Blood-Injection-Injury Phobia in Children and Adolescents

Ella L. Oar
BPsych(Hons), DPsych(Clin)

School of Applied Psychology
Griffith Health
Griffith University

Submitted in fulfilment of the requirements of the degree of a Doctor of Philosophy

June 2015
ABSTRACT

Blood-Injection-Injury (BII) phobia is a complex and debilitating condition that is associated with excessive fear and avoidance of seeing blood or injuries, receiving injections or invasive medical procedures (American Psychiatric Association (APA), 2013). It effects 3 to 4% of adults and 0.8 to 1% of children and adolescents, and can lead to serious health consequences as sufferers may avoid seeking assistance from health professionals or receiving medical treatments for diagnosed illnesses (Depla, ten Have, van Balkom, & Graaf, 2008; Essau, Conradt, & Petermann, 2000; Öst & Hellström, 1997). BII phobia has largely been neglected in the child and adolescent literature. To date the majority of the research relating to this disorder has been conducted with adults. From the adult literature it is evident that BII phobia has a complex clinical presentation that is characterised by a unique physiological (e.g., fainting) and emotional (e.g., disgust) response. Behavioural and cognitive behavioural therapies (CBT) have received the strongest empirical support for the treatment of adult BII phobia. The efficacy of CBT approaches with children and adolescents however is less clear, as these youth have been excluded from a number of the large randomised controlled trials (RCT) for childhood specific phobia (Ollendick et al., 2015; Ollendick et al., 2009), owing to their unique physiological response (e.g., fainting), difficulties associated with the delivery of treatment (e.g., the involvement of medical professionals) and their arguably poorer treatment response (Öst, Sven, Iström, Hellstrom, & Lindwall, 2001).

This thesis consists of a series of four studies, which have been submitted for publication, and were designed to address the significant gap in the child phobia literature, thereby advancing our knowledge in relation to the clinical characteristics, assessment and treatment of BII phobia in youth. Based upon existing etiological pathways for child specific phobia and adult BII phobia, Study 1 proposed a cognitive behavioural model to guide case-formulation driven
approaches for the treatment for BII phobia in youth. Two children with a primary diagnosis of BII phobia (aged 8 years and 11 years) were involved in the study. The first child received a standard intensive CBT session known as a one session treatment (OST; Öst, 1989), while the second child received an individualised, case-formulation driven OST. The cases highlighted the unique challenges associated with treating BII in youth and the need for a modified approach. Modifications to standard OST included addressing the role of pain (e.g., psychoeducation, more graduated exposure steps), disgust (e.g., disgust eliciting exposure tasks), and fainting in the maintenance of children’s phobia. Moreover, it was recommended that parents be actively involved throughout treatment (e.g., education session prior to OST, contingency management training, guidance regarding planning exposure tasks following treatment) and for families to participate in a structured e-therapy maintenance program post treatment in order to maintain progress.

Study 2 extended upon Study 1 by systematically examining whether BII phobia \( (n = 27; \text{7-18 years}) \) in youth presents with distinct psychological characteristics relative to youth with animal phobia \( (n = 25) \). The purpose of this study was to examine symptoms and maintaining mechanisms highlighted in the proposed cognitive behavioural model described in Study 1. Youth with BII phobia were found to have greater diagnostic severity and to experience greater impairment in their family, school and social life in comparison to those with animal phobia. Moreover, youth with BII phobia were also more likely to have a comorbid diagnosis of generalised anxiety disorder or a physical health condition. BII phobic youth also reported more exaggerated danger expectancies and tended to focus their fear on physical symptoms relative to youth with animal phobia.

The third study evaluated the effectiveness of the modified OST and e-therapy maintenance program (developed in Study 2) using a multiple baseline, controlled design. Twenty-four
children and adolescents (8-18 years) with a primary diagnosis of BII phobia were randomly assigned to a 1, 2 or 3 week baseline. BII symptoms were found to remain relatively stable during the baseline period; however, significantly improved following the OST with changes evidenced across multiple measures (e.g., child, parent and clinician). At post treatment, 33.33% of youth were BII diagnosis free. Treatment gains continued to improve across follow-up, with 58.33% of youth diagnosis free at 1-month follow-up and 62.5% by 3-month follow-up.

Finally, Study 4 examined patterns of response and remission following the modified OST for BII phobia in youth. Youth who participated in Study 3 were categorised into four responder groups (e.g., immediate responder/remitter, delayed responder/remitter, partial responder and non-responder) based upon defined criteria for remission. Characteristics of the different responder groups were examined to identify correlates of poorer response. Notably those in the immediate responders/remitter group were more likely to have a primary diagnosis of injection phobia, as opposed to a combined blood and injection phobia. Youth in the non-responder group reported significantly greater disgust sensitivity at baseline and were more likely to have a comorbid diagnosis of social phobia. Children and adolescents who were able to have a blood test during treatment were more likely to be in the immediate and delayed responder/remitters groups.

In summary, this thesis makes an important and valuable contribution to our knowledge and understanding of the clinical phenomenology, assessment and treatment of BII phobia in youth. Taken together these studies suggest that BII phobia in children and teenagers is a complex and debilitating disorder that requires an individualised and formulation driven approach to treatment. The studies provide preliminary evidence for the effectiveness of a modified OST including e-therapy maintenance program for children and adolescents.
DECLARATION OF ORIGINALITY

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

_____________________
Ella Lindsey Oar

June 12th 2015
ACKNOWLEDGEMENTS

I would like to thank Dr Lara Farrell my primary supervisor, mentor and friend. When I started working for Lara in 2008 I had never contemplated pursuing a career in research but her enthusiasm and passion for research is contagious. She has been one of the most influential people in my life. Not only is Lara an incredible researcher, but also an amazing clinician. I am so thankful for all the opportunities she has given me and for her kind words, encouragement and support throughout my PhD. I look forward to continuing our work together for many years to come.

I would also like to acknowledge the support of my associate supervisor Associate Professor Allison Waters for sharing her extensive knowledge and expertise and for involving me in the Griffith University Child Phobia Study and thus allowing me to be able to carry out my ideal PhD project.

I am humbled and honoured to have worked with Distinguished Professor Thomas Ollendick. I am very fortunate to have had the opportunity to collaborate with Tom and work with him at Virginia Tech. In 2011, I was terrified to travel to the US alone and away from my family and friends. These fears were quickly forgotten as the months I spent at the Child Study Centre progressed. Tom, his lovely wife Mary and all of his students made me feel welcomed and supported. I am very grateful to Tom for his encouragement and the sharing of his wealth of knowledge about childhood phobia and anxiety disorders. Tom, who is an internationally renowned researcher, still prioritised our work together and turned around the speediest drafts I have ever received! I look forward to continuing our friendship and working together in the future.

I wish to express my gratitude to Associate Professor Elizabeth Conlon. Liz provided me with an incredible amount of time, encouragement and patience during the final phases of
my PhD. I thoroughly enjoyed collaborating with her on these single case papers and my confidence with statistical analyses has increased phenomenally under her guidance. She has cured me of my statistics phobia! I hope we can continue to work together in the future.

I wish to thank Jackie Malloy, Andrea Miller and Ruth Macalpine for their involvement in the delivery of all of the One Session Treatments. They are incredible health professionals and their kind, warm and patient approach was ideal for working with fearful children and adolescents. I also wish to thank the Griffith University Physiotherapy and Active Health Centre and the Griffith University Medical Centre. Moreover, I would like to acknowledge the invaluable assistance of postgraduate students Michelle Parker Tomlin, Monique Holmes, Dipti McGowan, Ivan Pickett, Sophie James and others who were involved in administering assessments and delivering treatments. I would especially like to thank all the children, teenagers and parents who were involved in the studies. They were a pleasure to work with and I thank them for all the time that they devoted to completing interviews and questionnaires.

This research would not have been able to be conducted without the support of a Griffith University Areas of Strategic Investment in Chronic Disease Prevention Grant and additional funding from the Griffith University Behavioural Basis of Health, Menzies Health Institute. I also wish to thank Vivienne Van Rooyen for proof reading my final PhD thesis.

I would also like to acknowledge my examiners and the reviewers of my submitted manuscripts. Thank you for the time and effort you have dedicated to reading this collection of research and providing me with feedback to continue my development as a researcher.

Finally a special thank you to my husband Andrew, parents Ruth and Geoff, sister Lucy and grandmother Ella. This PhD would not be possible without your love, support and
encouragement. Thank you for helping me to pursue and achieve my dreams. Andrew, I can’t wait to start the new chapter in our lives together!
TABLE OF CONTENTS

Abstract
Declaration of Originality
Acknowledgements
Table of Contents
List of Figures
List of Tables
Abbreviations
Publications

Chapter 1  Specific Phobia in Children and Adolescents

1.1  Phenomenology and Epidemiology
1.2  Etiology
1.3  Evidenced Based Assessment
1.3.1  Questionnaires
1.3.2  Behavioural Approach Test
1.3.3  Phobic Beliefs
1.4  Evidenced Based Treatment
1.4.1  Systematic desensitization (SD)
1.4.2  Reinforced Practice (RP)
1.4.3  Modelling and Participant Modelling (PM)
1.4.4  Cognitive Behaviour Therapy
1.4.4.1  Case Study 1
1.4.5  One Session Treatment
1.4.5.1  Case Study 2
1.4.6  Partial responders and Treatment Refractory Specific Phobia
1.5  Summary
1.6  References

Chapter 2  Blood-Injection-Injury Phobia in Children and Adults

2.1  Phenomenology and Epidemiology
2.2  Age of Onset
2.3  Impairment
2.4 Comorbidity
2.5 Aetiology of BII Phobia
2.5.1 Genetics and Neurobiology
2.5.2 Learning
2.5.3 Evolutionary Preparedness
2.5.4 Physiological Response
2.5.5 The Role of Disgust
2.5.6 The Role of Pain
2.5.7 Other Cognitive Processes
2.6 Evidenced Based Assessment
2.6.1 Clinical interview and Diagnostic Interviews
2.6.2 Questionnaires
2.6.3 Behavioural Approach Tasks
2.7 Evidence-Based Treatment
2.7.1 Current Status of Treatment for Adult BII Phobia
2.7.2 Current Status of Treatment for Paediatric BII Phobia
2.8 Summary and Future Directions
2.9 References

Chapter 3 Preamble
3.1 Rationale for this program of research
3.2 Study 1 - One Session Treatment for Specific Phobias: An Adaptation for Paediatric Blood-Injection-Injury Phobia in Youth
3.3 Study 2 – Blood-Injection-Injury Phobia and Animal Phobia in Youth: Psychological Characteristics and Associated Features in a Clinical Sample
3.4 Study 3 – One Session Treatment for Paediatric Blood-Injection-Injury Phobia: A controlled multiple baseline trial
3.5 Study 4 - Patterns of response and remission following a One Session Treatment for Blood-Injection-Injury Phobia in Youth
3.6 Significance for the Program of Research
3.7 References
Chapter 4   One Session Treatment for Specific Phobias: An Adaptation for Paediatric Blood-Injection-Injury Phobia in Youth
4.1 Abstract
4.2 Introduction
4.3 Vulnerability Factors Associated with Specific Phobia
4.4 An Integrated Cognitive Behavioural Model of BII Phobia
4.5 Treatment for Specific Phobia in Youth
4.6 Current Status of Treatment for BII Phobia in Children and Adolescents
4.7 Current Status of Treatment for Adult BII Phobia
4.8 OST Approach for BII Phobic Youth
4.9 Treatment Illustrations
4.9.1 Case Study 1
4.9.2 Case Study 2
4.10 Modified OST for BII Phobia
4.11 Conclusions and Implications
4.12 References
4.13 Chapter 4 Relevant Appendices

Chapter 5   Blood-Injection-Injury Phobia and Animal Phobia in Youth: Psychological Characteristics and Associated Features in a Clinical Sample
5.1 Abstract
5.2 Introduction
5.3 Method
5.3.1 Participants
5.3.2 Measures
5.3.2.1 Diagnostic severity and comorbid diagnoses
5.3.2.2 Functional impairment and quality of life
5.3.2.3 Comorbid symptoms
5.3.2.4 Threat appraisals and focus of fear
5.3.2.5 Disgust
5.3.3 Procedure
5.4 Results
5.4.1 Data Analysis
5.4.2 Sociodemographic Characteristics
7.2 Introduction

7.3 Method

7.3.1 Participants and Procedure

7.3.2 Measures

7.3.2.1 Measures Used to Define Response and Remission Patterns

7.3.2.2 Measures used to Characterise Response and Remission Patterns

7.4 Results

7.4.1 Remission and Response following OST

7.4.2 Data Analysis

7.4.3 Baseline Variables

7.4.4 Within Treatment Variables

7.5 Discussion

7.6 References

7.7 Chapter 7 Relevant Appendices

Chapter 8 General Discussion

8.1 Study 1 – Outcomes and Implications

8.2 Study 2 – Outcomes and Implications

8.3 Study 3 - Outcomes and Implications

8.4 Study 4 – Outcomes and Implications

8.5 Strengths and Limitations of the Program of Research

8.6 Future Directions

8.7 Summary and Conclusions

8.8 References

Appendices

Appendix A Ethics Approval from Griffith University

Appendix B Information and Consent Form for BII Phobic Youth

Appendix C Information and Consent Form for Animal Phobic Youth

Appendix D Telephone Screen

Appendix E Demographic Questionnaire BII and Animal Phobia

Appendix F Composite Clinician Diagnoses and CGI

Appendix G Clinician Global Assessment Scale (CGAS)

Appendix H Spence Children’s Anxiety Scale - Child Version (SCAS-C)

Appendix I Spence Children’s Anxiety Scale - Parent Version (SCAS-P)
Appendix J Short Mood and Feelings Questionnaire - Child Version (SMFQ-C)
Appendix K Short Mood and Feelings Questionnaire - Parent Version (SMFQ-P)
Appendix L Fear Survey Schedule for Children Revised - Child Version (FSSC-R)
Appendix M Fear Survey Schedule for Children Revised - Parent Version (FSSC-R)
Appendix N Disgust Emotion Scale for Children – Child Version (DES-C)
Appendix O Disgust Emotion Scale for Children – Parent Version (DES-C)
Appendix P Mutilation Questionnaire – Child Version (MQ-C)
Appendix Q Injection Phobia Scale – Child Version (IPS-Anx-C)
Appendix R Functional Analysis Guide- BII
Appendix S Functional Analysis Guide- Animals/Objects
Appendix T Idiographic Target Behaviours – Child Version
Appendix U Idiographic Target Behaviours – Parent Version
Appendix V Behavioural Avoidance Task – Actual Stimuli
Appendix W Behavioural Avoidance Task – Video Stimuli
Appendix X Threat Appraisal Ratings
Appendix Y Fear and Disgust Ratings
Appendix Z Homework Compliance – Child Version
Appendix AA Homework Compliance – Parent Version
Appendix AB Therapist Adherence and Competence
Appendix AC Treatment Satisfaction – Child Version (CTS)
Appendix AD Treatment Satisfaction – Parent Version (PTS)
LIST OF FIGURES

Figure 1.1  Treatment algorithm for children with specific phobia

Figure 4.1  A cognitive-behavioural formulation of BII specific phobia

Figure 6.1  Flow of participants through the study

Figure 6.2  Mean group scores for CSR, child and parent fear ratings of target behaviours across 1 week ($n = 8$), 2 week ($n = 9$) and 3 week ($n = 7$) baseline

Figure 7.1  Coping estimates for youth in each of the responder groups during OST and at follow-up.
LIST OF TABLES

Table 1.1  BAT example steps for a Dog Phobia
Table 2.1  Supplementary Questions for the ADIS-IV C/P BII Specific Phobia Module
Table 2.2  Behavioural approach test (BAT) example steps for a phobia of blood
Table 4.1  Summary of Louise’s OST session
Table 4.2  Summary of Ivy’s OST session
Table 4.3  Suggested adaptations to treatment for BII Phobia in Children and Adolescents

Table 5.1  Participant Characteristics BII and Dog phobia comparison samples
Table 5.2  Comparison of BII and Dog Phobic Youth Comorbidity
Table 5.3  Comparison of BII and Dog Phobic Youth across Diagnostic Severity, Impairment and Comorbid Symptoms, Disgust and Threat Appraisals
Table 5.4  Comparison of BII and Dog Phobic Youth Focus of Fear
Table 6.1  Participant Characteristics
Table 6.2  Time main effects for treatment outcome measures
Table 6.3  Percentage of youth who were reliably changed, percentage of youth who were improved and percentage of youth recovered
Table 7.1  Percentage of children in each responder group meeting remission criteria
Table 7.2  Baseline Characteristics
Table 7.3  Comorbid Diagnoses
Table 7.4  Within Treatment Characteristics
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADHD</td>
<td>Attention Deficit Hyperactivity Disorder</td>
</tr>
<tr>
<td>ADIS-IV</td>
<td>Anxiety Disorders Interview Schedule for DSM-IV</td>
</tr>
<tr>
<td>ADIS-IV-C</td>
<td>Anxiety Disorders Interview Schedule for DSM-IV - Child Version</td>
</tr>
<tr>
<td>ADIS-IV-P</td>
<td>Anxiety Disorders Interview Schedule for DSM-IV - Parent Version</td>
</tr>
<tr>
<td>ANOVA</td>
<td>Analysis of Variance</td>
</tr>
<tr>
<td>APA</td>
<td>American Psychiatric Association</td>
</tr>
<tr>
<td>BAT</td>
<td>Behavioural Approach/ Avoidance Task</td>
</tr>
<tr>
<td>BII</td>
<td>Blood-Injection-Injury</td>
</tr>
<tr>
<td>BISS</td>
<td>Blood-Injection Symptom Scale</td>
</tr>
<tr>
<td>CAMS</td>
<td>Child/Adolescent Anxiety Multimodal Study</td>
</tr>
<tr>
<td>CASI</td>
<td>Child Anxiety Sensitivity Index</td>
</tr>
<tr>
<td>CBCL</td>
<td>Child Behaviour Checklist</td>
</tr>
<tr>
<td>CBT</td>
<td>Cognitive Behaviour Therapy/ Cognitive Behavioural Treatment</td>
</tr>
<tr>
<td>CDS</td>
<td>Child Disgust Scale</td>
</tr>
<tr>
<td>CGAS</td>
<td>Children’s Global Assessment Scale</td>
</tr>
<tr>
<td>CGI</td>
<td>Clinical Global Impressions Scale</td>
</tr>
<tr>
<td>CGI-I</td>
<td>Clinical Global Impressions Scale – Improvement</td>
</tr>
<tr>
<td>CGI-S</td>
<td>Clinical Global Impressions Scale – Severity</td>
</tr>
<tr>
<td>CM</td>
<td>Contingency Management</td>
</tr>
<tr>
<td>CSR</td>
<td>Clinician Severity Rating</td>
</tr>
<tr>
<td>CTS (PTS)</td>
<td>Child and Parent Treatment Satisfaction</td>
</tr>
<tr>
<td>DES-C</td>
<td>Disgust Emotion Scale for Children - Child Version</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>DSM-IV</td>
<td>Diagnostic and Statistical Manual of Mental Disorders, 4th Edition</td>
</tr>
<tr>
<td>DSM-IV-TR</td>
<td>Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision</td>
</tr>
<tr>
<td>DSM-V</td>
<td>Diagnostic and Statistical Manual of Mental Disorders, 5th Edition</td>
</tr>
<tr>
<td>DPSS-R</td>
<td>Disgust Propensity and Sensitivity Scale-Revised</td>
</tr>
<tr>
<td>EMDR</td>
<td>Eye Movement Desensitization and Reprocessing</td>
</tr>
<tr>
<td>ES</td>
<td>Education Support</td>
</tr>
<tr>
<td>EST</td>
<td>Education Support Treatment</td>
</tr>
<tr>
<td>fMRI</td>
<td>functional magnetic resonance imaging</td>
</tr>
<tr>
<td>FSS</td>
<td>Fear Survey Schedule</td>
</tr>
<tr>
<td>FSSC-R</td>
<td>Fear Survey Schedule for Children Revised - Child Version</td>
</tr>
<tr>
<td>GAD</td>
<td>Generalized Anxiety Disorder</td>
</tr>
<tr>
<td>IPS-Anx</td>
<td>Injection Phobia Scale – Anxiety</td>
</tr>
<tr>
<td>MBPI</td>
<td>Multidimensional Blood/Injury Phobia Inventory</td>
</tr>
<tr>
<td>MQ</td>
<td>Mutilation Questionnaire</td>
</tr>
<tr>
<td>OCD</td>
<td>Obsessive Compulsive Disorder</td>
</tr>
<tr>
<td>ODD</td>
<td>Oppositional Defiant Disorder</td>
</tr>
<tr>
<td>OST</td>
<td>One Session Treatment</td>
</tr>
<tr>
<td>PANAS</td>
<td>Positive and Negative Affect Schedule</td>
</tr>
<tr>
<td>PedsQL</td>
<td>Pediatric Quality of Life Inventory</td>
</tr>
<tr>
<td>PTSD</td>
<td>Post Traumatic Stress Disorder</td>
</tr>
<tr>
<td>PM</td>
<td>Participant Modelling</td>
</tr>
<tr>
<td>RCI</td>
<td>Reliable Change Index</td>
</tr>
<tr>
<td>RCT</td>
<td>Randomised Controlled Trial</td>
</tr>
<tr>
<td>RIRD</td>
<td>Robust Improvement Rate Difference</td>
</tr>
</tbody>
</table>
RP  Reinforced Practice
SAD  Separation Anxiety Disorder
SCAS-C  Spence Children’s Anxiety Scale - Child Version
SCAS-P  Spence Children’s Anxiety Scale - Parent Version
SD  Systematic Desensitization
SMFQ-C  Short Mood and Feelings Questionnaire - Child Version
SMFQ-P  Short Mood and Feelings Questionnaire - Parent Version
Published in this thesis is a book chapter and papers (published or under review) in Chapters 1, 4, 5, 6 and 7, which were co-authored with other researchers. My contribution to each co-authored paper is outlined at the front of the relevant chapter. The bibliographic details for the book chapter and papers including all authors are as follows -

Chapter 1

Chapter 4

Chapter 5
Chapter 6


Chapter 7


Dr Ella Oar 12/06/15  Dr Lara Farrell 12/06/15

Dr Allison Waters 11/06/15  Dr Elizabeth Conlon 12/06/15

Dr Thomas Ollendick 10/06/15
Chapter 1 Specific Phobia in Children and Adolescents

This chapter includes a co-authored book chapter which was published in 2013. The bibliographic details of the chapter are:


My contribution to the book chapter involved: initial concept, development of chapter outline, literature search and review of relevant research, completion of complete chapter draft and revisions following co-author contributions.

Permission has been obtained via email correspondence (21/04/15) from the publisher Cambridge University Press (Claire Taylor) to include this book chapter as part of this PhD thesis.

Dr Ella Oar 12/06/15 Dr Lara Farrell 12/06/15

Dr Thomas Ollendick 10/06/15
Children typically experience a range of fears during the course of their development. The content of these fears follows a predictable course that coincides with increasing cognitive development (Gullone, 2000; Muris, Merckelbach, Gadet, & Moulaert, 2000; Ollendick, King, & Muris, 2004), from concrete fears in infancy and toddlerhood (e.g., strangers and animals) to increasingly more abstract fears in childhood (e.g., ghosts, the supernatural) and adolescence (e.g., social fears, agoraphobia). Specific fears tend to peak in early childhood between the ages of 7 to 9 years and then begin to decline in children 10 years and older (Muris et al., 2000). While typically transient in nature, for some children, fears persist and become more frequent, intensive and durable in nature, eventually evolving into a phobia (Ollendick et al., 2004).

1.1 Phenomenology and Epidemiology

According to the Diagnostic and Statistical Manual of Mental disorders (DSM-IV-TR; American Psychiatric Association (APA), 2000) a specific phobia is an intense and persistent fear cued by the presence or anticipation of a specific object or situation. Exposure to the phobic stimulus typically provokes an immediate anxiety response or panic attack in the child and the phobic stimulus is typically avoided or, if avoidance is not possible, endured with considerable distress. Moreover, avoidance of the phobic stimulus generally interferes significantly with the child’s academic, social and family functioning. The fear cannot be better accounted for by another mental disorder. The DSM-IV-TR criteria take into consideration the tenets of developmental psychopathology and specify that fear should not be transient and must be present for at least six months in children. Additionally, unlike adults, children are not required to recognize that their fear is excessive or unreasonable. The DSM-IV-TR further classifies specific phobia into five major subtypes: animal (e.g., dogs, insects, snakes), natural environment (e.g., thunderstorms, heights, darkness), situational (e.g.,
elevators, enclosed places, flying), blood-injury-injection (e.g., seeing blood, injections), and other (e.g., loud noises, costume characters; APA, 2000). Animal and natural environment phobias are the most frequently observed types of phobia in children and adolescents (Last, Perrin, Hersen, & Kazdin, 1992; Milne et al., 1995; Silverman et al., 1999), including phobias of dogs, insects, heights, the dark, and storms.

Lang’s tripartite model (Lang, 1967, 1969; Lang, Cuthbert, & Bradley, 1998) describes fear and the phobic response as being comprised of three components: cognition, physiology and behaviour that are in line with the DSM-IV-TR criteria. When exposed to phobic objects or situations children and adolescents may think catastrophic thoughts e.g., the dog will bite me, the injection will get stuck in my arm (cognitive component), experience activation of their autonomic nervous system, including increased heart rate and/or breathing, sweating and shaking (physiological component) and engage in avoidance behaviour such as running away, crying, having a tantrum, freezing or clinging to their caregiver (behavioural component; Davis & Ollendick, 2011).

Specific phobias are highly prevalent, affecting approximately 5 – 10% of children and adolescents in community samples and 15% in mental health settings (Bener, Ghuloum, & Dafeeah, 2011; Kessler et al., 2005; Ollendick, Hagopian, & King, 1997). The average age of onset for specific phobias is 9 to 10 years of age. However, similar to normative fears, the onset of specific phobia types follows a developmental progression. For example, animal phobias typically emerge at 7 years of age, followed by blood-injury-injection phobia at 9 years, situational fears at approximately 13 years of age and claustrophobia at 20 years of age (Öst, 1987). Phobic youth frequently experience academic difficulties (Dweck & Wortman, 1982; Ialongo, Edelsohn, Werthamer-Larsson, Crockett, & Kellam, 1995; Klein & Last, 1989), social and personal distress (Ollendick & King, 1994; Ollendick, King, & Muris, 2002; Strauss, Lease, Kazdin, Dulcan, & Last, 1989) and interference in their day to day activities.
(Essau, Conradt, & Petermann, 2000; Ollendick et al., 1997; Ollendick et al., 2004; Silverman et al., 1999). If untreated, childhood phobias may persist into adolescence and adulthood (Ollendick et al., 2004). Moreover, they may lead to the development of other psychiatric disorders including adult anxiety, mood and substance use (Kendall, Safford, Flannery-Schroeder, & Webb, 2004).

Specific phobias are frequently comorbid with other psychiatric conditions. Community and clinical studies suggest that 25% to 72% of phobic youth meet criteria for at least one other comorbid diagnosis (Costello, Egger, & Angold, 2004; Last et al., 1992; Ollendick et al., 2002; Ollendick, Öst, Reuterskiöld, & Costa, 2010; Silverman et al., 1999). Most commonly, specific phobias co-occur with other types of anxiety disorders, including; other types of phobia, generalized anxiety disorder, social anxiety disorder, separation anxiety disorder and obsessive compulsive disorder. In fact, prevalence rates indicate that 50% of phobic youth meet criteria for at least one other type of phobia (Costello et al., 2004).

Comorbidity with mood and externalizing disorders (e.g., oppositional defiant disorder and attention deficit hyperactivity disorder) is also observed (Last et al., 1992).Interestingly, current research suggests that comorbidity does not adversely affect phobia treatment outcome. For example, Ollendick and colleagues (2010) reported that successful treatment of specific phobia in their clinical sample was not adversely affected by the presence of comorbid anxiety disorders and also was associated with reductions in the clinical severity of the other comorbid anxiety disorders (Ollendick et al., 2010).

1.2 Etiology

Specific phobias in youth have a complex etiology that is multi-determined (King, Muris, & Ollendick, 2004; Ollendick, 1979). Genetic influences, parenting, learning experiences and evolutionary preparedness are all factors thought to be involved in the
development of vulnerability for a specific phobia (Cowart & Ollendick, in press).

It is evident from family and twin studies that phobias are highly familial, with the offspring of phobic individuals significantly more likely to develop the same type of phobia as their parent (LeBeau et al., 2010). Some studies however, suggest a common vulnerability for animal, natural environment and situational phobia subtypes and a separate genetic risk for blood-injection-injury phobia (Hettema, Prescott, Myers, Neale, & Kendler, 2005). Moreover, other studies again suggest a general genetic risk factor that places an individual at risk for a range of anxiety disorders (Taylor, 1998). Thus, genetic influences appear to play a role in the development of a specific phobia; however, the specificity of the genetic vulnerability is so far unclear.

Parenting factors are also believed to play a role in the development of childhood phobias. Parents of anxious children have been found to have a more intrusive and ‘overprotective’ parenting style (Barrett, Rapee, Dadds, & Ryan, 1996; Chorpita, Albano, & Barlow). Parents with this style tend to intervene and attempt to protect their child from negative experiences (e.g., injury, failure and misfortune). In regards to phobias, parents may accommodate and reinforce their child’s phobic avoidance to prevent their child from potential negative experiences. Thus children are prevented from having a positive learning experience with the phobic object that could challenge their fear related beliefs (Cowart & Ollendick, in press). For example, a parent may allow their child to stay home from school because their class is going on an excursion to the Zoo and the child has a fear of snakes; or the child is allowed to avoid a friend’s birthday party because they have a fear of costume characters and their will be a clown at the party. In these instances the child does not have the opportunity to learn that the fearful events they anticipate do not occur, or that they could in fact cope with the anxiety associated with the situation/object.

According to Rachman’s theory (1976, 1977), three learning pathways are associated
with phobia acquisition: direct/classical conditioning, vicarious conditioning (modelling) and
the transmission of negative information. Classically conditioned phobias are acquired
through a direct negative experience with the phobic object/situation. For example, a child
who experiences dangerous conditions and damage to property during a severe storm and then
develops a storm phobia, would be said to have acquired their phobia through direct
conditioning. In contrast, phobias acquired vicariously involve modeling and observation of
others’ anxious behavior towards the phobic object/situation. An example of this type of
phobia acquisition would include a child who develops a phobia of dogs after watching their
mother or father behave in a fearful manner around dogs. The third learning pathway
proposed to result in phobia acquisition is that a child may acquire a phobia through hearing
or reading negative information about the phobic object/situation. For example, a child may
develop a phobia of injections after a peer relays to them the traumatic circumstances they
experienced when they were held down and forcibly given an injection.

The aforementioned etiological pathways may not account for all causes of specific
phobia. The non-associative model of fear acquisition proposes that some fears are
biologically prepared through evolution (e.g., heights, snakes, water) (Menzies & Clarke,
According to this model, at some point in time, these fears were evolutionarily adaptive and
necessary for survival and they were passed on to us from our ancestors and therefore do not
require critical learning experiences. For example, fear of heights or darkness may be
characterized as being evolutionarily adaptive fears that, in some children, become excessive
and phobic in nature through this complex interaction of environment, learning and biological
vulnerability.

In recent years there has been considerable research into the role of disgust in the
etiology and maintenance of anxiety disorders (Mortez, Rogrove, & McKay, 2011). This
research has predominantly focused on two types of specific phobia: animal (specifically spider) and blood-injury-injection (de Jong, Andrea, & Muris, 1997; Olatunji, Williams, Sawchuck, & Lohr, 2006). Disgust is believed to be a concurrent emotion that interacts with fear and results in increased avoidance behaviour (Phillips, Senior, Fahy, & David, 1998). Research suggests that disgust sensitivity in children is significantly correlated with small animal and spider phobias (de Jong & Muris, 2002; Muris, van der Heiden, & Rassin, 2008). deJong and Muris (2002) compared spider phobic children and non phobic children on belief ratings of disgust sensitivity, likelihood of a spider entering their living space and approaching them and subjective probability of a spider doing them harm. Additionally, they were asked to indicate their willingness to eat a favourite food item shortly after it had been in contact with a spider. Phobic children reported high ratings on the probability of a spider entering their room, approaching them and making physical contact (de Jong & Muris). Additionally, they reported higher ratings concerning spiders’ disgust-evoking status. The spider’s disgust evoking status was found to be the strongest predictor of spider phobia (de Jong & Muris). The contribution of the subjective probability of a spider doing harm was found to be insignificant. From this study deJong and Muris concluded that spider phobia is essentially a fear of physical contact with disgusting stimuli. In a recent study, Muris and colleagues (2009) exposed youth aged 9 to 14 years to disgust related information, cleanliness related information and threat related information about unknown animals. A bidirectional relationship was found between fear and disgust with disgust-related information promoting fear beliefs and conversely, threat-related information enhancing feelings of disgust (Muris et al., 2009). Furthermore, they found that children who received disgust related information were less likely to approach the unknown animal. To date, the majority of research investigating the relationship between disgust and specific phobia has focused on adults, while relatively little attention has been given to children. Further research is needed to
explore a developmentally sensitive role of disgust in the etiology of phobias in children.

