

tackle and improve body image concerns (Johnson et al., 2017), and thus, propose the adaption of mindfulness-based programmes to include concepts and strategies that specifically target body dissatisfaction. *The Mindfulness Model* (Atkinson & Wade, 2016), achieved this by formulating a programme that specifically, applied mindfulness to body image concerns. Mindfulness has been combined with self-compassion approaches to improve body image (Albertson et al., 2015). Participants undertook daily self-compassion-based meditations. Results indicated improvements in appearance-based self-worth and body dissatisfaction with improvements were maintained up to three months post-intervention.

With the rise of focus on positive body image over the last 15 years (Tylka & Wood-Barcalow, 2015) there has been development in programmes aimed at targeting positive body image, in particular, constructs such as positive embodiment, body acceptance, and body functionality. One of the most-established programmes includes Alleva et al. (2018) functionality appreciation-based approach. This programme entails writing exercises designed to shift one's focus from their appearance to functionality, specifically, aspects such as bodily senses, capabilities, internal processes, creative endeavours, communication, and self-care (Alleva, et al., 2018). Results indicate that this approach demonstrates improvements in body image among adolescent and adult women (Alleva, et al., 2018; Alleva et al., 2015). Programmes designed to instil positive embodiments aim to encourage individuals to apply a more comprehensive view of the experience of being in a body (Piran, 2017). To this end, a positive experience of embodiment reflects comfort in, positive connection, agency in the body and the expression of desire and engagement in self-care (Piran, 2017). Contemporary body image approaches have begun to incorporate elements of embodiment, however, to date the most examined intervention approach is yoga (Tylka & Piran, 2019). Research has demonstrated the effectiveness of sole yoga approaches (Ariel-Donges et al., 2019) and yoga integrated with positive body image concepts (Halliwell

et al., 2019) in improvements in body image among adolescent women when compared with controls. Again, the modalities implemented in contemporary preventative and treatment approaches to body image can be mapped onto traditional cognitive behavioural approaches to body image (Cash, 2002; Cash, 2004), that implement relaxation and breathing techniques and imagery.

In summary, the history of body image prevention and treatment can be traced back and mapped onto cognitive behavioural approaches, what is apparent is that irrespective of the contemporary approach as Cash postulated changes in attitude, behaviours, and emotions are key in the prevention of negative body image and development of positive body image. Historically, body image treatment has neglected to include males, often conducted with clinical samples solely, and failed to incorporate mechanisms that foster positive body image. Due to the increasing prevalence of body image concerns it is critical to explore and identify robust prevention and treatment approaches that not only treat negative body image but create foundations for positive body image, it is also key that this is examined among a diverse array of populations. Literature suggests that CBT approaches remain the most evidence-based approaches, as such any such approach should and is likely to be grounded in its core principles.

2.3 REBT and body image.

2.3.1 REBT applied to body image. Research has indicated an association between cognitive processing and negative body image (Cash & Pruzinsky, 2002). Prominent cognitive behavioural therapists have published numerous studies (e.g., Cash & Muth, 1997; Veale, 2004; Jakatdar et al., 2006) highlighting cognitive structures associated with body image such as cognitive distortions. Despite this, there remains a paucity of research

investigating body image in respect of irrational and rational evaluative beliefs postulated by REBT.

To date, to the author's knowledge, only one study has examined the role of irrational beliefs in negative body image. Moller & Bothma (2001) examined the role of irrational beliefs in body dissatisfaction among three groups including an eating disorder group, a high body dissatisfaction group and a low body dissatisfaction group. The results indicated that there was no significant difference in body dissatisfaction between the eating disorder group and the high body dissatisfaction group in beliefs. Significant correlations were found for negative self-rating (i.e., self-depreciation) and body dissatisfaction in the high body dissatisfaction group. Moreover, the eating disorder group and high body dissatisfaction group reported higher scores in catastrophizing (i.e., awfulizing), low frustration tolerance (i.e., FI), and negative self-rating, compared to controls. The research provided partial support for the role of irrational beliefs in body image dissatisfaction. Interestingly the research indicated no relationship between the body image dissatisfaction group and the eating disorder group, contrary to extant literature. The researchers remarked that "the fact that the Survey of Personal Beliefs does not specifically measure irrational beliefs pertaining to weight, body shape, or physical appearance may have contributed to this result" (Moller & Bothma, 2004, p.27). Though this research provided tentative support, the research had several limitations by not capturing specific beliefs associated with body dissatisfaction (Moller & Bothma, 2001) and included a sample that mainly comprised university students, yielding its results non-generalizable.

Of the limited research examining the application of REBT to body image, several research papers have conflated REBT approaches with general CBT, therefore, there remains a lack of applied research explicitly examining the application of REBT. Butters and Cash (1987) applied a CBT program (REBT) to a college population of women with body image

dissatisfaction. The women were assigned to a treatment group ($n = 15$) or a waiting-list control group ($n = 16$). The treatment group (CBT) comprised six sessions. Participants were examined at pre-, and post-intervention and a 7-week follow-up upon several aspects of body image and other areas of psychosocial functioning. The treatment group reported improved affective body image, social self-esteem, physical fitness, and sexuality, and reduced maladaptive body-image cognitions when compared to controls. Moreover, the treatment effect was maintained at follow-up. Finally, after post-intervention, the control group received a 3-week treatment in which they reported immediate effects that replicated the treatment group. This research indicated partial support for the application of REBT principles in body image, however, limitations occurred due neglecting the measurement of change (i.e., beliefs). Unfortunately, the research did not measure irrational beliefs, being general or specific, nor was any measurement of rational beliefs undertaken. Given, that the central mechanism of change was irrational beliefs this was a key limitation. Additionally, due to the holistic approach of CBT, irrational beliefs were worked on simultaneously with cognitive errors, thus diluting any inference of change via irrational beliefs solely.

Horan (1996) examined a computer-based cognitive restructuring program (REBT) against a relaxation training control condition. The computer program targeted irrational beliefs linked to components of self-esteem including body image. Participants were assessed throughout the program. The results indicated larger improvements in rationality and self-esteem in the computer-based cognitive reconstructing program. This research provided compelling results, however, the psychometrics utilised provided limitations. Firstly, the measure used to capture irrationality/rationality was the Irrational Beliefs Test (Jones, 1968) a measure that derives from obsolete manifestations of REBT. Moreover, rational beliefs were not measured, and rationality was considered as reductions in irrational beliefs.

Additionally, body image was captured via self-esteem measures, rather than validated measures of body image.

Fadaei et al (2011) conducted a quasi-experimental study comprised of 72 patients diagnosed with breast cancer. The participants were randomly assigned to an intervention group ($n = 32$) or control group ($n = 40$). The intervention group received six REBT sessions across three weeks. Paired t-test results indicated that the body image scores were significantly lower in the intervention group (9.03 ± 6.11) compared to controls (17.18 ± 5.27) post-test ($t = -6.07, p < 0.001$). This research provided tentative support for the use of REBT among cancer patients. However, limitations included not measuring irrational beliefs, or rational beliefs and failing to conduct a follow-up to establish long-term effects. Thus, compromising interpretations of the role of irrational and rational beliefs in body image as a key mechanism of change.

More recently, Obiageli (2015) examined the efficacy of REBT and assertiveness training in the management of negative self-image. Psychological instruments were administered to 200 participants including: the Negative Self-image Inventory (NSII); Fear of Negative Evaluation (FNE); Index of Self Esteem (ISE); Illness Behaviour Questionnaire (IBQ); Physical Self-Efficacy Scale (PSE); Social Maladjustment Scale (SMS) and Adjective Checklist (ACL). Participants that scored highly in negative self-image ($n=30$) were randomly assigned into three groups: 1st treatment (REBT and assertiveness training), 2nd treatment (placebo) and control group. The groups included 10 participants each of which half were male and half were female. The treatment lasted eight weeks and participants underwent group therapy. The results indicated that the first treatment group (REBT and assertiveness training) reported significant reductions in negative self-image when compared to controls. This study offered support for the application of REBT and assertiveness training in dealing with negative self-image. This study was also compromised by several limitations,

including measurement, as there was no measure of irrational or rational beliefs.

Furthermore, given that assertiveness training was also a part of this study, it is hard to infer whether REBT or assertiveness training brought about changes in negative self-image.

Sampling challenges existed also, as the sample was derived from a university sample solely aged between 16-26, thus, interpretations to older populations may need to be tempered.

Yang and Han (2020) examined an REBT binge eating program among a population of college students ($n=46$). The participants were assigned to an experimental or control group. The research examined several variables including self-esteem, covert narcissism, perfectionism, body dissatisfaction, anxiety, depression, and binge eating. The data was analysed via frequency analysis, χ^2 tests, t-tests, and analysis of covariance. The results reported positive effects on all variables when compared to controls. This study provided insightful findings for the application of REBT in binge eating, negative body image, and related constructs. However, several limitations arose. First, the study's sample comprised of an all-female population, thus, limiting its generalisability to other populations (e.g., men). Second, the study did not have a long-term follow-up phase, thus, inferences cannot be made about its long-term effectiveness. Third, Cronbach's alpha results indicated low scores, therefore, the results derived from this study may have been compromised. Finally, as with previous research this study neglected the measurement of irrational and rational beliefs, thus, inferences about change cannot specifically or partially be attributed to changes in beliefs, as per REBT.

REBT research in body image is limited, and of this research, there have been several methodological limitations, in particular, themes have emerged with measurement of change (i.e., measurement of belief), implementing follow-up phases, and including diverse samples. Thus, to examine the utility of REBT in body image and advance the field of REBT it is pertinent that these limitations are addressed.

2.4 Measurement of body image beliefs

2.4.1 Irrational and rational beliefs measurement. Irrational and rational beliefs are at the core of REBT theory, therefore, the need for empirically robust and well-validated psychometrics of these constructs are critical. Valid, and reliable psychometrics is an essential prerequisite of any theoretical construct, to provide the necessary support to validate any psychotherapeutic approach. At present, there exist more than 40 measures that assess Ellis' construct of irrational and rational beliefs (David et al., 2019). However, evidence supporting their reliability, validity, and factor structure has vastly varied and suffered several limitations (David et al. 2019; Terjesen et al. 2009). Consequently, these methodological limitations have partially compromised data of REBT research over several decades (David et al., 2019).

A review by Terjesen et al (2009) highlighted several limitations of beliefs measures. First, measures typically did not capture cognitive content exclusively (i.e., irrational beliefs), but instead were contaminated by affect-related states (Smith, 1989). For example, scholars have highlighted that irrational belief measures contain affect-related items such as "I often get excited or upset when things go wrong" (Robb and Warren, 1990) and behavioural-related items such as "I avoid facing my problems" (Jones, 1968). Ramanaiah et al (1987) examined items of irrational belief measures (e.g., RBI, IBT) and determined that only 50% of the items were stated as beliefs. Robb and Warren (1990) found that only the Belief Scale (Malouff and Schutte, 1986) and the General Attitude and Belief Scale-II (DiGiuseppe et al. 1989) included exclusively belief items. Moreover, they found that the measures contained items that included other CBT cognitive constructs such as automatic thoughts or inferences rather than irrational beliefs. Such limitations proved challenges for statistical processes such as discriminant validity (Smith & Zurawski, 1983). Moreover, the measures only measured irrational domains of beliefs, with rationality scores generated as a reverse of irrationality

scores or low irrationality scores. Given that REBT theory distinctively postulates the distinction between the functional and the adaptive nature of irrational and rational beliefs this development presents a large shortcoming. REBT theorists assert that irrational beliefs and rational beliefs are not orthogonal, as such low irrational beliefs do not imply high rational beliefs or vice versa (Bernard, 1998). Another limitation of REBT measures is their internal validity, in which the majority have reported unacceptable Cronbach coefficients, specifically when looking at subscales (David et al., 2019). Moreover, test-retest reliability has been examined in a limited number of studies. As such, Terjesen et al (2009) concluded that none of the psychometrics available for measurement of irrational and rational beliefs possessed acceptable psychometric properties.

Early measures may have suffered from such challenges due to the theoretical shifts in REBT theory. Indeed, initial irrational belief measures were developed upon Ellis's (1962) original eleven irrational beliefs such as condemnation of self and others, demands, factual errors, lack of endurance/or perseverance and catastrophizing. Ellis (1977) revised his theory and proposed four central cognitive processes that derived from rigid and absolutistic thinking called demandingness which was at the centre of psychopathology. The other three derivative beliefs included Awfulizing (AWF), Low Frustration Tolerance and Global Evaluations of Human Worth or self/other world depreciation. Thus, measures capturing irrational and rational beliefs differ in the way they conceptualise beliefs either being from the original eleven irrational beliefs or the revised four cognitive processes, meaning that previous measures are theoretically obsolete.

Some more contemporary measures have addressed many of the limitations of REBT measures, including the Attitudes and Beliefs Scale-2 (ABS-2; DiGiuseppe et al. 1988). However, examination by Hyland and colleagues (2014) have disagreed with this contention reporting the ABS-2 yields poor factorial validity after examination via confirmatory factor

analysis (CFA). Furthermore, they reported poor discriminant validity, as correlations between the items were all high. Furthermore, Mogoase et al. (2013) have criticised measures that endorse composite scores of irrational and rational beliefs for irrationality, thus, including reverse scores of items assessing rational beliefs. Hyland and colleagues aimed to address the problem by removing "contaminated" items from the ABS-2 through bifactor analysis, thus removing items which were conflated by the contextual factors (i.e., affiliation, achievement). The revised and abbreviated ABS-2 (ABS-2-AV; Hyland et al., 2014c) produced satisfactory validity and reliability. However, the measure received further criticism due to the sampling methods applied, in which the research utilised a small sample comprised of trauma-exposed law enforcement officers (i.e., special population)(ref).

Another area of research that has not received much attention is the development and assessment of irrational and rational psychometrics that examine specific populations, constructs, disorders, or problems rather than general irrational and rational beliefs (David et al, 2019). To date, only three measures capture specific content including: The irrational food beliefs scale (IFB; Osberg et al., 2008); The Irrational performance beliefs inventory (iPBI; Turner et al., 2018); The Exam-Related Beliefs Scale (EBS; Montgomery et al., 2007). Indeed, the ABS-2 AV has provided a questionably sound psychometric for general irrational beliefs. However, context-specific measures are essential, and at present, there is no body image beliefs measure. Recent recommendations highlight the importance of contextually driven measures to comprehend specific populations and conditions more accurately (Ziegler & Horstmann, 2015; Breevaart et al., 2012). Given this, developing an irrational and rational beliefs measure that can accurately capture beliefs associated with body image is critical to further the field of research. Especially, given that research suggests that measures that specifically measure body image cognitions over general cognitions are key in body image (Cash et al, 2004).

Overall, the corpus of research indicates the requirement for more robust, contextually specific, valid, and reliable measures of irrational and rational beliefs. Such measures would support practitioners to garner greater insights into specific irrational beliefs (e.g., body image beliefs vs general beliefs) and foster more specific intervention development that can advance REBT efficacy and effectiveness. However, using measures that are limited by psychometric support may negatively impact research and clinical practice of REBT, as such should be considered with caution.

2.4.2 Body image measurement. There has been a rise in the examination of body image over the last 70 years (Cash & Pruzinsky, 2002; Grogan, 2021). Consequently, this has resulted in the development of new and revised measures designed to capture one or several dimensions of body image (Cash, 2002; Thompson, 1996; Kling et al., 2019). Research cites that there are more than 150 different body image measures (Kling et al, 2019).

Unfortunately, these measures have often been plagued by validity issues, such as Cronbach alpha scores, lack of test-retest reliability, homogeneous samples (e.g., all-female), containing items that do reflect gender differences, and measuring negative dimensions solely (i.e., negative body image), consequently, impacting their scientific robustness and utility among researchers and clinicians (Cafri & Thompson, 2004; Schaefer et al., 2019). Scholars have often commended researchers' empirical questions, the robustness of their design, and the sophisticated data analysis approaches adopted, however, have often been underwhelmed by researchers' misinterpretation of the constructs and dimensions of concern. The challenges the body image psychometrics have faced have been often attributed to the labile conceptualisation of body image over the decades (Thompson et al., 2012). For example, Thompson et al. (1999) distinguished 14 different terms utilised to measure or reflect some dimension of body image, which has continued to expand. Such diversity often makes it challenging for scholars to reach to consensus. With that said, scholars tend to agree that the

measurement of body image can fall under two broad categories including perceptual body image and attitudinal body image (Thompson et al., 1999; Cash, 2002).

2.4.2.1 Perceptual body image measures. Perceptual measures reflect the accuracy of one's appraisals of size and shape, also known as body size estimation (BSE). Research around perceptual measures are controversial, however, a diverse array of techniques have been developed including analogue scales, image marking, optical distortion methods, figural drawing scales and psychophysical methods (Hsu & Sobkiewicz, 1991). Analogue scales measure individuals' perception of the distance between two points or a pair of callipers to indicate the size of their body (Shontz, 1969; Slade & Russell, 1973). Image marking (IM) entails assessing an individual's ability to draw areas of their body on a vertically mounted piece of paper to indicate the width of certain parts (Askevold, 1975). Research suggests that test-retest reliability demonstrates good reliability for shoulders, hips, and thighs, but reliability coefficients for chest and waist are poor (Askevold, 1975). Data on the convergent and construct validity of IM are lacking resulting in its infrequent use in recent years (Gardner, 2011).

Optical distortion techniques utilise computer software that portrays a distorted image of the individual in which they are required to rectify the image to depict their actual and ideal size (Hennighausen & Remschmidt, 1999). Optical distortion methods deploy a diverse array of methods including distorting photographs, distorting mirrors, and videos. Glucksman and Hirsch (1969) utilised one of the first methods to measure BSE by subjecting individuals to distorted photographs. Subjects were required to estimate their size from a projected photograph of their body, this image was distorted along a horizontal axis with an anamorphic lens. Distorted mirror techniques consist of a full-length mirror made of crystal glass that can be manipulated to reflect the subject's body distorted along a continuum ranging from actual to completely distorted (Traub & Orbach, 1964). Test-retest reliability

for distorted mirror techniques has been shown to be mediated by the presence of psychopathology, with patients with schizophrenia demonstrating scores between .40-.74 with controls scoring between .70-.81 at two times points (i.e., one month). The Video Distortion Technique was first employed by Allebeck et al. (1976) which entails using a television monitor to manipulate subjects' height/width by +/- 20%. The researchers reported excellent test-retest coefficients between .86-.90 across 11 days.

Figure scale drawings often referred to as silhouette scales are line drawings of the human body ranging from larger to thinner bodies. These measures are often employed to measure attitudinal components of body image reflecting satisfaction or dissatisfaction. Typically, the scale comprises a discrete number of drawings usually between 5-12 in which individuals are requested to indicate the images that reflect their actual size and ideal size. The discrepancy between the elected actual size and the subject's actual BMI is conceived as a measure of body size distortion (Garnder, 2011). Williamson et al. (1989) were the first to utilise this method to measure BSE, since then it has been used and amended across a wide range of populations including obese individuals, children, and several ethnic groups. Unfortunately, there is a dearth of reliability and validity procedures for figural scale drawing methods, and this technique has been subject to scrutiny from scholars. Gardner et al. (1998) postulated that this method is likely to produce "spuriously high" test-retest reliability due to testing effect bias in which participants remember the figure they previously indicated. Moreover, Doll et al. (2004) illustrated that the results of figure scale rating could be manipulated by changing the order in which the figures were presented, with differences between random distributions to ascending.

Psychophysical techniques entail the separate measurement of sensory and nonsensory components of BSE. Sensory components relate to stimuli responses deriving from the visual system such as the retina and visual cortex. Nonsensory components relate to

processes deriving from cognitive and affective components illustrating how the brain appraises visual stimuli. Researchers have found that all methods capturing BSE tend to be confounded by these two aspects resulting in inconsistent findings (Fonagy et al., 1990). Furthermore, researchers highlighted various errors that tarnished the accuracy and validity of these measures collectively known as errors of anticipation. As a result, researchers have deployed several psychophysical methods to minimize errors of anticipation including the method of constant stimulus, signal detection theory, and adaptive probit estimation. Method of constant stimuli (CMS) entails presenting subjects with a range of discrete stimuli usually between 5-9 values, which range from distortion to no distortion. Upon trial, the participant is presented with one of these images and has to determine whether it is an over or underestimation of their body. Signal detection theory was coined by Tanner and Swets (1954) it entails presenting subjects with a static image of their body that is either distorted or the actual size in which they have to report whether distortion is present or absent. The technique provides two distinct measurements including sensory sensitivity (d) which relates to the subject's sensitivity to detect distortions in the presented images, and non-sensory response bias (β) which reflects the subject's proclivity to report whether an image is distorted or not, with higher levels of β values indicating a response bias to report that distortion is absent. Finally, adaptive probit estimation (APE) has been utilised by Garnder (1996) and entails researchers estimating the means and standard deviation of the error distribution for body size estimates and presenting subjects with four stimulus distortion levels at $\pm .45$ and ± 1.35 z values. The APE utilises similar methods as the CMS to present the stimuli, however, the APE allows for the four blocks of stimuli to be revised.

Perceptual measurement methods have provided rich insights into the role of perception in the development of body image, however, have suffered from several methodological challenges. Nevertheless, research in this area is still growing aiming to

advance and address its limitations. In the field of body image, the measurement of body image has tended to orientate toward attitudinal measurements of body image as such there are a host of measures that capture its multiple facets.

2.4.2.2 Attitudinal body image measures. Attitudinal measures assess an individual's perceptions of their appearance including their satisfaction/dissatisfaction, cognitions (e.g., attitudes, thoughts, beliefs, investment), affect (e.g., anxiety, shame, guilt), and behaviours (e.g., avoidance). Over the last two decades, there has been a rise in measures developed to measure unique aspects of attitudinal body image including novel dimensions such as muscularity and positive body image. Additionally, the works of Cash (2004) have developed several cognitive-behavioural measures to support researchers and clinicians. Similar to perceptual measures, attitudinal measures have too faced several limitations due to methodological issues, albeit to a less extent.

Global subjective satisfaction measures concern one's overall satisfaction with the body including its size, weight, shape, and specific body parts (e.g., legs). It is conceived that body image dissatisfaction reflects negative attitudes towards the overall body or specific parts. Two key methods for capturing subjective satisfaction include Figure scale drawing and questionnaires. Subjective satisfaction measures employ the same methods as perceptual methods when distinguishing satisfaction or dissatisfaction, however, dissatisfaction is calculated via the discrepancy between actual-ideal body sizes. This method has been greatly utilised due to its ability to easily manipulate various aspects of the body such as the chest, arms, legs, muscularity, and body fat. This has been further advanced by more sophisticated methods such as computer software and anthropomorphic measurements that have improved its methodological robustness.

Questionnaires have been vastly utilised to measure the diverse attributes of body image dissatisfaction and satisfaction. The measures typically fall into two categories: measurement of satisfaction-dissatisfaction with specific body parts (e.g., nose, eyes, legs, arms, chest) and those that measure satisfaction-dissatisfaction with the overall appearance. Questionnaires typically employ a Likert rating scale to assess satisfaction-dissatisfaction or agreement-disagreement with appearance-related items. Prominent measures capturing satisfaction related to body image include the Body Appreciation Scale-2 (BAS; Tylka & Wood-Barcalow, 2015b), Figure Rating Scale (FRS; Stunkard et al., 1983), Body Esteem Scale (BES; Franzoi & Shields, 1984), Body Shape Questionnaire (BSQ; Cooper & Fairburn, 1987), and Multidimensional Body Self-Relations Questionnaire (MBSRQ; Brown et al., 1990).

Affective measures reflect one's emotions relating to appearance such as anxiety, shame, guilt, disgust, or discomfort (Cash, 2004). Emotional distress associated with appearance can be body part specific or general weight/shape status, contextual or situational, in which distressing emotions occur in romantic encounters or with peers, or in public places such as swimming pools, leisure centres or beaches. Prominent measures capturing affect-related body image include Objectified Body consciousness Scale – body shame (OBS; Mckinley & Hyde, 1996), Physical Appearance State and Trait Anxiety Scale (PASTAS; Reed et al., 1991), and Situational Inventory of Body Dysphoria (SIBD; Cash, 2002).

Cognitive measures reflect one's cognitions, thoughts, attributions, and beliefs relating to one's appearance, such as schemas, distortions, and cognitive salience/investment of appearance that are a central component to body image disturbance (Cash, 2004). Given the importance of the cognitive component of body image and psychopathology, there remains a dearth of measures capturing this domain, however, prominent measures capturing cognitive body image include the Appearance Schema Inventory (ASI; Cash & Labarge, 2005),

Assessment of Body Image Cognitive Distortions (ABCD; Jakatdar et al., 2006), and Sociocultural Attitudes Toward Appearance Questionnaire-3 (SATQ; Thompson et al, 2004).

Finally, behavioural measures have received increasing attention, irrespective of the difficulty to capture behavioural components of body image. Behavioural body image measures assess behaviours relating to one's appearance such as avoidance (e.g., fitness centres), body checking, and fixing. Prominent measures include the Body Checking Questionnaire (BCQ; Reas et al., 2002) and Body Image Avoidance Questionnaire (BIAQ; Lydecker, 2015).

In addition to measures assessing the key components of body image, there are available several measures that assess clinical BID such as BDD and MD. For example, the Body Dysmorphic Disorder Diagnostic Module (BDDDM; Phillips, 1994), and Structured Clinical Interview for DSM Disorders (SCID; First et al., 1997a) are both based on the DSM-IV diagnostic criteria that are designed to support the assessment of a diagnosis of BDD (Phillips, 1996). In MD, several measures have been developed including the Drive for Muscularity (DMS; McCreery & Sasse, 2000), Muscle Areas Satisfaction Scale (Mass; Mayville et al., 2002), and Muscle dysmorphic disorder inventory (MDDI; Hildebrandt et al., 2004).

The proliferation in positive body image research has been followed by a demand for measures aimed at capturing domains of positive body image such as body appreciation, positive rational acceptance, body image flexibility, and body functionality (Tylka & Wood-Barcalow, 2015; Alleva et al., 2017). Unfortunately, the field of body image has neglected positive experiences and protective factors of body image, as such much of the measures that capture attitudinal and perceptual body image indicate body image dissatisfaction, BID and neutral components of body image. The measurement of positive body image and factors

related to it is a pertinent step in supporting scholars and practitioners to treat and prevent negative body image and cultivate positive body image. Moreover, given the critical role of cognitions in BID and psychopathology, in particular, maladaptive cognitions (e.g., cognitive distortions, irrational beliefs) there is a dearth of measures capturing this domain of body image, creating a theoretical and practice gap in our understanding of mechanisms that contribute to the development of negative and positive body image. Robust measures are a prerequisite to developing effective prevention and treatment approaches, therefore, it is imperative to develop valid, reliable, and accurate measures of body image that capture both negative and positive aspects of body image.

2.5 Rationale for the current program of research

The theory of REBT remains one of the most prominent forms of CBT, which has been validated across various populations and several psychological challenges (David et al., 2019). REBT postulates irrational beliefs as a central mechanism in psychopathology (i.e., REBT model of psychopathology), and rational beliefs as central to psychological health (REBT model of psychological health). REBT's scientific advancements have been partially compromised by a scarcity of valid and reliable, and theoretically driven measures that capture irrational and rational beliefs (Terjesen et al., 2009). Indeed, of the 40 or more measures that are available, the vast majority have suffered from methodological limitations due to their validity, reliability, sample selection, and factor construct (Terjesen et al., 2009). However, advancements have been made that have remedied some of this methodological blight. With that said, to date, there remains a paucity of research evaluating the application of REBT in body image, and of the limited research this has been nullified due to researchers neglecting the measurement of beliefs (irrational or rational beliefs). Moreover, no measurement exists that assesses irrational and rational beliefs associated with body image, consequently, limiting any such inferences deduced from research in this space.

Body image research has seen a steady proliferation due to its impact on psychological and physical health (Grogan, 2021) including the risk of the development of body dysmorphic disorder, muscle dysmorphia, eating disorders, and anxiety and depression. Moreover, body image measures have suffered from similar methodological challenges as beliefs measures such as lack of test-retest, homogenous samples, and gendered items (Kling et al., 2019). Additionally, given the centrality of cognitive distortions (e.g., irrational beliefs) in psychopathology, there is a dearth of measures capturing distortions about body image. Moreover, measures of body image typically capture negative domains of body image, thus, neglecting protective and positive mechanisms of body image (Tylka & Wood-Barcalow, 2015). Irrational beliefs are ubiquitous and given the centrality of the physical self in our self-concept, it is feasible to suggest that they may permeate body image cognitions, as research suggests (e.g., Moller & Bothma, 2001). Our daily lives may present a fruitful milieu for irrational body image beliefs to thrive, especially, in cultures which are preoccupied with aesthetic ideals such as the thin ideal (Grogan, 2021). Indeed, this may be exacerbated by contemporary developments within our daily lives such as the use of social media networks (e.g., Instagram) which may provide a platform for social comparisons to be operationalised.

Examining the application of REBT to body image, and the development of a psychometrically sound measure provides a rich area of research contributing greatly to the scant literature on REBT and body image. Therefore, the key aims of this PhD thesis were to examine the application of REBT in body image, measuring both irrational and rational beliefs. Subsequently, to develop and validate a robust, contextually specific, and reliable measurement of irrational and rational beliefs related to body image, guided by recommendations by Terjesen et al. (2009) and Kling et al. (2019). In doing so, this thesis will conduct an REBT intervention, and scale development which will include item generation, content validity (i.e., an examination from expert and usability panels), factor

analysis (i.e., confirmatory factor analysis), criterion validity, and test-retest, consequently, addressing shortcomings of research in REBT and body image and contributing the research and practice literature.

Chapter 3

Methodology

3.1 Research design.

The principal aims of this study were to examine the effectiveness of REBT on body image and develop a valid, reliable, and contextually specific scale for the measurement of irrational and rational beliefs concerning body image. To do this the PhD took place in two phases: I) Applied phase, II) Scale development phase. A mixed-method approach was adopted across the studies. A mixed-method design is defined as:

Mixed methods research refers to a type of research in which a researcher or team of researchers combine elements of qualitative and quantitative research approaches (e. g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques). Mixed methods are often employed to bolster the scientific rigour, depth and conclusions drawn within a body of research (Johnson et al. 2007, p. 123). In particular, Greene et al. (1989) identify five key purposes of employing mixed-method designs including: triangulation - which relates to the convergence, corroboration, and correspondence of results from different methods; complementarity - which relates to seeking clarity, elaboration, and illustration of methods with the results of another; development - which relates to using results from one method to support or inform the development of another method; initiation - which relates to the discovery and comprehension of paradoxes, contradictions, and new insights or perspectives of frameworks and theory; expansion - which relates to garnering further depth and breadth by the deployment of a diverse range of methods and inquiry components. More recently, Bryman (2006) have provided further rigour to the rationale of adopting a mixed-method approach by providing key classifications in addition to Greene's categories including: Credibility - which relates to applying both approaches to enhance the integrity of findings; Context - which relates to utilising qualitative methods to foster richer

insights to the contextual nuances within research that quantitative methods do not afford.

Mixed methods research is considered as having three different drives including:

Qualitative dominant [or qualitatively driven] mixed methods research is the type of mixed research in which one relies on a qualitative, constructivist-poststructuralist-critical view of the research process, while concurrently recognizing the addition of quantitative data and approaches are likely to benefit most research projects.

Quantitative dominant [or quantitatively driven] mixed methods research is the type of mixed research in which one relies on a quantitative, postpositivist view of the research process, while concurrently recognizing that the addition of qualitative data and approaches are likely to benefit most research projects.

The area around the center of the [qualitative-quantitative] continuum, equal status, is the home for the person that self-identifies as a mixed-methods researcher. This researcher takes as his or her starting point the logic and philosophy of mixed methods research. These mixed methods researchers are likely to believe that qualitative and quantitative data and approaches will add insights as one considers most, if not all, research questions. (Johnson et al., 2007, p.123-24).

Given the nature of both intervention and scale development research, this study is orientated towards a quantitative dominant (or quantitative driven) approach. Thus, both qualitative (e.g., interviews) and quantitative (e.g., psychometrics, statistical analysis) methods were employed in both phases to provide a rigorous approach to the research questions, however, the research was led by quantitative inquiry and discovery, and qualitative methods provided support, nuance, and clarity to the complexities of phenomenon

at hand. In the applied phase, a single case design was the elected in keeping with contemporary REBT intervention research (e.g., Wood et al., 2018) and the scale development phase was guided by the principles of scale development by DeVellis (2021) a widely used framework in measurement research (Boateng et al., 2018).

3.2. The legitimization of mixed method design

Mixed methods are a methodology approach that is still in its infancy and scholars are still developing processes and procedures to rigorously test its validity, which is better known as legitimization. As such, to bolster the veracity of the methodological design Onwuegbuzie and Johnson's (2006) nine-component typology for assessing mixed research legitimization was examined to support the legitimization of the research design. The nine legitimization types include inside-out, paradigmatic mixing, consumerability, conversion, weakness minimization, sequential, sample integration, multiple validities, and political. Below each typology was explored and assessed in reference to actions taken in the present thesis (For an overview, see table 3.1).

Inside-out relates to the degree of accuracy and adequacy of utilising both inside (i.e., emic) and researchers (i.e., etic) viewpoints when appraising psychological phenomena (Onwuegbuzie et al., 2011). Moreover, the balance of these two views to provide rigorous meta-inferences in which, "both sets of inferences [i.e., from the qualitative and quantitative components] are combined into a coherent whole" (Tashakkori & Teddlie 2003a, p. 686). In the present thesis, a quantitative dominant mixed study was the predominant status, however, this oscillated along a spectrum towards a qualitative dominant status in particular times of the research, in particular studies 1 and 2 when understanding and forging of the phenomenon was at the forefront. In order, to address issues of the vying of quantitative/qualitative

dominant stances it is recommended that the researcher when the status is equal, to shift one's voice iteratively between etic and emic perspectives when collecting and presenting research findings, allowing readers to comprehend the participants and researchers world vicariously and concurrently (Onwuegbuzie et al., 2011). This type also relates to the issues such as positions that were held regarding subjective vs objective reality, in which the present study considered it was essential to elicit personal experiences as well as objective reality, in which known challenges (e.g., dissatisfaction with bodyfat), cognitions (i.e., irrational and rational beliefs) to social sciences as well as how the participants and panels experienced these phenomena personally and professionally were triangulated. Emphasising a strong intersubjectivism and moderate subjectivism and objectivism in studies 1 and 2 (Morgan, 2007). This was applied in the data collection and reporting through the implementation of questionnaires, interviews, and social validation data in studies 1 and 2, thus, yielding richer data insights.

Paradigmatic mixing relates to the degree to which the researcher's epistemological, ontological, axiological, and methodological beliefs adequately converge to address the research questions. It is recommended that is important to make explicit the philosophical position of the researcher at the outset of the research and to clarify the research goals, questions, objectives, rationale for mixed designs, and purpose (Collins et al., 2006). In the present thesis, as highlighted above a quantitative dominant mixed research stance was applied in which the researcher overall followed the philosophical and other assumptions associated with quantitative research, as such considered as weak paradigmatic mixing (Onwuegbuzie et al., 2011).

Commensurability relates to the researcher's assumption of the compatibility of quantitative and qualitative paradigms (Onwuegbuzie & Johnson, 2006). For this to take

place the researcher has to make "Gestalt switches" (Kuhn, 1996) oscillating between quantitative and qualitative perspectives at the appropriate time. In doing so, the researcher will be able to elicit holistic and deep insights that neither quantitative nor qualitative sole approaches could accumulate (Onwuegbuzie & Johnson, 2006). In the present thesis, this was demonstrated throughout the thesis utilising what is referred to as dialectical pragmatism to consider multiple epistemological perspectives in the appropriate times of conception.

Conversion relates to the degree to which rigorous inferences are derived from any data transformed. Methods employed to transform data include quantizing and qualitzing. Quantizing entails transforming qualitative data into numerical codes that can be statistically analyzed (Tashakkori & Teddlie 1998). On the contrary, qualitzing entails transforming quantitative data into a narrative that can be qualitatively analysed (Tashakkori & Teddlie 1998). In the present thesis, in keeping with the quantitative dominant approach adopted with this research no transformations took place to uphold the integrity of both approaches when applied.

Weakness minimization relates to how the weaknesses of one approach are addressed by the strengths of the other (Onwuegbuzie et al., 2011). For example, quantitative method techniques are often utilised to gather empirical precision such as metabolic indices (e.g., systolic blood pressure in the face of a stressor), however, qualitative data is better suited to gather descriptive precision (e.g., the internal/external experiences of what this elevation in blood pressure feels like cognitively, behaviourally, emotionally, and socially) (Onwuegbuzie et al., 2011). As such, the amalgamation of quantitative and qualitative techniques can be utilised to generate robust meta-inferences (Onwuegbuzie et al., 2011). In the present thesis, this was utilised in both the applied and scale development phase. The battery of measurements (i.e., panel reviews, validated measures, social validation questionnaire)

administered in studies 1 and 2 was supplemented with qualitative techniques such as interviews and open questions to address what Ivarsson and Andersen refer to as “what do the numbers really tell us” (Andersen et al, 2007; Ivarsson & Andersen, 2016). In doing so, data were examined to understand what the items and intervention changes meant, thus triangulating the data to reinforce the “accuracy” and “legitimization” of the testing enterprise (Andersen et al, 2007).

Sequential relates to how components of quantitative and qualitative methods are conducted (i.e., the order). This entails examining the potential role in which the order of techniques may impact the research (e.g., an interview followed by a questionnaire and vice versa). In the present thesis, the processes in which two data methods were utilised about the same subject were designed to build upon previous data but from a different perspective. For example, the usability data collection explored the clarity of the items quantitatively (1-10) before examining qualitative perspectives such as what thoughts and emotions arise when reading this item.

Sample integration, another legitimization type, relates to the degree of the association between quantitative and qualitative sample designs to promote robust meta-inferences. It is considered to be important that the data in both the quantitative and qualitative components of the study derive from the same sample (Onwuegbuzie et al., 2011). In the present thesis, mixed methods were applied to the same samples as a way to supplement the data rather than gain insights from different cohorts, and followed sampling methods appropriate for a quantitative dominant approach, as such supporting its legitimization (Onwuegbuzie et al., 2011).

Multiple validities relate to the degree to which all essential legitimization strategies are implemented and addressed. In the present thesis, all strategies conformed to recommendations of a quantitative dominant intervention and scale development research projects (e.g., Devellis, 2022; Boateng et al., 2019). For example, in the scale development phase two Confirmatory factor analyses, hierarchical regression, and test-retest were conducted, utilising an array of analysis methods such as Intraclass correlation coefficient (ICC) and Pearson correlation as recommended by COSMIN.

Political relates to the degree to which the stakeholders of mixed method research value and can utilise its outputs. At present, randomized controlled trials (RCT) remain the gold standard of scientific enquiry for policymakers and stakeholders (Patton, 2006). Thus, the justification of mixed method approaches has to be considered by researchers to support its legitimization. This is achieved by outlining explicitly whose needs are being directly and indirectly met by conducting the research (Greene 2006). In doing so, this can bolster what has been referred to as "action validity" (Kyale, 1995), which pertains to the justification of the validity of the research findings. Moreover, mixed method researchers should indicate the historical context of the research, as such, support its historical validity defined as "validity evidence that accrues through utilization and cited relevance in the extant literature"[that facilitates] "decisions about the value of a study's inferences" (Dellinger 2005, p. 44). Moreover, communicative validity (Kyale, 1995) relates to another strategy mixed method researchers can employ, which relates to examining how the findings of the research are useful to practitioners and researchers, and how it can empower and liberate, known as catalytic validity (Lather 1986). In the present thesis, it has been explicitly advised of the beneficiaries of the research findings (see chapter 2 - Literature review and chapter 6 - Discussion), and how this can empower key stakeholders (e.g., practitioners and researchers).

Furthermore, research has been conducted to highlight the chronology of research outputs to support the historical context of the thesis.

Table 3.1. *Overview of legitimation types and applications in thesis studies*

Legitimation type	Description	Example of thesis actions
Inside–outside	The degree of accuracy, appropriates, balance of etic and emic viewpoints for the comprehension and explanation of research	Examining and reporting the results both etic and emic views Study 1: Design of questions, Cognitive interviews, expert panel interviews/questionnaires Study 2: Social validation data collection and reported
Paradigmatic mixing	This relates to the degree to which the researchers epistemological, ontological, axiological, methodological beliefs are adequately converged to address the research questions	Explicitly outlining a qualitative dominant, quantitative dominant or mixed design. This study adopted a quantitative dominant design as such orientated towards a post-positivist approach.
Commensurability	The relates to the researchers assumption of the compatibility of quantitative and qualitative paradigms	Throughout the thesis and in specific areas such as studies 1 and study 2.
Weakness minimization	This legitimization type relates to how the weaknesses of one approach are addressed by the strengths in the other	Triangulation of quantitative and qualitative data collected via techniques associated with both (i.e., interviews, open questions, validated measurement)
Conversion	Conversion relates to degree to which rigorous inferences are derived from any data transformed	No data transformation took place in the thesis studies
Sample integration	Relates to the degree of the association between quantitative and qualitative sample designs promote robust meta-inferences	Qualitative and quantitative data were collected from the same samples
Multiple validities	relates to degree in which all essential legitimation strategies are implemented and addressed	Recommendations for data collection, analysis (validity and reliability) by Devllis (2022) & Boateng (2019) followed.
Sequential	This legitimization type relates to how components of quantitative and qualitative methods are conducted (i.e. the order).	Examination of the order of mixed method technique were undertaken (e.g., quantitative questionnaire followed by cognitive interview)
Political	Political relates the degree to which the stakeholders of mixed method research value and can utilise its outputs.	Implications for key stakeholders examined. Historical context outlined.

3.3 Phase I: Applied Phase. Single-case experimental design (SCED) is a research design employed that rigorously measures, and monitors an outcome variable (e.g., body image) from the implementation of an intervention protocol (e.g., REBT) to examine its effect (Barker et al., 2011). In SCED, the outcome variables are measured repeatedly across a period and varying levels of the intervention (Kazdin, 1982; Kratochwill et al., 2014). SCEDs are often confused with case studies, however, case studies entail single patients or small cohorts of patients, in which purposeful manipulation of the independent variable does not occur, nor is there a requirement to repeatedly measure the outcome variable (Kratochwill et al., 2014). Furthermore, it is not typical for case studies to report data narratively whilst in SCED data are presented statistically and graphically (Kratochwill et al., 2014). SCED have varying levels of intervention referred to as “phases”, in which one phase represents a baseline, in which the participant (s) act as their own control (Kratochwill et al., 2014). It is through these phases in which the systematic manipulation of an independent variable (e.g., irrational, and rational beliefs) occurs to allow for the testing of a hypothesis (Tate et al., 2008). Thus, SCEDs are considered to afford the rigorous experimental evaluation of intervention effects and provide robust foundational information for establishing causal inferences (Lobo et al., 2017). Due to this and the advancement of analysis techniques in SCED, there has been a rise in its use in psychological research (Lobo et al., 2017; Turner et al., 2020; Outar et al., 2018).

In psychological research, randomized control trials (RCTs) are considered the gold standard in determining the efficacy of an intervention (Hariton & Locascio, 2018), however, when considering the employment of either SCEDs or RCT's there are advantages and disadvantages, and researchers are encouraged to select the design which answers their research questions sufficiently. RCTs when conducted rigorously offer strong evidence of intervention effects. However, RCT often requires large resources including money, time,

and personnel, especially, those that take place in clinical settings. Moreover, RCTs require a large pool of consenting participants, which may be difficult to acquire in certain settings and populations, such as those in which prevalence is low, or individuals are insufficiently attuned to their psychological difficulties (Sanson-Fisher, 2007). Thus, the sole use of RCTs could potentially result in empirical voids in the bodies of research (Sanson-Fisher, 2007). Lastly, results from RCTs are often disseminated as a collective (i.e., group data) rather than individual (e.g., idiographic), which can create challenges in therapeutic settings in which practitioners strive to translate group data to the nuances of an individual.

SCED can provide a rigorous and robust alternative to RCTs for examining the effectiveness and efficacy of interventions (Kratochwill et al., 2014). SCEDs afford the ability to examine a variety of research questions, populations, variables, and settings (Kratochwill et al., 2014). SCEDs require fewer resources, and fewer participants, whilst affording the scientific veracity necessary in research. Furthermore, participants act as their own comparison, therefore, controlling for confounding variables such as age, gender, and socioeconomic status (Kratochwill & Levin, 2010). When executed rigorously data from SCEDs can determine intervention effectiveness at the individual level and can demonstrate robust internal and external validity that can provide implications and insights to broader settings and populations (Kratochwill et al., 2014; Portney & Watkins, 2015).

SCED utilise a variety of designs to determine the effectiveness of an intervention including AB designs, reversal designs, and multiple baseline designs. The AB design entails the repeated measurement of the outcome variable (e.g., body image, anxiety) throughout the baseline (A) and intervention phase (B). A stable baseline is considered a prerequisite before the onset of the intervention phase (Kratochwill et al., 2014).

A reversal design is recommended when the intervention effect does not have any long-term effects. Reversal designs are recommended to have a minimum of four phases (i.e., A1B1A2B2), doing so is considered to provide stronger foundations for inferring a causal relationship between the intervention and outcome variable. However, a caveat with using the reversal design is the researcher determining the ethical implications of withdrawing the intervention, especially when the intervention demonstrates effectiveness (Kratochwill & Levin, 2010). Furthermore, the reversal design can include multiple intervention effects (i.e. B1C1B2C2) in which two intervention effects (B and C) can be examined (Lobo et al., 2017).

In many cases interventions permanently change participants, making it difficult to return to baseline. In such cases, reversal designs are infeasible and inappropriate. In such circumstances, multiple baseline designs (MBDs) can be employed. MBDs utilise a staggered approach in which each participant is randomly assigned to one of the experimental conditions (i.e., baseline and intervention phase) typically determined by length of baseline and starting date (Ferron et al., 2014). MBD include more than one participant, thus replication of effects across participants is indicative of the basis of a causal relationship between the intervention and outcome variable. In this study given the nature of REBT, it was deemed appropriate to adopt an MBD approach, to provide a rigorous, idiographic examination of the intervention effects.

3.4 Phase II: Scale Development phase. Scales also known as "psychometrics" or "measures" are a manifestation of latent constructs and measure unobservable behaviours, attitudes, feelings, and hypothetical scenarios (DeVellis, 2021). Measurement is a vital concern across a range of social science research. As such, thousands of scales have been developed to capture human experiences (Boateng et al., 2018). Indeed, as science advances and novel research questions emerge, the requirement for new scales becomes a necessity.

Failing to do so can impede researchers' and practitioners' ability to infer changes in target mechanisms, determine relationships among variables, and differences among populations. Thus, scale development is a fundamental research activity. Indeed, Duncan (1984) argued that the roots of measurement lie in social processes and that these processes and their measurement actually precede science and stated “All measurement... is social measurement. Physical measures are made for social purposes” (Duncan, 1984, p.35).

Duncan (1984) claims that social necessity led to the development of measurements before science emerged. To this end, measures of some form were likely to be a part of our species' repertoire since prehistoric times (DeVellis, 2021). However, scale development is not a straightforward task. Scholars employ several methods in the development and validation of new scales, but, irrespective of their elected methods common features must derive from the process including articulating the context and domains (e.g., beliefs), choosing response format, collecting data from respondents, and examining the scales validity and reliability (Furr, 2011). Assessment of the validity and reliability of the items is at the core of scale development, and a degree of visibility is paramount to support researchers and practitioners to ascertain measures psychometric properties. In the present study, the scale development process is derived from the well-established guidelines by DeVellis (2021). This scale development process includes eight distinctive steps including:

1. Determine clearly what it is you want to measure
2. Generate an item pool
3. Determine the format of the measurement
4. Have initial item pool reviewed by experts
5. Consider inclusion of validated items
6. Administer items to a development sample
7. Evaluate the items

8. Optimize scale length

The section below provides a detailed account of each of the steps involved in scale development that was adopted in this research thesis.

3.4.1 Step 1 Determine clearly what it is you want to measure. The first step in scale development is the identification of domains that the research questions aim to measure. A domain relates to a concept, attribute, or unobservable behaviour that is the target of the study (Haynes et al., 1995). Thus, an essential prerequisite of the development of a valid and reliable scale is the domain of interest being rigorously examined and defined (Raykov & Marcoulides, 2011). A well-defined context provides foundational knowledge of the phenomenon of concern, and boundaries relating to it and supports the process of item generation and content validation (Boateng et al., 2018). Indeed, DeVellis remarks:

“Measurement of elusive, intangible phenomena derived from multiple, evolving theories poses a clear challenge to social science research. The more researchers know about phenomena of interest, the abstract relationships that exist among hypothetical construct, and quantitative tools available to them, the better equipped they are to develop reliable, and usable scales” (DeVellis, 2021, P.11).

McCoach et al. (2013) provide guidelines for scale development that facilitate the domain identification process. The first five steps of his guidelines are centred around a thorough literature review that accommodates: a) identifying the purpose of the domain being measured; b) establishing that no current measures exist that can reliably and adequately measure the phenomena of concern and if a similar exists, how will the new measure differ and go beyond; c) provide a preliminary conceptual definition for the domain; d) specify dimensions of the domain is possible.

Chapter 2 reported a rigorous literature review of the current measures in REBT theory and body image and highlighted conceptual, methodological, and analytical issues current measures face when aiming to measure irrational and rational beliefs relating to body image. The literature review provided the theoretical groundings to identify theoretically relevant domains that capture the research questions and aims. Thus, based on REBT theory and previous contemporary measures, the domains identified included the eight cognitive structures including four irrational beliefs including demandingness, awfulizing, frustration intolerance, self-depreciation, and four rational beliefs including preferences, anti-awfulizing, frustration intolerance, and unconditional self-acceptance (Terjesen et al., 2009; David et al., 2019). Furthermore, in the initial exploration of attitudinal body image areas, seven contextual areas emerged including shape, size, muscularity, physique, bodyfat, symmetry, and definition. A preliminary conceptual definition was “Body image beliefs relate to irrational and rational beliefs that capture attitudinal dimensions of body image”.

3.4.2 Step 2 Generate an item pool. Once the domain has been clearly articulated, the generation of the item pool can be identified. The previous step provides a guide for item generation. Each item developed should be considered as a "test", examining its association with the latent variable. Generating a pool of items includes the adoption of one of the two methods including deductive and inductive methods. Deductive methods, also known as “logical partitioning” or “classification from above” (Hunt, 1991) are based on the description of the domain (i.e., irrational, and rational beliefs) and the identification of the items (e.g., “I must have my ideal body size”) and is achieved via the literature review, in particular of existing measures (e.g., ABS-2) of relevant domains (Hinkin, 2004). The inductive method, also known as “grouping” or “classification from below” entails the development of items from sample responses (Hunt, 1991). This method typically deploys exploratory and observation methods such as interviews, and focus groups, in which domains

can be inductively identified (Morgado et al., 2018). Scholars prescribe the adoption of both methods as a best practice which can be captured by the following statement:

“While the literature review provides the theoretical basis for defining the domain, the use of qualitative techniques moves the domain from an abstract point to the identification of its manifest forms. A scale or construct defined by theoretical underpinnings is better placed to make specific pragmatic decisions about the domain, as the construct will be based on the accumulated knowledge of existing items.” (Boateng et al., 2018; p5).

The pool of items should be comprehensive, Kline (2005) stipulates that an initial pool of items should be at least twice as long as the final version of the scale. He advocated that this provides the necessary requisite margin to afford the optimum set of items. Additionally, items should aim to be worded clearly and unambiguous and should be devoid of offensive language about race, religion, economic status, and sexual orientation (Schinka et al., 2012). Kronsick (2018) states that respondent’s behaviour is typically characterised by a lack of comprehensive thinking, depth, and accuracy. Thus, to tackle this behaviour, it is pertinent that items remain succinct, direct, simple, and colloquial. In the present study, 228 items were generated in the pool utilising primarily deductive methods, however, at a later stage, inductive methods were utilised to support the content validity of the items. Thus, items were first informed by REBT theory, followed by a literature review of measures, empirical and measure papers on body image, and practice experiences from the research panels.

3.4.3 Step 3 Determine the format of the measurement. Within scale development, there are a variety of formats for the questions. Formats should be considered in conjunction when generating the pool of items. The format of a measure pertains to the responses that can be made. Scholars provide several recommendations when considering which format to

deploy. When adopting a Likert scale, it is essential the continuum on the scale represent the entirety of the measure (i.e., strongly disagree to strongly agree). Moreover, responses should follow an ordinal manner (i.e., ascending). The researchers should aim for each response to be meaningful and globally interpreted by each participant (Krosnick & Presser, 2009). Krosnick and Presser (2009) suggest that responses should be between 5 and 7 points, with scales that have two to three points yielding lower reliability. Furthermore, five response points are recommended for unipolar items (e.g., strongly disagree to strongly agree), whereas seven response points are recommended for bipolar items (e.g., happy to sad). In the present study, at the outset, the panel identified that a Likert scale would best represent the body image beliefs inventory (BIBI). In keeping, with previous belief measures (Terjesen et al., 2009; Turner et al., 2018) the BIBI adopted a 5-point Likert scale ranging from Strongly disagree to Strongly agree. The Likert scale is the most well-validated format of measures used for declarative items, especially when measuring attitudes and beliefs, therefore was deemed suitable (DeVellis, 2021).

3.4.4 Step 4 Have initial item pool reviewed by experts. Having domains reviewed by an expert panel is a fundamental step in establishing content validity. Content validity also referred to as “Theoretical Analysis” (Morgado, 2018), relates to the “adequacy with which a measure assesses the domain of interest” (Hinkin, 1995). This adequacy is pertinent if items in a psychometric are to measure their elected construct (e.g., body image beliefs) (DeVellis, 2021). Furthermore, content validity pertains to the relevance of the items and their ability to represent the human experience of the phenomenon (McPhail, 2007). Guion (1977) proposes that five conditions must be fulfilled to establish content validity including 1) the meaning of any behavioural content is globally accepted; 2) domains are unambiguous; 3) The domain is relevant to the purpose of the measure; 4) subject matter experts (SME’s) validate the domains; and 5) the response content must be observed and evaluated reliably. Thus, a pre-

requisite of content validity is that the content entails relevancy, representation, and technical quality. SMEs are individuals who hold knowledge in the domain of interest (e.g., REBT), and a usability panel relates to reviewers from potential respondents of the measure (DeVellis, 2021). Usability panels provide face validity, which is a component of content validity (Haynes et al., 2005). Face validity relates to the "degree that respondents or end-users [or lay persons] judge that the items of an assessment instrument are appropriate to the targeted construct and assessment objectives" (Haynes et al., 2005). Typically, usability panels assess the domains of interest via cognitive interviews. Cognitive interviews entail administering a version of the measure to the usability panel and requesting the panel to articulate the mental processes occurring whilst reviewing the items (Beatty & Willis, 2007). Cognitive interviews are designed to assess whether the items proposed in the measurement elicit the intended response by evaluating whether users understand the questions. Cognitive interviewing supports researchers to 1) ensure questions yield the relevant data; 2) ambiguous questions are identified and removed; 3) items elicit the cognitive processes clients experience when filling in the measure (Beatty & Willis, 2007). Scholars recommend utilising both SMEs and usability panels to review measurement items, however, a minimum requirement is SMEs (Boateng et al., 2018). The role of the SMEs is to evaluate each item and factor of interest (i.e., "I must have the ideal body/demandingness). The SMEs should be independent of the item generation team. Expert reviews can be undertaken using several methods. Typically, researchers send a list of the items for the reviewers to assess how appropriate, accurate, and clear the items are via quantitative means (Boateng et al., 2018). Additionally, research indicates that an increase in the number of SMEs is associated with an increase in the robustness of the scoring (Haynes et al., 2005).

In the present study, two independent expert panels were recruited consisting of an REBT panel and a body image panel. Consistent with recommendations a usability panel

were recruited, and cognitive interviews were undertaken. The item review process included three phases: phase 1 - REBT panel; phase 2 - Body image panel; phase 3 - Usability panel. The panels were requested to review the items of the measure and proposed factors, in addition, semi-structured interviews were conducted to corroborate the review and offer space for further enquiry.

3.4.5 Step 5 Consider inclusion of validated items. The expert and usability panel data provide the foundations for the inclusion of items for the first version of the scale. This version of the scale will then proceed to data collection and statistical analysis. Additionally, DeVellis (2021) recommends that researchers measure social desirability, as items that are associated highly with social desirability may distort results. In the present study, a social desirability scale was utilised to assess the social desirability of factors in the BIBI (see study 5).

3.4.6 Step 6 Administer Items to a Development Sample. Once the items that make up the first version of the measure are confirmed, the next step is to administer the measure to a sample. A critical next step is deciding the sample size. An inadequate sample can greatly compromise the validity of a measure. Nunnally (1978) indicates that a sample should be large enough to equate for subject variance. Recruiting a sample size that is inadequate presents a variety of challenges including 1) the inability to detect the stability of covariation among items. Indeed, small samples may present better pictures of internal consistency; and 2) the sample may not represent the population. To this end, DeVellis (2021) recommends sample sizes of five participants per item. Additionally, Kline (2005) states that "less than 100 is considered "small" and may only be appropriate for very simple Confirmatory Factor Analysis models; 100 to 200 is "medium" and may be an acceptable minimum sample size if the model is not too complex; and greater than 200 is "large", which is probably acceptable

for most models (Kline, 2005). In the present study, we adopted DeVellis's (2021) recommendations of five participants per item.

3.4.7 Steps 7 & 8 Evaluate the items and optimize scale length. The final steps of the recommendations include conducting factor analysis and examining the validity and reliability of the scale. Factor analysis includes exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), and reliability includes Cronbach's alpha and test-retest reliability. The purpose of evaluating the items is to statistically assess the fit of the proposed factors (e.g., beliefs) and examine the validity of the measure against other measures, and examine its internal reliability and stability over time. In the present study, across 4 studies CFA, criterion validity (concurrent and predictive), and test-retest were undertaken in independent samples to support the validity and reliability of the BIBI.

3.5 Data Collection

3.5.1 Sampling methodology and size determination. The studies comprised in the PhD received ethical approval from the university's ethics committee (See appendix 4.1 & 5.1). Data collection occurred in each study. Qualtrics were utilised to collect data across the studies. Due to the mixed-method methodology adopted in this study a mixture of sampling methods was deployed including convenience, snowballing and purposive sampling. Purposive (criterion/homogenous) sampling (Patton, 1990) was utilised to identify specific sampling criteria for the research question (e.g., are beliefs associated with body image?). Purposive sampling is a non-probability sampling method that is widely used to support the identification and selection of information-rich cases when resources are limited (Patton, 2002). Convenience sampling is one of the most widely used approaches in quantitative methods due to its cost-efficiency and simplicity in implementation. Additionally, Prolific was utilised to recruit participants, an online research participant recruitment platform

successfully utilised in extant research (e.g., Palan & Schitter, 2018; Turner et al., 2020). Due to the research questions at hand and the exploratory nature of the PhD thesis, these approaches were adopted to "maximize discovery of the heterogeneous patterns and problems that occur in the particular context under study" (Erlandson et al., 1993, p.82). Furthermore, Viswanathan (2005) states that "convenience sampling is suited for these studies rather than probabilistic sampling because the aim is not to establish population estimates, but rather to use correlational analysis to examine relationships between items and measures" (p.70).

The inclusion criteria of the studies included being over the age of 18 and having no current or previous mental health difficulties, if the individual reported so they were excluded from the study, therefore, the studies included a diverse range of ages, gender types, professions, and socioeconomic statuses. In addition, study two had additional inclusion criteria of high irrational beliefs and negative body image scores.

Informed consent was required from each participant. In study one, participants were requested to fill out a battery of measures weekly over 12 weeks. In studies 2-4, participants filled out the BIBI and a battery of measures (i.e., study 3-4) once. Additionally, in study 2 the expert and usability panels (3 panels in total) filled in a questionnaire relating to the content validity of the BIBI. Study 5 (test-retest) required participants to fill out the BIBI, and a social desirability scale at two time points. All questionnaires were reviewed and validated by the research team before administration and participants were provided with a link to the measures, to fill in via Qualtrics. Demographic details were captured across the studies including age, and sex. All data were anonymous. Data collection took place between February 2017 and April 2021.

The sample size was determined principally by guidelines for best practices in factor analysis, specifically, DeVellis's (2021) recommendations of the 5 to 1 ratio (i.e., 5

participants per scale item), and Kline's (2005) guide of "less than 100 is considered "small" and may only be appropriate for very simple Confirmatory Factor Analysis models; 100 to 200 is "medium" and maybe an acceptable minimum sample size if the model is not too complex; and greater than 200 is "large", which is probably acceptable for most models.

3.6 Data Analysis

The data analysis included several components including single-case design (statistical, visual, and social validation) and the examination of the structural (CFA) and psychometric (validity and reliability) properties of the BIBI. In study one, a single case design was adopted to examine the effectiveness of an REBT intervention on body image. In studies 3-5, conventional scale development methods were deployed including CFA, criterion validity, internal reliability and, test-retest reliability (Boateng, et al., 2018). This sub-section reports the analyses applied in Studies 1-5 and will be separated by an Applied phase (Study 1) and Scale Development phase (Studies 2-5).

3.6.1 Applied phase analysis

3.6.1.1 Visual analysis. Visual analysis is a key method of data analysis in SCED. Simply, the data were examined to determine whether the intervention (i.e., REBT) produced a significant change in the dependent variables, with the dependent variables in study 1 being beliefs (irrational and rational) and negative body image (Kinugasa et al. 2004). Visual analysis was conducted via graphical display and descriptive statistics were tabulated for each participant. The graphical display adopted a single data point format to allow the data level between and within intervention phases to reveal intervention effectiveness (Franklin et al., 1996). The research adopted several guidelines to determine whether a change has occurred. Hrycaiko and Martin (1996) proposed that this can be achieved by: a) the immediacy of effect at the intervention phase; b) the number of overlapping data points between the pre-

intervention, intervention, and follow-up phases; and c) the magnitude of the effect following the intervention. Parsonson and Baer (1978) provide a more detailed guide to visual analysis.

The guidelines stipulate ten key factors including:

1. Stability of baseline: A stable baseline should be achieved before treatment onset
2. Variability within phases: If data illustrates large variability, more data should be acquired.
3. Variability between phases: A stable treatment phase followed by variable data is indicative of a degree of experiment control.
4. Overlap between scores of adjacent phases: The less overlap, the greater the treatment effect.
5. Number of data points in each phase: The more data points the better.
6. Changes in trend within phases: Changes within phases are indicative that more data is required.
7. Changes in trend between adjacent phases: large changes in adjacent phases are indicative of strong treatment effects.
8. Changes in level between phases: large changes in adjacent phases are indicative of strong treatment effects.
9. Analysis of data across similar phases: Replication of results is indicative of treatment effect.
10. Evaluation of the overall pattern of the data: Examination of the overall pattern can provide further insights despite initial faults.

3.6.1.2 Statistical analysis. In line with contemporary research using SCED changes in the target variables (i.e., beliefs, negative body image) were analysed using an independent t-test (Barker et al, 2011; Turner & Bennett, 2018). A t-test also known as the "student t-test"

is a parametric measure used to examine changes or differences between stages or groups. A t-test was conducted to complement the visual analysis. To conduct a t-test, the data will be assessed for serial dependency via autocorrelation analysis to validate whether the data were suitable for parametric tests, the data must be transformed if autocorrelation is detected (Ottenbacher, 1986). The data will be analysed between the pre-intervention and post-intervention phases. The intervention effect was calculated via Cohen's *d* between intervention phases. Effect sizes will be examined against single-case references of small effect size $<.87$; medium effect size $.87-2.67$; and large effect size >2.67 (Parker & Vannest, 2009).

3.6.1.3 Social validation. In line with previous research utilising SCED's social validation was used to determine satisfaction and impact of the intervention (Barker et al., 2011; Turner & Bennett, 2018). Social validation is a measure of social importance and has been defined as a "supplemental method that facilitates involvement of multiple participants in the evaluation process" (Busse et al., 1995, p. 273). Hrycaiko and Martin (1996) state that eliciting "social validation helps to ensure that practitioners do the best job that they can in helping consumers of their service function to the best of their ability" (p. 187). Social validation entails eliciting three key criteria including the social significance of goal (s), the social appropriateness of procedures, and the social importance of the effects (Wolf, 1978). Informed by the guidelines of Page and Hewell (2015) the present study collected data via a questionnaire. The questionnaire was unambiguous, worded simply and concise (Shaw & Wright, 1967). The questionnaire was guided by Thelwell & Maynard (2003) and included items such as a) "How important is an improvement inconsistency of performance to you?" with responses ranging from 1 (not at all important) to 7 (extremely important); b) "Do you consider the changes in performance to be significant?" with responses ranging from 1 (not at all significant) to 7 (extremely significant); c) "How satisfied were you with the mental skills

training program?" with responses ranging from 1 (not at all satisfied) to 7 (extremely satisfied); d) "Has the intervention proved useful to you?" with responses ranging from 1 (not at all useful) to 7 (extremely useful). An adapted version was utilised for the present thesis which comprised of eleven-open ended questions on a 7-item Likert scale ranging from 1 (do not agree at all) to 7 (completely agree).

3.6.2 Scale development analysis

3.6.2.1 Factor analysis. Factor analysis (FA) comprises an array of statistical techniques designed to distil complex data sets into tangible, comprehensible and parsimonious factors (Child, 2006). FA's origins can be dated back to the early 90s of the works of Charles Spearman who had a keen interest in human behaviour ability and produced a two-factor theory. This seminal work produced the necessary impetus for future work on theoretical and statistical principles that form factor analysis (Harman, 1976). It operates on the notion that measurable and observable phenomena or "variables" can be rendered to fewer latent variables that share common variance and are unobservable, this is referred to as "reducing dimensionality" (Bartholomew et al., 2011). These unobservable factors can be conceived as hypothetical constructs that can be used to represent the variables (Cattell, 1973). FA is used primarily in fields such as social and behavioural science, medicine, economics, and geography (Yong & Pearce, 2013). FA is a vital part of scale development (newly developed and existing) and affords the refinement and evaluation of psychometrics. FA has a host of uses, however, chiefly speaking factorial analysis is utilized to:

- Reduce the number of variables.
- Examine the structure or relationship between variables.
- Detection and assessment of unidimensionality of a theoretical construct.
- Evaluates the construct validity of a psychometric.

- Development of parsimonious (simple) analysis and interpretation.
- Addresses multicollinearity (two or more variables that are correlated).
- Develop theoretical constructs (i.e., Eight factorial REBT model).
- Prove/disprove proposed theories.

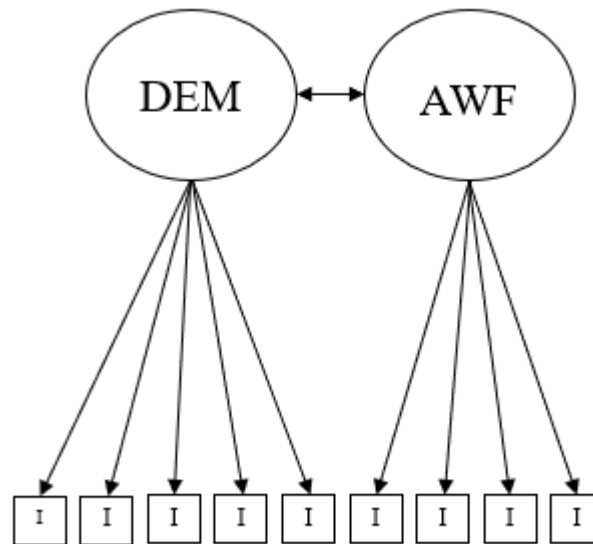
FA comprises two major classes: Exploratory Factor Analysis (EFA), and Confirmatory Factor Analysis (CFA).

EFA is a highly heuristic method, as the researcher applies an exploratory model of inquiry. This affords the researcher to explore the principal dimension to generate a theory, or a model from a large set of data (i.e., items). The primary objective of EFA is to determine the common factors among a data set and to define the relationship between each factor and observed measure (DeCoster, 1998). EFA is used when researchers are uncertain of the dimensionality of a measure, which typically is due to the absence of strong theoretical assumptions. This is typically the case when measuring new phenomena, or constructs with limited theoretical underpinnings. EFA examines the characteristics of a scale by analysing the variance of items in three categories: common, specific, and unique variance. EFA is designed to extract factors based solely on common variance, referred to as “communality”. EFA is comprised of several components including data collection, analysis of correlation matrix, distinguishing factors, extracting factors, rotating factors, and determining a factor score (DeCoster, 1998). A similar yet distinct statistical technique to EFA is principal component analysis (PCA). PCA differs from EFA in that it does not solely focus on common variance, but rather, total variance additionally. The core assumption in PCA is that the total variance of an item relates to both its error and explained variance. Therefore, components (i.e., factors) that are formed are linear combinations of observed items. Typically, in social sciences, EFA is a preferred method, due to its grounding in determining

latent constructs. In the present thesis, EFA was not conducted given the robust theoretical assumptions and principles present in REBT theory, and the large corpus of beliefs scales that have demonstrated the efficacy of the four (and eight) cognitive structure factor model (Terjesen et al., 2009; Diguseppe et al., 2020; Turner et al., 2018). Nevertheless, a crucial step in scale development is an examination of the appropriate methods to deploy.

CFA is a statistical analysis that affords the systematic comparison of an alternative a priori factor structure derived from a systematic model fit assessment and estimates the relationship between latent constructs (Morin et al., 2016). Thus, CFA is utilized to test a proposed theory or factorial model (e.g., demandingness, awfulizing, frustration tolerance, self-depreciation, preferences, anti-awfulizing, frustration tolerance, unconditional Self-acceptance) in which assumptions are generated by theoretical considerations, to test the fit of such factors. CFA is generally based on techniques of structural equation modelling (SEM) and is typically used among psychologists, and sociologists to rigorously model the relationships between a complex set of variables. Unlike EFA, with CFA researchers will hold assumptions about the number of factors and which items should load onto a factor, thus, the statistical approach is used to test the applied theoretical model. Several structural equation modelling (SEM) programs can be used to conduct CFA including AMOS (Arbuckle, 2009), EQS (Bentler, 1995), and LISREL (Joreskog & Sorbom, 2018). Using such programs provide visual representations of the models that are created, that represent the core components (see figure 3.1). In such visual representation, the oval-shaped items represent the factors (i.e., latent constructs), and rectangles represent observed variables (i.e., scale items). Each observed variable is provided with an error term represented by a circle, single-headed arrows depict relationships with a factor, and a double-headed arrow illustrates a hypothesised relationship between factors.

Figure 3.1. Example of a Two-factor structural model for CFA



CFA factors are examined against model indices to test their factorial properties. There is some contention in research over the practice of examining model fit, especially, about which statistical indices should be utilised (Vernon & Eysenck, 2007). For example, scholars have scrutinized whether fit indices should be utilised in conjunction with chi-square statistic, however, others have advocated the utility of deploying several fit indices to determine the adequacy of a model fit (McIntosh, 2012; Williams, Vandenberg, & Edwards, 2009). Despite this, typically scholars evaluate the adequacy of models using χ^2 statistic, the comparative fit index (CFI; Bentler, 1990), tucker lewis index (TLI), the standardized root mean square residual (SRMR; Hu & Bentler, 1998), the root mean square error of approximation (RMSEA; Steiger, 1990), and the Akaike Information Criterion (AIC; Akaike, 1987). Values near .06 and .08 are indicative of a good model fit for the RMSEA and SRMR, respectively. Moreover, $>.90$ for the CFI and TLI (Hu & Bentler, 1999).

Another type of factor analysis similar to CFA is Bifactor modelling, also known as “Nested factor modelling (Gerbing & Hamilton, 1996). Bifactor modelling is utilised when

researchers hypothesize overlapping in factors (i.e., latent constructs), thus, items in a proposed measure will tend to load on two, or more factors. Bifactor modelling affords researchers the ability to estimate unidimensionality whilst acknowledging the multidimensionality properties of the construct (Gibbons & Hedeker, 1992). The aim is to ascertain whether a construct is unidimensional or multidimensional, by examining group factors and an underlying general factor (Reise et al, 2007). If a factor loading appears to be significantly larger on the general factor rather than the group factor, unidimensionality is implied (Reise et al, 2007). In the present thesis, the researcher applied CFA in keeping with contemporary research and the proposed scale properties of the body image beliefs inventory (Terjesen et al., 2009; Diguseppe et al., 2020). Thus, the eight-factor model of the BIBI (i.e., demandingness, awfulizing, frustration tolerance, self-depreciation, preferences, anti-awfulizing, frustration tolerance, unconditional self-acceptance) was subject to model fit assessment to ascertain the goodness of fit. The goodness of fit was assessed using several indices including the χ^2 statistic, the comparative fit index (CFI), the non-normed fit index (NNFI), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA). The process was in keeping with contemporary literature conducting factor analysis (Turner & Allen, 2018; Turner et al., 2021).

3.6.2.2 Factor scoring. A composite score for each of the subscale factors was calculated based on the items of each factor (Kline, 2005). Factor scores were utilised for statistical analysis including Pearson's correlation, hierarchical regressions, and reliability statistics. All items of a subscale were equally weights, and a mean of the item's scores was determined to retain the scale's original properties (Hogue et al., 2005).

3.6.2.3 Analysis of Validity. Scale validity can be defined as the extent to which “an instrument indeed measures the latent dimension or construct it was developed to evaluate” (Raykov & Marcoulides, 2011). Validation of a scale is an ongoing endeavour that occurs

throughout the life of a scale, from its inception such as the content validity to its generalizability among different cultures (and sub-cultures), genders, and ages (Messick, 1995). The validity of a scale typically is examined in a variety of ways including content validity which occurs during the scale development process, and criterion validity which occurs after the administration of the scale to a sample. Criterion validity can be referred to as the “degree to which there is a relationship between a given test score and performance on another measure of particular relevance, typically referred to as criterion” (Raykov & Marcoulides, 2011). Criterion validity comprises two forms including concurrent validity and predictive validity.

Concurrent validity relates to the extent to which the scores of a scale are associated with gold standard measures when data is collected at the same time and sample (Raykov & Marcoulides, 2011). This can be estimated with Pearson product-moment correlation coefficient, better known as the "Pearson correlation coefficient". Pearson's correlation coefficient measures the strength of a linear association between a variable and is denoted by r . Pearson's correlation coefficient, r , ranges between values of +1 to -1, with a value of 0 indicating no association between two variables. Values greater than 0 are indicative of a positive association, thus, when the value of one variable increases so too does the other, whereas values lower than 0 are indicative of a negative association, thus, when the value of one variable increases/or decreases the other values decrease/or increases. Thresholds have been designed to examine the strength of an association, with an R -value of 0-0.3 representing small, 0.3-0.5 moderate, and 0.5-1 large. In the present thesis, several gold standard scales are available to the researcher, as such it would be expected that the subscales of the BIBI are associated with body image measures (negative and positive) and beliefs measures (e.g., ABS-2). The greater the associated the more indicative that the scale (i.e., the BIBI) demonstrates concurrent validity.

Predictive validity relates to “the extent to which a measure predicts the answers to some other question or a result to which it ought to be related with” (Fowler, 1995). Therefore, a marker of a scale’s validity is its predictive capacity of constructs in the future. For example, body image (negative and positive) has been implicated as a risk factor for a variety of psychiatric disorders including body dysmorphic disorder, muscle dysmorphia, eating disorders, anxiety, and depression. Moreover, irrational, and rational beliefs are associated with psychological distress and wellbeing. Therefore, it would be expected that the BIBI will have the capacity to predict scores on these constructs. Predictive validity can be estimated by examining the association of a scale (e.g., BIBI) and criterion measures (e.g., eating disorders). Predictive validity can be examined utilising linear regression analysis. In particular, hierarchical regression methods are typically used in scale development (e.g., Turner et al., 2017). Hierarchical regression is a form of multiple regression analysis in which multiple variables can be added to a model in systematic steps known as “blocks”. This is typically used to statistically “control” for particular variables, to ascertain whether adding variables significantly enhances a model's capacity to predict criterion variables and/or assess its moderating effect (i.e., to what extent does a variable influence the relationship between variables?). For instance, common predictors of body image are body mass index (BMI) and gender (Pop, 2017; Voges et al., 2019), to examine the predictive validity of beliefs, a step may be to control relevant covariant factors (e.g., demographics), to examine whether beliefs enhance the model, and how they may moderate the relationship between variables (i.e., do beliefs moderate the relationships between negative body image and eating disorders?).

3.6.2.4 Analysis of Reliability. Reliability is a fundamental element of research, and specifically, in scale development, it relates to the degree to which a measure consistently exhibits similar results under identical conditions (Porta, 2008). Reliability can be estimated using a variety of statistical methods including Cronbach’s Alpha (Cronbach, 1951) and test-

retest reliability (DeVellis, 2021), Ordinal alpha (Zumba et al., 2007), and Raykov's rho (Raykov & Marcoulides, 2011). However, in the assessment of scales, Cronbach's alpha and test-retest reliability are the most predominantly utilised analysis of reliability (Raykov & Marcoulides, 2011; Boateng et al., 2018).

Cronbach's alpha (α), known also as "coefficient alpha", was developed by Lee Cronbach in 1951. Cronbach's alpha measures the reliability, or internal consistency of a scale and is denoted as a number between 0 to 1. Internal consistency relates to the extent to which all the items within a scale measure the same factor, thus their inter-relatedness. Moreover, internal consistency illustrates the amount of error in a scale. To this end, reliability indicates the correlation of the test with itself (i.e., items within a subscale), squaring this correlation and subtracting it from 1 provides the index of measurement error. Threshold values have been provided for α scores with coefficients lower than .50 indicative of unacceptable reliability and greater than .70 indicative of good test reliability and .90 indicative of excellent reliability (Nunnally & Bernstein, 1994). Importantly, when applying Cronbach's alpha researchers should be aware that the test assumes unidimensionality of a scale, that is that the items of a subscale (i.e., factor) solely measure that subscale, violating this assumption can compromise the test.

Another approach to assess reliability is test-retest reliability. Test-retest Reliability is a pertinent part of research and refers to the degree of consistency exhibited when a measurement is repeated under identical circumstances (Porta, 2006, DeVellis, 2021). Test-retest often referred to as the coefficient of stability, is utilised to assess the degree to which individuals' score/performance on a psychometric, is consistent and repeatable. To this end, test-retest looks at how consistent an individual's scores are across time (Raykov & Marcoulides, 2011). In test-retest reliability, higher correlations are indicative of higher test-retest reliability. Researchers adopt a variety of methods to examine test-retest, however,

prominent approaches include Pearson coefficient correlation, and intraclass correlation coefficient (Weir, 2005; Rousson et al., 2002). Irrespective of the method adopted, higher correlations are indicative of greater test-retest reliability. Intraclass correlation coefficient (ICC) was coined by Ronald Fisher in 1921, and since then it is widely utilised as a preferred method of examining reliability in scale development (Boateng et al., 2018). ICC measures the reliability of two different raters to measure similarity across studies (Fisher, 1992). ICC affords the ability to demonstrate whether a scale remains robust with changes in raters, with high inter-rater reliability being indicative of less proclivity to measurement error (Shrout, 1979). ICC is included in the Consensus-based Standards for the selection of the health status measurement instruments (COSMIN) checklist. The checklist is designed to examine the methodological quality in scale development studies, in which ICC is recommended for the assessment of inter-rater reliability (Mokkink, 2010). ICC values range between 0 and 1, in which values below 0.5 are indicative of poor reliability, 0.5 to 0.75 moderate reliability, 0.75 and 0.9 good reliability, and values above 0.9 excellent reliability (Koo & Li, 2016).

This chapter has covered the methodological approaches adopted in the proceeding series of studies. The following chapters will include Studies 1-5 which include the application of REBT to body image (Study 1), and the development and validation of an irrational and rational beliefs measurement of body image (Studies 2-5).

Chapter 4

An Examination of the use of Rational Emotive Behaviour Therapy (REBT) upon exercisers at-risk of Muscle Dysmorphia.

Chapter 2 provided a comprehensive review of the literature regarding the efficacy of REBT in managing psychological disturbance and fostering psychological health (e.g., David et al., 2019). However, very little is known about its application in body image, and of the limited research available, scholars have neglected the measurement of irrational and rational beliefs, moreover, the intervention protocols utilised have not been explicitly outlined. Thus, within the present chapter is reported a single-case design study that provided an examination of the application of REBT in body image, whilst assessing irrational and rational beliefs. More specifically, with a mixed-sex cohort of exercisers upon muscle dysmorphia symptomatology.

4.1 Introduction

A burgeoning number of males and females are dissatisfied, disturbed, preoccupied, and functionally impaired by concerns relating to their muscularity (Schneider et al., 2017; Rodgers et al., 2018). Cognitions of discontent and insecurity often precede compulsive exercise, eating pathology, and anabolic-androgenic steroid abuse, when individuals detect a disparity between their current self and societal ideals, rendering their efforts inadequate. This dynamic interaction between negative body image, compulsive exercise, and nutritional intake dysregulation when intensified can increase individuals' risk of developing a debilitating body image condition known as Muscle Dysmorphia (MD).

MD as conceptualised by the seminal works of Pope and colleagues (1997) describes a body image disorder characterised by a pathological preoccupation with one's perceived lack of muscularity and high adiposity levels. MD is marked by a constellation of maladaptive practices to address these concerns including excessive exercise, restrictive eating, anabolic-androgenic steroid abuse, and excessive supplementation use.

Preoccupations with one's muscularity and adiposity are pervasive and cause significant impairment in daily functioning. Consequently, individuals disregard pertinent social, recreational, and occupational activities due to exercise and dietary scheduling conflicts. Individuals with MD often avoid situations where their physique is exposed (e.g., beaches), engage in frequent mirror checking, and excessive social comparison with others, which often leads to a myriad of dysfunctional emotions (Olivardia, 2001).

MD has received increasing research attention, leading to its inclusion in the current Diagnostic Statistical Manual of Mental Disorders (DSM-5) as a variant of body dysmorphic disorder (BDD). MD is characterised by the fulfilment of three main criteria: (a) preoccupation with being lean and muscular; (b) negative beliefs about one's body and subsequent body avoidance or anxiety; (c) interference of (a) or (b) in social, occupational, or other important areas of functioning. The overall epidemiology of MD is largely unknown, with estimates indicating prevalence rates of 6.9% among young men (Compte et al., 2015).

MD has been considered to be a condition that afflicts men primarily, however, research has also indicated a rise in muscularity concerns among women (Grogan 2021: Homan, 2010). Due to the inherent focus on muscularity and adiposity, the populations most at risk of developing MD include bodybuilders and athletes. The initial conceptualisation of MD was confirmed among a cohort of weightlifters, and since this finding, weightlifting and bodybuilding practices have consistently been associated with an increased risk of developing MD (Mosley, 2009). In sporting arenas, sports that focus on high muscle mass (e.g., athletics, rugby, football, combat sports) are postulated to be at greater risk, with those who participate in such sports being more likely to use or abuse anabolic-androgenic steroids (Irving et al., 2002). Furthermore, athletes possess many of the psychological dispositions that can increase the development of MD including high competitiveness, excessive demand for control, and perfectionist tendencies (Hill et al, 2008). Finally, athletes are exposed to a social climate that

orientates to a specific body ideal that is idiosyncratic to the sport which usually represents an extreme body type (Haase et al., 2002).

The phenomenology of MD has been examined in research in a variety of domains including aetiology, nosology, and comorbidity. However, to date, there is a paucity of published research on preventing its onset. This sparsity in intervention protocols may be attributed to nosological disparities, with scholars divided between whether MD should reside as a BDD variant, or an eating disorder (e.g., Murray & Griffiths, 2015). Furthermore, recruiting samples can pose a challenge, in particular among men, who may fear the stigma attached to psychological conditions associated with body image and/or eating disorders (Griffiths et al., 2015). Moreover, the behavioural manifestations of MD often go unrecognised due to its imitation of seemingly "healthy behaviours." Behavioural expressions such as regular exercise and dietary restraint are potentially rewarded in sports and exercise settings where such behaviours are often desirable or even pertinent for performance (Anderson et al., 2012).

Considering the potential prevalence and deleterious nature of MD, there is a dearth of randomized controlled trials (RCTs), and only one study examining the effectiveness of an intervention approach to MD (Murray & Griffiths, 2015). Subsequently, interventions to prevent MD remain in their infancy, thus further examination of potentially effective treatments and preventive protocols are greatly warranted. Despite these limitations, researchers have proposed a variety of intervention protocols adopted from the approaches employed for BDD and concomitant disorders (e.g., eating disorders) (e.g., Murphy et al., 2010; Harrison, et al., 2016). The principal tenants of CBT are proposed to have utility in addressing MD. CBT techniques such as cognitive reconstruction are considered to address egosyntonic (i.e., beliefs consistent with one's self-concept) and perfectionistic beliefs. Egosyntonic beliefs may be present in those suffering from MD as they struggle to

acknowledge the negative consequences of MD. Pope (1997) highlighted that those with MD may often amplify the benefits of excessive exercise and rigid dietary protocols. Perfectionist beliefs are a salient factor in BDD models (Veale, 2004; Veale et al., 1996; Wilhelm & Neziroglu, 2002) and research indicates that those with MD exhibit a greater degree of the endorsement of perfectionist beliefs (Olivardia et al., 2000).

Third-wave CBT approaches have also been considered including Acceptance-Commitment Therapy (ACT; Hayes, 2004) have been proposed as a potential intervention for MD. Albeit ACT has not been examined in the context of MD, mechanisms of its approach have been considered to have utility (Cunningham et al., 2017). For example, features of MD such as adopting excessive exercise and restrictive dietary protocols to exert cognitive and emotional control can be conceptualised as experiential avoidance. These behaviours often alleviate negative affect in the short term, however, reinforce the beliefs concerning the salience of one's muscularity and adiposity level. To address this, ACT helps individuals to develop acceptance of unpleasant cognitions and emotions to minimise the "urge" to employ maladaptive modalities to avoid them (Hayes, 2004). Finally, Family-Based Therapy (FBT; Le Grange et al., 2010) is the only psychotherapeutic approach to demonstrate empirical efficacy in MD. Murray and Griffiths (2015) published a case study examining the efficacy of an FBT intervention upon MD. The results indicated a reduction in MD symptomology using the MDDI inventory (MDDI; Hildebrandt et al., 2004). Albeit promising, typically the onset of MD occurs in late adolescence/early adulthood in which individuals may live a completely autonomous life, living independently, therefore the plausibility of FBT may warrant further examination.

The preliminary findings and postulations concerning CBTs are encouraging, but limitations arise in empirical support and generalizability of their results (e.g., FBT; Murray & Griffiths, 2015). Therefore, to address this dearth and advance MD literature it is pertinent

to examine the efficacy of interventions that can prevent the onset of MD. Research suggests that CBT offers a plausible approach for MD given the nosological similarities with BDD. REBT provides an efficacious and effective treatment protocol for a host of psychological conditions and has received increasing attention in sport and exercise psychology (Turner, 2016), a field of psychology that which MD is more likely to be present (Mosley, 2008). Sports and exercise provide a growing literature body – consisting of single-case experimental studies, one-to-one case studies, and group-based interventions – that indicates that REBT is effective across a range of sporting and exercise-related issues including reducing competitive anxiety (e.g., Turner & Barker, 2013), reducing social anxiety (Turner et al., 2020), enhancing resilient qualities (Deen et al. 2017), improving wellbeing (Davis & Turner, 2020), reducing exercise addiction (Outar et al, 2018). Therefore, examining the application of REBT to symptoms of MD provides a worthwhile and plausible undertaking by expanding and advancing REBT's application in body image, and upon a body image disorder that has received a dearth of intervention research attention.

REBT in the context of MD can be conceptualized in terms of the role of irrational and rational beliefs about muscularity size and adiposity tissue, which is a process of self-schema development via acculturation processes. Such beliefs are activated in situations (A) emphasising one's appearance (e.g., gymnasium) or body image threats (e.g., comments by others) and social comparisons (e.g., via the media). Such situations can activate a series of irrational or rational beliefs (B) which dependent on their investment can underpin qualitatively different cognitive, emotional, and behavioural responses. If irrational beliefs are held, the individual may experience disturbed emotions (C) including anxiety, shame, hurt, depression, or envy. The individual may attempt to neutralize these emotions by engaging in ritualistic safety, avoidance, or escape behaviour, which manifests as excessive exercise, restrictive dieting, reassurance-seeking, anabolic-androgenic steroid use/abuse, or

physique concealment. This method appears somewhat effective in the short term as it appeases the individual's emotional and cognitive distress, however, the latent irrational beliefs remain present, being further reinforced each time this approach is adopted. This postulation is evidenced in literature which implicates irrational beliefs in body dissatisfaction, eating pathology and exercise addiction (e.g., Moller and Bothma, 2008; Outar et al., 2018; Tomotake et al., 2002).

Theoretically rational beliefs may provide means to prevent and abate symptoms of MD. MD presents a disorder that derives from negative body image. Literature in the body image space advocates the importance of fostering positive body image rather than solely attenuating negative body image (Cash, 2008). Positive rational acceptance (Cash, 2005) is a construct of positive body image that is characterised by the development of a repertoire of rational coping mechanisms to body-image threats, including developing an awareness and understanding of the diverse, vagarious, and multidimensional nature of human beings. The psychological underpinnings of positive rational acceptance appear theoretically analogous to unconditional self-acceptance (USA; Ellis, 1977). Ellis defined USA as “the individual fully and unconditionally accepts himself whether or not he behaves, intelligently, correctly or competently and whether or not other people approve, respect or love him” (Ellis, 1977, p.101). Therefore, USA in the context of MD would relate to the individual relinquishing their pursuit of appearance-based self-esteem (i.e., appearance-based contingent self-worth) in which self-worth is derived from appearance; instead, accept oneself unconditionally, regardless of the aforementioned. For example, adversities (A) such as body image threats would be greeted by rational beliefs such as “I have worth despite my physical appearance” rather than “If I am not muscular and lean, I am completely worthless and unlovable.” This consequently may reduce the probability of the adoption of maladaptive practices (e.g., excessive exercise). Research supports such postulations highlighting the role of rational

beliefs in psychological health and exercise addiction (Chamberlain & Haaga, 2001; Hall et al., 2009).

In summary, MD is a severe disorder depicted by a myriad of maladaptive cognitive, behavioural, and emotional consequences. Despite the nascent examination of the condition, there remains a large paucity of research examining the effectiveness of intervention approaches (e.g., Cunningham et al., 2017). To date, only one study exists that has examined the effectiveness of an intervention upon MD, which is confined to a male population. Moreover, at present, there is a dearth of literature examining the application of REBT to body image. Given extant literature, REBT may provide an approach that may prevent and abate symptoms of MD advancing the fields of REBT, body image, and MD specifically. Moreover, REBT provides a theoretical framework to examine unhelpful and helpful beliefs about appearance, therefore, may allude to mechanisms that may lead to positive body image, considered essential in body image literature (Tylka & Wood-Barcalow, 2015). Finally, research in MD has neglected its examination in females, however, research is emerging suggesting a rise in muscularity-related body image concerns in females (Homan, 2010). Therefore, the aim of study 1 was to apply a one-to-one REBT, among a mixed-sex population comprising four exercisers at high risk of developing MD with a view of decreasing MD symptomology, irrational beliefs and increasing rational beliefs (USA). This study contributes to the aims of this thesis, and more broadly REBT and body image literature. In keeping with contemporary research this study adopted a single-case research design to examine and evaluate the effectiveness of REBT (e.g., Turner & Davis, 2020). To the researcher's knowledge, this is the first study to examine the efficacy of a CBT (REBT) intervention upon MD and the first to examine a mixed-sex cohort. It is hypothesized that REBT will bring about reductions in MD and irrational beliefs, and increases in rational beliefs (USA), from pre- to post-intervention, with effects remaining stable at follow-up.

4.2 Method

4.2.1 Participants. The first researcher consulted with a U.K. leisure centre based in the Midlands, and consent was attained to recruit participants from their facility. The participants were four of twenty-five volunteers that expressed an interest in taking part in an intervention that was advertised to bring greater self-awareness of health and wellbeing beliefs. Participants were two male and two female exercisers aged between 18 and 26 ($M_{age} = 22.5$; $SD = 3.40$; Participant age in years; $p1 = 24$; $p2 = 18$; $p3 = 23$; $p4 = 26$), with 3–7 years of exercise experience ($M_{exp} = 5.43$; $SD = 2.18$), who were not engaged in any other sport or exercise during the data collection for this study. Experience refers to exercising at or over the government guidelines for physical activity (i.e., 150 min of moderate-intensity activity, and two muscle-strengthening exercise sessions per week [Davies et al., 2019]). All participants reported that they exercised 4–6 times weekly, which included a mixture of cardiovascular and resistance training. Participants were purposely selected from an opportunity sample after a needs analysis, which involved a screening process in which participants ($n = 25$) completed a battery of psychometrics that included: demographics, exercise engagement, previous mental health conditions, muscle dysmorphia symptomology (MDDI) and irrational beliefs (iPBI). Four participants were invited to participate in the study after indicating during the screening process high scores of MD (i.e., scores >39 indicative of greater MD symptoms; Hilderbrandta et al., 2004), and high irrational beliefs (i.e., scores 18–35; Turner et al., 2018). High MDDI scores illustrate high symptoms of MD, however, are not a formal diagnosis of the condition. Participants were selected to accommodate the idiographic and rigorous analysis of intervention effects in which greater comprehension is acquired by examining fewer participants (Normand, 2016). Informed consent was obtained, and ethical approval was granted from the University before all data collection.

4.2.2 Design. A single-case, staggered multiple-baseline across participants (MBAP) A-B design was utilized in the current study, offering an idiographic (e.g., Turner et al., 2018) and empirical platform to examine the intervention effects in an ecologically valid manner (Barker et al., 2011). Methodologically, single-case designs are favourable as they afford the meticulous examination of each subject and the data from a few subjects provides a comprehensive narrative (Normand, 2016). In a recent review of single-case designs (Barker et al., 2020), compared to MBAP designs, other approaches tend to give rise to larger intervention effects, and so researchers should endeavour to apply a design such as the MBAP design used in the current study, which does not inflate intervention effects. In addition, it was found that studies with no procedural reliability report larger effect sizes compared to more precise, smaller effects reported in studies with procedural reliability. The current study employs procedural reliability, reflecting the methodological rigour and study quality (e.g., Kazdin, 2011).

An idiographic single-case design permits the report of the intervention effects for each participant (Neil et al., 2013), and can link previous theories in an ecologically rich milieu (Willig, 2008). Furthermore, it enables specific manipulation, measurement, and assessment of variables (Barlow & Nock, 2009), which is highly sought after in monitoring and evaluating the course of an intervention (Lyon et al., 2017).

Data were collected over a six-month period from baseline to follow-up. Baseline data was established across at least four stable data points, before the intervention onset. A stable baseline relates to finite deviations of scores prior to the intervention implementation. This affords the ability to ascertain whether change (statistical, meaningful, or both) has occurred, offering insights into trait rather than state scores. The A-B design is a robust procedure for assessing the effectiveness of the intervention (i.e., REBT) on the target variables (i.e., MD, irrational beliefs, and USA), and it allows the practitioner to determine whether the

intervention brought about change (Kazdin, 1982). The multiple-baseline-across-participants design (MBD) is characterized by an A (baseline phase) B (intervention phase) design where the intervention is sequentially delivered across participants at different time points, to allow attributions of change upon the dependent variables to the intervention rather than extraneous variables (Kazdin, 1982). Specifically, participant 1 commenced the intervention phase in Week 4, participant 2 in Week 5, Participant 3 in week 6, and participant 4, week 7. Through this design, one would expect changes to occur in the target participant(s) only, with the participant's data in the baseline phase remaining relatively stable (Barker et al., 2011).

4.2.3 Measures

4.2.3.1 Muscle Dysmorphia symptomology. The Muscle dysmorphic disorder inventory (MDDI; Hildebrandt et al., 2004) comprises 13 items rated on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*). Total scores range from 13 to 65, with scores over 40 representing higher risk of developing MD. The measure includes items such as "I feel like I have too much body fat." The MDDI has demonstrated acceptable internal consistency coefficients (α) between .77 and .85.

4.2.3.2 Irrational beliefs. The irrational Performance Beliefs Inventory (iPBI; Turner et al., 2018) comprises 28 items that measure irrational beliefs. Participants are asked to indicate their agreement on all items on a Likert scale between 0 (*strongly disagree*) to 5 (*strongly agree*). The measure includes items such as "I have to be viewed favourably by people who matter to me." The iPBI has demonstrated excellent internal consistency (α reliability) coefficients between .90 and .96

4.2.3.3 Unconditional self-acceptance. The Unconditional Self-Acceptance Questionnaire (USAQ; Chamberlain & Haaga, 2001) is a 20-item scale with 11 reversed items. Participants rate items on a 7-item Likert scale from 1 (almost always true) to 7 (almost always untrue). The measure includes items such as "I feel that some people have

more value than others.” The USAQ has demonstrated a moderate internal consistency ($\alpha = .72$).

4.2.3.4 Social validation. Social validation data were collected at post-intervention. Social validation provides a supplement to objective data, which allows the researcher to discriminate participant satisfaction with the intervention which has important ramifications as it correlates with the intervention effect within the social context and guides future practice (Wolf, 1978). A social validation questionnaire (See Appendix 4.7) was completed by each participant to ascertain perceptions and feelings of the intervention delivery and effectiveness (Page & Thewell, 2013). Exercisers responded to seven questions on a 7-item Likert scale ranging from 1 (*do not agree at all*) to 7 (*completely agree*) followed by eleven-open ended questions.

4.2.4 Data collection. Data were collected over a six-month period (October-March). Participants were required to complete the MDDI, iPBI, and USAQ weekly during the baseline phase. Thereafter, the participants were required to complete the iPBI, MDDI and USAQ at the start, middle and end of the intervention phase (weeks 1, 3, 5, & 7) and at the end of the 6-month follow-up phase (research completion). The intervention took place in the private personal training consultation room of a leisure centre.

4.2.5 Intervention. The intervention was delivered by the lead researcher a supervised trainee sports and exercise psychologist registered with the British Psychological Society (BPS) and an accredited primary practitioner in REBT. In addition, the research team comprised HCPC Registered sports and exercise psychologists and trained REBT practitioners who facilitated the design of the intervention. The intervention followed a Socratic and didactic approach, comprising of a mixture of psychoeducational (e.g., presentations) and experiential components (e.g., cognitive reconstructing, behavioural experiments). Each session was structurally similar, and to maintain procedural fidelity the

lead researcher followed a session manual developed by the research team. Broadly, sessions began with a review of the participant's week, followed by the main body of the session (e.g., ABC psychoeducation) and concluded with assignment setting (e.g., belief reconstruction worksheet) and session reflections. Participants received an REBT intervention program comprising five, 60-minute one-to-one counselling sessions and four homework assignments (between sessions). Muscularity concerns were not the sole focus of the intervention, as such irrational and rational beliefs were considered in reference to multiple domains of the participant's life (e.g., academia, relationships, performance, exercise). Irrational beliefs represent schemas, therefore, are derived from experiences, and archived as core beliefs, which have a proclivity to manifest and permeate across individuals' lives (Ellis, 1957).

Sessions adhered to guidelines within REBT literature (Dryden & Branch, 2008; Dryden & DiGiuseppe, 1990; Ellis & Dryden, 1997; Turner & Bennett, 2018). The intervention was divided into psychoeducation, cognitive reconstruction and reinforcement phase guided by the ABCDE framework.

4.2.5.1 Psychoeducation phase. The principal aim of the psychoeducation phase was to teach participants the central tenets of REBT. Specifically, this included: 1) the philosophical underpinnings of REBT ("People are not disturbed by things (alone), but by the view, they take of them"), 2) the role of cognitions (i.e. irrational and rational beliefs) in behaviour and emotion, 3) the ABCDE framework, 4) identifying beliefs and discriminating between irrational (i.e., demands, awfulizing, frustration intolerance, self-depreciation) and rational beliefs (i.e., preferences, anti-awfulizing, frustration tolerance, self-acceptance), and finally 5) the emotional and behavioural responses to irrational beliefs (e.g., anxiety, depression, unhealthy envy; avoidance, procrastination) and rational beliefs (e.g., concern, sadness, healthy envy, approach, perseverance). In this phase, the emphasis was placed on understanding, accountability, and empowerment. It provided participants with the means to

understand that they are largely, but not completely, responsible for their emotional and behavioural responses, as such have the capacity to determine whether they experience healthier and more goal-orientated outcomes (Dryden, 1991). For example, participant three expressed irrational beliefs (B) regarding achievement (e.g., "I want to be successful, therefore I must be successful," "Not being successful would be intolerable," "If I were not successful it would mean that I am a complete failure"). Not limited to exercise settings, such an irrational belief cascaded into all important facets of their life, in which they dogmatically demanded success. In relation to exercise, engaging in exercise was fundamental to success, therefore missing a training session was greeted with anxiety, which led to implementing avoidance and safety strategies such as, missing important social activities, adhering to strict exercise regimes, and engaging in compensatory behaviours when regimes were broken (e.g., exercising 2-3 times the following day). A key mechanism of the ABCDE framework is goal setting, in the form of formulating new beliefs, and emotional and behavioural responses. Participants were encouraged to consider how they would like to respond (C), and how such a change would facilitate their goals (e.g., improved psychological wellbeing, improved dietary, and exercise enjoyment, and improved social life). For example, participant three desired to feel less anxious concerning breaking training regimes, to reduce the conflict between training and other important life domains, and consequently to have a flexible approach towards exercise.

4.2.5.2. Cognitive restructuring phase. The cognitive restructuring phase is a fundamental part of REBT and took place over two sessions. When restructuring cognitions (i.e., irrational beliefs) in the first instance REBT practitioners will assume that the individual's perception of the adversity (A) is true, and therefore will help the individual to restructure the irrational beliefs about A, rather than restructuring A itself. This approach is referred to as the elegant solution, because a change in one's deeply held beliefs, rather than

our often-fleeting perceptions of As, provides a more robust and long-term method for attenuating emotional disturbance. Indeed, A's can often be valid and not suitable for disputation (Ellis, 1957). Therefore, the primary goal is to restructure irrational beliefs and construct and promote rational beliefs to foster more functional and healthier emotional and behavioural responses. The disputation process entails examining beliefs based on three main criteria relating to the psychological property of the belief's validity, logic and utility with the goal to develop and internalise beliefs that are empirically valid, logical, and support important goals (DiGiuseppe et al., 2013).

4.2.5.3. Reinforcement phase. The reinforcement phase includes the rehearsal of new effective (rational) beliefs and cognitive-behavioural strategies. This occurred throughout the intervention and specifically in the latter stages. First, this was achieved through setting homework assignments to cultivate self-awareness, self-reflection, and affirmations of REBT principles (Ellis & Dryden, 1997). Moreover, participants were educated on a myriad of strategies including cognitive, emotional, and behavioural methods to reinforce and internalize their rational beliefs. Cognitive assignments involved working through ABCDE self-help worksheets, cognitive reconstructing sheets, and creating rational self-statements. Emotive assignments included rational-emotive imagery (REI; Ellis & Dryden, 1997), in which the participants used imagery techniques to elicit emotions and restructure cognitions as a rehearsal for real-life implementation. Behaviour assignments included behavioural experimentation in which participants worked with the lead author to identify adversities in which irrational beliefs were salient and to then evaluate rational self-statements in the presence of the actual adversity. For example, participant three decided to purposely miss a scheduled training session to deal with the adversity in the real world, applying their newly acquired rational beliefs. A core REBT component is unconditional self-acceptance (USA; Chamberlain & Haaga, 2001). Considering the link between USA and exercise addiction

(Hall et al., 2009; Outar et al., 2018), and by extension MD (Hildebrandt, Langenbucher, & Schlundt, 2004), greater time was given to exploring and cultivating USA beliefs. First, this was achieved by delineating the differences between self-esteem (contingent self-worth) and USA. Second, we used Dryden's (2009) realistic unconditional self-acceptance Credo, to create a tailored credo in which the lead researcher and participant worked in tandem to identify salient features of the credo to accommodate their idiosyncratic challenges (Turner, 2016). Lastly, the final session included a comprehensive overview of the session's content to explore the client's comprehension and independent implementation of REBT. Here the lead researcher used "Rational Reverse Role-play" (RRR; Turner et al., 2020), in which the researcher became the 'participant' and role-played an individual who held irrational beliefs regarding an adversity; the participant, therefore, was tasked with helping the practitioner ('client') to identify and dispute irrational beliefs and develop and reinforce effective new rational beliefs.

4.2.6 Procedural reliability. To ensure procedural reliability and fidelity, and that each participant was intervened equally a session-by-session manual was utilised to guide the REBT intervention (Turner & Bennett, 2018). Furthermore, data were not viewed until the completion of the intervention, to ensure that the lead researcher's behaviour toward the intervention was not compromised. Finally, each session began with a review of the previous session, and assignments were assessed for successful completion. Between-session assignments are a pertinent part of CBT interventions as they foster greater comprehension of fundamental principles (Dryden & DiGiuseppe, 1990).

4.3 Analytical strategy

4.3.1 Visual analysis. Visual analysis of the data was conducted to ascertain whether the REBT intervention brought about changes in the dependent variables. Visual analysis was

conducted via graphical display (see figure 4.1) and descriptive statistics were tabulated (see table 4.1) for each participant. The graphical display adopted a single data point format to allow the data level between and within intervention phases to reveal intervention effectiveness (Franklin et al., 1996). The tabulated data were inspected to determine if change occurred in MD, irrational beliefs, and rational beliefs (USA).

4.3.2 Statistical analysis. Statistical analyses were conducted to complement the visual analyses. In keeping with relevant guidelines (Ottenbacher, 1986), the data were assessed for serial dependency via autocorrelation analysis to ensure that the data qualified for parametric tests. Data were assessed between pre-intervention and post-intervention phases (5 weeks post-intervention onset). All dependent variables (MD & irrational and rational beliefs) were analysed apart from participant 1's data, as there were too few data points (< 10 data points; Ottenbacher, 1986). Autocorrelation analyses revealed non-significant autocorrelation in irrational beliefs (P2, $r = .39$; P3, $r = .69$, P4, $r = .63$) and MD (P2, $r = .15$; P3, $r = .41$, P4, $r = .67$) and rational beliefs (P2, $r = .01$; P3, $r = .80$, P4, $r = .01$). Data were rendered suitable for statistical analysis, with retention of the original raw data for visual and statistical analysis. To elucidate the magnitude of the intervention effect, Cohen's d was calculated between pre-and post-intervention phases. Single-case data were interpreted in reference to small effect size $<.87$; medium effect size $.87$ - 2.67 ; and large effect size >2.67 categories (Parker & Vannest, 2009). Furthermore, in line with contemporary research and typical of single-case designs, changes in the target variables were assessed utilising an independent t -test for each participant. For brevity, only statistically significant data is mentioned.

4.4 Results

4.4.1 Muscle Dysmorphia, Irrational beliefs, and Unconditional self-acceptance

4.4.1.1 Participant 1. Visual analysis of the data (see table 4.1) revealed a medium reduction ($d = 1.29$) in MD symptoms (-10.11%) and a large ($d = 2.76$) reduction in irrational beliefs (-33.65%) and medium ($d = 2.48$) increase in USA (+17.04%), from pre- to post-intervention phases. In addition, changes in the variables were maintained from pre-intervention to 6-month follow-up (MDDI = -9.09%; iPBI = -30.81%; USAQ = + 20.85%). There was an immediate reduction from pre- to post-intervention phase in all variables, with no overlapping data points from pre- to post-intervention in irrational beliefs. Statistical analyses revealed that participant 1 showed a significant reduction in irrational beliefs ($t(6) = 8.86, p = .001$), and increase in USA ($t(6) = 4.10, p = .001$) from pre- to post- intervention phases.

In summary, visual analysis and descriptive analysis indicated that pre-to post-reductions occurred across all variables, maintained at follow-up, which was supported in part by statistical analysis.

4.4.1.2 Participant 2. Visual analysis of the data (see table 4.1) revealed small ($d = .16$) increases in MD symptoms (+1.19%) and medium ($d = 1.26$) reductions in irrational beliefs (-25.88%) and small ($d = 1.17$) increases in USA (+12.27%) , from pre to post-intervention, with changes occurring from post- to follow-up intervention phases (MDDI = -24.06%; iPBI = -39.29%; USAQ = + 14.00). In addition, across all variable's changes were maintained from pre-intervention to 6-month follow-up (MDDI = -23.21%; iPBI = -55%; USAQ = + 24.75%). There was an immediate reduction from pre-to post-intervention phase in MD and irrational beliefs and increase in USA. Statistical analyses revealed that participant 2 showed a significant reduction in irrational beliefs ($t(8) = 2.82, p = .002$), and increase in USA ($t(8) = 2.08, p = .003$) from pre- to post- intervention phases.