1.3 Evidenced Based Assessment

A comprehensive assessment is critical to the provision of effective treatment for specific phobia. Ideally, assessments should be multi-method (e.g., clinical/ diagnostic interview, self report questionnaires, observation) and multi-informant (e.g., child, parent, teacher) as this allows for a complete diagnostic picture of the child across contexts and settings (Davis & Ollendick, 2011; King, Muris, & Ollendick, 2005; Silverman & Ollendick, 2005). All aspects of the phobic response (cognitive, physiological, behavioural) should be investigated to develop a complete understanding of the child’s phobia. Furthermore, given that specific phobias are highly comorbid, a broad assessment of psychopathology is required to assist in differential diagnosis (e.g., separation anxiety versus phobia of the dark) as well as identifying comorbid conditions. Clinicians also need to take into consideration the child’s developmental level and what is normative given the developmental trajectory of fear. A range of assessment tools including diagnostic interviews, questionnaires and observational methods are recommended for the assessment. A combination of these measures will provide the most comprehensive understanding of a child’s phobia and lead to the selection of the most appropriate treatment approach. For purposes of this chapter we focus our review on assessment measures unique to specific phobia. Broad based anxiety measures including diagnostic interviews and self-report measures are reviewed elsewhere (see Silverman & Ollendick, 2005).

1.3.1 Questionnaires

The Fear Survey Schedule for Children Revised (FSSC-R; Ollendick, 1983) is considered the gold standard specific phobia questionnaire. It is a self-report measure that assesses overall fearfulness and provides information about a range of specific and social
phobias. The questionnaire requires children and adolescents to rate their level of fear to 80 objects/ situations. The FSSC-R contains five factors including fear of danger and death, fear of failure or criticism, fear of the unknown, fear of small animals and medical fears. Higher scores indicate greater overall fearfulness and may suggest a specific phobia. Investigation of phobia specific items can assist with determining the presence and severity of different types of phobia. The FSSC-R provides norms for boys and girls of various ages and nationalities. It has been translated into several languages and has well-established reliability and validity (Weems, Silverman, Saavedra, Pina, & Lumpkin, 1999; Silverman & Ollendick, 2005).

Questionnaires are also available that assess individual phobia types such as the Spider Phobia Questionnaire for Children (SPQ-C). The SPQ-C consists of 29 items and provides the clinician with an overall spider fear score (Kindt, Brosschot, & Muris, 1996).

1.3.2 Behavioural Approach Test

Behavioural approach tests (BAT) are an essential part of any phobia assessment as they allow for direct observation of the child’s phobic response. The BAT is a standardized and controlled test in which individuals are asked to approach a phobic object or stimuli (Ollendick et al., 2004). For example, a child who is afraid of spiders may be brought to a closed door and informed that inside the room there is a table with a spider in a container. The child would then be instructed to enter the room, walk to the table, open the lid of the container, pick up the spider and hold it for 20 seconds. The child would be told that they only need to complete as much of the task as they feel comfortable with and that they can stop at any time. The degree to which the child complies or avoids the therapist’s instructions gives an objective measure of phobic avoidance (Ollendick et al., 2004). At different time points throughout the BAT the clinician may ask the child to rate their level of fear on a 0 (Not at all) to 8 (very high) likert-scale Additionally, physiological data such as heart rate and
heart rate variability can be collected to allow for assessment across all three components of the child’s phobic response (cognition, physiology and behaviour).

Although behavioural approach tasks may be difficult to arrange (e.g., retrieving, storing and caring for stimuli or scheduling outside clinic visits), particularly for private practice clinicians with limited resources, assistance and space, the incorporation of BATs in the assessment process is strongly recommended. The BAT is an important tool for treatment planning as it provides a foundation on which to establish a graduated exposure hierarchy (Cowart & Ollendick, in press). The child’s behaviour during the BAT gives an indication of a starting point for treatment and what the child is able to cope with in terms of interacting with the phobic object or situation. Moreover, the BAT gives insight into the child’s motivation to overcome their fear and their willingness to engage in therapy (Cowart & Ollendick, in press). A standardized BAT assessment protocol can be developed and adjusted for a range of phobia types. Performance on the BAT can be measured by the percentage of steps completed by the child (see Table 1.1) and their fear ratings (Ollendick et al., 2004).

### 1.3.3 Phobic Beliefs

Children’s expectancies and catastrophic cognitions (e.g., the dog will bite me, the needle will touch my bone; the plane will crash) regarding their phobic object or situation are involved in the maintenance of their avoidance behaviour (Öst, 1997; Öst & Ollendick, 2001; Zlomke & Davis, 2008). It is essential for the clinician to thoroughly elicit and assess the child’s phobic beliefs prior to commencing treatment. This can be achieved through a clinical interview (see Öst & Ollendick, 2001) or during the BAT. To gain an objective measure of the phobic beliefs the child can be asked to rate on a 9 point scale (0 – 8) how likely the belief is to occur (probability), how bad it would be if it actually occurred (danger) and how sure they are that they could cope with the event were it to occur (self efficacy). This can be
carried out for the child’s most severe phobic beliefs and be reevaluated during and following the completion of treatment.

Table 1.1  B A T example steps for a Dog Phobia

<table>
<thead>
<tr>
<th>BAT Steps</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Does not open door</td>
</tr>
<tr>
<td>2.</td>
<td>Opens door, but does not go in</td>
</tr>
<tr>
<td>3.</td>
<td>Steps inside the room</td>
</tr>
<tr>
<td>4.</td>
<td>Stays 1 meter from dog</td>
</tr>
<tr>
<td>5.</td>
<td>Stands arm’s length away from dog for &lt;20 seconds, but does not attempt to pet dog</td>
</tr>
<tr>
<td>6.</td>
<td>Stands arm’s length away from dog for ≥20 seconds, no attempt to pet dog</td>
</tr>
<tr>
<td>7.</td>
<td>Stands within arm’s reach of dog, reaches out to dog but does not make contact</td>
</tr>
<tr>
<td>8.</td>
<td>Stands within arm’s reach of dog and pets dog anywhere on dog’s body (not head) for &lt;20 seconds</td>
</tr>
<tr>
<td>9.</td>
<td>Stands within arm’s reach of dog and pets dog anywhere on body for ≥20 seconds</td>
</tr>
<tr>
<td>10.</td>
<td>Stands within arm’s reach of dog and pets dog on head for &lt;20 seconds</td>
</tr>
<tr>
<td>11.</td>
<td>Stands within arm’s reach to dog and pets dog on head with one hand ≥20 seconds</td>
</tr>
</tbody>
</table>

1.4  Evidenced Based Treatment

Several interventions have empirical support for the treatment of child and adolescent phobias (Davis & Ollendick, 2005). The most commonly used strategies and those with the
strongest evidence base are derived from behavioural and cognitive-behavioural perspectives. Exposure based therapies have been proven to be particularly efficacious (Wolitsky-Taylor, Horowitz, Powers, & Telch, 2008). As well, systematic desensitization, reinforced practice and participant modelling have also been shown to be effective with phobic youth (King et al., 2005).

1.4.1 Systematic desensitization (SD)

Developed by Wolpe (1958), systematic desensitization (SD) is one of the earliest and most influential treatments for specific phobia in youth. This approach is purported to work through the process of reciprocal inhibition - the notion that an individual cannot experience two competing emotions (e.g., fear and relaxation) simultaneously. SD involves exposing the patient to a feared object or situation while having them engage in an anxiety inhibiting response. For treating anxiety disorders, Wolpe (1958) generally recommended use of relaxation techniques; however, he also suggested other counter conditioning agents such as humor and eating could weaken the anxiety response. SD typically proceeds with training in progressive muscle relaxation and the development of an exposure hierarchy. During exposure tasks the child is coached to use progressive muscle relaxation. Hence, in the presence of the phobic object or situation the child experiences minimal levels of anxiety. In theory, the association between the phobic object and the child’s fear response weakens through the child not experiencing excessive levels of fear during exposure tasks (e.g., a spider no longer elicits a fear response; Davis & Ollendick, 2005, 2011).

The theory and procedure of SD have been increasingly criticized in recent years (Davis & Ollendick, 2011). More recent research has led to an understanding of exposure therapy as creating competing, context-specific learning as opposed to Wolpe’s (1958) ‘counter-conditioning’ hypothesis or unlearning of the fear response (Bouton, 2004; Davis &
In the last decade research has moved away from SD towards exposure therapy which involves fewer distractions (e.g., Davis & Ollendick, 2011). Interest in SD research has waned and more recent large scale randomized controlled trials with carefully diagnosed youth have not used systematic desensitization as their treatment of choice.

### 1.4.2 Reinforced Practice (RP)

Based on operant conditioning principles (e.g., reinforcement, shaping, extinction and verbal feedback), reinforced practice (RP; also referred to as contingency management) is another behavioural approach used to treat childhood specific phobia. This approach involves reinforcing successive steps towards a feared object or situation, thereby overcoming avoidance behaviour (Davis & Ollendick, 2005). RP requires the clinician to develop a graduated exposure hierarchy with the child. However, unlike SD it does not include the use of a competing response. RP alters avoidance behaviour through the manipulation of the consequences of the behaviour. Together the child and clinician develop a list of desirable reinforcers (e.g., praise, stickers, food items). The clinician gives the discussed reinforcers to the child contingent upon their completion of increasingly difficult steps on the fear hierarchy. Behaviour can be shaped and changed over time using this technique. The schedule of reinforcement is gradually decreased and then eventually faded out altogether as the child becomes more competent in facing their fears.

To date RP has not been used alone to treat childhood specific phobia, but rather has been implemented successfully as a component of an integrated behavioural approach (Silverman et al., 1999). Of theoretical and practical importance is the distinction between RP and SD. Frequently RP and SD are confused in the literature and often misconstrued as ‘distractors’ or ‘safety behaviours’ (Davis & Ollendick, 2011; Ollendick, Davis, & Sirbu, 2009). This is especially apparent when techniques other than relaxation are used in SD (e.g.,
eating or humor – any behaviour that competes with fear). The critical distinction between SD and RD is whether a competing response or a reinforcer is delivered (Ollendick, Davis et al., 2009). The goal of SD is for the child not to experience fear, whereas the goal of RP is for the child to experience manageable levels of fear and allow for extinction of avoidance to occur (Davis & Ollendick, 2011). Thus, in SD, a competing response is initiated before fear occurs, in an attempt to prevent the fear response from occurring. In contrast, the reinforcer in RP is given as soon as possible after the approach behaviour occurs.

1.4.3 Modelling and Participant Modelling (PM)

Modelling, based on social learning theory, involves the therapist (e.g., model) demonstrating how to approach and interact with the phobic object or situation (Davis & Ollendick, 2005). Watching another successfully interact with the feared stimulus is believed to weaken the relationship between the unconditioned and conditioned stimulus in the observer, as new context specific inhibitory learning begins to challenge their fear (Ollendick, Davis et al., 2009). Participant modelling (PM) extends upon basic modelling and encourages the observer to interact with the model and the feared stimulus (Ollendick, Davis et al., 2009). For example, children and adolescents are encouraged to interact with the model and phobic stimuli using a range of techniques including verbal instruction and physical contact, from simply standing beside the model to ‘hand-over-hand’ assistance where the child places his/her hand on the model, who is touching the phobic object (Davis, 2009; Davis & Ollendick, 2011). For example, when treating a child with a spider phobia, PM may progress as follows: (1) the therapist models allowing the spider to walk over their hand, (2) the child is instructed to place their hand on the therapist’s upper forearm, (3) the child is gradually encouraged to move their hand down the therapists arm and finally, (4) the therapist uses hand-over-hand assistance to help the child while the spider walks across their hand.
Gradually therapist instruction and physical contact is phased out. The goal of PM is for the child to eventually be able to independently engage in steps from their fear hierarchy.

Similar to RP, PM alone has not been evaluated in large scale randomized controlled trials with carefully diagnosed youth. However, PM has the additional benefits of skill building (e.g., learning how to safely catch and remove a spider from inside) and breaking down exposure tasks into more manageable steps (e.g., holding a spider versus observing someone hold a spider followed by placing your hand underneath the hand of someone who is holding a spider). PM is often misconstrued as only being useful with animal phobias (Davis, Ollendick, & Öst, 2009; Zolmke & Davis, 2008). In fact, PM can be and has been used with multiple phobia types such as costume characters, blood-injection-injury, and heights. For example, the therapist could model holding the hand of a costume character. The child could then move their hand gradually down the therapist’s arm until they have their hand over the top of the therapist’s and the costume character’s hand. Similar activities could occur with other phobias.

1.4.4 Cognitive Behaviour Therapy

Cognitive behaviour therapy (CBT) uses a combination of behavioural and cognitive techniques. It aims to addresses and modify behavioural avoidance and physiological arousal associated with avoidance, as well as catastrophic cognitions, attentional biases and cognitive distortions (Beck, 1993; Beck & Clark, 1997; Davis & Ollendick, 2005; Kendall 1993). For specific phobia, CBT typically involves behavioural techniques including graduated exposure, reinforcement, participant modelling, psychoeducation about the phobic stimuli, behavioural skills to assist with interacting with the phobic object, and cognitive techniques such as skills to identify and challenge cognitive biases and distortions. CBT has been found to be superior to a control group and waitlist control (Kanfer, Karoly, & Neuman, 1975; Graziano &
Mooney, 1980) and comparable to RP (Silverman et al., 1999). CBT, including one-session treatment (OST, Ollendick et al., 2009, see below), is currently considered an efficacious treatment for youth diagnosed with specific phobia, and is considered the first line treatment of choice.

1.4.4.1 Case Study 1

Oliver (not his real name), a 12 year old Caucasian boy, lived with his parents. His mother (age 40) and his father (age 42) resided together with Oliver, who was an only child. Oliver was referred for CBT for food neophobia. Oliver’s fear of food significantly interfered with his own and their family’s lives. Oliver was reported to have had an extremely restricted diet only eating plain chicken, plain white rice, crackers, bacon and eggs (a particular way). His parents stated that he refused to eat in the same room as them, would not enter the kitchen when food was being prepared and was unable to touch a dinner plate other than his own. Oliver was particularly afraid of fruit and vegetables, and foods that were mixed together, such as casseroles. He would refuse to touch or even look at leafy vegetables, such as lettuce. If taken to a supermarket, Oliver would become highly distressed crying and asking his mother to leave. Oliver’s parents were both from Italian families and loved to cook and share meals with their extended family on special occasions. Oliver’s parents indicated that they had stopped attending these family meals as they were embarrassed by Oliver’s behaviour and restricted diet. Furthermore, Oliver’s fear caused considerably family conflict and distress at meal times.

1.4.4.1.1 Assessment

Oliver and his parents were interviewed using the Anxiety Disorders Interview Schedule for DSM-IV Child/Parent version (ADIS-IV-C/P; Silverman & Albano, 1996). Oliver’s mother indicated that Oliver had feeding difficulties from infancy. She stated that she had been unable to produce sufficient breast milk and therefore Oliver had been bottle-fed.
She reported that Oliver often had difficulties attaching to the bottle. He was said to have always struggled with trying new foods, and been a fussy eater and underweight throughout his life.

Based on Oliver’s report and that of his parents during the diagnostic interview, Oliver was diagnosed with a specific phobia of food with a clinician severity rating (CSR) of 7 (scores range from 0 to 8), indicating a fear in the severe range. Additionally, Oliver was diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) with a CSR of 4. Oliver himself endorsed a high level of fear of food during the interview. He also reported some inattentive symptoms of attention deficit hyperactivity disorders. He had previously been diagnosed with ADHD and was currently receiving stimulant medication (Dexamphetamine) at the time of the family’s referral. During the initial assessment, a BAT was administered during which Oliver was asked to enter a room and eat a piece of lettuce from a bowl on a table. Oliver opened the door but refused to enter the room and reported his subjective anxiety to be at an 8 (on a scale ranging from 0 – 8).

1.4.4.1.2 Treatment

Oliver and his family participated in 15 one-hour weekly sessions of CBT. His treatment commenced with psychoeducation regarding anxiety and monitoring of his fear and avoidance between sessions (Session 1 onwards). Following this, Oliver was taught breathing and relaxation strategies to assist him in managing his physiological phobic response (Session 2). Session 3 to 4 focused on identifying his negative cognitions about food and eating. Oliver reported disliking the texture, colour (particularly green), smell and consistency of certain foods. He underestimated his ability to cope when trying new foods. He was extremely fearful of having to try new foods and was certain that he was unable to do so. He believed he could not possibly bring himself to put the food in his mouth, and that he would vomit if made to eat something new. An exposure hierarchy was constructed based on Oliver’s monitoring of
his fear and avoidance (refer Table 1.1). In each session (session 5-14) exposure activities were carried out and Oliver’s negative cognitions were tested and challenged. In early sessions, Oliver would often become highly distressed during exposure activities crying and refusing to touch or try foods. He would often say ‘I can’t do it’. Eventually, however, he would complete the task as quickly as possible, to the point that he would try and swallow foods whole, rather than have to bite and chew into them. During exposure tasks Oliver was provided with psychoeducation about food and encouraged to focus his attention on the positive aspects of food and foods he enjoyed. Furthermore, exposure tasks were broken into very small steps for difficult foods (i.e., fruits and vegetables – look, touch, chop up, dice up, make a salad, watch someone eat, smell the food, hold the food, etc). The goal of exposure task was to have Oliver put the food in his mouth, and hold it there for as long as possible until the fear subsided. He would then move onto chewing the food as slow as possible and for as long as possible, again to allow his anxiety to subside. His avoidance during exposure was addressed by asking him to describe in detail first the appearance of food, then the smell of food, and finally the taste and texture as he progressed with each exposure task (the order varied for different foods depending on the fear associated with smell versus appearance versus taste). Moreover, Oliver’s parents were trained in contingency management and Oliver received points towards rewards that he had negotiated with his parents (e.g., iTunes cards). Outside of the therapy sessions the family practiced a step from Oliver’s exposure hierarchy every day for one week.

The therapist had a supportive and trusting relationship with Oliver. He made considerable progress during the course of therapy. Following session 14 Oliver was reassessed. His fear had reduced considerably from his pretreatment levels as evidenced by a CSR rating of a 3 (sub-clinical level) on the ADIS-IV C/P. On a BAT (identical to the one used at pretreatment) Oliver was able to touch lettuce and place a piece to his lips, and then in
his mouth. He was unable to chew and swallow the lettuce; however, he offered to eat some corn instead! His beliefs had shifted over the course of therapy, with Oliver reporting during the post-BAT “I could eat it and nothing bad would happen, but I just don’t like lettuce and will probably always be a bit fussy. For vegetables, I’ll eat corn, onion, carrot or potato though, and I think that will do for now.” He continued to meet criteria for ADHD (CSR = 4) based on his diagnostic assessment. It was decided that the family would continue to practice outside of therapy and attend follow-up sessions once a month to assist Oliver in making gains and maintaining progress achieved in treatment.

1.4.5 One Session Treatment

Recently, cognitive behavioural techniques have been incorporated into an intensive one session treatment (OST) package for specific phobia in children and adults (Öst, 1989). OST involves a 3 hour massed exposure session which includes psychoeducation and skills training, cognitive restructuring, graduated and in vivo exposure, PM and RP.

Prior to the OST the therapist meets with the child and parent for a separate 45-minute functional assessment session during which the therapist elicits the child’s phobic cognitions, develops a graduated exposure hierarchy and provides the family with information about the OST session (Cowart & Ollendick, in press; Davis et al., 2009). The session also gives the therapist an opportunity to build rapport with the child and increase their motivation for treatment. The therapist explains to the family the rationale for treatment. The child is encouraged to think of themselves as a “detective” or “scientist” testing out their cognitions through a series of behavioural experiments (e.g., exposure tasks; Cowart & Ollendick, in press; Davis & Ollendick, 2011; Davis et al., 2009). They are informed that treatment will proceed at their pace and that nothing will be done without their permission. Children are advised that the goal of the session is not to shock or surprise them, rather, for the clinician
and child to work as a team to gradually face the child’s fear. The clinician also indicates that the child will need to experience some fear during the session to overcome their phobia; however, this will be a manageable amount and that if they remain in the situation, without avoiding, their fear will subside or considerably reduce (Davis et al., 2009). Finally, the clinician emphasizes that the OST is just the start of overcoming their fear and that they will need to continue practicing what they have learnt following treatment. While a great deal can be accomplished in the single 3 hour session, it may take several weeks or even months to consolidate treatment gains (Davis et al., 2009; Öst & Ollendick, 2001; Zlomke & Davis, 2008). Ideally the functional assessment is carried out one week prior to the OST to allow time to use the information gathered to prepare for the exposure session. However, if a family lives a considerable distance from the treatment clinic, the functional assessment can be carried out the day before or the day of treatment (Davis et al., 2009).

From one child to the next, OST sessions vary considerably, even when the same type of phobia is being treated. Unfortunately, there is no standard format for structuring an OST session (Davis & Ollendick, 2011; Ollendick et al., 2009). This is because the therapist proceeds at the child’s pace and adjusts their approach based on the child’s response to various exposure tasks (e.g., fear level and behaviour). Ideally, at least 3 phobic objects or situations are introduced over the course of the session (approximately one per hour). To engage the child and increase their motivation to participate in treatment, exposure activities should be fun and as interesting as possible. For example, when treating a phobia of the dark the therapist may use glow sticks, play games of hide and seek and make shadow puppets. The therapist should frequently praise the child for participating in exposure activities and reinforce approach behaviour (Cowart & Ollendick, in press).

Behavioural experiments are completed throughout treatment. They typically proceed as follows: the clinician and/or child propose and discuss a possible exposure task, the
clinician demonstrates the proposed task and the child attempts the demonstrated task (with the assistance of the clinician if required) (Davis & Ollendick, 2011; Davis et al., 2009). The cognitions identified during the functional assessment are used to prompt the child as to what they think will happen during each part of the exposure task (e.g., Do you think the spider will bite you if you allow it to crawl on your hand?”). Following the exposure, the clinician and child discuss what actually happened and whether the child’s cognition came true (You held the spider in your hand and what happened? Did it bite you?).

Additionally, during the behavioural experiment, the clinician provides the child with psychoeducation about the phobic object or situation, highlighting positive information (e.g., spiders help control flies and other insect populations) and educating the child in how to successfully interact with the phobic object (e.g., how to catch a spider and release it outside; Cowart & Ollendick, in press). Exposure tasks should be repeated and if possible carried out across multiple contexts to assist in generalisation (e.g., interact with a dog in a therapy room, a backyard and an open unfenced park; Cowart & Ollendick, in press). The child and their family should be reminded to regularly schedule practice exposure tasks to continue to progress and prevent relapse.

To date the efficacy of OST has been supported by two large scale randomized controlled trials (RCTs; Ollendick, Öst et al., 2009; Öst et al., 2001) and two smaller clinical trials (Flatt & King, 2010; Muris, Merckelbach, Holdrinet, & Sijsenaar, 1998). OST has been found to be superior to a waitlist control (Flatt & King, 2010; Öst et al., 2001) and an education support group (Ollendick, Öst, et al., 2009). Hence, OST has strong empirical support for the treatment of child and adolescent specific phobia (see Farrell, Waters, Milliner, & Ollendick, in press).

1.4.5.1 Case Study 2

Lucy (not her real name), an 8 year old Caucasian girl, lived with her parents and 10
year old sister. Her mother (age 38) and father (age 38) were both primary school teachers. Lucy was referred for a phobia of costume characters. Based on her parents’ report, Lucy’s fear of costume characters significantly interfered with the lives of herself and her parents. The family reported that on a number of occasions they had to leave early from birthday parties, school functions and sporting events because of Lucy’s fear. They indicated that Halloween was a particularly difficult time for Lucy and that for the previous 3 years she had refused to be involved. Lucy’s parents stated that last year their neighbours had visited dressed in costume and that Lucy had locked herself in her room until she knew they had left. Recently at a local football game Lucy had unexpectedly seen the team mascot. She was reported to have clung to her parents using them as a shield to avoid the mascot and that she had also asked them to leave. Lucy’s mother reported that she often had to ‘check out’ or screen certain places (e.g., parties or amusement parks) before Lucy would enter them. Her father indicated that they often had to reassure Lucy that they would protect her from costume characters if they were attending an event where there could be a character.

1.4.5.1.1 Assessment

Lucy and her parents were interviewed using the Anxiety Disorders Interview Schedule for DSM-IV Child/Parent versions (ADIS-IV-C/P; Silverman & Albano, 1996). Lucy’s parents indicated that her fear of costume characters had started when she was approximately 3 years of age when at a friend’s birthday party a clown had jumped out and scared her. They also reported that Lucy’s elder sister had been afraid of costume characters before outgrowing this fear.

Based on Lucy’s report and that of her parents during the diagnostic interview, Lucy was diagnosed with a specific phobia of costume characters with a clinician severity rating (CSR) of 6 (scores range from 0 to 8), indicating a fear in the moderately severe range. Additionally, Lucy was diagnosed with generalized anxiety disorder (GAD) with a CSR of 4.
During the initial assessment a BAT was administered during which Lucy was asked to enter a room (by herself), approach a costume character at the other end of the room and shake hands with it for 20 seconds. Lucy was able to open the door and enter the room however she did not approach the costume character. She rated her subjective anxiety to be at a 7 (on a scale ranging from 0 – 8).

A functional assessment was conducted to establish (1) the antecedents and consequences of Lucy’s avoidant behaviour, (2) her faulty cognitions about costume characters, and (3) an avoidance hierarchy of her fear (a rating from 0 to 8 for different situations that might trigger her fear). Lucy reported that she was afraid costume characters would approach her and that she would feel scared and then this would trigger for her a number of distressing physiological symptoms (e.g., racing heart, sweaty, stomach pains and shaking). She indicated she found costume characters with covered faces particularly intimidating because she was unsure who was in the costume and because they could be a ‘mean person’. The therapist and Lucy constructed a hierarchy of characters with clowns and the Grim Reaper the most anxiety provoking, next were costumes with a covered face and holiday characters (e.g., Easter bunny and Santa) and the least anxiety provoking were open face characters. When asked if her fear prevented her from doing things she wanted to, Lucy stated that she was unable to attend friends’ birthday parties, sporting events, particular restaurants and amusement parks. She also reported that her fear caused her considerable embarrassment when with friends as they all liked costume characters. She said she was afraid they would laugh at her and would not understand her fear.

1.4.5.1.2 Treatment

The single session followed the format of OST (3 hours of gradual exposure, modelling, reinforcement of approach behaviour and testing of faulty cognitions; see above). Initially the therapist provided Lucy with psychoeducation about costume characters and
showed Lucy an empty ‘Cat in the Hat’ costume. Lucy held the costume and described it to the therapist and then they both dressed in the costume. Following this the therapist had an assistant enter the room dressed in the costume and Lucy practiced approaching him, asking him questions, allowing him to approach her and playing a game with him. The session progressed with the introduction of a ‘Curious George’ costume. At the end of the first hour Lucy was comfortably playing games (e.g., catching bubbles, throwing a ball) with both ‘Cat in the Hat’ and ‘Curious George’. At the beginning of the second hour an Easter Bunny costume was introduced and then the session continued with looking and dressing up in clown costumes.

At the commencement of the third hour the therapist had Lucy enter a room in which a fully dressed clown was present. Shortly after, the clown painted Lucy’s face while the therapist left the room. Following this the therapist entered the room with a surprise character the Jester. Lucy began to cry and moved to the opposite side of the room to the character. She indicated that her fear level was an 8 (on a 0 – 8 scale with 8 being the highest level of fear). She reported that the face was scary and that the character would jump out at her and frighten her. The therapist had Lucy describe the costume and then slowly approach it. The therapist assisted Lucy to test and disconfirm her cognition that the character would jump towards her. Subsequently, Lucy played a game with the Jester and asked him some questions. The therapist then left Lucy alone with the Jester for two minutes. This exposure task was repeated three times to ensure that Lucy sufficiently habituated to her anxiety. After the third time Lucy reported her fear level of the Jester had decreased to a 2. Following this Lucy spent the remainder of the session playing with all 5 costume characters. Lucy also dressed in a costume and the characters and Lucy paraded through the hallways of the clinic.

Throughout the OST session the therapist provided Lucy with copious amounts of praise for facing and coping with her fears. A playful, supportive and trusting relationship
was developed. Lucy made considerable progress during the session. However, she and her parents were reminded that this was only the beginning of Lucy’s treatment and for the treatment to work fully it would be important for them to continue exposure activities outside of therapy for several months.

Upon post testing one week later Lucy’s fear had reduced considerably from her pretreatment levels as evidenced by a CSR rating of a 3 (subclinical level) on the ADIS-IV C/P. On a BAT (identical to the one used a pretreatment) Lucy was able to stand an arms length away from a costume character and shake its hand for 10 seconds. One month later Lucy was re-evaluated. Lucy’s parents reported that they had practiced on a regular basis. They stated that Lucy was now able to attend their local football game and shake the mascot’s hand. They indicated that Lucy had been to a friend’s birthday party where a clown had been present. Lucy’s ADIS-IV C/P rating for a specific phobia of costume characters was a 1 (subclinical level) and for GAD a 3. During the BAT at follow-up Lucy was able to enter the room and shake and talk with the costume character for more than 20 seconds.

### 1.4.6 Partial responders and Treatment Refractory Specific Phobia

Whilst outcomes are generally favourable, unfortunately a significant proportion (20 – 50%) of children and adolescents do not respond adequately to CBT interventions for specific phobia (Ollendick, Öst et al., 2009; Öst et al., 2001). There is limited information into factors associated with poor treatment response in phobic youth with only three studies to date (Ollendick, Öst, et al., 2009; Öst et al., 2001; Silverman et al., 1999) examining predictors of treatment outcome (see Farrell et al., in press). Collectively these studies show that the sociodemographics of the child (e.g., age, gender, socioeconomic status, and ethnicity), severity of the diagnosis and type of phobia are not related to treatment success or failure (defined as either no longer meeting criteria for a specific phobia on a diagnostic interview or
showing a major reduction in severity on the clinician rating scale used for diagnostic
purposes (drop of 4 or more points on the 8-point rating scale)). However, findings are mixed
in regards to comorbidity. Silverman et al., (1999) found that child and parent self report of
depression were associated with treatment failure using standard CBT procedures (Berman et
al., 2000). In contrast, in the two trials of intensive, one-session treatment that explored
comorbidity (Ollendick et al., 2009; Öst et al., 2001), child self reported depression was not
found to relate to treatment outcome for phobic youth. Unfortunately, measures of parent
psychopathology were not collected in the Öst et al., 2001. However, Ollendick and
colleagues are currently exploring parental psychopathology and family functioning variables
and their relation to treatment success. Hence conclusions about factors related to poor
treatment response are unable to be drawn at this time. In addition, the one-session treatment
has resulted in reductions in comorbid anxiety disorders as well.

Ollendick, Davis et al. (2009) have developed a four stage treatment algorithm to
guide treatment decisions for child and adolescent specific phobia, in an effort to assist
clinicians in making appropriate treatment decisions for all children, from those who are
treatment naive through to those who are treatment refractory. Following an initial
assessment, an evidenced based treatment (refer to the above treatment section) should be
selected and implemented (e.g., CBT, OST). If the youth only partially responds to this initial
treatment, then in stage two this treatment is supplemented. Supplementary strategies include
additional assessment, increasing treatment frequency or intensity, treating comorbid
conditions and/or addressing other impediments (e.g., treatment for a comorbid oppositional
defiant disorder diagnosis followed by a second treatment session) (Davis & Ollendick,
2011). Stage three is reached when two attempts at delivering the initially selected evidenced
based treatment have been unsuccessful. At this stage, a second evidenced based treatment
(e.g., alternate psychosocial treatment and/or medication - for a review of pharmacological
interventions for child anxiety disorders see Bolch & McGuire, 2011) should be selected and implemented. Following success at any stage, strategies to maintain and generalise treatment gains should also be instigated (Davis & Ollendick, 2011).
Figure 1.1 Treatment algorithm for children with specific phobia (adapted from Ginsburg & Walkup, 2004, Ollendick & March, 2004; Ollendick, Davis, & Sirbu, 2009). Reproduced with permission.
1.5 Summary

Specific phobias are one of the most common psychological disorders causing significant interference and distress in the daily lives of children and adolescents. Phobic youth are at an increased risk of academic and social difficulties as well as adult psychopathology. Specific phobias have a multi-determined etiology with several pathways thought to be involved in their development including genetics, parenting, learning experiences, evolutionary preparedness and disgust. Due to the complex presentation of specific phobia (etiology, phenomenology, comorbidity) a comprehensive assessment is necessary for the provision of effective treatment. Ideally, assessments should be multi-modal (diagnostic interview, questionnaires and BAT) and multi informant (e.g. child, parent, teacher, clinician). Behavioural and cognitive behavioural treatments have been shown to be the most effective with specific phobia in children and adolescents. More recently, OST was developed which incorporates cognitive behavioural procedures into an intensive (3 hour) treatment package (Öst, 1989). The efficacy of OST has been established in two large RCTs (Ollendick, Öst, 2009; Öst, et al., 2001) and two smaller clinical trials (Flatt & King, 2010; Muris et al., 1998). OST offers a cost and resource effective way to alleviate children’s fears and improve their quality of life. Whilst one of the most frequent forms of child anxiety disorder and typically debilitating in nature for both children and families, childhood phobias are often very responsive to our best psychosocial treatments. In cases where children do not fully respond to first-line treatments, guidelines now exist to inform clinicians in making treatment decisions. Efforts must now be made to ensure effective dissemination of evidence-based treatments, such as OST and other CBT-based procedures.
1.6 References


*Behaviour Research and Therapy, 32*, 635-638.


Chapter 2  Blood-Injection-Injury Phobia in Children and Adults

BII phobia is characterised by fear and avoidance of seeing blood or an injury, or receiving an injection or other invasive medical procedure (American Psychiatric Association (APA), 2013). It is a debilitating disorder that is associated with serious health consequences. To date the majority of the research related to BII phobia has been conducted with high BII fearful and phobic adult samples, and because of this, the disorder is currently poorly understood in children and adolescents. This chapter discusses the clinical phenomenology, aetiology, assessment and the current status of treatments for BII phobia in adults and children.

2.1  Phenomenology and Epidemiology

BII is a debilitating phobia, which is more common than previously believed. Several epidemiological studies have estimated the prevalence of BII phobia in community samples of adults with rates ranging from 3.2-4.5% (Bienvenu & Eaton, 1998; Curtis, Magee, Eaton, Wittchen, & Kessler, 1998; Depla et al., 2008; Stinson et al., 2007). Bienvenu and Eaton (1998) reported a 3.5% lifetime prevalence rate of BII phobia in a sample of 1,920 American adults, with 23% of BII phobics reporting a fear of blood, 47% reporting a fear of injections and 78% reporting a fear of dentists. Moreover, 78% of this sample reported experiencing symptoms of BII phobia in the last 6 months. Finally, females and less educated individuals were found to have higher prevalence rates. Curtis et al. (1998) found a lifetime prevalence rate for BII phobia of 4.5% in a sample of 8,098 American adults, whilst Depla et al. (2008) reported a lifetime prevalence of 3.2% in a sample of 7,076 adults in the Netherlands. In a more recent study, Stinson et al. (2007) investigated the prevalence of specific phobia and its
subtypes in a representative sample ($n = 43,093$) of the adult population (18 years and older) in the United States. The prevalence of BII phobia in the total population was reported as 4%.

In children and adolescents there are limited studies examining the prevalence of subtypes of specific phobia. Essau et al. (2000) reported a 0.8% prevalence BII phobia in 1,035 German adolescents (12-17 years) where as Kim et al. (2010) found that 7.9% of a sample of 2,673 Korean children and adolescents met criteria for a 1-year prevalence of a specific phobia, and of those 18.4% had BII phobia. In the largest study to date, Burstein et al. (2012) investigated the prevalence of specific phobia and its subtypes in a sample of 10,123 adolescents (13-18 years) in the United States. Approximately 15.1% met criteria for a specific phobia, and of those 9.07% met criteria for BII phobia in their lifetime.

2.2 Age of Onset

Existing research suggests that BII phobia typically has its onset during middle childhood prior to 10 years of age (LeBeau et al., 2010). Predominantly, studies investigating the age of onset for BII phobia have involved retrospective reports in adult community and clinical samples, and consequently these estimates are vulnerable to reporting errors. Bienvenu and Eaton (1998) reported an average age of onset of 10.5 years in their epidemiological study; however, they noted that the distribution of age of onset in the sample was highly skewed and that the median age of onset was only 5.5 years. In Öst and Hellström (1997) clinical sample, 65% of blood-injury phobics ($n = 111$) and 68% of injection phobics ($n = 64$) reported that they developed their phobia prior to 10 years of age. The average age of onset for blood-injury phobia was 8.5 years, and for injection phobia 8.2 years. In another clinical sample, Lipsitz, Barlow, Mannuzza, Hofmann, and Fyer (2002) found that 84% of BII phobics ($n = 19$) reported the onset of their phobia as being prior to age 12 years, with an average age of 9.4 years. In epidemiological studies with adolescent samples, Essau et al. 
similarly found that 80% of BII phobic youth \((n = 8)\) reported the onset of their phobia to be prior to 10 years of age and Burstein et al. (2012) found a median age of onset of 6 years in their sample of 959 adolescents.

### 2.3 Impairment

Phobic avoidance of situations related to BII often causes significant interference in a person’s life and can lead to serious health consequences (Marks, 1988; Ritz, Meuret, & Ayala, 2010). Adults with BII phobia report avoiding routine medical check-ups, seeing a physician when unwell, having minor operations, receiving medical treatment for diagnosed illnesses (e.g., diabetes and heart failure), undergoing dental treatment, watching television shows or movies where they may see blood and even buying and eating red meat (Hellström, Fellenius, & Öst, 1996). They may also avoid certain career paths (e.g., nursing, medicine, teaching), travel for fear of receiving necessary vaccinations, becoming pregnant, caring for injured or unwell children, visiting family and friends in hospital and engaging in leisure activities where there is a high risk of injury (LeBeau et al., 2010; Öst & Hellström, 1997; Öst, Hellström, & Kåver, 1992). In a treatment seeking sample, Öst (1992) assessed BII phobia related impairment in 81 primary blood-injury phobic and 59 primary injection phobic adults. Participants were asked to rate interference on a scale from 0 (No Interference) to 4 (Very Interfering). Results revealed that 36% of blood phobics and 25% of injection phobics had experienced high levels of interference (>2) in their career choice due to their phobia. Moreover, 41% of blood phobics and 32% of injection phobics reported that their phobia had led to significant interference (>2) in their leisure and social activities. Similarly, Öst and Hellström (1997) examined BII phobia related impairment in a sample of 111 adults with a primary diagnosis of blood-injury phobia. Of the sample, 32% indicated that their phobia had adversely impacted on their career choice, work and education, 9% reported that they would
be unable to assist others if they were injured, 8% indicated that they entirely avoided visiting hospitals and having medical check-ups, 8% said that they did not go to the movies, 7% reported that they generally were anxious and avoided a number of different situations and 2% stated that they avoided becoming pregnant.

Whilst treatment seeking samples of adults with BII have reported very high rates of impairment, epidemiological studies demonstrate less compelling evidence. For example, Bienvenu and Eaton (1998) investigated the health consequences of BII phobia in their epidemiological study. They compared BII phobics \( (n = 60) \) with clinical controls who did not have BII phobia \( (n = 1,664) \) in regards to the frequency with which they accessed health care over the previous 6 to 12 months. Contrary to expected, significant differences were not observed between the groups. Furthermore, subjects with BII phobia did not appear to avoid surgery or other painful medical procedures, or avoid having children more often than non BII phobics. Interestingly, a significant difference was observed between diabetics with BII phobia \( (n = 8) \) and diabetics without BII phobia \( (n = 138) \). Diabetics with BII phobia had significantly elevated rates of macrovascular complications (e.g., peripheral vascular disease and cardiovascular disease); however, experienced no other complications associated with diabetes. In an epidemiological sample of the Dutch general population \( (n = 7,076) \) of adults (18-65 years), Depla et al. (2008) found that BII phobia and situational phobia were significantly more impairing than animal and natural environment subtypes of phobia. Impairment was measured by history of seeking professional help, taking medication and experiencing interference within daily and social life.

In contrast, limited studies have examined BII related impairment in youth. In Burstein et al. (2012) epidemiological study \( (n = 10,123, \text{13-18 years}) \), adolescents were asked to rate the degree of impairment and disability they experienced during the worst month of their phobia in the areas of household chores, school/work, family relations and social life.
using the Sheehan Disability Scale (Leon, Olfson, Portera, Farber, & Sheehan, 1997). Consistent with adult studies, BII and situational phobic adolescents were found to be the most severely impaired of the phobia subtypes with animal phobics the least impaired. Moreover, BII phobic youth endorsed the greatest level of disability and the highest rates of treatment contact across the phobia subtypes, providing evidence for the debilitating nature of this disorder in adolescents.

2.4 Comorbidity

BII phobias are frequently comorbid with other psychiatric conditions. Bienvenu and Eaton (1998) found that adults with a BII phobia (n= 60) were significantly more likely to have lifetime prevalence rates of comorbid marijuana abuse/dependence, major depression, OCD, Panic Disorder, Agoraphobia, Social Phobia and other Specific Phobia than adults without a BII phobia (n = 1,664). Likewise, BII phobia was significantly associated with lifetime prevalence rates of other anxiety disorders, mood disorders and substance use disorders in a Dutch epidemiological study (Depla et al., 2008). Indeed, studies suggest that BII phobics have higher rates of lifetime comorbidity than animal and natural environment phobias.

Limited studies however have investigated comorbidity patterns in BII phobic youth. In a community sample of 2,673 Korean children and adolescents (6-17 years), Kim et al. (2010) investigated comorbid psychiatric disorders and behavioural/ emotional problems associated with the different types of specific phobia in youth. Parents completed the Diagnostic Interview Schedule for Children (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) and the Child Behaviour Checklist (Achenbach, 1991) and youth completed the Child Depression Inventory (Kovacs, 1981). BII phobia was most commonly comorbid with ADHD (26.5%). Burstein et al. (2012) examined the clinical and psychiatric correlates in
accordance with the different phobia subtypes in a nationally representative sample of 10,123 adolescents aged 13 to 18 years in the United States. Youth completed a face-to-face survey including a modified version of the World Health Organisation Composite International Diagnostic Interview Version 3.0 (Kessler & Üstün, 2004), which is a fully structured interview of DSM-IV disorders. BII and situational phobias were found to have a unique pattern of comorbidity. These subtypes were significantly associated with behavioural disorders; however, not mood or substance use disorders. BII phobia most notably was associated with a diagnosis of ADHD, whereas situational phobia was associated with conduct disorder.

2.5 Aetiology of BII Phobia

The aetiology of specific phobias is complex and multi-determined (King, Muris, & Ollendick, 2004). As discussed in Chapter 1, a host of factors are believed to be involved including genetic predisposition, aberrant brain processes, temperament, parenting, learning experiences, evolutionary preparedness, cognitive biases and avoidance (Cowart & Ollendick, 2013b; Ollendick & Muris, 2015). In addition to the above, BII phobia may have a number of unique factors, in comparison to other phobia types, that are implicated in its onset and maintenance. Aetiological factors specific to BII are briefly discussed here; however, a full review of the aetiological literature including an integrated cognitive behavioural model of BII phobia in children and adolescents is proposed in Chapter 4 (Oar, Farrell, & Ollendick, Submitted).

2.5.1 Genetics and Neurobiology

Existing research indicates that biological factors, including heritability are involved in the development of BII phobia. Öst (1992) reported that that 61% of blood injury phobic adults and 29% of injection phobic adults reported having a first degree relative with the same
fear, which was significantly higher than other phobia types (e.g., animal, dental, and claustrophobics). Van Houtem et al. (2013) recently conducted a review and meta-analysis of 10 adult twin studies to examine differences in the heritability of the varying phobia subtypes. The highest heritability rates were found for BII phobia ranging from 28% to 63%, followed by animal phobia 22% to 44%. Moreover, neuroimaging studies have noted various metabolic and structural abnormalities in BII phobia. Using functional magnetic resonance imaging (fMRI), adults with BII ($n = 12$) showed increased activation in the thalamus and visual/attention areas (occipito-temporo-parietal cortex) in comparison to spider phobic adults ($n = 14$) and healthy controls ($n = 14$) (Caseras et al., 2010).

### 2.5.2 Learning

Similar to other phobia types, fear conditioning also appears to play a significant role in the development of BII phobia, with many BII phobic adults reporting that a painful experience proceeded the onset of their fear (Öst, 1991, 1992). Öst (1991) explored phobia acquisition in 137 BII phobics and found approximately half of the participants attributed the onset of their fear to traumatic conditioning experiences, 24% to vicarious conditioning and 7% to negative information transmission. The remaining 17% were unsure regarding the onset of their fear.

### 2.5.3 Evolutionary Preparedness

Evolutionary models (Menzies & Clarke, 1995; Poulton & Menzies, 2002) propose that some fears, such as fear of heights, blood, snakes, spiders, are biologically prepared for over time. According to this model, these fears do not require critical learning experiences because they have been passed on to us from our ancestors (e.g., genetically encoded) and are evolutionary adaptive and necessary for survival. For example, a fear of blood may be characterised as an evolutionary adaptive fear; however, in some children and adults it
becomes excessive and phobic in nature through a complex interaction of biological vulnerability, learning and the environment. Beyond heritability, learning and evolutionary models there appears to be a number of unique characteristics of BII which may underlie the pathogenesis of this disorder.

2.5.4 Physiological Response

An important feature distinguishing BII phobia from all other phobia types is its unique phobic response. This response is believed to be involved in the development and maintenance of this disorder (Page & Tan, 2009). When confronted with their phobic stimuli, many BII phobic individuals experience a diphasic physiological response (Ayala, Meuret, & Ritz, 2009). The initial phase involves a rapid acceleration of heart rate and blood pressure, as is typically observed as part of fight or flight anxiety response, whereas the second phase is characterised by a sharp decrease in heart rate and blood pressure (Ayala et al., 2009). This vasovagal response is unique to BII phobia and is associated with fainting in the presence of BII stimuli (Öst, Sterner, & Lindahl, 1984; Page, 1994). Indeed, many BII phobics (56–100%) report a history of fainting in response to phobic stimuli (Connolly, Hallam, & Marks, 1976; Öst, 1992; Thyer, Himle, & Curtis, 1985). Conversely, only 0.02% of people with other phobia types (Connolly et al., 1976) and 2% with other anxiety disorders (Thyer et al., 1985) report fainting. Thyer et al. (1985) studied a sample of 15 adults with BII phobia and found that 80% reported a history of fainting when confronting their phobic stimuli. Moreover, in a sample of 81 adults with a primary diagnosis of blood phobia and 59 adults with a primary diagnosis of an injection phobia, 70% of blood phobics and 56% of injection phobics reported a history of fainting in the presence of their phobic stimuli (Öst, 1992).

In order to characterise the triggers of vasovagal response, Öst, Sterner, et al. (1984) measured the physiological response (e.g., heart rate and blood pressure) of 18 blood phobics
before, during and after watching a 30 minute thoracic surgery video. Overall, BII phobics displayed a diphasic response with an initial increase in heart rate and blood pressure followed by a rapid decrease in heart rate and blood pressure. Furthermore, five participants fainted during the task. These findings were replicated by Dahllöf and Öst (1998) in a study comparing the physiological response of BII phobics (\( n = 16 \)) and a control group (\( n = 16 \)) during a Behavioural Avoidance Task (BAT) (e.g., watching a 30 minute video of a thoracic surgery). BII phobics were found to display the diphasic heart rate and blood pressure response, while comparatively no one in the control group showed the response. Sarlo, Palomba, Angrilli, and Stegagno (2002) examined the cardiac reactions of BII phobics (\( n = 12 \)) and spider phobics (\( n = 12 \)) while watching two fear related and one control video (all 132 seconds in duration). While watching their phobia relevant video, BII individuals displayed an initial increase in heart rate followed by a decline in heart rate that fell below their initial baseline levels. Contrary to expectations, a complete diphasic response (e.g., rapid drop in heart rate) was not observed. The authors proposed that the limited bradycardiac response in BII phobics was likely due to the duration of the videos as they were relatively brief, and the full autonomic effects may not have had time to develop.

Conversely, other research studies have failed to find evidence of the diphasic response in BII phobia (Gerlach et al., 2006; Ritz, Wilhelm, Gerlach, Kullowatz, & Roth, 2005). Ritz et al. (2005) investigated vasovagal dysregulation in a sample 12 blood phobics and 14 non-anxious controls during the presentation of five categories of emotional stimuli: pleasant, unpleasant, neutral, BII related (surgery) and asthma related video clips (each 150 – 300 seconds in duration). Furthermore, they investigated the role of hyperventilation in the BII phobic response. Hyperventilation, defined by subnormal arterial pCO2 levels, induces anxiety and may lead to fainting (Ritz et al., 2005). The results revealed that end tidal pCO2 levels dropped to their lowest levels in BII phobics during surgery videos. In comparison,
pCO2 levels were relatively stable across the different types of videos in the control group. These results indicate that hyperventilation may play a role in the BII phobic response. The majority of BII phobic participants however did not display evidence of diphasic heart rate or blood pressure, with only two BII phobic patients demonstrating this response. Ritz et al. (2005) results may in part be due to the conservative criteria they used to define diphasic responding (e.g., participants maximum heart rate during the BII video needed to exceed their maximum heart rate during the unpleasant video and participants minimum heart rate during the BII video needed to fall below their minimum heart rate during the neutral video) and again to a fairly brief time of measurement.

Type of stimuli may play a role in triggering diphasic responding in BII. For example, Gerlach et al. (2006) examined the physiological response of BII phobics ($n = 20$) during a live venipuncture in comparison to 20 control participants. Nine of the BII phobics reported a history of fainting at the sight of blood or injury. BII phobics were found to have significantly higher heart rates during venipuncture than controls. Deceleration of heart rate was not observed within the group. Previous studies demonstrating the diphasic response have used surgery videos and phobia related stimuli where as Gerlach et al. (2006) used live venipuncture as stimuli. Other researchers have proposed that venipuncture stimuli could be a weaker elicitor of the diphasic response (Cisler, Olatunji, & Lohr, 2009), or that the diphasic response may be specific to a subset of BII phobics (Vögele, Coles, Wardle, & Steptoe, 2003). In order to progress this area of research and enquiry, a clearer definition of diphasic responding needs to be established to clarify specificity within diphasic responding (e.g., BII phobics with a history of fainting vs. those without). Whilst a considerable body of research has examined this response in adults, it is currently unknown to what degree children and adolescents with BII experience a similar physiological response. This is important given that in adults this response appears to be involved in the maintenance of the disorder and
furthermore, may lead to a differential response to treatment. Treatments for adults with BII have been developed with this response in mind (i.e., Applied Tension and Applied relaxation); however, to date there is no compelling evidence for enhanced efficacy using these approaches with adults (Ayala et al., 2009).

Consistent with the non-associative fear model discussed earlier (Menzies & Clarke, 1995; Poulton & Menzies, 2002), some researchers have suggested that fainting is an adaptive response to threat. Slowing of heart rate and blood pressure in response to blood or injury produces immobility and this may be an adaptive reflex with predators losing interest in a prey if it is immobile (i.e., playing dead; Marks, 1988). Alternatively, Barlow (2004) suggested that our ancestors responded with a significant drop in blood pressure to minimise blood loss and the danger of shock, hence helping us to be more likely to survive an attack or injury. However, evolutionary theories of BII fainting have received criticism and cannot fully account for all aspects of the response (Page, 1994). For example, research conducted by Page and Martin (1998) suggest that individuals with BII phobias may inherit a tendency to faint in non-blood related situations as well. In a multivariate genetic analysis, which involved 659 twin pairs, they found that BII fainting was explained by additive genetic variance predictive of fainting in non-blood situations, and also unique environmental experiences related to fainting in the presence of blood. Page and Tan (2009) proposed that the development of BII phobia may involve a process whereby aversive experiences associated with fainting directly condition fear to BII situations. Moreover, they hypothesised that disgust plays a key role in BII related fainting and that when disgust and fear are elicited by the same stimuli (e.g., BII stimuli), this may increase the likelihood of fainting. However, the fainting response cannot be completely explained by the co-occurrence of the two emotions. Page and Tan (2009) hypothesised that the type of stimuli, disgust response involved (state versus trait disgust), a predisposition to faint and appraisal of the stimuli are all involved in
the complex interaction that results in fainting. Further research investigating these complex associations is needed to better understand the role of fainting in BII phobia and the interplay between both fear and disgust.

Another potentially significant factor associated with fainting in BII phobia is perceived control. Fear of loss of control is believed to be involved in a number of anxiety disorders, particularly panic disorder (Barlow, 2004). Little is known about the role of control cognitions in the vasovagal response. In a recent study, Gilchrist, McGovern, Bekkouche, Bacon, and Ditto (2015) examined the effects of experimentally manipulated perceived control during a task (e.g., watching a surgery video) that was demonstrated to induce a vasovagal responding in non-medical personnel. Eighty-two university students (18-30 years) watched a 10 minute video of an open heart mitral valve surgery and were randomly assigned to either (1) being able to take a 2 minute break whenever they requested during the video (e.g., perceived control group) or (2) they were informed that the experimenter would assign them a two minute break during the task. Those in the no perceived control group reported significantly greater vasovagal symptoms and anxiety. The findings were corroborated with physiological data showing lower stroke volume, cardiac output and diastolic blood pressure. Moreover, for participants who indicated they were fearful of blood, enhancing their sense of perceived control reduced their vasovagal symptoms. It appears that perceived control may indeed be implicated in the fainting response and may be an important target for treatments.

2.5.5 The Role of Disgust

Disgust is a complex and multifaceted emotion. Interest into the role of disgust in the aetiology and maintenance of anxiety disorders (Moretz, Rogove, & McKay, 2011) has increased in recent years. Existing research has predominantly focused on two types of specific phobia which have demonstrated disgust components: animal (i.e., spider) and BII
Disgust has been argued to be a concurrent emotion that interacts with fear and leads to increased avoidance behaviour (Phillips, Fahy, David, & Senior, 1998), therefore playing an important role in the aetiology and maintenance of particular anxiety disorders.

Disgust is defined as a feeling of revulsion or intense disapproval elicited by something unpleasant or offensive (Lindberg, 2002). It is a basic emotion with well-defined physiological and behavioural response patterns (Ekman, 1992; Olatunji, Cisler, McKay, & Phillips, 2010). Disgust comes from the feeling of distaste that is elicited by contaminated or bad tasting food, with early conceptualisations suggesting that disgust served to prevent the consumption of harmful substances thus protecting against disease. Current models of disgust take into consideration the multidimensionality of this emotion, which at its core has an oral defence; however, this has arguably evolved from our animal origins, and serves to maintain interpersonal boundaries, and influences our sense of morality and social order (Olatunji et al., 2009; Rozin, Haidt, & McCauley, 2000).

Several domains have been identified that elicit disgust responses and these include: spoiled or socially/culturally unacceptable food (e.g., such as rotting lettuce, dog meat), animals (e.g., rats, spiders), body products (e.g., faeces, urine, vomit, mucus), body envelope violations (e.g., mutilated body parts, wounds), death (e.g., dead bodies, a person’s ashes), culturally inappropriate sexual behaviour (e.g., incest, bestiality), poor hygiene (e.g., body odour, greasy hair, sticky hands) and violations of social or moral norms (e.g., bad manners, being vulgar) (Haidt, McCauley, & Rozin, 1994; Moretz et al., 2011). These disgust domains have consistently been found across cultures (Olatunji et al., 2009). Fear and disgust are each characterised by distinct physiological, behavioural and cognitive responses (Ekman, 1992; Izard, 1977; Woody & Teachman, 2000). The fear response is characterised by an activation of the sympathetic nervous system, escape and avoidance behaviours, and perceived threat of
harm or danger (Ekman, Levenson, & Friesen, 1983; Mowrer, 1960). The disgust response however, is associated with the activation of the parasympathetic nervous system, rejection and avoidance, and perceived threat of contamination (Rozin, Haidt, & McCauley, 1993; Sawchuk, Lohr, Westendorf, Meunier, & Tolin, 2002).

Traditionally, BII phobia has been associated with fear and anxiety; however, in recent years, there has been considerable research into the important role of disgust in the aetiology and maintenance of the disorder (Ayala et al., 2009; Öst, 1992). Numerous studies have found that self-report measures of disgust and disgust sensitivity are positively associated with measures of BII phobia (Phillips et al., 1998). Disgust sensitivity is defined as the trait-like predisposition to experience disgust towards a range of aversive stimuli (Moretz et al., 2011; Olatunji & Cisler, 2009). Disgust sensitivity has been found to be positively correlated with neuroticism and negatively with sensation seeking. de Jong and Merckelbach (1998) demonstrated that BII and spider fearful individuals show domain specificity among disgust elicitors. They found significant correlations between measures of BII phobia and disgust associated with body envelope violations (e.g., wounds and bodily punctures) and between measures of spider phobia and animal related disgust elicitors. Moreover, existing research suggests that not only do BII fearful individuals report high levels of disgust and aversion toward blood and mutilation stimuli, but they also experience heightened disgust responses toward a range of disgust elicitors that are unrelated to their fearful stimuli (Olatunji, Lohr, Sawchuk, & Patten, 2007). For example, Sawchuk, Lohr, Tolin, Lee, and Kleinknecht (2000) and Tolin, Lohr, Sawchuk, and Lee (1997) found that BII fearful individuals reported significantly higher levels of disgust towards odours, rotting foods and bodily products (e.g., mucus, vomit, faeces) than non-fearful individuals. Additionally, BII fearful individuals reported greater levels of disgust while watching videos of maggots (Sawchuk, Lohr, Lee, & Tolin, 1999) and sewage (Sawchuk et al., 2002) than non-fearful individuals. Together these
studies suggest that BII phobia is characterised by a heightened generalised disgust sensitivity (Olatunji, Lohr, et al., 2007), which could be involved in the development and maintenance of this disorder.

In children, disgust sensitivity has been found to be significantly correlated with small animal and spider phobias, as well as BII phobias (de Jong & Muris, 2002; Muris, van der Heiden, & Rassin, 2008). More specifically, Muris and colleagues (Muris, Merckelbach, Schmidt, & Tierney, 1999; Muris, van der Heiden, et al., 2008) found that disgust sensitivity was associated with BII phobia symptoms in samples of non-clinical children, even after controlling for the effects of trait anxiety and neuroticism. Moreover, disgust sensitivity may be a causal factor in the development of anxiety. For example, Muris, Mayer, Huijding, and Konings (2008) found that providing disgust related information to children about a fictional animal subsequently increased their fear of the animal. As previously discussed, the majority of research investigating the relationship between disgust and specific phobia has focused on adults, while relatively little attention has been given to child samples and to date there are no clinical studies with children.

Empirical support for the role of disgust in BII phobia goes beyond self-report and behavioural measures. During exposure to phobia related stimuli, BII fearful individuals have been observed to display disgust facial expressions. Disgust is typically accompanied by a characteristic facial expression, specifically a raised upper lip, wrinkled nose, lowered eyebrows, a squinted nose and sometimes a protruding tongue, which gives the impression that one is about to gag or spit out (Cisler et al., 2009; Izard, 1971, 1977). Lumley and Melamed (1992) examined facial expressions of BII fearful ($n = 24$) and non BII fearful ($n = 24$) controls while watching a 60 second surgery video showing a scalpel incising into an abdomen. BII fearful individuals exhibited significantly more disgust facial expressions than non BII fearful individuals. However, during surgery videos depicting tubes being inserted
into an abdomen and a neutral video, no differences were observed between the groups. As previously discussed, the unique heart rate response of BII phobia also lends further support for the role of disgust in the disorder. Numerous physiological studies have found that confrontation with disgust evoking stimuli, in comparison to fear and neutral stimuli, is associated with heart rate deceleration across those with and without anxiety disorders (Cisler et al., 2009; Olatunji, Haidt, McKay, & David, 2008).

2.5.6 The Role of Pain

Pain is believed to play a pivotal role in the development and maintenance of BII fears. As previously discussed a large proportion of BII phobics report that painful experiences preceded the onset of their fear (Öst, 1991). Existing research suggests that BII fears may be maintained by a tendency to exaggerate pain, which is then consequently associated with increased pain intensity (Severeijns, Vlaeyen, van den Hout, & Weber, 2001). This exaggerated pain response and elevated pain intensity are believed to perpetuate phobic avoidance. In the adult literature, BII and dental fearful individuals have been found to have a tendency to overestimate pain and to endorse a lower perceived ability to tolerate physical pain and discomfort (Arntz, van Eck, & Heijmans, 1990; Smith & Meuret, 2012).

In a recent study, Smith and Meuret (2012) explored the relationship between the role of painful experiences and pain perception in BII fears. Three hundred and ninety two undergraduate students participated in the study. Findings revealed that a history of high intensity pain experiences with injections was associated with BII fears. However, painful experiences involving blood and injury, as well as the frequency of painful injection experiences did not predict BII fears. The authors suggested that the development of BII fears may depend less on repeated painful experiences and rather more on the intensity of these experiences. Moreover, the study found that students with a lower perceived pain tolerance
were significantly more likely to endorse BII fears. Interestingly, avoidance of physical discomfort was not found to be related to BII fears. The authors speculated that this potentially suggests a predisposition characteristic of lower pain tolerance or thresholds in those with BII fears. From the study, the authors concluded that targeting pain perceptions in those with BII phobia may be of therapeutic importance. The role of pain in childhood BII phobia has not previously been explored. How children and adolescents perceive painful events associated with BII stimuli and their beliefs relating to their ability to tolerate pain and discomfort may be involved in the maintenance of the disorder.

2.5.7 Other Cognitive Processes

A large body of research has found that various other cognitive biases are associated with the maintenance of specific phobias. Experimental studies with children and adults have demonstrated that phobic and anxious individuals are hypervigilant to threatening stimuli, and allocate their attention towards threatening stimuli relative to neutral stimuli (Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg, & Van Ijzendoorn, 2007; Cisler & Koster, 2010). Moreover, these individuals may have more difficulty disengaging their attention away from threatening stimuli (Fox, Russo, Bowles, & Dutton, 2001). This phenomenon is known as attentional bias.

In regards to adults with BII phobias, findings relating to attentional biases have been mixed (Armstrong, Hemminger, & Olatunji, 2013; Haberkamp & Schmidt, 2014). There is some evidence to suggest that BII phobia may be associated with a vigilance avoidance pattern, whereby individuals are initially vigilant and then rapidly disengage from the stimuli. Hence, individuals with BII phobias may exhibit shorter fixations or glances towards threat (Mogg, Bradley, Miles, & Dixon, 2004). In a recent study, Armstrong et al. (2013) found that high injection fearful adults \((n = 33)\) oriented to injection related images more often than low
injection fearful adults ($n = 32$). However, they did not orient to injection images more frequently than other emotional images (e.g., attack, appetitive and neutral). Consistent with a vigilance avoidance pattern, high injection fearful adults rapidly disengaged from injection images after initially seeing them. Overall they also looked at the injection images significantly less frequently than the other emotive images, a pattern which was not observed in the low injection fearful group. Finally, attentional avoidance of injection threat was found to predict avoidance during an injection BAT. A weakness of existing literature in the area is that studies have predominantly used BII fearful samples, determined by the use of self-report data only. Few studies have examined attentional bias in BII phobic adults who have been diagnosed using structured clinical interviews. Moreover, to date research has not examined attentional biases in BII phobic youth.

Other cognitive biases, such as interpretation biases, have also been implicated in the maintenance of specific phobias. Children and adults with specific phobia have been found to overestimate and inflate the association between phobia-related stimuli and negative outcomes (Byrne, Rapee, Malhi, Sweller, & Hudson, 2014; Jones & Menzies, 2000). For example, Jones and Menzies (2000) examined perceptions of danger in 15 spider phobic adults and 15 controls before, during and after a spider avoidance task. Spider phobic adults rated higher estimates of being bitten by the spider and more severe consequences resulting from a spider bite in comparison to controls. Harm beliefs were found to predict avoidance during the spider avoidance task. Similar cognitive distortions have been reported in other phobia subtypes (de Jongh, Muris, Schoenmakers, & Horst, 1995; Marshall, Bristol, & Barbaree, 1992; Menzies, Harris, & Jones, 1998; Rachman & Cuk, 1992).

Limited knowledge exists regarding the role of cognition in children with specific phobia. Ollendick, Raishevich, Davis III, Sirbu, and Öst (2010) reported no differences in danger expectancies between animal and natural environment phobic youth, with both phobia
types reporting exaggerated probability of harm associated with feared stimuli and low expectancies for coping with negative phobia related outcomes. In a recent study, Byrne et al. (2014) investigated whether harm beliefs in dog phobic children \(N=27\) predicted avoidance and distress before and after exposure therapy. Children were shown a live dog and asked to rate how much they believed the dog would harm them (e.g., the dog would bite them or jump on them). Harm beliefs predicted distress during a pre-treatment BAT and avoidance during the post treatment BAT. Currently, there is no research examining interpretation biases in children and adolescents with BII.