In summary, visual analysis and descriptive analysis indicated that pre-to post-reductions occurred for irrational beliefs, maintained at follow-up, which was supported in part by statistical analysis. For MD, there was a slight pre-to post-increase, but a decrease in the follow-up phase. Finally, increases in USA were demonstrated from pre-post intervention phase and increased in the follow-up phase.

4.4.1.3 Participant 3. Visual analysis of the data (see table 4.1) revealed medium ($d=1.34$) reductions in MD symptoms (-9.59%) and medium ($d=1.86$) reductions in irrational beliefs (-24.01%) and medium ($d=2.13$) increase in USA (+31.72%), from pre- to post-intervention, with further changes occurring from post- to follow up- intervention phases (MDDI = -17.81%; iPBI = -26.96%; USAQ = +18.90%). In addition, across all variable's changes were maintained from pre-intervention to 6-month follow-up (MDDI = -25.69 %; iPBI = -45.49%; USAQ = + 50.27%). There was an immediate reduction from pre- to post-intervention phase in irrational beliefs and MD, furthermore there were no overlapping data points from pre- to post- intervention in irrational beliefs. Statistical analyses revealed that participant 3 and showed a significant reduction in MD ($t(10) = 2.25, p = .048$), irrational beliefs ($t(10) = 3.86, p = .003$), and increase in USA ($t(10) = 4.30, p = .001$) respectively from pre- to post- intervention phases.

In summary, visual analysis and descriptive analysis indicated that pre-to post-reductions occurred across MD and irrational beliefs and increases in USA, maintained at follow-up phase, which was supported by statistical analysis.

4.4.1.4 Participant 4. Visual analysis of the data (see table 4.1) revealed medium ($d=2.46$) reductions in MD symptoms (-27.93%) and medium ($d=1.98$) reductions in irrational beliefs (-25.94%), and medium ($d=1.30$) increases in USA, from pre-to- post intervention, with further changes occurring from post- to follow-up intervention phases (MDDI = -25.69%; iPBI = -40.07%; USAQ= + 24.50%). In addition, across all variable's

changes were maintained from pre-intervention to 6-month follow-up (MDDI = -34.58%; iPBI = -55.61%; USAQ = 37.09%). There was an immediate reduction from pre- to post-intervention phase in MD and irrational beliefs, furthermore there were no overlapping data points from pre- to post-intervention phases in MD and irrational beliefs. Statistical analyses revealed that participant 4, showed a significant reduction in irrational beliefs ($t(10) = 4.13, p = .002$), MD ($t(10) = 4.05, p = .002$) and increase in USA ($t(10) = 2.62, p = .001$) from pre- to post-intervention phases.

In summary, visual analysis and descriptive analysis indicated that pre-to post-reductions occurred across MD and irrational beliefs and increases in USA, maintained at follow-up phase, which was supported by statistical analysis.

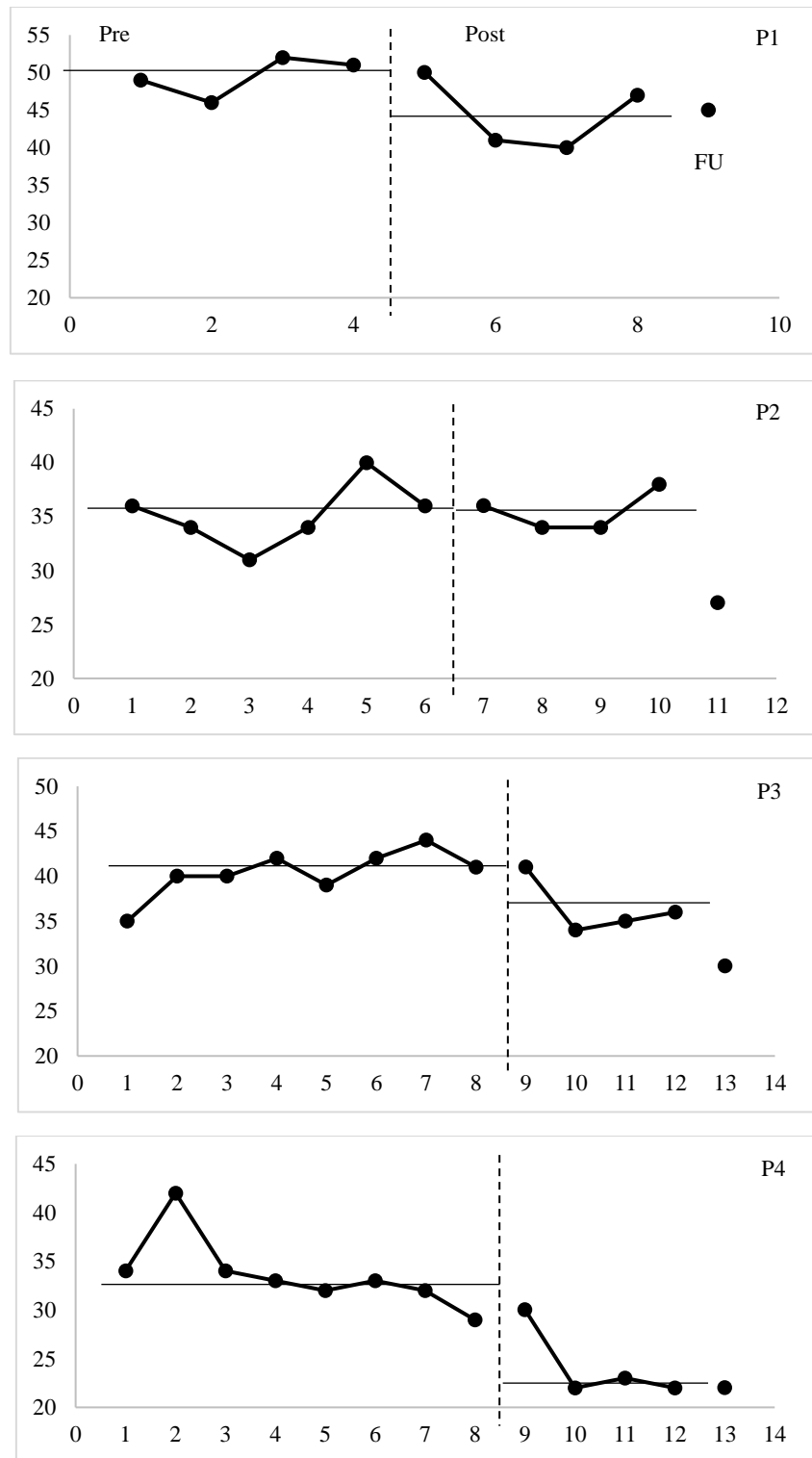


Figure 4.1. Pre, Post, and 6-month follow up intervention phases scores in Muscle dysmorphia (MDDI).

Table 4.1. *Mean values, standard deviations of Irrational beliefs, Muscle dysmorphia and Unconditional self-acceptance scores from pre- to post- and follow-up intervention phases.*

P	IB			MD			USA		
	Pre	Post	Follow-up	Pre	Post	Follow -up	Pre	Post	Follow-up
1	105.5± 3.11	70.00±17.94*	73.00	49.5±2.65	44.5±4.80	45.00	82.75±5.06	95.90±6.23*	100.00
2	75.55±11.02	56.00±18.89*	34.00	35.16±2.99	35.55±1.91	27.00	85.17±4.40	93.30±11.77*	106.25
3	113.50±3.16	86.25±20.50*	63.00	40.37± 2.67	36.50±3.11*	30.00	64.88± 3.60	82.00±3.13.13*	97.50
4	103.63±2.50	76.75±18.99*	46.00	33.63±3.74	24.25±3.86*	22.00	75.50±3.55	83.10±12.64*	103.50

4.4.2 Social validation. Social validation data indicated that all participants felt that the intervention improved healthy emotions and behaviours ($M = 6.50$, $SD = 1.00$), for example, Participant 1 highlighted “The sessions helped me look at how to react to situations in vastly different ways, whether that being situations in the past with regards to how they still affected me currently. Also, how I react to new adversities in life when they occur.” Participants expressed that REBT had a positive influence on body image, eating, and exercise practices ($M = 6.75$, $SD = .50$). For example, participant 3 specified "My family have noticed a massive change, I used to get so agitated and moody if I missed a gym session." and participant 4 stated, "My mum has noticed a big difference in my mood and attitude towards my eating and the gym". Furthermore, participants perceived the intervention to improve their well-being ($M = 6.75$, $SD = .50$) and to be effective ($M = 6.75$, $SD = .50$), engaging ($M = 6.50$, $SD = 1.00$), exerting themselves ($M = 6.50$, $SD = 1.00$), and feeling passionate and enthusiastic about the intervention ($M = 6.50$, $SD = 1.00$), for example, Participant 2 stated “By the end of the sessions I was happy to be filled with knowledge”.

In summary, social validation data suggested that REBT brought about meaningful changes in irrational and rational (USA) beliefs, subsequently, this promoted healthier thoughts, emotions, and behaviour towards their appearance, exercise, and eating.

4.5 Discussion

Study 1 reports the examination of an idiographic single-case REBT intervention upon MD symptomology, irrational beliefs, and rational beliefs (USA), with a mixed-sex cohort of four exercisers at-risk of MD. It was hypothesized that REBT would bring about acute and long-term reductions in MD symptomatology and irrational beliefs and increases in rational beliefs (USA). The findings demonstrate acute and long-term (6-months) reductions in MD symptoms and irrational beliefs and increases in USA. Building on previous literature

(i.e., Bothma & Moller, 2008; Murray et al., 2017) the primary aim of this study was to examine an REBT intervention upon MD symptomology.

The results of the visual and statistical analyses indicated that REBT was effective in reducing MD symptomatology, irrational beliefs, and increasing USA, across all four participants. REBT was effective in reducing MD symptomatology across all four participants illustrating acute and long-term effects. These reductions occurred at post-intervention phase for participants 1,3, and 4, however, participant 2 displayed a slight increase (0.39) in the post-intervention phase. In the follow-up phase, participants 2,3, and 4 made reductions, with participant 1 making a slight increase (0.5) from post. Overall, all participants reported reductions in MD symptomatology from pre- to follow-up intervention phases. These reductions in MD were aligned with concomitant reductions in irrational beliefs, and by extension increases in USA (rational beliefs), across all four participants. Broadly, REBT brought about immediate changes in target variables across all participants at the intervention phase. Changes were upheld at the follow-up phase, with participants 2, 3 and 4 making further reductions at the follow-up phase.

Social validation data substantiated these changes, in addition to highlighting improvements in emotions, body image, exercise and eating behaviours. REBT, brought about long-term changes among all variables, illustrating its long-term effectiveness in line with previous research (e.g., Turner et al., 2015, Outar et al, 2018; Cunningham & Turner, 2016). This represents an important goal in cognitive-behavioural approaches as participants are educated to self-regulate their own emotions and behaviours autonomously and competently (Turner & Bennett, 2018). This is particularly important with respect to MD, where body image adversities can be pervasive. The concurrent changes in irrational and rational beliefs (USA) and MD symptoms evidence a potential relationship between irrational and rational beliefs and body image symptoms as postulated in previous literature (Bothma &

Moller, 2004). Furthermore, given that the intervention specifically targeted and measured irrational and rational beliefs, rather than superficially targeting symptoms themselves, the changes in MD symptoms alongside changes in irrational and rational beliefs may suggest a relationship, addressing limitations in extant literature (Butters & Cash, 1987; Horan, 1996 Fadaei et al., 2011). These results are promising, however, the causal nature of the relationship between irrational and rational beliefs and MD symptoms, and body image more broadly should be investigated further.

In agreement with the study hypotheses all participants experienced statistically significant reductions in irrational beliefs and increases in rational beliefs, however, only two participants (3 & 4) experienced a statistically significant reduction in MD symptomatology. Notably, the two participants that experienced statistically significant reductions in MD reported larger increases in USA. Therefore, it appears USA, in particular, may have an important role in the prevention of MD, and negative body image. Research examining rational beliefs is scant. Indeed, most research focuses on irrational beliefs, reflecting a negative or problem-focused bias, rather than benefit-focused (Turner, 2016). Thus, by reporting rational beliefs (USA) in addition to irrational beliefs (e.g., Cunningham & Turner, 2016) study 1 provides meaningful conclusions on the benefits of rational beliefs, as opposed to just the benefits of low irrational beliefs.

There are a variety of mechanisms which REBT may deploy that could potentially assuage MD symptoms. In REBT clients are helped to challenge empirically invalid, illogical, and unhelpful beliefs known as irrational beliefs, and encouraged to develop and commit to flexible, empirically sound, logical, and helpful beliefs known as rational beliefs. This is achieved through the ABCDE psychotherapeutic framework at D and E. Irrational beliefs are pervasive, problematic, and theoretically synonymous with core beliefs, as such, they tend to cascade into many facets of individuals' lives (Ellis, 1957). All participants held

common irrational beliefs pertaining to "success." It is likely, that participants may have attached success to reaching an aesthetic ideal (e.g., muscular, and lean). This desire to reach their muscular ideal may have manifested into dogmatic beliefs about acquiring this ideal ("I must acquire my ideal body shape"), and they may have held egosynotic beliefs about the repercussions of not achieving these beliefs (e.g., "I'll be a failure"), consequently, holding great importance on the engagement in excessive weight-training and dietary restraint as means in achieving this ideal (Pope et al., 1997; Olivardio et al., 2000). For example, participants when faced with adversities (A) such as body exposing situations, missing an exercise schedule, losing muscle and gaining adipose tissue, may have held beliefs such as: "To be successful my body needs to be perfect", "I can't stand not having the perfect body", "To have the perfect body, I need to exercise, regardless of the repercussions", "I need to stick to my calorie intake", "To not exercise would be completely awful", "I'd be unlovable if I did not have the perfect body". Such beliefs may underpin deleterious effects including anxiety from the prospect of not adhering to exercise scheduling, or guilt and shame when failing to adhere to an exercise schedule and eating over or under a defined calorie intake. To appease these emotions participants may elect safety, avoidance, and escape behaviours, which may include developing strict rigid exercise and dietary plans, exercising excessively, and engaging in compensatory exercise (e.g., training twice or three times a day); all of which are symptoms of MD (Pope et al., 1997). Such contentions have been demonstrated in previous research highlighting the role of irrational beliefs in negative body image, exercise addiction and eating pathology (e.g., Moller & Bothma, 2008; Outar et al., 2018; Tomotakoe et al., 2004). MD represents a dynamic interaction of the above, therefore, its plausible, and evidence suggest that beliefs may have a role in negative body image and body image disorders.

In REBT the primary role of the practitioner is to collaborate with clients to challenge such erroneous, illogical, and unhelpful beliefs (i.e., irrational), and formulate beliefs that are adaptive, flexible, and helpful (i.e., rational beliefs). In this study, participants were supported to develop flexible, adaptive, and helpful beliefs (rational beliefs) regarding "success," as such hold thoughts such as "I want to be successful, but that does not mean I must" and "I can accept myself regardless of if I am successful." As with irrational beliefs, these beliefs may have cascaded into concerns about muscularity and adiposity level. Therefore, in the example above the individual would hold beliefs such as "I'd like my body to be perfect, but it doesn't have to be." "I can cope if I do not have the perfect body," "Not exercising would not be the end of the world," "It's not awful if I eat over my calorie intake" and "My worth is not dependent on my appearance." Such beliefs may have brought about qualitatively different emotional and behavioural responses, which may underpin healthy emotions and adaptive behaviours, which with MD may include regular exercise engagement rather than excessive, adequate rest, upholding social and vocational activities despite exercise scheduling conflicts, dietary flexibility, and concern and remorse regarding failures of the above. Such an approach would create greater flexibility and may result in a decrease in the impairment of the individual's life.

A key part of this study, was to examine the role of rational beliefs, scantily observed in REBT and body image literature, albeit theoretically, and empirically pertinent. This study examined USA, which may be conceived as being theoretically akin to positive rational acceptance (Cash, 2005), a construct of positive body image. Adopting a positive rational acceptance coping style is characterised by acceptance of distressing adversities and engaging in rational self-talk, which can be articulated as "Regardless of my appearance I have other good qualities." REBT holds that humans should strive for unconditional self-acceptance to foster psychological wellbeing, which is characterised by an acknowledgement and

acceptance of the multifaceted and fallible nature of human beings (e.g., "my appearance is one dimension of my whole person, and therefore cannot determine my self-worth").

Therefore, theoretically, USA beliefs may not only buffer the impact of negative body image but also forge a pathway towards developing positive body image. Specifically, in MD, USA beliefs may prevent individuals from engaging in maladaptive practices to achieve an aesthetic goal (e.g., excessive exercise) as exhibited in research highlighting the role of USA in exercise addiction (Hall et al., 2009).

Study 1 findings suggest that USA may have a distinctive role in negative body image, however, further research is required to ascertain whether a greater investment in USA brings about greater positive body image.

4.5.1 Limitations. The limitations of the present study have been recognized. First, the study did not provide any objective measures of unhealthy negative and healthy negative emotions (UNEs/HNEs) or behaviours. This omission occurred because albeit the postulation of UNEs and HNEs is a focal facet of REBT (Dryden, 2009), a robust and valid psychometric that captures these constructs does not exist. Indeed, the researcher opted against the use of unitary measures of emotions (e.g., anxiety, depression, anger) as unitary measures of emotions are not in keeping with REBT's theoretical underpinnings, additionally, to prevent participants from spending copious amounts of time completing scales in this study. Subsequently, shifts from negative unhealthy emotions to healthy negative emotions cannot be accurately evidenced. Thus, to wider the scope of the application of REBT measures of UNEs and HNEs is warranted. Moreover, to strengthen conclusions made about the use of REBT on MD, implementing behavioural measures would help to strengthen its validity. MD derives from negative body image, and therefore is multifaceted in nature, comprising cognitive, affective, behavioural, and perceptive dimensions. MD manifests itself in a host of maladaptive behavioural modalities (e.g., dietary restraint, physical concealment). The MDDI

(Hildebrandt et al., 2004) is the gold standard psychometric for MD, however, is an attitudinal body image assessment and therefore measures only one dimension of body image (i.e., thoughts regarding muscularity), rather than one's behaviours associated with it. Albeit, cognitions are key in body image development, measurement of behaviours associated with MD, and changes through intervention protocols require further enquiry. With further regard to measurement, in keeping with the aims of this thesis, a measure identifying beliefs relating to body image specifically may reveal more accurate information regarding the role of irrational and rational beliefs in body image, as research stipulates (Moller & Bothma, 2008). Moreover, rational beliefs were measured via USA. Albeit USA is highlighted in the literature as being associated with related comorbidities (e.g., exercise addiction), it has not been directly related to body image. Furthermore, USA though important represents one of four key rational beliefs, therefore, to understand the specific relationships between rational beliefs and body image, a scale that measure all dimensions of rational beliefs is required.

As with all intervention-based research, cognitive biases need to be observed with caution. In this study, the lead researcher was not blind to the research parameters, thus risking halo effects. The Halo effect reflects a tendency to like or dislike aspects of the assessment target such as those observed and not observed (Thorndike, 1920). As such, it can impede the research coherence of judgement, whether features occur or not. To address the likelihood of this bias, the research utilised a standardised session agenda manual to foster procedural reliability. The guide was led by the ABC(DE) model, and followed a systematic approach, in which irrational and rational beliefs were discussed about general irrational and rational beliefs (e.g., career, academia, exercise, eating), rather than solely relating to muscularity. In addition, certain response biases may have impeded this research, in particular, social desirability responses (SDR). In applied research, SDR is characterised by a tendency to distort responses to align with the perceived research parameters or one's self-

concept such as to give socially desirable responses. Thus, SDR reflects a proclivity to adopt impression management by under or over-reporting certain symptoms (Meehl & Hathaway, 1946). SDR are hard to capture, and to abate this bias there have been a range of social desirability scales developed (e.g., SDS; Edwards, 1957). However, just like other self-report questionnaires, SDR are also subject to SDR biases. Therefore, methods to adequately assess SDR are limited.

Finally, although the design of the current study is in line with single-case research guidelines, data derives from only four participants who are demographically and culturally homogenous (males and females aged between 18 and 26). Thus, the results of the current study are difficult to generalise to other populations and cultures. Nevertheless, this study expanded upon research by including a mixed-sex cohort, in which females are greatly unrepresented within MD literature. Additionally, the effectiveness of REBT has been demonstrated in a wide variety of populations (e.g., Turner, 2016), thus, the results in this study may be present in other populations. However, to rigorously evaluate the utility of REBT for body image, and MD specifically, further studies are required, and RCTs with diverse age ranges and cultures.

4.5.2 Conclusion. This chapter outlined an examination of REBT upon negative body image (Muscle dysmorphia). To the researcher's knowledge, the present study is the first to report an REBT intervention for individuals at-risk of MD. This study addresses several limitations in extant literature such as measuring irrational and rational beliefs, explicitly discussing the intervention protocols, and recruiting a mixed-sex cohort. Therefore, this study provides a novel, unique and compelling contribution to the dire paucity of preventative interventions for MD, and the application of REBT to body image broadly. These research findings provide valuable insights into the role of irrational and rational beliefs in body image as well as provide preliminary support for the efficacy of REBT in body image. However, to

garner deeper insights a contextually specific assessment of irrational and rational beliefs in body image is necessary. Such insights may provide greater knowledge supporting precise inferences of the role of irrational and rational beliefs in the development and maintenance of negative and positive body image.

At present, no such measure exists with generic measures existing that capture only irrational beliefs. Given the importance of USA in the present study, it is key to understand the role of the other derivative rational beliefs (i.e., preferences, anti-awfulizing, frustration tolerance) in body image. Chapter Four will report Studies 2 to 5 which systematically outline the development and validation of a contextually specific measurement of irrational and rational beliefs in body image, providing valuable contributions to both the field of REBT and body image.

Chapter 5

The development and validation of the Body Image Beliefs Inventory (BIBI)

Chapter 4 provided preliminary evidence for the efficacy of REBT as an intervention to improve body image. However, a key limitation of Study 1 was the lack of a contextually specific irrational and rational belief measurement of body image. Thus, the purpose of Chapter 4 is to develop and validate a contextually driven irrational and rational beliefs measure of body image.

5.1 Introduction

Irrational and rational beliefs are central to the theory of REBT and hypothesised to mediate the impact of adversities upon the development of cognitive, emotional, behavioural, and physiological responses (David et al., 2019). Moreover, research in body image has witnessed a proliferation over the last seven decades (Pruzinsky & Cash, 2002) due to the scholarly interest in its impact on psychological and physical health (Grogan, 2021). At present, REBT does not possess an irrational and rational beliefs measurement that captures body image. Furthermore, REBT and body image measures have suffered from conceptual, item development and methodological issues, limiting their reliability and validity to make inferences regarding mechanisms of change, treatment success, and cultural variations (Terjesen et al., 2009; David et al., 2021).

The initial formulation of rational-emotive therapy (RET; Ellis, 1962) outlined eleven types of irrational beliefs hypothesised to precede emotional disturbance. Consequently, preliminary measures aimed to assess irrational beliefs derived from these eleven beliefs. However, Ellis and Dryden (1987) modified the initial eleven irrational beliefs to the four core irrational beliefs (i.e., demandingness, awfulizing, frustration intolerance, and self-depreciation) found in contemporary literature. Therefore, previous measures that assess the eleven beliefs have become obsolete, capturing previous manifestations of REBT theory. Due to these conceptual shifts, REBT measurement has received criticism, as measures should be

developed on the contemporary theories in REBT (Terjesen et al., 2009). Similarly, body image measurement has faced similar criticisms due to its conceptualisation. Body image reflects a multifaceted construct, including cognitive, behavioural, affective, and perceptual components. Due to this, scholars have faced challenges in establishing conceptual consensus, leading to 14 different terms utilised to measure or reflect some dimension of body image, which has continued to expand (Stewart & Williamson, 2004). This has impacted the ability to make inferences, comparisons, and cross-validate findings from the extant literature.

Item development is at the crux of scale development, nevertheless, REBT measures and body image measures have demonstrated issues. Firstly, irrational beliefs have often been conflated with affective and behavioural components, as such inferences have been difficult to make about cognitive processes (Terjesen et al., 2009). Moreover, REBT measures have often neglected the measurement of rational beliefs, and typically their measurement has been considered as the inverse of irrational beliefs, in which lack of endorsement with irrational belief items is considered as greater rationality (i.e., low irrational beliefs equal high rational beliefs) (David et al., 2021). Such measurements are incongruent with the theoretical assumptions of REBT highlighting that irrational and rational beliefs are not bipolar constructs (Bernard, 1998). To this end, the majority of available measures assessing irrational and rational beliefs do not reflect the theory of REBT, with most measures not assessing irrational and rational beliefs separately (e.g., The Belief Scale; Malouff & Schutte, 1986), consequently, hindering the ability to accurately capture the diversity and theoretical veracity of rational beliefs. Furthermore, given that irrational and rational beliefs are the key mechanism of change in REBT, measurements are required to be sensitive to change during treatment/interventions (e.g., weekly assessments) (David et al., 2021). Body image measures also have item development issues such as the lack of gender-appropriate items. Body image

measures must be generalisable to a diverse range of genders, however, many body image measures have been derived and developed to target gendered appearance concerns, as such measures of body image must often be modified or adapted to accurately capture targeted body image concerns (Thompson et al., 2012; Cash, 2011). For example, the drive for muscularity scale (DMS; McCreary, 2007) contains items such as ("I think that I would look better if I gained 10 pounds in bulk"), such items may not apply to some genders.

Methodological and analytical issues in REBT have included a lack of sampling diversity, validity, and reliability. The majority of research has utilised homogenous samples typically deriving from university cohorts, which poses problems as data garnered with such samples may not be generalisable to the general population. Moreover, when aiming to validate measures some research has utilised affect-based measures to establish construct and concurrent validity, but such correlations would be deemed inappropriate given the centrality of cognition in irrational and rational beliefs measurement (Terjesen et al., 2009). Finally, test-retest has been examined in a limited quantity of studies, hindering the reliability of such measures. Given the importance of reliability, especially, in practice, such limitations pose challenges to researchers and practitioners aiming to accurately and reliably measure irrational and rational beliefs. Indeed, Terjesen et al. (2009) concluded that none of the measures available for the measurement of irrational and rational beliefs provides acceptable psychometric properties. Similarly, in body image, many studies examining test-retest reliability have demonstrated unacceptable values due to reporting solely Pearson correlation coefficient scores between time points. Indeed, COSMIN guidelines (Mokkink et al., 2010a; Terwee et al., 2012), suggest that the sole use of Pearson's and Spearman's correlation coefficients is inadequate for the use of test-retest, as they fail to consider systematic error in account. As such, it is recommended that future studies use the intraclass correlation coefficient (ICC) to provide evidence that no systematic error occurs between time points

(Kling et al., 2019). Finally, as with REBT, sample diversity challenges have arisen in body image studies. Typically, the vast majority of studies are homogenous and derive from female-only, white, western, heterosexual, and university participants, consequently, hindering their ability to be generalised to broader populations from different cultures, clinical conditions, and other dimensions of identity (Kling et al., 2019).

In summary, REBT does not possess a contextually specific, valid, and reliable measure of irrational and rational beliefs concerning body image. Without such a measure the theory, practice, and research of REBT in body image cannot be rigorously examined, therefore compromising its scientific veracity. Therefore, based on recommendations of previous literature (e.g., Terjesen et al., 2009; Kling et al., 2019) the following studies in this chapter aimed to design, develop, and validate a theoretically driven measure of irrational and rational beliefs relating to body image. Within REBT theory, irrational and rational beliefs have been linked to psychological distress and health (e.g., Hyland et al, 2017). It is therefore predicted that the measurement of irrational and rational beliefs relating to body image would be associated with negative and positive body image, psychological distress (e.g., anxiety), psychological health, and eating pathology.

This chapter reports the development and validation of the body image beliefs inventory (BIBI). The purpose of Study 2 was to develop and provide evidence for the content validity of the BIBI items among experts and users. The purpose of Study 3 was to analyse the factorial fit of the BIBI via Confirmatory factor analysis (CFA). The first purpose of Study 4 was to cross-validate the factorial fit of the BIBI among an independent sample and conduct criterion validity. Finally, the purpose of Study 5 was to conduct test-retest reliability of the BIBI.

5.2 Study 2

Study 2 was guided by the first four principles of scale development outlined by DeVellis (2021) including 1) Determine clearly what it is you want to measure, 2) Generate an item pool, 3) Determine the format of the measurement, 4) Have initial item pool reviewed by experts. Therefore, the primary objectives of Study 2 were first to generate a pool of items that comprehensively capture irrational and rational beliefs about body image. Secondly, to examine and provide partial support for its content validity among subject matter experts and the general public.

5.2.1 Method

5.2.1.1 Participants. The first objective was conducted by the research team. The research team comprised four experienced ($M = 11.25$ years, $SD = 4.14$) sports and exercise practitioners and researchers. All four members were qualified REBT practitioners (Centre for Rational Emotive Behaviour Therapy [the UK affiliate of the Albert Ellis Institute, New York]), and three were registered practitioner psychologists (Health Care Professions Council, UK). Second, to examine the content validity of the items, three independent panels were recruited (see table 5.1). The panels included two expert panels comprising an REBT panel ($n=5$), a body image panel ($n=3$), and a separate usability panel ($n=3$). In keeping with the Standard for Educational and Psychological Testing (American Educational Research Association, 1985), all the experts for qualified REBT practitioners, experienced/qualified practitioners (e.g., HCPC) and/or published researchers in body image.

5.2.1.2 Procedure. The procedures of Study 2 were divided into three parts including: 1) the generation of the items; 2) the examination of content validity by two independent panels, and 3) examination of content and face validity by a usability panel. In part 1, the initial pool of items was generated. The primary aim was to generate a large and

comprehensive pool of items that capture irrational and rational body image beliefs. Moreover, the items generated should aim to be inclusive, unambiguous, and succinct and the end item pool should be approximately twice as long as the intended final scale (Schinka et al., 2012; Kline, 2005). Deductive methods were utilised, in which literature such as REBT and body image measurement and theory, and practitioner and research experience were triangulated and informed the development of items. Finally, another objective of the research team was to determine the format of the scale (e.g., the Likert scale). In phase 2, the REBT panel examined the content validity (e.g., irrationality and rationality) of the initial pool of items of the BIBI. The SMEs were provided with a definition of each core irrational and rational belief and received a digital document containing the items for rating (See Appendix 5.9). The SMEs were requested to specify if an item was measuring a particular factor (e.g., demandingness). In addition, SMEs were asked to rate each item on how clear and accurate the items captured the factors between 1 (*poor*) and 10 (*excellent*). Finally, a column was available that invited SMEs to comment on any suggestions, thoughts, modifications

Table 5.1. *Participant characteristics (Studies 2, 3, 4, and 5)*

	Study 2: Expert Panels	Study 2: Usability Panel	Study 3	Study 4	Study 5
<i>N</i>	8	3	420	364	151
Male	4	1	206	121	38
Female	4	2	201	241	113
Gender not disclosed	0	0	13	2	0
<i>Mage</i> (SD)	33.25 (13.65)	39 (9.89)	32.62 (12.93)	32.53(10.58)	34.96 (11.91)
Peer-reviewed journals/published literature	1-13	Not applicable	Not applicable	Not applicable	Not applicable
Practitioner/clinician years providing support	4 - 20	Not applicable	Not applicable	Not applicable	Not applicable
Time spent working in Academia	2- 20	Not applicable	Not applicable	Not applicable	Not applicable

and revisions (Boateng et al., 2018). Next, the independent body image panel was asked to assess the contextual areas (e.g., body fat). This was conducted via a semi-structured interview. Before the interview, the experts were provided with definitions and examples of each of the contextual areas. After this, the lead researcher conducted a semi-structured interview in which the utility and validity of the contextual areas were examined about theory, research, and practice. In part 3, the usability panel was provided with a digital document containing the items for rating. The usability panel were asked to rate each item on how clear (i.e., clarity) the items were between 1 (*poor*) and 10 (*excellent*). Moreover, a column was available that invited users to comment on any suggestions, thoughts, modifications, and revisions (Boateng et al., 2018). The questionnaire was followed up by a cognitive interview (i.e., a semi-structured interview). In the cognitive interviews, the users were requested to articulate the cognitive and emotive processes occurring whilst reviewing the items (Beatty & Willis, 2007). Moreover, the interviews provided the opportunity for users to share concerns, clarify, elaborate, and add further depth (Beatty & Willis, 2007). Collecting both qualitative and quantitative data enabled the researchers to examine the content validity, in which exclusions, inclusions and revisions could be made (Boateng et al., 2018).

5.2.2 Results

In part one, 192 items were generated. The items were evenly disrupted across the irrational and rational beliefs (i.e., 96 items each). The items were mapped across the four-core irrational cognitive patterns including demandingness, awfulizing, frustration intolerance, self-depreciation, and four rational cognitive patterns including preferences, anti-awfulizing, frustration tolerance, and unconditional self-acceptance beliefs (Terjesen et al.,

2009). More specifically, demandingness ($n = 18$ items), awfulizing ($n = 18$ items), frustration intolerance ($n = 30$ items), self-depreciation ($n = 30$ items), preferences ($n = 18$ items), anti-awfulizing ($n = 18$ items), frustration tolerance ($n = 30$ items), self-acceptance beliefs ($n = 30$ items). In addition, seven contextual factors were developed including shape, size, muscularity, physique, bodyfat, symmetry, and definition. Finally, the research team adopted a 5-item Likert scale ranging from *strongly disagree* to *strongly agree* in keeping with previous beliefs measures (Terjesen et al, 2009; DeVellis, 2021).

In part two, 84 items (43.75 %) and three contextual areas (43.00%) were retained based on the SME's scores reference to their clarity, relevance, and integrity to the theory. The resulting measure included demandingness ($n = 18$ items), awfulizing ($n = 9$ items), frustration intolerance ($n = 9$ items), self-depreciation ($n = 9$ items), preferences ($n = 12$ items), Anti-awfulizing ($n = 9$ items), frustration tolerance ($n = 9$ items), self-acceptance ($n = 9$ items) across three contextual areas including shape, size and bodyfat.

In part three, the remaining item pool was retained. The format (rating scales) remained. The result of the process was the 84-item BIBI (see Appendix). The research panel deemed that the 84-item was clear and applicable to body image and REBT, and therefore, ready for the measurement evaluation (i.e., factor analysis) among a wider population.

5.3 Study 3

The purpose of study 3 was to examine the eight-factorial model of the 84-item BIBI with Confirmatory factor analysis.

5.3.1 Method

5.3.1.1. Participants. DeVellis (2021) recommends a sample size of five participants per measurement item for statistical analyses. Kline (2005) supports this by remarking that "less than 100 is considered "small" and may only be appropriate for very simple

Confirmatory Factor Analysis (CFA) models; 100 to 200 is "medium" and maybe an acceptable minimum sample size if the model is not too complex; and greater than 200 is "large", which is probably acceptable for most models (Kline, 2005). Therefore, 420 participants (i.e., 84 items x 5 = 420 participants) were recruited for CFA (For participant details, see table 5.1).

5.3.1.2. Measure. The 84-item BIBI produced in Study two was administered to participants. The stem followed "The following questions relate to several beliefs you may hold about your appearance" in which participants were requested to respond on a 5-item Likert ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

5.3.1.3. Procedure. Following ethical approval from the principal researcher's academic ethics committee, participants were recruited to participate. Participants were recruited via convenience, snowballing and purposive sampling (Patton, 2002). All data collection took place online via the Qualtrics software package. Upon filling out the BIBI participants were provided information regarding the nature of the study, eligibility for the study, risks and benefits of the study, data protection and confidentiality policies, and contact information for further information. Moreover, participants were encouraged to be open and honest. Upon reading, participants were requested to provide informed consent before completing the BIBI.

5.3.1.4. Data analysis. The BIBI was subject to CFA using structural equation Modelling (SEM) in SPSS AMOS version 28 in which various models were tested to determine the fit. In each model, the latent variables (i.e., factors) were scaled to one (Harrington, 2009). The CFA used the estimation method Maximum likelihood (ML) the most utilised estimated method (Brown, 2006, p. 73). In line with recommendations in factor analysis (e.g., Byrne, 2006) multiple fit indices were used to examine the adequacy of model

fit of the BIBI. The indices used included χ^2 statistic, the comparative fit index (CFI; Bentler, 1990), tucker lewis index (TLI; Tucker and Lewis 1973), the standardized root mean square residual (SRMR; Hu & Bentler, 1998), the root mean square error of approximation (RMSEA; Steiger, 1990), and the Akaike Information Criterion (AIC; Akaike, 1987). Values in close proximity of .06 and .08 are indicative of a good model fit for the RMSEA and SRMR, respectively. For CFI and TLI, values greater than .90 are indicative of adequate model fit, whilst value greater than .95 are indicative of excellent model fit (Kline, 2005). The AIC was used to evaluate alternative nested models, with smaller values indicative of best fitting models. In addition, Cronbach's alpha was calculated for each factor to indicate internal consistency. Coefficients greater than .70 are indicative of good test reliability and .90 is indicative of excellent reliability (Nunnally & Bernstein, 1994). Additionally, inter-item correlations were examined in the dataset to support internal consistency reliability (see table 5.3). Inter-item correlations are considered essential when analysing scale items, it allows the examination of item redundancy, that is if the items of the BIBI provide consistent and appropriate results (Cohen & Swerdlik, 2005). Clark and Watson (1995), stipulate that inter-item correlations should range between .15 and .50, in which values below .15 are indicative of poor measurement of a construct, whilst values above .50 are indicative of item redundancy and potential repetition.

5.3.2 Results

5.3.2.1 Main analysis. Prior to the main analysis, data were screened for outliers (standardized z values > 3.29), and outliers were Winsorized ($n = 32$ from 35280 cases = .09%). Additionally, skewness and kurtosis were analysed (Kline, 2010). The results indicated skewness -0.02 -.93 and Kurtosis -1.41 - .14. Kline (2010) suggests that skew

values greater than 3 are indicative of extreme skewness, whilst kurtosis values greater than 8.0 are indicative of extreme kurtosis. Thus, the results implied that the data satisfied normality and was suitable for CFA (Kline, 2010). Bryne (2006) indicates running alternative models to determine model fit. Therefore, several models (see figures 5.1-5.5) were run including a beliefs one-factor model (Model 1), a two-factor model irrational and rational belief (Model 2), a one-factor irrational belief factor model (Model 3), a one-factor rational beliefs model (Model 4), and finally the eight-factor model (Model 5) (see table 5.2). Results indicated that Model 1 demonstrated an unacceptable fit $\chi^2(420) = 8839.561, p < .001$, CFI = .61, SRMR = .1568, RMSEA = .11 (90% CI: .104- .108), TLI = .60. Moreover, Model 2 demonstrated an unacceptable fit. In order to examine the irrational and rational beliefs subscales separately, Models 3 and 4 were analysed, results indicated that both models demonstrated acceptable fit with Model 3 $\chi^2(420) = 682.494, p < .001$, CFI = .94, SRMR = .1008, RMSEA = .05 (90% CI: .047- .057), TLI = .93 and model 4 produced a one factor irrational beliefs model $\chi^2(420) = 820.877, p < .001$, CFI = .97, SRMR = .0437, RMSEA = .05 (90% CI: .045- .055), TLI = .96. Through Models 1-4 items that demonstrated poor factor loadings were removed, which included 27 items, leaving 57 items left on the BIBI (Demandingness = 12, Awfulizing = 6, frustration tolerance = 6, Self-depreciation = 6, Preferences = 9, Anti-awfulizing = 6, frustration tolerance = 6, Self-acceptance = 6). The final model (Model 5) examined the eight-factor fit in keeping with REBT theory (e.g., Hyland, et al. 2017). Results indicated an acceptable fit (2 x 4) $\chi^2(420) = 2970.486, p < .001$, CFI = .93, SRMR = .0883. RMSEA = .05 (90% CI: .047- .050), TLI = .92. Out of the models ran, Model 4 (irrational beliefs) displayed the best fit, however, this model tells us very little about rational beliefs, rather validates the use of the irrational beliefs subscales, as this does not address the limitations presented by extant literature (Terjesen et al., 2009), thus, Model 5 was elected as the final model to assess both irrational and rational beliefs. Overall, the factor

loadings of Model 5 (see table 5.3) presented high loadings across the factors ranging from .64-.87 across all observed variables illustrating between very good and excellent loadings (Tabachnick & Fidell, 2007). Following this process, no further modifications were deemed appropriate, and all remaining items were retained (see fig 5). Additionally, Reliability analysis indicated demandingness (.96), awfulizing (.92), frustration intolerance (.93), self-depreciation (.94), preferences (.93), anti-awfulizing (.93), frustration tolerance (.87), self-acceptance (.89) demonstrating good to very good internal reliability across the factors. Finally, inter-item correlations overall fell within range (see table 5.3).

Table 5.2. *Fit indices for alternative factor models for the BIBI*

Model	χ^2	<i>Df</i>	CFI	TLI	RMSEA (90% CI)	SRMR	AIC
Model 1 (Beliefs)	8839.561	1542	.611	.597	.106 (.104-.108)	.1568	9175.561
Model 2 (IBs & RBs)	7903.402	1541	.66	.648	.099 (.097- .101)	.2567	8241.402
Model 3 (RBs)	682.494	320	.938	.932	.052 (.047- .057)	.1008	852.494
Model 4 (IBs)	820.877	401	.965	.962	.05 (.045- .055)	.0437	1008.877
Model 5 Final (2 x 4)	2970.486	1530	.931	.920	.047 (.045-.050)	.0883	3330.486

Table 5.3. CFA factor loadings for eight-factor model, Cronbach alpha, Mean, standard deviation and inter-item correlation statistics.

Item Number	Factor	β	α	M(SD)	Inter-item correlation	
					Range	M(SD)
	Demand		.96			
DEM_SI	I absolutely must be my ideal size	.84		2.25 (1.10)	.516-.760	.619(.074)
DEM_BF	I absolutely must have my ideal body fat	.82		2.23 (1.06)	.463- .754	.596 (.083)
DEM_SH	I absolutely must be my ideal shape	.83		2.25 (1.08)	.484- .760	.609 (.075)
DEM_SI3	I would like to be my ideal size and therefore I absolutely must be	.85		2.44 (1.03)	.421 -.749	.580 (.109)
DEM_BF3	I would like to have my ideal body fat and therefore I absolutely must	.84		2.38 (.10)	.424 -.746	.577 (.105)
DEM_BF4	I would like to have my ideal body fat and therefore I absolutely should	.84		2.53 (1.03)	.421- .730	.574 (.110)
DEM_SH3	I would like to be my ideal shape and therefore I absolutely must be	.84		2.44 (.10)	.402 -.758	.575 (.107)
DEM_SI5	I would prefer to be my ideal size and therefore I absolutely must be	.84		2.51 (1.04)	.409 -.747	.562 (.116)
DEM_SI6	I would prefer to be my ideal size and therefore I absolutely should be	.79		2.60 (1.01)	.376 -.730	.529 (.114)
DEM_BF5	I would prefer to have my ideal body fat and therefore I absolutely must	.87		2.35 (1.01)	.451 -.758	.593(.113)
DEM_SH5	I would prefer to be my ideal shape and therefore I absolutely must be	.84		2.45 (1.02)	.422 -.739	.576- (.103)

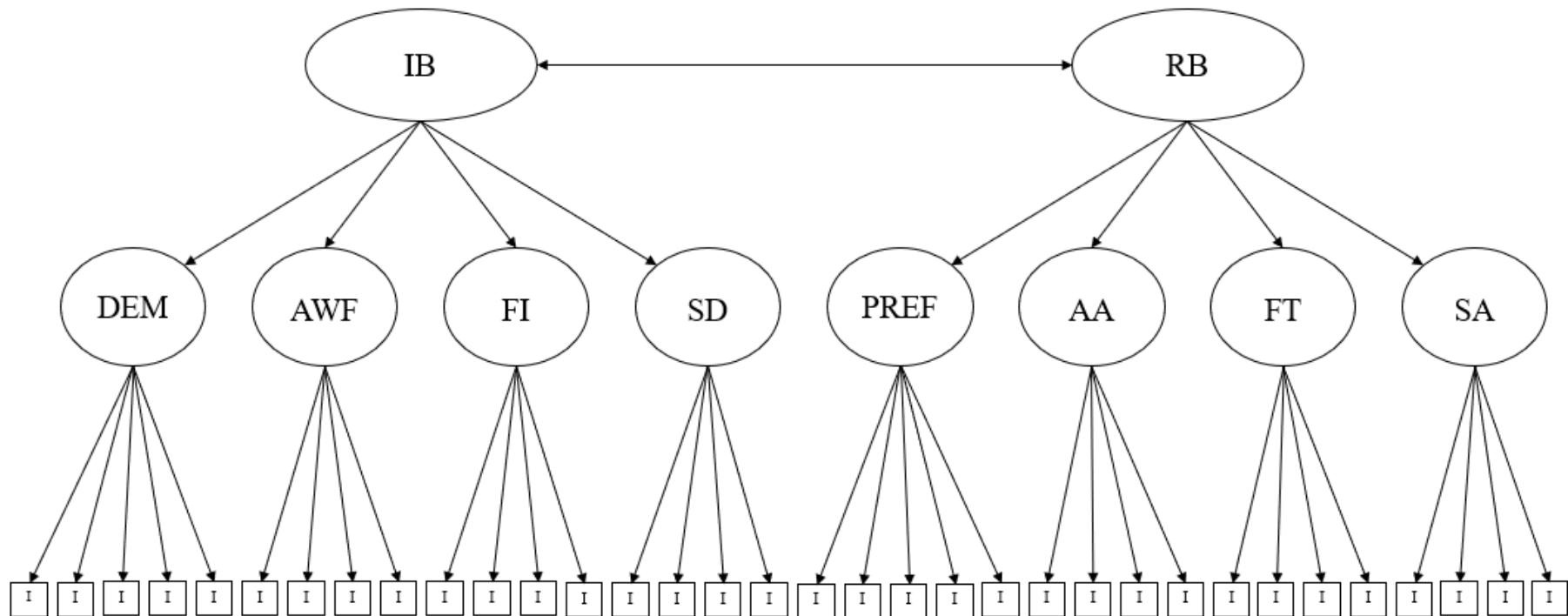
DEM_SH6	I would prefer to be my ideal shape and therefore I absolutely should be	.81	2.66 (1.01)	.385 -.725	.537 (.117)
	Awfulizing		.92		
AW_SI1	It would be completely awful if I was not my ideal size	.82	1.91 (.76)	.467-.734	.594 (.066)
AW_SI3	It would be the worst thing imaginable if I was not my ideal size	.80	1.71 (.77)	.376 -.718	.564 (.101)
AW_BF2	It would be completely terrible if I did not have my ideal body fat	.82	1.85 (.74)	.430 -.684	.587(.074)
AW_BF3	It would be the worst thing imaginable if I did not have my ideal body fat	.78	1.66 (.75)	.416 -.718	.560 (.095)
AW_SH1	It would be completely awful if I was not my ideal shape	.81	1.90 (.75)	.464 - .734	.590 (.063)
AW_SH2	It would be completely terrible if I was not my ideal shape	.83	2.07 (1.02)	.518 -.737	.617 (.056)
	Frustration tolerance		.93		
FI_SI1	It would be unbearable if I was not my ideal size	.85	2.06 (.99)	.466 -.737	.591(.078)
FI_SH1	It would be unbearable if I was not my ideal shape	.84	2.09 (1.05)	.465 - .734	.608(.063)
FI_SI2	I could not stand it if I was not my ideal size	.82	2.16 (1.07)	.492 -.730	.583 (.067)
FI_BF2	I could not stand it if I did not have my ideal body fat	.82	2.11 (1.02)	.508 -.693	.600 (.053)
FI_BF3	It would be intolerable if I did not have my ideal body fat	.84	2.09 (1.05)	.463 -.732	.595 (.068)
FI_SH3	It would be intolerable if I was not my ideal shape	.81	2.04 (1.02)	.495 -.711	.598 (.058)

Self-depreciation		.94			
GS_SI2	I would be completely unlovable if I was not my ideal size	.81	1.74 (.75)	.407 - .816	.580 (.099)
GS_BF1	I would be completely worthless if I did not have my ideal body fat	.86	1.67 (.77)	.385 -.770	.557 (.117)
GS_BF2	I would be completely unlovable if I did not have my ideal body fat	.85	1.71 (.77)	.407 -.816	.579 (.108)
GS_SH1	I would be completely worthless if I was not my ideal shape	.86	1.70 (.77)	.396 -.758	.569 (.112)
GS_SI3	If I was not my ideal size it would make me completely worthless	.88	1.70 (.76)	.404 -.770	.581(.115)
GS_SH3	If I was not my ideal shape it would make me completely worthless	.85	1.66 (.75)	.410 -.748	.569 (.104)
Preferences		.93			
PF_SI1	I would like to be my ideal size, but I do not absolutely have to be	.73	3.76 (.87)	.157-.598	.378(.124)
PF_BF1	I would like to have my ideal body fat, but that does not mean that I must	.72	3.80 (.83)	.163 -.577	.358 (.126)
PF_BF2	I would like to have my ideal body fat, but that does not mean that I absolutely should	.67	3.67 (.86)	.081-.548	.325 (.134)
PF_SH1	I would like to be my ideal shape, but I do not absolutely have to be	.73	3.75 (.90)	.109 -.598	.361 (.134)
PF_SH2	I would like to be my ideal shape, but that does not mean that I must be	.73	3.75 (.88)	.159 -.577	.359 (.130)
PF_SI3	I would prefer to be my ideal size, but I do not absolutely have to be	.73	3.76 (.89)	.166 -.592	.373 (.121)
PF_SI4	I would prefer to be my ideal size, but that does not mean that I must be	.74	3.82 (.86)	.132 -.614	.379 (.132)

PF_BF3	I would prefer to have my ideal body fat, but that does not mean that I must	.75	3.79 (.85)	.138 -.584	.370 (.134)
PF_SH4	I would prefer to be my ideal shape, but that does not mean that I must be	.78	3.79 (.86)	.104 -.614	.380 (.147)
Anti-Awfulizing		.93			
AA_SI1	If I was not my ideal size it would be very bad, but it would not be the end of the world	.65	3.48 (.95)	.027 -.534	.246 (.158)
AA_SI2	If I was not my ideal size it would be unpleasant and unfortunate, but not awful	.68	3.45 (.90)	.015 -.556	.283 (.165)
AA_BF2	If I did not have my ideal body fat it would be unpleasant and unfortunate, but not awful	.62	3.32 (.92)	.026 -.556	.289 (.130)
AA_BF3	It would be unfortunate if I did not have my ideal body fat, but not the end of the world	.71	3.70 (.86)	.189 -.594	.337 (.102)
AA_SH1	If I was not my ideal shape it would be very bad, but it would not be the end of the world	.66	3.47 (.93)	.039 -.534	.261 (.149)
AA_SH3	It would be unfortunate if I were not my ideal shape, but not the end of the world	.76	3.69 (.88)	.167 -.594	.342 (.105)
Frustration tolerance		.87			
FT_SI1	It would be difficult if I was not my ideal size, but I could stand it	.73	3.45 (.83)	.155 -.557	.360 (.120)
FT_SI3	It would be difficult if I was not my ideal size, but I could tolerate it	.71	3.50 (.85)	.156 -.560	.351 (.120)
FT_BF1	It would be difficult not having my ideal body fat, but I could stand it	.76	3.45 (.84)	.115 -.565	.366 (.133)
FT_BF2	It would be tough not having my ideal body fat, but I could bear it	.73	3.51 (.83)	.114 -.562	.316 (.144)
FT_SH2	It would be tough if I was not my ideal shape, but I could bear it	.70	3.47 (.84)	.098 -.555	.317 (.139)

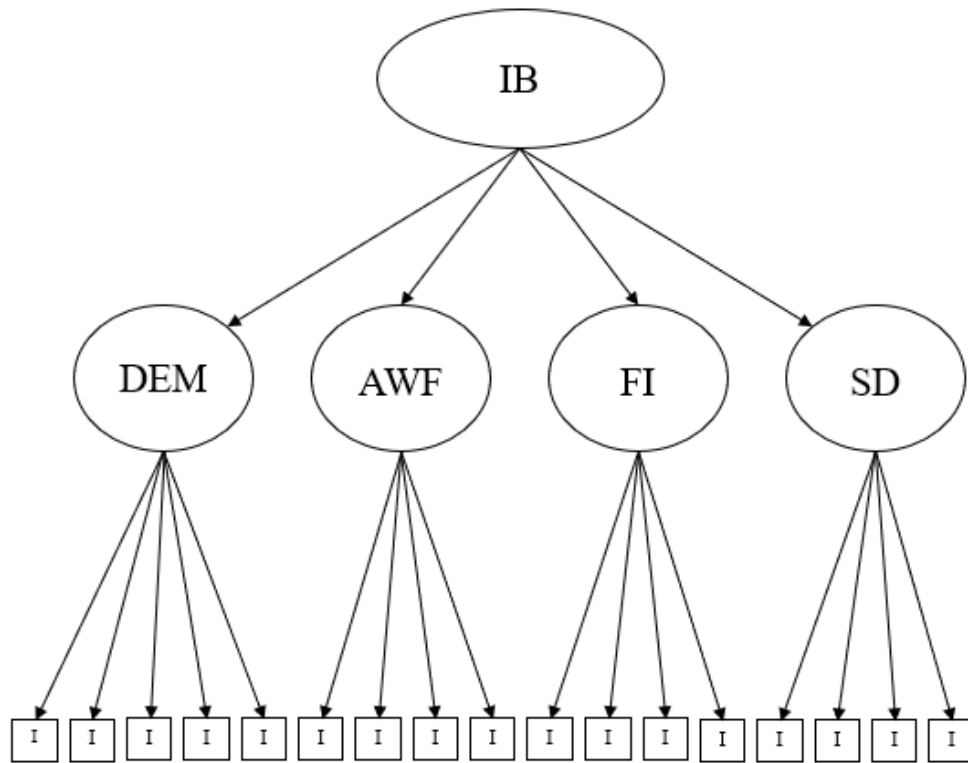
FT_SH3	It would be difficult if I was not my ideal shape, but I could tolerate it	.76	3.46 (.87)	.114 -.565	.337 (.135)
Self-acceptance		.89			
SA_SI2	I can accept myself regardless of whether I am my ideal size or not	.78	3.88 (1.10)	.054 -.667	.320 (.175)
SA_SI3	My worth as a human being does not depend on me being my ideal size	.75	4.23 (.82)	.106 -.648	.321(.159)
SA_BF1	Regardless of whether I have my ideal body fat or not, I can accept myself as a human being	.81	4.26 (.72)	.090 -.712	.332 (.177)
SA_BF3	My worth as a human being does not depend on me having my ideal body fat	.74	4.23 (.79)	.083 -.648	.323 (.158)
SA_SH1	Regardless of whether I am my ideal shape or not, I can accept myself as a human being	.80	4.23 (.73)	.084 -.712	.313 (.177)
SA_SH2	I can accept myself regardless of whether I am my ideal shape or not	.74	4.04 (.73)	.015 -.667	.269 (.188)

Figure 5.1. Final CFA model of the 57-item BIBI (Model 5).