In sum, aetiological models propose that a genetic predisposition, atypical brain processes, temperament, parenting, learning experiences, evolutionary preparedness, cognitive biases and avoidance (Ollendick & Muris, 2015) are all implicated in the development of specific phobia. In addition to these broad risk factors a number of unique mechanisms have been proposed to underlie BII phobia in adults specifically physiological symptoms, fainting, perceived control, disgust and pain.

2.6 Evidenced Based Assessment

BII phobia has a complex clinical presentation. A thorough evidence-based assessment is necessary not only for the purposes of diagnostic classification of BII phobia but also to inform treatment planning and to adequately evaluate outcome. Assessments for BII phobia in children and adolescents should be multi-method (e.g., clinical/diagnostic interview, behavioural observation, self- and parent-report questionnaires) and multi-informant (e.g., child, parent and doctor) to ensure a complete diagnostic picture of the youth across contexts and settings (Silverman & Ollendick, 2005). Moreover, all aspects of the child’s phobic response (e.g., cognitions, physiological and behavioural) should be investigated. Given that BII phobia commonly occurs alongside other psychological
problems, a broad assessment of psychopathology is recommended to assist with differential
diagnosis, as well as the identification of comorbid conditions. Additionally, given that BII phobia is a highly familial disorder, it is recommended that parents also be assessed via
clinical interview or self-report questionnaires, to determine whether they have the same fear as their child. The identification of phobic fear in parents can be important to the delivery of successful treatment for the youth, as fearful parents may inadvertently reinforce avoidance behaviour and convey threat messages to the child when interacting with the phobic stimuli during treatment.

2.6.1 Clinical interview and Diagnostic Interviews

As previously discussed in Chapter 1, the Anxiety Disorders Interview Schedule for
DSM-IV, child and parent versions (ADIS-IV-C/P; Silverman & Albano, 1996) is the gold standard (Ollendick & Davis III, 2012) diagnostic interview for anxious and phobic youth. It is recommended that when administering the BII related questions of the specific phobia
module of the ADIS-IV-C/P, clinicians ask a number of supplementary questions related to phobic objects or situations, given a fear rating of 4 or above, by the parent or child. Example supplementary questions may include asking parents about their child’s physical and emotional reaction (e.g., fainting and disgust) when confronted with their phobic object or situation. Furthermore, the child and parents can be questioned about avoidance behaviours and impairment associated with the child’s phobia (e.g., “Has your child been able to have all their necessary vaccinations?” and “Has your child’s fear of blood or injections impacted their health or schooling in anyway?”). The information gathered through additional questioning provides greater understanding of the nature and diagnostic severity of the child’s BII phobia, which is crucial for developing an individualised, formulation driven, treatment plan. Please refer to Table 2.1 for examples of supplementary questions for BII phobia.
Table 2.1  Supplementary Questions for the ADIS-IV C/P BII Specific Phobia Module

- How do you respond when you need a vaccination (e.g., cry, runaway, vomit, faint)?
- Is there a part of the body that you are most fearful of having an injection in (e.g., mouth or toe)?
- Were you able to have your necessary vaccinations?
- If you had to visit the doctor and you knew for certain you would not be having an injection or blood test how would you feel?
- Would you be able to watch someone have an injection in person or on television?
- Have you ever fainted or vomited when you have seen blood?
- Could you attend a Halloween dress up party where people had fake wounds?
- If your friend hurt himself or herself when cutting something would you be able to help them?
- If your class was watching a documentary about heart surgery how would you feel?
- Is there any particular sports or activities you do not participate in because you are concerned about being injured?
- How would you feel listening to someone discuss injections or other medical procedures?
- Have you ever had a bad experience related to blood, injections or injury?

Adapted from Ollendick (2001) and reproduced with permission
2.6.2 Questionnaires

Consistent with other phobia types, in addition to diagnostic interviews, it is recommended that questionnaires be administered, as part of a comprehensive assessment. Broad-based child anxiety, depression and phobia measures are reviewed in detail in Chapter 1. In the adult literature several questionnaires are available to assess BII phobia (Hood & Antony, 2012), including the Medical Fear Survey long and short versions (Kleinknecht, Kleinknecht, Sawchuk, Lee, & Lohr, 1999; Olatunji et al., 2012), the Blood-Injection Symptom Scale (BISS; Page, Bennett, Carter, Smith, & Woodmore, 1997) and the Multidimensional Blood/Injury Phobia Inventory (MBPI; Wenzel & Holt, 2003).

Of the BII symptom measures, the Mutilation Questionnaire (MQ; Klorman, Weerts, Hastings, Melamed, & Lang, 1974) and the Injection Phobia Scale–Anxiety (IPS-Anx; Öst et al., 1992) are two of the most well known. The MQ is a 30-item true/false scale designed to assess fears of blood, injury and mutilation. The scale consists of fearful (e.g., “I do not like looking at pictures of accidents or injuries”) and non fearful (e.g., “Visiting and seeing sick or injured people in hospital does not bother me”) statements with individuals required to rate each item as true or false. Scores range from 0 to 30. The MQ has sound psychometric properties and has been proven to be sensitive to treatment effects (Kleinknecht & Thorndike, 1990; Öst, Fellenius, & Sterner, 1991; Öst, Lindahl, Sterner, & Jerremalm, 1984; Öst, Sterner, & Fellenius, 1989). The MQ has demonstrated an acceptable internal consistency with Cronbach’s alpha ranging from 0.77 to 0.86 across non-clinical samples (Kleinknecht & Thorndike, 1990). The MQ has been found to consist of a two factor structure, one factor ‘repulsion and revulsion of blood, injury and mutilation’ and the other ‘fear of bodily damage’. It has found to be positively correlated with blood and injury related items from the Fear Survey Schedule (FSS; Wolpe & Lang, 1964)(r = 0.75) and is predictive of a history of blood and injury related fainting (Kleinknecht & Thorndike, 1990).
The Injection Phobia Scale-Anxiety (IPS-Anx; Öst et al., 1992) is an 18-item self-report measure designed to assess anxiety and avoidance of situations involving injections. The measure requires individuals to rate the degree of anxiety they would experience during a range of injection and/or venipuncture procedures (e.g., getting a vaccination) using a 5-point Likert scale ranging from 0 = not worried to 4 = extremely worried. The IPS-Anx has sound psychometric properties (Olatunji, Sawchuk, et al., 2010). It has an estimated test retest reliability of 0.88 (based on intra class correlations) over 12 weeks. Furthermore, it has demonstrated acceptable convergent validity, with positive correlations with the Disgust Propensity and Sensitivity Scale-Revised (DPSS-R; van Overveld, de Jong, Peters, Cavanagh, & Davey, 2006) (r=.42) and the negative affect subscale of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988)(r = .27). The measure is able to discriminate between those with and without a history of BII related fainting and a history of medical avoidance (Olatunji, Sawchuk, et al., 2010). Furthermore, the IPS-Anx has been proven to be able to differentiate between those with and without BII phobia. Notably neither the MQ nor the IPS-Anx have been used or previously validated in samples of children and adolescents. There are currently no evidenced-based self-report measures available for the assessment of BII phobia symptoms in children and adolescents.

Moreover, self-report questionnaires can also provide valuable information about the other dimensions associated with BII phobia, such as disgust. The Disgust Emotion Scale for Children (DES-C; Muris et al., 2012) is a 30-item self-report measure designed to assess disgust sensitivity in children and adolescents. The measure requires youth to rate the degree of disgust they believe they would experience if exposed to certain stimuli or situations (e.g., a pile of rotting lettuce) using a 5-point Likert scale ranging from 0 = no disgust at all to 4 = extreme disgust. The parent version of the scale requires parents to rate how much disgust their child would experience when exposed to certain stimuli or situations. The measure
yields a total score and five subscale scores. The subscales include animals, injection and blood, mutilation and death, rotting food and odours. The DES-C has been found to have excellent internal consistency with Cronbach’s alpha estimated at 0.93 and between 0.77 (animals) and 0.91 (rotting foods) for the various subscales (Muris et al., 2012). Evidence has also been found for the validity of the DES-C with positive correlations observed between the DES-C and other self-report phobia measures such as the Spider Phobia Questionnaire for Children (Kindt, Brosschot, & Muris, 1996) ($r = .59$) and subscales of the (FSS; Wolpe & Lang, 1964) ($r = 0.66$ to $r = 0.77$). Furthermore, DES-C scores have been found to be associated with behavioural avoidance of disgust eliciting stimuli ($r = 0.42$) and feelings of disgust ($r = 0.46$) during a BAT. The Child Disgust Scale (CDS) is another recently validated measure of disgust sensitivity in children aged 5 to 13 years. It consists of 18 items that assesses core, contamination and animal reminder domains of disgust on a 3-point Likert scale (0 = Always, 1 = Sometimes, 2 = Never). It yields a total score and three domain scores with higher scores indicating greater disgust sensitivity. The measure has sound psychometric properties with Cronbach’s alpha for the total score 0.77. Moreover, it has demonstrated convergent, divergent and known groups validity. Scores on the CDS were correlated with other childhood measures of anxiety and fear, however not depression. Additionally, youth with a specific phobia were found to report significantly greater disgust sensitivity in comparison to non clinical controls.

### 2.6.3 Behavioural Approach Tasks

A BAT is a standardised and controlled test that involves the child being asked to approach their feared object or stimulus. BATs provide a wealth of knowledge, beyond that which can be obtained by clinical interviews and questionnaires. They are an integral part of any phobia assessment, as they allow for a direct observation of all aspects (e.g., cognitive,
physiological and behavioural) of the child’s phobic response (Ollendick & Davis III, 2012). They are designed to elicit and activate children’s fear and approximate their response to the phobic stimuli in a real world setting. They give a foundation on which to establish an exposure hierarchy for treatment (Cowart & Ollendick, 2013b). The child’s behaviour during the BAT provides insight into the ideal starting point for treatment and how the child will cope with interacting with the phobic object or situation. Moreover, they provide information regarding the child’s motivation to overcome their BII fear and their willingness to engage in therapy.

Example BAT tasks for BII phobia include sitting in a doctors office with an needle and syringe sitting on the table, holding a vile of blood, watching a video of an operation or having a finger prick. More specifically, a child who is fearful of blood may be brought to a closed door and informed that inside the room is a television with a video playing of someone having a blood test. The child is then instructed to enter the room, sit in front of the television and watch the video for 5 minutes. Children are informed that the task is voluntary and they can stop at any time. The degree to which the child approaches the feared object or situation provides an objective measure of phobic avoidance (e.g., does not enter the room versus watches 1 minute of the video). At various time points (beginning, during and after) of the task the clinician may ask the child to rate his or her fear from 0 (Not at all scared) to 8 (Very very scared). BAT performance is scored by measuring the percentage of steps completed by the child and their fear ratings (see Table 2.2; Ollendick, King, & Muris, 2004). Clinicians may also obtain information about the child’s phobic beliefs (e.g., “What do you worry will happen while you watch the video” and “What would be difficult for you about watching a video of blood tests”) prior to the task. Moreover, physiological data (e.g., heart rate) can also be collected to allow for assessment across all components (e.g., cognitive, physiological and behavioural) of the phobic response (Milliner, Farrell, & Ollendick, 2013).
Table 2.2  *Behavioural approach test (BAT) example steps for a phobia of blood*

<table>
<thead>
<tr>
<th>Step</th>
<th>Behavior Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Does not enter room</td>
</tr>
<tr>
<td>2.</td>
<td>Opens door, but does not go in</td>
</tr>
<tr>
<td>3.</td>
<td>Enters room, but averts eyes and/or covers ears at least 50% of time and remains within arm’s reach of door</td>
</tr>
<tr>
<td>4.</td>
<td>Enters room, opens eyes and does not cover ears, but stays within arm’s reach of door</td>
</tr>
<tr>
<td>5.</td>
<td>Enters room, opens eyes and does not cover ears, but stays in chair across the room from the video</td>
</tr>
<tr>
<td>6.</td>
<td>Sits in chair near television but covers ears and/or averts eyes at least 50% of time</td>
</tr>
<tr>
<td>7.</td>
<td>Sits in chair near television, averts eyes, but uncovers ears for 2 minutes</td>
</tr>
<tr>
<td>8.</td>
<td>Sits in chair near television, averts eyes, but uncovers ears for 4 minutes</td>
</tr>
<tr>
<td>9.</td>
<td>Sits in chair near television, watches video, ears uncovered for 2 minutes</td>
</tr>
<tr>
<td>10.</td>
<td>Sits in chair near television, watches video, ears uncovered for 4 minutes</td>
</tr>
<tr>
<td>11.</td>
<td>Sits in chair near television, watches video, ears uncovered for 5 minutes</td>
</tr>
</tbody>
</table>

2.7  *Evidence-Based Treatment*

Behavioural and cognitive-behavioural procedures have received empirical support for the treatment of BII phobia in adults (Ayala et al., 2009). In vivo exposure and applied tension have been found to be particularly effective. To date five controlled treatment trials have been conducted for adults with BII phobia (Hellström et al., 1996; Öst, Fellenius, et al., 1991; Öst et al., 1992; Öst, Lindahl, et al., 1984; Öst et al., 1989), all of which have been
produced by one research group, Öst and colleagues from Sweden. Interventions used in the studies include massed or spaced exposure, applied tension, tension only, applied relaxation and combination of applied tension and applied relaxation (Ayala et al., 2009).

Exposure is a behavioural technique that involves the patient confronting their feared object or situation in a controlled manner (Hood & Antony, 2012). The patient is required to remain in their feared situation for a prolonged period of time, in order to learn that the consequences they fear do not occur and that they can tolerate their fear and anxiety. For BII phobics, graded exposure may include sitting in a doctors office, examining a test tube of blood, observing a live surgery, having a finger prick or venipuncture or observing a subcutaneous injection (Öst et al., 1992). Exposure for BII phobics has been delivered across spaced sessions (9 x 1 hour or 5 x 1 hour) or in a single massed exposure session (1 x 3 hours) without the use of any additional coping techniques (Öst, Fellenius, et al., 1991; Öst et al., 1992).

Applied tension is one such coping technique that may be implemented during exposure to BII stimuli in order to counteract the unique vasovagal fainting response experienced by BII phobics. The technique involves brief tension of arms, legs and torso muscles until the person feels warmth rising in their face (10–20 seconds), followed by 20–30 seconds of release (not relaxation) of the muscles (Ayala et al., 2009; Öst & Sterner, 1987), which is repeated 5 times. Applied tension is proposed to prevent or reduce the likelihood of fainting by raising blood pressure, venous return and cerebral blood flow. The technique is to be applied at the first signs of fainting during exposure to BII stimuli. Applied tension has previously been delivered to blood phobics in 5 spaced sessions (5 x 1 hour; Öst et al., 1989) and 1 session format (1 x 2 hours; Hellström et al., 1996).

A tension only technique has also been used to treat BII phobia (Hellström et al., 1996; Öst, Fellenius, et al., 1991). The tension technique is identical to that used during
applied tension. It involves the brief tension of different muscle groups for (10–20 seconds) followed by 20–30 seconds of release (not relaxation) (Ayala et al., 2009; Öst & Sterner, 1987). The technique is hypothesised to raise blood pressure thus preventing fainting. However, unlike applied tension, patients are not exposed to BII stimuli during the treatment and are advised to avoid all contact with BII stimuli outside of the therapy setting. During the treatment, patients are given the opportunity to practice the technique following an orthostatic manoeuvre that temporarily decreases their blood pressure. The tension only technique has also been trialled in a 5 session format (5 x 1 hour; Öst, Fellenius, et al., 1991) and 1 session format (1 x 2 hour; Hellström et al., 1996).

Finally, another BII treatment approach is applied relaxation which involves the use of a progressive muscle relaxation technique in the context of exposure to BII stimuli (Öst et al., 1989). The technique involves the brief tensing (5 seconds) of different muscle groups followed by a release of the tension and relaxation (10-15 seconds). Applied relaxation is proposed to counteract the initial increase in heart rate and blood pressure experienced by BII phobics upon confrontation with feared stimuli. The applied relaxation intervention has been delivered to BII phobics in a 9 session format during which phobics were taught tense and release relaxation techniques followed by release only and cue controlled relaxation (Öst et al., 1989). Blood phobics practice the technique while being exposed to slides of blood and wounds and while visiting a blood bank. A combination of applied tension and relaxation has also been used to treat BII phobia (Öst et al., 1989). In this intervention BII phobics are taught both the muscle tension and relaxation techniques and learn to implement the techniques systematically when exposed to BII stimuli.
2.7.1 **Current Status of Treatment for Adult BII Phobia**

The work of Öst and colleagues from Sweden has pioneered the development and evidence base of behavioural treatments for BII phobia in adults (Hellström et al., 1996; Öst, Fellenius, et al., 1991; Öst et al., 1992; Öst, Lindahl, et al., 1984; Öst et al., 1989) and collectively the group has published five trials. In the first controlled trial, Öst, Lindahl, et al. (1984) compared the effectiveness of in vivo exposure to applied relaxation for the treatment of blood phobia. Eighteen adults (aged 21-44 years) with phobias of blood, wounds and injury participated in the study and were randomised to one of the treatments, both which consisted of 9 individual therapy sessions (45–60 minutes duration). Results showed that both groups improved significantly across a range of outcome measures (e.g., self-report questionnaires, subjective ratings of anxiety, fainting behaviour, and time spent watching a surgery film) with treatment gains maintained at 6-month follow-up. In fact, across the treatment groups, 10 of the 16 BII phobics went on to become blood donors. In vivo exposure was found to be superior to applied relaxation on phobia-specific self-report measures (e.g., FSS and MQ) at post-treatment; however, differences were not observed at 6-month follow-up. The treatment groups showed comparable change on the BAT and physiological measures.

In a subsequent RCT, Öst et al. (1989) evaluated the relative efficacy of applied tension, applied relaxation and combination of the two treatments for blood and injury phobia. Treatments were 5, 9 and 10 sessions, respectively, and all involved weekly individual sessions that were 45 to 60 minutes in duration. Thirty adults (18-51 years) with phobias of blood, wounds and injury participated in the study. All three treatments were associated with significant improvements on primary outcome measures including self-report questionnaires, subjective ratings of anxiety, fainting behaviour, time spent watching a surgery film, negative cognitions during a BAT and heart rate. Overall, 73% of patients were clinically improved at post-treatment and this increased to 77% at 6-month follow-up. There was a trend for those in
the applied tension treatment to fare better than those in combination and applied relaxation condition; however, significant differences were not observed between the conditions. Treatment gains were maintained in all groups at 6-month follow-up.

In a later trial, Öst, Fellenius, et al. (1991) randomly assigned 30 adults (18-55 years) with blood phobia to applied tension, in vivo exposure or a tension only treatment conditions. Each intervention consisted of 5 sessions (each 45-60 minutes in duration). All treatment groups improved significantly on outcome measures (e.g., self-report questionnaires, subjective ratings of anxiety, fainting behaviour, time spent watching a surgery film and negative cognitions during a BAT, physiological measures) and gains were maintained at 1 year follow-up. The applied tension and tension only conditions were found to be superior to exposure on measures of fainting behaviour and time spent watching a surgery video during a BAT. Ninety percent of participants in the applied tension and 80% in the tension only group were clinically improved at post-treatment compared to 40% in the exposure group. At follow-up participants had continued to improve with 100%, 90% and 50%, respectively, showing clinically significant change.

In the first controlled trial for injection phobia, Öst et al. (1992) compared the effectiveness of one session (3 hours maximum) of exposure to five weekly spaced sessions (1 hour maximum each) of exposure. Following treatment all the participants were offered to a voluntary maintenance program that involved visiting a nurse regularly for 8 weeks and continuing exposure practice. Forty adults (aged 18-51 years) with phobias of injections, venipuncture and finger pricks participated in the study. Both groups showed significant improvements on a range outcome measures from pre to post-treatment and follow-up (e.g., self-report questionnaires, subjective ratings of anxiety, fainting behaviour, negative cognitions during a BAT and number of steps completed on an exposure hierarchy). However, changes were not observed from pre to post-treatment on physiological measures.
(e.g., heart rate and blood pressure). Post-treatment, 80% of participants in the one session exposure group and 79% in the five session exposure group were considered clinically improved. At 1-year follow-up, 90% and 84%, respectively, showed clinically significant improvement with no differences between the groups.

Finally, Hellström et al. (1996) randomised 30 blood phobics (18-54 years) to five sessions of applied tension (1 hour maximum per session), one session of applied tension (2 hours maximum per session) or one session of tension only (2 hours maximum per session). All the participants were offered a voluntary maintenance program following treatment. Across the treatment groups participants showed significant improvements on key outcome measures (e.g., self-report questionnaires, subjective ratings of anxiety, fainting behaviour, time spent watching a surgery film and negative cognitions during a BAT) with treatment gains maintained at 1-year follow-up. Interestingly, no changes were observed from pre to post-treatment on physiological measures (e.g., heart rate and blood pressure). Five sessions of applied tension was found to be superior to one session of applied tension on post-treatment subjective ratings of anxiety during the BAT. However, this difference was not maintained at follow-up. Fifty percent of those in the five session applied tension group, 0% of the one session applied tension group, and 30% of the one session tension only group showed clinically significant change at post treatment. Additionally, at 1-year follow-up 60% of the five session applied tension group, 70% of the one session applied tension group and 60% of the one session tension only group were considered significantly improved. Hellström et al. (1996) hypothesised that the one session applied tension group did not respond as well at post-treatment as they required more time to practice implementing the tension technique. This explanation accounts for the significant improvement in the percentage of participants clinically improved in this group at 1-year follow-up. Notably, 88% of participants who
completed the maintenance program were considered clinically improved following treatment compared to only 36% of those who did not complete the maintenance program.

Recently, Ayala et al. (2009) and colleagues conducted a systematic literature review of the status of evidence-based treatments for BII phobia including the aforementioned studies by Öst and colleagues (Hellström et al., 1996; Öst, Fellenius, et al., 1991; Öst et al., 1992; Öst, Lindahl, et al., 1984; Öst et al., 1989). Overall, the review found that treatments were largely equivocal, regardless of the type of intervention (e.g., exposure, applied tension) delivered, with 70-80% of patients experiencing clinically significant change. Limited evidence was found for the additional effects of applied tension beyond exposure alone. Applied tension was superior to alternative interventions on subjective ratings of anxiety, time spent watching a surgery film during a BAT and fainting. However, on phobia specific measures (e.g., MQ and FSS), pre- to post-treatment effect sizes indicated that exposure outperformed all other interventions. Ayala and colleagues proposed that applied tension gives the individual a sense of control in BII related situations; however, the coping skill does not affect the individual’s more stable characteristics of anxiety or their view of themselves as a blood phobic. Furthermore, Ayala et al. (2009) suggested that applied tension and applied relaxation may distract from the benefits of pure exposure therapy. Surprisingly, fainters and non-fainters responded similarly within studies. Additionally, applied tension was not associated with differential effects on physiological measures during BATs. These findings are contrary to those expected as the rationale for applied tension is to address vasovagal syncope in individuals who faint, when confronted with BII stimuli. Moreover, applied tension is theoretically hypothesised to effect diphasic responding and lead to increased heart rate and blood pressure. Ayala et al. (2009) concluded that the studies’ results were too complex and varied to determine the superiority of one treatment for BII phobia. They indicated that some of the variability in the findings may be explained by the heterogeneity of
patient populations (e.g., fainting proneness), differential targeting of BII phobia presentations and small sample sizes.

Given the small samples within the clinical trials to date, currently there are no published studies that have examined mediators or moderators of treatment response for BII phobia.

2.7.2 Current Status of Treatment for Paediatric BII Phobia

Treatment literature in youth with BII phobia is limited. To date a few single case studies have been published and small numbers of youth with BII phobias have been included in two of the large RCTs and one smaller clinical trial for specific phobia (Flatt & King, 2010; Öst et al., 2001; Silverman et al., 1999). Sanders and Jones (1990) described the treatment of a 13 year old girl with phobias of injections, dental and medical procedures who required a major surgery. The adolescent also presented with comorbid Oppositional Defiant Disorder (ODD). Treatment consisted of 21 sessions involving coping skills training, systematic desensitisation, imaginal and in vivo desensitisation with participant modelling and daily home tasks. Following treatment the adolescent displayed significant improvements on measures of anxiety including subjective ratings of distress, BAT and self-report measures. Moreover, these gains were maintained at 8-month follow-up.

Thompson (1999) evaluated the effectiveness of CBT for a 14 year old girl with a BII phobia who had a history of fainting at the sight of blood. The adolescent completed 13 one-hour sessions, which included exposure, applied tension and cognitive restructuring. Results showed substantial reductions in subjective distress in BII situations from baseline to post-treatment. On phobic and general self-report measures of anxiety, reductions were also observed. Fainting did not occur during treatment. The adolescent reported that the she found the cognitive restructuring component of treatment the most helpful. Finally, in a more recent
publication, Mednick and Claar (2012) outlined two case studies of treatment for BII phobia in a 13 year old female and 16 year old female. The adolescents each participated in 11 and 16 sessions, respectively, of a behavioural treatment involving in vivo exposure and applied tension. Following treatment both adolescents were reported to experience a significant decrease in their anxiety and were able to have necessary medical procedures. Evidenced-based measures of assessment (e.g., self-report questionnaires and diagnostic interviews) were not used in these studies, therefore the results need to be interpreted with caution. Whilst case studies are an important first step in treatment development they provide limited guidance regarding the effectiveness of a treatment which is achieved by conducting large RCTs.

To date, empirical support for CBT for specific phobia in children and adolescents has been demonstrated in eleven studies, including four large RCTs (Ollendick et al., 2015; Ollendick et al., 2009; Öst et al., 2001; Silverman et al., 1999) and seven smaller clinical trials (Farrell, Waters, Milliner, Zimmer-Gembeck, et al., 2013; Flatt & King, 2010; Leutgeb, Schäfer, Köchel, & Schienle, 2012; Leutgeb & Schienle, 2012; Muris, Merckelbach, Holdrinet, & Sijsenaar, 1998; Muris, Merckelbach, Van Haaften, & Mayer, 1997; Waters, Farrell, et al., 2014). Only small numbers of youth with BII phobias have been included in two of the large RCTs and one smaller clinical trial for specific phobia Öst et al. (2001) included 12 youth with injection phobias and 2 with blood phobias in a large RCT (n = 60), which evaluated the efficacy of an intensive OST for specific phobia in children and adolescents. Interestingly, in secondary analyses of outcomes these authors found that BII phobic youth responded significantly less favourably to treatment than youth with other types of phobia during a post-assessment BAT. Based on their clinical impression from working with the children, Öst et al. (2001) hypothesised that the youth had difficulty differentiating the therapist from other health professionals (e.g., doctor, nurse) who they associated with previous anxiety provoking experiences. Hence, they were less likely to engage in therapist
suggested exposure tasks. Similarly, Silverman et al. (1999) and Flatt and King (2010) also included a small number (4-6 participants) of youth with BII phobias in their specific phobia controlled treatment trials; however, they did not examine differences in treatment outcome across the different types of phobias. In the largest clinical trial conducted to date, Ollendick and colleagues (2009) specifically excluded youth with BII phobias due to their poorer treatment response as reported in Öst et al. (2001); their unique physiological response (e.g., fainting); and the complexity associated with delivering treatment to these youth (i.e., need for medical professionals). In sum, very little is known about the effectiveness of cognitive behavioural treatments for BII phobia in youth. Taken together these studies suggest that children and adolescents with BII phobia may not respond as well to an OST, the current gold standard approach for phobic youth. Further research is needed to establish if this is indeed correct and to determine whether modified approaches to treatment are needed to enhance outcomes for these youth.

2.8 Summary and Future Directions

It is evident from the adult literature that BII phobia is a complex and debilitating condition that is distinct from the other phobia types. In comparison with adults, considerably little is known about the expression of BII phobia in children and adolescents. To date the only descriptions of BII phobia in childhood come from a small number of epidemiological studies. These studies suggest that in youth, BII is associated with a unique pattern of comorbidity, namely externalising disorders, and significant disability associated with high rates of treatment contact. A broader description of the unique psychological characteristics of BII phobic youth are yet to be explored.

Alongside of broad risk factors that may predispose an individual to developing a specific phobia, a number of unique factors appear to be involved in the pathogenesis of BII,
such as fainting, disgust, pain and perceived control. Research examining these unique factors has almost exclusively been carried out with adults; thus, further research among samples of youth is warranted in order to guide effective assessment and treatment approaches.

Given BII is associated with a complex clinical presentation, a comprehensive assessment is required to inform the delivery of effective treatment. Assessments should ideally be multimodal and examine specific BII maintaining factors (e.g., cognitive biases relating to pain and disgust; avoidance). With regards to treatment, cognitive behavioural approaches have received the strongest empirical support of adult BII phobia. Controlled treatment trials have largely been carried out by the one research group, Öst and colleagues in Sweden, with this team evaluating a range of intervention approaches including intensive and massed exposure, in addition to applied tension, a treatment technique designed to counteract the vasovagal response exhibited by BII phobics. These trials suggest that a large proportion of adults experience clinically significant change regardless of the treatment type delivered, and on physiological measures, differences have not been observed calling into question the need for applied tension techniques.

In youth, a small number of case studies have been published that use multiple (approximately 14) spaced CBT sessions, including applied tension, also, small numbers of BII phobic youth have been included in large RCT for specific phobia. In the RCT, which included the largest number of BII phobic youth (Öst et al., 2001), they were found to respond more poorly to OST, the current first line treatment for childhood phobia. Consequently, youth with BII phobia have been excluded from other large RCTs (Ollendick et al., 2015; Ollendick et al., 2009). Currently, BII remains largely understudied among children and adolescents. The adult literature suggests this phobia subtype in youth is likely to be highly debilitating and may be associated with a unique phobic response, with distinct factors implicated in its development and maintenance. Moreover, youth with BII phobia may
therefore require more individualised approaches to treatments that target these unique characteristics to improve outcomes. The development and evaluation of treatments for BII phobia among youth presents an important area for future research.
2.9 References


Ritz, T., Meuret, A. E., & Ayala, E. S. (2010). The psychophysiology of blood-injection-injury phobia: Looking beyond the diphasic response paradigm. *International Journal of Psychophysiology, 78*(1), 50 - 67. doi: [http://dx.doi.org/10.1016/j.ijpsycho.2010.05.007](http://dx.doi.org/10.1016/j.ijpsycho.2010.05.007)


specific phobias with attention training towards positive stimuli. *Behaviour Research and Therapy.*


Specific phobia are one of the most common psychological disorders in children and adolescents, affecting approximately 5 to 10% of youth in community samples and 15% in mental health settings (Kessler et al., 2005; Ollendick, Hagopian, & King, 1997). It is associated with significant impairment including academic difficulties, personal and social distress and interference in day-to-day activities. If untreated, phobias typically have a chronic course and may lead to the development of adult anxiety, mood and substance use problems (Kendall, Safford, Flannery-Schroeder, & Webb, 2004). Behavioural and cognitive behavioural treatments (CBT) have received the strongest empirical support for children and adolescents with specific phobia, and are considered the first line treatment of choice (Farrell, Waters, Milliner, & Ollendick, 2013). Of the phobia subtypes, BII is a particularly complex and debilitating disorder characterised by fear and avoidance of seeing blood, receiving an injection or other invasive medical procedures (American Psychiatric Association (APA), 2013). It effects 3 to 4% of adults and 0.8 to 1% of children and adolescents, and is often associated with significant health problems, since sufferers may avoid seeking assistance from health professionals or receiving medical treatments for diagnosed illnesses (Öst & Hellström, 1997).

### 3.1 Rationale for this program of research

It is evident from the literature reviewed in Chapter 1 and Chapter 2 that of the phobia subtypes in youth, BII has been largely neglected to date. In the adult literature efforts have been made to examine heterogeneity across the phobia subtypes (Antony, Brown, & Barlow, 1997; Lipsitz et al., 2002) with a substantial body of research devoted to BII phobia due to its unique physiological (e.g., fainting) and emotional (e.g., disgust) responses (Olatunji &
McKay, 2009; Öst, 1992). It is clear from this research that BII is distinct from other phobia subtypes in relation to its clinical features, aetiology, and maintenance and it has been proposed that it requires a specialised treatment approach (e.g., applied tension; Öst, Fellenius, et al., 1991). While comparatively in the child literature very few studies exist that have examined differences among the phobia types with only one study of treatment seeking youth ((Animal and Natural Environment; Ollendick, Raishevich, et al., 2010) and a small number of epidemiological studies (Burstein et al., 2012; Essau et al., 2000; Kim et al., 2010). There has been speculation that BII phobia in youth may have a distinct clinical expression; however, this is yet to be empirically examined (Ollendick, Raishevich, et al., 2010).

Moreover, as highlighted in Chapter 2, BII phobia may have a number of unique aetiologi cal and maintaining factors involved in its pathogenesis such as fainting, disgust, pain and perceived control. Again while research has examined broad, shared aetiological factors (e.g., genetics, temperament, learning, parenting) involved in the development and maintenance of child specific phobias, research to date has not explored the unique factors specific to the different phobia subtypes such as BII. Finally, the efficacy of CBT for youth with BII phobia is unclear. There is some evidence to suggest these youth with BII may not respond as well as other phobia subtypes to standard CBT approaches (Öst et al., 2001) raising the question of whether they require a specialised treatment approach.