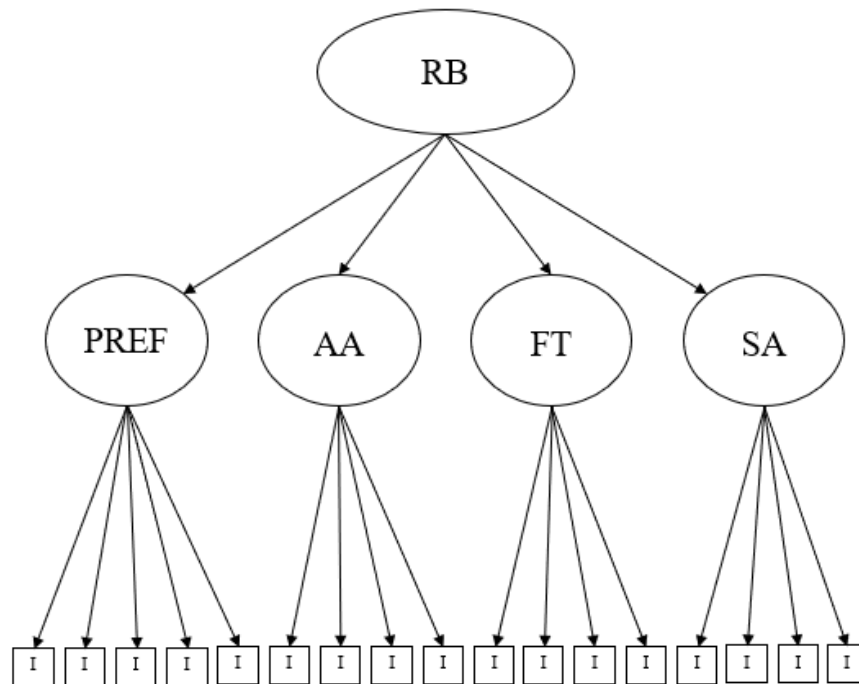
Note. Irrational and rational belief eight-factor (2 x 4) model. DEM Demandingness, AWF Awfulizing, FI Frustration Intolerance, SD Self-depreciation, PREF Preference, AA Anti-Awfulizing, FT Frustration Tolerance, SA Self-Acceptance. Note, that this image does not represent the exact items on each factor and associated loadings. For this information, please see table 5.3.

Figure 5.2. Irrational belief one-factor model (Model 4)



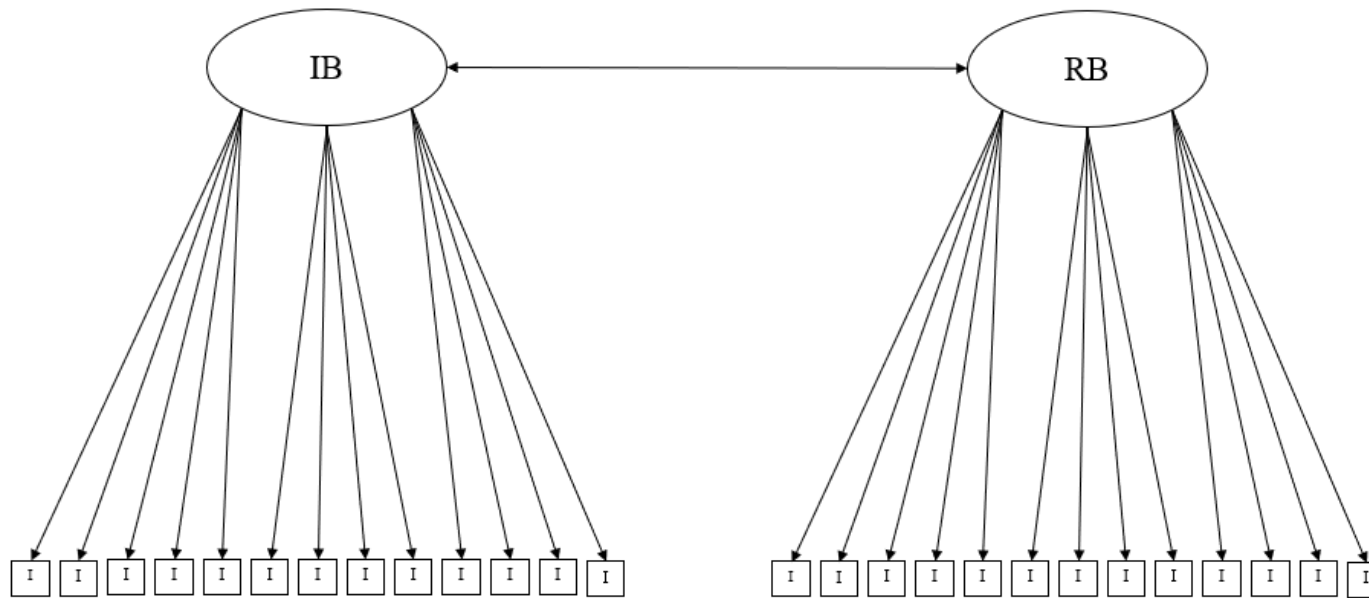
Note. Irrational belief one-factor model. DEM Demandingness, AWF Awfulizing, FI Frustration Intolerance, SD Self-depreciation. Note, that this image does not represent the exact items on each factor and associated loadings. For this information, please see table 5.3.

Figure 5.3. Rational belief one-factor model (Model 3).



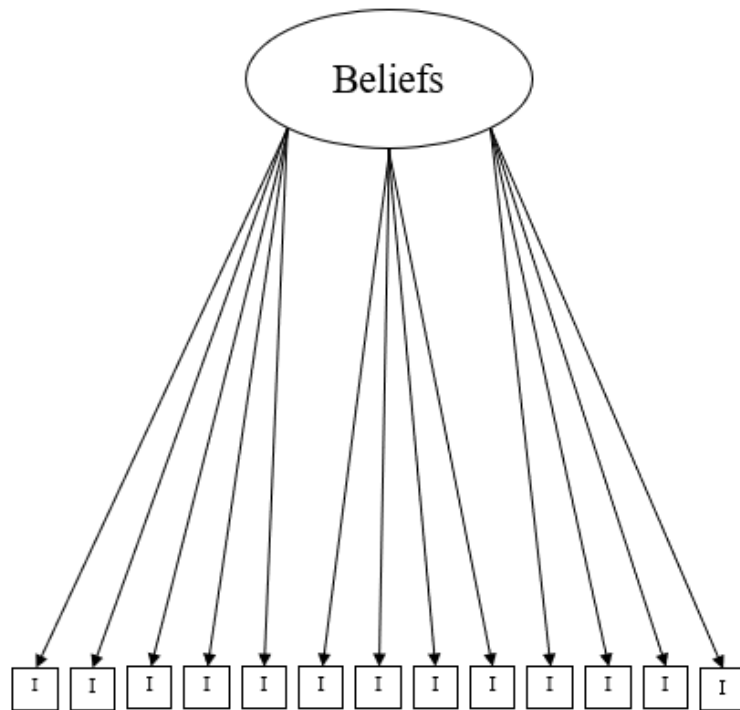
Note. Rational belief one-factor model. PREF Preference, AA Anti-Awfulizing, FT Frustration Tolerance, SA Self-Acceptance. Note, that this image does not represent the exact items on each factor and associated loadings. For this information, please see table 5.3.

Figure 5.4. Irrational and rational belief two-factor model (Model 2).



Note. Irrational and rational belief two-factor model. IB irrational beliefs, RB rational beliefs. Note, that this image does not represent the exact items on each factor and associated loadings. For this information, please see table 5.3.

Figure 5.5. Beliefs one-factor model (Model 1).



Note. Beliefs one-factor model. Note, that this image does not represent the exact items on each factor and associated loadings. For this information, please see table 5.3.

5.4 Study four

The purpose of study 3 was to cross-validate the eight-factorial model of the 57-item BIBI using a CFA with an independent sample. Secondly, to examine the criterion validity of the BIBI, to establish its association with gold standard measures (concurrent validity) in beliefs, body image, and its capacity to predict results in related constructs (predictive validity), a critical part of identifying a psychometrics validity. To do so, the BIBI will be examined against rational and irrational beliefs (ABS-2), negative body image (BSQ), positive body image (BAS-2), mental health (PHQ-9; GAD-7) psychological wellbeing (PMH), eating pathology (EAT-26).

5.4.1 Method

5.4.1.1 Participants. Guided by DeVellis's (2021) recommendations for CFA 364 participants were recruited. For participant details, see table 5.1.

5.4.1.2 Measures

5.4.1.2.1. Body image beliefs. The body image beliefs inventory (BIBI) is a 57-item self-report measure of rational and irrational beliefs about body image, consistent with contemporary theory. The scale measures irrational and rational beliefs specifically on body shape, size, body fat body-fat (See Appendix 4.8). The items are on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The measure includes items such as “I can accept myself regardless of whether I am my ideal shape or not.”. In the present study, the BIBI demonstrated excellent internal reliability ($\alpha = 0.90$).

5.4.1.2.2. Irrational and rational beliefs. The Attitudes and beliefs Scale 2-Abbreviated Version (ABS-2-AV; Hyland et al. 2014c) is a 24-item self-report measure of rational and irrational beliefs (See Appendix 4.8). The scale measures the four cognitive processes of both irrational (demand, awfulizing, frustration tolerance, self-depreciation) and

rational beliefs (preferences, anti-awfulizing, frustration tolerance, and self-acceptance). Items are scored on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores are indicative of a greater endorsement of the cognitive process (See Appendix 4.8). The measure includes items such as “If important people dislike me, it is because I am an unlikable bad person.”. The ABS-2 has demonstrated acceptable to good internal reliability ($\alpha = 0.53-78$; Hyland et al., 2017), convergent and discriminant validity, (Hyland et al., 2017). In the present study, the ABS-2 demonstrated acceptable internal reliability ($\alpha = 0.68$).

5.4.1.2.3. Negative body image. The Body shape questionnaire (BSQ-8C; Cooper et al., 1987) is a brief 8-item measure of body image dissatisfaction (See Appendix 4.8). The measure asks participants to examine how they are feeling about their appearance over the past four weeks. Items are scored on a 5-point Likert scale ranging from “*never*” to “*always*”. Higher scores are indicative of higher body dissatisfaction. The measure includes items such as “Have you felt excessively large and rounded?”. The BSQ -8C has demonstrated good test-retest reliability and discriminant validity. In the present study, the BSQ demonstrated excellent internal reliability ($\alpha = 0.92$).

5.4.1.2.4. Positive body image. The Body Appreciation Scale-2 (BAS-2; Tylka & Wood-Barcalow, 2015) is a 10-item measure that measures body appreciation a factor of positive body image (See Appendix 4.8). Items are scored on a 5-point Likert scale ranging from “*never*” to “*always*”. Higher scores are indicative of higher body appreciation. The measure includes items such as “I feel good about my body.”. The BAS-2 has demonstrated excellent internal reliability ($\alpha = 0.97$). In the present study, the BAS-2 demonstrated excellent internal reliability ($\alpha = 0.94$).

5.4.1.2.5. Depression. The Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001) is a 9-item psychometric screener for major depressive disorder (See Appendix 4.8). The measure asks participants to examine how bothered they have felt by specific problems in the past two weeks. Items are scored on a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*nearly every day*). The measure includes items such as “Feeling down, depressed, or hopeless”. The PHQ-9 is a highly established psychometric for depression and has demonstrated validity via association with comorbid disorders such as anxiety (Burns et al., 2012), and evidence of internal consistency among a diverse array of populations ($\alpha = 0.86$; Grant et al., 2014; $\alpha = 0.91$; Timmins et al., 2017). In the present study, the PHQ-9 demonstrated very good internal reliability ($\alpha = 0.89$).

5.4.1.2.6. Anxiety. The Generalized Anxiety Disorder-7 (GAD-7; Spitzer et al., 2006) is a 7-item diagnostic psychometric for anxiety disorders (See Appendix 4.8). The measure asks participants to examine how bothered they have felt by specific problems in the past two weeks. Items are scored on a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*nearly every day*). The measure includes items such as “Feeling nervous, anxious or on edge”. The GAD-7 is a well-established psychometric and evidenced internal consistency among a broad population range ($\alpha = 0.90$; Woodford et al., 2014; $\alpha = 0.91$; Timmins et al., 2017; $\alpha = 0.92$; Spitzer et al., 2006). In the present study, the GAD-7 demonstrated excellent internal reliability ($\alpha = 0.89$).

5.4.1.2.7. Positive mental health. The Positive Mental Health Scale (PMH; Lukat et al., 2016) is a nine-item scale measuring emotional, psychological, and social factors of wellbeing (See Appendix 4.8). Items are scored on a 4-point Likert scale ranging from 0 (“*I do not agree*”) to 3 (“*I agree*”). The measure includes items such as “All in all, I am satisfied with my life.”. The PHM has been utilised with various populations and has demonstrated excellent consistency ($\alpha = 0.93$), convergent and discriminant validity, and test-

retest reliability (Lukat et al., 2016). In the present study, the PMH demonstrated excellent internal reliability ($\alpha = 0.93$).

5.4.1.2.8. Eating disorder symptomatology. The Eating Attitudes Test (EAT-26; Garner et al., 1982) is a 26-item psychometric that measures dysfunctional eating patterns related to eating disorders (See Appendix 4.8). Items are scored on a 6-item Likert scale ranging from 0 (*rarely, sometimes, never*) to 3 (*always*), with item 26 reversed. The measure includes items such as “Am terrified about being overweight.”. Higher scores are indicative of more dysfunctional eating patterns. The EAT-26 has evidenced good discriminant concurrent validity, internal consistency), and test-retest reliability (Garner et al., 1982; Mazzeo, 1999). In the present study, the EAT-26 demonstrated excellent internal reliability ($\alpha = 0.91$).

5.4.1.2.9. Body mass index (BMI). BMI is an anthropometric measure that utilises height/weight characteristics in individuals and categorises them into groups. It is typically utilised as a measure of healthy body weight. Moreover, it is often used as an indicator of the development of several health issues.

5.4.1.3 Procedure. The procedures remained the same as those outlined in Study 3. All data collection took place online via the Qualtrics software package. In addition, a battery of measurements was distributed and collected including the Attitudes and Beliefs Scale 2-Abbreviated Version (ABS-2-AV; Hyland et al. 2014c), Body Shape Questionnaire (BSQ; Cooper et al., 1987), The Body Appreciation Scale-2 (BAS-2; Tylka & Wood-Barcalow, 2015), The Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001), The Generalized Anxiety Disorder-7 (GAD-7; Spitzer et al., 2006), The Positive Mental Health Scale (PMH-Scale; Lukat et al., 2016), and The Eating Attitudes Test-26 (EAT-26; Garner et al., 1982).

5.4.2 Data analysis

A second CFA was undertaken to cross-validate the results of the first CFA in an independent sample. The data analysis procedures remained the same for the second CFA as those outlined in Study 3. Thus, cross-validate the eight-factorial model the same model fit indices were employed in Study 3 in which values close to .06 and .08 are indicative of good model fit, for the RMSEA and SRMR, respectively. Moreover, .95 for the CFI (Hu & Bentler, 1999). Moreover, Cronbach's alpha and inter-item correlation were examined as in Study 3 with coefficients greater than .70 are indicative of good test reliability and .90 is indicative of excellent reliability (Nunnally & Bernstein, 1994) and inter-item correlations should range below .15 are indicative of poor measurement of a construct, whilst values above .50 are indicative of item redundancy (Clark and Watson, 1995). Secondly, criterion validity was undertaken in two stages using SPSS 28.

First, Pearson's correlation was utilised to examine the concurrent validity of the BIBI against the ABS-2 to examine the irrational and rational belief factors. Pearson's correlation coefficient, r , ranges between values of +1 to -1, with a value of 0 indicating no association between two variables. R-value thresholds depict that 0-0.3 is indicative of a small association, 0.3-0.5 moderate, and 0.5-1 large. Therefore, given the nature of the BIBI and the ABS-2, it would be expected that the two measures would demonstrate an association. Next, linear hierarchical regression analysis was used to examine the predictive validity of the BIBI for BAS, BSQ, PHQ, GAD, PMH, and EAT against sex and age and BMI. This takes place by adding variables over three steps including age and sex (step one), BMI (step two), and irrational and rational beliefs (step three). Literature has consistently established sex, age, and BMI as predictors of negative body image (Ahadzadeh, 2018; Grogan, 2021), thus it was deemed appropriate to assess the BIBI against such criteria. Additionally, a rational-irrational index was developed which relates to the degree of an individual's

rationality or irrationality, being more irrational or more rational. This is achieved by subtracting a participant's irrational beliefs score from their rational beliefs. The rational-irrational index was examined under the same conditions as the previous hierarchical regression analysis to examine whether being more irrational or rational predicted scores in related constructs.

5.4.3 Results

5.4.3.1 Confirmatory factor analysis. Prior to the main analysis, data were screened for outliers (standardized z values > 3.29), and outliers were Winsorized ($n = 37$ from 54600 cases = .07%). Additionally, skewness and kurtosis were analysed (Kline, 2010). The results indicated skewness $-.80 - .92$ and kurtosis $-1.28 - .28$, suitable for CFA (Kline, 2010). The second CFA of the 57-item BIBI produced acceptable fit for eight-factor model, $\chi^2(364) = 3043.743$, $p < .001$, CFI = .91, SRMR = .1206. RMSEA = .05 (90% CI: .049- .054). Overall, the factor loadings presented high loadings across the factors (see table 5.4). Reliability analysis indicated demandingness (.96), awfulizing (.92), frustration intolerance (.92), self-depreciation (.95), preferences (.91), anti-awfulizing (.80), frustration tolerance (.87), self-acceptance (.89) demonstrating overall good to excellent internal consistency (see table 5.4). Finally, inter-item correlations overall fell within range (see table 5.4).

Table 5.4. 2nd CFA factor loadings for eight-factor model, Cronbach alpha, Mean, standard deviation and inter-item correlation statistics.

Item Number	Factor	β	α	M(SD)	Inter-item correlation	
					Range	M(SD)
	Demand		.96			
DEM_SI	I absolutely must be my ideal size	.72		2.19 (1.06)	.581-.753	.659 (.050)
DEM_BF	I absolutely must have my ideal body fat	.66		2.12 (1.00)	.507- .730	.618 (.065)
DEM_SH	I absolutely must be my ideal shape	.72		2.22 (1.05)	.575- .766	.662 (.050)
DEM_SI3	I would like to be my ideal size and therefore I absolutely must be	.71		2.27 (1.04)	.500 -.777	.619 (.082)
DEM_BF3	I would like to have my ideal body fat and therefore I absolutely must	.74		2.20 (1.00)	.529 -.783	.640 (.072)
DEM_BF4	I would like to have my ideal body fat and therefore I absolutely should	.62		2.42 (1.08)	.451- .713	.588 (.081)
DEM_SH3	I would like to be my ideal shape and therefore I absolutely must be	.72		2.31 (1.09)	.554 -.783	.669 (.072)
DEM_SI5	I would prefer to be my ideal size and therefore I absolutely must be	.71		2.36 (1.06)	.513 -.758	.628 (.072)
DEM_SI6	I would prefer to be my ideal size and therefore I absolutely should be	.69		2.46 (1.13)	.439 -.744	.598 (.095)
DEM_BF5	I would prefer to have my ideal body fat and therefore I absolutely must	.71		2.23 (1.05)	.503 -.769	.632 (.074)
DEM_SH5	I would prefer to be my ideal shape and therefore I absolutely must be	.66		2.36 (1.07)	.462 -.745	.600 (.080)

DEM_SH6	I would prefer to be my ideal shape and therefore I absolutely should be	.67	2.48 (1.14)	.467 -.736	.602 (.089)
	Awfulizing		.92		
AW_SI1	It would be completely awful if I was not my ideal size	.66	2.02 (1.02)	.570-.699	.631 (.040)
AW_SI3	It would be the worst thing imaginable if I was not my ideal size	.64	1.76 (.94)	.515 -.725	.614 (.057)
AW_BF2	It would be completely terrible if I did not have my ideal body fat	.74	2.03 (.96)	.589 -.749	.668 (.040)
AW_BF3	It would be the worst thing imaginable if I did not have my ideal body fat	.61	1.72 (.93)	.499 -.725	.608 (.058)
AW_SH1	It would be completely awful if I was not my ideal shape	.68	2.00 (.97)	.541 - .744	.639 (.044)
AW_SH2	It would be completely terrible if I was not my ideal shape	.73	2.02 (.98)	.546 -.749	.650 (.054)
	Frustration intolerance		.92		
FI_SI1	It would be unbearable if I was not my ideal size	.70	2.00 (1.05)	.560 -.734	.646(.040)
FI_SH1	It would be unbearable if I was not my ideal shape	.60	2.01 (.98)	.544 - .707	.606(.042)
FI_SI2	I could not stand it if I was not my ideal size	.64	2.13 (1.06)	.576 -.690	.626 (.033)
FI_BF2	I could not stand it if I did not have my ideal body fat	.70	2.06 (.98)	.580 -.741	.650 (.041)
FI_BF3	It would be intolerable if I did not have my ideal body fat	.64	2.01 (1.00)	.519 -.692	.612 (.044)
FI_SH3	It would be intolerable if I was not my ideal shape	.61	2.03 (1.02)	.543 -.692	.612 (.044)

Self-depreciation		.95			
SD_SI2	I would be completely unlovable if I was not my ideal size	.72	1.78 (1.02)	.462 - .763	.650 (.077)
SD_BF1	I would be completely worthless if I did not have my ideal body fat	.76	1.67 (.89)	.462 -.779	.618 (.088)
SD_BF2	I would be completely unlovable if I did not have my ideal body fat	.73	1.75 (.94)	.483 -.763	.607 (.080)
SD_SH1	I would be completely worthless if I was not my ideal shape	.78	1.75 (1.01)	.439 -.779	.615 (.094)
SD_SI3	If I was not my ideal size it would make me completely worthless	.74	1.80 (1.04)	.459 -.778	.610 (.084)
SD_SH3	If I was not my ideal shape it would make me completely worthless	.75	1.73 (.99)	.451 -.776	.597 (.092)
Preferences		.93			
PF_SI1	I would like to be my ideal size, but I do not absolutely have to be	.51	3.75 (.95)	.145-.652	.402(.150)
PF_BF1	I would like to have my ideal body fat, but that does not mean that I must	.60	3.75 (.88)	.186 -.608	.387 (.123)
PF_BF2	I would like to have my ideal body fat, but that does not mean that I absolutely should	.50	3.70 (.88)	.180-.584	.387 (.123)
PF_SH1	I would like to be my ideal shape, but I do not absolutely have to be	.51	3.78 (.94)	.136-.612	.410 (.151)
PF_SH2	I would like to be my ideal shape, but that does not mean that I must be	.59	3.76 (.91)	.137 -.663	.422 (.135)
PF_SI3	I would prefer to be my ideal size, but I do not absolutely have to be	.60	3.77 (.93)	.127 -.696	.428 (.154)
PF_SI4	I would prefer to be my ideal size, but that does not mean that I must be	.67	3.81 (.90)	.145 -.650	.403 (.147)

PF_BF3	I would prefer to have my ideal body fat, but that does not mean that I must	.60	3.72 (.86)	.152 -.696	.432 (.148)
PF_SH4	I would prefer to be my ideal shape, but that does not mean that I must be	.68	3.80 (1.03)	-.041 -.480	.227 (.164)
Anti-Awfulizing		.80			
AA_SI1	If I was not my ideal size it would be very bad, but it would not be the end of the world	.26	3.24 (1.02)	-.119-.515	.214 (.180)
AA_SI2	If I was not my ideal size it would be unpleasant and unfortunate, but not awful	.27	3.33 (.99)	-.021 -.515	.257 (.167)
AA_BF2	If I did not have my ideal body fat it would be unpleasant and unfortunate, but not awful	.32	3.28 (.99)	.249 -.505	.410 (.075)
AA_BF3	It would be unfortunate if I did not have my ideal body fat, but not the end of the world	.63	3.69 (.88)	-.001 -.479	.270 (.147)
AA_SH1	If I was not my ideal shape it would be very bad, but it would not be the end of the world	.38	3.32 (.95)	.210 -.504	.359 (.085)
AA_SH3	It would be unfortunate if I were not my ideal shape, but not the end of the world	.41	3.73 (.91)	.134 -.603	.381 (.128)
Frustration tolerance		.87			
FT_SI1	It would be difficult if I was not my ideal size, but I could stand it	.55	3.44 (.94)	.137 -.580	.365 (.121)
FT_SI3	It would be difficult if I was not my ideal size, but I could tolerate it	.50	3.48 (.91)	.076 -.595	.352 (.139)
FT_BF1	It would be difficult not having my ideal body fat, but I could stand it	.53	3.39 (.93)	.088 -.568	.334 (.130)
FT_BF2	It would be tough not having my ideal body fat, but I could bear it	.48	3.39 (.93)	.107 -.554	.364 (.128)
FT_SH2	It would be tough if I was not my ideal shape, but I could bear it	.50	3.47 (.92)	.172 -.603	.387 (.122)

FT_SH3	It would be difficult if I was not my ideal shape, but I could tolerate it	.65	3.47 (.92)	-.090 -.697	.276 (.206)
	Self-acceptance		.88		
SA_SI2	I can accept myself regardless of whether I am my ideal size or not	.57	3.70 (1.12)	.023 -.598	.335 (.151)
SA_SI3	My worth as a human being does not depend on me being my ideal size	.42	4.08 (1.10)	-.039 -.700	.308(.191)
SA_BF1	Regardless of whether I have my ideal body fat or not, I can accept myself as a human being	.66	4.13 (.93)	.032 -.598	.310 (.154)
SA_BF3	My worth as a human being does not depend on me having my ideal body fat	.44	4.03 (1.13)	-.108 -.700	.304 (.186)
SA_SH1	Regardless of whether I am my ideal shape or not, I can accept myself as a human being	.60	4.08 (.93)	-.119 -.697	.306 (.221)
SA_SH2	I can accept myself regardless of whether I am my ideal shape or not	.70	3.75 (1.11)	.115 -.607	.387 (.141)

5.4.3.2 Criterion validity

4.4.3.2.1 Concurrent validity

Table 5.5 illustrates the correlations between the BIBI subscales and ABS (general irrational and rational beliefs), BSQ (negative body image), BAS (positive body image), GAD (anxiety), PHQ (depression), PMH (positive mental health), and EAT (eating disorder symptomology).

Body image beliefs and General beliefs

As hypothesised, each of the BIBI irrational factors (demandingness, awfulizing, frustration intolerance, self-depreciation) were all significantly and positively associated ($p < .01$) with ABS subscales, demands ($r = .21$ to $.37$), catastrophising ($r = .24$ to $.35$), low frustration tolerance ($r = .28$ to $.31$), depreciation ($r = .29$ to $.42$). Additionally, the majority of the BIBI rational beliefs factors were positively and significantly associated ($p < .01$) with ABS preference ($r = -.02$ to $.11$), non-catastrophising ($r = .13$ to $.34$), high frustration tolerance ($r = .12$ to $.22$), and acceptance ($r = .04$ to $.42$).

Body image beliefs and Body image

As hypothesised, BSQ was significantly and positively associated ($p < .01$) with the BIBI demandingness ($r = .39$), awfulizing ($r = .40$), frustration intolerance ($r = .42$), depreciation ($r = .43$), and negatively with preferences ($r = -.19$), frustration tolerance ($r = -.01$), self-acceptance ($r = -.47$) subscales. Additionally, the BAS was significantly and negatively associated ($p < .01$) with the BIBI demandingness ($r = -.21$), awfulizing ($r = -.30$), frustration intolerance ($r = -.33$), depreciation ($r = -.34$), and positively with preference ($r = .11$), and self-acceptance ($r = .46$) subscales.

Body image beliefs and psychological distress and health

As hypothesised, the PHQ was significantly and positively associated ($p < .01$) with the BIBI demandingness ($r = .25$), awfulizing ($r = .30$), frustration intolerance ($r = .28$), depreciation ($r = .32$), and negatively with preference ($r = -.05$) and self-acceptance ($r = -.31$) subscales. The GAD was significantly and positively associated ($p < .01$) with the BIBI demandingness ($r = .24$), awfulizing ($r = .27$), frustration intolerance ($r = .25$), depreciation ($r = .27$), and negatively with preferences ($r = -.03$), self-acceptance ($r = -.26$) subscales. The PHM was negatively and significantly associated ($p < .01$) with the BIBI demandingness ($r = -.16$), awfulizing ($r = -.20$), frustration intolerance ($r = -.19$), depreciation ($r = -.26$), and positively preferences ($r = .11$), anti-awfulizing ($r = .04$), frustration tolerance ($r = .08$), and self-acceptance ($r = .21$) subscales.

Body image beliefs and eating disorder symptomatology

As hypothesised, the EAT was significantly and positively associated ($p < .01$) with the BIBI demandingness ($r = .43$), awfulizing ($r = .39$), frustration intolerance ($r = .43$), depreciation ($r = .37$), and negatively with preferences ($r = -.25$), frustration tolerance ($r = -.11$), self-acceptance ($r = -.40$) subscales.

In summary, the BIBI overall displayed adequate to good concurrent validity among beliefs, body image, psychological health and distress, and eating disorder symptomatology as would be expected. The data suggest that irrational beliefs were associated in the direction expected among the target variables, however, in some instances, anti-awfulizing and frustration tolerance subscales were associated in an atypical manner.

Table 5.5. Means, Standard Deviations, and Correlations between BIBI, ABS-2, BAS, BSQ, PHQ, GAD, PMH and EAT.

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1.BIBI DEM	2.26	0.87	(.96)																					
2.BIBI AWF	1.80	0.64	.79**	(.93)																				
3.BIBI FI	1.91	0.68	.83**	.91**	(.92)																			
4.BIBI SD	1.64	0.67	.67**	.83**	.80**	(.95)																		
5.BIBI PREF	3.94	0.16	.49	-.46**	-.49**	-.45**	(.39)																	
6.BIBI AA	3.47	0.60	.02	-.02	.00	-.01	.37**	(.79)																
7.BIBI FT	3.47	0.66	-.12*	-.15**	-.15**	-.18**	.47**	.74**	(.87)															
8.BIBI SA	4.05	0.72	-.59**	-.72**	-.73**	-.76**	.51**	.13*	.24**	(.89)														
9.BAS-2	3.23	0.81	-.21**	-.30**	-.33**	-.34**	.11*	-.11*	-.05	.46**	(.94)													
10.BSQ-8	2.96	1.16	.39**	.40**	.42**	.43**	-.19**	.15**	-.01	-.47**	-.61**	(.92)												
11.GAD-7	3.23	1.40	.24**	.27**	.25**	.27**	-.03	.16**	.01	-.26**	-.33**	.48**	(.90)											
12.PHQ-9	1.88	0.64	.25**	.30**	.28**	.32**	-.05	.13*	.04	-.31**	-.43**	.53**	.77**	(.89)										
13.PMH	2.93	0.69	-.16**	-.20**	-.19**	-.26**	.11*	.04	.08	.21**	.43**	-.32**	-.42**	-.49**	(0.93)									
14.ABS DEM	3.36	0.86	.37**	.30**	.30**	.21**	-.11*	.10	.01	-.24**	-.19**	.22**	.27**	.210**	-.04	(.77)								
15.ABS CAT	2.78	0.98	.24**	.35**	.32**	.35**	-.05	.13*	.05	-.31**	-.44**	.36**	.44**	.46**	-.32**	.42**	(.68)							
16.ABS LFT	3.10	0.89	.28**	.32**	.31**	.28**	-.01	.14**	.10	-.26**	-.35**	.35**	.46**	.45**	-.25**	.46**	.59**	(.64)						
17.ABS DEP	2.40	0.70	.29**	.39**	.36**	.42**	-.15**	.03	-.01	-.40**	-.31**	.36**	.38**	.43**	-.28**	.23**	.50**	.34**	(.85)					
18.ABS PREF	2.91	0.57	.15**	.16**	.17**	.19**	-.02	.11*	.05	-.12*	-.09	.21**	.23**	.23**	-.14**	-.05	.22**	.06	.43**	(.78)				
19.ABS NONCAT	3.60	0.65	-.11*	-.23**	-.22**	-.27**	.21**	.13*	.23**	.34**	.19**	-.09	-.14**	-.14**	.25**	-.16**	-.18**	-.12*	-.11*	.20**	(.62)			
20.ABS HFT	3.37	0.68	.04	-.02	.00	-.09	.12*	.16**	.22**	.18**	.11*	-.07	-.11*	-.04	.18**	-.18**	-.20**	-.17**	-.02	.39**	.50**	(.55)		
21.ABS ACCEPT	3.82	0.89	-.15**	-.26**	-.25**	-.34**	.16**	.04	.07	.45**	.38**	-.18**	-.28**	-.33**	.35**	-.17**	-.39**	-.21**	-.42**	.05	.46**	.38**	(.83)	
22. EAT-26	0.36	0.38	.43**	.39**	.43**	.37**	-.26**	.13	-.11	-.40**	-.34**	.60**	.33**	.33**	-.22**	.25**	.27**	.25**	.27**	.19**	-.12*	-.00	-.11*	(.91)

5.4.3.2.2. Predictive validity

Body image beliefs and body image

For BAS (positive body image), step 1 (age and sex) did not explain a significant proportion of variance in BAS ($R^2 < .00$, $p > .05$), however, Step 2 (BMI) explained 9.6% the of total variance in BAS ($R^2 < .01$, $p < .001$) and 9.1% in the additional variance (R^2 change). The final model (age, sex, BMI, and beliefs), $R^2 = .33$, $F(11, 352) = 16.21$, $p < .001$, explained 33% of the total variance in BAS and 24.10% of the additional variance. Demand ($\beta = .13$, $t = 1.54$, $p = .12$), awfulizing ($\beta = .64$, $t = .54$, $p = .59$), frustration intolerance ($\beta = -.13$, $t = -1.13$, $p = .26$), self-depreciation ($\beta = -.04$, $t = -.41$, $p = .68$), preference ($\beta = -.04$, $t = -.62$, $p = .54$), anti-awfulizing ($\beta = -.07$, $t = -.97$, $p = .33$), and frustration tolerance ($\beta = -.12$, $t = -1.80$, $p = .08$) were not significantly associated with BAS. Self-acceptance was positively associated with BAS ($\beta = .50$, $t = 6.86$, $p < .001$). In sum, those who reported lower BMI scores and greater self-acceptance scores reported greater BAS scores.

For BSQ (negative body image), step 1 (age and sex) explained 5.3% of the variance in BSQ ($r^2 < .53$, $p < .001$). Additionally, step 2 explained 20.0 % of the total variance in BSQ ($r^2 < .020$, $p < .001$) and 14.6% of the additional variance. The final model (age, sex, BMI and beliefs), $r^2 = .47$, $F(11, 352) = 24.80$, $p < .001$, explained 47.3% of the total variance in BSQ and 23.7% of the additional variance, awfulizing ($\beta = -.05$, $t = -.05$, $p = .67$), frustration intolerance ($\beta = -.01$, $t = -.01$, $p = .92$), self-depreciation ($\beta = .14$, $t = -1.71$, $p = .09$) preference ($\beta = .00$, $t = -.01$, $p = .097$), and frustration tolerance ($\beta = -.04$, $t = -.70$, $p = .49$) were not significantly associated with BSQ. Demand ($\beta = .21$, $t = 2.01$, $p < .05$) and Anti awfulizing ($\beta = .39$, $t = 3.27$, $p < .001$) were positively associated with BSQ. Self-acceptance was negatively associated with BSQ ($\beta = -.47$, $t = -4.36$, $p < .001$). In sum, those were younger, female and had a higher BMI reported greater BSQ scores. Additionally, those who

reported greater demand and anti-awfulizing scores reported greater BSQ scores, whereas those who reported greater self-acceptance beliefs reported lower BSQ scores.

Body image beliefs and psychological distress and health

For PHQ (depression), step 1 (age and sex) explained 8.3% of the variance in PHQ ($r^2 < .83, p < .001$). Additionally, step 2 explained 11.4 % of the total variance in PHQ ($r^2 < .011, p < .001$) and 3.1% of the additional variance. The final model (age, sex, BMI, and beliefs), $r^2 = .22, F(11, 352) = 9.30, p < .001$, explained 22.5% of the total variance in PHQ and 11.1% of additional variance. Demand ($\beta = .04, t = .44, p = .66$), awfulizing ($\beta = .14, t = 1.13, p = .26$), frustration intolerance ($\beta = -.14, t = -1.05, p = .29$), self-depreciation ($\beta = .15, t = 1.63, p = .10$), preference ($\beta = .08, t = 1.30, p = .19$), anti-awfulizing ($\beta = .10, t = 1.44, p = .15$), frustration tolerance ($\beta = .00, t = -.00, p = .10$) were not significantly associated with PHQ. Self-acceptance was negatively associated with PHQ ($\beta = -.20, t = -2.4, p < .05$). In sum, those who were younger, female and had a higher BMI reported greater PHQ scores. Additionally, those who reported greater self-acceptance beliefs reported lower PHQ scores.

For GAD (anxiety), step 1 (age and sex) explained 8.7% of the variance in GAD ($r^2 < .87, p < .001$). Additionally, step 2 explained 9.8 % of the total variance in GAD ($r^2 < .01, p < .05$) and 1.1% of the additional variance. The final model (age, sex, BMI, and beliefs), $r^2 = .19, F(11, 352) = 7.90, p < .001$, explained 19.8% of the total variance in GAD and 10.0% of the additional variance. Demand ($\beta = .08, t = .84, p = .40$), awfulizing ($\beta = .12, t = .92, p = 3.60$), frustration intolerance ($\beta = -.14, t = -1.10, p = .29$), self-depreciation ($\beta = .12, t = 1.21, p = .23$), preference ($\beta = .11, t = 1.60, p = .11$), and frustration tolerance ($\beta = -.14, t = -1.90, p = .06$) were not significantly associated with anxiety. Anti-awfulizing was positively associated with anxiety ($\beta = .23, t = 3.16, p < .001$), whereas self-acceptance ($\beta = -.16, t = -2.02, p < .001$) was negatively associated with GAD. In sum, those who were younger,

female and had a higher BMI reported greater GAD scores. Additionally, those who reported greater GAD reported greater anti-awfulizing scores, and those who scored greater self-acceptance beliefs reported lower GAD scores.

For PHM (positive mental health), step 1 (age and sex) and step 2 (BMI) did not explain a significant proportion of variance in PMH ($r^2 < .00$, $p > .05$; $r^2 < .01$, $p > .05$). The final model (age, sex, BMI, and beliefs), $r^2 = .10$, $F(11, 352) = 3.61$, $p < .001$, explained 10.1% of the total variance in PMH and 9.3% of the additional variance. Demand ($\beta = -.06$, $t = -.58$, $p = .56$), awfulizing ($\beta = .08$, $t = .60$, $p = .55$), frustration intolerance ($\beta = .10$, $t = .73$, $p = .47$), self-depreciation ($\beta = -.19$, $t = -1.86$, $p = .06$), preference ($\beta = -.06$, $t = -.83$, $p = .41$), anti-awfulizing ($\beta = -.00$, $t = -.02$, $p = .98$), and frustration tolerance ($\beta = .03$, $t = .39$, $p = .70$) were not significantly associated with PMH. Self-acceptance was positively associated with PMH ($\beta = .27$, $t = 3.18$, $p < .001$). In sum, those who reported greater PMH scores reported greater scores in self-acceptance.

Body image beliefs and eating disorder symptomatology

For EAT (eating disorder symptomatology), step 1 (age and sex) explained 6.7% of the variance in EAT ($r^2 < .07$, $p < .001$). Additionally, step 2 explained 9.2% of the total variance in EAT ($r^2 < .09$, $p < .001$) 3.3% of the additional variance. The final model (age, sex, BMI and beliefs), $r^2 = .29$, $F(11, 352) = 12.82$, $p < .001$, explained 28.6% of the total variance in EAT and 26.6% of additional variance. Awfulizing ($\beta = -.15$, $t = -1.20$, $p = .23$), frustration intolerance ($\beta = .17$, $t = 1.36$, $p = .18$), self-depreciation ($\beta = .01$, $t = .12$, $p = .91$), preference ($\beta = -.02$, $t = -.32$, $p = .75$), anti-awfulizing ($\beta = .07$, $t = 1.03$, $p = .30$), and frustration tolerance ($\beta = -.08$, $t = -1.09$, $p = .28$) were not significantly associated with EAT. Demand was positively associated with EAT ($\beta = .24$, $t = 2.90$, $p < .01$), whereas self-acceptance was negatively associated ($\beta = -.19$, $t = -2.44$, $p < .01$). In sum, those who were

younger, female and had a higher BMI reported greater EAT scores. Additionally, those who reported greater EAT scores reported greater demand scores, and those who scored greater self-acceptance scores reported lower EAT scores.

Body image beliefs (Rational-irrational index) and body image

For BAS (positive body image), step 1 (age and sex) did not significantly explain the variance in BAS ($r^2 < .00$, $p > .05$). However, step 2 explained 10.4 % of the total variance in BAS ($r^2 < .0.10$, $p < .001$) and 9.9% of additional variance. The final model (age, sex, BMI, and rational-irrational index), $r^2 = .19$, $F(4, 359) = 20.88$, $p < .001$, explained 18.9% of the total variance in BAS and 8.5% of additional variance. Rational-irrational index scores were positively associated with BAS ($\beta = .29$, $t = 6.14$, $p < .01$). In sum, those who reported a lower BMI and greater rational-irrational index scores reported greater BAS scores.

For BSQ (negative body image), step 1 (age and sex) explained 5.3% of the variance in BSQ ($r^2 < .05$, $p > .001$). Additionally, step 2 explained 17.5 % of the variance in BSQ ($r^2 < .18$, $p < .001$). The final model (age, sex, BMI, and rational-irrational index), $r^2 = .33$, $F(4, 359) = 43.13$, $p < .001$, explained 32.5% of the total variance in BSQ and 15.0% of the additional variance. Rational-irrational index scores were negatively associated with BSQ ($\beta = -.39$, $t = -8.92$, $p < .001$). In sum, those who were female and reported a greater BMI reported greater BSQ scores. Additionally, those who reported greater rational-irrational index scores reported BSQ scores.

Body image beliefs (Rational-irrational index) and psychological distress and health

For GAD (anxiety), step 1 (age and sex) explained 8.7% of the variance in GAD ($r^2 < .09$, $p > .001$). Additionally, step 2 explained 10.2 % of the variance in GAD ($r^2 < .10$, $p < .001$) and 5.8% of the additional. The final model (age, sex, BMI and rational-irrational

index), $r^2 = .14$, $F(4, 359) = 14.31$, $p < .001$, explained 13.8% of the total variance in GAD and 3.6% of the additional variance. Rational-irrational index scores were negatively associated with GAD ($\beta = -.19$, $t = -3.85$, $p < .001$). In sum, those who were female and reported a greater BMI reported greater GAD scores. Additionally, those who reported greater rational-irrational index scores reported lower GAD scores.

For PHQ (depression), step 1 (age and sex) explained 8.3% of the variance in PHQ ($r^2 < .08$, $p < .001$). Additionally, step 2 explained 11.5 % of the total variance in PHQ ($r^2 < .10$, $p < .001$) and 3.2% in additional variance. The final model (age, sex, BMI, and rational-irrational index), $r^2 = .17$, $F(4, 359) = 17.83$, $p < .001$, explained 16.6% of the total variance in PHQ and 5.1% additional variance. Rational-irrational index scores were negatively associated with PHQ ($\beta = -.23$, $t = -4.68$, $p < .001$). In sum, those who were female and reported a greater BMI reported greater PHQ scores. Additionally, those who reported greater rational-irrational index scores reported lower PHQ.

For PMH (positive mental health), step 1 (age and sex) did not significantly explain the variance in PMH ($r^2 < .01$, $p > .05$). However, step 2 (BMI) explained 5.4 % of the total variance in PMH ($r^2 < .54$, $p < .001$) and 4.0% of additional variance. The final model (age, sex, BMI, and rational-irrational index), $r^2 = .11$, $F(4, 359) = 10.58$, $p < .001$, explained 10.5% of the total variance in PMH. Rational-irrational index scores were positively associated with PMH ($\beta = .23$, $t = 4.55$, $p < .001$). In sum, those who reported a lower BMI reported less PMH scores, whereas those who reported greater rational-irrational index scores reported greater PMH scores.

Body image belief (Rational-irrational index) and eating disorder symptomatology

For EAT (eating disorder symptomatology), step 1 (age and sex) explained 6.7% of the variance in EAT ($r^2 < .07$, $p < .001$). Additionally, step 2 (BMI) explained 9.2 % of the

variance in EAT ($r^2 < .09$, $p < .001$) and 2.5% in additional variance. The final model (age, sex, BMI, and rational-irrational index), $r^2 = .26$, $F(4, 359) = 31.17$, $p < .001$, explained 25.8% of the total variance in EAT and 16.6% of additional variance. Rational-irrational index scores were negatively associated with EAT ($\beta = -.41$, $t = -8.96$, $p < .001$). In sum, those who were female and reported a greater BMI reported more EAT scores, whereas those who reported greater rational-irrational index scores reported lower EAT scores.

5.5 Study 5

The purpose of Study 5 was to examine the test-retest reliability of the BIBI utilising interclass coefficient correlation and Pearson's correlation and to examine the BIBI's association with social desirability.

5.5.1 Method

5.5.1.1 Participants. Research indicates that sample sizes of a minimum of 50 participants are required at two-time points to establish intra-class coefficients (ICC) of .80 with a 95 % confidence interval (CI) from .70 to .90 (Giraudeau & Mary, 2001), whereas other scholars propose aiming for ICCs of at least 0.75 with lower limits of CIs of .6, with a minimum sample size of 30 participants (Law, 2004). To this end, 151 participants were recruited to complete the BIBI at two separate time points, two weeks apart. Research suggests attrition rates of 50% (Polit, 2014) and therefore approximately 75 participants were expected to be retained at timepoint two. Participant sampling methods remained the same as in Studies 3 and 4. Only those who participated at time point one could participate in time point two. The final sample comprised 151 participants and 86 participants were retained at time point two. For participant details, see table 5.1.

5.5.1.2. Measures

5.5.1.2.1. Body image beliefs. The body image beliefs inventory (BIBI) is a self-report measure of rational and irrational beliefs about body image, consistent with contemporary theory. The scale measures irrational and rational beliefs specifically about body shape, size, body fat body-fat (See Appendix 4.8). The items are on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The measure includes items such as “I can accept myself regardless of whether I am my ideal shape or not.”. In the present study, the BIBI demonstrated excellent internal reliability ($\alpha = 0.90$).

5.5.1.2.2. Social desirability. The brief social desirability scale (BSDS; Haghghat, 2007) is a short social desirability scale. Participants are asked to respond to four questions “yes” or a “no,” and a score of 1 is allocated to “yes” and 0 for “no” answers. Item four is reversed. The measure includes items such as “Would you ever lie to people.” The BSDS has demonstrated internal reliability (Cronbach’s $\alpha = 12 .60$) and validity among a diverse range of populations.

5.5.1.3 Procedure. The procedures remained the same as those outlined in Study 3 and 4. All data collection took place online via the Qualtrics software package. In addition, the 57-item BIBI was administered to participants at two-time points (i.e., two weeks apart), and the BSDS was administered at time point one.

5.5.2 Data analysis

To assess the test-retest reliability of the BIBI, the Intraclass correlation coefficient (ICC) and its associated 95% CI’s were examined at time point one and two utilising two-way mixed effects, absolute agreement, and single measurement (McGraw & Wong, 1996). Portney and Watkins (2000) suggest that two-way mixed effects and absolute agreement should be utilised for test-retest reliability, as repeated measurement cannot be considered as

deriving from a random sample and if there was no absolute agreement among repeated measurements it would render the data meaningless.

Koo and Li (2016) suggest that ICC and CI ranges of .5 and .75 are indicative of moderate reliability, whilst values between 0.75 and 0.9 are indicative of good reliability and a value greater than 0.90 is indicative of excellent reliability. Additionally, Pearson's correlation coefficient was calculated between time point one and two, Barker et al. (2002) suggest that values over .70 are indicative of test-retest reliability.

Finally, Pearson's correlation coefficient between the BIBI and BSDS was examined. Social desirability is a key factor in research and relates to a participant's proclivity to give 'desirable' responses to attitudinal questionnaires to promote a more socially acceptable self-image (Haghighat, 2007). Attitudinal measures can be distorted by a social desirability factor, which can corrupt the validity of the questionnaire as the measure may not be measuring what it intends to measure, but rather, attempts to provide 'desirable' answers to 'appease' the researchers (Haghighat, 2007; DeVellis, 2021). Thus, given the attitudinal psychometric characteristics of the BIBI, an assessment of social desirability was considered necessary.

5.5.3 Results

Prior to the main analysis, data were screened for outliers (standardized z values > 3.29), and outliers were Winsorized ($n = 8$ from 9211 cases = .09%). The results from a two-way, mixed effects model, absolute agreement indicates that across the BIBI subscales the ICC estimates and their 95% CI's range between .68-87 and .45-91 respectively.

Additionally, Pearson correlation coefficient results demonstrated that a significant correlation was found from time point 1 and 2 for demandingness ($r = .88, p > .01$), awfulizing ($r = .82, p > .01$), frustration intolerance ($r = .81, p > .01$), self-depreciation ($r = .81, p > .01$), preferences ($r = .79, p > .05$), anti-awfulizing ($r = .72, p > .01$), and self-

acceptance ($r = .82, p > .01$). Therefore, ICC estimates and their associated CI's of the BIBI were indicative of moderate to excellent reliability (see table 5.6). Additionally, Pearson's r statistic illustrates that all subscales exceed the .7 range indicating test-retest reliability (Barker et al., 2002). Finally, Pearson correlation coefficient results demonstrated non-significant associations between the BSDS (social desirability) scores and demand ($r = .06, p > .05$), awfulizing ($r = -.09, p > .05$), frustration intolerance ($r = .10, p > .05$), self-depreciation ($r = .12, p > .05$), anti-awfulizing ($r = -.19, p > .05$), however, a significant correlation for frustration tolerance ($r = -.23, p > .05$) and self-acceptance ($r = -.28, p > .05$) were found. Therefore, overall, the BIBI subscales indicated that the BIBI was not subject to social desirability, however, frustration tolerance and self-acceptance suggest low albeit significant association which will warrant further enquiry.

Table 5.6. *Interclass correlation and Pearson's correlation for the BIBI.*

Factor	Interclass correlation	Interval		<i>F</i> value	<i>r</i>
		Lower Bound	Upper Bound		
DEM	.87	.80	.91	15.17**	.88**
AWF	.82	.73	.87	10.05**	.82**
FI	.82	.73	.88	9.72**	.81**
SD	.81	.72	.87	9.30**	.81**
PREF	.81	.58	.83	7.26**	.79**
AA	.68	.45	.81	6.35**	.72**
FI	.71	.59	.80	6.12**	.72**
SA	.81	.72	.87	9.18**	.82**

Note, DEM Demandingness, AWF Awfulizing, FI Frustration Intolerance, SD Self-depreciation, PREF Preference, AA Anti-Awfulizing, FT Frustration Tolerance, SA Self-Acceptance. $p < .05$. * $p < .001$ **

5..5.4 Discussion

Although REBT theory boasts over 40 measures that assess irrational and rational beliefs (David et al., 2019) and there are over 150 measures that assess dimensions of body image (Kling et al., 2019), to date no measure exists that measures irrational and rational beliefs concerning body image. Studies 2-5 in this thesis aimed to address this limitation by developing a contextually driven, valid, and reliable measure of irrational and rational beliefs in body image – the Body Image beliefs Inventory (BIBI). The result was the 57-item BIBI an accurate, valid, and reliable measure of body image beliefs.

In Study 2 the eight factors (e.g., demandingness), three contextual areas (e.g., body fat), and items developed represented parsimonious, yet comprehensive items and subscales for body image beliefs that were grounded by recommendations from extant literature (Terjesen et al., 2009). More specifically, the BIBI contained cognitive items only, rather than affect, or behavioural laden items, thus providing partial support that cognitions only were being captured, as such addressing limitations in relating to the assessment of central mechanisms of change as per REBT theory (Terjesen et al., 2009). Moreover, the BIBI assesses rational beliefs, rather than irrational beliefs solely, or conceiving low irrational beliefs as an indication of rational beliefs, a key limitation in previous REBT measures. The BIBI is derived from contemporary manifestations of REBT, and as such relates to the eight cognitive appraisal structures (i.e., demandingness, awfulizing, frustration intolerance, self-depreciation, preferences, anti-awfulizing, frustration tolerance, and self-acceptance), rather than obsolete manifestations of the theory (i.e., eleven core beliefs). Thus, providing measurement advancements in the field.

Concerning body image, the BIBI provides gender-neutral items, rather than gender-specific (i.e., appearance concerns associated with particular genders), as seen in measures

such as the Muscle Dysmorphic Disorder Inventory (MDDI). Therefore, addressing issues such as the requirement for modification or adaption for specific gendered groups. To bolster this, the subscales were rigorously examined by two independent samples and a usability sample, addressing previous shortcomings in content and construct validity in REBT measurement (Terjesen et al., 2019), whilst adhering to standards of scale development (Boateng et al., 2019).

In Study 3, three of the models of the BIBI provided acceptable model fit (Hu & Bentler, 1999; Bentler, 1992). However, the 2 x 4 factorial fit demonstrated the best model fit in line with theoretical postulations of REBT (Ellis, 1977; Hyland, 2016). Moreover, Study 4 provided further support for the factorial fit of the 57-item BIBI, by demonstrating a good model fit in an independent sample. Additionally, in Study 3-5, a heterogeneous sample was recruited including both males and females, and a diverse array of ages addressing limitations in sample diversity in REBT and body image measurement research. Thus, the BIBI goes beyond previous measures by providing a more representable sample, as such inferences are more likely to be generalised to broader populations than women-only, or academic samples, as witnessed in previous research (Kling et al., 2019).

In Study 4, the BIBI demonstrated good concurrent and predictive validity overall. More specifically, in concurrent validity, as hypothesised the BIBI irrational belief subscales were positively associated with ABS irrational belief subscales, negative body image, anxiety, depression and eating disorder symptomatology, whereas the BIBI rational belief subscales were positively associated with ABS rational belief subscales, positive body image and positive mental health. Thus, the BIBI addressed limitations in previous research by demonstrating associations with gold-standard measures of irrational and rational beliefs measures (i.e., ABS), as previous measures have often measured belief measures against

affect measures (e.g., anxiety), rather than cognitive measures (i.e., beliefs). These findings are in line with research indicating the role of irrational and rational beliefs in body image, psychological pathology and health, and eating disorder symptomology (Bothma & Moller, 2008; Hyland et al., 2017; David et al., 2021; Tomoatake et al., 2004).

Predictive validity demonstrated that the BIBI subscales (Model 3) explained a significant proportion of the variance in all variables. Indeed, the BIBI demonstrated a similar variance explanation as BMI in body image and more variance in anxiety and depression than age and sex. Furthermore, the BIBI subscales were the only predictor to significantly explain variance in positive mental health. Finally, the BIBI subscales explained four times more than other predictors in eating disorder symptomatology. As hypothesised in research and the theory of REBT, the data suggested that self-acceptance was a significant predictor in all models among all variables, highlighting its importance in psychopathology and health. As such, the BIBI demonstrated concurrent validity and predictive ability in essential theoretical comorbidities, consequently, researchers may now be able to make predictions relating to the development of other psychiatric conditions such as body dysmorphic disorder, muscle dysmorphia, anxiety, depression, and eating disorders via body image beliefs measurement. However, further research is warranted to examine in further detail the subscales of the BIBI to provide richer insight into the results reported in Study 4.

In Study 5, the BIBI demonstrated good to excellent test-retest reliability via ICC estimates and Pearson's correlation coefficient. The data suggests that the eight BIBI subscales remained stable across two-time points. This is an essential step in scale development as a reliable psychometric should provide consistent scores across time in a stable population (Aaronson et al., 2002). Additionally, overall the BIBI subscales were not associated with social desirability scores. Study 5 contributed to the scale development of the

BIBI and thesis aims in several ways. First, the results of Study 5 indicate that the BIBI is reliable in repeated administration and is overall not associated with social desirability. These findings hold implications for the use of the BIBI and the examination of body image beliefs. The test-retest findings in Study 5 when combined with preliminary evidence of construct, content, concurrent, and predictive validity, indicate that researchers and practitioners can be confident that the BIBI can measure accurately and reliably body image beliefs. As such, researchers and practitioners can have greater certainty that the BIBI is accurately measuring what it is designed to but also can be used for repeated-measure assessment of body image beliefs, a particularly valuable and essential characteristic for scientist-practitioners and researchers when using REBT (Turner & Bennett, 2018). Furthermore, the BIBI addresses previous limitations in REBT and body image measures in which there remains a dearth of psychometrics reporting test-retest results, and of the limited results poor scores have been identified (Terjesen et al., 2009; Kling et al., 2019). Indeed, the BIBI follows COSMIN guidelines in scale development (Mokkink et al., 2010a; Terjsen et al., 2012) by examining ICC, scantily reported in research (Mokkink et al., 2010a), thus, further demonstrating the BIBI as a reliable measurement of body image beliefs.

This research has developed the first valid and reliable measure of body image beliefs. In contrast to previous measures of irrational and rational beliefs, and body image that only assess general beliefs (David et al., 2021), the BIBI can be utilised to assess specific cognitive processes relating to body image, that can map onto the REBT theory and treatment protocols. Despite these strengths, it is crucial to highlight some of the limitations rendered by the series of studies reported in this Chapter. Firstly, although the BIBI provided a more diverse sample than previous measurement research in REBT and body image, the studies did not capture ethnicity, sexual preference, and more diverse gender orientations all deemed as important variables in body image research (Grogan, 2021). Thus, to support the ongoing

validation of the BIBI, it is pertinent to develop norms and analyse its use in different populations. A second limitation relates to the cross-sectional nature of the adopted methodological approach. Indeed, this approach was consistent with guidelines of scale development (e.g., DeVellis, 2021), however, applying a longitudinal approach may garner rich insights into the enduring nature of body image beliefs, especially, concerning their correlation with concurrent psychological difficulties (e.g., anxiety).

Additionally, the BIBI does not assess the frequency, intensity, or duration of beliefs. Albeit very few measurements capture such data, capturing such information may be a fruitful endeavour allowing researchers to examine and make inferences regarding the prevalence and impact of the eight cognitive processes. Such insights may provide broad clinical implications for the effectiveness of treatment (Terjesen et al., 2009). Additionally, research should examine how the BIBI scores react to REBT, as such a repeated-measures intervention design should be conducted. The results in study 5 demonstrated how the BIBI remained stable in a non-intervention setting, however, it is yet understood how the BIBI will react to REBT (Turner et al., 2018).

Finally, further examination of the BIBI validation and reliability is essential. Overall, the BIBI demonstrated that is a valid and reliable measure, however, results within the studies could be further examined such as further CFA's to provide additional support for the 8-factor BIBI model. Additionally, further criterion validity to examine the correlations of the BIBI subscales with relevant constructs, in particular, frustration tolerance and anti-awfulizing which on occasion demonstrated results against theoretical predictions. Moreover, examining the BIBI and its association with social desirability would further strengthen the measure, more specifically, self-acceptance and frustration tolerance to assess if such results

are repeated. The continued validation and reliability analysis of the BIBI will support its robustness and utility for researchers and practitioners.

To conclude, the findings of this chapter report the development and validation of a psychometrically robust measurement of body image beliefs. The measure entitled the Body image beliefs inventory (BIBI) – measures demandingness, awfulizing, frustration intolerance, self-depreciation, preferences, anti-awfulizing, frustration tolerance, and self-acceptance beliefs contextually specific to body image. In the context of the overall thesis, the studies reported in this chapter have advanced the programme of research by addressing shortcomings in Study 1 and extant literature and greatly contribute to the field of REBT and body image. The BIBI provides a diagnostic measure that researchers and clinicians can use to examine body image beliefs across a diverse range of populations and contexts, affording the advancement of REBT and body image theory.

Chapter 6

General Discussion

The investigation into understanding body image beliefs offers crucial implications for research and practice aiming to prevent body image disturbances, eating disorders and improve mental health and quality of life. The aims of this thesis were to: 1) examine the effects of REBT upon irrational beliefs, rational beliefs, and negative body image (Chapter 4), 2) develop a psychometric to assess irrational and rational beliefs concerning body image; the Body Image Beliefs Inventory (BIBI), 3) examine the factor structure of the BIBI via confirmatory factor analyses, 4) assess the criterion validity (concurrent and predictive) of the BIBI, and 5) determine the test-retest reliability of the BIBI (Chapter 5). In Part I of the present thesis an exercise setting was utilised to examine the impact of REBT on Muscle dysmorphia and irrational and rational beliefs. To address limitations in this study and previous literature in Part II a rigorous scale development design was adopted to develop the BIBI. This thesis greatly contributes to the scant theoretical and empirical literature on the application of REBT and the measurement of irrational and rational beliefs in body image. This chapter will (a) provide a summary of the 5 studies and core findings, (b) discuss theoretical explanations of findings, theoretical contributions, practical implications, limitations, and directions for future research, and (c) provide the main conclusion of the thesis.

6.1 Summary of findings

6.1.1 Applied Phase (Study 1)

Despite several prominent cognitive behavioural therapists elucidating that dysfunctional cognitive patterns are associated with body image (e.g., Cash, 2002; Veale, 2004; Jakatdar et al, 2006) there has been a dearth of research examining irrational and rational beliefs in body image, and the application of REBT to address body image

disturbance. Of the limited research, several limitations have arisen such as neglecting the assessment of general or specific irrational and rational beliefs, using poor measurements of body image, having no follow-up phase, using university or female-solely samples, and conflating methods with other prominent CBT approaches (e.g., CT), thus compromising its internal validity and treatment fidelity. In an attempt to address these limitations, the primary purpose of Study 1 was to examine the effects of REBT on body image, whilst measuring irrational and rational beliefs, with a diverse sample of males and females, through pre-post and follow-up intervention phases. In doing so, Study 1 examined the effects of one-to-one REBT on negative body image (i.e., Muscle dysmorphia symptomatology), irrational beliefs, and rational beliefs (i.e., unconditional self-acceptance). A single-case multiple baseline design was adopted to ascertain intervention effectiveness. By doing this, Study 1 provided an idiographic examination of the acute and maintained effects of REBT. The results demonstrated that the application of REBT brought about acute and longer-term (6-months) reductions in muscle dysmorphia symptoms and irrational beliefs and increases in unconditional self-acceptance. Social validation data highlighted that the participants experienced improvements in their body image, eating, and exercise practices and general wellbeing, which was noticeable by close family and friends. The results from Study 1 greatly advanced and contributed to the field by reporting the first study to apply REBT (and CBT) to muscle dysmorphia and addressing several limitations in previous research. Specifically, in study 1 both irrational and rational beliefs were measured, allowing for inferences to be made regarding both irrational and rational beliefs, previously never reported as far as the researcher knows. Additionally, beliefs were measured and monitored throughout the intervention from pre-follow-up phase, thus, allowing a thorough examination of the short-term and longer-term effects of REBT. Moreover, the research maintained fidelity by strictly applying REBT solely, thus, providing specific support for the application

of REBT for body image. Additionally, albeit with a smaller sample, the research comprised a mixed-sex population, thus, providing greater sample diversity. Finally, Study 1 measured body image with a highly utilised and validated measurement of body image (i.e., The Muscle Dysmorphic Disorder Inventory), thus, reliably, and accurately capturing body image. Despite this, there were several limitations in Study 1. Firstly, albeit Study 1 advanced research by measuring irrational and rational beliefs, these were general rather than body image specific (e.g., irrational and rational beliefs regarding body image). However, as with previous research, this limitation arose due to the unavailability of a contextually driven measurement of irrational and rational beliefs for body image, as such general beliefs were captured. This key limitation highlighted an important practical and empirical gap in the literature that impeded Study 1 and previous literature. Therefore, to offer further support for the efficacy and effectiveness of REBT for body image, an essential prerequisite was the development and validation of a contextually driven, robust, valid, and reliable measurement of body image beliefs. Such a tool could offer more comprehensive, accurate, and insightful data relating to the role of body image beliefs. Additionally, although this research provided greater sample diversity than previous research the participant group still possessed a degree of homogeneity, in that the participants were similar in age range (+/- 10 years), ethnicity, socioeconomic status, and cultural background. Thus, to advance this research and offer further generalisability broader sample characteristics should be examined. In the context of the overall thesis, Study 1 advanced the empirical status of REBT in body image and provided the necessary foundations to develop and validate a measurement of body image beliefs.

6.1.1 Scale development phase (Studies 2 to 5)

Although REBT has a rich history of application to a host of psychological disorders (Visla et al., 2016), no measure exists to assess irrational and rational beliefs concerning body

image. To address this theoretical and empirical gap the purpose of Studies 2-5 was to develop and validate an accurate and reliable irrational and rational beliefs measurement of body image. Specifically, the series of studies in the scale development phase aimed to (a) provide evidence for the content and face validity of a pool of items among expert and usability panels, (b) to examine the eight-factor (2 x 4) factorial composition of the items via confirmatory factor analysis (CFA), (c) to cross-validate the factor structure with a second CFA among an independent sample, (d) to examine the criterion validity (concurrent and predictive) of the measure, (e) to conduct test-retest reliability.

In Study 2, the research team generated a pool of items representing irrational and rational beliefs relating to body image. These items were subsequently mapped onto several contextual areas (e.g., body fat). Subsequently, to support content validity, three independent samples were recruited to examine the items and contextual areas: 1) expert panel 1 (REBT experts), expert panel 2 (body image experts), and the usability panel. This was achieved quantitatively and qualitatively (e.g., through cognitive interviews). The process brought about the development of the first version of the measurement, the 84-item BIBI which comprised eight subscales - four irrational and four rational - across three contextual areas including shape, size, and body fat. Then, the factorial fit of the 84-item BIBI was examined using CFA. After testing various models, informed by theory, a 57-item BIBI arrived, indicating good factorial validity and internal consistency.

Next, In Study 4, the primary aim was to cross-validate the results of the CFA with a second CFA with an independent sample. Secondly, was to examine the criterion validity of the BIBI. For the second CFA, the same procedures and data analysis methods were deployed as in Study 3. For criterion validity, two stages were undertaken by using Pearson's correlation to examine the concurrent validity of the BIBI among relevant variables (e.g., negative body image). Second, linear hierarchical regression analysis was conducted to

examine the predictive validity for positive body image (BAS), negative body image (BSQ), depression (PHQ), anxiety (GAD), and positive mental health (PMH), and eating disorders (EAT). A three-step process was utilised in which gender and age were added to the model in Step 1, BMI in Step 2, and Beliefs (i.e., BIBI) in Step 3. Additionally, a rational-irrational index was created to examine the degree to which greater rationality (i.e., a higher rational belief score than irrational) would predict outcomes in related variables (e.g., eating disorder symptomatology). The findings from the second CFA indicated further support for the eight-factor model. Moreover, reliability analysis demonstrated excellent internal consistency via Cronbach's alpha. In the criterion validity analysis, the BIBI irrational beliefs subscales (i.e., DEM, AWF, FI, SD) were significantly and positively associated with the ABS irrational belief subscales (i.e., DEM, CATS, FT, SD) and negatively with rational belief subscales (i.e., PREF, NCAS, FI, SA). The rational belief subscales of the BIBI (i.e., PREF, AA, FI, SA) negatively correlated with the irrational and positively with rational belief subscales of the ABS in line with theoretical assumptions, providing support for concurrent validity with a gold standard measure of irrational and rational beliefs (general beliefs). Additionally, the irrational beliefs subscales of the BIBI were positively associated with negative body image, depression, anxiety and eating disorders, whereas the rational beliefs subscales of the BIBI were negatively associated with such variables. Moreover, the rational beliefs subscales of the BIBI were positively associated with positive body image and positive mental health. In sum, the concurrent validity analysis of the BIBI provided additional support for REBT's model of psychopathology and health via irrational and rational body image beliefs.

Predictive validity demonstrated that beliefs (irrational and rational) were a significant part of the variance across all factors and represented larger values than demographics (i.e., gender and age) and BMI (i.e., body composition) in several models, which literature indicates are important variables in predicting body image (Grogan, 2021). Moreover, self-acceptance

beliefs remained a significant predictor among all variables, providing further support for its role in addressing psychopathology and promoting psychological health (Chamberlain & Haaga, 2001). However, some of the BIBI subscales were correlated in unexpected directions in some instances (e.g., frustration tolerance) thus, further research is warranted to examine these results among further samples.

The aim of Study 5 was to examine the test-retest reliability of the 57-item BIBI. To do this, the Intraclass coefficient correlation (ICC) and Pearson correlation coefficient were utilised over two time points (two weeks apart). Additionally, to examine the social desirability of the BIBI, the Brief Social Desirability Scale (BSDS) was deployed to participants at time point 1. The BIBI demonstrated good-excellent test-retest via ICC and Pearson statistics, providing preliminary evidence for the BIBI as a reliable measure over time, greatly important in research and practice (Aaronson et al., 2002). Moreover, the BIBI overall demonstrated poor social desirability across its subscales, however, USA and FI demonstrated weak yet significant correlations with social desirability, thus requiring further enquiry. Study 5 addressed limitations in previous research in both REBT and body image measurement development, which have often neglected reporting test-retest results, and when reported often findings have been poor (Terjesen et al., 2009; Kling et al, 2019).

Overall, the findings of this series of studies provided the 57-item Body Image Beliefs Inventory (BIBI), the first measurement of irrational and rational beliefs relating to body image. The findings in the studies provide support for the BIBI as a valid, reliable, and accurate measurement of body image beliefs. The studies have addressed several limitations in the body of research by addressing validity, item content, reliability, sample diversity, and conceptual and theoretical issues in REBT and body image measurements.

6.2 Theoretical contributions and explanations of findings

6.2.1 REBT theoretical model of body image. In line with previous literature, the findings of Study 1 provided further support for the application of REBT as an intervention for body image (Butters & Cash, 1987; Fadaei et al, 2011; Obiageli, 2015). This study expanded upon previous literature by explicitly presenting the intervention procedures and measuring rational beliefs (i.e., USA) which previous literature has failed to do, therefore, advancing the theoretical and empirical status of REBT in body image.

An REBT theoretical model of body image would be conceptualised in terms of the role of irrational and rational beliefs on body image. More specifically, one's evaluative beliefs regarding appearance. Such beliefs are likely to occur as a result of the acculturation process, which centralises appearance pertinent to goal attainment and worth, as typical in western societies (Grogan, 2021; Moller & Bothma, 2008). This may lead to some individuals who hold a great investment in appearance forging inflexible, rigid, and unhelpful beliefs about their appearance (i.e., irrational beliefs), these beliefs may be activated in situations that Cash et al. (2005) referred to as "body image threats" or "body image adversities" which can include external events including comments about appearance from peers or family, body exposing environments including fitness centres, swimming pools, video conference calls, or internal events such as social comparison with peers and family, or via media including television, magazines or more contemporary forms for instance Instagram. Such events can be historical such as bullying, abuse or current events and future events such as important occasions (e.g., weddings, holidays). Body image adversities (A) can activate a series of irrational and rational beliefs dependent on the individual, which subsequently are associated with qualitatively different cognitive, emotional, and behavioural responses. If the individual holds irrational beliefs (B), such as "I need to lose weight, and it would be completely awful if I did not", "I need to lose weight, and I cannot stand my body

now", or "I need to lose weight, if I do not I'm completely unlovable" the individual is likely to experience dysfunctional emotions (C) such as anxiety (in the event of not losing weight), shame (regarding not meeting body ideals), anger (self-directed at their current appearance or to those they hold responsible), and guilt (rumination about past transgressions against their ideal appearance), and depression (hopelessness relating to their appearance), which Study 4 provided preliminary support for in that irrational body image beliefs were associated with emotional distress.

REBT's principal aim would be to dispute (D) irrational beliefs and develop rational beliefs. Different to other CBT's REBT operates a non-biased approach to whether A's are valid or not, thus, REBT is unlikely to challenge your dissatisfaction with your body, or that you are or are not meeting a self-prescribed or socially-prescribed ideal, instead, it works at the evaluative level as to what this means to you (Ellis & Dryden, 1997). This relates to the elegant solution as beliefs are deep, ingrained and core cognitions, rather, perceptions are fickle and can change with new stimuli (Ellis, 1957). In relation to body image, this is particularly important given the fluidity of body image in the presence of new stimuli (Grogan, 2021). Indeed, our body weight perception can dramatically change throughout the course of a day due to incoming internal and external stimuli, such as eating particular foods, emotional states, interactions with others, and consumption of media (e.g., Instagram) (Mehak & Raccine, 2020). An example of this is the phenomenon of 'feeling fat', a somatic sensation of being overweight that correlates poorly with one's actual weight, which has been implicated as a maintenance factor in eating disorders (Mehak & Raccine, 2020). Moreover, research suggests that body weight perception (e.g., feeling fat) rather than "actual" body weight status is associated with suicidal ideation and suicide attempts (Eaton et al., 2005). Thus, REBT acknowledges that we may be at the mercy of our perceptions, in particular body image threats which can be ubiquitous in life. REBT's antidote for this would be to

work at B, thus, identify and challenge inflexible, rigid and extreme beliefs irrespective of the A's that may arise (e.g., bad body image days, feeling fat, gaining or losing weight). Such an approach fosters healthy, flexible, and non-extreme beliefs regarding appearance that protects individuals from emotional and behavioural disturbances when their appearance is an important domain in their life. Study 1 provided additional support for such an approach in body image, and Muscle dysmorphia specifically. Essentially, these findings may elucidate how operating at B (i.e., beliefs) may bring about changes in body image, without intervening with individual's A's (e.g., weight loss, muscle loss). However, further research is required to provide additional support for an REBT model of body image, including the examination of behaviours and emotions associated with body image beliefs. In doing so, greater inferences may be gleaned. The development of the BIBI offers scholars the necessary tool to action such research.

Additionally, the findings in this thesis offer support for REBT's theoretical proposition that irrational and rational beliefs are not bipolar psychological constructs, but rather, separate distinct continua (DiLorenzo et al., 2007; Dryden, 2008). The results in Study 4 illustrated that irrational beliefs were positively associated with psychopathologies such as anxiety, depression, eating disorders, and negative body image, whereas rational beliefs were positively associated with better mental health and positive body image. Thus, the current results are consistent with previous literature regarding REBT's models of psychopathology and health (Otlean et al., 2018)

6.2.2 Irrational beliefs and body image. REBT theory proposes that humans have an innate tendency to adopt irrational beliefs, as such irrational beliefs are omnipresent in societies and cultures (Diguiseppa et al., 2014). Given such postulations, it is very little surprise that individuals can develop extreme and rigid beliefs regarding aspects of our self-concept such as our appearance. There exists limited research examining the role of irrational

beliefs in body image. Of the scant research, Moller and Bothma (2008) found that irrational beliefs were associated with poorer body image, to the researcher's knowledge, this remains one of few published research examining irrational beliefs in body image. The findings in Study 1 and 4 contributed to and expand upon this by illustrating that reductions in irrational beliefs were associated with improved body image, and correlational analysis indicated that all irrational beliefs subscales in the BIBI were associated positively with negative body image, and negatively associated with positive body image. Thus, we may be able to infer that holding extreme, illogical, and absolutistic beliefs about our appearance may result in negative body image and may lead to unhealthy consequences such as body dysmorphic disorder, muscle dysmorphia, anxiety, depression, and eating disorders. This contention is supported by previous literature from prominent cognitive behavioural therapists implicating cognitive distortions in body image disturbance (e.g., Cash, 2002; Veale, 2004). According to cognitive behavioural approaches to body image (Cash, 2002; Pope et al., 2005), body-image cognitions are pertinent in determining the processing of stimuli. CBT theorists suggest that negative body image evaluations and investment in one's appearance can lead to negative and cognitively distorted internal dialogues, negative body image affect, and the employment of avoidance and safety strategies for coping. Indeed, the CBT processing model for body dysmorphic disorder (BDD; Pope et al., 2005; Veale, 2004; Wilhelm & Neziroglu, 2002) indicates that people with BDD possess dysfunctional beliefs and faulty perceptions about their appearance, which can influence executive functions such as attention and memory. Such individuals may perceive that they have physical "defects" that are not existent or minimal to others, furthermore, their body-image evaluations and salience of appearance for self-worth promote chronic self-depreciation and distorted interpersonal interpretations (Veale, 2004). Their thought processes are considered to be inflexible and rigid. (Cash, 2002a; Williamson et al., 2002). With irrational beliefs, individuals who are highly irrational

may develop faulty perceptions and biased attention (A), in that their beliefs may lead them to attend to more A's. For example, if I believe that "Not having my ideal body makes me unlovable", I may attend to information that validates such cognitions more, consequently activating further irrational beliefs. Research examining general beliefs offers support for this indicating their association with a gamut of emotional, behavioural, and physiological challenges including comfort eating, social anxiety, depression, and eating disorders (David et al., 2019). This requires further study, however, irrational beliefs have a decorated history of preceding psychological disturbance (Otlea et al., 2017), thus is feasible that this translates into important domains such as body image, as reported in the present thesis.

6.2.3 Rational beliefs and body image. In comparison to research on irrational beliefs, there is a dearth of literature on the role rational beliefs play as a protective and positive influence on psychological health (Otlea et al., 2018). Regarding body image specifically, to the researcher's knowledge, there is no research explicitly implicating rational beliefs. Of the research that has been conducted, rational beliefs have consistently been illustrated as conducive to improved psychological health (David et al., 2019). Rational beliefs have been linked with reductions in PTSD, depression, and anxiety (Hyland et al. 2014). Study 4 provided further support for this by illustrating that rational body image beliefs were negatively associated with negative body image, depression and anxiety. Interestingly, research suggests that self-acceptance beliefs present the strongest predictor of psychological disturbance and psychological health (Hyland et al. 2014; Otlea et al., 2018)). Study 4 findings support previous research as body image self-acceptance beliefs had the strongest correlation to negative body image, positive body image, depression and anxiety. REBT scholars advocate the importance of holding acceptance beliefs in the face of adversities (Chamberlain & Haaga, 2001a). Thus, in the face of adversities such as negative feedback, it is believed that rather than negatively appraising oneself as "bad" or "worthless"

(self-depreciation) instead rate one's behaviour and not one's global self, which is less likely to lead to emotional disturbance (Ellis & Dryden, 1997). For example, when we consider body image beliefs specifically, in the face of body-image-related adversities (e.g., weight gain), holding beliefs such as "Irrespective of my body size I can accept myself as a human being" would yield less psychological disturbance as the individual would not globally evaluate their entire self-based solely on their appearance. Additionally, the individual is less likely to engage in maladaptive behaviours (e.g., excessively exercise, fad diet, misuse of anabolic and androgenic steroids), but rather, engage in adaptive behaviours (e.g., regular exercise, healthy eating). Several mechanisms can explain unconditional self-acceptance role in body image.

REBT's position on the self is a core principle that delineates it from other forms of CBT (Dryden & Ellis, 2008). The self is a multidimensional construct in human psychological functioning and is strongly associated with psychological wellbeing (McCrae & Costa, 1996). A key component of the self is an evaluative component, that is, the human capacity to hold negative or positive cognitions about ourselves. Research suggests that the evaluative component of the self has a great tendency to be associated with psychological disturbance – that is, excessively low or high evaluations of facets of the self tend to correlate with a vast array of psychological disturbances (Chamberlain & Haaga, 2001; David & Szentagotai, 2005). Typically, self-esteem is the construct of interest when improving self-concepts. However, self-esteem is marked by an individual's capacity to make positive or negative global evaluations of the self (Sedikides & Gregg, 2003). Research indicates that positive/high self-esteem is indicative of a wealth of mental health outcomes such as psychological well-being (Mann et al., 2004; Zimmerman, 2000), happiness (Diener & Diener, 1995; DeNeve & Cooper, 1998), whilst, low self-esteem is typically considered to precede psychological dysfunctionality such as depressive symptoms (e.g., Beck 1997;

Tarlow & Haaga, 1996), and higher levels of psychological distress and anxiety (Tennen & Affleck, 1993). Consequently, self-esteem is often conceived as a “social vaccine” and thus crucial in treatment and prevention (Baumeister et al, 2003). However, there is contention among scholars that high self-esteem may not always provide adaptive and functional outcomes, and research suggests that there is often very little efficacy for such programs (Baumeister et al., 2003). Of the research that exists, high self-esteem is considered to be linked to higher levels of violence, less openness to negative feedback, and greater emotional vulnerability to criticism (Baumesiter, et al.,1996; Shraugers & Lund, 1975).

In REBT, the very presence of self-evaluation of the self (positive or negative) and general assessment of ones worth or value based upon one's achievement, approval, accolades, and concerning this thesis appearance, is representative of irrationality (Ellis, 1976). Ellis concedes that self-rating is irrational as there is no objective or empirical way of assessing the worth of a human being, therefore, self-ratings, have what Ellis remarks as an "intrinsically illegitimacy about them, in that accurate or true self-ratings or global rating seems virtually impossible" (Ellis, 1976, p. 347). Ellis states that in addition to being illogical, self-rating is conducive to dysfunctionality as it predisposes individuals to feel depressed (if they rate themselves low) and anxious (if they rate themselves highly due to forecasts of low evaluations). Furthermore, self-rating can become a preoccupation, devouring an individual's past time, and distracting oneself from happiness, fulfilment, and purpose (Chamberlain & Haaga, 2001a). As seen in Study 1, REBT's solution to the problem of self-rating and self-esteem is that individuals abandon their investment and pursuit of self-esteem and invest in the “healthier” substitute known as unconditional self-acceptance (Ellis, 1977) which is defined as fully and unconditionally accepting yourself, regardless of whether you behave correctly, intelligently, or competently, and regardless of whether people respect, accept or love you (Ellis, 1977). Unconditional self-acceptance relates to the assessment of

one's behaviours, rather than the global self (Ellis, 1976). Concerning body image, this difference between self-esteem and unconditional self-acceptance can be found in remarks such as "I do not have the body I wish to have, and because of this I am completely worthless" and "I have the body I wish to have, and this makes me an incredible person," both of which represent global evaluations, typical in self-esteem. However, an unconditional self-acceptance approach could be expressed in cognitions such as "I may not have the body I desire, however, I can accept myself irrespective of this". As self-esteem being positive/high or low is associated with lower levels of openness to negative feedback and greater emotional vulnerability to criticism (Baumesiter et al., 1996; Shraugers & Lund, 1975), even if we held favourable opinions about our appearance, we may be highly vulnerable to criticism from others, and to manage this we may become obsessive about maintaining a particular aesthetic (i.e., thinness) which may lead to further psychological complications (e.g., eating disorders). Consequently, with self-rating, we may predispose ourselves to feel depressed if we rate ourselves low (e.g., "I am completely ugly and unlovable") and anxious when rating ourselves highly (e.g., "I look amazing and I am completely fantastic"). Self-rating ourselves based on our appearance may even become a preoccupation as with other forms, devouring our time and efforts in our pursuit of the physical ideal. In that, our lives may be consumed with practices (e.g., restrictive dieting, excessive exercising) aimed at changing how we look at the expense of other domains in our lives (e.g., career, relationships). Moreover, given the fluidity of body image, and the omnipresence of body image threats (e.g., social comparisons) investing in any form of self-esteem may lead individuals vulnerable to emotional and behavioural disturbance. Study 4 provides partial support for such postulations as USA was significantly and negatively associated with negative body image. This offers a further explanation for the results in Study 1, in which reductions in irrational beliefs and increases in rational beliefs (USA)

demonstrated a reduction in negative body image. The role of rational beliefs provides a fruitful endeavour as a protective factor against negative body image, and a solution to the issue of appearance-related contingent self-worth, and self-esteem broadly. Further research is warranted to examine the role of rational beliefs and USA's unique contribution.

6.2.4 Positive body image and rational beliefs. An important part of REBT theory is its model of psychological health. Rational beliefs albeit important in mitigating the development and maintenance of dysfunctional emotions and maladaptive behaviours are additionally linked to generating adaptive and positive emotional and behavioural responses (Balkis, 2013; Balkis et al., 2012). Research into the association between rational beliefs and positive affect is limited, however, they have been linked with life satisfaction (Balkis et al., 2012), optimism, and happiness (Oltean et al., 2018). Intriguingly, self-acceptance beliefs in particular have been implicated as especially important in generating positive affect. Therefore, theoretically, it's plausible that rational beliefs and in particular USA may lead to positive body image experiences. Body image literature advocates the importance of fostering positive body image rather than solely attenuating negative body image (Tylka & Wood-Barcalow, 2015), with a focus solely on negative body image leaving clinicians and researchers ill-equipped to comprehend and manage body image challenges. The solution to this is the development of a positive body image. Positive body image is a multifaceted construct qualitatively distinct from negative body image, similar to the relationship irrational beliefs share with rational beliefs. It alludes to favourable, accepting, and functional beliefs regarding one's appearance (Tylka & Wood-Barcalow, 2015). Study Four highlighted the role of rational beliefs (especially USA) in positive body image, as all beliefs were significantly and positively associated with positive body image, with USA holding the strongest correlation. These findings can be explained by the works of Cash and Pruzinsky (2002) who coined a facet of positive body image known as Positive rational acceptance.

Positive rational acceptance is marked by an individual holding a repertoire of rational coping mechanisms (i.e., statements) to body-image threats. Importantly, it also includes a component that highlights the importance of diversifying one's self-worth, in that our appearance is merely one facet of ourselves. If we consider USA's unique influence on positive body image, it is plausible to conceive parallels between the psychological makeup and core principles of the two constructs. For example, in the face of a body image threat, an individual who may hold unconditional self-acceptance body image beliefs such as "I have worth despite my physical appearance" may be less likely to experience debilitating emotions such as anxiety or depression, and consequently less likely to adopt maladaptive behavioural practices such as restrictive or binge eating. This has been supported by research highlighting the role of USA in mitigating exercise addiction (Hall et al., 2009). The role of rational beliefs in body image is in its infancy, this thesis has provided preliminary support, but further research is required to expand on such promising results. The mechanisms and pathways to cultivating positive body image are critical for the wellbeing of individuals.

6.3. Implications for practice

The previous section considered theoretical and conceptual contributions and explanations for the findings of the series of studies that comprised this thesis. Albeit the findings of this thesis provide compelling insights to scholars in the field of both body image and REBT, it is equally important to consider what these implications represent in practice. As REBT is a form of cognitive behavioural therapy, applied implications are highly valuable and they must derive from theory and research. Research indicates that body image challenges are ubiquitous at present, and as such any insights to mitigate its debilitating impact on individuals' wellbeing may be valuable (Grogan, 2021).

6.3.1 Measuring body image beliefs. Rational emotive behavioural therapy (REBT; Ellis 1962) have received criticisms due to its lack of empirical research. A key factor hindering research in the REBT has been the lack of robust, valid, and reliable measures of irrational and rational beliefs (Terjesen, 2009). Given this, the progression of REBT scientific progress has been diminished by practitioners and researchers inability to measure critical constructs proposed by REBT (DiGiuseppe, 2021). The BIBI is one a few measures to address such limitations by providing practitioners and researchers with the first irrational and rational belief measurement of body image that preliminary findings suggest is valid and reliable. This is a key development in the field of REBT and body image and has addressed a significant gap. The BIBI allows practitioners to administer the test in interventions setting across the course of psychotherapy. Thus, affording practitioners and researchers to examine hypotheses regarding the process of change in REBT. For example, practitioners can assess whether REBT works in body image due increases in irrational beliefs or increases in rational beliefs, or both, furthermore, it allows practitioners to identify which beliefs are central in body image change. Moreover, the BIBI allows researchers to design research and develop hypothesis examining body image beliefs with accuracy and validity, previously not a possibility. Additionally, the BIBI allows for the dissection of evaluations of particular components of appearance (e.g., bodyfat, size and shape), allowing practitioners to tease out body components that may be more central to individuals body image disturbance. This is valuable as this is what individuals often do when dissatisfied and critical of their bodies (Tylka & Wood-barlow, 2015).

6.3.2 Practitioners working with body image. In line with extant literature, our findings indicated that IBs were linked to worse body image, contrarily RBs were associated with more positive body image and better mental health (Visla et al., 2016; Moller & Bothma, 2008). The detrimental effect that IBs may hold on people's body image, may be

considered a risk factor for the onset of psychiatric body image conditions such as Body Dysmorphic Disorder and Muscle Dysmorphia. The BIBI goes beyond body image measures that typically illustrate dissatisfaction or satisfaction in areas or parts of one's body, impact on quality of life, or unhelpful behaviours associated, with very few directly indicating mechanisms to directly intervene upon. Moreover, this thesis provides partial support for rational belief's role in developing positive body image, thus, the BIBI may provide means of indirectly measuring the risk of hindering and supportive factors for positive body image, in which reductions in one and increases in another may orientate an individual towards negative or positive body image.

Importantly, practitioners operating in domains of body image may deal with several dimensions of functioning linked to body image such as eating behaviours, and engagement in sports and physical activity. Body image disturbances are not merely a diagnostic criterion for eating pathology but are a clinically established precursor (Stice, 2002). The findings in study 4 confirmed the BIBI association with eating disorder symptomology positively via irrational beliefs and negatively via rational beliefs. The regression analysis indicated that irrational and rational subscales were a significant predictor of eating disorder symptomology. This is a pertinent finding as it indicates that body image beliefs have an incremental capacity to predict maladaptive eating patterns beyond BMI, gender, and age. Thus, the BIBI may be utilised within eating disorder programmes in conjunction with an eating disorder-related psychometrics (e.g., EAT-26). The BIBI can be used to discuss unhelpful and helpful body cognitions, in an attempt to foster healthy beliefs regarding body image. The USA items of the BIBI focus on detachment from contingent appearance-related self-worth, which may be critical in helping individuals with heightened investment in appearance for self-worth as witnessed in some eating disorders. The BIBI can allow

practitioners to support individuals to become more aware of unhelpful cognitions they hold regarding their appearance.

The BIBI may also be useful in eating disorders in special populations such as athletes. In sports, there has been a rapid rise in scholarly interest in eating disorders and disordered eating over the last three decades (Machin et al., 2020). Research indicates that athletes are among a risk population for eating disorders and disordered eating (Bratland-Sanda & Sundgot-Borgen, 2013; Byrne & McLean, 2002; Schaal et al., 2011; Sundgot-Borgen et al., 2004). Research suggests that eating pathology prevalence is greater among female athletes, elite athletes, and sports that are weight sensitive (Torstveit et al., 2008), with prevalence rates ranging between 0-19% among male athletes and 6-45% among female athletes over the full spectrum of DE to ED (Hudson et al., 2007). This population are considered an at-risk population due to a variety of mechanisms. Athletes face the typical risk factors associated with those among the general public such as sociocultural factors (e.g., pressure to meet body ideals, internalization), psychological factors (e.g., perfectionism), biological (e.g., genes) but in addition, they face a myriad of unique risk factors related to sport participation such as weigh-ins, performance pressure, wearing sports kits, injury, and weight-related comments from coaches, and peers, (Bratland-Sanda & Sundgot-Borgen, 2013). Activating events (A) typically involve negative comments on body weight and shape, traumatic experiences, and injury (Stice, 2002). Research indicates that EDs can be maintained by perpetuating factors such as validation by coaches and peers and the physiological outcomes from starvation (e.g., weight loss) (Drinkwater et al., 2005). Of great importance to sport, EDs are associated with decreased performance and risk of injury (El Ghoch et al., 2013; Mountjoy et al., 2014; Tenforde et al., 2016). The BIBI can be used in such environments as means to glean risk factors of developing EDs and to elicit unhelpful body image beliefs within athletes and coaches.

Another key area relating to body image is engagement in sports and physical activity. Physical activity is a health behaviour that boasts a wealth of physical and psychological benefits including the prevention of cardiovascular disease, diabetes, cancer, hypertension, obesity, osteoporosis, reductions in depression, anxiety, cognitive decline, and stress (Warbuton et al., 2006). Despite this, many individuals do not engage in physical activity and research indicates that sedentary behaviour (energy expenditure ≤ 1.5 METs) is on the rise due to changes in our working lives and increased reliance on technology and activities that avoid/minimize physical effort (Thivel et al., 2018). Given, such benefits it is important that all individuals engage in some capacity of physical activity. Research indicates that body image plays an important role in the adoption, adherence, and engagement with physical activity (Grogan, 2021). In particular, body image has been associated with exercise avoidance (More et al., 2019) which relates to the active avoidance of physical activity which is found to be more prevalent in individuals with higher BMI (More et al., 2019). A construct highly associated with body image that captures this is Social Physique Anxiety (SPA; Leary et al., 1989) defined as "a subtype of social anxiety that occurs as a result of the prospect or presence of interpersonal evaluations involving one's physique" (p. 96). Individuals may consider sporting and exercise settings as A's and hold irrational beliefs relating to negative appraisals from others such as "I must not be negatively judged by others". A solution for such cognitions would be to work on identifying unhelpful cognitions regarding body image and foster helpful ones. The BIBI can allow practitioners to identify such beliefs and support clients to develop healthy alternatives to minimize the impact of SPA and improve sports and physical activity engagement and enjoyment. On the topic of sport and physical activity engagement is the role of motivation. Motivation is typically delineated by intrinsic and extrinsic motivation (Deci & Ryan, 1985; Frederick & Ryan, 1993). Intrinsic motivation relates to engaging in exercise for reasons such as enjoyment and challenge. Contrarily,

extrinsic motivation relates to exercising due to external pressure from others (e.g., society), which tends to be health or appearance-related (e.g., "I need to exercise to get my ideal body"). Research indicates that irrational beliefs are associated with weaker forms of motivation (Davis & Turner, 2020). By extension, this may apply to body image beliefs, as identifying irrational beliefs related to body image (e.g., demands regarding exercise to improve appearance), and developing helpful beliefs may enhance individual's motivation to engage in sport and physical activity.

It is key to note REBT is not merely useful for addressing psychological issues but can also be used with those who do not identify as having psychological problems (e.g., body image disturbance, eating disorder symptomatology), but instead can be applicable and valuable to those who display lower irrationality scores. Gonzalez et al. (2004) highlighted meta-analysis indicated the effects of REBT to be effective as a preventative as well as a reactive solution to psychopathology. In body image, this is key as body image disturbances typical onset is at childhood and adolescence, thus, preventative interventions (e.g., workshops, talks) may help prevent the onset of pathology relating to body image in later life if prevented. Thus, practitioners operating in such settings may find the BIBI and application of REBT principles valuable in instilling rational body image beliefs as a preventative approach.

6.3.3 Creating body image rationality. The REBT ACBDE model provides a structured systematic approach to addressing body image challenges. Findings from the studies indicated that REBT had utility in addressing body image challenges, in particular it was found that USA may play a key role, as such it is recommended that practitioners working with body image pay special attention to managing self-depreciative beliefs, whilst simultaneously fostering USA beliefs relating to appearance. In addition to using cognitive strategies to dispute self-depreciative beliefs and develop USA beliefs, other strategies can be

used such as using the Big I tool, the fruit basket analogy, and Dryden's (2008) unconditional self-acceptance credo, diversifying strategies may allow for the individuals to practice and engrain self-acceptance beliefs.

REBT albeit formulaic is a malleable intervention, in which its application is not restricted to one-to-one modalities, rather, can be used in educational group-based milieus such as workshops (e.g., Turner et al., 2013). Moreover, REBT can also be used with parents and coaches to support them to manage their irrationality and reinforce rational principles in individuals. This is of great importance in the context of body image. Body image is a deep construct that is developed and reinforced in socio-cultural settings, consequently, it operates in many domains of our lives. As such, the ideas, and philosophies that people hold regarding their bodies have a proclivity to be moulded by a plethora of interactions such as peers, employers, coaches and health professionals, and social media. These individuals act as key social agents in the individual's life and can harbour and model irrational body image beliefs via behaviour and language. Such irrationalities may then be internalized, consequently, leading to the development and maintenance of body image disturbances. Ellis fervently argued the point that whilst irrationality has a biological basis, socio-cultural environments are influential and provide the impetus for them to thrive (David & DiGiuseppe, 2010; Ellis, 1976). Research supports this line of thought, highlighting that those who operate in irrationality rich environments tend to develop irrational beliefs, whereas, those in rational environments, are likely to develop mainly rational beliefs (David & DiGiuseppe, 2010).

Body image develops from childhood, at this stage, REBT states that children are gullible to and seriously influenced by their parent's absolutistic musts, should, ought's, demands and commands" (Ellis, 1994, pp. 13–14). As such, irrational body image beliefs such as "You must never be overweight" can be learnt in these early stages. Indeed, a corpus of literature indicates that parents can demonstrate a high level of irrationality (David, 2014;

Gavita & Calin, 2013; Trip et al., 2019). As children grow their scope to develop irrational body image beliefs may broaden and can include sources such as peers, health professionals and media (Maccoby, 2000; Stevens & Prinstein, 2005). Acceptance from these sources can become a pertinent goal which is marked by the degree that which one is liked and socially accepted (Bishop & Inderbitzen, 1995). Ellis conceded that we have a proclivity to hold ego-related irrationalities, such as a need for approval and love from others (Ellis, 1976). In body image, this may relate to beliefs such as "I need to have the perfect body to be accepted, approved of, and my status and worth are conditional on meeting body ideals". These beliefs may be rewarded by popularity and acceptance when meeting cultural body ideals. In contemporary times, social media can act as a key agent that permeates body image beliefs. Indeed, individuals who utilise social media can often consider it as an extension of themselves, in which users may strive to quantify their self-worth via social media engagement metrics such as likes, shares, and followers (Sabik et al., 2020). Platforms such as Instagram that are mainly aesthetic based may provide a milieu in which irrational body image beliefs may flourish, that prey on an innate need for acceptance, inclusion and popularity which may be used as proximal indicators of self-worth.

Finally, research suggests that many healthcare professionals hold negative attitudes and stereotypes regarding people with obesity, moreover, evidence suggests that such attitudes can influence person-perceptions, decision making, and interpersonal behaviour impacting the care provided (Phelan et al., 2015; Puhl & Heuer, 2009). When individuals expect poor treatment can lead to avoidance of medical care, mistrust in practitioners, and poor level of adherence, consequently, reducing the quality of care, despite, the best intentions of healthcare provided to provide high-quality support and care (Phelan et al., 2015; Puhl & Heuer, 2009). With respect to REBT, such practitioners may hold irrational body image beliefs such as "To be healthy this person must be a specific weight" and "those

who are overweight are lazy". In fitness, personal trainers may hold irrational beliefs about reaching specific body goals including "You need to be lean to be healthy", "You must not eat carbs", and "You must not eat after 6 pm", which clients may learn, internalise, and may be reinforced for demonstrating. In sports, weight-based sports may hold great importance regarding reaching a specific weight, this may lead to extreme and rigid beliefs about ones worth based on weight including "If I am not a specific weight I am a loser", coaches may reinforce such beliefs given the nature of performance settings, and in the event of failure they may respond with beliefs such as "not making weight is the worst thing possible" and "this was a must-win, so you needed to make weight" further reinforcing body image irrationality.

Given the duty of care and importance of mental health for employers, schools, healthcare providers, and sports and fitness environments (Henriksen et al., 2020; Kavanagh et al., 2021; Stambulova et al., 2021), there is a critical necessity for socio-cultural interventions upon irrationality regarding body image. These interventions may provide lasting effects given environmental socialisation and internalisation of beliefs (Turner et al, 2022). A comprehensive approach by combining efforts through employers, schools, healthcare professionals, coaches, and media outlets can contribute to developing rational body image environments to prevent and ameliorate body image disturbance. Educational REBT via workshops (Larner et al., 2007; Turner et al., 2015) provide a potentially fruitful format for such an endeavour, and the BIBI may be utilised to examine the body image irrationality and rationality climate of these environments pre and post-intervention.

6.3.4 REBC and wider body image contexts

Over the last two decades, there has been a proliferation in coaching psychology literature and practice establishing it as a psychological profession. The essence of coaching

originated in a requirement to support individuals to self-develop and self-actualize in one or more domains of life (Downey, 1999) and has been defined as "Coaching is unlocking a person's potential to maximise their own performance" (Whitmore, 1992, p. 8). Coaching psychology operates in a broad range of life domains including workplace, education, health, and wellbeing, including topics such as academic and work-based performance and uses several modalities including traditional sit-down and talking to ecopsychology modes such as coaching in blue spaces (e.g., near open water). Rational Emotive Behaviour Coaching (REBC) is a coaching approach that has been developed over the last two decades (Neenan & Palmer, 2011) which was influenced by the REBT and Rational Effectiveness training (Ellis & Blum, 1967). REBC has been found to have utility in enhancing performance, reducing stress, and increasing resilience (Palmer & Whybrow, 2019). The REBC approach is based on the ABCDEF model of emotional management, resilience, and performance (Palmer, 2009). As with the ABCDE approach in REBT the acronyms stand for Activating event or adversity, Beliefs, Consequences, Disputation and Effective new approach to the concern or problem, however, the addition that is F stands for Focus, which relates to focus upon present and future goals (e.g., managing procrastination).

Importantly, coaches are often required to support people with emotional problems as well as development-focused problems as some people prefer to be in “coaching” rather than “therapy”. Such individuals may resist consultation from psychologists, psychotherapists, and psychiatrists due to the perceived stigma and connotations that seeing such professionals may hold (Dryden, 2017). Such individuals may be more likely to be present in professional and sporting domains, in which performance is the main focus and psychological challenges are somewhat a barrier to performance (Dryden, 2017). Challenges in such domains could include the role of body image in performance situations such as meetings, presentations, games, and press conferences, in which the individual’s performance may be compromised

due to the focus on “How do I look?” which acts as a barrier to optimal performance and development. Indeed, research exploring athletes has indicated a relationship between body image and variables of sporting success such as flow state, sporting confidence, and perceived performance success, indicating those with positive body image typically experience greater scores on sporting success outputs (Soulliard et al., 2019). Moreover, athletes have indicated that concerns with body image have impacted their sporting performance (Greenleaf, 2002). Additionally, research has indicated a relationship between job satisfaction and body image (Jackson et al., 2011). Models of job satisfaction typically illustrate that job satisfaction derives from both job (i.e., pay, hours) and interpersonal characteristics (i.e., personality) (Schleicher et al., 2010). Given the large amounts of time that employers spend at work interacting, interpersonal challenges such as body image that impact daily functioning are likely to impact important domains of life.

As body image challenges can be considered on a spectrum from mild dissatisfaction to body disturbance in psychiatric conditions (e.g., BDD), coaches, in particular, REB coaches may provide an avenue of support for such individuals seeking developmental or emotional-based support. REB coaches can provide an essential outlet for those whose development may be hindered by body image challenges, in which body image is not the sole focus of the individual's development, which may be to be more confident or to find greater purpose and meaning in which body image among other domains of life represent a disproportionate segment of the individual's self-worth. Using theory from REBT, REB coaches can support individuals to develop less extreme and scientifically robust thinking styles to overcome their developmental challenges. Given, the prevalence and impact of body image challenges (Grogan, 2021) such support can provide a wider body image initiative that tackles body image challenges at all levels. However, as with other challenges coaches should refer to the appropriate mental health professional if greater body image disturbance is

detected, indeed Cavanagh et al. (2005) offers guidance on the scope of REBC practice for coaches and coaching psychologists.

6.4 Limitations

This thesis has developed the first valid and reliable measurement of irrational and rational body image beliefs. In doing so the thesis has deployed a variety of research methods to fulfil the aims and objectives of this thesis and has addressed many methodological and theoretical limitations of previous literature. Notwithstanding this strength, it is critical to highlight limitations to the series of studies that have occurred within this programme of research, in doing so this can inform scholars avenues to expand, refine and broaden insights into REBT and body image.

Firstly, as with much research, the sample obtained in the studies can provide a limitation. It is worth noting that the samples in the present thesis are derived from a UK-based sample solely, therefore, to have deeper insights into body image beliefs it is vital to test the BIBI in different cultures, without doing so limitations may arise in generalizability. . Indeed, scholars (Nunnally, 1967) have highlighted the importance of generalizability in the development of new scales, in which sample diversification should be considered a core. With that said, the results garnered in this thesis are consistent with previous research (Hyland et al. 2014c; Terjesen et al. 2009), thus it is unlikely that the results are subject to sampling biases. In regard to samples, this study did not include clinical samples, therefore to understand the BIBI in this population further research is required. In particular, due to its potential importance in psychiatric conditions such as Body dysmorphic disorder, Muscle dysmorphia and eating disorders, establishing cut-off scores in such populations could be clinically and scientifically valuable.

Secondly, it is important to note the significance of body image being a multifaceted construct. Albeit the BIBI alluded to cognitive body image, its ability to illustrate body image behaviours, perceptions, and emotions may be limited. To address this future research could consider triangulating methods, to incorporate self-report, observations, and physiological indices to add greater understanding to the role of body image beliefs. This could be used to look at the adoption or avoidance of health behaviours such as physical activity.

Thirdly, the data collected in this thesis was cross-sectional and correlational in design, as such no inferences can be made on causality between beliefs and negative or positive body image. Despite this shortcoming, cross-sectional data was considered appropriate for the development and validation of the BIBI, however, it is necessary to conduct longitudinal research on body image beliefs to offer further insight.

Fourthly, the BIBI much like other measures of body image, is a self-report measure that relies on individuals accurately reporting their beliefs about their bodies. Despite the low conceptual overlap with impression management measures such as social desirability, it is very difficult to discern whether responses were accurate and candid. Thus, scholars are encouraged to continue to examine the social desirability of the BIBI.

Moreover, although the multiple-baseline across participant design adopted in Study 1 is considered to be a robust methodological design (e.g., Barker et al. 2011), the sample size was small, thus, findings should be interpreted with caution. Future research could look at replication studies as well as wide-scale RCTs to corroborate the findings.

Additionally, the BIBI is yet to be examined in an intervention setting, this is imperative to examine its sensitivity in applied settings. At present, this remains unknown, therefore, future research should examine the BIBI's administration in applied settings.

Finally, the BIBI had particularly elevated levels of high loading factors as such the measure struggled with reducing the size of the measure. Scale length is an important factor of research, and research in REBT measures indicates that factors should have roughly between 3-5 items (Terjesen et al., 2009). In this research, we opted to retain the items and to continue to validate and refine the BIBI over time. Thus, future research can undertake methods to reduce the length of the BIBI to support practitioners and researchers with its deployment.

6.5 Recommendations for future research

The research conducted in this thesis provides the foundations for future research, in which theoretical, methodological, and applied advancements can be made.

In the continuing validation of a measurement, it is pertinent to examine measurement invariance (Chen, 2007). As such, to determine whether the BIBI is invariant across different populations it is key to test it in a variety of cultures, genders, ethnicities, and sexual orientations. Furthermore, it is imperative to examine psychiatric populations to determine any invariance among these cohorts. In particular, Body dysmorphic disorder, Muscle dysmorphia and eating disorders.

Although initial findings of the BIBI have been novel and compelling, to determine the long-term effects of the BIBI, scholars are encouraged to conduct longitudinal studies to examine the stability or fluctuations of body image beliefs. In particular, insights including seasonal impacts upon body image beliefs may be worth exploring, due to increased societal and self-induced pressures during summer months (Griffiths et al, 2021). These findings will support the understanding of the interaction between sociocultural factors and body image beliefs throughout the year. Moreover, such line of inquiry could provide a framework to examine the association of body image beliefs with constructs in sociocultural approaches to

body image, including the objectification theory and tripartite model. To this end, body image beliefs could be examined with constructs such as body surveillance (McKinley & Hyde, 1996) and sociocultural internalisation of appearance ideals (Thompson and Stice 2001). Moreover, given the potential role rational body image beliefs may have as a protective factor against maladaptive outcomes such as eating disorders, BDD and MD, it is a worthy exploration, to examine their ability to reduce these outcomes, their preventive capacity, and their interaction with other risk factors (e.g., perfectionism).