Thus, there are a number of important areas of research in paediatric BII in need of empirical investigation. Chapters 4, 5, 6 and 7 present a series of four studies (which have been submitted for publication) to address this gap in the child phobia literature, with the general aim to advance knowledge relating to the clinical presentation, assessment and treatment of BII phobia in children and adolescents. The studies more specifically aim to (1) describe a CBT model of BII phobia in youth and the development of a modified One Session Treatment (OST), (2) examine the clinical phenomenology of BII phobia in children and
teenagers, (3) evaluate the efficacy of a modified OST for BII phobia in a controlled multiple baseline trial, and (4) examine patterns of response and remission following a modified OST for youth with BII.

3.2 Study 1 - One Session Treatment for Specific Phobias: An Adaptation for Paediatric Blood-Injection-Injury Phobia in Youth

Study 1 involves a comprehensive review of the aetiological models that inform approaches to treatment and the evidence base of CBT for BII phobia. Following this review a cognitive behavioural model of BII phobia in children and adolescents is proposed. The model draws upon and incorporates the existing aetiological pathways for childhood specific phobias more generally (Muris & Merckelbach, 2001; Ollendick & Muris, 2015), and adult BII phobia more specifically (Page & Tan, 2009). Two children with a primary diagnosis of BII phobia, (aged 8 years and 11 years) were involved in the study; the first child received a standard OST, which consisted of a single massed exposure session maximised to 3 hours, while the second child received an individualised, case-formulation driven OST, based upon the proposed CBT model, that included an education session, single massed exposure session and a structured e-therapy maintenance program. The cases highlight the unique challenges associated with treating BII in youth and the need for a modified approach.

3.3 Study 2 – Blood-Injection-Injury Phobia and Animal Phobia in Youth: Psychological Characteristics and Associated Features in a Clinical Sample

Study 2 extended upon Study 1 by systematically examining whether BII phobia in youth presents with distinct psychological characteristics relative to youth with animal phobia (e.g., threat appraisals, disgust sensitivity). The purpose of this study was to examine maintaining mechanisms highlighted in the proposed cognitive behavioural model described in Study 1, therefore providing support for a modified approach to treatment. Whilst there is
some preliminary evidence to suggest this disorder in youth may present with distinct features, there have been no studies to date that explore these correlates across samples of youth with BII phobia relative to other phobia subtypes. Studies which present clinical data on youth with less well-understood mental health disorders represent an important contribution in order to advance developmentally sensitive aetiological models and inform disorder-specific treatments.

Study 2 involves a between groups design. Twenty-seven children and adolescents who met DSM-V criteria for a primary diagnosis of BII phobia, and 25 children and adolescents who met criteria for a primary diagnosis of animal phobia participated in the study. The independent variable was phobia subtype (BII versus Animal) and there were several dependent variables including; phobia severity, functional impairment and quality of life, fainting and family history, comorbidity, self and parent reported anxiety, depression, fearfulness and externalising symptoms, threat appraisals (danger expectancies and coping), focus of fear and disgust sensitivity. Analyses included a series of $t$ tests and chi-square.

3.4 Study 3 – One Session Treatment for Paediatric Blood-Injection-Injury Phobia: A controlled multiple baseline trial

Study 3 aimed to advance the status of the literature by examining the efficacy of the modified OST, including e-therapy maintenance program that was developed in Study 1, in a controlled trial for youth with a primary diagnosis of BII. On the basis of the piloting of the treatment (e.g., Study 1) it was expected that (1) BII symptoms and diagnostic status would remain stable during the baseline periods and then significantly improve following modified OST, (2) significant reductions would be observed from pre- to post-treatment on clinician severity ratings (CSR), diagnostic status, global functioning, self-reported anxiety, fearfulness
and depression, behavioural avoidance during a BAT, and (3) a modified OST would be acceptable to families, and treatment gains would be maintained at 1- and 3-month follow-up.

Using a highly-controlled, multiple-baseline design, 24 children and adolescents (8-18 years) with a primary diagnosis of BII phobia were randomised to a 1, 2 or 3 week baseline prior to receiving an intensive one session CBT. This experimental design allows for the systematic evaluation of the efficacy of novel interventions in a controlled manner (Jarrett & Ollendick, 2012). Single case designs are endorsed by the evidence-based treatment movement (Task Force on Promotion and Dissemination, 1995) and are considered an important initial step in examining the efficacy of novel treatments. Although, large randomised controlled trials offer greater causal clarity, they are costly and time consuming and may be premature when piloting new interventions. On the basis of the assumption in the literature that BII phobic youth would respond less well to behavioural interventions, it was considered that this design would provide a rigorous, initial examination of a well-validated approach (OST), modified on the basis of careful piloting in order to provide an initial test of the efficacy of behavioural interventions for youth with BII. On a weekly basis during the baseline period, youth and parents completed telephone-administered BII related questions from the ADIS-IV Specific Phobia Module and rated the youth’s idiographic target behaviours. Efficacy was assessed at post-treatment, 1-month follow-up and 3-month follow-up.

A series of repeated measures ANOVAs were conducted to examine participant changes over time on the primary and secondary outcome measures. A Reliable Change Index (RCI; Jacobson & Truax, 1991) was calculated to determine whether the magnitude of change in children’s diagnostic severity was statistically reliable. Clinically significant improvement, as defined by Jacobson and Truax (1991), was also assessed in relation to diagnostic severity (CSR). To further evaluate children’s response to the modified OST approach, single case
data were analysed using the robust improvement rate difference (RIRD) technique described by Parker, Vannest, and Davis (2011). This technique is used in single case research to describe the difference in improvement rates between the baseline phase and treatment phase.

3.5 Study 4 - Patterns of response and remission following a One Session Treatment for Blood-Injection-Injury Phobia in Youth

Study 4 aimed to examine youth’s pattern of response and remission following a modified OST, evaluated in Study 3, to identify the psychological characteristics related to the different responder groups. An important step in the advancement of effective treatments is studies that define response and remission, and identify predictors of treatment outcome. In the existing literature, treatment response is defined as a significant reduction in symptoms, while remission is achieved when a patient no longer meets diagnostic criteria for a disorder. Whilst the majority of youth respond, fewer typically achieve full remission of their disorder following current best treatment approaches. The goal of evidence-based treatment research is to improve rates of remission, and moreover achieve them in the most efficient way possible. In order to improve outcomes, research which closely examines patterns of response following treatment, and aims to characterise youth who both do and do not achieve response, may provide a way forward, informing individualised approaches to treatments.

Differences in baseline characteristics were examined, as well as patterns of within OST change, across estimates of coping, fear and disgust ratings. Finally, examining the successes of exposure, defined as having a blood test within the session or following OST, as well as homework compliance was examined in order to explain response patterns. Twenty-four children and adolescents (8 – 17 years) who participated in a multiple-baseline design, controlled trial of a modified OST (Study 3) were involved in Study 4. Participants were classified into one of four responder groups (e.g., immediate responder/remitter, delayed
responder/remitter, partial responder and non-responder) on the basis of defining children’s outcome at each assessment point between groups. Descriptive data was inspected and non-parametric analyses conducted to examine differences between the responder groups in relation to baseline characteristics (e.g., age, gender, BII subtype, disgust sensitivity, comorbidity). Within group changes in child coping and fear and disgust ratings during the OST and between group differences on homework compliance were also explored using non-parametric analyses.

3.6 Significance for the Program of Research

BII phobia has largely been neglected in the child and adolescent literature. The timely delivery of effective treatment for youth with the disorder is critical given that children’s debilitating fears may effect them accessing optimal health care (e.g., children with medical conditions such as diabetes or asthma) and could lead to long term health consequences. This phobia type in youth has developed a reputation as being ‘difficult to treat’. In the few published case studies for children with this disorder, treatment has involved upwards of 12 weekly CBT sessions. Currently the gold standard treatment for specific phobia in youth involves a single intensive CBT session. When youth with BII were included in one of the large RCTs evaluating OST, they were found to respond significantly less favourably, and as such have been excluded from other trials due to their poorer treatment response; unique physiological response (e.g., fainting); and the complexity associated with delivering treatment to these youth (i.e., need for medical professionals).

The aforementioned series of studies are the first to empirically examine this phobia type in children and adolescents. The proposed CBT model of BII phobia for children and adolescents in Study 1 can be used to guide further research in the field and assist clinicians to develop individualised and formulation driven approaches to treatment that maximise
outcome. This is critical given that these youth with BII phobia do not appear to respond as well to standard CBT. Greater understanding of the psychological characteristics and factors involved in the development and maintenance of BII phobia in youth will lead to further improvements in the assessment and treatment of these youth (e.g., Study 1 and Study 2). The adapted OST that was developed as part of Study 1 incorporates CBT techniques to specifically address the unique clinical features of BII phobia. Study 3 addresses the empirical question of whether an intensive CBT is effective for BII phobic youth, while Study 4 will provide insight into who may or may not respond as well to treatment. It is proposed that these four studies will lead to significant advances in knowledge and practice regarding the treatment of BII phobic youth. The development of a cost effective and efficient treatment approach that delivers rapid reductions in fear is of particular importance for this phobia type given the potential effects it may have on children’s physical health.
3.7 References


Chapter 4  One Session Treatment for Specific Phobias: An Adaptation for Paediatric Blood-Injection-Injury Phobia in Youth

This chapter includes a co-authored paper which is currently “Under Review”. The bibliographic details of the paper are:


My contribution to the paper involved: initial concept and review design; literature search and review of relevant research; data collection and data analysis; and manuscript preparation.

Dr Ella Oar 12/06/15  Dr Lara Farrell 12/06/15

Dr Thomas Ollendick 10/06/15
One Session Treatment for Specific Phobias: An Adaptation for Pediatric Blood-Injection-Injury Phobia in Youth

Ella L. Oar (DPsyChClin)
Lara J. Farrell (PhD)
School of Applied Psychology, Behavioural Basis of Health and Menzies Health Institute,
Griffith University

Thomas H. Ollendick (PhD)
Child Study Centre, Department of Psychology, Virginia Polytechnic Institute and State University,
Blacksburg, VA, USA, 24060

Corresponding author:
Ella L. Oar School of Applied Psychology, Behavioural Basis of Health and Menzies Health Institute, Griffith University, Gold Coast Campus, Southport, QLD, Australia, 4222
TEL: +61 7 5678 8224, FAX: +61 7 5678 8291 Email: e.oar@griffith.edu.au
4.1 Abstract

Blood-Injection-Injury (BII) phobia is a chronic and debilitating disorder, which has largely been neglected in the child literature. The present paper briefly reviews the aetiology of specific phobias with particular attention to BII and provides an integrated cognitive behavioural model of this disorder in youth. Evidence based treatments for child specific phobias are discussed and the development of a modified One Session Treatment (OST) approach to enhance treatment outcomes for BII phobia in children and adolescents is described. This approach is illustrated in two children with a primary diagnosis of BII phobia, (aged 8 and 11 years). The cases illustrate the unique challenges associated with treating BII in youth and the need for a modified intervention. Modifications included addressing the role of pain (e.g., psychoeducation, more graduated exposure steps), disgust (e.g., disgust eliciting exposure tasks), and fainting in the maintenance of children’s phobia. Moreover, it was recommended that parents be more actively involved throughout treatment (e.g., education session prior to OST, contingency management training, guidance regarding planning exposure tasks following treatment) and for families to participate in a structured e-therapy maintenance program post treatment.

Keywords: Blood phobia, Injection phobia, BII, children, intensive treatment
4.2 Introduction

Blood-Injection-Injury (BII) phobia is a chronic and debilitating specific phobia that affects as many as 3 to 4.5% of individuals (Curtis et al., 1998; Depla et al., 2008). It is characterised by fear and avoidance of seeing blood or an injury, or receiving an injection, or other invasive medical procedure (American Psychiatric Association (APA), 2013). Phobic avoidance of situations related to blood, injections and injury is often associated with serious health consequences and impairment due to avoidance of seeing a doctor when ill, having immunisations, receiving medical treatment for diagnosed illnesses, and having operations and dental treatment (Marks, 1988; Öst, 1992; Öst & Hellström, 1997). Moreover, individuals with BII phobia may also avoid certain career paths (e.g., nursing, medicine) and travel for fear of receiving necessary vaccinations (Öst & Hellström, 1997; Öst et al., 1992). The disorder is associated with a complex clinical presentation and is thought to be distinct from other phobia types in that individuals often present with a unique physiological (e.g., fainting) and emotional (e.g., disgust) response.

To date, the clinical phenomenology, assessment and treatment of BII phobia has largely been neglected in the child literature; indeed, there are no evidence-based treatments for youth with this disorder at this time. The present paper aims to briefly review the aetiology of specific phobia with a focus on BII phobia and to propose an integrated cognitive behavioural model of BII phobia in children and adolescents. The current status of treatments for youth is discussed and case illustrations are used to describe the development of a case formulation driven, intensive cognitive behavioural treatment (CBT) for BII phobic youth.

4.3 Vulnerability Factors Associated with Specific Phobia

Specific phobias have a complex aetiology that is multi-determined (King et al., 2004). Genetic influences, aberrant brain processes, temperament, parenting, learning
experiences, evolutionary preparedness, cognitive biases and avoidance are all factors thought to be involved in the development and maintenance of a specific phobia (Cowart & Ollendick, 2013a; Ollendick & Muris, 2015). In addition to the above, BII phobia may have a number of unique factors, in comparison to other phobia types, that are implicated in its onset and course.

**Genetics.** Family and twin studies have found a genetic contribution to the development of specific phobia. First-degree relatives of adults with a specific phobia are at significantly higher risk of developing their own specific phobia (31%) in comparison to the first-degree relatives of controls with no psychiatric diagnoses (11%; Fyer et al., 1990). Moreover, children of parents with a specific phobia have been found to be at increased risk for the development of a specific phobia but only for the phobia displayed by their parent (Fredrikson, Annas, & Wik, 1997; Fyer, Mannuzza, Chapman, Martin, & Klein, 1995). In relation to BII phobia, Öst (1992) reported that 61% of blood injury phobic adults and 29% of injection phobic adults reported having a first degree relative with the same fear, which was significantly higher than other phobia types (e.g., animal, dental, and claustrophobics). Van Houtem et al. (2013) recently conducted a review and meta-analysis of 10 adult twin studies to examine differences in the heritability of the varying phobia subtypes. The highest heritability rates were found for BII phobia ranging from 28% to 63% followed by animal phobia 22% to 44%.

**Neurobiology.** Neuroimaging studies over the past 20 years have examined area-specific changes in metabolic activity in the brain that underlie aberrations in the processing of fear. In a recent review, Del Casale et al. (2012) concluded that phobic individuals show abnormal activation of brain areas, such as the amygdala, anterior cingulate cortex, thalamus and insula—all of which are associated with the emotional perception and early amplification of fear. Moreover, they found that following exposure to phobic stimuli, brain areas in the
prefrontal cortex, which regulate fear, are less activated in individuals with a specific phobia in comparison to healthy controls. Hence, in terms of brain structure, sufferers of specific phobia appear to be more easily and strongly aroused when confronted with phobic stimuli and are less able to regulate their arousal. Across the phobia types there appear to be shared neural correlates and also some distinct neural substrates relevant to the different phobia types. Caseras et al. (2010) compared the neural responses of BII phobic adults \( (n = 12) \), spider phobic adults \( (n = 14) \) and healthy controls \( (n = 14) \) during the presentation of phobia relevant stimuli using functional magnetic resonance imaging (fMRI). BII adults showed increased activation in the thalamus and visual/attention areas (occipito-temporo-parietal cortex) in comparison to the spider phobic adults and healthy controls. While providing interesting findings in relation to the brain circuits involved in specific phobia, neuroimaging studies have predominantly been carried out with animal phobic adults (particularly spider subtype); therefore, further research is needed in order to investigate fear processing across the different phobia subtypes and, particularly so, in youth.

*Temperament.* Existing research suggests that temperament is associated with the development of a specific phobia (Ollendick & Muris, 2015). Behavioural inhibition is a temperamental characteristic, which is described as a tendency to demonstrate distress, fear, and avoidance when confronted with unfamiliar situations, persons and objects. It is believed to be inherited, is observed in 10 to 15% of children (Kagan, Reznick, Clarke, Snidman, & Garcia-Coll, 1984), and appears to be a risk factor for the development of both phobic and anxiety disorders (Kagan et al., 1984). Biederman and colleagues (1993; 1990) found that behaviourally inhibited young children (2 to 8 years) were more likely to have anxiety disorder, including specific phobia, in comparison to uninhibited children. Moreover, Muris, Merckelbach, Wessel, and van de Ven (1999) examined the relationship between self-reported behavioural inhibition in older children \( (N = 152; 12 \text{ to } 14 \text{ years}) \) and anxiety and
depressive symptoms. Youth were provided with a definition of behavioural inhibition and were asked to classify themselves as low, medium or high in this temperamental characteristic. Following this, they completed a range of self-report measures including scales assessing symptoms of specific phobia (e.g., animal, environmental, BII and situational). In comparison to the low and middle behavioural inhibited groups, children in the high behavioural inhibition group endorsed specific phobia symptoms more frequently.

**Parenting.** Parenting practices and parental psychopathology are also believed to be involved in the development and maintenance of specific phobias in children. Parents of anxious youth have been found to have a more intrusive and overprotective parenting style (Breinholst, Esbjørn, Reinholdt-Dunne, & Stallard, 2012; Gar & Hudson, 2009). Parents with this style may prevent their child from engaging in age appropriate activities and responsibilities. They are also more likely to intervene and attempt to protect their child from new, difficult or anxiety provoking situations. In regards to phobic youth, this may involve accommodating and reinforcing their child’s phobic avoidance. Hence, children do not have the opportunity to develop coping skills in fear-inducing situations, and also do not gather evidence that disconfirms their threat expectancies and low self-efficacy in dealing with their fears (Bögels & Brechman-Toussaint, 2006; Breinholst et al., 2012; Hudson & Rapee, 2001, 2002). Parental anxiety and other psychopathology can also influence the development and maintenance of childhood specific phobia through modelling and reinforcement of anxious and avoidant behaviour, which can be accounted for by social learning experiences. The actions and instructions given by an anxious parent in anxiety provoking situations may also convey to the child that the situation is threatening and therefore needs to be avoided (Bögels & Brechman-Toussaint, 2006). Existing research has found that anxious children, in comparison to non-anxious children, tend to have parents who encourage avoidance (Dadds, Barrett, Rapee, & Ryan, 1996; Ginsburg, Siqueland, Masia-Warner, & Hedtke, 2004).
According to Rachman (1976, 1977), there are three learning pathways associated with the development of a specific phobia: direct/classical conditioning, vicarious conditioning (modelling) and negative information transmission. Classically conditioned phobias are acquired through a direct negative experience with the phobic object/situation. Fear develops when a neutral stimulus becomes associated with an aversive outcome (unconditioned stimulus), such that the neutral stimulus takes on its aversive properties (becoming a conditioned stimulus). The likelihood of a conditioned fear developing is dependent upon the intensity of fear/pain experienced in the presence of the stimuli and/or the frequency and repetition of the association between the conditioned stimulus and fear/pain. An example of a direct/classically conditioned phobia would be a child who has a painful vaccination and goes on to develop an injection phobia. Consistent with this, many BII phobic adults report that a painful experience preceded the onset of their fear (Öst, 1991, 1992). The direct/classical conditioning pathway to phobia acquisition assumes that a person has had a direct negative experience with the phobic stimulus; however, this is not always the case and individuals can develop a phobia despite having no direct contact with the phobic object. In these individuals, indirect pathways play a crucial role in fear acquisition. A phobia may be acquired vicariously through modelling and observation of other’s anxious behaviour. An example of this type of phobia acquisition would include a child who develops a blood phobia after watching their brother faint while having a blood test. Negative information transmission is the third learning pathway proposed to result in specific phobia acquisition. A child may acquire a phobia through hearing or reading negative information about an object/situation. For example, a child might develop an injection phobia after hearing a peer talking about being held down and forcibly given an injection.

Evolutionary Preparedness. The non-associative model of fear acquisition proposes that some fears, such as a fear of heights, blood, snakes, spiders, are biologically prepared for
through evolution. According to this model, these fears do not require critical learning experiences because they have been passed on to us from our ancestors (e.g., genetically encoded) in as much as they were evolutionarily adaptive and necessary for survival. For example, a fear of blood may be characterised as an evolutionarily adaptive fear; however, in some children and adults it becomes excessive and phobic in nature through a complex interaction of biological vulnerability, learning and the environment.

Fainting. An important feature distinguishing BII phobia from other phobia types is its unique physiological response (Öst, 1991), with many BII phobic individuals (56-100%) reporting a history of fainting when confronted with their phobic stimuli (Ayala et al., 2009). Comparatively, only 0.02% of people with other phobia types (Connolly et al., 1976; Öst, 1992; Thyer et al., 1985) and 2% with other anxiety disorders (Connolly et al., 1976) report fainting in the presence of their feared stimuli. In the literature, this fainting response has been described as diphasic, with an initial phase involving a rapid acceleration of heart rate and blood pressure, as is typical of the fight or flight anxiety response, followed by a second phase which is characterised by a sharp decrease in heart rate and blood pressure (Thyer et al., 1985). This rapid decline in heart rate and blood pressure leads to reduced cerebral blood flow, and ultimately can result in fainting (Ayala et al., 2009). More recently, researchers have begun to look beyond the cardiovascular changes associated with BII fainting (Ritz et al., 2010) and have examined additional physiological parameters, such as changes to respiration including hyperventilation, that may also have a role in this response pattern (Lumley & Melamed, 1992).

The relationship between fainting and BII phobia is not yet fully understood. Consistent with the non-associative fear model, some researchers have suggested that fainting is an adaptive response to threat. Slowing of heart rate and blood pressure in response to blood or injury produces immobility and this may be an adaptive reflex with predators losing
interest in a prey if it is immobile (i.e., playing dead; Marks, 1988). Alternatively, Barlow (2004) suggested that our ancestors responded with a significant drop in blood pressure to minimise blood loss and the danger of shock, helping us to be more likely to survive an attack or injury. However, evolutionary theories of BII fainting have received criticism and cannot fully account for all aspects of the response (Page, 1994). Early research conducted by Page and Martin (1998) suggested that individuals with BII phobias may inherit a tendency to faint in non-blood related situations as well. In a multivariate genetic analysis involving 659 twin pairs, they found that BII fainting was explained by additive genetic variance predictive of fainting in non-blood situations, and also unique environmental experiences related to fainting in the presence of blood. Page and Tan (2009) proposed that the development of BII phobia may involve a process whereby aversive experiences associated with fainting directly condition fear to BII situations. Moreover, they hypothesise that disgust plays a key role in BII related fainting and that when disgust and fear are elicited by the same stimuli (e.g., BII stimuli), this may increase the likelihood of fainting. However, the fainting response cannot be completely explained by the co-occurrence of the two emotions. Page and Tan (2009) hypothesise that the type of stimuli, disgust response involved (state versus trait disgust), a predisposition to faint and appraisal of the stimuli are all involved in the complex interaction that results in fainting. Further research is needed to better understand the role of fainting in BII phobia and the interplay between both fear and disgust, especially in children.

Disgust. Traditionally, BII phobia has been associated with fear and anxiety; however, in recent years, there has been considerable research into the important role of disgust in the aetiology and maintenance of the disorder (Ayala et al., 2009; Öst, 1992; Page & Tan, 2009). Numerous studies have found that self-report measures of disgust and disgust sensitivity are positively associated with measures of BII phobia (Phillips et al., 1998). Disgust sensitivity is the trait-like predisposition to experience disgust towards a range of aversive stimuli (Moretz...
et al., 2011; Olatunji & Cisler, 2009). Disgust sensitivity has been found to be positively correlated with neuroticism and negatively with sensation seeking. de Jong and Merckelbach (1998) demonstrated that BII and spider fearful individuals show domain specificity among disgust elicitors. They found significant correlations between measures of BII phobia and disgust associated with bodily wounds and punctures) and between measures of spider phobia and animal related disgust elicitors. Moreover, existing research suggests that not only do BII fearful individuals report high levels of disgust and aversion toward blood and mutilation stimuli; they also experience heightened disgust responses toward a range of disgust elicitors that are unrelated to their fearful stimuli (Olatunji, Lohr, et al., 2007). For example, Sawchuk et al. (2000) and Tolin et al. (1997) found that BII fearful individuals reported significantly higher levels of disgust towards odours, rotting foods and bodily products (e.g., mucus, vomit, faeces) than non-fearful individuals. Additionally, BII fearful individuals reported greater levels of disgust while watching videos of maggots (Sawchuk et al., 1999) and sewage (Sawchuk et al., 2002) than non-fearful individuals. Together these studies suggest that BII phobia is characterised by a heightened generalised disgust sensitivity (Olatunji, Lohr, et al., 2007), which could be involved in the development and maintenance of this disorder.

In children, disgust sensitivity has been found to be significantly correlated with small animal and spider phobias as well as BII phobias (de Jong & Muris, 2002; Muris, van der Heiden, et al., 2008). More specifically, Muris and colleagues (Muris, Merckelbach, Schmidt, et al., 1999; Muris, van der Heiden, et al., 2008) found that disgust sensitivity was associated with BII phobia symptoms in samples of non-clinical children, even after controlling for the effects of trait anxiety and neuroticism. As previously discussed, the majority of research investigating the relationship between disgust and specific phobia has focused on adults, while relatively little attention has been given to child samples and to date there are no clinical studies with children.
Although anxiety certainly appears to play an important role in BII, some research suggests disgust may play a more pivotal role than anxiety. Research conducted by Tolin et al. (1997) and Sawchuk et al. (2002), for example, has found that when confronted with their phobic stimuli, BII fearful individuals report greater disgust than fear. Tolin et al. (1997) presented BII fearful \((n = 24)\), spider fearful \((n = 59)\) and non-fearful \((n = 74)\) controls with colour photographs of spiders and injections. During the tasks participants completed fear and disgust emotional rating forms. As expected, BII fearful participants reported significantly higher levels of fear and disgust when confronted with the injection photograph than spider and non-fearful participants. Moreover, BII fearful participants reported higher levels of disgust than fear when viewing phobia related stimuli, whereas spider fearful participants reported equal levels of fear and disgust. Sawchuk et al. (2002) replicated these findings, whereby BII fearful adults \((n = 37)\) reported significantly higher levels of fear and disgust relative to controls and furthermore, BII fearful individuals reported higher levels of disgust than fear.

*Cognitive Biases.* In addition to disgust appraisals, a large body of research has found that various other cognitive biases are associated with the maintenance of specific phobia. Experimental studies with children and adults have demonstrated that phobic and anxious individuals are hypervigilant to threatening stimuli, and allocate their attention towards threatening stimuli relative to neutral stimuli (Bar-Haim et al., 2007; Cisler & Koster, 2010). Moreover, these individuals may have more difficulty disengaging their attention away from threatening stimuli (Fox et al., 2001). This phenomenon is known as attentional bias. These biases are activated when initially confronted with a feared object or situation and as such have a distorting effect on further information processing (Muris & Field, 2008). Attentional biases have been observed in both adults (Armstrong et al., 2013; Mogg & Bradley, 2006) and children (Waters, Bradley, & Mogg, 2014; Waters, Farrell, et al., 2014). In regards to
adults with BII phobias, findings relating to attentional biases have been mixed (Armstrong et al., 2013; Haberkamp & Schmidt, 2014). There is some evidence to suggest that BII phobia may be associated with a vigilance avoidance pattern whereby individuals are initially vigilant and then rapidly disengage from the stimuli. Hence, individuals with BII phobias may exhibit shorter fixations or glances towards a threat (Mogg et al., 2004). In a recent study, Armstrong et al. (2013) found that high injection fearful ($n = 33$) adults oriented to injection related images more often than low injection fearful ($n = 32$) adults. However, they did not orient to injection images more frequently than other emotional images (e.g., attack, appetitive and neutral). Consistent with a vigilance avoidance pattern, high injection fearful adults rapidly disengaged from injection images after initially seeing them. Overall, they also looked at the injection images significantly less frequently than the other emotive images. This pattern was not observed in the low injection fearful group. Finally, attentional avoidance of injection threat was found to predict avoidance during an injection behavioural avoidance task (BAT).

A weakness of existing literature in the area is that studies have predominantly used BII fearful samples, determined by the use of self-report data only. Few studies have examined attentional bias in BII phobic adults who have been diagnosed using structured clinical interviews.

Only a few studies exist that have examined attentional bias in children with specific phobia. Waters, Bradley, et al. (2014) investigated differences in attentional biases in 435 children (5-13 years) who had either a principal fear disorder, including specific phobia, social phobia and separation anxiety disorder ($n = 158$) or a principal distress disorder which included generalised anxiety disorder ($n = 75$), as well as a healthy control group ($n = 202$). Youth with a principal fear diagnosis (e.g., specific phobia) were found to have a significant bias away from threat faces relative to neutral faces when compared to those in the principal distress disorder and healthy control groups.
Other cognitive biases, such as interpretation biases, have also been implicated in the maintenance of specific phobias. Children and adults with specific phobia have been found to overestimate and inflate the association between phobia-related stimuli and negative outcomes. Jones and Menzies (2000) examined perceptions of danger in 15 spider phobic adults and 15 controls before, during and after a spider avoidance task. Spider phobic adults rated higher estimates of being bitten by the spider and more severe consequences resulting from a spider bite in comparison to controls. Harm beliefs were found to predict avoidance during the spider avoidance task. Similar cognitive distortions have been reported in other phobia subtypes (de Jongh et al., 1995; Marshall et al., 1992; Menzies et al., 1998; Rachman & Cuk, 1992).

Limited knowledge exists regarding the role of cognition in children with specific phobia. Ollendick, Raishevich, et al. (2010) reported no differences in danger expectancies between animal and natural environment phobic youth, with both phobia types reporting exaggerated probability of harm associated with feared stimuli and low expectancies for coping with negative phobia related outcomes. In a recent study, Byrne et al. (2014) investigated whether harm beliefs in dog phobic children ($N = 27$) predicted avoidance and distress before and after exposure therapy. Children were shown a live dog and asked to rate how much they believed the dog would harm them (e.g., the dog would bite them or jump on them). Harm beliefs predicted distress during a pre-treatment BAT and avoidance during the post-treatment BAT.

**Physiological Symptoms / Pain.** The physiological symptoms experienced when confronting their phobic stimuli is often a significant source of distress for individuals with BII phobias and can perpetuate their avoidance of BII related stimuli (Öst, Sterner, et al., 1984; Page, 1994; Ritz et al., 2010). In comparison to other phobia subtypes, studies have found that BII phobic individuals tend to focus their cognitions on physical symptoms (e.g.,
fainting) and internal feelings (e.g., disgust and revulsion) and to a lesser extent on danger and harm cognitions (Antony et al., 1997; Lipsitz et al., 2002). BII phobics may also fear the secondary consequences of their physiological response such as embarrassment associated with fainting or worry about being injured when fainting (Öst, 1992; Page, 1994). Moreover, research suggests that BII fears may be maintained by a tendency to exaggerate pain which is then consequently associated with increased pain intensity (Severeijns et al., 2001). This exaggerated pain response and elevated pain intensity are believed to perpetuate phobic avoidance. In the adult literature, BII and dental fearful individuals have been found to have a tendency to overestimate pain and to endorse a lower perceived ability to tolerate physical pain and discomfort (Arntz et al., 1990; Smith & Meuret, 2012).