As the BIBI assesses attitudinal body image solely, research examining it among other factors of body image would be valuable. Therefore, examining the association of the BIBI with behaviours such as exercise, nutrition, sleep, and sexual functioning offers exciting opportunities. In particular, in addition to examining the BIBI against pathology, a valuable endeavour may be to see how body image beliefs impact healthy behaviours. Positive body image has been linked with intuitive eating (i.e., eating according to physiological hunger and satiety cues; Tylka & Wood-Barcalow, 2015), non-appearance related exercise motives (Homan & Tylka, 2014), given, that rational body image beliefs were associated with positive body image, they may predict or correlate with greater health behaviour engagement. To expand upon this, exploring the role of holding irrational and rational beliefs in body image coping strategies would be valuable. People with body image disturbances typically deploy a range of coping strategies used in response to distressing thoughts and feelings regarding their body. For example, a person struggling with body image disturbance may avoid exercise classes, swimming pools, or camouflage a perceived defect and repeatedly check or seek reassurance for their appearance. Theoretically, body image beliefs should intervene with such behaviour, however, it is imperative to examine how they interact with safety and avoidance behaviours. In the same line of thought, looking at body image emotions and physiological responses may offer insight into the physiological and emotional

responses (e.g., cortisol, cardiovascular indices, heart rate, inflammation indices) that holding body image beliefs provide, especially, in the face of adversity. Additionally, albeit this thesis examines the association of body image beliefs with anxiety and depression, body image experiences present a wealth of emotions such as shame, guilt, and anger. Thus, considering the implications rational beliefs hold for invoking functional emotions (Otlean et al., 2017) researchers are encouraged to broaden the examination across a variety of emotional responses. Additionally, perceptual body image is a key construct within body image, an interesting research insight would be to examine the association of the BIBI with perceptual factors of body image, for example, does holding greater irrationality effect an individual's ability to accurately measure their body size and thus greater body image distortion. Figural scale drawings would be a useful method to examine this research.

In terms of measurement advancement, several developments could progress the BIBI and improve its validity and reliability. Firstly, the length of measures can be critical in many cohorts, typically, in those that are emotionally disturbed, it may be difficult to focus on a lengthy measurement, especially if administered in a battery of measures (Terjesen et al., 2009). This can also be true in sporting and coaching environments in which individuals are often time-poor and practitioners are typically on the move (e.g. Turner, 2017). Indeed, the BIBI was designed to be a parsimonious assessment and falls under scale length guidance (e.g., Terjesen et al., 2009), however, 57 items may still be difficult to utilise in these populations. Therefore, a worthy line of research would be to develop a Body Image Beliefs Inventory short form (BIBI-SF), this development may provide easily manageable data collection in clinical and time-poor samples.

Next, to support cultural validation, it is important that the BIBI satisfies internationally recognized standards for validity and reliability (Terwee et al. 2007). The most widely recognised criteria for establishing the assessment properties of scales are

provided by the Scientific Advisory Committee (SAC) of the Medical Outcomes Trust (Aaronson et al. 2002). The SAC present eight criteria which include : (1) conceptual and measurement models, (2) validity, (3) reliability, (4) responsiveness, (5) interpretability, (6) respondent and administrative burden, (7) alternative forms, and (8) cultural and language adaptations (translations). Indeed, the BIBI should be sensitive to these criteria, and as such to foster cross-cultural validity research translating the BIBI is an important direction. This should follow robust approaches, by undergoing multiple forward and backward translations, and the final assessment should be pilot tested. Furthermore, translators are encouraged to work independently, clearly report inconsistencies and the resolution of them, and engage in regular review with a committee (e.g, original scale developers) (Hyland et al, 2016). In addition to the aforementioned, as recommended with all scales, ongoing validation and reliability analysis of the BIBI should be conducted (Boateng et al, 2018). Researchers are encouraged to conduct additional tests through replication studies, using CFA and criterion validity tests.

Finally, in the application of REBT. To encourage the successful adoption of rationality, Dryden (2007), has developed several credos to foster the rational philosophy. Credos are "a set of beliefs, which expresses a particular opinion and influences the way you live" (p. 219). In particular, the unconditional self-acceptance credo promotes the development of acceptance and the parting of global self-ratings and the rational resilience credo promotes resilience in the face of adversity. Whilst such credos are valuable and have been utilised successfully, an adapted version of a credo would allow for the specific contextual difficulties that individuals struggling with body image could adopt. As such, a body image rationality credo could comprise statements relating to demands for appearance approval, unconditional self-acceptance when one doesn't meet body ideals, and how to diversify one's sense of self-worth. This credo could then be read in a document or listened to

via recordings throughout the intervention. The body image rationality credo could be a useful tool for supporting individuals with the long-term adoption of body image rationality.

6.6 Conclusion

This thesis takes major steps towards supporting the efficacy of REBT for body image, by providing a novel applied and theoretical contribution that has examined the utility of an REBT intervention to body image, and by developing and validating the first irrational and rational belief assessment of body image – The 57-item Body Image Beliefs Inventory (BIBI). The initial findings of the research (Study 1) and previous literature indicated the need for a contextually driven, accurate, and reliable psychometric that measured contemporary manifestations of irrational and rational beliefs in body image. The process of scale development for the BIBI produced a measure that illustrates content, face, criterion validity and internal and test-retest reliability, fulfilling key components of scale development (Boateng et al., 2018). The findings demonstrated the BIBI as theoretically expected was correlated with both negative and positive body image, in that irrational beliefs were positively associated with negative body image and rational beliefs positively associated with positive body image. In particular, the findings indicated that USA beliefs held a uniquely stronger correlation with negative and positive body image, thus, providing further support for USA in REBT's model of psychological health (Ellis, 1957, Dryden, 2021). Furthermore, the BIBI subscales illustrated links with concomitant disorders such as anxiety, depression and eating disorders. Furthermore, the BIBI illustrated stronger predictions than gender and BMI which literature holds as core moderators in the development of negative body image. The development of the BIBI has provided practitioners and researchers with a valid and reliable measure to continue the examination of beliefs in body image. Furthermore, this thesis has provided partial support for the efficacy of REBT as an intervention protocol for body image and therefore contributed to the dearth of professional practice literature on

REBT applied to body image. Along with the proliferation of body image concerns, is the need for understanding mechanisms that mitigate negative body image and invoke positive body image. In a climate where appearance is becoming a more salient domain of one's self-concept, instilling rational body image philosophies within ourselves and culture may hold important implications. One which present important and impactful avenues for future research.

Chapter 7

Reference list

- Aaronson, N., Alonso, J., Burnam, A., Lohr, K. N., Patrick, D. L., Perrin, E., & Stein R. E. (2002). Assessing health status and quality-of-life instruments: attributes and review criteria. *Quality of Life Research*, 11, (3), 193–205. doi: 10.1023/A:1015291021312
- Abelson, R. P., & Rosenberg, M. J. (1958). Symbolic psycho-logic: A model of attitudinal cognition. *Behavioral Science*, 3, 1–13. <https://doi.org/10.1002/bs.3830030102>
- Addis, J., & Bernard, M. E. (2002). Marital adjustment and irrational beliefs. *Journal of Rational Emotive & Cognitive Behavior Therapy*, 2(1), 3-13.
- Adler, A. (1927). *Understanding human nature*. Greenberg.
- Ahadzadeh, A. S., Rafik-Galea, S., Alavi, M., & Amini, M. (2018). Relationship between body mass index, body image, and fear of negative evaluation: Moderating role of self-esteem. *Health psychology open*, 5(1), 2055102918774251. <https://doi.org/10.1177/2055102918774251>
- Akaike, H. (1987). Factor analysis and AIC. *Psychometrika*, 52(3), 317–332. <https://doi.org/10.1007/BF02294359>
- Albertson, E.R., Neff, K.D., & Dill-Shackleford, K.E. (2015). Self-compassion and body dissatisfaction in women: A randomized controlled trial of a brief meditation **intervention**. *Mindfulness*, 6, 444-454, [10.1007/s12671-014-0277-3](https://doi.org/10.1007/s12671-014-0277-3)
- Allebeck, P., Hallberg, D., & Espmark, S. (1976). Body image-an apparatus for measuring disturbances in estimation of size and shape. *Journal of psychosomatic research*, 20(6), 583–589. [https://doi.org/10.1016/0022-3999\(76\)90060](https://doi.org/10.1016/0022-3999(76)90060)
- Alleva, J. M., Diedrichs, P. C., Halliwell, E., Martijn, C., Stuijzand, B. G., Treneman-Evans, G., & Rumsey, N. (2018). A randomised-controlled trial investigating potential

- underlying mechanisms of a functionality-based approach to improving women's body image. *Body image*, 25, 85–96. <https://doi.org/10.1016/j.bodyim.2018.02.009>
- Alleva, J. M., Sheeran, P., Webb, T. L., Martijn, C., & Miles, E. (2015). A Meta-Analytic Review of Stand-Alone Interventions to Improve Body Image. *PloS one*, 10(9), e0139177. <https://doi.org/10.1371/journal.pone.0139177>
- Alleva, J.M., Diedrichs, P.C., Halliwell, E., Peters, M.L., Dures, E., Stuijzand, B.G., & Rumsey, N. (2018). More Than My RA: A Randomized Trial Investigating Body Image Improvement Among Women With Rheumatoid Arthritis Using a Functionality-Focused Intervention Program. *Journal of Consulting and Clinical Psychology*, 86, 666–676.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders*. 5th ed. Arlington: American Psychiatric Association
- Andersen, M. B., McCullagh, P., & Wilson, G. J. (2007). But what do the numbers really tell us? Arbitrary metrics and effect size reporting in sport psychology research. *Journal of Sport and Exercise Psychology*, 29, 664-672
- Anderson, C. M., Petrie, T. A., & Neumann, C. S. (2012). Effects of sport pressures on female collegiate athletes: A preliminary longitudinal investigation. *Sport, Exercise, and Performance Psychology*, 1(2), 120–134. <https://doi.org/10.1037/a0026587>
- Anderson, J. R. (2000). *Cognitive psychology and its implications (5th edn.)*. New York: Worth Publishers, Inc.

- Andrew, R., Tiggemann, M., & Clark, L. (2016). Predicting body appreciation in young women: An integrated model of positive body image. *Body image*, 18, 34–42.
<https://doi.org/10.1016/j.bodyim.2016.04.003>
- Angelakis, I., Gooding, P. A., & Panagioti, M. (2016). Suicidality in body dysmorphic disorder (BDD): A systematic review with meta-analysis. *Clinical psychology review*, 49, 55–66. <https://doi.org/10.1016/j.cpr.2016.08.002>
- Angst, J., Gamma, A., Baldwin, D. S., Ajdacic-Gross, V., & Rössler, W. (2009). The generalized anxiety spectrum: prevalence, onset, course and outcome. *European archives of psychiatry and clinical neuroscience*, 259(1), 37–45.
<https://doi.org/10.1007/s00406-008-0832-9>
- Arbuckle, J.L. (2009). Amos 18 User's Guide, 635.
- Archer, R.P., Cash, T.F. (1985). Physical attractiveness and maladjustment among psychiatric inpatients. *Journal of Social and Clinical Psychology*, 3, 170–180
- Ariel-Donges, A.H., Gordon, E.L., Bauman, V., & Perri, M.G. (2019). Does yoga help college-aged women with body image dissatisfaction feel better about their bodies? *Sex Roles*, 80, 41-51, [10.1007/s11199-018-0917-5](https://doi.org/10.1007/s11199-018-0917-5)
- Askevold, F. (1975). Measuring body image: Preliminary report on a new method. *Psychotherapy and Psychosomatics*, 26(2), 71–77. <https://doi.org/10.1159/000286913>
- Aspen, V., Darcy, A. M., & Lock, J. (2013). A review of attention biases in women with eating disorders. *Cognition & emotion*, 27(5), 820–838.
<https://doi.org/10.1080/02699931.2012.749777>

- Atkinson, M.J., & Wade, T.D. (2016). Does mindfulness have potential in eating disorders prevention? A preliminary controlled trial with young adult women. *Early Intervention in Psychiatry*, 10, 234-245, [10.1111/eip.12160](https://doi.org/10.1111/eip.12160)
- Aubrey, J.S. (2006). Effects of Sexually Objectifying Media on Self-Objectification and Body Surveillance in Undergraduates: Results of a 2-Year Panel Study. *Journal of Communication*, 56, 366-386.
- Augustus-Horvath, C. L., & Tylka, T. L. (2011). The acceptance model of intuitive eating: A comparison of women in emerging adulthood, early adulthood, and middle adulthood. *Journal of Counseling Psychology*, 58(1), 110-125. <https://doi.org/10.1037/a0022129>
- Avalos, L. C., & Tylka, T. L. (2006). Exploring a model of intuitive eating with college women. *Journal of Counseling Psychology*, 53(4), 486–497. <https://doi.org/10.1037/0022-0167.53.4.486>
- Bacon, L., Stern, J. S., Van Loan, M. D., & Keim, N. L. (2005). Size acceptance and intuitive eating improve health for obese, female chronic dieters. *Journal of the American Dietetic Association*, 105(6), 929–936. <https://doi.org/10.1016/j.jada.2005.03.011>
- Balkis, M. (2013). Academic procrastination, academic life satisfaction and academic achievement: The mediation role of rational beliefs about studying. *Journal of Cognitive and Behavioral Psychotherapies*, 13(1), 57–74.
- Balkis, M., Duru, E., & Bulus, M. (2012). Analysis of the relation between academic procrastination, academic rational/irrational beliefs, time preferences to study for exams, and academic achievement: A structural model. *European Journal of Psychology of Education*, 28(3), 825–839. <https://doi.org/10.1007/s10212-012-0142-5>

- Barker, J. B., McCarthy, P. J., Jones, M. V., & Moran, A. (2011). *Single-Case Research Methods in Sport and Exercise Psychology*. London: Routledge.
- Barlow, D. H., & Nock, M. K. (2009). Why can't we be more idiographic in our research? *Perspectives on Psychological Science*, 4(1), 19–21. <https://doi.org/10.1111/j.1745-6924.2009.01088.x>
- Barlow, J., & Coren, E. (2004). Parent-training programmes for improving maternal psychosocial health. *The Cochrane database of systematic reviews*, (1), CD002020. <https://doi.org/10.1002/14651858.CD002020.pub2>
- Barrett, L. F. (2005). Valence is a basic building block of emotional life. *Journal of Research in Personality*, 40, 35–55.
- Bartholomew, D.J., Knott, M., & Moustaki, I. (2011). *Latent variable models and factor analysis: a unified approach*. John Wiley & Sons, London, UK. ISBN 9780470971925
- Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does High Self-Esteem Cause Better Performance, Interpersonal Success, Happiness, or Healthier Lifestyles?. *Psychological science in the public interest : a journal of the American Psychological Society*, 4(1), 1–44. <https://doi.org/10.1111/1529-1006.01431>
- Baumeister, R. F., Smart, L., & Boden, J. M. (1996). Relation of threatened egotism to violence and aggression: the dark side of high self-esteem. *Psychological review*, 103(1), 5–33. <https://doi.org/10.1037/0033-295x.103.1.5>
- Baumeister, R.F. (1990) Suicide as Escape from Self. *Psychological Review*, 97, 90-113. <http://dx.doi.org/10.1037/0033-295X.97.1.90>

- Beatty, P.C., & Willis, G.B. (2007). Research synthesis: the practice of cognitive interviewing. *Public Opinion Quarterly*, 71:287–311. doi: 10.1093/poq/nfm006
- Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. New York, NY: International Universities Press.
- Beck, A. T. (1999). *Prisoners of hate: The cognitive basis of anger, hostility, and violence*. New York:
- Bentler, P. M. (1990). Comparative Fit Indexes in Structural Models. *Psychological Bulletin*, 107, 238-246.
- Bentler, P. M. (1995). *ESQ structural equation program manual*. Multi variate Software.
- Bernard M. E., Ellis A., Terjesen M. (2006). “Rational-emotive behavioral approaches to childhood disorders: History, theory, practice and research,” in *Rational Emotive Behavioral Approaches to Childhood Disorders*, eds Ellis A., Bernard M. E. (New York, NY: Springer
- Bernard, M. E. & Laws, W. (1988). Childhood irrationality and mental health. Paper presented at the 24th International Congress of Psychology, Sydney, Australia.
- Bishop, F. M. (2001). *Managing addictions: Cognitive, emotive, and behavioral techniques*. New Jersey: Aronson.
- Bishop, J. A., & Inderbitzen, H. M. (1995). Peer acceptance and friendship: An investigation of their relation to self-esteem. *The Journal of Early Adolescence*, 15(4), 476–489. <https://doi.org/10.1177/0272431695015004005>
- Blatt, S. J. (1995). The destructiveness of perfectionism. *American Psychologist*, 50(12), 1003 1020.

- Bland, A.M., DeRobertis, E.M. (2019). Humanistic Perspective. In: Zeigler-Hill, V., Shackelford, T. (eds) *Encyclopedia of Personality and Individual Differences*. Springer, Cham. https://doi.org/10.1007/978-3-319-28099-8_1484-2
- Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quinonez, H. R., & Young, S. L. (2018). Best Practices for Developing and Validating Scales for Health, Social, and Behavioral Research: A Primer. *Frontiers in public health*, 6, 149. <https://doi.org/10.3389/fpubh.2018.00149>
- Boepple, L., & Thompson, J. K. (2016). A content analytic comparison of fitspiration and thinspiration websites. *The International journal of eating disorders*, 49(1), 98–101. <https://doi.org/10.1002/eat.22403>
- Bordo, S. (2003) *Unbearable weight: Feminism, Western culture, and the body*, 10th anniversary edition, Berkeley, CA: University of California Press. ISBN: 9780520240544.
- Boskind-Lodahl, M. (1976). Cinderella's stepsisters: A feminist perspective on anorexia nervosa and bulimia. *Signs*, 2(2), 342–356. <https://doi.org/10.1086/493362>
- Bratland-Sanda, S., & Sundgot-Borgen, J. (2013). Eating disorders in athletes: overview of prevalence, risk factors and recommendations for prevention and treatment. *European journal of sport science*, 13(5), 499–508. <https://doi.org/10.1080/17461391.2012.740504>
- Breevaart, K., Bakker, A. B., Demerouti, E., & Hetland, J. (2012). The measurement of state work engagement: A multilevel factor analytic study. *European Journal of Psychological Assessment*, 28, 305–312.
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. The Guilford Press.

- Brown, T. A., & Keel, P. K. (2015). A randomized controlled trial of a peer co-led dissonance-based eating disorder prevention program for gay men. *Behaviour research and therapy*, 74, 1–10. <https://doi.org/10.1016/j.brat.2015.08.008>
- Brown, T. A., Cash, T. F., & Mikulka, P. J. (1990). Attitudinal body-image assessment: Factor analysis of the Body Self-Relations Questionnaire. *Journal of Personality Assessment*, 55, 135-144.
- Bruch, H. (1973). *Eating disorders, obesity, Anorexia Nervosa and the person within*. Routledge and Kegan Paul, London
- Brunet, J., & Sabiston, C. M. (2009). Social physique anxiety and physical activity: A self-determination theory perspective. *Psychology of Sport and Exercise*, 10(3), 329–335. <https://doi.org/10.1016/j.psychsport.2008.11.002>
- Bryman A. Integrating quantitative and qualitative research: how is it done? *Qualitative Research*. 2006;6:97–113. doi: 10.1177/1468794106058877.
- Buhler, C. (1971). Basic theoretical concepts of humanistic psychology. *American Psychologist*, 26, 378-386.
- Burns, D. D. (1980). *Feeling Good: The New Mood Therapy*. New York: William Morrow.
- Buss, D. M. (2001). Human nature and culture: An evolutionary, psychological perspective. *Journal of Personality*, 69, 955-978.
- Buss, D. M., Haselton, M. G., Shackelford, T. K., Bleske, A. L., & Wakefield, J. C. (1998). Adaptations, exaptations, and spandrels. *The American psychologist*, 53(5), 533–548. <https://doi.org/10.1037//0003-066x.53.5.533>

- Busse, R.T., Kratochwill, T.R., & Elliott, S.N. (1995). Meta-analysis for single-case consultation outcomes: Applications to research and practice. *Journal of School Psychology, 33*, 269-285.
- Butters, J. W., & Cash, T. F. (1987). Cognitive-behavioral treatment of women's body-image dissatisfaction. *Journal of consulting and clinical psychology, 55*(6), 889–897.
<https://doi.org/10.1037//0022-006x.55.6.889>
- Byrne, B. M. (2006). *Structural equation modeling with EQS and EQS/Windows: Basic concepts, application and programming*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Byrne, S., & McLean, N. (2002). Elite athletes: effects of the pressure to be thin. *Journal of science and medicine in sport, 5*(2), 80–94. [https://doi.org/10.1016/s1440-2440\(02\)80029-9](https://doi.org/10.1016/s1440-2440(02)80029-9)
- Cafri, G., & Thompson, J. K. (2004). Measuring Male Body Image: A Review of the Current Methodology. *Psychology of Men & Masculinity, 5*(1), 18–29. <https://doi.org/10.1037/1524-9220.5.1.18>
- Cafri, G., Olivardia, R., & Thompson, J. K. (2008). Symptom characteristics and psychiatric comorbidity among males with muscle dysmorphia. *Comprehensive psychiatry, 49*(4), 374–379. <https://doi.org/10.1016/j.comppsy.2008.01.003>
- Calogero, R.M. (2009). Objectification processes and disordered eating in British women and men. *Journal of Health Psychology, 2009*;14(3):394–402.
doi: 10.1177/1359105309102192
- Cash, T.F. (2008). *The body image workbook: An eight-step program for learning to like your looks* (2nd ed.). Oakland, CA: New Harbinger Publications.

- Cash, T. F. (2004). Body image: Past, present, and future [Editorial]. *Body Image*, 1(1), 1–5. [https://doi.org/10.1016/S1740-1445\(03\)00011-1](https://doi.org/10.1016/S1740-1445(03)00011-1)
- Cash, T. F., & Deagle, E. A. III. (1997). The nature and extent of body-image disturbances in anorexia nervosa and bulimia nervosa: A meta-analysis. *International Journal of Eating Disorders*, 22(2), 107–125. [https://doi.org/10.1002/\(SICI\)1098-108X\(199709\)22:2<107::AID-EAT1>3.0.CO;2-J](https://doi.org/10.1002/(SICI)1098-108X(199709)22:2<107::AID-EAT1>3.0.CO;2-J)
- Cash, T. F., & Pruzinsky, T. (1990). *Body images: Development, deviance, and change*. New York: Guilford Press. (Eds.)
- Cash, T. F., & Muth, J. L. (1997). Body-Image Attitudes: What Difference Does Gender Make? *Journal of Applied Social Psychology*, 27(16), 1438-1452.
- Cash, T., F., Santos, M. T., & William, E. F. (2005). Coping with body-image threats and challenges: validation of the Body Image Coping Strategies Inventory. *Journal of Psychosomatic Research*, 58(2), 190-9
- Cash, T.F. & Smolak, L. (2011). *Understanding Body Images: Historical and Contemporary Perspectives*. In: Cash, T.F. and Smolak, L., Eds., *Body Image: A Handbook of Science, Practice, and Prevention*, Guilford Press, New York, 3-11.
- Cash, T.F. (2002). The situational inventory of body-image dysphoria: psychometric evidence and development of a short form. *The International journal of eating disorders*, 32 3, 362-6 .
- Cash, T.F. (2012). *Encyclopedia of Body Image and Human Appearance*.
<https://doi.org/10.1016/C2010-1-66177-9>

- Cash, T.F., & Labarge, A.S. (2005). Development of the Appearance Schemas Inventory: A new cognitive body-image assessment. *Cognitive Therapy and Research*, 20, 37-50.
- Cash, T.F., & Pruzinsky, T. (2002) *Body image. A handbook of theory, research, and clinical practice*. The Guilford Press, New York.
- Cattell, R. B. (1973). *Personality and mood by questionnaire*. Jossey-Bass.
- Cavanagh, M., Grant, A. M., & Kemp, T. (2005). Evidence-based coaching, Vol. 1. Theory, research and practice from the behavioural sciences. Australian Academic Press
- Chamberlain, J. M., & Haaga, D. A. (2001a). Unconditional self-acceptance and psychological health. *Journal of Rational-Emotive and Cognitive-Behavior Therapy*, 19(3), 163–176.
- Chamberlain, J. M., & Haaga, D. A. F. (2001b). Unconditional self-acceptance and responses to negative feedback. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 19, 177–189.
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling*, 14(3), 464–504. <https://doi.org/10.1080/10705510701301834>
- Child, D. (2006). *The essentials of factor analysis*. Continuum, London.
- Ching, B.H. (2021). The effect of masculinity threat on transprejudice: Influence of different aspects of masculinity contingent self-worth. *Psychology and Sexuality*, 1-15.
- Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope, & F. R. Schneier (Eds.), *Social phobia: Diagnosis, assessment, and treatment*, 69–93. The Guilford Press.

- Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, 7(3), 309–319. <https://doi.org/10.1037/1040-3590.7.3.309>
- Cohen, R. J., & Swerdlik, M. E. (2005). *Psychological Testing and Assessment: An Introduction to Tests and Measurement* (6th ed.). New York: McGraw-Hill.
- Coles, M. E., Phillips, K. A., Menard, W., Pagano, M. E., Fay, C., Weisberg, R. B., & Stout, R. L. (2006). Body dysmorphic disorder and social phobia: cross-sectional and prospective data. *Depression and anxiety*, 23(1), 26–33.
<https://doi.org/10.1002/da.20132>
- Collins, K. M. T., Onwuegbuzie, A. J., & Jiao, Q. G. (2007). A Mixed Methods Investigation of Mixed Methods Sampling Designs in Social and Health Science Research. *Journal of Mixed Methods Research*, 1(3), 267–294.
<https://doi.org/10.1177/1558689807299526>
- Compte, E. J., Sepulveda, A. R., & Torrente, F. (2015). A two-stage epidemiological study of eating disorders and muscle dysmorphia in male university students in Buenos Aires. *International Journal of Eating Disorders*, 48(8), 1092–1101.
<http://dx.doi.org/10.1002/eat.22448>
- Cooper, P. J., Taylor, M. J., Cooper, Z., & Fairburn, C. G. (1987). The development and validation of the Body Shape Questionnaire. *International Journal of Eating*

Disorders, 6(4), 485–494. [https://doi.org/10.1002/1098-108X\(198707\)6:4<485::AID-EAT2260060405>3.0.CO;2-O](https://doi.org/10.1002/1098-108X(198707)6:4<485::AID-EAT2260060405>3.0.CO;2-O)

Corcoran, J., & Pillai, V. (2009). A review of the research on solution-focused therapy.

British Journal of Social Work, 39(2), 234–242. <https://doi.org/10.1093/bjsw/bcm098>

Cosmides, L., & Tooby, J. (1992). *Cognitive adaptations for social exchange*. In J. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind*. New York: Oxford University Press.

Cosmides, L., & Tooby, J. (2006). *Evolutionary psychology: A primer*. <http://www.psych.ucsb.edu/research/cep/primer.html>

Crawford, S., & Eklund, R. C. (1994). Social physique anxiety, reasons for exercise, and attitudes toward exercise settings. *Journal of Sport & Exercise Psychology*, 16(1), 70–82.

Cronbach, L.J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 297–334. doi: 10.1007/BF02310555

Crossley, K. L., Cornelissen, P. L., and Tovée, M. J. (2012). What Is an Attractive Body? Using an Interactive 3D Program to Create the Ideal Body for You and Your Partner. *PLoS One*, 7:e50601. doi: 10.1371/journal.pone.0050601

Cunningham, M. L., Griffiths, S., Mitchison, D., Mond, J. M., Castle, D., Murray, S. (2017). Muscle Dysmorphia: An Overview of Clinical Features and Treatment Options. *Journal of Cognitive Psychotherapy*, 31, 4

- Cunningham, R., Turner, M. J. (2016). Using rational emotive behavior therapy (REBT) with mixed martial arts (MMA) athletes to reduce irrational beliefs and increase unconditional self-acceptance. *Journal of Rational-Emotive and Cognitive-Behavioural Therapy*, 34 (4), 289-309
- Dae, A., Robinson, P., Lawson, M., Turpin, J. A., Gregory, B., & Tobias, J. D. (2002). Psychologic and physiologic effects of dieting in adolescents. *Southern medical journal*, 95(9), 1032–1041.
- David D., McMahon J. (2001). Clinical strategies in cognitive behavioral therapy: a case analysis. *Romartian Journal of Cognitive-Behavioral Psychotherapy*, 1, 71-87.
- David D., Szentagotai A., Eva K. & Macavei B. (2005). A synopsis of rational- emotive behavior therapy (REBT): fundamental and applied research. *Journal of Rational Emotive Cognitive Behavior Therapy*, 23, 175-221.
- David, D. (2015). *Rational emotive behavior therapy (REBT)*. In R. L. Cautin and S. O. Lilienfeld (eds), *Encyclopedia of Clinical Psychology*. New Jersey: Wiley-Blackwell.
- David, D. O., Matu, S. A., Podina, I. R., & Predatu, R. M. (2019). Future research directions for REBT. In M. E. Bernard & W. Dryden (Eds.), *Advances in REBT: Theory, practice, research, measurement, prevention and promotion* (pp. 121–146). Springer Nature Switzerland AG. https://doi.org/10.1007/978-3-319-93118-0_6

- David, D., & DiGiuseppe, R. (2010). Social and cultural aspects of rational and irrational beliefs: A brief reconceptualization. In D. David, S. J. Lynn, & A. Ellis (Eds.), *Rational and irrational beliefs: Research, theory, and clinical practice* (pp. 49–61). Oxford University Press.
- David, D., & Szentagotai, A. (2006). Cognitions in cognitive-behavioral psychotherapies; toward an integrative model. *Clinical Psychology Review*, 26(3), 284–298. <https://doi.org/10.1016/j.cpr.2005.09.003>
- David, D., Cotet, C., Matu, S., Mogoase, C., & Stefan, S. (2018). 50 years of rational-emotive and cognitive-behavioral therapy: A systematic review and meta-analysis. *Journal of Clinical Psychology*, 74(3), 304–318. <https://doi.org/10.1002/jclp.22514>
- David, D., Freeman, A., & DiGiuseppe, R. (2010). *Rational and irrational beliefs: Implications for mechanisms of change and practice in psychotherapy*. In D. David, S. J. Lynn, & A. Ellis (Eds.), *Rational and irrational beliefs: Research, theory, and clinical practice* (pp. 195–217). Oxford University Press.
- David, D., Schnur, J., & Belloiu, A. (2002). Another search for the “hot” cognitions: Appraisal, irrational beliefs, attributions, and their relation to emotion. *Journal of Rational-Emotive and Cognitive-Behavior Therapy*, 15, 93–131.
- David, D., Schnur, J., & Birk, J. (2003). Functional and dysfunctional feelings in Ellis’ cognitive theory of emotion: An empirical analysis. *Cognition and Emotion*, 18, 869–880.

David, D., Szentagotai, A., Eva, K., & Macavei, B. (2005). A synopsis of rational-emotive behavior therapy (REBT); Fundamental and applied research. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 23(3), 175–221. <https://doi.org/10.1007/s10942-005-0011-0>

David, D., Szentagotai, A., Lupu, V., & Cosman, D. (2008). Rational emotive behavior therapy, cognitive therapy, and medication in the treatment of major depressive disorder: a randomized clinical trial, posttreatment outcomes, and six-month follow-up. *Journal of clinical psychology*, 64(6), 728–746. <https://doi.org/10.1002/jclp.20487>

David, D.O., & Montgomery, G.H. (2011). The Scientific Status of Psychotherapies: A New Evaluative Framework for Evidence-Based Psychosocial Interventions. *Clinical Psychology-science and Practice*, 18, 89-99.

David, O. A. (2014). The rational positive parenting program for child externalizing behavior: Mechanisms of change analysis. *Journal of Evidence-Based Psychotherapies*, 14(1), 21–38.

David, O. A., Cîmpean, A., Costescu, C., DiGiuseppe, R., Doyle, K., Hickey, M., & David, D. (2021). Effectiveness of Outpatient Rational Emotive Behavior Therapy Over One Decade. *American journal of psychotherapy*, 74(4), 157–164. <https://doi.org/10.1176/appi.psychotherapy.20200009>

- Davies, C. S., Atherton, F., McBride, M., Calderwood, C. (2019) UK Chief Medical Officers' Physical Activity Guidelines. London: Department of health.
- Davis, H., & Turner, M. J. (2020). The use of rational emotive behavior therapy (REBT) to increase the self-determined motivation and psychological well-being of triathletes. *Sport, Exercise, and Performance Psychology*, 9(4), 489–505. <https://doi.org/10.1037/spy0000191>
- Deacon, T. W. (1998). The symbolic species. New York: Norton.
- Deci, E. L., & Ryan, R. M. (1985). Intrinsic Motivation and Self-Determination in Human Behavior. Berlin: Springer Science & Business Media.
<https://doi.org/10.1007/978-1-4899-2271-7>
- Decker, K.M., Thurston, I.B. Thurston., Kamody, R.C. (2018).The mediating role of internalized weight stigma on weight perception and depression among emerging adults: Exploring moderation by weight and race. *Body Image*, 27, 202-210, [10.1016/j.bodyim.2018.10.004](https://doi.org/10.1016/j.bodyim.2018.10.004)
- DeCoster, J. (1998). *Overview of Factor Analysis*.
- Deen, S., Turner, M. J., & Wong, R. (2017). The effects of REBT and credos on irrational beliefs and resilient qualities in athletes, *The Sport Psychologist*, 31, 249-263
- Delfabbro, P. H., & Winefield, A. H. (2000). Predictors of irrational thinking in regular slot machine gamblers. *The Journal of Psychology*, 134, 117–128.

Dellinger, A.B. (2005). Validity and the review of literature. *Research in the Schools*, 12(2), 41-54.

DeNeve, K. M., & Cooper, H. (1998). The happy personality: A meta-analysis of 137 personality traits and subjective well-being. *Psychological Bulletin*, 124(2), 197–229. <https://doi.org/10.1037/0033-2909.124.2.197>

de Shazer, S. (1994). Words were originally magic. New York: Norton.

DeVellis, R. F. (2021). *Scale development: Theory and applications*. Thousand Oaks, CA: Sage

Diener, E., & Diener, M. (1995). Cross-cultural correlates of life satisfaction and self-esteem. *Journal of Personality and Social Psychology*, 68(4), 653–663. <https://doi.org/10.1037/0022-3514.68.4.653>

DiGiuseppe R, Doyle K, Dryden W, Backx W. *A Practitioner's Guide to Rational-emotive Behavior Therapy*, 3rd ed. New York: Oxford University Press; 2013.

Digiuseppe R. A., Doyle C. A., Dryden W., Backx W. (2014). *A Practitioner's Guide to Rational Emotive Behavior Therapy*, 3rd Edn New York, NY: Oxford University Press.

DiGiuseppe, R. (1996), “The nature of irrational and rational beliefs: progress in rational emotive behavior theory”, *Journal of Rational-Emotive and Cognitive-Behavior Therapy*, Vol. 4, pp. 5-28.

DiGiuseppe, R., Robin, M. W., Leaf, R., & Gorman, A. (1989). A cross-validation and factor analysis of a measure of irrational beliefs. Paper presented at the World Congress of Cognitive Therapy, Oxford, England.

DiLorenzo, T.A., David, D., and Montgomery, G.H. (2007), “The interrelations between irrational cognitive processes and distress in stressful academic settings”. *Personality and Individual Differences*, 42, 765-77.

Dodds T.J. (2017). Prescribed benzodiazepines and suicide risk: a review of the literature. *The Primary Care Companion for CNS Disorders*, 19(2):doi 10.4088/PCC.16r02.

Doll, M., Ball, G. D., & Willows, N. D. (2004). Rating of figures used for body image assessment varies depending on the method of figure presentation. *The International journal of eating disorders*, 35(1), 109–114. <https://doi.org/10.1002/eat.10233>

Downey, M. (1999). Effective coaching, London: Orion Business.

Drinkwater, E. J., Lawton, T. W., Lindsell, R. P., Pyne, D. B., Hunt, P. H., & McKenna, M. J. (2005). Training leading to repetition failure enhances bench press strength gains in elite junior athletes. *Journal of strength and conditioning research*, 19(2), 382–388. <https://doi.org/10.1519/R-15224.1>

Dryden W. (2009). *How to Think and Intervene Like an REBT Therapist*. London: Routledge.

- Dryden, W. (2017). *Very Brief Cognitive Behavioural Coaching (VBCBC)* (1st ed.). Routledge. <https://doi.org/10.4324/9781315272405>
- Dryden, W. (2021). *New Directions in Rational Emotive Behaviour Therapy* (1st ed.). Routledge. <https://doi.org/10.4324/9781003081593>
- Dryden, W. (1984c). *Rational-emotive therapy: Fundamentals and innovations*. Beckenham, Kent, England: Croom Helm.
- Dryden, W., & Branch, R. (2008). *The Fundamentals of Rational-Emotive Behavior Therapy*. West Sussex: Wiley.
- Dryden, W., & DiGiuseppe, R. (1990). *A Primer on Rational-Emotive Therapy*. Champaign, IL: Research Press.
- Dryden, W., & Mytton, J. (1999). *Four approaches to counselling and psychotherapy*. Taylor & Frances/Routledge.
- Duncan, O. D. (1984). *Notes on social measurement: Historical and critical*. New York: Russell Sage Foundation.
- Edwards, A. L. (1957). *The social desirability variable in personality assessment and research*. Dryden Press.
- Eisenberger, R. (1992). Learned industriousness. *Psychological Review*, 99, 248-267

El Ghoch, M., Soave, F., Calugi, S., & Dalle Grave, R. (2013). Eating disorders, physical fitness and sport performance: a systematic review. *Nutrients*, 5(12), 5140–5160.
<https://doi.org/10.3390/nu5125140>

Ellis A. (1994). *Reason and Emotion in Psychotherapy*. Secaucus, NJ: Birscej Lane.

Ellis A., David D., Lynn S. J. (2010). “Rational and irrational beliefs: a historical and conceptual perspective,” in *Rational and Irrational Beliefs: Research, Theory, and Clinical Practice*, eds David D., Lynn S. J., Ellis A. (New York, NY: Oxford University Press;), 3–22.

Ellis, A. (1957). Rational psychotherapy and individual psychology. *Journal of Individual Psychology*, 13, 38–44.

Ellis, A. (1962). *Reason and emotion in psychotherapy*. Secaucus, NJ: Citadel.

Ellis, A. (1976). RET abolishes most of the human ego. *Psychotherapy*, 13, 343–348.
Reprinted: New York: The Institute for Rational-Emotive Therapy.

Ellis, A. (1979a). Rational-emotive therapy: Research data that support the clinical and personality hypotheses of RET and other modes of cognitive-behavior therapy. In A. Ellis & J. M. Whiteley (Eds.), *Theoretical and empirical foundations of rational-emotive therapy* (pp. 101–173). Monterey, CA: Brooks/Cole.

- Ellis, A. (1979b). *Rejoinder: Elegant and inelegant RET*. In A. Ellis & J. M. Whiteley (Eds.), *Theoretical and empirical foundations of rational-emotive therapy*, (pp. 240–267). Monterey, CA: Brooks/Cole.
- Ellis, A. (1988). *How to stubbornly refuse to make yourself miserable about anything—yes, anything!* Secaucus, NJ: Lyle Stuart.
- Ellis, A. (1994). The sport of avoiding sports and exercise: The rational emotive behaviour therapy perspective. *The Sports Psychologist*, 8, 248-261.
<https://doi.org/10.1123/tsp.8.3.248>
- Ellis, A. (2001). *Overcoming destructive beliefs, feelings, and behaviors: New directions for rational emotive behavior therapy*. New York: Prometheus Books.
- Ellis, A. , & Knaus, W. (1977). *Overcoming procrastination*. New York: New American Library.
- Ellis, A. , & Velten, E. (1992). *When AA doesn't work for you: Rational steps for quitting alcohol*. New York: Barricade Books.
- Ellis, A., & Becker, I. (1982). *A guide to personal happiness*. North Hollywood, CA: Wilshire.

- Ellis, A., & Blum, M. L. (1967). Rational Training: A New Method of Facilitating Management and Labor Relations. *Psychological Reports*, 20, 1267–1284.
<https://doi.org/10.2466/pr0.1967.20.3c.1267>
- Ellis, A., & Dryden, W. (1997). *The Practice of Rational-Emotive Behavior Therapy*. New York: Springer Publishing Company.
- Ellis, A., David, D., & Lynn, S. J. (2010). *Rational and irrational beliefs: a historical and conceptual perspective* (pp. 3–22), in *Rational and Irrational Beliefs: Research, Theory, and Clinical Practice*, D. David, S. J. Lynn, and A. Ellis (Eds.). New York, NY: Oxford University Press).
- Emmelkamp, P. M., & Beens, H. (1991). Cognitive therapy with obsessive-compulsive disorder: A comparative evaluation. *Behaviour Research and Therapy*, 29(3), 293–300. [https://doi.org/10.1016/0005-7967\(91\)90120-R](https://doi.org/10.1016/0005-7967(91)90120-R)
- Engels, G. I. , Garnefski, N. , & Diekstra, R. F. (1993). Efficacy of rational-emotive therapy: A quantitative analysis. *Journal of Consulting and Clinical Psychology*, 61(6), 1083–1090
- Erlandson, D. A., Harris, E. L., Skipper, B., & Allen, S. D. (1993). *Doing naturalistic inquiry: A guide to methods*. Newbury Park, CA: Sage Publications.
- Eysenck, M.W., & Keane, M.T. (2015). *Cognitive Psychology: A Student' Handbook* (7th ed.). Psychology Press. <https://doi.org/10.4324/9781315778006>

- Fadaei, S., Janighorban, M., Mehrabi, T., Ahmadi, S. A., Mokaryan, F., & Gukizade, A. (2011). Effects of cognitive behavioral counseling on body Image following mastectomy. *Journal of research in medical sciences : the official journal of Isfahan University of Medical Sciences*, 16(8), 1047–1054.
- Fairburn, C.G. (2008). *Eating disorders: the transdiagnostic view and the cognitive behavioral theory*. In: Fairburn C.G., editor. *Cognitive behavior therapy and eating disorders*. Guilford Press; New York:
- Fairburn, C. G., Bailey-Straebler, S., Basden, S., Doll, H. A., Jones, R., Murphy, R., O'Connor, M. E., & Cooper, Z. (2015). A transdiagnostic comparison of enhanced cognitive behaviour therapy (CBT-E) and interpersonal psychotherapy in the treatment of eating disorders. *Behaviour research and therapy*, 70, 64–71.
<https://doi.org/10.1016/j.brat.2015.04.010>
- Fernandez, S., & Pritchard, M. (2012). Relationships between self-esteem, media influence and drive for thinness. *Eating behaviors*, 13(4), 321–325.
<https://doi.org/10.1016/j.eatbeh.2012.05.004>
- Ferron, J., Jones, P.K. (2006). Tests for the Visual Analysis of Response-Guided Multiple-Baseline Data. *Journal of Experimental Education*, 75(1):66–81

First MB, Spitzer RL, Gibbon M, Williams JBW. *Structured Clinical Interview for DSM-IV Personality Disorders, (SCID-II)* Washington, D.C.: American Psychiatric Press, Inc.; 1997a

Fisher RA. *Statistical methods for research workers. In: Breakthroughs in statistics.* Springer: 1992. p. 66–70.

Fisher, D., Beech, A., & Browne, K. (1999). Comparison of sex offenders to nonoffenders on a selected psychological measures. *International Journal of Offender Therapy and Comparative Criminology*, 43, 473–491.

Fisher, S. (1970). *Body experience in fantasy and behavior.* New York: Appleton-Century-Crofts.

Fisher, S. (1986). *Development and structure of the body image* (vols. 1, 2). Hillsdale, NJ: Lawrence Erlbaum Associates.

Fonagy, P., Benster, R., & Higgitt, A. (1990). Adaptive probit estimation and body size: the evaluation of a new psychophysical technique. *British journal of psychology (London, England : 1953)*, 81 (Pt 2), 159–171. <https://doi.org/10.1111/j.2044-8295.1990.tb02353.x>

Fowler, F. J., Jr. (1995). *Improving survey questions: Design and evaluation.* Sage Publications, Inc.

Franklin RD, Allison DB, Gorman BS, editors. *Design and analysis of single-case research.* Erlbaum; Mahwah, NJ: 1996. pp. 119–158. [[Google Scholar](#)]

- Franzoi, S.L. & Shields, S.A. (1984). The Body-Esteem Scale: Multidimensional structure and sex differences in a college population. *Journal of Personality Assessment*, 48, 173-178.
- Frederick, C. M., & Ryan, R. M. (1993). Differences in motivation for sport and exercise and their relations with participation and mental health. *Journal of Sport Behavior*, 16(3), 124–146.
- Fredrickson, B. L., & Roberts, T.-A. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly*, 21(2), 173–206. <https://doi.org/10.1111/j.1471-6402.1997.tb00108.x>
- Frías, Á., Palma, C., Farriols, N., & González, L. (2015). Comorbidity between obsessive-compulsive disorder and body dysmorphic disorder: prevalence, explanatory theories, and clinical characterization. *Neuropsychiatric disease and treatment*, 11, 2233–2244. <https://doi.org/10.2147/NDT.S67636>
- Fromm, E. (1956). *The Art of Loving: An Enquiry into the Nature of Love*. New York: Harper & Brothers.
- Frost, R. O., Turcotte, T., Heimberg, R. G., & Mattia, J. I. (1995). Reactions to mistakes among students high and low in perfectionistic concern over mistakes. *Cognitive Therapy and Research*, 19(2), 195 205.
- Furr, R.M. (2011). *Scale Construction and Psychometrics for Social and Personality Psychology*.

- Gable, S. L., & Haidt, J. (2005). What (and Why) is Positive Psychology? *Review of General Psychology*, 9(2), 103–110. <https://doi.org/10.1037/1089-2680.9.2.103>
- Gardner, R. M. (2011). Perceptual measures of body image for adolescents and adults. In T. F. Cash & L. Smolak (Eds.), *Body image: A handbook of science, practice, and prevention* (pp. 146–153). The Guilford Press.
- Gardner, R. M., & Bokenkamp, E. D. (1996). The role of sensory and nonsensory factors in body size estimations of eating disorder subjects. *Journal of clinical psychology*, 52(1), 3–15. [https://doi.org/10.1002/\(SICI\)1097-4679\(199601\)52:](https://doi.org/10.1002/(SICI)1097-4679(199601)52:)
- Gardner, R.M., Friedman, B. N., & Jackson, N. A. (1998). Methodological concerns when using silhouettes to measure body image. *Perceptual & Motor Skills*, 86, 387–395.
- Gargari, B. P., Khadem-Haghighian, M., Taklifi, E., Hamed-Behzad, M., & Shahraki, M. (2010). Eating attitudes, self-esteem and social physique anxiety among Iranian females who participate in fitness programs. *The Journal of sports medicine and physical fitness*, 50(1), 79–84.
- Garner, D.M., Keiper, C.D. (2010). *Anorexia and bulimia*. In: Thomas J.C, Hersen M, editors. *Handbook of clinical psychology competencies*. New York: Springer; 1429–1460

- Garner, D. M., Olmsted, M. P., Bohr, Y., Garfinkel, P. E. (1982). The Eating Attitudes Test: psychometric features and clinical correlates. *Psychological Medicine*, 12(4), 871-8.
<https://doi.org/10.1017/s0033291700049163>
- Gautam, M., Tripathi, A., Deshmukh, D., & Gaur, M. (2020). Cognitive Behavioral Therapy for Depression. *Indian journal of psychiatry*, 62(2), S223–S229.
https://doi.org/10.4103/psychiatry.IndianJPsychiatry_772_19
- Gaviña, O. A., David, D., Bujoreanu, S., Tiba, A., & Ionuțiu, D. R. (2012). The Efficacy of a Short Cognitive-Behavioral Parent Program in the Treatment of Externalizing Behavior Disorders in Romanian Foster Care Children: Building Parental Emotion-Regulation through Unconditional Self- and Child-Acceptance Strategies. *Children and Youth Services Review*, 34(2), 1290–1297.
- Gavita, O. A., David, D., DiGiuseppe, R., & DelVecchio, T. (2011). The development and validation of the parent rational and irrational beliefs scale. *Procedia Social and Behavioral Sciences*, 30, 2305–2311. <https://doi.org/10.1016/j.sbspro.2011.10.449>
- Gelso, C., & Fretz, B. (2001). *Counseling psychology* (2nd ed.). Fort Worth, TX: Harcourt.
- Gerbing, D. W., & Hamilton, J. G. (1996). Viability of exploratory factor analysis as a precursor to confirmatory factor analysis. *Structural Equation Modeling*, 3(1), 62–72. <https://doi.org/10.1080/10705519609540030>

- Gibbons, R. D., & Hedeker, D. R. (1992). Full-information item bi-factor analysis. *Psychometrika*, 57(3), 423–436. <https://doi.org/10.1007/BF02295430>
- Giraudeau, B., & Mary, J. (2001). Planning a reproducibility study: how many subjects and how many replicates per subject for an expected width of the 95 per cent confidence interval of the intraclass correlation coefficient. *Statistics in Medicine*, 20.
- Glucksman, M.L., & Hirsch, J. (1969). The response of obese patients to weight reduction. 3. The perception of body size. *Psychosomatic medicine*, 31(1), 1-7 .
- Goldberg, G. M. (1990). Irrational beliefs and three interpersonal styles. *Psychological Reports*, 66(3), 963-969.
- Gonzalez J., Nelson J., Gutkin T., Saunders A., Galloway A., Shwery C. (2004). Rational emotive therapy with children and adolescents: a meta-analysis. *Journal of Emotional and Behavioral Disorders*, 12, 222–235. 10.1177/10634266040120040301
- Gould, D., Dieffenbach, K., & Moffett, A. (2002). Psychological characteristics and their development in Olympic champions. *Journal of Applied Sport Psychology*, 14(3), 172–204. <https://doi.org/10.1080/10413200290103482>
- Gray, S. H. (1977). Social aspects of body image: Perception of normalcy of weight and affect of college undergraduates. *Perceptual and Motor Skills*, 45(3, Pt 2), 1035–1040. <https://doi.org/10.2466/pms.1977.45.3f.1035>

- Greene JC, Valerie J, Caracelli, Graham WF. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, 11, 255–274. doi: 10.3102/01623737011003255.
- Greenleaf, R. K. (2002). *Servant leadership: A journey into the nature of legitimate power and greatness* (25th anniversary ed.) (L. C. Spears, Ed.). Paulist Press.
- Griffiths, S., Austen, E., Krug, I., & Blake, K. (2021). Beach body ready? Shredding for summer? A first look at "seasonal body image". *Body image*, 37, 269–281.
<https://doi.org/10.1016/j.bodyim.2021.03.004>
- Griffiths, S., Mond, J. M., Murray, S. B., Touyz, S. (2015). Positive beliefs about anorexia nervosa and muscle dysmorphia are associated with eating disorder symptomatology. *Australian and New Zealand Journal of Psychiatry*, 49(9), 812-820
- Griffiths, S., Mond, M, J., Murray, S, B., Touyz, S. (2015). The Prevalence and Adverse Associations of Stigmatization in People With Eating Disorders. *International journal of eating disorders*, 48, 767-764 <https://doi: 10.1002/eat.22353>
- Grogan, S. (2021). *Body Image: Understanding Body Dissatisfaction in Men, Women and Children* (4th ed.). London, UK: Routledge.
- Guion, R. (1977). Content validity - the source of my discontent. *Applied Psychological Measurement*, 1, 1–10. doi: 10.1177/014662167700100103

- Gunstad, J., Phillips, K.A. (2003). Axis I comorbidity in BDD. *Comprehensive Psychiatry*, 44, 270–276.
- Haaga, D. A. F., & Davison, G. C. (1989). Outcome studies of rational-emotive therapy. In M. E. Bernard & R. DiGiuseppe (Eds.), *Inside rational-emotive therapy: A critical appraisal of the theory and therapy of Albert Ellis* (pp. 155–197). Academic Press.
- Haase, A.N., Prapavesis, H., & Owens, G.R. (2002). Perfectionism, social physique anxiety and disordered eating: A comparison of male and female elite athletes. *Psychology of Sport and Exercise*, 3, 209-222.
- Habermas, T. (2015). *History of anorexia nervosa*. In L. Smolak & M.P. Levine's (Eds.), *The Wiley handbook of eating disorders* (pp. 11-24), West Sussex, UK: John Wiley & Sons.
- Hagger, M.S., Stevenson, A., Chatzisarantis, N.L., Gaspar, P.M., Ferreira, J.P., & Ravé, J.M. (2010). Physical self-concept and social physique anxiety: invariance across culture, gender and age. *Stress and Health*, 26, 304-329.
- Haghighat, R. (2007). The Development of the Brief Social Desirability Scale (BSDS). *Europe's Journal of Psychology*, 3, 0.
- Hall, H., Hill, A., Appleton, P. R., & Kozub, S. (2009). The mediating influence of unconditional self-acceptance and labile self-esteem on the relationship between

multidimensional perfectionism and exercise dependence. *Psychology of Sport and Exercise*, 10, 33-45. <https://doi.org/10.1016/j.psychsport.2008.05.003>

Halliwell, E., Dawson, K., & Burkey, S. (2019). A randomized experimental evaluation of a yoga-based body image intervention. *Body image*, 28, 119–127.
<https://doi.org/10.1016/j.bodyim.2018.12.005>

Hariton, E., & Locascio, J. J. (2018). Randomised controlled trials - the gold standard for effectiveness research: Study design: randomised controlled trials. *BJOG : an international journal of obstetrics and gynaecology*, 125(13), 1716.
<https://doi.org/10.1111/1471-0528.15199>

Harman, H.H. (1976) *Modern Factor Analysis*. 3rd Edition, The University of Chicago Press, Chicago.

Harrington N. (2005a). Dimensions of frustration intolerance and their relationship to self-control problems. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 23, 1–20. [10.1007/s10942-005-0001-2](https://doi.org/10.1007/s10942-005-0001-2)

Harrington, D. (2009). *Confirmatory Factor Analysis*. New York: Oxford University Press.