4.4 An Integrated Cognitive Behavioural Model of BII Phobia.

Based on our review of the literature, a cognitive behavioural model of BII phobia in children and adolescents is proposed (see Figure 4.1). This model incorporates and draws upon the existing aetiological pathways for childhood specific phobias more generally (Muris & Merckelbach, 2001; Ollendick & Muris, 2015) and adult BII phobia more specifically (Page & Tan, 2009). In this model, it is proposed that BII phobia in children and adolescents has a complex aetiology that is multi-determined. Genetics, neurobiology, temperament, parenting, learning experiences, evolutionary preparedness, fainting, disgust, cognitive biases, physiological symptoms, and pain are all involved in the development and maintenance of the disorder in youth. Addressing components of the proposed model is hypothesised to lead to a better understanding of BII phobia in youth and assist in the development of individualised and case formulation-driven approaches to assessment and treatment. The model highlights the importance of the assessment of the children’s unique phobic response (e.g., fainting) and the role of pain, disgust and parent psychopathology and parenting practices in the
maintenance of their child’s disorder. A hypothesis testing approach can be used to identify the key maintaining mechanisms for each youth and following this treatment, components can be matched to this formulation to maximise treatment outcome. Following a brief review of the treatment of specific phobias in youth, this model is described further and illustrated with two case studies.
Figure 4.1  A cognitive-behavioural formulation of BII specific phobia
4.5 Treatment for Specific Phobia in Youth

CBT is considered an evidenced-based treatment for paediatric specific phobia. To date, four large randomised controlled trials (Ollendick et al., 2015; Ollendick et al., 2009; Öst et al., 2001; Silverman et al., 1999) and seven smaller clinical trials (Farrell, Waters, Milliner, Zimmer-Gembeck, et al., 2013; Flatt & King, 2010; Leutgeb et al., 2012; Leutgeb & Schienle, 2012; Muris et al., 1998; Muris et al., 1997; Waters, Farrell, et al., 2014) support its effectiveness. These trials have compared CBT to waitlist control (Flatt & King, 2010; Leutgeb et al., 2012; Leutgeb & Schienle, 2012; Öst et al., 2001), an education support group (Ollendick et al., 2009; Silverman et al., 1999), and other psychological treatments (e.g., eye movement desensitization and reprocessing, psychoeducation, cognitive therapy; Flatt & King, 2010; Muris et al., 1998; Muris et al., 1997). Traditionally, CBT for specific phobia involves 8 to 12 weekly sessions (approximately 1 hour each in duration). However, in the 1980s seminal work by Öst led to the development of an intensive treatment approach, called One Session Treatment (OST), that involves a single session of massed exposure that is maximised to 3 hours in duration (Öst, 1989). OST was initially trialled with adults, delivering favourable outcomes (Öst, Brandberg, & Alm, 1997; Öst, Salkovskis, & Hellström, 1991) and following this was successfully adapted and tailored for use with children and adolescents. During the single intensive session a range of cognitive behavioural techniques are utilised, including exposure, cognitive challenges, participant modelling, reinforcement and psychoeducation (see Davis III, Ollendick, Reuther, & Muson, 2012 for a thorough treatment description). To date, the most published treatment studies for pediatric specific phobia have used an OST approach which has resulted in it now being considered a well-established treatment for phobic youth, based on the stringent criteria developed by Chambless and colleagues (Chambless et al., 1998; Chambless & Ollendick, 2001).
4.6 Current Status of Treatment for BII Phobia in Children and Adolescents

Across the published studies, children with a diverse range of specific phobias (e.g., animal, natural environment) have been included. Notably however, children with BII phobias have been under-represented in many samples and excluded in others. Moreover, to date, only a few single case studies have been published (Sanders & Jones, 1990; Thompson, 1999), in addition to the small numbers of youth with BII who have been included in RCTs (Flatt & King, 2010; Öst et al., 2001; Silverman et al., 1999). In one of the case studies, Sanders and Jones (1990) treated a 13 year old girl who required major surgery and suffered from phobias of injections, dental and medical procedures. The adolescent also presented with comorbid Oppositional Defiant Disorder. Treatment consisted of 21 sessions involving coping skills training, systematic desensitisation, imaginal and in vivo desensitisation with participant modelling and daily home tasks. Following treatment the adolescent displayed significant improvements on measures of anxiety including ratings of distress, performance on a BAT, and responses on self-report measures. Moreover, these gains were maintained at an 8-month follow up. In the second case study, Thompson (1999) evaluated the effectiveness of CBT for a 14 year old girl with a BII phobia who had a history of fainting at the sight of blood. The adolescent completed 13 one-hour sessions, which included exposure, applied tension and cognitive restructuring. Results showed substantial reductions in subjective distress in BII situations from baseline to post treatment. On phobic and general self-report measures of anxiety, reductions were also observed and, furthermore, fainting did not occur during treatment. The adolescent reported that she found the cognitive restructuring component of treatment the most helpful.

In RCTs, Öst et al. (2001) included 12 youths with injection phobias and 2 with blood phobias in their trial of 60 youth, which evaluated the efficacy of an intensive OST for specific phobia in children and adolescents. They found that BII phobic youth responded
significantly less favourably to treatment than youth with other types of phobia during a post assessment BAT. Based on their clinical impression from working with the children, Öst et al. (2001) hypothesised that the youth had difficulty differentiating the therapist from other health professionals (e.g., doctor, nurse) who they associated with previous anxiety provoking medical experiences. Hence, they were less likely to engage in therapist suggested exposure tasks. Silverman et al. (1999) and Flatt and King (2010) also included a small number (4 to 6 participants) of youths with BII phobias in their controlled treatment trials; however, they did not examine differences in treatment outcome across the different types of phobia. In the two largest RCTs conducted to date, Ollendick and colleagues (2009) specifically excluded youths with BII phobias due to their unique physiological presentation (e.g., fainting), poorer treatment response (Öst et al., 2001) and the challenges associated with delivering treatment in an outpatient setting (i.e., need for medical professionals to assist in exposure). Moreover, in two recently published RCTs for youth with specific phobias, Waters, Farrell, et al. (2014) and Farrell, Waters, Milliner, Zimmer-Gembeck, et al. (2013), youth with BII phobias were excluded.

4.7 Current Status of Treatment for Adult BII Phobia

Behavioural and cognitive-behavioural procedures have received considerable empirical support for the treatment of BII phobia in adults (Ayala et al., 2009). In vivo exposure and applied tension have been found to be particularly effective. Applied tension is a coping technique that can be implemented during exposure to BII stimuli (Ayala et al., 2009; Öst & Sterner, 1987). The technique involves brief tension of arms, legs and torso muscles until the person feels warmth rising in their face (10-20 seconds) followed by 20-30 seconds of release of the muscles. The procedure is repeated up to 5 times. Applied tension is proposed to raise blood pressure, venous return and cerebral blood flow and hence reduce the
likelihood of fainting. To date five controlled treatment trials have been conducted for adults with BII phobia (Hellström et al., 1996; Öst, Fellenius, et al., 1991; Öst et al., 1992; Öst, Lindahl, et al., 1984; Öst et al., 1989), all conducted by the one research group, led by Öst and colleagues from Sweden. Interventions used in the studies included massed or spaced exposure, applied tension, tension only, applied relaxation and combination of applied tension and applied relaxation In a recent review, Ayala et al. (2009) concluded that treatments were largely equivalent regardless of the type of intervention (e.g., exposure, applied tension), with 70 to 80% of patients experiencing clinically significant change. Despite expectations, limited evidence was found for the additional effects of applied tension beyond exposure alone when they were combined in the same treatment. While the treatment research with adults is favourable in outcome for BII, as noted above, BII phobia has largely been neglected in the child and adolescent treatment literature. Furthermore, while OST has been deemed to be well-established for the treatment of childhood specific phobia in general, there is no efficacy data for its use with BII phobic in youth.

4.8 OST Approach for BII Phobic Youth

It is evident from the adult literature that this phobia type has a complex clinical presentation involving a unique emotional (e.g., fear, pain and disgust) and physiological (e.g., fainting) response. The clinical phenomenology of BII in youth has not yet been fully explored; however, if consistent with adults this multifaceted presentation needs to be considered in the delivery of treatment. In youth, the clinical presentation may be further complicated by parent psychopathology as BII has one of the strongest heritability estimates of any phobia type (Öst, 1992; Van Houtem et al., 2013). Moreover, BII phobic youth may be more difficult to engage in exposure therapy. They may have trouble differentiating the therapist from other health professionals (e.g., doctor or nurse) who they associate with past
anxiety provoking experiences as suggested by Öst et al. (2001). Furthermore, BII phobic youth may be less motivated than other phobia types to overcome their fear, and as such, it may be more challenging to establish a trusting relationship with these youth, which is critical in terms of facilitating exposure. Implementing an OST approach for BII phobic youth requires exposure to blood and medical procedures and thus the involvement of qualified health professionals, such as nurses or doctors in addition to the child’s treating therapist, which can complicate the feasibility and delivery of exposure in routine clinical practice (see Ollendick et al., 2009).

4.9 Treatment Illustrations

The following case studies describe the treatment response of two children to OST for BII phobia. The first case follows a standard OST format (e.g., OST without specific adaptations and without a formal maintenance program). Following this, the second case involves a formulation-driven approach to delivering OST with adaptations to the traditional OST structure in order to address BII specific issues and maximise outcomes (refer to Figure 4.1).

4.9.1 Case Study 1

Louise (not her real name) an 8-year-old girl presented with a specific phobia of injections. Louise’s mother (Kathryn) reported that Louise would become highly anxious prior to going to the doctor or dentist for fear of having an injection. Recently, Louise’s brother had required a whooping cough vaccination. In the days leading up to her brother’s appointment, Louise constantly asked for reassurance that she would not be vaccinated also and had extreme trouble sleeping. At her brother’s appointment (her mother required her to go) Louise turned away, closed her eyes and blocked her ears when he was being vaccinated. She also reported that in the past the family had planned to travel to Bali, Indonesia for a
holiday; however, Louise had refused the necessary vaccinations. In addition to her fear of injections, Louise was also concerned about being injured. Louise refused to ride her bike for fear of falling off and getting hurt. In the past she had been hit in the face by a netball and following this incident had refused to play the sport again, resulting in the family withdrawing her from the team.

Kathryn reported that when Louise was 5 years old she had taken her for a blood test and that the nurse had ‘botched it’. Kathryn recalled that Louise had an extreme reaction – crying, kicking and screaming, which resulted in her having to be restrained. After the nurse had inserted the needle, she had been unable to find Louise’s vein. Following the first failed attempt, the nurse was going to attempt a second blood draw; however, Kathryn refused and had taken Louise home. Kathryn returned to the doctor who said they could pursue a less invasive assessment approach that would not involve a blood test given Louise’s distress. Louise had not had any injections since that time.

Assessment. Louise and her mother were interviewed using the parent and child versions of the Anxiety Disorder Interview Schedule for Children (Silverman & Albano, 1996). Based on Louise’s report and that of her mother during the diagnostic interviews, Louise was diagnosed with specific phobia of BII with a clinician severity rating (CSR) of 6, indicating a moderately severe fear. Additionally, Louise was diagnosed with a number of comorbid conditions including generalised anxiety disorder (GAD; CSR 6), separation anxiety disorder (SAD; CSR 5), a specific phobia of the dark (CSR 5), and a specific phobia of vomiting (CSR 4). During the initial assessment Louise was also administered a BAT. The BAT required Louise to enter a room with a nurse, sit on a chair, and be prepared for a blood test (e.g., tourniquet placed on her arm, alcohol wipe, nurse pretends to draw blood). Louise refused to enter the room and rated her subjective anxiety at 7 (on a scale ranging from 0-8).
During the functional assessment of her phobic beliefs, Louise stated that her greatest fear was the pain associated with getting an injection. She reported that she was afraid the nurse would force her to have the injection and that the nurse would be careless and insert the needle into the wrong part of her body. She also reported a heightened sense of disgust, describing injections as disgusting because they “break through the skin and veins which is gross”. The therapist and Louise constructed a hierarchy of injection related stimuli. At the end of this session Louise’s therapist discussed with the family the rationale for OST approach.

**Formulation.** Louise’s temperament in combination with negative learning experiences may have led to the development of her injection and injury phobia. Louise was reported to be a ‘difficult’ baby, crying for long periods of time and difficult to settle. The complicated blood test taken when Louise was 5 years old and following this her mother’s response to the situation (e.g., refusing to allow the nurse to attempt a second blood draw and facilitating escape from the clinic) may have reinforced Louise’s fear of injections and lack of trust for health professionals. Moreover, in the years following this incident the family had discussed this experience in a highly negative manner with both Louise and Kathryn reporting that the nurse had ‘botched it’ and that she was ‘unfriendly and rushed’ thereby perpetuating a fear and distrust of medical professionals.

Consistent with the proposed CBT formulation of BII phobia in youth (see Figure 4.1), Louise had numerous catastrophic phobic beliefs associated with pain that were maintaining her fear of injections and injury. More specifically, Louise reported exaggerated danger expectancies, whereby she believed that the pain of having an injection would be unbearable and furthermore, underestimated her ability to cope with experiencing such pain (e.g., needles or falling off her bike). Additionally, she believed that health professionals (e.g., nurse, doctors) were careless and would insert the needle into the wrong part of her body. She
also believed she would be forced to have an injection. Louise’s fear was maintained by her avoidance of stimuli that she associated with pain, such as injections and situations during which she had previously been hurt (e.g., riding her bike and playing netball). In the short term, Louise’s avoidance reduced her distress; however, this avoidance prevented her from gaining corrective evidence that she could indeed tolerate pain, cope with the challenges of the task, and that the majority of health professionals were careful, helpful and could be trusted. Louise also demonstrated attentional biases, whereby in the presence of BII stimuli she became extremely avoidant (i.e., when her brother had a vaccination; refer Figure 4.1, CBT model). Attentional avoidance perpetuated her fear and phobic beliefs and prevented the acquisition of safety learning.

Louise’s parents facilitated and accommodated her avoidance and provided her with undue attention when she engaged in anxious behaviours, thereby inadvertently rewarding her anxious avoidant responding to challenging situations. Louise’s parents changed their holiday plans so as not to travel to a country that required vaccinations. They additionally allowed her to leave her netball team and did not encourage her to continue riding her bike. Additionally, Kathryn reported feeling highly anxious when her children were being vaccinated and hence it is likely that Kathryn modelled anxious behaviours to Louise when her children were being vaccinated. Certainly Kathryn also provided negative verbal information about needles and health professionals. In accordance with the proposed CBT model of BII phobia in youth (refer Figure 4.1), these parenting factors were hypothesised to perpetuate Louise’s fear.

Treatment. Louise’s single session treatment followed the standard format of OST (3 hours of graduated exposure, cognitive challenges, modelling, reinforcement of approach behaviours, and psychoeducation) given that to date there is no clear evidence regarding the effectiveness of this treatment for BII phobic youth (see Table 2.1 for a summary of the session). The first hour of treatment was conducted at the Griffith Psychology Clinic and
commenced with the therapist providing Louise with psychoeducation about needles and showing her pictures of people having injections. Following this, the therapist and Louise watched videos of people having blood tests. While watching the video Louise indicated that she thought it was disgusting and ‘so gross’ seeing people have a blood test. Through the use of participant modelling, Louise and the therapist held a syringe with a capped needle and administered a pretend blood test to Kathryn. The session progressed with Louise having a tourniquet placed on her arm and finally the therapist giving her a pretend blood test. Louise was positively reinforced with attention and praise throughout the session when she was looking at and holding the BII stimuli.

The second and third hours of treatment were conducted at the nearby Griffith University Medical Centre. Louise and the therapist met with a pathology nurse. The nurse provided Louise with education regarding the benefits of having injections and also spoke to her about her job (e.g., taking 20+ blood tests per day to people of all ages including new born babies). Exposure was conducted in the form of behavioural experiments. Each time the therapist would ask Louise what she feared would happen, and then following this, they discussed whether her prediction was correct. The therapist and Louise had the nurse give them pretend blood tests, and Louise also held an uncapped needle. Louise watched the therapist model having two real blood tests. Prior to observing the therapist, Louise reported her fear to be a 5 (on scale ranging from 0-8), but following completion of the second blood test she indicated that her fear had reduced to a 1. At the end of the second hour Louise was encouraged to have a blood test, however she refused.

Since she was unable to have the blood test following the second hour of treatment, the third hour focused on finger pricks. Louise observed both the nurse and therapist have a finger prick. She practised putting finger pricks into the fake skin on the training pad and also administered them to the therapist. Participant modelling was also used whereby Louise
placed her finger underneath the therapists while they had a finger prick. Following this, Louise practised resting the finger prick (without pressing the release button) on her own hand. Shortly after this, to elicit Louise’s phobic beliefs regarding health practitioners, the therapist suggested that the nurse hold the finger prick against Louise’s finger. Louise refused and became upset crossing her arms, scowling and had tears in her eyes. She stated that “you said I would not have to do anything I did not want to”. Louise reported her fear level to be a 6 on scale ranging from 0-8. The therapist asked Louise what she feared would happen. She indicated that she was worried the nurse would surprise her and give her a finger prick. The therapist assisted Louise to test this belief using a behavioural experiment. Subsequently, Louise allowed the nurse to rest the lancet on her finger for 10 minutes. She rated her fear at a 5 (on scale ranging from 0-8) when commencing the task with this gradually declining to a 1 at the conclusion of the 10 minutes. The therapist discussed with Louise as to whether her belief had been correct. Louise was able to provide a more correct and adaptive appraisal of health professionals stating that “doctors and nurses can be trusted and if they do give me an injection it is to help me stay healthy and well”.

Throughout the session the therapist frequently praised Louise for facing and coping with her fears. At the conclusion of the session, Louise was comfortable interacting with the nurse and needle related stimuli (e.g., holding needles, giving finger pricks); however, she still had not had a needle penetrate her skin. Louise and her parents were reminded that this session was just the beginning of Louise’s treatment and that she would need to continue with exposure practice outside of therapy for several months.
## Table 4.1 Summary of Louise’s OST session

<table>
<thead>
<tr>
<th>OST</th>
<th>Exposure Steps</th>
<th>Fear rating Pre (0-8)</th>
<th>Fear rating Post (0-8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hour 1</td>
<td>Psychoeducation regarding needle related stimuli (e.g., syringe &amp; tourniquet)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Looking at pictures of needles and people having injections/blood tests.</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Videos of needles</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Practise the steps involved in having a blood test</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Hour 2</td>
<td>Psychoeducation regarding the benefits of having injections and blood tests and the role of a pathology nurse</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pathology nurse prepare the therapist for a blood test</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pathology nurse prepare Louise for a blood test</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Pathology nurse holding an uncapped needle above Louise’s vein</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Observe the therapist having two blood tests</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pathology nurse complete a blood test in a training skin pad attached to Louise’s arm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hour 3</td>
<td>Observe the pathology nurse and therapist have a finger prick.</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Louise give the training skin pad and therapist a finger prick.</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Louise rest the finger prick on her finger without releasing it.</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>The pathology nurse hold the finger prick on Louise’s finger without her releasing it</td>
<td>7</td>
<td>3</td>
</tr>
</tbody>
</table>

**Post Treatment and Follow-Up Assessment.** One week after her OST, Louise’s fear had reduced from her pre-treatment assessment. On the ADIS-IV-C/P, Louise continued to meet criteria for a diagnosis of BII phobia; however, her CSR had reduced from 6 to 5. She also continued to meet criteria for specific phobias of the dark (CSR 5) and vomit (CSR 4).
One month later Louise was re-evaluated. Louise’s parents reported that they had been attempting finger pricks and practising pretend blood tests at home, but had made limited progress. Louise still had not had a finger prick. However, Kathryn indicated that they were applying the strategies they had learned during Louise’s OST to her fear of the dark with great success. Louise had been sleeping in her own room and had only a smaller lamp turned on while sleeping. Louise’s ADIS-IV-C/P diagnosis at this time was a specific phobia of BII (CSR 5). During a BAT (identical to that completed at pre-treatment), Louise was able to enter a room and be prepared for a blood test demonstrating improvement in her ability to approach and attend to the feared stimuli. However, her subjective anxiety was at a 7 (scale of 0-8) and she was not able to have the blood test. All Louise’s post and follow up assessments were conducted by independent evaluators.

**Complicating Factors.** There were a number of challenges that arose in delivering standard OST to Louise. Throughout the treatment process, Louise seemingly lacked motivation to overcome her fear of needles. Upon arrival at all sessions she would state that she would not be having any injections. Typically tangible reinforcers (e.g., food, toys, stickers) are not used during OST with social reinforcers favoured (Rudy & Davis III, 2012); however, in Louise’s case social reinforcers (positive attention, praise and social support) had a limited effect. Establishing trust with Louise was another challenge. Louise feared health professionals would force her to have an injection, which led to her extreme control and refusal during sessions to engage in certain tasks. Prior to her OST, only two brief assessment sessions were carried out with Louise, both involving semi-structured interviews. Although the therapist was able to successfully build rapport with Louise, given her past negative experiences with medical professionals, she was hesitant to engage with the therapist during exposure due to a fear of forcibly being given an injection. Throughout her OST, Louise repeated on multiple occasions “you told me I would not be made to do anything I don’t want
to do and I am not going to have an injection today”. Particularly during the third hour of treatment, exposure came to an impasse in that Louise had completed all possible easier exposure steps (e.g., resting a finger prick against your skin) and was at the point that to move forward she would have had to have a needle penetrate her skin. The therapist was unable to move past this point in the session either with finger pricks or blood tests. Because of this, Louise’s catastrophic cognitions relating to pain remained unchallenged. Following OST, Louise and her mother occasionally engaged in exposure practice at home; however, when practising they always completed the same exposure step (e.g., pretend blood test) which Louise was able to carry out quite easily as she did not have a needle penetrate her skin. The family did not actively seek opportunities for more challenging exposures, such as scheduling appointments with a doctor or visiting a pathology clinic. Given that the ultimate goal of OST is to assist children in facing their fears (i.e., having an injection in this case), this approach was serving to perpetuate Louise’s fear that medical professionals will push you into having a procedure you are terrified of. We hypothesised that Louise’s poor progress was a function of insufficient preparation and her session being too fast for her. Louise would have benefited from more exposure to challenge her beliefs that all medical professionals are untrustworthy and will force you to have injections.

4.9.2 Case Study 2

Ivy (not her real name) an 11-year-old girl presented with a specific phobia of injections. Ivy’s father was quadriplegic and if he caught a cold or flu he could develop pneumonia and become very ill. Because of this, her father’s doctors recommended that Ivy and her mother have a flu vaccination every year. Due to her injection phobia, Ivy had not had a flu vaccination for the past two years. Ivy previously had all her early childhood vaccinations; however, Rosie (Ivy’s mother) indicated that when being vaccinated Ivy had to
be restrained and that she would cry, scream, punch and hit in an attempt to escape the doctor. At age 9 Ivy had required a blood test. She reported a range of physiological symptoms (e.g., dizziness, pale, cold sweat, racing heart and feeling faint) during the test and immediately following its completion had fainted. Ivy was reported to be able to watch medical shows on television; however, she was unable to watch others receive injections in real life. Rosie reported that her husband required regular injections due to his illness and that she administered these at home. This often distressed Ivy who had to leave the room when this was occurring. She also asked her mother to keep her father’s needles out of sight. Ivy stated that her greatest fear was having an injection in her mouth while at the dentist. When Ivy had a wobbly tooth she would refuse to eat solid food and would only consume a liquid diet. In addition to a fear of injections, Ivy worried about accidentally swallowing her loose teeth.

Assessment. Ivy and her mother were administered the ADIS-IV-P and ADIS-IV-C (Silverman & Albano, 1996). Ivy received a principal diagnosis of a specific phobia of BII (CSR = 7) and comorbid diagnoses of a specific phobia of dentists (CSR = 5) and specific phobia of dogs (CSR = 4). Ivy completed a BAT as part of her initial assessment. Consistent with Louise, the BAT involved Ivy being prepared for a blood test. Ivy was able to complete all steps involved in being prepared for a blood test, however she rated her subjective anxiety at a 7 (on scale ranging from 0-8).

The therapist completed a functional assessment of Ivy’s phobic beliefs. Ivy reported that she worried that the needle would hurt so much that she would prefer to die. She also indicated that she was concerned that the health professional would inject the wrong medicine into her and that this would kill her. Furthermore, she stated that her gums were harder than her arm and therefore a dental injection would hurt considerably more than an injection in the arm. She also reported worrying that if she had blood test she would faint.
Formulation. Ivy was reported to have had a number of specific fears (e.g., dogs, butterflies) throughout her early childhood. Her mother, Rosie, indicated that she herself was afraid of injections for many years; however, she overcame her fear following her husband’s accident, which resulted in her needing to give him daily injections. Also, members of Rosie’s extended family had a history of fainting when exposed to blood and injection related stimuli. Given her family history and possible anxious temperament, it is probable that Ivy had a biological predisposition to developing her own injection phobia (refer Figure 4.1). Ivy also had had multiple negative learning experiences associated with injections. During her most recent blood test Ivy experienced a number of aversive physical symptoms, which may have led to the development of a number of dysfunctional beliefs. Consistent with the proposed CBT model of BII phobia in youth, Ivy had exaggerated beliefs regarding the severity of pain, as well as the likelihood of something bad happening (e.g., fainting, dying). Moreover, Ivy underestimated her ability to cope with needles and injections to the point that she believed death would be preferable to enduring the pain. In addition to experiencing fear, Ivy also reported experiencing intense disgust associated with injections, and particularly those in the mouth (see Figure 4.1). It was hypothesised that disgust concurrently interacted with Ivy’s fear and led to greater avoidance of injection-related stimuli. Moreover, Ivy’s family appeared to accommodate her avoidance of injections. It was hypothesised that Ivy’s avoidance and her parents’ accommodation of this maintained her fear, as she has been unable to acquire corrective evidence that she can tolerate and cope with the pain, disgust and physiological symptoms associated with fainting.

Modifications to standard OST. Given the challenges described in delivering standard OST to Louise and Ivy’s individualised cognitive behavioural formulation, a number of modifications were made to Ivy’s treatment to maximise her outcome. Ivy was provided with education regarding the relationship between pain and fear and coping with discomfort.
Moreover, she learnt about arousal and the experience of fainting. Ivy was also given education to normalise her physical response to BII stimuli, and was taught strategies to assist her to tolerate the unpleasant physical symptoms she experienced when having an injection or blood test. A more incremental approach to exposure was taken with Ivy using a topical anaesthetic and dry needling (e.g., acupuncture) prior to exposure to blood tests. In addition to fear, when exposed to BII stimuli, Ivy responded with disgust and because of this a number of the exposure tasks she completed were designed to elicit this emotion. To motivate and increase Ivy’s engagement during the OST, tangible rewards were used throughout her session. To enhance compliance with exposure practice following OST an education session and an e-therapy maintenance program were developed and included as part of Ivy’s treatment. Furthermore, Rosie directly observed Ivy’s OST session and participated in all e-therapy maintenance sessions. It was evident from Louise’s treatment that parent involvement would be particularly necessary for BII phobic youth due to difficulties in organising post treatment exposure opportunities, parent’s accommodation of their child’s phobic avoidance, and the parents’ own BII fears. The inclusion of the education session also provided another opportunity for the therapist to gain Ivy’s trust. Below is a detailed description of Ivy’s modified treatment approach.

**Parent and Child Education Session.** One week prior to their OST session, Ivy and Rosie attended a one-hour education session. The session focused on education about the aetiology of BII phobia, the phobic response (cognitive, physiological and behavioural), an overview of exposure therapy, the role of parenting practices and family accommodation in the maintenance of a phobia, parent contingency management training and a rationale for OST. During the session the therapist worked with Ivy and Rosie to develop an exposure hierarchy (e.g., starting with videos of people having dental injections and progressing to having a blood test) to help guide the OST. The therapist, Rosie and Ivy also spent time
planning and preparing for Ivy’s exposure practice following OST (e.g., purchase syringes from the local chemist, book doctor and physiotherapist appointments). The therapist emphasised to the family that the OST was just a ‘kick start’ and that a fear Ivy had had for a long time would not disappear after one session. The therapist advised the family that the e-therapy maintenance sessions were still an active part of treatment and that if Ivy continued to practice exposure tasks regularly, with the support of the therapist, over the weeks following her OST she would be able to overcome her fear.

**Treatment.** Ivy’s OST involved 3 hours graduated exposure in addition to the use of cognitive challenges, modelling, reinforcement of approach behaviours (see Table 4.2 for a summary of the session). The first hour commenced at the Griffith University psychology clinic. Rosie was involved throughout the session observing and also as a model demonstrating particular exposure steps (e.g., having a finger prick). The session began with reviewing the psychoeducation material regarding the phobic response. Ivy was asked to identify the physiological cues she experienced when having an injection. She was encouraged to be aware of these cues throughout the session and if she noticed them to try a number of adaptive responses to manage these symptoms (e.g., wiggle her toes, take some slow breaths, have a drink, splash water on her face, sit or lie with her feet up).

Ivy and Rosie were also provided with education about pain (e.g., pain cells send a message to the brain) and the interaction between pain, anxiety and disgust. Throughout the session a narrative/ language associated with pain experiences was used to challenge Ivy’s dysfunctional phobic beliefs. The therapist encouraged Ivy to use less intense language to describe her pain for example using the terms ‘hurt’ and ‘discomfort’ to highlight to Ivy that we experience different levels of discomfort and that the pain associated with an injection is transient and manageable, as opposed to a chronic and enduring pain that is associated with considerable suffering. Ivy was taught that anxiety tricks you into believing that the pain...
associated with an injection is unbearable; however, in reality pain is part of our everyday lives and although it is unpleasant we frequently tolerate and cope with pain. The concept of an ‘ouch thermometer’ was introduced to Ivy, to rate her level of discomfort from (0-8). A discussion was had with Ivy and her mother about painful experiences that Ivy had been able to cope with in the past (e.g., spraining her arm playing hockey, biting her tongue, stubbing her toe and falling off her bike). Ivy was asked to rate the discomfort she experienced during these events on the ouch thermometer (e.g., spraining her ankle – 6/8) and then to compare this to the discomfort associated with having an injection. A behavioural experiment was then carried out whereby Ivy and her mother were both asked to hold ice for as long as they could. After 30 seconds of holding the ice, Ivy reported that her hand was hurting (she rated 5/8 on the ouch thermometer); however, she said she knew she could keep going and persisted with the task for 8 minutes. Following the task Ivy was questioned as to how she had been able to cope with the discomfort. She was able to reappraise the pain associated with holding ice and stated “I felt uncomfortable while holding the ice, it hurt, however I knew I was not in danger and could handle it”. Ivy was informed that when someone is anxious it turns up the pain dial in their head (e.g., more painful); however, if they stay calm and use calm thoughts it is much easier to cope with discomfort.

The remaining time during the first hour was spent watching dental injection videos aimed at eliciting disgust, in order to both normalise the disgust response, as well as reduce the intensity of this emotion through exposure. Videos were chosen specifically to elicit Ivy’s disgust (as opposed to fear), given that Ivy did not perceive herself to be in imminent danger watching a video. Exposure was conducted in the form of behavioural experiments with Ivy predicting that she would find the videos disgusting and that the child in the video would scream out in pain. Ivy watched the video multiple times and at the end of the task her predictions were reviewed. Ivy reported that she initially felt ‘gross’ while watching the
video, but over time she got used to it. She also indicated that the child in the video did not appear to be in pain. The therapist reinforced to Ivy that disgust is another normal emotion that is unpleasant, but that we can cope with it and, like fear, passes with time if we stay in the situation and allow ourselves to face it. At the beginning of the session the therapist introduced the concept of a scoreboard to Ivy for “braving discomfort and fear”. Ivy received points for braving and coping with discomfort and fear throughout the session. At the end of the second hour and third hours, Ivy was given rewards for achieving a pre-determined number of points.

The second hour of Ivy’s OST was conducted at the Griffith University Physiotherapy Clinic. During this hour, a physiotherapist, trained in dry needling, (i.e., acupuncture) gave Ivy multiple dry needles. Dry needling uses very fine needles of varying sizes and thicknesses providing an ideal opportunity to graduate exposure to injection needles. To assist with graduating Ivy’s exposure tasks, a topical anaesthetic cream was placed on her arm. At the conclusion of the hour, Ivy was able to have more than 15 dry needles of various sizes initially in her arm with the anaesthetic, and then in her non-anesthetised arm. Ivy initially worried that the pain associated with the dry needles would be unbearable. Over the course of the hour however, she reappraised the level of discomfort associated with having a dry needling saying to Rosie “the dry needles sting however only for a short time and they do not hurt as much as when I broke my finger at netball, which I was able to cope with”.