Harrison, A., De la Cruz, L., F, Enander, J., Radua, J., & Mataix-Cols, D. (2016). Cognitive-behavioral Therapy for Body Dysmorphic Disorder: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Clinical psychology review*.48, 43-51
[https://doi: 10.1016/j.cpr.2016.05.007](https://doi.org/10.1016/j.cpr.2016.05.007)

- Hart, E. A., Leary, M. R., & Rejeski, W. J. (1989). The measurement of social physique anxiety. *Journal of Sport and Exercise Psychology*, 11, 94-104.
- Hausenblas, H. A., Brewer, B. W., Van Raalte, J. L. (2004). Self-presentation and exercise. *Journal of Applied Sport Psychology*, 16, 3–18
- Hausenblas, H.A., & Mack, D.E. (1999). Social Physique Anxiety and Eating Disorder Correlates among Female Athletic and Nonathletic Populations. *Journal of sport behavior*, 22, 502-513.
- Hayes, S. C. (2004). Acceptance and commitment therapy, relational frame theory, and the third wave of behaviour therapy. *Behaviour Therapy*, 35(4), 639–665.
[http://dx.doi.org/10.1016/S0005-7894\(04\)80013-3](http://dx.doi.org/10.1016/S0005-7894(04)80013-3)
- Haynes, S.N., Richard, D.C., & Kubany, E.S. (1995). Content validity in psychological assessment: A functional approach to concepts and methods. *Psychological Assessment*, 7, 238-247.
- Hazzard, V. M., Schaefer, L. M., Schaumberg, K., Bardone-Cone, A. M., Frederick, D. A., Klump, K. L.,(2019). Testing the tripartite influence model among heterosexual, bisexual, and lesbian women. *Body Image*, 30, 145–149. doi: 10.1016/j.bodyim.2019.07.001
- Head, H., & Holmes, H.G. (1911). Sensory disturbances from cerebral lesions. *Brain*, 34, 102–254.

- Hennighausen, K., Enkelmann, D., Wewetzer, C., & Remschmidt, H. (1999). Body image distortion in Anorexia Nervosa--is there really a perceptual deficit?. *European child & adolescent psychiatry*, 8(3), 200–206. <https://doi.org/10.1007/s007870050130>
- Henriksen, K., Stambulova, N., & Roessler, K. K. (2010). Holistic approach to athletic talent development environments: A successful sailing milieu. *Psychology of Sport and Exercise*, 11, 212–222. <https://doi.org/10.1016/j.psychsport.2009.10.005>
- Hewitt, P. L., & Flett, G. L. (1991). Dimensions of perfectionism in unipolar depression. *Journal of abnormal psychology*, 100(1), 98–101.
<https://doi.org/10.1037//0021-843x.100.1.98>
- Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, 94(3), 319–340. <https://doi.org/10.1037/0033-295X.94.3.319>
- Higgins, S., & Wysong, A. (2017). Cosmetic Surgery and Body Dysmorphic Disorder - An Update. *International journal of women's dermatology*, 4(1), 43–48.
<https://doi.org/10.1016/j.ijwd.2017.09.007>
- Hildebrandta, T., Langenbucherb, J., David G. Schlundt, D. G. (2004). Muscularity concerns among men: development of attitudinal and perceptual measures. *Body Image*, 1, 169–181.

- Hill, A. P., Hall, H. K., Appleton, P. R., & Kozub, S. R. (2008). Perfectionism and burnout in junior elite soccer players: The mediating influence of unconditional self-acceptance. *Psychology of Sport and Exercise*, 9, 630-644.
- Hinkin, T.R. (1995) A review of scale development practices in the study of organizations. *Journal of Management*, 21, 967–88. doi: 10.1016/0149- 2063(95)90050-0
- Hogue, A., Dauber, S., Henderson, C. E., & Liddle, H. A. (2014). Reliability of therapist self-report on treatment targets and focus in family-based intervention. *Administration and policy in mental health*, 41(5), 697–705. <https://doi.org/10.1007/s10488-013-0520-6>
- Hollander, E., Cohen, L.J., Simeon, D. (1993). Body dysmorphic disorder. *Psychiatric Annals*. 1993;23:359–364.
- Homan, K. (2010). Athletic-ideal and thin-ideal internalization as prospective predictors of body dissatisfaction, dieting, and compulsive exercise. *Body image*, 7(3), 240-5.
- Homan, K. J., & Tylka, T. L. (2014). Appearance-based exercise motivation moderates the relationship between exercise frequency and positive body image. *Body image*, 11(2), 101–108. <https://doi.org/10.1016/j.bodyim.2014.01.003>
- Horan, J. J. (1996). Effects of computer-based cognitive restructuring on rationally mediated self-esteem. *Journal of Counseling Psychology*, 43(4), 371–375. <https://doi.org/10.1037/0022-0167.43.4.371>

Horney, K. (1950). *Neurosis and human growth; the struggle toward self-realization*. W. W. Norton.

Hrycaiko, D., & Martin, G. L. (1996). Applied research studies with single-subject designs: Why so few? *Journal of Applied Sport Psychology*, 8, 183–199.
<https://doi.org/10.1080/10413209608406476>

Hsu, L. G., & Sobkiewicz, T. A. (1991). Body image disturbance: Time to abandon the concept for eating disorders? *International Journal of Eating Disorders*, 10(1), 15–30. [https://doi.org/10.1002/1098-108X\(199101\)10:1<15::AID-EAT2260100103>3.0.CO;2-I](https://doi.org/10.1002/1098-108X(199101)10:1<15::AID-EAT2260100103>3.0.CO;2-I)
<http://dx.doi.org/10.1037/0033-2909.107.2.238>

Hu, L.-t., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, 3(4), 424–453. <https://doi.org/10.1037/1082-989X.3.4.424>

Hudson, J. I., Hiripi, E., Pope, H. G., Jr, & Kessler, R. C. (2007). The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. *Biological psychiatry*, 61(3), 348–358.
<https://doi.org/10.1016/j.biopsych.2006.03.040>

Hunt, S.D. (1991). *Modern Marketing Theory*. Cincinnati: South-Western Publishing.

Hyland, P., Shevlin, M., Adamson, G., & Boduszek, D. (2014c). Modelling the structure of the Attitudes and Belief Scale 2: Toward the development of an abbreviated version. *Cognitive Behaviour Therapy*, 43, 60-71.

Irving, L. M., Wall, M., Neumark-Sztainer, D., & Story, M. (2002). Steroid use among adolescents: Findings from Project EAT. *Journal of Adolescent Health*, 30(4,Suppl), 243–252. [https://doi.org/10.1016/S1054-139X\(01\)00414-1](https://doi.org/10.1016/S1054-139X(01)00414-1)

Ivarsson, A., & Andersen, M. B. (2016). What counts as "Evidence" in Evidence-Based practice? Searching for some fire behind all the smoke. *Journal of Sport Psychology in Action*, 7, 11-22.

Iversen, J., Linsen, S., Kwon, J. A, Maher, L. (2016.) *Needle Syringe Program National Minimum Data Collection*. Kirby Institute, UNSW Sydney.

Jackson, A.T., Madewell, A.N., & Kennison, S.M. (2011). The Relationship between Body Image and Job Satisfaction. *Journal of Organizational Psychology*, 11, 56-69.

Jakatdar, T. A., Cash, T. F., & Engle, E. K. (2006). Body-image thought processes: The development and initial validation of the Assessment of Body-Image Cognitive Distortions. *Body image*, 3(4), 325–333.
<https://doi.org/10.1016/j.bodyim.2006.09.001>

Janet, P. (1889). *L'Automatisme psychologique* Félix Alcan, Paris (Reprint: Société Pierre Janet, Paris, 1973).

Jarry, J. L., & Ip, K. (2005). The effectiveness of stand-alone cognitive-behavioural therapy for body image: a meta-analysis. *Body image*, 2(4), 317–331.

<https://doi.org/10.1016/j.bodyim.2005.10.001>

Johnson, B.R., Onwuegbuzie, A.J., Turner, L.A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1, 112–133.
doi: 10.1177/1558689806298224.

Johnson, C., Burke, C., Brinkman, S., & Wade, T. (2017). A randomized controlled evaluation of a secondary school mindfulness program for early adolescents: Do we have the recipe right yet? *Behaviour Research and Therapy*, 99, 37–46. <https://doi.org/10.1016/j.brat.2017.09.001>

Jones, J., & Trower, P. (2004). Irrational and evaluative beliefs in individuals with anger disorder. *Journal of Rational Emotive & Cognitive Behavior Therapy*, 22(3), 153–169

Jones, R. (1968). A factored measure of Ellis' irrational beliefs system with personality maladjustment correlates. *Dissertation Abstracts International*, 29 (II-B), 4379–4380. (University Microfilms No. 69-6443, 1969)

Jöreskog, K.G. & Sörbom, D. (2018). *LISREL 10 for Windows* [Computer software]. Skokie, IL: Scientific Software International, Inc.

Kassinove, H., & DiGiuseppe, R. (1975). *Rational role reversal*. *Rational Living*, 10(1), 44–45.

Kavanagh, E., Rhind, D., & Gordon-Thomson, G. (2021). *Duties of care and welfare practices*. In R. Arnold & D. Fletcher (Eds.), *Stress, well-being, and performance in sport* (pp. 313–331). Routledge.

Kvale, S. (1995). The Social Construction of Validity. *Qualitative Inquiry*, 1(1), 19–40.
<https://doi.org/10.1177/107780049500100103>

Kazdin, A. (1982). *Single-case experimental designs*. In P. C. Kendall & J. N. Butcher (Eds.), *Handbook of Research Methods in Clinical Psychology* (pp. 461–490). New York: Wiley.

Kern, M., Waters, L., Alder, A., & White, M. (2014). Assessing employee wellbeing in schools using a multifaceted approach: Associations with physical health, life satisfaction and professional thriving. *Psychology*, 5(6), 500–513

Kessler, R. C., Chiu, W. T., Demler, O., Merikangas, K. R., & Walters, E. E. (2005). Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of general psychiatry*, 62(6), 617–627.
<https://doi.org/10.1001/archpsyc.62.6.617>

Kilpela, L. S., Blomquist, K., Verzijl, C., Wilfred, S., Beyl, R., & Becker, C. B. (2016). The body project 4 all: A pilot randomized controlled trial of a mixed-gender dissonance-

based body image program. *The International journal of eating disorders*, 49(6), 591–602. <https://doi.org/10.1002/eat.22562>

Kinugasa, T., Cerin, E., & Hooper, S. (2004). Single-subject research designs and data analyses for assessing elite athletes' conditioning. *Sports Medicine*, 34, 1035–1050.

Kline, R. B. (2005). *Principles and practice of structural equation modeling*. New York: The Guilford press.

Kline, R.B. (2010). *Principles and Practice of Structural Equation Modeling*. The Guilford Press, New York.

Kling, J., Kwakkenbos, L., Diedrichs, P. C., Rumsey, N., Frisén, A., Brandão, M. P., Silva, A. G., Dooley, B., Rodgers, R. F., & Fitzgerald, A. (2019). Systematic review of body image measures. *Body image*, 30, 170–211.
<https://doi.org/10.1016/j.bodyim.2019.06.006>

Koo, T. K., & Li, M. Y. (2016). A Guideline of Selecting and Reporting Intraclass Correlation Coefficients for Reliability Research. *Journal of chiropractic medicine*, 15(2), 155–163. <https://doi.org/10.1016/j.jcm.2016.02.012>

Korzybski, A. (1933). *Science and sanity. An introduction to non-Aristotelian systems and general semantics*. International Non-Aristotelian Libr.

- Kotler, L., Devlin, B., Davies, M., Walsh, B.T. (2003) An open trial of fluoxetine in adolescents with bulimia nervosa. *Journal of Child and Adolescent Psychopharmacology*, 13, 329–325.
- Kratochwill, T.R., Levin, J.R. (2010). Enhancing the Scientific Credibility of Single-Case Intervention Research: Randomization to the Rescue. *Psychological Methods*, 15, 124–144.
- Kratochwill, T. R., & Levin, J. R. (Eds.). (2014). *Single-case intervention research: Methodological and statistical advances*. American Psychological Association. <https://doi.org/10.1037/14376-000>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: validity of a brief depression severity measure. *Journal of general internal medicine*, 16(9), 606–613.
<https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- Krosnick, J.A., & Presser, S. (2009). *Question and questionnaire design*. In: Wright JD, Marsden PV, editors. *Handbook of Survey Research*. San Diego, CA: 263–314.
- Krosnick JA. (2018). *Questionnaire design*. In: Vannette DL, Krosnick JA, editors. *The Palgrave Handbook of Survey Research*. Cham: Palgrave Macmillan. 439–55.
- Larner C., Morris T., & Marchant D. (2007). The management of directional trait anxiety in competitive sports with rational-emotive behavior therapy. *Paper Presented at the European Congress of Sport Psychology*.

- Lather, P. (1986). Issues of validity in openly ideological research: Between a rock and a soft place. *Interchange*, 17(4), 63–84. <https://doi.org/10.1007/BF01807017>
- Law, M. (2004). *Outcome measures rating form guidelines*. Can Child Centre for Childhood Disability Research, McMaster University, Hamilton, Canada
- Lazarus, R. S. (1991). *Emotion and adaptation*. Oxford University Press
- Lazarus, R. S., & Smith, C. A. (1988). Knowledge and appraisal in the cognition-emotion relationship. *Cognition and Emotion*, 2(4), 281–300. <https://doi.org/10.1080/02699938808412701>
- Le Grange, D., Lock, J., Loeb, K., & Nicholls, D. (2010). Academy for Eating Disorders position paper: The role of the family in eating disorders. *The International Journal of Eating Disorders*, 43(11), 1–5. [http:// dx.doi.org/10.1002/eat.20751](http://dx.doi.org/10.1002/eat.20751)
- Leary, M. R., & Kowalski, R. M. (1990). Impression management: A literature review and two-component model. *Psychological Bulletin*, 107(1), 34–47. <https://doi.org/10.1037/0033-2909.107.1.34>
- Leary, M. R., & Kowalski, R. M. (1995). The self-presentation model of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope, & F. R. Schneier (Eds.), *Social phobia: Diagnosis, assessment, and treatment* (pp. 94–112). The Guilford Press.

Leiblum, S. R., & Rosen, R. C. (Eds.). (2000). *Principles and practice of sex therapy* (3rd ed.). New York: Guilford Press.

Leone, J. E., Fetro, J. V., Kittleson, M., Welshimer, K. J., Partridge, J. A., & Robertson, S. L. (2011). Predictors of adolescent male body image dissatisfaction: implications for negative health practices and consequences for school health from a regionally representative sample. *The Journal of school health, 81*(4), 174–184.
<https://doi.org/10.1111/j.1746-1561.2010.00577.x>

Levine, M.P., & Smolak, L. (2006). *The Prevention of Eating Problems and Eating Disorders: Theory, Research, and Practice*. Mahwah, NJ: Lawrence Erlbaum Associates.

Lewer, M., Bauer, A., Hartmann, A. S., & Vocks, S. (2017). Different Facets of Body Image Disturbance in Binge Eating Disorder: A Review. *Nutrients, 9*(12), 1294.
<https://doi.org/10.3390/nu9121294>

Lipsky, M., Kassino, H., & Miller, N. (1980). Effects of rational-emotive therapy, rational role reversal and rational-emotive imagery on the emotional adjustment of community mental health center patients. *Journal of Consulting and Clinical Psychology, 48*, 366–374.

Lobo, M. A., Moevaert, M., Baraldi Cunha, A., Babik, I. (2017). Single-Case Design, Analysis, and Quality Assessment for Intervention Research. *Journal of Neurologic Physical Therapy, 41* (3), 187-197.

- Lohr, J. M., & Parkinson, D. L. (1989). Irrational beliefs and bulimia symptoms. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 7(4), 253–262. <https://doi.org/10.1007/BF01073811>
- Lukat, J., Margraf, J., Lutz, R., van der Veld, W. M., & Becker, E. S. (2016). Psychometric properties of the Positive Mental Health Scale (PMH-scale). *BMC Psychology*, 4, Article 8.
- Lupton, D. (2018) *Fat* (revised 2nd edition). London: Routledge.
- Lydecker J.A. (2015). *Body Image Avoidance Questionnaire (BIAQ)*. In: Wade T. (eds) Encyclopedia of Feeding and Eating Disorders. Springer, Singapore.
https://doi.org/10.1007/978-981-287-087-2_130-1
- Lyons, L. C., & Woods, P. J. (1991). The efficacy of rational-emotive therapy: A quantitative review of the outcome research. *Clinical Psychology Review*, 11(4), 357–369. [https://doi.org/10.1016/0272-7358\(91\)90113-9](https://doi.org/10.1016/0272-7358(91)90113-9)
- Shaw, M.E., & Wright, J. M.(1967). “*Scales for the Measurement of Attitudes*,”. McGraw-Hill, New York
- Macavei B. (2005). The role of irrational beliefs in the rational emotive behavioral theory of depression. *Journal of Cognitive Psychotherapy*, 5, 73–81

- Maccoby, E. E. (2000). Parenting and its effects on children: On reading and misreading behavior genetics. *Annual Review of Psychology*, 51(1), 1–27. <https://doi.org/10.1146/annurev.psych.51.1.1>
- MacLaren, C., Doyle, K.A., & Diguseppe, R. (2016). *Rational Emotive Behavior Therapy (REBT) Theory and Practice*.
- Malhi, G. S., & Mann, J. J. (2018). Depression. *Lancet (London, England)*, 392(10161), 2299–2312. [https://doi.org/10.1016/S0140-6736\(18\)31948-2](https://doi.org/10.1016/S0140-6736(18)31948-2)
- Malouff, J. M., & Schutte, N. S. (1986). Development and validation of a measure of irrational belief. *Journal of Consulting and Clinical Psychology*, 54, 860–862.
- Mann, M., Hosman, C. M., Schaalma, H. P., & de Vries, N. K. (2004). Self-esteem in a broad-spectrum approach for mental health promotion. *Health education research*, 19(4), 357–372. <https://doi.org/10.1093/her/cyg041>
- Margolis, S. E., & Orsillo, S. M. (2016). Acceptance and Body Dissatisfaction: Examining the Efficacy of a Brief Acceptance Based Intervention for Body Dissatisfaction in College Women. *Behavioural and cognitive psychotherapy*, 44(4), 482–492. <https://doi.org/10.1017/S1352465816000072>
- Martin, R. C., & Dahlen, E. R. (2004). Irrational Beliefs and the Experience and Expression of Anger. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 22(1), 3–20. <https://doi.org/10.1023/B:JORE.00000011574.44362.8f>

Martins, Y., Tiggemann, M., & Kirkbride, A. (2007). Those speedos become them: the role of self-objectification in gay and heterosexual men's body image. *Personality & social psychology bulletin*, 33(5), 634–647.

<https://doi.org/10.1177/0146167206297403>

Mayhew, R., & Edelman, R. J. (1989). Self-esteem, irrational beliefs and coping strategies in relation to eating problems in a non-clinical population. *Personality and Individual Differences*, 10(5), 581–584. [https://doi.org/10.1016/0191-8869\(89\)90042-1](https://doi.org/10.1016/0191-8869(89)90042-1)

Mayville, S. B., Williamson, D. A., White, M. A., Netemeyer, R. G., & Drab, D. L. (2002). Development of the Muscle Appearance Satisfaction Scale: a self-report measure for the assessment of muscle dysmorphia symptoms. *Assessment*, 9(4), 351–360.

<https://doi.org/10.1177/1073191102238156>

Mazzeo, S. E. (1999). Modification of an existing measure of body image preoccupation and its relationship to disordered eating in female college students. *Journal of Counseling Psychology*, 46(1), 42–50. <https://doi.org/10.1037/0022-0167.46.1.42>

Mazzeo, S. E., Lydecker, J., Harney, M., Palmberg, A. A., Kelly, N. R., Gow, R. W., Bean, M. K., Thornton, L. M., Tanofsky-Kraff, M., Bulik, C. M., Latzer, Y., & Stern, M. (2016). Development and preliminary effectiveness of an innovative treatment for binge eating in racially diverse adolescent girls. *Eating behaviors*, 22, 199–205.

<https://doi.org/10.1016/j.eatbeh.2016.06.014>

- McCabe, M. P., & Ricciardelli, L. A. (2004). Body image dissatisfaction among males across the lifespan: a review of past literature. *Journal of psychosomatic research*, 56(6), 675–685. [https://doi.org/10.1016/S0022-3999\(03\)00129-6](https://doi.org/10.1016/S0022-3999(03)00129-6)
- McCarthy, M. (1990). The thin ideal, depression and eating disorders in women. *Behaviour research and therapy*, 28(3), 205–215. [https://doi.org/10.1016/0005-7967\(90\)90003-2](https://doi.org/10.1016/0005-7967(90)90003-2)
- McCoach, D.B., Gable, R.K., & Madura, J.P. (2013). *Instrument development in the affective domain: School and corporate applications*. 3rd. New York: Springer.
- McCrae, R. R., & Costa, P. T., Jr. (1996). *Toward a new generation of personality theories: Theoretical contexts for the five-factor model*. In J. S. Wiggins (Ed.), *The five-factor model of personality: Theoretical perspectives* (pp. 51–87). Guilford Press.
- McCreary, D. R., & Sasse, D. K. (2000). An exploration of the drive for muscularity in adolescent boys and girls. *Journal of American College Health*, 48, 297–304. <https://doi.org/10.1080/07448480009596271>
- McCreary, D. R., & Saucier, D. M. (2009). Drive for muscularity, body comparison, and social physique anxiety in men and women. *Body Image*, 6, 24–30.
- McCreary, D. R., Sasse, D. K., Saucier, D. M., & Dorsch, K. D. (2004). Measuring the drive for muscularity: Factorial validity of the Drive for Muscularity Scale in men and women. *Psychology of Men and Masculinity*, 5, 49–58

- McFarland, M. B., & Kaminski, P. L. (2009). Men, muscles, and mood: The relationship between self-concept, dysphoria, and body image disturbances. *Eating Behaviors*, 10(1), 68–70. <https://doi.org/10.1016/j.eatbeh.2008.10.007>
- McGraw, K. O., & Wong, S. P. (1996). Forming inferences about some intraclass correlation coefficients. *Psychological Methods*, 1(1), 30–46. <https://doi.org/10.1037/1082-989X.1.1.30>
- McKinley, N.M., & Hyde, J.S. (1996). The Objectified Body Consciousness Scale. *Psychology of Women Quarterly*, 20, 181 - 215.
- McLean, S. A., Paxton, S. J., & Wertheim, E. H. (2016). The role of media literacy in body dissatisfaction and disordered eating: A systematic review. *Body image*, 19, 9–23. <https://doi.org/10.1016/j.bodyim.2016.08.002>
- McLean, S. A., Wertheim, E. H., Masters, J., & Paxton, S. J. (2017). A pilot evaluation of a social media literacy intervention to reduce risk factors for eating disorders. *The International journal of eating disorders*, 50(7), 847–851. <https://doi.org/10.1002/eat.22708>
- McMahon, J. (2011). REBT: Past, present, and future: The views of the oldest living life member of the Institute. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 29(4), 228–238. <https://doi.org/10.1007/s10942-011-0145-1>
- McPhail, S.M. (2007). *Alternative Validation Strategies: Developing New and Leveraging Existing Validity Evidence*. San Francisco, CA: John Wiley & Sons, Inc.

- Meehl, P.E., & Hathaway, S.R. (1946). The K factor as a suppressor variable in the Minnesota Multiphasic Personality Inventory. *The Journal of applied psychology*, 30, 525-64 .
- Mehak, A., & Racine, S.E. (2020). Understanding "feeling fat" and its underlying mechanisms: The importance of multimethod measurement. *The International journal of eating disorders*, 53, 1400-1404. <https://doi.org/10.1002/eat.23336>
- Menezes, G.B., Fontenelle, L.F., & Versiani, M. (2005). Early-onset social anxiety disorder in adults: Clinical and therapeutic features. *Revista Brasileira de Psiquiatria*, 27, 32–36.
- Mental Health Foundation. (2019). Body Image: How we think and feel about our bodies. London: Mental Health Foundation
- Mersch, P. P., Emmelkamp, P. M., Bögels, S. M., & van der Sleen, J. (1989). Social phobia: individual response patterns and the effects of behavioral and cognitive interventions. *Behaviour research and therapy*, 27(4), 421–434. [https://doi.org/10.1016/0005-7967\(89\)90013-2](https://doi.org/10.1016/0005-7967(89)90013-2)
- Messick, S. (1995). Validity of psychological assessment: Validation of inferences from persons' responses and performances as scientific inquiry into score meaning. *American Psychologist*, 50(9), 741–749. <https://doi.org/10.1037/0003-066X.50.9.741>

- Mogase, C., Stefan, S., & David, D. (2013). How do we measure rational and irrational beliefs? The development of Rational and Irrational Beliefs Scale (RAIBS) - a new theory driven measure. *Journal of Cognitive and Behavioral Psychotherapies*, 13, 529-546.
- Mokkink, L. B., Terwee, C. B., Patrick, D. L., Alonso, J., Stratford, P. W., Knol, D. L., Bouter, L. M., & de Vet, H. C. (2010). The COSMIN checklist for assessing the methodological quality of studies on measurement properties of health status measurement instruments: an international Delphi study. *Quality of life research : an international journal of quality of life aspects of treatment, care and rehabilitation*, 19(4), 539–549. <https://doi.org/10.1007/s11136-010-9606-8>
- Moller, A., Bothma, M. E. (2001). Body Dissatisfaction And Irrational Beliefs. *Psychological Reports*, 88, 423-430.
- Montgomery, G. H., David, D., Diloranzo, T. A., & Schnur, J. B. (2007). Response Expectancies And Irrational Beliefs Predict Exam-Related Distress. *Journal of rational-emotive and cognitive-behavior therapy : RET*, 25(1), 17–34. <https://doi.org/10.1007/s10942-006-0029-y>
- More, K. R., Phillips, L. A., & Eisenberg Colman, M. H. (2019). Evaluating the potential roles of body dissatisfaction in exercise avoidance. *Body image*, 28, 110–114. <https://doi.org/10.1016/j.bodyim.2019.01.003>

Morgado, F.F.R., Meireles, J.F.F., Neves, C.M., Amaral, A.C.S., & Ferreira, M.E.C . (2018).

Scale development: ten main limitations and recommendations to improve future research practices. *Psicol Reflex E Crítica*, 30, 3. doi: 10.1186/s41155-016-0057-1

Morgan, D. L. (2007). Paradigms Lost and Pragmatism Regained: Methodological

Implications of Combining Qualitative and Quantitative Methods. *Journal of Mixed Methods Research*, 1(1), 48–76. <https://doi.org/10.1177/2345678906292462>

Morin, A.J.S., Arens, A.K., & Marsh, H.W. (2016). A bifactor exploratory structural equation

modeling framework for the identification of distinct sources of construct relevant psychometric multidimensionality. *Structural Equation Modeling: A Multidisciplinary Journal*, 23, 116–39. doi: 10.1080/10705511.2014.961800

Mosley, P. E. (2009). Bigorexia: bodybuilding and muscle dysmorphia. *European Eating Disorder Review*, 17(3),191–198.

Mountjoy, M., Sundgot-Borgen, J., Burke, L., Carter, S., Constantini, N., Lebrun, C., Meyer,

N., Sherman, R., Steffen, K., Budgett, R., & Ljungqvist, A. (2014). The IOC consensus statement: beyond the Female Athlete Triad--Relative Energy Deficiency in Sport (RED-S). *British journal of sports medicine*, 48(7), 491–497.
<https://doi.org/10.1136/bjsports-2014-093502>

Murphy, R., Straebl, S., Cooper, Z., Fairburn, C. (2010). Cognitive Behavioral Therapy for

Eating Disorders. *Psychiatry clinical north America*, 33(3), 611-627
[https://doi: 10.1016/j.psc.2010.04.004](https://doi.org/10.1016/j.psc.2010.04.004)

Murray, S. (2016). *The fat female body*, London: Palgrave. ISBN: 978-0-230-58441-9

Murray, S.B., Griffiths, S. (2015). Adolescent muscle dysmorphia and family-based treatment: a case report. *Clinical Child Psychological Psychiatry*, 20(2),324–330.

Neenan, M., & Palmer, S. (2011). Cognitive Behavioural Coaching in Practice: An Evidence Based Approach (1st ed.). Routledge. <https://doi.org/10.4324/9780203144404>

Neil, R., Hanton, S., & Mellalieu, S. D. (2013). Seeing things in a different light: *Journal of Applied Sport Psychology*, 25, 106-130.
<https://doi.org/10.1080/10413200.2012.658901>

Nicastro, R., Luskin, F., M., Raps, C., & Benisovich, S. (1999). The relationship of imperatives and self-efficacy to indices of social anxiety. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 17, 249–264. 10.1023/A:1023096713512

Nolan, L. J., & Jenkins, S. M. (2019). Food Addiction Is Associated with Irrational Beliefs via Trait Anxiety and Emotional Eating. *Nutrients*, 11(8), 1711.
<https://doi.org/10.3390/nu11081711>

Normand, M.P., (2016) Less Is More: Psychologists Can Learn More by Studying Fewer People. *Frontiers in Psychology*. Retrieved from:
<https://www.frontiersin.org/articles/10.3389/fpsyg.2016.00934/full>

- Nowell, C., & Ricciardelli, L. A. (2008). Appearance-based comments, body dissatisfaction and drive for muscularity in males. *Body Image*, 5(4), 337–345. <https://doi.org/10.1016/j.bodyim.2008.06.002>
- Nunes, M., Barros, F., Olinto, M. A., Camey, S., & Mari J. (2003). Prevalence of abnormal eating behaviours and inappropriate methods of weight control in young women from Brazil: a population-based study. *Eating and Weight Disorders*, 8, 100–106. 10.1007/bf03324998
- Nunnally, J.C. (1978). *Psychometric Theory*. New York, NY: McGraw-Hill.
- Obiageli, A. (2015). Management of negative self-image using rational emotive and behavioural therapy and assertiveness training . *ASEAN Journal of Psychiatry*, 16
- Olivardia, R. (2001). Mirror, mirror on the wall, who's the largest of them all? the features and phenomenology of muscle dysmorphia. *Harvard Review of Psychiatry*, 9(5), 254-259.
- Olivardia, R., Pope, H. R., Hudson, J. L. (2000). Muscle dysmorphia in male weightlifters: a case-control study. *American Journal of Psychiatry*, 157(8), 1291-6.
- Oltean, H. R., & David, D. O. (2018). A meta-analysis of the relationship between rational beliefs and psychological distress. *Journal of clinical psychology*, 74(6), 883–895. <https://doi.org/10.1002/jclp.22562>

- Oltean, H. R., & David, D. O. (2018). A meta-analysis of the relationship between rational beliefs and psychological distress. *Journal of clinical psychology*, 74(6), 883–895.
<https://doi.org/10.1002/jclp.22562>
- Oltean, H. R., Hyland, P., Vallières, F., & David, D. O. (2017). An Empirical Assessment of REBT Models of Psychopathology and Psychological Health in the Prediction of Anxiety and Depression Symptoms. *Behavioural and cognitive psychotherapy*, 45(6), 600–615. <https://doi.org/10.1017/S1352465817000133>
- Onuigbo, L. N., Onyishi, C. N., & Eseadi, C. (2020). Clinical benefits of rational-emotive stress management therapy for job burnout and dysfunctional distress of special education teachers. *World journal of clinical cases*, 8(12), 2438–2447.
<https://doi.org/10.12998/wjcc.v8.i12.2438>
- Onwuegbuzie, A. J., & Johnson, R. B. (2006). The Validity Issue in Mixed Research. *Research in the Schools*, 13, 48-63.
- Onwuegbuzie, A.J., Johnson, R.B. & Collins, K.M.T. Assessing legitimation in mixed research: a new framework. *Quality & Quantity*, 45, 1253–1271
<https://doi.org/10.1007/s11135-009-9289-9>
- Osberg, T. M., Poland, D., Aguayo, G., & MacDougall, S. (2008). The Irrational Food Beliefs Scale: development and validation. *Eating behaviors*, 9(1), 25–40.
<https://doi.org/10.1016/j.eatbeh.2007.02.001>

- Ottenbacher, K. J. (1986). *Evaluating Clinical Change: Strategies for Occupational and Physical Therapists*. Baltimore: Williams & Wilkins.
- Outar, L., Turner, M. J., Wood, A. G., & Lowry, R. (2018). “I need to go to the gym”: Exploring the use of rational emotive behaviour therapy upon exercise addiction, irrational and rational beliefs. *Performance Enhancement & Health*, 6(2), 82–93.
<https://doi.org/10.1016/j.peh.2018.05.001>
- Page, J., & Thelwell, R. (2013). The value of social validation in single case methods in sport and exercise psychology, *Journal of Applied Sport Psychology*, 25, 61-71.
<https://doi.org/10.1080/10413200.2012.663859>
- Palan, S. & Schitter, C. (2018). Prolific.ac—A subject pool for online experiments. *Journal of Behavioral and Experimental Finance*, 17, 22-27
- Pallister, E., & Waller, G. (2008). Anxiety in the eating disorders: understanding the overlap. *Clinical psychology review*, 28(3), 366–386.
<https://doi.org/10.1016/j.cpr.2007.07.001>
- Palmer, S., & Whybrow, A. (2019). *Handbook of coaching psychology: A guide for practitioners* (2nd ed.). Abingdon, Oxon: Routledge.
- Palmer, S. (2009). Rational Coaching: A cognitive behavioural approach. *The Coaching Psychologist*, 5, 1, 12-18.

- Papageorgiou C., Panagiotakos D. B., Pitsavos C., Tsetsekou E., Kontoangelos K., & Stefanadis C. (2006). Association between plasma inflammatory markers and irrational beliefs; the ATTICA epidemiological study. *Progress in Neuro-Psychopharmacology & Biological Psychiatry*, 30, 1496–1503.
[10.1016/j.pnpbp.2006.05.018](https://doi.org/10.1016/j.pnpbp.2006.05.018)
- Parker, R., & Vannest, K. (2009). An improved effect size for single-case research: nonoverlap of all pairs. *Behavior therapy*, 40 (4), 357-367.
- Parsonson, B. S., & Baer, D. M. (1978). *The analysis and presentation of graphic data*. In T. R. Kratochwill (Ed.), *Single-subject research: Strategies for evaluating change* (pp. 101-165). New York: Academic Press.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Patton, M.Q. (2006). Foreword: Trends and issues as context. *Res. Sch.* 13(1)
- Pearson, C., & Gleaves, D. (2006). The multiple dimensions of perfectionism and their relation with eating disorder features. *Personality and Individual Differences*, 41, 225–235. [10.1016/j.paid.2006.01.013](https://doi.org/10.1016/j.paid.2006.01.013)
- Pelusi, N. M. (2003). Evolutionary psychology and rational emotive behavior therapy. In W. Dryden (Ed.), *Rational emotive behaviour therapy: Theoretical developments* (pp. 200–227). Brunner-Routledge.

Perls, F.S. (1969) *Gestalt Therapy Verbatim*. Real People Press, Lafayette

Perugi, G., Akiskal, H.S, Giannotti, D., Frare, F., Di Vaio, S., & Cassano, G.B. (1997).

Gender-related differences in body dysmorphic disorder (dysmorphophobia) *The Journal of Nervous and Mental Disease*, 185, 578–582

Phelan, S. M., Burgess, D. J., Yeazel, M. W., Hellerstedt, W. L., Griffin, J. M., & van Ryn,

M. (2015). Impact of weight bias and stigma on quality of care and outcomes for patients with obesity. *Obesity reviews : an official journal of the International Association for the Study of Obesity*, 16(4), 319–326.

<https://doi.org/10.1111/obr.12266>

Piran, N. (2017). *Journeys of embodiment at the intersection of body and culture: The developmental theory of embodiment*. Elsevier Academic Press.

Prichard, I., Kavanagh, E., Mulgrew, K.E., Lim, M.S., & Tiggemann, M. (2020). The effect of Instagram #fitspiration images on young women's mood, body image, and exercise behaviour. *Body image*, 33, 1-6 .

Hyland, P., Shevlin, M., Adamson, G., & Boduszek, D. (2014). Irrational Beliefs in Posttraumatic Stress Responses: A Rational Emotive Behavior Therapy Approach. *Journal of Loss and Trauma*, 20 (2), 171-188. 10.1080/15325024.2013.839772,)

Phillips, K.A, Wilhelm, S., Koran, L.M., Didie, E.R., Fallon, B.A, Feusner, J., & Stein, D.J. (2010). Body dysmorphic disorder: some key issues for DSM-V. *Depression and Anxiety*. 2010;27:573–591.

Phillips KA. Psychosis in body dysmorphic disorder. *Journal of Psychiatric Research*. 2004;38:63–72.

Phillips, K. A., & Stout, R. L. (2006). Associations in the longitudinal course of body dysmorphic disorder with major depression, obsessive-compulsive disorder, and social phobia. *Journal of psychiatric research*, 40(4), 360–369.
<https://doi.org/10.1016/j.jpsychires.2005.10.001>

Pinker, S. (1994). *The language instinct*. William Morrow & Co.

Polit, D. F. (2014). Getting serious about test-retest reliability: a critique of retest research and some recommendations. *Quality of Life Research*, 23(6), 1713-1720.

Pop C. L. (2017). Association between Body Mass Index and Self Body Image Perception. *Iranian journal of public health*, 46(12), 1744–1745.

Pope, C. G., Pope, H. G., Menard, W., Fay, C., Olivardia, R., & Phillips, K. A. (2005). Clinical features of muscle dysmorphia among males with body dysmorphic disorder. *Body image*, 2(4), 395–400. <https://doi.org/10.1016/j.bodyim.2005.09.001>

- Pope, H. G., Gruber, A. J., Mangweth, B., Bureau, B., DeCol, C., Jouvent, R., Hudson, J. I. (2000). Body image perception among men in three countries. *American journal of psychiatry*, 157, 1297-301.
- Pope, H. G., Gruber, A., Choi, P., Olivardia, R., & Phillips, K. (1997). An underrecognized form of body dysmorphic disorder. *Psychosomatics*, 38, 548–557.
- Pope, H. G., Katz, D. L., & Hudson, J. L. (1993). “Anorexia Nervosa And ‘reverse Anorexia’ among Male Bodybuilders.” *Comprehensive Psychiatry*, 34, 406–9.
- Pope, H. G., Phillips, K. A., & Olivardia, R. (2000). *The Adonis complex: The secret crisis of male body obsession*. New York: Free Press.
- Popov, B., Jelić, D., Raković, S., & Matanović, J. (2018). Emotions And Work Burnout From The Rebt Perspective: A Short–Term Prospective Study. *Primenjena Psihologija*, 11(3), 365–384. <https://doi.org/10.19090/pp.2018.3.365-384>
- Popper, K. R. (1959). *The logic of scientific discovery*. Basic Books
- Porta, M. A. (2008). *Dictionary of Epidemiology*. New York, NY: Oxford University Press.
- Portney, L.G., & Watkins, M.P. (2000). *Foundations of clinical research; application to practice 2nd ed*. Julie Alexander; Upper Saddle River: 2000.

- Power, M., & Dalgleish, T. (1997). *Cognition and emotion: From order to disorder*. East Sussex, UK: Hove, Psychology Press.
- Preti, A., Rocchi, M. B., Sisti, D., Camboni, M. V., & Miotto, P. (2011). A comprehensive meta-analysis of the risk of suicide in eating disorders. *Acta psychiatrica Scandinavica*, 124(1), 6–17. <https://doi.org/10.1111/j.1600-0447.2010.01641.x>
- Puhl, R. M., & Heuer, C. A. (2009). The stigma of obesity: a review and update. *Obesity (Silver Spring, Md.)*, 17(5), 941–964. <https://doi.org/10.1038/oby.2008.636>
- Rakhkovskaya, L. M., & Warren, C. S. (2014). Ethnic identity, thin-ideal internalization, and eating pathology in ethnically diverse college women. *Body image*, 11(4), 438–445. <https://doi.org/10.1016/j.bodyim.2014.07.003>
- Ramanaiah, N. V., Heerboth, J. R., & Schill, T. R. (1987). *Measurement of irrational beliefs: A critical review*. In J. N. Butcher & C. D. Spielberger (Eds.), *Advances in personality assessment* (pp. 49–67). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia. *Behaviour research and therapy*, 35(8), 741–756. [https://doi.org/10.1016/s0005-7967\(97\)00022-3](https://doi.org/10.1016/s0005-7967(97)00022-3)
- Rawal, A., Park, R. J., & Williams, J. M. (2010). Rumination, experiential avoidance, and dysfunctional thinking in eating disorders. *Behaviour research and therapy*, 48(9), 851–859. <https://doi.org/10.1016/j.brat.2010.05.009>

- Raykov, T., & Marcoulides, G. A. (2011). *Introduction to psychometric theory*. Routledge/Taylor & Francis Group.
- Reas, D. L., Whisenhunt, B. L., Netemeyer, R., & Williamson, D. A. (2002). Development of the body checking questionnaire: a self-report measure of body checking behaviors. *The International journal of eating disorders*, 31(3), 324–333.
<https://doi.org/10.1002/eat.10012>
- Reed D., Thompson K., Brannick M., Sacco W. (1991) Development and validation of the Physical Appearance State and Trait Anxiety Scale (PASTAS). *Journal of Anxiety Disorders* 5, 323-332. [https://doi.org/10.1016/0887-6185\(91\)90032-O](https://doi.org/10.1016/0887-6185(91)90032-O) 10.1016/0887-6185(91)90032-O
- Reise, S. P., Morizot, J., & Hays, R. D. (2007). The role of the bifactor model in resolving dimensionality issues in health outcomes measures. *Quality of life research : an international journal of quality of life aspects of treatment, care and rehabilitation*, 16, 1, 19–31. <https://doi.org/10.1007/s11136-007-9183-7>
- Rice, S. M., Siegel, J. A., Libby, T., Graber, E., & Kourosh, A. S. (2021). Zooming into cosmetic procedures during the COVID-19 pandemic: The provider's perspective. *International journal of women's dermatology*, 7(2), 213–216.
<https://doi.org/10.1016/j.ijwd.2021.01.012>
- Richerson, P. J., and Boyd, R. (2005). *Not by genes alone: How culture transformed human evolution*. Chicago: University of Chicago Press.

Robb, H. B., & Warren, R. (1990). Irrational belief tests: New insights, new directions.

Journal of Cognitive Psychotherapy: An International Quarterly, 4, 303–311.

Rodgers, R. F., Franko, D. L., Lovering, M. E., Luk, S., Pernal, W., & Matsumoto, A. (2018).

Development and validation of the Female Muscularity Scale. *Sex Roles: A Journal of Research*, 78(1-2), 18–26. <https://doi.org/10.1007/s11199-017-0775-6>

Rodgers, R. F., Lowy, A. S., Halperin, D. M., & Franko, D. L. (2016). A Meta-Analysis

Examining the Influence of Pro-Eating Disorder Websites on Body Image and Eating Pathology. *European eating disorders review : the journal of the Eating Disorders Association*, 24(1), 3–8. <https://doi.org/10.1002/erv.2390>

Rodgers, R., Chabrol, H., & Paxton, S. J. (2011). An exploration of the tripartite influence model of body dissatisfaction and disordered eating among Australian and French college women. *Body image*, 8(3), 208–215.

<https://doi.org/10.1016/j.bodyim.2011.04.009>

Rogers, C. B., Taylor, J. J., Jafari, N., & Webb, J. B. (2019). "No seconds for you!":

Exploring a sociocultural model of fat-talking in the presence of family involving restrictive/critical caregiver eating messages, relational body image, and anti-fat attitudes in college women. *Body image*, 30, 56–63.

<https://doi.org/10.1016/j.bodyim.2019.05.004>

- Rogers, C. B., Webb, J. B., & Jafari, N. (2018). A systematic review of the roles of body image flexibility as correlate, moderator, mediator, and in intervention science (2011-2018). *Body image*, 27, 43–60. <https://doi.org/10.1016/j.bodyim.2018.08.003>
- Rogers, C. R. (1951). *Client-centered therapy; its current practice, implications, and theory*. Houghton Mifflin.
- Rogers, C. R. (1961) *On Becoming a Person: A Therapist's View of Psychotherapy*. Houghton Mifflin, Boston.
- Rothblum, E. (2021). Fat Studies: An interdisciplinary journal of body weight and society, available online at <https://www.tandfonline.com/action/journalInformation?>
- Rousson V, Gasser T, Seifert B. (2002). Assessing intrarater, interrater and test– retest reliability of continuous measurements. *Stat Med*, 21, 3431–46. doi: 10.1002/sim.1253
- Ruderman, A. J. (1985). Restraint and irrational cognitions. *Behaviour Research and Therapy*, 23(5), 557–561. [https://doi.org/10.1016/0005-7967\(85\)90103-2](https://doi.org/10.1016/0005-7967(85)90103-2)
- Russell G. (1979). Bulimia nervosa: an ominous variant of anorexia nervosa. *Psychological medicine*, 9(3), 429–448. <https://doi.org/10.1017/s0033291700031974>
- Russell, T. G. (1965). *Educational Administration Quarterly*, 1(1), 42–49. <https://doi.org/10.1177/0013161X6500100105>

Ruth, W. (1992). Irrational thinking in humans: an evolutionary proposal for Ellis' genetic postulate. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 10

Sabik, N. J., Falat, J., & Magagnos, J. (2020). When self-worth depends on social media feedback: Associations with psychological well-being. *Sex Roles*, 82(7–8), 411–421. <https://doi.org/10.1007/s11199-019-01062-8>

Sabiston, C. M., Sedgwick, W. A., Crocker, P. R. E., Kowalski, K. C., & Mack, D. E. (2007). Social physique anxiety in adolescence: an exploration of influences, coping strategies, and health behaviors. *Journal of Adolescent Research*, 22, 78-101.

Sælid, G. A., & Nordahl, H. M. (2017). Rational emotive behaviour therapy in high schools to educate in mental health and empower youth health. A randomized controlled study of a brief intervention. *Cognitive Behaviour Therapy*, 46(3), 196–210.

Sanson-Fisher, R. W., Bonevski, B., Green, L. W., & D'Este, C. (2007). Limitations of the randomized controlled trial in evaluating population-based health interventions. *American journal of preventive medicine*, 33(2), 155–161.
<https://doi.org/10.1016/j.amepre.2007.04.007>

Santos Filho, C. A., Tirico, P. P., Stefano, S. C., Touyz, S. W., & Claudino, A. M. (2016). Systematic review of the diagnostic category muscle dysmorphia. *The Australian and New Zealand journal of psychiatry*, 50(4), 322–333.
<https://doi.org/10.1177/0004867415614106>

- Schaal, K., Tafflet, M., Nassif, H., Thibault, V., Pichard, C., Alcotte, M., Guillet, T., El Helou, N., Berthelot, G., Simon, S., & Toussaint, J. F. (2011). Psychological balance in high level athletes: gender-based differences and sport-specific patterns. *PloS one*, 6(5), e19007. <https://doi.org/10.1371/journal.pone.0019007>
- Schaefer, J. D., Hamdi, N. R., Malone, S. M., Vrieze, S., Wilson, S., McGue, M., & Iacono, W. G. (2021). Associations between adolescent cannabis use and young-adult functioning in three longitudinal twin studies. *Proceedings of the National Academy of Sciences of the United States of America*, 118(14), e2013180118. <https://doi.org/10.1073/pnas.2013180118>
- Schaefer, L. M., Burke, N. L., & Thompson, J. K. (2019). Thin-ideal internalization: How much is too much?. *Eating and weight disorders : EWD*, 24(5), 933–937. <https://doi.org/10.1007/s40519-018-0498-x>
- Schinka, J.A., Velicer, W.F., Weiner, I.R. (2012). Handbook of Psychology, Vol. 2, Research Methods in Psychology. Hoboken, NJ: John Wiley & Sons, Inc.
- Schleicher, D. J., Hansen, S. D., & Fox, K. E. (2011). Job attitudes and work values. APA handbook of industrial and organizational psychology, 3.–189 <https://doi.org/10.1037/12171-004>
- Schneider, K. J. (2015). Rediscovering awe: A new front in humanistic psychology, psychotherapy, and society. Handbook of humanistic psychology, 73–81

- Schneider, C., Agthe, M., Yanagida, T., Voracek, M., Hennig-Fast, K. (2017). Effects of muscle dysmorphia, social comparisons and body schema priming on desire for social interaction: an experimental approach. *BMC Psychology*, 5, 19
<https://doi.org/10.1186/s40359-017-0189-9>
- Schwerin, M. J., Corcoran, K. J. (2006). A Multimethod Examination of the Male Anabolic Steroid User. *Journal of applied social psychology*, 26, 211- 217.
- Sedikides, C., & Gregg, A. P. (2003). *Portraits of the self*. In M. A. Hogg & J. Cooper (Eds.), *Sage handbook of social psychology* (pp. 110–138). London: Sage Publications.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55(1), 5–14. <https://doi.org/10.1037/0003-066X.55.1.5>
- Seligman, M. E. (2012). *Flourish: A visionary new understanding of happiness and well-being*. Atria Paperback
- Shafran, R., Teachman, B. A., Kerry, S., & Rachman, S. (1999). A cognitive distortion associated with eating disorders: Thought-shape fusion. *British Journal of Clinical Psychology*, 38, 167–179.
- Shontz, E.C. (1969). *Perceptual and cognitive aspects of body experience*. New York: Academic Press.

- Shontz, F. C. (1990). *Body image and physical disability*. In T. F. Cash & T. Pruzinsky (Eds.), *Body images: Development, deviance, and change* (pp. 149–169). New York: Guilford Press.
- Shrauger, J. S., & Lund, A. K. (1975). Self-evaluation and reactions to evaluations from others. *Journal of Personality*, 43(1), 94–108. <https://doi.org/10.1111/j.1467-6494.1975.tb00574.x>
- Shrout PE, Fleiss JL. Intraclass correlations: uses in assessing rater reliability. *Psychol Bull.* 1979; 86(2):420.
- Silverman, S., & DiGiuseppe, R. (2001). Cognitive behavioral constructs and children's behavioral and emotional problems. *Journal of Rational Emotive & Cognitive Behavior Therapy*, 19(2), 119–134.
- Slade, P.D. (1977). Awareness of body dimensions during pregnancy: An analogue study. *Psychological Medicine*, 7, 245–252.
- Smith, C. A., Haynes, K. N., Lazarus, R. S., & Pope, L. K. (1993). In search of the "hot" cognitions: Attributions, appraisals, and their relation to emotion. *Journal of Personality and Social Psychology*, 65(5), 916–929. <https://doi.org/10.1037/0022-3514.65.5.916>
- Smith, T. W. (1989). *Assessing belief systems: Concepts and strategies*. In P. C. Kendall & S. D. Hollon (Eds.), *Assessment strategies for cognitive-behavioral interventions*. New York: Academy Press.

- Smith, T. W., & Zurawski, R. M. (1983). Assessment of irrational beliefs: The question of discriminant validity. *Journal of Clinical Psychology*, 39, 976–979.
- Soler, P. T., Fernandes, H. M., Damasceno, V. O., Novaes, J. S. (2013). Vigorexy and levels of exercise dependence in gym goers and bodybuilders. *Revista Brasileira de Medicina do Esporte*, 14(5), 343-348.
- Soulliard, Z. A., Kauffman, A. A., Fitterman-Harris, H. F., Perry, J. E., & Ross, M. J. (2019). Examining positive body image, sport confidence, flow state, and subjective performance among student athletes and non-athletes. *Body image*, 28, 93–100.
<https://doi.org/10.1016/j.bodyim.2018.12.009>
- Spielberger, C. D. (1999). *State Trait Anger Expression Inventory 2: Professional manual*. Odessa, FL: Psychological Assessment Resources, Inc
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7. *Archives of internal medicine*, 166(10), 1092–1097. <https://doi.org/10.1001/archinte.166.10.1092>
- Stambulova, N. B., Ryba, T. V., & Henriksen, K. (2021). Career development and transitions of athletes: The international society of sport psychology position stand revisited. *International Journal of Sport and Exercise Psychology*, 19(4), 524–550. <https://doi.org/10.1080/1612197X.2020.1737836>

- Steiger, J.H. (1990). "Structural model evaluation and modification,". *Multivariate Behavioral Research*, 25, 214-12
- Steinfeldt, J. A., Carter, H., Benton, E., & Steinfeldt, M. C. (2011a). Muscularity beliefs of female college student-athletes. *Sex Roles*, 64, 543–554.
- Stevens, E. A., & Prinstein, M. J. (2005). Peer contagion of depressogenic attributional styles among adolescents: A longitudinal study. *Journal of Abnormal Child Psychology*, 33(1), 25–37. <https://doi.org/10.1007/s10802-005-0931-2>
- Stice E. (2002). Risk and maintenance factors for eating pathology: a meta-analytic review. *Psychology Bulletin*, 128, 825–848. 10.1037/0033-2909.128.5.825
- Stice E., Marti C. N., Spoor S., Presnell K., Shaw H. (2008). Dissonance and healthy weight eating disorder prevention programs: long-term effects from a randomized efficacy trial. *J. Consult. Clin. Psychol.* 76, 329–340. 10.1037/0022-006X.76.2.329
- Stice E., Yokum S., Waters A. (2015). Dissonance-based eating disorder prevention program reduces reward region response to thin models; how actions shape valuation. *PLoS One* 10:e0144530. 10.1371/journal.pone.0144530
- Stice, E., & Whitenton, K. (2002). Risk factors for body dissatisfaction in adolescent girls: A longitudinal investigation. *Developmental Psychology*, 38(5), 669–678. <https://doi.org/10.1037/0012-1649.38.5.669>

- Stunkard, A.J., Sorenson, T., Schulsinger, F. (1983). *Use of the Danish Adoption Register for the study of obesity and thinness*. Genetics of Neurological and Psychiatric Disorders. Edited by: Kety SS, Rowland LP, Sidman RL, Matthysse SW. 1983, New York: Raven Press, 115-120.
- Swanson, S. A., Crow, S. J., Le Grange, D., Swendsen, J., & Merikangas, K. R. (2011). Prevalence and correlates of eating disorders in adolescents. Results from the national comorbidity survey replication adolescent supplement. *Archives of general psychiatry*, 68(7), 714–723. <https://doi.org/10.1001/archgenpsychiatry.2011.22>
- Sypeck, M. F., Gray, J. J., Ahrens, A. H. (2004). No longer just a pretty face: Fashion magazines' depictions of ideal female beauty from 1959 to 1999. *International journal of eating disorders*, 36, 342-347.
- Szentagotai, A., & Freeman, A. (2007). An analysis of the relationship between irrational beliefs and automatic thought in predicting distress. *Journal of Cognitive and Behavioral Psychotherapies*, 7(1), 1–9.
- Tylka, T.L., & N. Piran. (2019). *Handbook of positive body image and embodiment: Constructs, protective factors, and interventions*. Oxford University Press, New York, NY, pp. 325-335
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th ed.). New York: Allyn and Bacon.