The third hour was initially conducted at the Griffith University dental clinic and then moved to the medical centre where the therapist and Ivy met with a pathology nurse. At the dental clinic, Ivy sat in a dentist chair, looked at dental tools and practised wobbling her teeth for extended periods of time. Ivy’s predictions regarding the fear and discomfort she would experience when completing exposure tasks declined during her time at the clinic and she was able to successfully reappraise beliefs related to her ability to cope with discomfort and
disgust. Following this the session progressed to the medical centre where Ivy watched the therapist have a blood test. While watching the therapist Ivy became very pale and reported feeling nauseous. The therapist encouraged Ivy to take some slow breaths. She then had her sit in a chair with her feet up and fan her face to cool herself down. Ivy stated that she was worried she would faint. The therapist used this opportunity to conduct some challenges of her phobic beliefs – What are the chances you will faint? How bad would it be? If you did faint would you be able to cope with that? Ivy was encouraged to use cognitive challenges, such as “I feel icky but I am ok - the feelings will pass” and “this is just a trick - I am not in danger”. Once the colour had returned to Ivy’s face the exposure task was continued with the therapist having a second blood test. Ivy said she felt ‘yucky’ but she was not in danger watching someone have a blood test and the feelings passed. Towards the end of the session Ivy was able to have a blood test in her arm that had a topical anaesthetic on it. She did not cry and was not restrained at all. Following the blood test she reported her actual pain level to be significantly lower than she had anticipated. She reported that the injection had hurt a little; however, she was able to cope with the pain. At the end of the session, Ivy’s progress was reviewed and the family was reminded that the session was a ‘kick start’ in overcoming her fear. A time was scheduled to provide Ivy with e-therapy maintenance sessions to assist the family with ongoing exposure practice, problem solve any obstacles to exposure and provide ongoing motivation and reinforcement to both Ivy and her mother.
### Table 4.2  
Summary of Ivy’s OST session

<table>
<thead>
<tr>
<th>OST</th>
<th>Exposure Steps</th>
<th>Fear rating Pre (0-8)</th>
<th>Fear rating Post (0-8)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hour 1</strong></td>
<td>Psychoeducation regarding coping with pain and disgust.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Exposure task – Holding ice cubes.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Watching videos of children receiving dental injections.</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td><strong>Reward = Points on behavioural chart</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hour 2</strong></td>
<td>Ivy holding a small dry needle.</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Watching the therapist and her mother receive a small dry needle.</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Ivy (under the supervision of the physiotherapist) tap a small dry needle into her own arm.</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Physiotherapist tap a small dry needle into Ivy’s forearm which had topical anaesthetic on it</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Having a small dry needle in her forearm that had no topical anaesthetic.</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Having a large dry needle in her forearm with topical anaesthetic.</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Reward = Iced chocolate from university coffee shop</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hour 3</strong></td>
<td>Sitting in a dental chair and watching a dental injection video.</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Wobbling her loose tooth while sitting in the dental chair.</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Watching the therapist have a finger prick.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Giving the therapist a finger prick.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Watching the therapist have a blood test.</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Having a pathology nurse pretend to give her blood test with an uncapped needle.</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Having a blood test in her arm, which has topical anaesthetic.</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td><strong>Reward = $10 iTunes gift card and candy blood bag</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Maintenance Program.* Following Ivy’s OST, the clinician contacted Ivy and Rosie once a week for a 30 minute e-therapy session (delivered over Skype) for 4 weeks. During the sessions, the therapist reviewed Ivy’s progress, completed a brief exposure task, and then
helped plan Ivy’s exposure practice for the following week. Exposure tasks completed by Ivy over the course of the 4 weeks included visiting an acupuncturist, wobbling her loose tooth, visiting a dentist and sitting in the chair, having her teeth cleaned by the dentist, giving her mother a finger prick and having her own finger prick. In addition to her injection related fears, Ivy and her mother were encouraged to apply the skills they had learned to her fear of dogs. Ivy and her mother developed their own exposure exercises with the therapist’s assistance and visited a friend’s house that owned dog and went walking in a dog park. Rosie regularly rewarded Ivy (e.g., ice cream, friend sleep over) for practising her exposure tasks.

Post Treatment and Follow up Assessment. A post assessment was carried out one week after Ivy’s OST session. On the basis of the ADIS-IV-P/C Ivy continued to meet criteria for BII phobia; however, the severity of her phobia (CSR = 4), had reduced significantly. Although she continued to meet criteria for a dental phobia (CSR = 4), her dog phobia diagnosis was now considered subclinical (CSR = 3). At 1-month follow-up, Ivy did not meet criteria for any diagnosis on the ADIS-IV P/C. On the BAT task (administered at 1-month follow-up) Ivy was able to be prepared for a blood test and reported minimal levels of distress completing the task (1 on a scale ranging from 0-8). Assessments were conducted by independent evaluators.

4.10 Modified OST for BII Phobia

The aforementioned case studies highlight some of the unique challenges associated with treating BII phobia in children and adolescents. BII phobia has a highly heterogeneous presentation in youth. A formulation-driven approach is essential to the delivery of an effective treatment for these children and adolescents. The following is a summary of key maintaining mechanisms (see Figure 4.1) that need to be considered when treating these youth and a discussion of possible modifications to a traditional OST approach to augment
treatment outcome. Specifically, our treatment approach includes modifications to address (a) pain, (b) disgust, (c) the physical symptoms associated with BII (e.g., fainting and vomiting), (d) parent involvement in treatment, and (e) maintenance of treatment gains.

A key treatment consideration for BII phobic youth is addressing the role of pain in the maintenance of their fear. Previous research with adults has found that BII and dental fearful individuals have a tendency to exaggerate or overestimate pain and have a lower perceived ability to tolerate physical pain and discomfort (Arntz et al., 1990; Severeijns et al., 2001; Smith & Meuret, 2012). For children who report catastrophic cognitions and phobic beliefs associated with pain, it is suggested that their psychoeducation focus on the interaction between pain and fear. Addressing phobic beliefs associated with pain occurs through education about the experience of pain (e.g., pain cells) and by changing the language children and parents use to describe pain; the use of an ouch thermometer demonstrates to youth the various intensities of discomfort a person may experience from slight discomfort to extreme discomfort; behavioural experiments test exaggerated danger expectancies (probability and severity) related to pain and discomfort, as well as coping estimates; and explicitly having children reappraise their phobic beliefs using knowledge obtained via adaptive learning experiences.

Öst and colleagues (1997), in their description of OST for adults with injection phobias, report that their patients had been able to have multiple finger pricks, saline injections and multiple blood draws by the end of the session. From the above case studies it is evident that the pace of exposure for BII phobic children is significantly slower. To address this, dry needling (i.e., acupuncture) and a topical anaesthetic are recommended as intermediate exposure steps prior to the finger pricks and blood tests. Dry needles do not look like traditional needles as they are smaller, finer and are not attached to a syringe. Children may be more willing to attempt this during exposure. These transitional exposure steps give
children the opportunity to have a corrective learning experience. They learn they can cope with discomfort and once children have had one needle they are often more willing and open to engaging in other exposure tasks. Moreover, after initially attempting exposure tasks on their arm with the topical anaesthetic, children are encouraged to then attempt needles in their arm without anaesthetic with the goal to ultimately phase out the use of the anaesthetic.

Furthermore, the use of a reward system during the OST session is considered integral in engaging children and keeping them motivated. With Ivy a scoreboard was used, receiving points for braving her discomfort and fear. Points are awarded throughout the session and at the end of the second hour and third hour rewards are presented for achieving a predetermined number of points. Hence, contrary to traditional OST, tangible rewards may be necessary to encourage youth who appear to be more difficult to engage in exposure therapy. Similarly, Rudy and Davis III (2012) recommend the use of tangible rewards during OST for special populations, such as children with Autistic Spectrum Disorders or Intellectual disability, who are more likely to have low motivation. During the education session contingency management strategies are also introduced to parents and a rewards program set up at home to keep children motivated to continue exposure practice following treatment.

Many BII phobic youth report previous experiences of being restrained or forced to have an injection and hence they often have limited trust of their therapist and the other clinicians involved in their treatment. This serves to further heighten their anxiety during the OST session. For youth who have comorbid chronic illnesses and BII phobia, this may particularly be the case if they have required life-saving treatments. When conducting exposure it is important that the child feels in control of the session. Children should never be forced to have an injection during the session. Wherever possible it is helpful to give the child a choice so that they feel more in control (e.g., Would you like the nurse to give you a finger prick or would you prefer to give one to yourself? or Would you like the physiotherapist to tap
in your dry needle or would you like the physiotherapist to set it up in the right position and then you tap it yourself?). It is also important when discussing the rationale for treatment to emphasise to the child that they will be in charge of how the session progresses. Additionally, if a child is becoming overwhelmed or finding an exposure task to difficult the therapist can have the child take a step back and complete an easier exposure task in some circumstances. For example, when a child is attempting a finger prick, the therapist may leave the room for a short period and allow the child to attempt the task without the pressure of therapist, parent or other health professionals observing.

Another unique challenge associated with BII phobia and which needs to be considered when delivering treatment to youth with BII is the role of disgust in the aetiology and maintenance of the disorder. Louise and Ivy reported that they found BII related stimuli disgusting. With Ivy disgust was introduced when explaining to the family the phobic response (cognitive, physiological and behavioural) during the education session. In the first hour of OST children can be taught that disgust like pain and anxiety is another normal feeling that we can learn to tolerate. A distinction is made between fear that occurs in response to danger, versus anxiety or disgust that occurs in response to something that is not dangerous. Children are educated that they need to learn to turn the dial down on anxiety and disgust because they do not have to avoid stimuli, which is not dangerous. Moreover, in accordance with the suggestion by Olantunji and colleagues (2007), it is recommended that the therapist complete disgust evoking exposure tasks with the child similar to those used with Ivy in order to assist in habituation of disgust as well as the development of adaptive and modest appraisals of disgust. For example, the therapist could squeeze their finger after having a finger prick so that blood flows or drips from it or the therapist and child could look at pictures of infected wounds. Targeting disgust is proposed to lead to enhanced treatment outcome, however further research is needed to clearly establish this with BII phobic youth.
An important feature distinguishing BII phobia from all other phobia types is its unique physiological response. In the cases reviewed, Ivy had a history of fainting when confronted with her phobic stimuli, which is a common feature of BII. Applied tension, a coping technique that is implemented during exposure to BII stimuli with adults, was developed to counteract the unique vasovagal fainting response experienced by individuals with BII phobia. However, in a recent review, Ayala et al. (2009) concluded that the findings in relation to the superiority of applied tension above and beyond exposure alone were mixed, with little compelling evidence for the need of applied tension. Hence, exposure alone was used to treat Ivy. For BII phobic children who faint or vomit, it is recommended that the OST commence by normalising this physiological response and educating children about the evolutionary purpose of fainting/vomiting when exposed to blood (Antony & Watling, 2006). The child is encouraged throughout the session to be aware of their bodily cues and if they notice that they are starting to feel faint they are reminded to stay calm and to use adaptive strategies (e.g., lie down, drink cool water, wiggle toes) to manage these normal symptoms, which do not present any danger or risk. Once they begin to feel better, children should continue with exposure as planned.

The case studies presented also highlight a number of parent-related issues that may interfere with maintenance of children’s treatment gains following OST. As was evident in both cases, parents reported that they too were fearful of BII related stimuli and Ivy had a family history of fainting. If parents are phobic themselves they may avoid assisting their child with exposure tasks and model anxious behaviours when interacting with BII stimuli. An integral part of Ivy’s treatment was the education session during which her mother was provided with information regarding the aetiology of phobias (e.g., heredity, learning pathways) and strategies to facilitate Ivy’s exposure such as being aware of verbal messages and modelling. Moreover, having parents actively involved in their child’s OST is also
important as it gives them an opportunity to vicariously expose themselves to BII stimuli. Parents of children with phobias often facilitate their child’s avoidance of phobia related objects and situations (Milliner et al., 2013) and thus inadvertently reinforce their anxious behaviour. Including the education session in addition to OST provides an opportunity to teach parents contingency management strategies such as using attention and rewards to reinforce approach behaviours. Having parents involved throughout the session also gives them an opportunity to observe the therapist respond appropriately to their child’s anxious behaviour.

Relative to other phobia types, such as dog or dark phobias, organising exposure practice for BII phobia takes significantly more time and active planning. Families may need to schedule doctor’s appointments for vaccinations, take their child to see physiotherapists for dry needling or book into the dentist, arranging these appointments and paying for health professional services places considerable burden on the family. This is an important treatment consideration when working with BII phobic youth. The inclusion of an education session provides an opportunity to spend more time socialising the child and their family to OST approach. It needs to be emphasised to families that OST is a kick-start and that continued exposure practice is essential for the month following treatment if the child is to overcome their phobia. Moreover, the session helps parents plan for future exposure practice with the therapist discussing with them medical supplies that they may need to purchase (e.g., finger prick lancets from the chemist) and health practitioners (e.g., doctor or physiotherapist or pathology nurse) that they made need to schedule appointments with. To maximise treatment outcomes, Ivy and her family completed 4 x 30 minute e-therapy sessions to assist them with problem solving difficulties associated with exposure and also to keep them motivated and engaged with practicing. These sessions were integral to the continued gains she made. Families should be advised that these maintenance sessions are still an active treatment
component and integral for long-term treatment success. E-therapy sessions placed a lesser burden on Ivy’s family in terms of the time needed to drive to appointments in the clinic and are more cost effective which is consistent with the OST approach. While findings relating to the benefit of parent involvement in the treatment of anxious and phobic youth are mixed (Ollendick et al., 2015), it is suggested that for BII phobia, given the potentially higher levels of parent BII related fears and the challenges associated with planning and organising exposure practice following OST, a modified approach which includes enhanced parental involvement may be of greater benefit these youth. Future research is needed to establish whether this is indeed correct.

It is evident from the above case illustrations that considerable preparation is required before engaging in OST for BII phobia. A significant amount of time was spent ensuring that the therapist had the appropriate materials and stimuli for exposure. Coordinating families, health professionals and being able to access medical rooms was also time consuming. Prior to the treatment sessions the therapist needed to find appropriate health professionals to be involved in the treatment and to train these professionals regarding their role in the session and how to appropriately interact with phobic youth. Given that during the session the child and therapist would be exposed to blood, and other bodily fluids, and be interacting with needles, it was important for them to consider the safety and ethical issues, which may arise when conducting exposure. This is also important when considering fainting or vomiting. The therapist needs to ensure that children will be safe (e.g., making sure the child will not hit their head if they faint and having a sick bucket available, and cool sugary drinks ready). Additionally, therapists need to prepare themselves for OST (Reuterskiold & Öst, 2012) by seeking supervision if necessary, researching the child’s phobic stimuli for psychoeducation (e.g., Why is blood red? Because of the protein haemoglobin) and practising interacting with the child’s phobic stimulus (e.g., have dry needling). The therapist involved in the case
illustrations had multiple dry needles, finger pricks and blood tests each session. It was important for the therapist to be able to calmly model having these medical procedures. Moreover, the therapist needed to be able to cope when the unexpected occurred. For example, if the pathology nurse had to insert the needle multiple times in order to find a vein, the therapist had to demonstrate how to handle this.

Table 4.3 **Suggested adaptations to treatment for BII Phobia in Children and Adolescents**

<table>
<thead>
<tr>
<th>Characteristic of BII Phobia</th>
<th>Mechanisms proposed in CBT Formulation</th>
<th>Adaptation for Formulation driven OST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>● Pain sensitivity</td>
<td>● Psychoeducation regarding the role of pain and practice coping with discomfort</td>
</tr>
<tr>
<td></td>
<td>● Direct/classical conditioning</td>
<td>● Exposure to discomfort/ pain (i.e., holding ice, pulling off band aids, pulling out a piece of hair)</td>
</tr>
<tr>
<td></td>
<td>● Overestimation of threat</td>
<td>● Reappraisals about expectancies of pain (Probability and Severity) and estimates of coping – using an “ouch! Thermometer”</td>
</tr>
<tr>
<td></td>
<td>● Underestimation of coping</td>
<td>● Exposure tasks: Dry needling (e.g., acupuncture), finger pricks, use of topical anaesthetic for blood test</td>
</tr>
<tr>
<td></td>
<td>● Avoidance</td>
<td></td>
</tr>
</tbody>
</table>

| Disgust                     | ● Disgust sensitivity                   | ● Psychoeducation regarding tolerating disgust |
|                            | ● Appraisals of disgust                 | ● Disgust evoking exposure tasks            |
|                            | ● Physiological symptoms (e.g. nausea)  | ● Reappraisal of expectancies of disgust (Probability and Severity) and estimates of coping |
|                            | ● Avoidance                            |                                       |

| Physiological Symptoms     | ● Overestimation of threat              | ● Psychoeducation regarding fainting |
|                            | ● Underestimation of coping             | ● Encouraging the use of adaptive strategies to cope with physical symptoms – e.g., lie down, drink cool water, wiggle toes etc. |
|                            | ● Negatively reinforced avoidance behaviour through reduced symptoms of faintness, nausea and embarrassment | ● Reappraisals about expectancies associated with unpleasant physiological symptoms (Probability and Severity) and estimates of coping |

| Parent BII related fears   | ● Vicarious conditioning                | ● Parent education session prior to OST – Contingency management training |
|                            | ● Negative Information Transmission     | ● Observation of the therapist modelling how to manage child anxiety |
|                            | ● Parent psychopathology                | ● Involvement in ongoing maintenance – e-therapy |
|                            | ● Parenting practices such as positive reinforcement of avoidance |                                       |

| Lack of motivation          | ● Parenting practices such as lack of positive reinforcement for approach behaviours | ● Tangible rewards |
|                            |                                                                                   | ● Contingency management training with parents |

| Difficulties maintaining treatment gains | ● Parenting practices – familial and contextual obstacles to homework compliance | ● Education session – Discuss preparing for exposure and homework |
|                                         | ● Avoidance                                                                       | ● E-therapy maintenance program/ Phone calls over one month following OST |
Lack of trust for health professionals
● Direct/classical conditioning
● Overestimation of threat
● Underestimation of coping

Additional time spent with the child during education session building rapport
● Slow pacing of OST
● Child led exposure tasks with child choosing next exposure step
● Reappraisal of cognitive biases associated with health professionals being untrustworthy (e.g., It is the priority of health professionals to keep us safe and well. This may involve procedures that make us uncomfortable, but are intended to keep us safe and well).

4.11 Conclusions and Implications

The efficacy of CBT treatments for BII phobic youth is currently unknown. The outcomes of large RCTs for children with specific phobia have generally led to conclusions that BII represents a more difficult phobia to treat and thus, they have been largely excluded from participation. Further, research examining BII phobia in youth is necessary to determine whether the proposed CBT model accurately describes these children and adolescents. Several assumptions, derived from the adult literature, have been included in the model, and these assumptions need to be empirically assessed. The aforementioned case studies describe an individualised approach to OST, based upon our proposed CBT model that addresses many of the unique characteristics associated with the clinical presentation of BII phobic youth. The development of a cost effective and efficient treatment approach that delivers rapid reductions in fear is essential for BII phobia, given that for many children (e.g., those with medical conditions) this debilitating fear may lead to accessing less than optimal health care and could result in long-term health consequences. It is evident that BII phobia has a highly heterogeneous presentation in youth. Because of this the underlying mechanisms maintaining each child’s phobia may vary considerably and hence children may respond differently to different treatments. An individualised and formulation informed approach to delivering OST is therefore recommended.
4.12 References


182

doi: [http://dx.doi.org/10.1016/S0005-7967(00)00107-8](http://dx.doi.org/10.1016/S0005-7967(00)00107-8)


doi: [http://dx.doi.org/10.1016/S0005-7967(99)00076-5](http://dx.doi.org/10.1016/S0005-7967(99)00076-5)


doi: [http://dx.doi.org/10.1016/j.jpsychires.2012.02.017](http://dx.doi.org/10.1016/j.jpsychires.2012.02.017)


Mogg, K., & Bradley, B. P. (2006). Time course of attentional bias for fear-relevant pictures in spider-fearful individuals. *Behaviour Research and Therapy, 44*(9), 1241-1250. doi: [http://dx.doi.org/10.1016/j.brat.2006.05.003](http://dx.doi.org/10.1016/j.brat.2006.05.003)


184


188


Ritz, T., Meuret, A. E., & Ayala, E. S. (2010). The psychophysiology of blood-injection-injury phobia: Looking beyond the diphasic response paradigm. *International Journal of Psychophysiology, 78*(1), 50 - 67. doi: [http://dx.doi.org/10.1016/j.ijpsycho.2010.05.007](http://dx.doi.org/10.1016/j.ijpsycho.2010.05.007)


Chapter 4 Relevant Appendices

The following Appendices are relevant to Chapter 4, but have not been referred in text as it has been submitted for publication.

Appendix A Ethics Approval from Griffith University
Appendix B Information and Consent Form for BII Phobic Youth
Appendix R Functional Analysis Guide- BII
Chapter 5  Blood-Injection-Injury Phobia and Animal Phobia in Youth: Psychological Characteristics and Associated Features in a Clinical Sample

This chapter includes a co-authored paper, which is currently “Under Review”. The bibliographic details of the paper are:


My contribution to the paper involved: initial concept and review design; literature search and review of relevant research; data collection and data analysis; and manuscript preparation.

Dr Ella Oar  12/06/15  Dr Lara Farrell  12/06/15

Dr Allison Waters  11/06/15  Dr Thomas Ollendick 10/06/15
Blood-Injection-Injury Phobia and Animal Phobia in Youth: 
Psychological Characteristics and Associated Features in a Clinical Sample

Ella L. Oar (DPsychClin)\textsuperscript{a} 
Lara J. Farrell (PhD)\textsuperscript{a} 
Allison M. Waters (PhD)\textsuperscript{b} 
Thomas H. Ollendick (PhD)\textsuperscript{c}

\textbf{Author affiliations:}
\textsuperscript{a}School of Applied Psychology, Behavioural Basis of Health and Menzies Health Institute, Griffith University, Gold Coast Campus, Southport, QLD, Australia, 4222
\textsuperscript{b}School of Applied Psychology, Behavioural Basis of Health and Menzies Health Institute, Griffith University, Mount Gravatt Campus, Mount Gravatt, QLD, Australia, 4122
\textsuperscript{c}Child Study Centre, Department of Psychology, Virginia Polytechnic Institute and State University, Blacksburg, VA, USA, 24060

\textbf{Corresponding author:}
Ella L. Oar; School of Applied Psychology, Behavioural Basis of Health and Menzies Health Institute, Griffith University, Gold Coast Campus, Southport, QLD, Australia, 4222
TEL: +61 7 5678 8224, FAX: +61 7 5678 8291 Email: e.oar@griffith.edu.au
Highlights

● The clinical features of BII phobia in 27 youth were examined relative to 25 youth with animal phobia

● Youth with BII phobia reported greater diagnostic severity and interference in their life

● Youth with BII were more likely to have a comorbid diagnosis of GAD and physical health conditions

● Youth with BII had exaggerated danger expectancies and fear related to physical symptoms
5.1 Abstract

Blood-Injection-Injury (BII) phobia is a particularly debilitating condition that has been largely ignored in the child literature. The present study examined the clinical phenomenology of BII phobia in 27 youth, relative to an age and gender-matched group of 25 youth with animal phobia - one of the most common and well-studied phobia subtypes in youth. Children were compared on measures of phobia severity, functional impairment, comorbidity, threat appraisals (danger expectancies and coping), focus of fear and physiological response, as well as vulnerability factors including disgust sensitivity and family history. Children and adolescents with BII phobia had greater diagnostic severity and greater interference in their family, school and social life. In addition, they were more likely to have a comorbid diagnosis of generalised anxiety disorder and physical health conditions, report more exaggerated danger expectancies, and to focus their fears on physical symptoms (e.g., faintness and nausea), in comparison to youth with animal phobia. The present study advances knowledge that may be important to take into consideration in the assessment and treatment of this poorly understood condition in youth.

**Keywords:** Blood phobia, Injection phobia, BII, Animal phobia, children
5.2 Introduction

The DSM-V classifies specific phobia into five major subtypes: animal (e.g., dogs, insects, snakes), natural environment (e.g., thunderstorms, heights, darkness), blood-injection-injury (BII; e.g., seeing blood, injections), situational (e.g., elevators, enclosed places, flying) and other (e.g., loud noises, vomiting, choking, costume characters). These subtypes reflect the heterogeneous nature of this disorder both in terms of its expression and the clinical characteristics associated with it. Indeed, significant differences have been observed between the phobia subtypes in their prevalence, age of onset, gender, comorbidity, associated impairment, threat appraisals, physiological response and vulnerability factors (LeBeau et al., 2010). Given that current psychological treatments for specific phobia are only effective for 50-80% of individuals, it has been suggested that more individualised approaches to treatment that target the unique characteristics of the phobia subtypes may lead to improved outcomes (Ollendick & Muris, 2015). The primary aim of the current study was to examine the psychological correlates of two subtypes of specific phobia (BII and animal phobia) in children and adolescents in order to determine the unique characteristics associated with these phobias in a paediatric sample. In the adult literature, BII phobia has been found to be distinct from the other phobia subtypes, including animal phobias, in that it is associated with a stronger genetic vulnerability (Van Houtem et al., 2013) and a unique physiological (e.g., fainting) and emotional response (e.g., disgust; Olatunji, Cisler, et al., 2010). Currently however, it is unknown whether the expression of BII phobia in children and adolescents differs to that of other phobia subtypes such as animal phobias in youth.

Although clinical studies with adults suggest that BII is a particularly distressing and impairing phobia (LeBeau et al., 2010), there are no clinical studies of children and adolescents with BII phobia at this time. Moreover, only one clinical study to date has
systematically examined the psychological characteristics of two of the major phobia subtypes in youth, providing preliminary evidence for clinical heterogeneity across phobia subtypes in youth. Ollendick, Raishevich, et al. (2010) compared differences between youth with animal ($n = 31$) and natural environment ($n = 31$) phobia subtypes. Although differences were not observed in terms of phobia severity or the magnitude of threat appraisals, the children with natural environment phobia fared more poorly on a number of indices including higher levels of somatic symptoms of anxiety, more depressive symptoms, and less overall satisfaction with quality of life. Further, parents of youth with a natural environment phobia rated their child as experiencing greater social problems and other internalising problems. Finally, the youth with natural environment phobias were found to have higher rates of comorbid generalised anxiety disorder (GAD) and separation anxiety disorder (SAD) diagnoses. The findings of this study suggest the need for tailored assessment and the possible need for individualised treatment approaches for youth with these phobia subtypes. For example, the findings suggest that children and adolescents with natural environment phobia may require a stronger dose of treatment or may benefit from additional treatment components focused on co-occurring GAD and/or SAD symptoms.

To date, the only descriptions of youth with BII phobia come from a small number of epidemiological studies that have explored differences among phobia subtypes. Across these studies, animal and natural environment phobia subtypes have consistently been found to be the most common in youth, followed by BII and then situational phobias (Burstein et al., 2012; Essau et al., 2000; Kim et al., 2010). For example, in the Burstein et al. (2012) epidemiological study ($n = 10,123$, 13-18 years), 15.1% of youth were found to meet criteria for a specific phobia, and of those, 10.98% had a natural environment phobia, 9.19% an animal phobia, 9.07% BII phobia and, finally, 8.06% situational phobia (some of the youth had more than one subtype). To date, the study by Burstein and colleagues is the only one to
explore differences in impairment between the phobia subtypes. Within the study adolescents were asked to rate the degree of impairment and disability they experienced in the areas of household chores, school/work, family relations and social life. Youth with BII and situational phobias were found to be the most severely impaired. Those with situational phobia reported the poorest mental health quality and highest overall fear level, whereas youth with BII phobia endorsed the greatest level of disability and the highest rates of referral for treatment. Those with animal phobia were the least impaired.

There is also evidence to suggest that youth with BII phobias have distinct patterns of comorbidity in comparison to the other phobia subtypes. For example, in a community sample of 2,673 Korean children and adolescents, Kim et al. (2010) reported that youth with animal phobias were significantly more likely to meet criteria for a comorbid anxiety disorder diagnosis and an oppositional defiant disorder (ODD) relative to other phobia subtypes. Whereas in comparison to other phobia subtypes, those with natural environment phobia most commonly met criteria for comorbid anxiety disorders alone. Moreover, BII phobics were found to be significantly more likely than those with the other phobia types to meet criteria for comorbid attention deficit hyperactivity disorder (ADHD). Consistent with this, Burstein et al. (2012) found that youth with natural environment phobia were significantly more likely to meet criteria for co-occurring diagnoses of agoraphobia and post traumatic stress disorder (PTSD) relative to those with situational phobia, who were more likely to meet criteria for a comorbid diagnosis of SAD or social anxiety disorder. Moreover, BII and situational phobics were significantly more likely to meet criteria for comorbid behavioural disorders; but not mood or substance use disorders. Notably, BII phobia was more frequently associated with a diagnosis of ADHD, whereas situational phobia was associated with conduct disorder.

Differences in appraisals of threat and danger, physiological responding, and disgust among the phobia subtypes in children and adolescents are yet to be explored. To date, youth
with BII phobia have been excluded from the large RCTs for specific phobia as they have been considered to present differently and have unique treatment needs (Ollendick et al., 2015; Ollendick et al., 2009). Still, at this time, there is limited data to describe this relatively prevalent phobia in youth, despite evidence from adult studies that the disorder is one of the most impairing and complex of phobia subtypes (LeBeau et al., 2010).

The present study provides the first systematic examination of the psychological characteristics of BII phobia in youth in order to identify unique and shared features of this phobia subtype in comparison with animal phobia, one of the most commonly diagnosed phobias in childhood (Ollendick, Raishevich, et al., 2010). Subtype comparisons were made on phobia severity, functional impairment, comorbidity, threat appraisals (danger expectancies and coping), focus of fear, physiological responding, and vulnerability factors of disgust sensitivity and family history. It was hypothesised that youth with BII phobia would have greater diagnostic severity based on clinician ratings and also experience greater impairment and poorer quality of life. Additionally, it was predicted that youth with BII phobia would be more likely to have a history of fainting in the presence of their feared stimulus and more frequently have an immediate family member with the same fear. It was also expected that youth with BII phobia would have a greater number of comorbid diagnoses and be more likely to have comorbid ADHD, and would report higher levels of comorbid symptoms, including symptoms of anxiety, depression, fearfulness and externalising symptoms, in comparison to animal phobic youth. Youth with BII phobias were also predicted to have more exaggerated danger expectancies, poorer estimates of coping and that their fear would be more likely to focus on physical symptoms and other internal sensations, in comparison to youth with animal phobias who may focus more on appraisals of harm and danger. Finally, it was anticipated that BII youth would report greater disgust sensitivity relative to those with animal phobia.
5.3  Method

5.3.1  Participants

Twenty-seven children and adolescents (7-18 years; \( M = 11.41, SD = 3.25 \)) who met DSM-V criteria for a primary diagnosis of BII phobia, and 25 children and adolescents (7-17 years; \( M = 10.02, SD = 2.54 \)) who met criteria for a primary diagnosis of animal phobia participated in this study, which was approved by the Griffith University Human Research and Ethics Committee. Youth in the present sample were drawn from two concurrent clinical trials evaluating the efficacy of one session treatments for specific phobia (Farrell, Waters, Milliner, Zimmer-Gembeck, et al., 2013; Oar, Farrell, Waters, Conlon, & Ollendick, Submitted; Waters, Farrell, et al., 2014). The trials were conducted at two sites (Griffith University, Gold Coast and Mt Gravatt campuses) by the same research team. Youth were recruited via advertising in school newsletters and local newspapers, and through referrals from paediatricians, general practitioners and other health practitioners. To be eligible for this study, children and adolescents needed to be between 7 and 18 years of age and meet criteria for either a primary diagnosis of BII phobia or animal phobia according to the DSM-V. Of the children and adolescents presenting with an animal phobia, 98% were phobic of dogs, therefore inclusion was redefined as meeting criteria for a phobia of dogs to provide a homogenous comparison condition. Comorbidity with other internalising and externalising disorders was permissible provided they were secondary diagnoses, or co-primary, with the exception of youth with BII phobia who were excluded if they had a comorbid dog phobia, and vice versa, youth with dog phobia were excluded if they had a comorbid BII phobia. Children and adolescents were required to have at least one parent available to attend all assessment appointments. Youth were excluded if they had a diagnosis of an Autism Spectrum Disorder or Intellectual Impairment, or reported psychotic symptoms or serious
suicidal ideation. Tables 5.1 and 5.2 present demographic data and describe comorbidity of the samples.
Table 5.1  Participant Characteristics BII and Dog phobia comparison samples

<table>
<thead>
<tr>
<th></th>
<th>Total (N = 52)</th>
<th>BII (n = 27)</th>
<th>Dog (n = 25)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age $M (SD)$</td>
<td>10.82 (3.03)</td>
<td>11.56 (3.30)</td>
<td>10.02 (2.54)</td>
<td>1</td>
</tr>
<tr>
<td>Gender $n$ (%) Male</td>
<td>13 (25%)</td>
<td>8 (29.6%)</td>
<td>5 (20%)</td>
<td>0</td>
</tr>
<tr>
<td>Ethnicity $n$ (%) Caucasian</td>
<td>52 (100%)</td>
<td>27 (100%)</td>
<td>25 (100%)</td>
<td></td>
</tr>
<tr>
<td>Family Structure $n$ (%) Parent together</td>
<td>37 (71.2%)</td>
<td>16 (59.3%)</td>
<td>21 (84%)</td>
<td>3</td>
</tr>
<tr>
<td>Family Income $n$ (%) Above 80,000</td>
<td>31 (66%)</td>
<td>16 (66.7%)</td>
<td>15 (65.2%)</td>
<td>0</td>
</tr>
<tr>
<td>Parent Education $n$ (%) Tertiary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>30 (61.2%)</td>
<td>18 (72%)</td>
<td>12 (50%)</td>
<td>2</td>
</tr>
<tr>
<td>Father</td>
<td>27 (56.3%)</td>
<td>17 (70.8%)</td>
<td>10 (41.7%)</td>
<td>4</td>
</tr>
<tr>
<td>Physical Health Condition</td>
<td>10 (19.2%)</td>
<td>9 (33.4%)</td>
<td>1 (4%)</td>
<td></td>
</tr>
<tr>
<td>Asthma</td>
<td>3 (11.1%)</td>
<td>1 (4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 1 Diabetes</td>
<td>1 (3.7%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerebrovascular disease</td>
<td>1 (3.7%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiovascular disease</td>
<td>1 (3.7%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancer</td>
<td>1 (3.7%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anaphylaxis</td>
<td>2 (7.4%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1 (3.7%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of Vomiting</td>
<td>5 (9.6%)a</td>
<td>5 (18.5%)</td>
<td>0 (0%)b</td>
<td></td>
</tr>
<tr>
<td>History of Fainting</td>
<td>5 (9.6%)a</td>
<td>5 (18.5%)</td>
<td>0 (0%)b</td>
<td></td>
</tr>
<tr>
<td>Family History of Same Fear</td>
<td>24 (46.2%)</td>
<td>15 (55.6%)</td>
<td>9 (36%)</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* a = % of (n = 41); b = % of (n = 14); 0*p < .05; **p < .01
Table 5.2  
**Comparison of BII and Dog Phobic Youth Comorbidity**

<table>
<thead>
<tr>
<th></th>
<th>BII (n = 27)</th>
<th>Dog (n = 25)</th>
<th>t/χ</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Comorbid Dx</td>
<td></td>
<td></td>
<td>1.92</td>
</tr>
<tr>
<td>M (SD)</td>
<td>2.93 (1.41)</td>
<td>2.52 (1.39)</td>
<td></td>
</tr>
<tr>
<td>Phobia n (%)</td>
<td></td>
<td></td>
<td>0.22</td>
</tr>
<tr>
<td>Animal</td>
<td>10 (37%)</td>
<td>11 (44%)</td>
<td></td>
</tr>
<tr>
<td>Natural Environment</td>
<td>2 (7.4%)</td>
<td>9 (36%)</td>
<td></td>
</tr>
<tr>
<td>Situational</td>
<td>4 (14.8%)</td>
<td>4 (16%)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>7 (25.9%)</td>
<td>4 (16%)</td>
<td></td>
</tr>
<tr>
<td>GAD n (%)</td>
<td>15 (55.6%)</td>
<td>6 (24%)</td>
<td>5.93</td>
</tr>
<tr>
<td>SoP n (%)</td>
<td>10 (37%)</td>
<td>6 (24%)</td>
<td>1.67</td>
</tr>
<tr>
<td>SAD n (%)</td>
<td>3 (11.1%)</td>
<td>3 (12%)</td>
<td></td>
</tr>
<tr>
<td>PTSD n (%)</td>
<td>1 (3.7%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td>OCD n (%)</td>
<td>1 (3.7%)</td>
<td>1 (4%)</td>
<td></td>
</tr>
<tr>
<td>MDD n (%)</td>
<td>1 (3.7%)</td>
<td>1 (4%)</td>
<td></td>
</tr>
<tr>
<td>ADHD n (%)</td>
<td>3 (11.1%)</td>
<td>2 (8%)</td>
<td></td>
</tr>
<tr>
<td>ODD n (%)</td>
<td>3 (11.1%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
</tbody>
</table>

Note. Dx = Diagnoses; GAD = Generalised Anxiety Disorder; SoP = Social Phobia; SAD = Separation Anxiety Disorder; PTSD = Post traumatic Stress Disorder; OCD = Obsessive Compulsive Disorder; MDD = Major Depressive Disorder; ADHD = Attention Deficit Hyperactivity Disorder; ODD = Oppositional Defiant Disorder. *p < .05; **p < .01
5.3.2 Measures

5.3.2.1 Diagnostic severity and comorbid diagnoses

Phobia diagnosis, phobia severity, and comorbidity were determined using the Anxiety Disorders Interview Schedule for DSM-IV, Child and Parent Versions (ADIS-IV-C/P; Silverman & Albano, 1996). During ADIS interviews children and parents were asked to rate the degree of interference the child’s phobia caused (0 = No interference to 8 = Very, very interfering) in relation to the child’s family life, schooling, peer relationships and personal distress. Diagnoses given a clinician severity rating (CSR) of 4 or above (scale 0 = Not present to 8 = Very severe) were considered clinically significant. CSR ratings were used in the present study to determine clinical severity of phobia subtype. The ADIS-IV has demonstrated high levels of inter-rater and retest reliability and has been found to have strong concurrent validity with other measures of childhood anxiety (Silverman, Saavedra, & Pina, 2001; Wood, Piacentini, Bergman, McCracken, & Barrios, 2002).