- Tanner, W. P., Jr., & Swets, J. A. (1954). A decision-making theory of visual detection. *Psychological Review*, 61(6), 401–409. <https://doi.org/10.1037/h0058700>
- Tantleff-Dunn, S., Barnes, R. D., & Larose, J. G. (2011). It's not just a "woman thing:" the current state of normative discontent. *Eating disorders*, 19(5), 392–402. <https://doi.org/10.1080/10640266.2011.609088>
- Tashakkori, A., & Teddlie, C. (1998). *Mixed Methodology: Combining Qualitative and Quantitative Approaches* (Vol. 46). Thousand Oaks, CA: Sage Publications.
- Tashakkori A., & Teddlie C., eds. (2003a). *Handbook of mixed methods in social and behavioral research*. Sage, Thousand Oaks, CA
- Tarlow, E. M., & Haaga, D. A. F. (1996). Negative self-concept: Specificity to depressive symptoms and relation to positive and negative affectivity. *Journal of Research in Personality*, 30(1), 120–127. <https://doi.org/10.1006/jrpe.1996.0008>
- Tate, R. L., McDonald, S., Perdices, M., Togher, L., Schultz, R., & Savage, S. (2008). Rating the methodological quality of single-subject designs and n-of-1 trials: introducing the Single-Case Experimental Design (SCED) Scale. *Neuropsychological rehabilitation*, 18(4), 385–401. <https://doi.org/10.1080/09602010802009201>
- Tenenbaum, G., Eklund, R. C., & Kamata, A. (2012). Introduction to measurement in

- Tenforde, A. S., Barrack, M. T., Nattiv, A., & Fredericson, M. (2016). Parallels with the Female Athlete Triad in Male Athletes. *Sports medicine (Auckland, N.Z.)*, 46(2), 171–182. <https://doi.org/10.1007/s40279-015-0411-y>
- Tennen, H., & Affleck, G. (1993). *The Puzzles of Self-Esteem a Clinical Perspective, Self-Esteem*. Springer, pp. 241-262.
- Terjesen, M. D., Salhany, J., & Sciutto, M. J. (2009). A psychometric review of measures of irrational beliefs: Implications for psychotherapy. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 27(2), 83–96. <https://doi.org/10.1007/s10942-009-0093-1>
- Terwee, C. B., Mokkink, L. B., Knol, D. L., Ostelo, R. W., Bouter, L. M., & de Vet, H. C. (2012). Rating the methodological quality in systematic reviews of studies on measurement properties: a scoring system for the COSMIN checklist. *Quality of life research : an international journal of quality of life aspects of treatment, care and rehabilitation*, 21(4), 651–657. <https://doi.org/10.1007/s11136-011-9960-1>
- Thelwell, R. C., & Maynard, I. W. (2003). The effects of a mental skills package on 'repeatable good performance' in cricketers. *Psychology of Sport and Exercise*, 4(4), 377–396. [https://doi.org/10.1016/S1469-0292\(02\)00036-5](https://doi.org/10.1016/S1469-0292(02)00036-5)
- Theron, W. H., Nel, E. M., & Lubbe, A. J. (1991). Relationship between body-image and self-consciousness. *Perceptual and Motor Skills*, 73(3, Pt 1), 979–983. <https://doi.org/10.2466/PMS.73.7.979-983>

Thibaut F. (2017). Anxiety disorders: a review of current literature. *Dialogues in clinical neuroscience*, 19(2), 87–88. <https://doi.org/10.31887/DCNS.2017.19.2/fthibaut>

Thivel, D., Tremblay, A., Genin, P. M., Panahi, S., Rivière, D., & Duclos, M. (2018). Physical Activity, Inactivity, and Sedentary Behaviors: Definitions and Implications in Occupational Health. *Frontiers in public health*, 6, 288. <https://doi.org/10.3389/fpubh.2018.00288>

Thomas, A., Tod, D. A., Edwards, C. J., & McGuigan, M. R. (2014). Drive for muscularity and social physique anxiety mediate the perceived ideal physique muscle dysmorphia relationship. *Journal of strength and conditioning research*, 28(12), 3508–3514. <https://doi.org/10.1519/JSC.0000000000000573>

Thompson, J. K. (1996). *Body image, eating disorders, and obesity: An integrative guide for assessment and treatment*. Washington, DC: American Psychological Association.

Thompson, J. K., & Stice, E. (2001). Thin-ideal internalisation: Mounting evidence for a new risk factor for body image disturbance and eating pathology. *Current Directions in Psychological Science*, 10(5), 181–183. <https://doi.org/10.1111/1467-8721.00144>.

Thompson, J. K., Burke, N. L., & Krawczyk, R. (2012). *Mesurement of body image in adolescence and adulthood*. In T. F. Cash (Ed.), *Encyclopedia of body image and human appearance* (Vol. 2) (pp. 512–520). San Diego, CA: Academic Press/Elsevier.

- Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. Washington, DC US: American Psychological Association.
- Thompson, J. K., van den Berg, P., Roehrig, M., Guarda, A. S., & Heinberg, L. J. (2004). The sociocultural attitudes towards appearance scale-3 (SATAQ-3): development and validation. *The International journal of eating disorders*, 35(3), 293–304.
<https://doi.org/10.1002/eat.10257>
- Thorndike, E. (1920) A Constant Error in Psychological Ratings. *Journal of Applied Psychology*, 4, 25-29. <http://dx.doi.org/10.1037/h0071663>
- Tiba, A., & Szentagotai, A. (2005). Positive emotions and irrational beliefs: Dysfunctional positive emotions in healthy individuals. *Journal of Cognitive and Behavioral Psychotherapies*, 1, 53 72.
- Timmins, L., Rimes, K. A., & Rahman, Q. (2017). *Minority stressors and psychological distress in transgender individuals*. Manuscript submitted for publication.
- Tomotake, M., Okura, M., Taniguchi, T., Ishimoto, Y. (2002). Traits of irrational beliefs related to eating problems in Japanese college women. *Journal of Medical Investigation*, 49, 51-55.
- Torstveit, M. K., Rosenvinge, J. H., & Sundgot-Borgen, J. (2008). Prevalence of eating disorders and the predictive power of risk models in female elite athletes: a controlled study. *Scandinavian journal of medicine & science in sports*, 18(1), 108–118.
<https://doi.org/10.1111/j.1600-0838.2007.00657.x>

- Traub, A. C., & Orbach, J. (1964). Psychophysical studies of body-image. *Archives of General Psychiatry*, 11(1), 53–66. <https://doi.org/10.1001/archpsyc.1964.01720250055007>
- Trip, S., & Popa, M. (2005). CASI – The Child and Adolescent Scale of Irrationality. *Analele Universităţii din Oradea Fascicula Psihologie*, 8(2), 39-51.
- Trip, S., Dume, C., Bora, C. H., McMahon, J., & Baroll, B. (2019). The efficiency of rational-emotive behavioral education for parents. *Journal of Psychological and Educational Research*, 27(1), 61–84.
- Tucker, L. R., & Lewis, C. (1973). A Reliability Coefficient for Maximum Likelihood Factor Analysis. *Psychometrika*, 38, 1-10. <https://doi.org/10.1007/BF02291170>
- Turner, B.S. (1992). *Regulating Bodies: Essays in Medical Sociology*. London: Routledge.
- Turner, M. (2016). Proposing a rational resilience credo for use with athletes. *Journal of Sport Psychology in Action*. 7(3), [https://DOI: 10.1080/21520704.2016.1236051](https://doi.org/10.1080/21520704.2016.1236051)
- Turner, M. J. (2016). Rational Emotive Behavior Therapy (REBT), irrational and rational beliefs, and the mental health of athletes, *Frontiers: Movement Science and Sport Psychology*, 7, 1423
- Turner, M. J., & Barker, J. B. (2013). Examining the efficacy of Rational-Emotive Behavior Therapy (REBT) on irrational beliefs and anxiety in elite youth cricketers. *Journal of Applied Sport Psychology*, 25, 1, 131-147.

- Turner, M. J., & Bennett, R. (2018). *Rational emotive behaviour therapy in Sport and Exercise*. London: Routledge.
- Turner, M. J., Allen, M., Slater, M. J., Barker, J. B., Woodcock, C., Harwood, C. G., & McFadyen, K. (2018). The development and initial validation of the irrational performance beliefs inventory (iPBI). *European Journal of Psychological Assessment*, 34, 174-180.
- Turner, M., David, W., Barker, J. (2020)._An Idiographic Single-Case Study Examining the Use of Rational Emotive Behavior Therapy (REBT) with Three Amateur Golfers to Alleviate Social Anxiety, *Journal of Applied Sport Psychology*, 32:2, 186-204, [https://DOI: 10.1080/10413200.2018.1496186](https://doi.org/10.1080/10413200.2018.1496186)
- Tylka, T. L., & Wood-Barcalow, N. L. (2015). The Body Appreciation Scale-2: Item refinement and psychometric evaluation. *Body Image*, 12, 53–67. <https://doi.org/10.1016/j.bodyim.2014.09.006>
- Tylka, T. L., & Wood-Barcalow, N. L. (2015). What is and what is not positive body image? Conceptual foundations and construct definition. *Body image*, 14, 118–129. <https://doi.org/10.1016/j.bodyim.2015.04.001>
- Tylka, T.L., & Subich, L.M. (2004). Examining a Multidimensional Model of Eating Disorder Symptomatology among College Women. *Journal of Counseling Psychology*, 51, 314-328.

Ugwoke, S. C., Eseadi, C., Onuigbo, L. N., Aye, E. N., Akaneme, I. N., Oboegbulem, A. I., Ezenwaji, I. O., Nwobi, A. U., Nwaubani, O. O., Ezegbe, B. N., Ede, M. O., Orji, C. T., Onuoha, J. C., Onu, E. A., Okeke, F., Agu, P., Omeje, J. C., Omeke, F., Ugwu, R., Arumede, F., & Eneh, A. (2018). A rational-emotive stress management intervention for reducing job burnout and dysfunctional distress among special education teachers: An effect study. *Medicine*, 97(17), e0475.
<https://doi.org/10.1097/MD.00000000000010475>

van den Berg, P., Wertheim, E. H., Thompson, J. K., & Paxton, S. J. (2002). Development of body image, eating disturbance, and general psychological functioning in adolescent females: A replication using covariance structure modeling in an Australian sample. *International Journal of Eating Disorders*, 32(1), 46–51. <https://doi.org/10.1002/eat.10030>

Vartanian, L. R. (2012). *Self-discrepancy theory and body image*. In T. F. Cash (Ed.), *Encyclopedia of body image and human appearance* (pp. 711–717). Elsevier Academic Press.

Vassou, C., Yannakoulia, M., Georgousopoulou, E. N., Pitsavos, C., Cropley, M., & Panagiotakos, D. B. (2021). Foods, Nutrients and Dietary Patterns in Relation to Irrational Beliefs and Related Psychological Disorders: The ATTICA Epidemiological Study. *Nutrients*, 13(5), 1472. <https://doi.org/10.3390/nu13051472>

- Veale D, Boocock A, Gournay K, Dryden W, Shah F, Willson R, Walburn J. (1996). Body dysmorphic disorder. A survey of fifty cases. *British Journal of Psychiatry*, 169, 196–201
- Veale, D. (2001). Cognitive–behavioural therapy for body dysmorphic disorder. *Advances in Psychiatric Treatment*, 7, 125–132.
- Veale, D. (2004). Advances in a cognitive behavioural model of body dysmorphic disorder. *Body Image*, 1, 113–125.
- Veale, D. (2004). Body dysmorphic disorder. *Postgraduate Medical Journal*, 80(940), 67–71.
[http://dx.doi.org/ 10.1136/pmj.2003.015289](http://dx.doi.org/10.1136/pmj.2003.015289)
- Veale, D., Gournay, K., Dryden, W., Boocock, A., Shah, F., Willson, R., & Walburn, J. (1996). Body dysmorphic disorder: A cognitive behavioural model and pilot randomised controlled trial. *Behaviour Research and Therapy*, 34, 717–729.
[http://dx.doi.org/10.1016/00057967\(96\)00025-3](http://dx.doi.org/10.1016/00057967(96)00025-3)
- Veldhuis, J., Alleva, J.M., Bij de Vaate, A.J., Keijer, M.G., & Konijn, E.A. (2020). Me, my selfie, and I: The relations between selfie behaviors, body image, self-objectification, and self-esteem in young women. *Psychology of Popular Media*.
- Vernon, T., & Eysenck, S. (2007). Structural equation modelling [Special issue]. *Personality and Individual Differences*, 42(5), 813-898.

- Vislă, A., Flückiger, C., grosse Holtforth, M., & David, D. (2016). Irrational Beliefs and Psychological Distress: A Meta-Analysis. *Psychotherapy and psychosomatics*, 85(1), 8–15. <https://doi.org/10.1159/000441231>
- Visla, A., Fluckiger, Holtforth, G, M., David, D. (2015). Irrational Beliefs and Psychological Distress: A Meta-Analysis. *Psychotherapy and psychsomatics*, 85(1), 8-15 doi: 10.1159/000441231
- Voges, M. M., Giabbiconi, C. M., Schöne, B., Waldorf, M., Hartmann, A. S., & Vocks, S. (2019). Gender Differences in Body Evaluation: Do Men Show More Self-Serving Double Standards Than Women?. *Frontiers in psychology*, 10, 544. <https://doi.org/10.3389/fpsyg.2019.00544>
- Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: the evidence. *CMAJ : journal de l'Association medicale canadienne*, 174(6), 801–809. <https://doi.org/10.1503/cmaj.051351>
- Watson H. J., Joyce T., French E., Willan V., Kane R. T., & Tanner-Smith E. E. (2016). Prevention of eating disorders: a systematic review of randomized, controlled trials. *International Journal of Eating Disorders*, 49, 833–862. 10.1002/eat.22577,
- Watson P. J., Sherbak J., Morris R. J. (1998). Irrational beliefs, individualism-collectivism, and adjustment. *Personality and Individual Differences*, 24, 173–179. 10.1016/S0191-8869(97)00168-2

- Watson, J. B. (1914). *Behavior: An introduction to comparative psychology*. New York: Henry Holt and Company.
- Webb, J. B., Butler-Ajibade, P., & Robinson, S. A. (2014). Considering an affect regulation framework for examining the association between body dissatisfaction and positive body image in Black older adolescent females: does body mass index matter?. *Body image*, 11(4), 426–437. <https://doi.org/10.1016/j.bodyim.2014.07.002>
- Weineland, S., Arvidssonb, D., Thanos, P., Kakoulidisb, T. P., & Dahla, J. (2012a) Acceptance and commitment therapy for bariatric surgery patients, a pilot RCT. *Obesity Research & Clinical Practice*, 6, 21–30.
- Weir, J.P. (2005). Quantifying test-retest reliability using the intraclass correlation coefficient and the SEM. *The Journal of Strength and Conditioning Research*, 19, 231–40. doi: 10.1519/15184.1
- Wessler, R. L. (1982). Varieties of cognitions in the cognitively-oriented psychotherapies. *Rational Living*, 17(1), 3–10.
- Whitmore, J. (1992). *Coaching for performance*. London: Nicholas Brealey.
- Wilhelm, S., & Neziroglu, F. (2002). Cognitive theory of body dysmorphic disorder. In R. O. Frost & G. Steketee (Eds.), *Cognitive approaches to obsessions and compulsions: Theory, assessment, and treatment* (pp. 203–214). Pergamon/Elsevier Science Inc. <https://doi.org/10.1016/B978-008043410-0/50014-3>

- Williams, E. F., Cash, T. F., & Santos, M. T. (2004). Positive and negative body image: Precursors, correlates, and consequences. Paper presented at the 38th annual Association for the Advancement of Behavior Therapy
- Williamson, D.A., Gleaves, D.H., & Watkins, P.C. (1993). Validation of self-ideal body size discrepancy as a measure of body dissatisfaction. *Journal of Psychopathology and Behavioral Assessment*, 15, 57–68. <https://doi.org/10.1007/BF00964324>
- Willig, C. (2008). *Introducing qualitative research in psychology : adventures in theory and method*.
- Wolf M. M. (1978). Social validity: the case for subjective measurement or how applied behavior analysis is finding its heart. *Journal of applied behavior analysis*, 11(2), 203–214. <https://doi.org/10.1901/jaba.1978.11-203>
- Wood, A. G., Barker, J. B., Turner, M., & Sheffield, D. (2018). Examining the effects of rational emotive behavior therapy (REBT) on performance outcomes in elite Paralympic athletes. *Scandinavian Journal of Medicine & Science in Sports*, 28 (1), 329-339. doi: 10.1111/sms.12926
- Wood, A. G., Barker, J. B., & Turner, M. J. (2017). Developing performance using rational emotive behavior therapy (REBT): A case study with an elite archer. *The Sport Psychologist*, 31(1), 78-87.

- Wood-Barcalow, N. L., Tylka, T. L., & Augustus-Horvath, C. L. (2010). "But I Like My Body": Positive body image characteristics and a holistic model for young-adult women. *Body image*, 7(2), 106–116. <https://doi.org/10.1016/j.bodyim.2010.01.001>
- Xu, X., Mellor, D., Kiehne, M., Ricciardelli, L. A., McCabe, M. P., & Xu, Y. (2010). Body dissatisfaction, engagement in body change behaviors and sociocultural influences on body image among Chinese adolescents. *Body image*, 7(2), 156–164. <https://doi.org/10.1016/j.bodyim.2009.11.003>
- Yaman, Ç. (2017). Physical and physiological correlates of social physique anxiety in college students. *Universal Journal of Educational Research*, 5(3), 334–337. <https://doi.org/10.13189/ujer.2017.050305>
- Yang, J., & Han, K. S. (2020). A rational emotive behavior therapy-based intervention for binge eating behavior management among female students: a quasi-experimental study. *Journal of eating disorders*, 8(1), 65. <https://doi.org/10.1186/s40337-020-00347-8>
- Yong, A.G., & Pearce, S.C. (2013). *A Beginner's Guide to Factor Analysis: Focusing on Exploratory Factor Analysis*.
- Zettle, R.D., & Hayes, S.C. (1980). Conceptual and Empirical Status of Rational-Emotive Therapy. *Progress in behavior modification*, 9, 125-166.

Ziegler, M., & Horstmann, K. (2015). Discovering the second side of the coin Integrating situational perception into psychological assessment. *European Journal of Psychological Assessment*, 31, 69-74.

Zimmerman, B. (2000). *Attaining self-regulation: A social cognitive perspective*. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of Self-Regulation* (pp. 13-35). San Diego: Academic Press.

Appendix

Appendix 4.1: Chapter 4 - Ethical approval

ETHICAL APPROVAL FEEDBACK

Researcher name:	Leon Antonio Outar
Title of Study:	Examining the efficacy of a Rational Emotive Behavioural Therapy intervention on social physique anxiety, exercise behaviour, and motivation
Status of approval:	Approved

Thank you for addressing the committee's comments. Your research proposal has now been approved by the Ethics Panel and you may commence the implementation phase of your study. You should note that any divergence from the approved procedures and research method will invalidate any insurance and liability cover from the University. You should, therefore, notify the Panel of any significant divergence from this approved proposal.

You should arrange to meet with your supervisor for support during the process of completing your study and writing your dissertation.

When your study is complete, please send the ethics committee an end of study report. A template can be found on the ethics BlackBoard site.

Signed:

Date: 28.09.2017

Appendix 4.2: Chapter 4 - Information sheet

Dear Sir/Madam

You are invited to participate in a research programme, which will look at how your thoughts influence your exercise behaviour and body image. It is imperative that you understand what the programme will entail before deciding to take part. Please take a few minutes to read the following information carefully, if you have any queries or concerns, please email me :
leon.outar@student.staffs.ac.uk

What is the purpose?

The aim of this programme is to explore how your beliefs influence your thoughts, emotions and behaviour in relation to your exercise behaviour.

Who is doing the research?

The research will be conducted by Leon Antonio Outar, who is a PhD researcher and trainee Sport and Exercise Psychologist with the British Psychological Society. Leon will be supported by and under the supervision of _____ who are both chartered Sport and Exercise Psychologists and registered with the Health and Care Professions Council (HCPC).

Am I suitable for the study?

The study requires that you are currently a member the fitness centre. In addition, you will not be able to take part in the programme if you have or previously have any mental health issues. Finally, the access and use of email will be essential in the completion of the project.

What does it involve?

Your participation in the programme will entail five weekly one-one sessions with Leon Antonio Outar. Before the session, you will be invited to fill out various questionnaires one a week in regards to your thoughts and emotions, these questionnaires will continue during the sessions and for four weeks after. All questionnaires will be provided electronically, and are able to be filled out via computer, tablet or phone.

Do I have to take part?

Your participation within this study is voluntary and you can withdraw at any point, before during or after the project and only up until the (insert date)

What are the benefits of taking part?

Your participation within this study will promote self-awareness and develop your thoughts, feelings, behaviours approaching and during pressurised situations; you will also learn

practical skills to help manage and cope during stressful situations. Your participation will also contribute to a greater understanding of how individual's beliefs will influence emotional states and exercise behaviour.

What will happen to my results and information?

Your data collection will be seen by the lead researcher (Leon Antonio Outar) and project supervisor's . Unless you state otherwise your personal details and questionnaire details will be anonymised and no individual identifying information will be provided. The results of the study maybe published, but all your details will be kept anonymised and confidential. If at any point there are certain things which you would like not to be included as part of the research, please contact me directly at:leon.outar@student.staffs.ac.uk and the information will be deleted immediately.

Who has reviewed the programme?

The study has been reviewed by Staffordshire University Ethics committee.

Who can I contact if I have any further concerns or questions regarding the study?

If you have any questions concerning the research or your participation in this study, please contact Leon Antonio Outar via email: leon.outar@student.staffs.ac.uk. If you would like to voice any other concerns or queries regarding this study with an external but relevant academic staff member of Staffordshire University please contact – Sport and Exercise Psychology Lecturer

Sincerely

Leon Antonio Outar BSc,MSc, MBPsS
leon.outar@student.staffs.ac.uk
R128 Brindley Building
Faculty of Health Science
Leek Road
Stoke-on-Trent
ST4 2DF

Appendix 4.3: Chapter 4 - Informed consent



Please tick the appropriate boxes as appropriate. If you do not agree with any of the statements, unfortunately you are excluded from the study and are not required to complete the rest of the consent form:

Please tick the following boxes:

I confirm that I have read the information form	
I confirm that I have understood the information form	
I am at least 18 years of age	
I have had the opportunity to withdraw participation and/or ask questions.	
I understand that my participation is voluntary.	
I understand that I may withdraw my consent and discontinue participation at any point up until the (insert date), without further consequences.	
I agree that psychological recordings will be taken and used only for research purposes at Staffordshire University. All data will be stored safely on a password protected computer.	
I agree to take part in the above study.	

.....

Name of Participant

.....

Signature

.....

Date

.....

Name of Researcher

.....

Signature

Appendix 4.4: Chapter 4 - Risk assessment form¹

Title of Activity: The use of REBT with exercise settings **Brief Description of Activity:** REBT sessions

Faculty/School/ Service: Faculty of health sciences

Building:

Location: Coventry

Date: 12/06/2017 **Review Date:** Ongoing

Assessed By: Leon Antonio Outar **Supervisor:**

Approved By: **Supervision Required:** Yes / No

	Activity/Process/Machines	Hazard	Persons in Danger	Severity 1-5	Likelihood 1-5	Risk Rate	Measures/Comments	Result
1	Data Collection Environment	Slippery surfaces, protruding objects and unstable equipment with risk of falling.	Researcher, participant, leisure centre staff	1	1	1	Check for hazards preceding each data collection session and respond appropriately to possible risks. Follow the advice and conduct data collection under the supervision of the Pingles leisure centre support staff.	T
2	Fire		Researcher, participant, leisure centre staff	1	1	1	All pingles staff and the researcher are trained in what to do in case of an emergency	T
3	Psychological harm	Discussing thoughts and feelings may invoke psychological disturbance	participant	1	3	3	This will be addressed in the debrief. Participants will be provided with the primary researcher's details if they have any concerns or queries (1024598c@student.staffs.ac.uk). Furthermore, an academic staff member external to the research study but within the health sciences department will also be available if the participant would like to voice any concerns in-directly (Martin Turner, Lecturer Health Sciences, M.turner@staffs.ac.uk).	T

¹ Key to Result: Hazards with risk ratings 1-4 can be considered Trivial Risk (T), 5-9 Adequately Controlled (A), 10-14 Not Adequately Controlled (N) (Further control measures will be required) and 15-25 Stop the Activity Immediately (S)NB: THE SEVERITY X LIKELIHOOD RATINGS ARE CALCULATED AFTER TAKING INTO ACCOUNT EXISTING PRECAUTIONS.



STAFFORDSHIRE
UNIVERSITY

361

The image shows a recruitment letter overlaid on a photograph of people exercising in a gym. The letter is contained within a semi-transparent circular area. In the top right corner of the letter, there is a red rectangular box with the Staffordshire University logo and name. The main text of the letter is in bold, black, uppercase letters. Below the title, there is a horizontal line followed by a bulleted list of three questions. At the bottom of the letter, there is a line of text saying 'Many thanks!'. The background photograph shows a person in a pink shirt and black leggings performing a squat with green dumbbells, with other people and gym equipment visible in the background.

CALLING ALL EXERCISERS

- Do you exercise?
- Do you have 10 minutes to spare?
- Could you please complete the following questionnaire regarding body image and exercise?

Many thanks!

STAFFORDSHIRE UNIVERSITY

Appendix 4.7: Chapter 4 – Social validation form

Exercisers' Perceptions of Rational Emotive Behaviour Therapy (REBT; After 5 Sessions)

To what extent do you agree that...

	1	2	3	4	5	6	7
Enhancing healthy emotions and behaviours is important to you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The REBT sessions have a positive influence on your exercise behaviour, nutrition, body image	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The REBT sessions have had a positive influence on your wellbeing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You were strongly motivated to engage in the five REBT sessions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The REBT sessions were very effective	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You exerted very high levels of effort during the REBT sessions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You were passionate and enthusiastic about the REBT sessions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please answer each question in as much detail as possible. There are no right or wrong answers and we are interested in all of your responses. All answers will be kept confidential and remain anonymous.

Please describe any concerns you had regarding the sessions at the beginning of the 1 to 1 sessions.

Explain whether or not these views changed after the final one to one session?

How did the sessions make you feel?

Please describe whether the session helped you to experience more functional - healthier emotions and/ behaviours when experiencing adversities (e.g., exercise, nutritional, body image, general life)?

Please report whether the sessions helped you to feel more capable of approaching and dealing with adversities in future?

Please report whether the sessions have helped you to develop a healthier pursuit towards health and fitness?

If so, give a brief description as to how the sessions have helped you?

Do you believe that the structure of the sessions was appropriate for promoting helpful thoughts? E.g. Use of presentations, information provided. If so/not why?

Have peers/significant others noticed differences in you since the sessions. If so how?

Are you satisfied with your progression from the sessions? If so/not why?

If you have any other comments, thoughts, or feelings regarding the 1 to 1 sessions, please explain below.

Thank you for your responses

Appendix 4.8: Chapter 4 – Irrational performance beliefs inventory (iPBI; Turner et al., 2018)

Here are a set of statements that describe what some people think and believe. Read each statement carefully, and then decide how much you agree or disagree with it by selecting the appropriate response.

	Items	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	I can't stand not reaching my goals	1	2	3	4	5
2	If I face setbacks it goes to show how stupid I am	1	2	3	4	5
3	I can't tolerate it when I fail at something that means a great deal to me	1	2	3	4	5
4	I need my manager/coach to act respectfully towards me	1	2	3	4	5
5	I have to be viewed favourably by people that matter to me	1	2	3	4	5
6	It is appalling if others do not give me chances	1	2	3	4	5
7	If decisions that affect me are not justified, it shows that I am worthless	1	2	3	4	5
8	If I am not given opportunities, then it shows that I am not a worthwhile person	1	2	3	4	5
9	I need others to think that I make a valuable contribution	1	2	3	4	5
10	I am a loser if I do not succeed in things that matter to me	1	2	3	4	5
11	I have to be respected by the members of my team	1	2	3	4	5
12	I can't bear not getting better at what I do	1	2	3	4	5
13	I absolutely should not be snubbed by people that matter to me	1	2	3	4	5
14	If my position in my team was not secure, then it would show I am worthless	1	2	3	4	5
15	I can't bear not being given chances	1	2	3	4	5
16	It's awful to not be treated fairly by my peers	1	2	3	4	5
17	It's terrible if the members of my team do not respect me	1	2	3	4	5
18	I must not be dismissed by my peers	1	2	3	4	5
19	I couldn't stand it if my competencies did not continually develop and improve	1	2	3	4	5
20	I can't stand failing in things that are important to me	1	2	3	4	5
21	It's awful if others do not approve of me	1	2	3	4	5
22	Decisions that affect me must be justified	1	2	3	4	5
23	It would be terrible to be dismissed by my peers	1	2	3	4	5
24	If my competencies did not continually develop and improve, it would show what a failure I am	1	2	3	4	5
25	I can't bear not succeeding in things that are important to me	1	2	3	4	5

26	It would be awful if my position in my team was not secure	1	2	3	4	5
27	If others think I am no good at what I do, it shows I am worthless	1	2	3	4	5
28	It's awful if others think I do not make a valuable contribution	1	2	3	4	5

Appendix 4.8: Chapter 4 – Unconditional Self-Acceptance Questionnaire (USAQ; Chamberlain & Haaga, 2001)

INSTRUCTIONS: Please indicate how often you feel each statement below is true or untrue of you. For each item, write the appropriate number (1 to 7) on the line to the left of the statement, using the following key:

- 1 – Almost Always Untrue
- 2 – Usually Untrue
- 3 – More Often Untrue Than True
- 4 – Equally Often True and Untrue
- 5 – More Often True Than Untrue
- 6 – Usually True
- 7 – Almost Always True

1. Being praised makes me feel more valuable as a person.
2. I feel worthwhile even if I am not successful in meeting certain goals that are important to me.
3. When I receive negative feedback, I take it as an opportunity to improve my behavior or performance.
4. I feel that some people have more value than others.
5. Making a big mistake may be disappointing, but it doesn't change how I feel about myself overall.
6. Sometimes I find myself thinking about whether I am a good or bad person.
7. To feel like a worthwhile person, I must be loved by the people who are important to me.
8. I set goals for myself with the hope that they will make me happy (or happier).
9. I think that being good at many things makes someone a good person overall.
10. My sense of self-worth depends a lot on how I compare with other people.
11. I believe that I am worthwhile simply because I am a human being.
12. When I receive negative feedback, I often find it hard to be open to what the person is saying about me.
13. I set goals for myself that I hope will prove my worth.
14. Being bad at certain things makes me value myself less.
15. I think that people who are successful in what they do are especially worthwhile people.
16. I feel that the best part about being praised is that it helps me to know what my strengths are.
17. I feel I am a valuable person even when other people disapprove of me.
18. I avoid comparing myself to others to decide if I am a worthwhile person.
19. When I am criticized or when I fail at something, I feel worse about myself as a person.
20. I don't think it's a good idea to judge my worth as a person.

Appendix 5.1: Chapter 5 - Ethical approval

ETHICAL APPROVAL FEEDBACK

Researcher name:	Leon Antonio Outar
Title of Study:	Initial Development and Validation of the Irrational Muscularity Beliefs Inventory (iMBI)
Status of approval:	Approved

Thank you for addressing the committee's comments. Your research proposal has now been approved by the Ethics Panel and you may commence the implementation phase of your study. You should note that any divergence from the approved procedures and research method will invalidate any insurance and liability cover from the University. You should, therefore, notify the Panel of any significant divergence from this approved proposal.

You should arrange to meet with your supervisor for support during the process of completing your study and writing your dissertation.

When your study is complete, please send the ethics committee an end of study report. A template can be found on the ethics BlackBoard site.

Signed:

Date: 07.03.2019



Dear Sir/Madam

We are in the first stages of developing the questionnaire and would like to ask you, as an REBT expert, if you have the capacity to help refine the items based on your REBT knowledge and experience. More specifically, we would like you to rate each item based on how accurately it measures the irrational belief and how clear the item is. We currently have 91 items and anticipate this to take approximately 30 minutes to complete. It is not a difficult task, and hopefully might even be interesting to you!

You are invited to participate in a research programme, we are in the initial stages of developing a questionnaire that assess irrational and rational beliefs relating to body image. It is imperative that you understand what the programme will entail before deciding to take part. Please take a few minutes to read the following information carefully, if you have any queries or concerns, please email me : leon.outar@student.staffs.ac.uk

What is the purpose?

The aim of this research is to develop a irrational and rational belief measure to support researcher and practitioner's to support and identify body image challenges.

Who is doing the research?

The research will be conducted by Leon Antonio Outar, who is a PhD researcher and trainee Sport and Exercise Psychologist with the British Psychological Society. Leon will be supported by and under the supervision of _____ who are both chartered Sport and Exercise Psychologists and registered with the Health and Care Professions Council (HCPC).

What does it involve?

Your participation in this study requires you to examine the clarity, validity, and content of the items in the proposed questionnaire. Your participation will take approximately 30 minutes, and you may be contacted for a follow-up semi structured interview with the lead researcher (Leon Antonio Outar). The questionnaire will be provided electronically, and are able to be filled out the form via computer, or tablet.

Do I have to take part?

Your participation within this study is voluntary and you can withdraw at any point, before during or after the project and only up until the (insert date)

What are the benefits of taking part?

Your participation will contribute to a greater understanding of how individual's beliefs will influence their body image.

What will happen to my data?

Your data collection will be seen by the lead researcher (Leon Antonio Outar) and project supervisor's Unless you state otherwise your personal details and questionnaire details will be anonymised and no individual identifying information will be provided. The results of the study maybe published, but all your details will be kept anonymised and confidential. If at any point there are certain things which you would like not to be included as part of the research, please contact me directly at: leon.outar@student.staffs.ac.uk and the information will be deleted immediately.

Who has reviewed the programme?

The study has been reviewed by Staffordshire University Ethics committee.

Who can I contact if I have any further concerns or questions regarding the study?

If you have any questions concerning the research or your participation in this study, please contact Leon Antonio Outar via email: leon.outar@student.staffs.ac.uk. If you would like to voice any other concerns or queries regarding this study with an external but relevant academic staff member of Staffordshire University please contact .
Exercise Psychology Lecturer

Sincerely

Leon Antonio Outar BSc,MSc, MBPsS
leon.outar@student.staffs.ac.uk
R128 Brindley Building
Faculty of Health Science
Leek Road
Stoke-on-Trent
ST4 2DF

Appendix 5.3: Chapter 5 - Informed consent sheet for expert and usability panels

Please tick the appropriate boxes as appropriate. If you do not agree with any of the statements, unfortunately you are excluded from the study and are not required to complete the rest of the consent form:

Please tick the following boxes:

I confirm that I have read the information form	
I confirm that I have understood the information form	
I am at least 18 years of age	
I have had the opportunity to withdraw participation and/or ask questions.	
I understand that my participation is voluntary.	
I understand that I may withdraw my consent and discontinue participation at any point up until the (insert date), without further consequences.	
I agree to take part in the above study.	

.....

Name of Participant

.....

Signature

.....

Date

.....

Name of Researcher

.....

Signature

Appendix 5.4: Chapter 5 - Information sheet study 3

Information Sheet



Dear Participant,

We are researchers in the School of Life Sciences & Education at Staffordshire University. As part of our research, we are interested in your current beliefs regarding your appearance, eating patterns and psychological health. By completing this series of questionnaires you will support us in understanding appearance beliefs, eating patterns and psychological health from your perspective.

What does it involve?

Your participation will involve completing an online questionnaire regarding your beliefs of your appearance. The participation in completing this questionnaire should take between 10-15 minutes.

Am I suitable for the study?

If you are currently suffering from a mental health condition, then unfortunately you are unable to take part.

Do I have to take part?

Your participation is completely voluntary and you have the right to withdraw at any point without further consequence. If at any point you would like to withdraw please email the lead researcher (Leon Outar) directly.

Are there any risks in taking part?

It is unlikely that the study will cause risk or harm. However, if you experience any stress related symptoms after completing this study then please contact Mind on: 0300 123 3393/ info@mind.org.uk, or visit their website <http://www.mind.org.uk> for more information.

What will happen to my results and information?

Your results will not be identifiable to anybody, including the researchers. Furthermore, we will not see your individual results. The data you provide will be kept completely anonymous at all times and only research team (Leon Outar, _____) will see your anonymised data. We do not ask for your name or any other identifying information. All data will be kept secured and will be stored for up to 10 years in line with university policy.

Who can I contact if I have further questions regarding the study?

If you have any questions regarding your participation, please contact the lead researcher at leon.outar@research.staffs.ac.uk

Appendix 5.5: Chapter 5 - Informed consent 3-5

Please tick the appropriate boxes as appropriate. If you do not agree with any of the statements, unfortunately you are excluded from the study and are not required to complete the rest of the consent form:

Please tick the following boxes:

I confirm that I have read the information form	
I confirm that I have understood the information form	
I am at least 18 years of age	
I have had the opportunity to withdraw participation and/or ask questions.	
I understand that my participation is voluntary.	
I understand that I may withdraw my consent and discontinue participation at any point up until the (insert date), without further consequences.	
I agree that psychological recordings will be taken and used only for research purposes at Staffordshire University. All data will be stored safely on a password protected computer.	
I agree to take part in the above study.	

.....
Name of Participant

.....
Signature

.....
Date

.....
Name of Researcher

.....
Signature

Dear Participant,

We are researchers in the School of Life Sciences & Education at Staffordshire University. As part of our research, we are interested in your current beliefs regarding your appearance, eating patterns and psychological health. By completing this series of questionnaires, you will support us in understanding appearance beliefs, eating patterns and psychological health from your perspective.

What does it involve?

Your participation will involve completing an online questionnaire regarding your beliefs of your appearance, psychological health and eating patterns. The participation in completing this questionnaire should take between 10-15 minutes.

Am I suitable for the study?

If you are currently suffering from a mental health condition, then unfortunately you are unable to take part.

Do I have to take part?

Your participation is completely voluntary and you have the right to withdraw at any point without further consequence. If at any point you would like to withdraw please email the lead researcher (Leon Outar) directly.

Are there any risks in taking part?

It is unlikely that the study will cause risk or harm. However, if you experience any stress related symptoms after completing this study then please contact Mind on: 0300 123 3393/ info@mind.org.uk, or visit their website <http://www.mind.org.uk> for more information.

What will happen to my results and information?

Your results will not be identifiable to anybody, including the researchers. Furthermore, we will not see your individual results. The data you provide will be kept completely anonymous at all times and only research team (Leon Outar, _____) will see your anonymised data. We do not ask for your name or any other identifying information. All data will be kept secured and will be stored for up to 10 years in line with university policy.

Who can I contact if I have further questions regarding the study?

If you have any questions regarding your participation, please contact the lead researcher at leon.outar@research.staffs.ac.uk

Appendix 5.7: Chapter 5 – Body shape questionnaire 8-C (BSQ-8C; Evans & Dolan, 1983)

We should like to know how you have been feeling about your appearance over the **PAST FOUR WEEKS**. Please read each question and circle the appropriate number to the right. Please answer all the questions.

OVER THE PAST FOUR WEEKS:

	Never	Rarely	Sometimes	Often	Very often	Always
1. Have you been afraid that you might become fat (or fatter)?.....	1	2	3	4	5	6
2. Has feeling full (e.g. after eating a large meal) made you feel fat?.....	1	2	3	4	5	6
3. Has thinking about your shape interfered with your ability to concentrate (e.g. while watching television, reading, listening to conversations)?.....	1	2	3	4	5	6
4. Have you imagined cutting off fleshy areas of your body?.....	1	2	3	4	5	6
5. Have you felt excessively large and rounded?.....	1	2	3	4	5	6
6. Have you thought that you are in the shape you are because you lack self-control?.....	1	2	3	4	5	6
7. Has seeing your reflection (e.g. in a mirror or shop window) made you feel bad about your shape?.....	1	2	3	4	5	6
8. Have you been particularly self-conscious about your shape when in the company of other people?.....	1	2	3	4	5	6

Appendix 5.7: Chapter 5 - Body Appreciation Scale 2 (BAS-2: Tylka & Wood-Barcalow, 2015)

For each item, the following response scale should be used:

1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Often, 5 = Always.

Directions for participants: Please indicate whether the question is true about you never, seldom, sometimes, often, or always

1. I respect my body.
2. I feel good about my body.
3. I feel that my body has at least some good qualities.
4. I take a positive attitude towards my body.
5. I am attentive to my body's needs.
6. I feel love for my body.
7. I appreciate the different and unique characteristics of my body.
8. My behavior reveals my positive attitude toward my body; for
9. example, I hold my head high and smile.
10. I am comfortable in my body.
11. I feel like I am beautiful even if I am different from media images
12. of attractive people (e.g., models, actresses/actors).

Appendix 5.7: Chapter 5 – 84-item Body Image Beliefs Inventory

The following questions relate to a number of beliefs you may hold about your appearance. Please read each item carefully and respond to each question from 1 (strongly disagree) to 5 (strongly agree). There are no right or wrong answers and we ask that you respond to each question as honestly as possible

#	Items
1	I absolutely must be my ideal size
2	I absolutely must have my ideal body fat
3	I absolutely must be my ideal shape
4	I absolutely should be my ideal size
5	I absolutely should have my ideal body fat
6	I absolutely should be my ideal shape
7	I would like to be my ideal size and therefore I absolutely must be
8	I would like to be my ideal size and therefore I absolutely should be
9	I would like to have my ideal body fat and therefore I absolutely must
10	I would like to have my ideal body fat and therefore I absolutely should
11	I would like to be my ideal shape and therefore I absolutely must be
12	I would like to be my ideal shape and therefore I absolutely should be
13	I would prefer to be my ideal size and therefore I absolutely must be
14	I would prefer to be my ideal size and therefore I absolutely should be
15	I would prefer to have my ideal body fat and therefore I absolutely must
16	I would prefer to have my ideal body fat and therefore I absolutely should
17	I would prefer to be my ideal shape and therefore I absolutely must be
18	I would prefer to be my ideal shape and therefore I absolutely should be
19	It would be completely awful if I was not my ideal size
20	It would be completely terrible if I was not my ideal size
21	It would be the worst thing imaginable if I was not my ideal size
22	It would be completely awful if I did not have my ideal body fat
23	It would be completely terrible if I did not have my ideal body fat
24	It would be the worst thing imaginable if I did not have my ideal body fat
25	It would be completely awful if I was not my ideal shape
26	It would be completely terrible if I was not my ideal shape
27	It would be the worst thing imaginable if I was not my ideal shape

28	It would be unbearable if I was not my ideal size
29	It would be unbearable if I did not have my ideal body fat
30	It would be unbearable if I was not my ideal shape
31	I could not stand it if I was not my ideal size
32	I could not stand it if I did not have my ideal body fat
33	I could not stand it if I was not my ideal shape
34	It would be intolerable if I was not my ideal size
35	It would be intolerable if I did not have my ideal body fat
36	It would be intolerable if I was not my ideal shape
37	I would be completely worthless if I was not my ideal size
38	I would be completely unlovable if I was not my ideal size
39	I would be completely worthless if I did not have my ideal body fat
40	I would be completely unlovable if I did not have my ideal body fat
41	I would be completely worthless if I was not my ideal shape
42	I would be completely unlovable if I was not my ideal shape
43	If I was not my ideal size it would make me completely worthless
44	If I did not have my ideal body fat it would make me completely worthless
45	If I was not my ideal shape it would make me completely worthless
46	I would like to be my ideal size, but I do not absolutely have to be
47	I would like to be my ideal size, but that does not mean that I must be
48	I would like to have my ideal body fat, but that does not mean that I must
49	I would like to have my ideal body fat, but that does not mean that I absolutely should
50	I would like to be my ideal shape, but I do not absolutely have to be
51	I would like to be my ideal shape, but that does not mean that I must be
52	I would prefer to be my ideal size, but I do not absolutely have to be
53	I would prefer to be my ideal size, but that does not mean that I must be
54	I would prefer to have my ideal body fat, but that does not mean that I must
55	I would prefer to have my ideal body fat, but that does not mean that I absolutely should
56	I would prefer to be my ideal shape, but I do not absolutely have to be
57	I would prefer to be my ideal shape, but that does not mean that I must be
58	If I was not my ideal size it would be very bad, but it would not be the end of the world

59	If I was not my ideal size it would be unpleasant and unfortunate, but not awful
60	It would be unfortunate if I were not my ideal size, but not the end of the world
61	If I did not have my ideal body fat it would be very bad, but it would not be the end of the world
62	If I did not have my ideal body fat it would be unpleasant and unfortunate, but not awful
63	It would be unfortunate if I did not have my ideal body fat, but not the end of the world
64	If I was not my ideal shape it would be very bad, but it would not be the end of the world
65	If I was not my ideal shape it would be unpleasant and unfortunate, but not awful
66	It would be unfortunate if I were not my ideal shape, but not the end of the world
67	It would be difficult if I was not my ideal size, but I could stand it
68	It would be tough if I was not my ideal size, but I could bear it
69	It would be difficult if I was not my ideal size, but I could tolerate it
70	It would be difficult not having my ideal body fat, but I could stand it
71	it would be tough not having my ideal body fat, but I could bear it
72	it would be difficult not having my ideal body fat, but I could tolerate it
73	It would be difficult if I was not my ideal shape, but I could stand it
74	It would be tough if I was not my ideal shape, but I could bear it
75	It would be difficult if I was not my ideal shape, but I could tolerate it
76	Regardless of whether I am my ideal size or not, I can accept myself as a human being
77	I can accept myself regardless of whether I am my ideal size or not
78	My worth as a human being does not depend on me being my ideal size
79	Regardless of whether I have my ideal body fat or not, I can accept myself as a human being
80	I can accept myself regardless of whether I have my ideal body fat or not
81	My worth as a human being does not depend on me having my ideal body fat
82	Regardless of whether I am my ideal shape or not, I can accept myself as a human being
83	I can accept myself regardless of whether I am my ideal shape or not
84	My worth as a human being does not depend on me being my ideal shape

Appendix 5.7: Chapter 5 – 57-item Body Image Beliefs Inventory

The following questions relate to a number of beliefs you may hold about your appearance. Please read each item carefully and respond to each question from 1 (strongly disagree) to 5 (strongly agree). There are no right or wrong answers and we ask that you respond to each question as honestly as possible

1	I absolutely must be my ideal size
2	I absolutely must have my ideal body fat
3	I absolutely must be my ideal shape
4	I would like to be my ideal size and therefore I absolutely must be
5	I would like to have my ideal body fat and therefore I absolutely must
6	I would like to have my ideal body fat and therefore I absolutely should
7	I would like to be my ideal shape and therefore I absolutely must be
8	I would prefer to be my ideal size and therefore I absolutely must be
9	I would prefer to be my ideal size and therefore I absolutely should be
10	I would prefer to have my ideal body fat and therefore I absolutely must
11	I would prefer to be my ideal shape and therefore I absolutely must be
12	I would prefer to be my ideal shape and therefore I absolutely should be
13	It would be completely awful if I was not my ideal size
14	It would be the worst thing imaginable if I was not my ideal size
15	It would be completely terrible if I did not have my ideal body fat
16	It would be the worst thing imaginable if I did not have my ideal body fat
17	It would be completely awful if I was not my ideal shape
18	It would be completely terrible if I was not my ideal shape
19	It would be unbearable if I was not my ideal size
20	It would be unbearable if I was not my ideal shape
21	I could not stand it if I was not my ideal size
22	I could not stand it if I did not have my ideal body fat
23	It would be intolerable if I did not have my ideal body fat
24	It would be intolerable if I was not my ideal shape
25	I would be completely unlovable if I was not my ideal size
26	I would be completely worthless if I did not have my ideal body fat
27	I would be completely unlovable if I did not have my ideal body fat

28	I would be completely worthless if I was not my ideal shape
29	If I was not my ideal size it would make me completely worthless
30	If I was not my ideal shape it would make me completely worthless
31	I would like to be my ideal size, but I do not absolutely have to be
32	I would like to have my ideal body fat, but that does not mean that I must
33	I would like to have my ideal body fat, but that does not mean that I absolutely should
34	I would like to be my ideal shape, but I do not absolutely have to be
35	I would like to be my ideal shape, but that does not mean that I must be
36	I would prefer to be my ideal size, but I do not absolutely have to be
37	I would prefer to be my ideal size, but that does not mean that I must be
38	I would prefer to have my ideal body fat, but that does not mean that I must
39	I would prefer to be my ideal shape, but that does not mean that I must be
40	If I was not my ideal size it would be very bad, but it would not be the end of the world
41	If I was not my ideal size it would be unpleasant and unfortunate, but not awful
42	If I did not have my ideal body fat it would be unpleasant and unfortunate, but not awful
43	It would be unfortunate if I did not have my ideal body fat, but not the end of the world
44	If I was not my ideal shape it would be very bad, but it would not be the end of the world
45	It would be unfortunate if I were not my ideal shape, but not the end of the world
46	It would be difficult if I was not my ideal size, but I could stand it
47	It would be difficult if I was not my ideal size, but I could tolerate it
48	It would be difficult not having my ideal body fat, but I could stand it
49	it would be tough not having my ideal body fat, but I could bear it
50	It would be tough if I was not my ideal shape, but I could bear it
51	It would be difficult if I was not my ideal shape, but I could tolerate it
52	I can accept myself regardless of whether I am my ideal size or not
53	My worth as a human being does not depend on me being my ideal size
54	Regardless of whether I have my ideal body fat or not, I can accept myself as a human being
55	My worth as a human being does not depend on me having my ideal body fat
56	Regardless of whether I am my ideal shape or not, I can accept myself as a human being
57	I can accept myself regardless of whether I am my ideal shape or not

Appendix 5.7: Chapter 5 – The Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001)

Over the last 2 weeks, how often have you been bothered by the following problems?

#	Item	Not at all	Several days	More than half the days	Nearly every day
1	Little interest or pleasure in doing things				
2	Feeling down, depressed, or hopeless				
3	Trouble falling or staying asleep, or sleeping too much				
4	Feeling tired or having little energy				
5	Poor appetite or overeating				
6	Feeling bad about yourself — or that you are a failure or have let yourself or your family down				
7	Trouble concentrating on things, such as reading the newspaper or watching television				
8	Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving .around a lot more than usual				
9	Thoughts that you would be better off dead or of hurting yourself in some way				

Appendix 5.7: Chapter 5 – Positive Mental Health Scale (PMH; Lukat et al., 2016)

Please indicate for each statement how much you agree. Please do not leave out a statement.

#	Item	Do not agree	Disagree	Tend to agree	Agree
1	I am often carefree and in good spirits.				
2	I enjoy my life.				
3	All in all, I am satisfied with my life.				
4	In general, I am confident				
5	I manage well to fulfil my needs				
6	I am in good physical and emotional condition.				
7	I feel that I am actually well equipped to deal with life and its difficulties				
8	Much of what I do brings me joy				
9	I am a calm, balanced human being.				

Appendix 5.7: Chapter 5 – The Generalized Anxiety Disorder-7 (GAD-7; Spitzer et al., 2006)

Over the last 2 weeks, how often have you been bothered by the following problems?

#	Item	Not at all	Several days	More than half the days	Nearly every day
1	Feeling nervous, anxious or on edge				
2	Not being able to stop or control worrying				
3	Worrying too much about different things				
4	Trouble relaxing				
5	Being so restless that it is hard to sit still				
6	Becoming easily annoyed or irritable				
7	Feeling afraid as if something awful might happen				

Appendix 5.8: Chapter 5 - Information sheet study 5



Dear Participant,

We are researchers in the School of Life Sciences & Education at Staffordshire University. As part of our research, we are interested in your current beliefs regarding your appearance. By completing this questionnaire you will support us in understanding appearance beliefs from your perspective.

What does it involve?

Your participation will involve completing an online questionnaire regarding your beliefs of your appearance. The participation in completing this questionnaire should take between 2-3 minutes. Furthermore, you will be contacted in two weeks to repeat the questionnaire.

Am I suitable for the study?

If you are currently suffering from a mental health condition, then unfortunately you are unable to take part.

Do I have to take part?

Your participation is completely voluntary and you have the right to withdraw at any point without further consequence. If at any point you would like to withdraw please email the lead researcher (Leon Outar) directly.

Are there any risks in taking part?

It is unlikely that the study will cause risk or harm. However, if you experience any stress related symptoms after completing this study then please contact Mind on: 0300 123 3393/ info@mind.org.uk, or visit their website <http://www.mind.org.uk> for more information.

What will happen to my results and information?

Your results will not be identifiable to anybody, including the researchers. Furthermore, we will not see your individual results. The data you provide will be kept completely anonymous at all times and only research team (Leon Outar, Dr Martin Turner & Dr Andrew Wood) will see your anonymised data. We do not ask for your name or any other identifying information. All data will be kept secured and will be stored for up to 10 years in line with university policy.

Who can I contact if I have further questions regarding the study?

If you have any questions regarding your participation, please contact the lead researcher at leon.outar@research.staffs.ac.uk

Sincerely,

Leon Outar BSc, MSc

Appendix 5.9: Chapter 5 – Content areas sheet for expert panel

Dear Expert Panel,

We are developing a new psychometric to assess irrational beliefs concerning body image. You have been invited to discuss the validity of the contextual areas of this new psychometric. The content areas presented below were generated at an item-development meeting. Today I am kindly asking you to express your thoughts on each of the contextual areas, indicating if you believe it has validity in conveying body image concerns pertaining to body image. Furthermore, if you feel that additional contextual areas should be considered, please let us know.

Shape

- The external form, contours, or outline of someone or something - *"She liked the shape of his muscles"*

Size

- The relative extent of something; a thing's overall dimensions or magnitude; how big something is - *"He was not happy with the size of his muscles"*

Muscularity

- Having well-developed muscles - *"A muscular build"*.

Physique

- The form, size, and development of a person's body - *"He desired a muscular physique"*

Body-fat

- The percentage of a person's body that is not composed of water, muscle, bone, and vital organs - *"She was not happy with her body-fat"*

Symmetry

- Correct or pleasing proportion of the parts of a thing - *"She pursued the perfect symmetry between upper and lower body"*

Definition

- The degree of distinctness in outline of an object, image, or sound - *"He wanted better definition"*