Trained clinical psychologists and postgraduate clinicians administered the ADIS-IV interviews via telephone with parents, and face to face with children. Telephone delivery of the ADIS-IV has been found to be as reliable as in person administration (Lyneham & Rapee, 2005). Following the interviews the findings were discussed, and a combined clinical consensus diagnoses was determined, in consultation with supervising clinical psychologists (LJF and AMW). All ADIS-IV interviews were recorded (voice and video-taped). An independent trained assessor randomly selected and reviewed 20% of the recordings, with results indicating excellent inter-rater reliability across subtypes ranging from $r = 0.89$ to $0.91$ for the primary diagnosis, $r = 0.81$ to $0.88$ for secondary diagnosis and $r = 0.86$ to $1.0$ for the tertiary diagnosis.
History of fainting in the presence of phobic stimuli and family history of the same fear were assessed during ADIS-IV-C and ADIS-IV-P interviews. Children and parents were asked a number of supplementary questions about the child’s phobic response (e.g., has your child ever fainted when faced with their feared object or situation?), in addition to questions relating to family history of the child’s phobia (e.g., “Is anyone else in the family afraid of injections?”).

Of note, the ADIS-IV version was utilised to diagnose youth as the ADIS-V child version was not available at the time of conducting this study. From DSM-IV to DSM-V only small changes were made to the diagnostic criteria for specific phobia. Alterations included adjusting the requirement that people over 18 years must recognise that fear is excessive, and also that the duration requirement (e.g., typically lasting for 6 months or more) was extended from children to adults. Therefore, our diagnostic assessment is aligned with DSM-V criteria.

5.3.2.2 Functional impairment and quality of life

The Children’s Global Assessment Scale (CGAS; Shaffer et al., 1983) is a clinician rated measure of overall child functioning and impairment. Children and teenagers are assigned a rating from 0 (Needing constant supervision) to 100 (Superior functioning), with higher scores indicating better functioning. The CGAS has favourable psychometric properties with good inter-rater and retest reliability, in addition to discriminant and concurrent validity (Shaffer et al., 1983).

The Pediatric Quality of Life Inventory Child and Parent Version (PedsQL; Varni, Seid, & Kurtin, 2001) is a 23-item self-report measure designed to assess health related quality of life in healthy children and adolescents and those with acute and chronic health conditions. For each item youth are asked to indicate which response best describes them over the past month (e.g., “I have trouble getting along with other kids”) on a 5-point Likert scale ranging from 0 = Never to 4 = Almost Always. On the parent version of the scale,
parents are asked to indicate which response best describes their child over the past month (e.g., My child has had problems with getting teased by other children) on a 5-point Likert scale ranging from 0 = *Never* to 4 = *Almost Always*. The PedsQL yields a total scale score, physical health summary score and a psychosocial health summary score. The PedsQL has well-established reliability and validity with data across multiple paediatric illnesses. It has demonstrated acceptable internal consistency in youth with psychiatric disorders (Cronbach’s alpha approaching 0.90; Limbers, Ripperger-Suhler, Heffer, & Varni, 2011; Varni & Burwinkle, 2006). The PedsQL also has established convergent and discriminant validity (Anderson et al., 2009; Limbers et al., 2011; Reinfjell, Hjemdal, Aune, Vikan, & Diseth, 2008; Varni & Limbers, 2009; Varni et al., 2001). Internal consistency for children was Cronbach’s $\alpha = 0.91$ and for parents Cronbach’s $\alpha = 0.88$ in the present study.

### 5.3.2.3 Comorbid symptoms

**Anxiety Symptoms.** The Spence Children’s Anxiety Scale, Child and Parent Versions (SCAS-C/P; Spence, 1998) were used to assess child anxiety symptoms. The SCAS-C consists of 45 items and the SCAS-P consists of 39 items. For each item children and parents respond on a four point Likert scale from 0 = *Never True* to 3 = *Always True*. Both of the SCAS-C/P forms yield a total score and six subscale scores consistent with DSM-IV criteria for panic/agoraphobia, separation anxiety, social phobia, generalised anxiety disorder, obsessive-compulsive disorder, and physical injury fears. The SCAS C/P has well-established psychometric properties; including, good internal consistency (e.g., Cronbach’s alpha coefficients for the total score ranging from 0.89 to 0.92) and demonstrated validity, and has been normed using nationally representative samples (Nauta et al., 2004; Spence, 1998). Internal consistency in the current study for the SCAS-C was Cronbach’s $\alpha = 0.91$ and for the SCAS-P was Cronbach’s $\alpha = 0.84$. 
**Depressive Symptoms.** Child symptoms of depression were assessed using the Short Mood and Feelings Questionnaire Child and Parent Version (SMFQ-C/P; Angold et al., 1995). Both the SMFQ-C and SMFQ-P consist of 13 items that ask children and parents to respond to a number of statements on a 3 point Likert scale from 0 = *Not true* to 2 = *Always true*, regarding how the child has felt and behaved over the past 2 weeks. The SMFQ-C/P yields a total score, with scores above 8 indicating clinical levels of depression. The SMFQ-C/P has been found to have good internal consistency (Cronbach’s $\alpha = 0.85$ for the SMFQ-C and 0.87 for the SMFQ-P)(Angold et al., 1995). Internal consistency in the current study for this measure was Cronbach’s $\alpha = 0.87$ for children and Cronbach’s $\alpha = 0.86$ for parents.

**Fearfulness Symptoms.** The Fear Survey Schedule for Children Revised (FSSC-R; Ollendick, 1983) is a self-report measure developed to assess fearfulness in youth. Children are asked to rate their fearfulness of 80 specific objects and situations on a 3-point Likert scale (1 = *None*, 2 = *Some* and 3 = *A lot*). The FSSC-R provides a total score and five factor scores including fear of the unknown, fear of failure and criticism, fear of minor injury and small animals, fear of danger and death, and medical fears. The psychometric properties of the FSSC-R are well-established, with the measure demonstrating strong internal consistency (Cronbach’s $\alpha$ = above 0.90), the ability to discriminate among phobia types (Weems, Silverman, Saavedra, Pina, & Lumpkin, 1999), and good convergent validity (Ollendick, 1983; Ollendick, Yule, & Oilier, 1991). Within the current study, internal consistency was high with Cronbach’s $\alpha = .96$.

**Externalising Symptoms.** The Child Behaviour Checklist (CBCL; Achenbach, 2001) is a parent completed, 113-item behavioural rating scale that is designed to assess children’s competencies and behavioural/emotional problems. Parents are asked to rate how often the described behaviour is displayed by their child on a 3-point Likert scale (0 = *Not true* to 2 = *Always true*). The measure generates internalising, externalising and total problem scale
scores. For purposes of the present study, only the externalising scale of the CBCL was examined. The CBCL has well-established psychometric properties. It has been shown to be reliable across time and has been found to discriminate between youth with and without anxiety disorders and between youth with anxiety disorders and those with externalising disorders (Achenbach, 2001; Seligman, Ollendick, Langley, & Baldacci, 2004). Cronbach’s alpha for the total scale was 0.93.

5.3.2.4 Threat appraisals and focus of fear

A semi-structured interview was carried out with children and teenagers to elicit the idiographic beliefs associated with their phobia based on an interview developed by Ollendick and colleagues (Ollendick et al., 2015; 2009; Ollendick, Raishevich, et al., 2010). For example, youth were asked “what is it about seeing blood/ or having an injection that makes you so afraid?” and “what do you think will happen if you see a dog in the park?” After identifying their 3 strongest phobic beliefs, the youth were asked to estimate the likelihood their belief would occur (probability; 0 = Not going to happen to 8 = Definitely going to happen), how bad it would be for them if their belief actually occurred (severity; 0 = Not bad at all to 8 = Very, very bad), and how sure they were that they could cope with it if their belief was to occur (coping; 0 = Not at all sure to 8 = Extremely sure I know I could cope). Each component of the belief was rated on 9-point Likert scale (0-8) with youth using expectancy thermometers to assist with ratings. The ratings of danger expectancies and coping were averaged across the three beliefs to provide mean ratings of likelihood, severity and coping.

Consistent with adult studies (Antony et al., 1997; Lipsitz et al., 2002) children and adolescent’s beliefs were categorised into one of four focus of fear groups: (1) fear of danger or harm (e.g., The needle will get stuck in my arm and I will need surgery to remove it; A dog will bite me), (2) fear of being trapped (e.g., I can’t escape when I have an injection and I have no choice; The dog might corner me), (3) fear of physical symptoms including fainting,
vomiting, dizziness and shortness of breath (e.g., If I see blood I will feel dizzy and will faint; If I see dog I won’t be able to breathe), and (4) fear of other internal sensations associated with experiencing fear and disgust (e.g., Prior to having an injection my heart will race and I will get butterflies in my tummy; Dogs will run up and lick me and I will feel really gross).

5.3.2.5 Disgust

The Disgust Emotion Scale for Children: Child and Parent Versions (DES-C; Muris et al., 2012) is a 30-item self-report measure designed to assess disgust sensitivity in children and adolescents. The measure requires youth to rate the degree of disgust they believe they would experience if exposed to certain stimuli or situations (e.g., a pile of rotting lettuce) using a 5-point Likert scale (0 = no disgust at all to 4 = extreme disgust). The parent version of the scale requires parents to rate how much disgust their child would experience when exposed to these same stimuli or situations. The measure yields a total score and assesses disgust across 5 domains including animals, injection and blood, mutilation and death, rotting food and odours. The DES-C has been found to have excellent internal consistency (α = 0.93; Muris et al., 2012). Evidence has also been found for the predictive validity of the DES-C with positive correlations observed between the DES-C and measures of animal and blood-injury phobia (r =0.66 and 0.68, respectively) relative to other phobia types. Internal consistency in the current study for the child (α = 0.96) and parent measure (α = 0.93) was high.

5.3.3 Procedure

Upon referral, parents/carers completed a brief telephone screen (15 minutes) to assess for the presence of a specific phobia and screen for the inclusion and exclusion criteria. Additionally, demographic details and information regarding co-occurring physical health conditions were obtained during the screen. If the child appeared to be suitable, the parent was emailed the relevant trial’s information and consent form and an appointment was
scheduled with the parent to complete the diagnostic interview (ADIS-P) via telephone. Parents returned signed consent forms by either email or post. After completion of the parent diagnostic interview the child’s eligibility was reviewed with supervising clinical psychologists. Following this, children who were judged appropriate attended two assessment sessions at the Griffith University Psychology Clinic (Gold Coast or Mt Gravatt). During the first assessment session, children completed a child diagnostic interview (ADIS-C) and self-report questionnaires. While their child was being interviewed, parents completed their own set of self-report questionnaires. After completion of the diagnostic interviews, the child’s diagnostic profile (e.g., presence of specific phobia and comorbidity) was reviewed with supervising clinical psychologists. A final combined consensus diagnosis, CGAS score, and eligibility to proceed to the next stage of the study were determined. One week later, during the second assessment session, the clinician completed a semi-structured interview with the child designed to elicit their phobic beliefs associated with the feared stimuli. The assessment session was predominantly conducted with the child alone and phobic beliefs later confirmed with parents. However, parents of young children stayed to assist throughout this session. Following completion of their assessment, children were offered a One Session Treatment as part of their involvement in the clinical trials (Farrell, Waters, Milliner, Zimmer-Gembeck, et al., 2013; Oar, Farrell, Waters, Conlon, et al., Submitted; Waters, Farrell, et al., 2014).

5.4 Results

5.4.1 Data Analysis

To examine differences in phobia severity, functional impairment, quality of life, comorbidity, comorbid symptoms (anxiety, depression, fearfulness and externalising), threat appraisals (danger expectancies and coping), focus of fear and disgust sensitivity between youth with BII phobia ($n = 27$) and dog phobia ($n = 25$), a series of $t$ tests and chi-square, with
Fisher’s exact test interpreted when the expected cell count was less than 5. One child in the BII phobia group had a co-occurring spider phobia. Given that disgust appears to play a role in the development and maintenance of both BII and spider phobia (Olatunji, Cisler, et al., 2010), analyses were conducted with and without this child and as the results remained the same, the child’s data were included in all analyses.

In regards to missing data, one child from the dog phobia group did not complete any child self-report measures and one child from the BII group completed only three of the self-report questionnaires (SCAS, SMFQ and FSSC-R). Additionally, two parents (one from the BII phobia group and one from the dog phobia group) did not complete the parent self-report measures. A significant proportion of dog phobic parents (n = 11) were not administered supplementary ADIS-P questions relating to the physical symptoms their child experienced when confronted with their feared stimuli (due to assessor error). Finally, one child with primary dog phobia did not complete the threat appraisal assessment.

5.4.2 Sociodemographic Characteristics

In relation to age, gender, ethnicity, family structure, family income and mother’s education level, no significant differences were observed between the two subtypes (refer to Table 5.1). Although not an aim of this study, it was observed that a substantial proportion of children and adolescents (19.2%) experienced significant physical health conditions including Type 1 diabetes, asthma, cancer, cerebrovascular disease, cardiovascular disease and anaphylaxis as reported by parents during their initial telephone screen. Notably, a significant difference (Fisher’s exact test, \( p = 0.01 \)) was observed between the phobia subtypes with youth with a BII phobia (n = 9) significantly more likely to have a physical health condition than youth with a dog phobia (n = 1).
5.4.3 Diagnostic Severity, Impairment and Comorbidity Diagnoses

Independent groups $t$ tests revealed a significant difference between BII and dog phobic youth in relation to CSR, $t(50) = 2.23$, $p = 0.03$, Cohen’s $d = 0.62$ (refer to Table 5.3). BII phobic youth ($M = 6.63; SD = 1.04$) were found to be rated by clinicians as significantly more severe than dog phobic youth ($M = 6.04; SD = 0.84$). Moreover, a significant difference was found between youth with BII and dog phobia in relation to child-, $t(50) = 2.64$, $p = 0.01$, Cohen’s $d = 0.73$ and parent-rated interference, $t(50) = 3.43$, $p < 0.01$, Cohen’s $d = 1.38$, with BII phobic children ($M = 6.59; SD = 1.60$) and their parents ($M = 7.26; SD = 1.06$) endorsing greater interference in the child’s family life, schooling, peer relationships associated with the child’s phobia, than children ($M = 5.20; SD = 2.18$) and parents ($M = 5.29; SD = 1.71$) of dog phobic youth. However, independent groups $t$ tests found no differences between the phobic youth in relation to overall functioning (CGAS), $t(50) = -1.53$, $p = 0.13$, Cohen’s $d = -0.42$; child reported quality of life, $t(48) = -1.18$, $p = 0.86$, Cohen’s $d = -0.05$; and parent reported quality of life, $t(48) = -1.35$, $p = 0.18$, Cohen’s $d = -0.39$ (refer to Table 5.3).

Five BII phobic youth (18.5%) reported a history of vomiting when confronted with their feared stimuli, while a further 5 (18.5%) reported a history of fainting in the presence of their feared stimuli. Of the BII children only one child had a history of both vomiting and fainting. Comparatively, no dog phobic youth reported a history of vomiting or fainting when confronted with their feared stimuli. However, analyses did not reveal significant differences between the phobic groups in relation to vomiting (Fisher’s exact test, $p = 0.15$) or fainting (Fisher’s exact test, $p = 0.15$). Fifteen of the youth with BII (55.6%) reported to have a family member (e.g., mother, father, sibling or grandparent) with the same fear (e.g., BII), relative to 9 of the youth with a dog phobia (37.5%) who had a family member with the same fear (i.e., dogs). This difference was not significant between the phobic groups, $\chi^2(1, N = 52) = 1.99$, $p = 0.16$, $\Phi = -0.20$. 

213
On average, youth met criteria for 2.73 diagnoses (refer Table 5.2). Forty-two children (80.8%) met criteria for a secondary comorbid diagnosis, 27 children (51.9%) a tertiary diagnosis and 12 children (23.1%) had four or more diagnoses. Significant differences were not observed between phobic groups in relation to the number of comorbid diagnoses \( t (50) = 1.04, p = 0.30, \text{Cohen’s } d = 0.29 \). The most commonly co-occurring disorders were other types of specific phobia (40.4%) and GAD (40.4%), followed by social phobia (30.8%). Chi square analyses were conducted to examine differences between the phobia subtypes on type of comorbid diagnosis. Youth with BII were significantly more likely to have a comorbid diagnosis of GAD in comparison to those with a dog phobia, \( \chi^2 (1, N = 52) = 5.37, p = 0.02, \Phi \Phi = -0.32 \). The phobia subtypes did not differ in terms of the presence of any other disorder.

5.4.4 Comorbid Symptoms

Independent group \( t \) tests revealed no significant differences between youth with BII and dog phobia in relation to symptoms of anxiety, depression and fearfulness (SCAS-C, SMFQ-C, FSSC-R; refer to Table 5.3). Similarly, independent groups \( t \) tests conducted on parent measures of child anxiety, depression and externalising symptoms (SCAS-P, SMFQ-P, and CBCL externalising) failed to show differences between the phobic groups (refer to Table 5.3).
Table 5.3  
Comparison of BII and Dog Phobic Youth across Diagnostic Severity, Impairment and Comorbid Symptoms, Disgust and Threat Appraisals

<table>
<thead>
<tr>
<th>Measure</th>
<th>BII (n = 27)</th>
<th>Dog (n = 25)</th>
<th>F/t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Diagnostic Severity (CSR)</td>
<td>6.63</td>
<td>1.04</td>
<td>6.04</td>
</tr>
<tr>
<td>Interference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child (0 – 8)</td>
<td>6.59</td>
<td>1.60</td>
<td>5.20</td>
</tr>
<tr>
<td>Parent (0 – 8)</td>
<td>7.26</td>
<td>1.06</td>
<td>5.29</td>
</tr>
<tr>
<td>Functional Impairment (CGAS)</td>
<td>58.70</td>
<td>7.28</td>
<td>62.04</td>
</tr>
<tr>
<td>Quality of Life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PedsQL-C</td>
<td>82.44</td>
<td>14.48</td>
<td>83.88</td>
</tr>
<tr>
<td>PedsQL-P</td>
<td>84.57</td>
<td>13.80</td>
<td>89.29</td>
</tr>
<tr>
<td>Comorbid Symptoms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCAS-C</td>
<td>23.69</td>
<td>15.59</td>
<td>30.22</td>
</tr>
<tr>
<td>SMFQ-C</td>
<td>3.88</td>
<td>3.80</td>
<td>4.04</td>
</tr>
<tr>
<td>FSSC-R</td>
<td>123.96</td>
<td>28.33</td>
<td>131.79</td>
</tr>
<tr>
<td>SCAS-P</td>
<td>20.00</td>
<td>11.81</td>
<td>19.78</td>
</tr>
<tr>
<td>SMFQ-P</td>
<td>2.35</td>
<td>2.10</td>
<td>2.57</td>
</tr>
<tr>
<td>CBCL Externalising</td>
<td>49.00</td>
<td>9.79</td>
<td>48.24</td>
</tr>
<tr>
<td>Disgust</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DESC-C</td>
<td>51.77</td>
<td>28.80</td>
<td>62.51</td>
</tr>
<tr>
<td>DESC-P</td>
<td>53.15</td>
<td>20.18</td>
<td>50.50</td>
</tr>
<tr>
<td>Threat Appraisals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likelihood (0 – 8)</td>
<td>5.25</td>
<td>1.51</td>
<td>3.83</td>
</tr>
<tr>
<td></td>
<td>Severity (0 – 8)</td>
<td>Coping (0 – 8)</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>----------------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.31</td>
<td>2.10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.23</td>
<td>2.03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.16</td>
<td>2.46</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.71</td>
<td>1.75</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.71</td>
<td>-0.00</td>
<td></td>
</tr>
</tbody>
</table>

*Note. CSR = Combined ADIS-C/P clinician severity rating; CGAS = Children’s Global Assessment Scale; PedsQL = Pediatric Quality of Life Inventory; SCAS = Spence Children’s Anxiety Scale; SMFQ = Short Mood and Feelings Questionnaire; FSSC-R = Fear Survey Schedule for Children Revised; CBCL = Child Behaviour Checklist; DES-C = Disgust Emotion Scale for Children.*p < .05; **p < .01
5.4.5 Threat appraisals and focus of fear

Independent groups $t$ tests showed significant differences between the youth in terms of appraisals of the probability of danger, $t_{(49)} = 3.35, p < 0.01$, Cohen’s $d = 0.94$, and severity of danger, $t_{(49)} = 2.79 p < 0.01$, Cohen’s $d = 0.77$ associated with children’s threat appraisals. Specifically, youth with BII ($M = 5.25; SD = 1.51$) rated their threat appraisal as significantly more likely to occur than those with a dog phobia ($M = 3.83; SD = 1.51$), and also rated the consequences ($M = 6.31; SD = 1.23$) of their threat appraisal as more severe ($M = 5.16; SD = 1.71$). However, significant differences were not observed between youth with BII ($M = 2.10; SD = 2.03$) and youth with dog phobia ($M = 2.46; SD = 1.75$) in their coping estimates.

The most common focus of fear across the phobia subtypes was that of harm and danger (refer Table 5.4). This category was endorsed by all youth (100%), followed by a fear of other internal sensations associated with experiencing fear and disgust (27.5%), a fear of physical symptoms including fainting, vomiting, dizziness and shortness of breath (15.7%) and finally a fear of being trapped, which was only reported by one adolescent (2%). Chi square analyses revealed that youth in the BII phobia group were significantly more likely to be concerned about physical symptoms in comparison to youth with dog phobia (Fisher’s exact test, $p < 0.01$). The phobic groups did not differ in relation to the other focus of fear categories.

<table>
<thead>
<tr>
<th>Focus of Fear</th>
<th>BII ($n = 27$)</th>
<th>Dog ($n = 24$)</th>
<th>$\chi^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear of danger/harm</td>
<td>27 (100%)</td>
<td>24 (100%)</td>
<td>-</td>
<td>1.0</td>
</tr>
<tr>
<td>Fear of being trapped</td>
<td>1 (3.7%)</td>
<td>0 (0%)</td>
<td>-</td>
<td>1.0</td>
</tr>
<tr>
<td>Fear of physical symptoms</td>
<td>8 (29.6%)</td>
<td>0 (0%)</td>
<td>-</td>
<td>&lt;.01**</td>
</tr>
</tbody>
</table>
Fear of other internal sensations

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>1.0</th>
<th>0.32</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9 (33.3%)</td>
<td>5 (20.8%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05; **p < .01

5.4.6 Disgust

Independent groups *t* tests found no significant differences between the groups in relation to child rated disgust, *t*(47) = -1.24, *p* = 0.22, Cohen’s *d* = -0.35, or parent rated disgust sensitivity, *t*(47) = 0.44, *p* = 0.66, Cohen’s *d* = 0.13.

5.5 Discussion

The present study aimed to examine the psychological characteristics of BII phobia in youth, to determine the unique and shared clinical features of this phobia subtype, relative to animal phobia subtype (i.e., dog phobia) one of the most commonly diagnosed and well characterised phobia subtypes in youth. Findings revealed important differences between the subtypes. As expected, youth with BII phobia were rated by clinicians as having greater diagnostic severity and also rated by children and their parents as experiencing greater interference in relation to family life, schooling, peer relationships and personal distress than children and adolescents with animal phobia. Moreover, youth with BII phobia differed from those with animal phobia in that they were more likely to have a co-occurring diagnosis of GAD and physical health conditions. As predicted, youth with BII phobia reported more exaggerated danger expectancies, and their fear more often focused on physical symptoms (e.g., faintness and nausea) in comparison to youth with animal phobia.

Of note, five youth in the BII phobia group reported a history of fainting in the presence of their feared stimuli, while a further five reported a history of vomiting. By contrast there were no youth in the animal phobia group who had a history of fainting or vomiting in the presence of their feared stimuli. Whilst this difference was notable, it was not
significantly different which may in part be due to the small sample size. Research is needed with larger samples of BII phobic children and adolescents, to confirm whether fainting and vomiting are a unique feature of child and adolescent BII phobia, as they appear to be here. Family history of the same fear was found to be similar across BII and animal phobia. Moreover, youth did not differ in terms of their overall functioning or quality of life. Beyond comorbid diagnoses, there were no significant differences between the phobia subtypes in relation to comorbid anxiety, depressive, fearfulness and externalising symptoms. Of note however, floor effects were observed with means consistently within normative ranges on these associated measures. Similar patterns of responding on self-report questionnaires have been observed across other phobia studies in youth (Ollendick et al., 2009; Öst et al., 2001) and may account for the failure to find differences between the subtypes. Youth with both phobia subtypes reported similar estimates of coping.

An interesting yet unexpected finding was that youth with dog phobia reported heightened disgust, not dissimilar in levels to youth with BII phobia. In regards to the magnitude of disgust being reported by both groups in the current study, comparisons with other published data suggest that levels of disgust were elevated relative to non-clinical adult samples (approximately two standard deviations above the mean), and moreover, in line with levels of disgust reported by adults with clinical BII and spider phobia (i.e., within one standard deviation of the mean reported by Sawchuk et al., 2000). These heightened levels of disgust were however not different to those reported in previously published data with non-selected community control youth (aged 8 to 12 years; Muris et al., 2012). Of interest, in both our data and that of non-selected community youth (Muris et al., 2012), variability in self-reported disgust was great, suggesting substantial individual variance in the experience of disgust among child and adolescent samples. Further research with well-defined non-clinical samples, as well as other phobia subtypes, may improve our understanding of the nature of
disgust sensitivity among youth with and without specific subtypes of phobia. Moreover, alternative methods of assessment (e.g., physiological measures such as heart rate or facial electromyography) may further clarify the nature of disgust experiences for youth with BII and/or animal phobia.

Taken together these findings suggest that BII phobia among children and adolescents is a severe and complex disorder, which is associated with significant interference in children’s lives. Given that BII phobic youth may be more severely impaired and have more exaggerated danger expectancies, in comparison to other phobia types, these youth may be less motivated to engage in intensive CBT, the current treatment of choice for phobic youth (Ollendick & Davis, 2013). Individualised approaches to treatment for these BII phobic children and adolescents may be enhanced by targeted and focused treatment addressing exaggerated danger expectancies and addressing fears of physical symptoms, such as feelings of faintness and nausea. Indeed, normalising these experiences for youth with BII phobia may be one small step to a disorder specific approach to treatment. Moreover, additional treatment modules, aimed at addressing comorbid GAD symptoms, may also beneficial.

The current study has a number of strengths including the use of multi-informant (e.g., clinician, parent and child) and multimodal (e.g., diagnostic interview and self-report measures) assessments. Moreover, youth included in the study were well characterised with either primary BII or animal phobia. The sample was age and gender matched, and youth were excluded from analyses if they meet diagnostic criteria for both phobia subtypes. The present study is however, not without limitations. Most notably, the sample sizes were relatively small and limited to BII and dog phobia. Future studies should include larger samples of youth with a diverse range of specific phobia. Existing research has demonstrated that youth with natural environment phobia, who experience greater somatic symptoms, are more likely to present with other comorbid conditions and have a poorer quality of life than
those with animal phobia (Ollendick, Raishevich, et al., 2010). In the adult literature, both BII phobia and situational phobia appear to be associated with greater impairment than other phobia subtypes (Depla et al., 2008). Hence, it would be of interest to compare youth with BII phobia to these other phobia subtypes to determine if differences are present. Moreover, the present sample consisted of largely Caucasian youth with the exception of two children in the BII group who were of Asian heritage. It is unknown whether the present findings could be generalised to other cultural and racial/ethnic groups.

Despite these limitations, the present study makes a valuable contribution to the literature in that it is the first study to systematically examine the psychological characteristics of BII phobia in youth. BII phobia in children and adolescents is a severe and debilitating disorder that is associated with a complex clinical presentation. As speculated within the existing child phobia literature (Ollendick et al., 2009; Öst et al., 2001), these youth appear to have a distinct clinical phenomenology which may require a modified treatment approach to maximise their treatment outcomes. Further research is warranted to improve outcomes for this group of severely impaired phobic youth.
Acknowledgements

This research was supported by a Griffith University Areas of Strategic Investment in Chronic Disease Prevention Grant and the Griffith University Behavioural Basis of Health, Menzies Health Institute.


223


Varni, J. W., Seid, M., & Kurtin, P. S. (2001). PedsQL 4.0: reliability and validity of the Pediatric Quality of Life Inventory version 4.0 generic core scales in healthy and patient populations. *Med Care, 39*(8), 800-812.


5.7 Chapter 5 Relevant Appendices

The following Appendices are relevant to Chapter 5, but have not been referred in text as it has been submitted for publication.

Appendix A Ethics Approval from Griffith University
Appendix B Information and Consent Form for BII Phobic Youth
Appendix C Information and Consent Form for Animal Phobic Youth
Appendix D Telephone Screen
Appendix E Demographic Questionnaire BII and Animal Phobia
Appendix F Composite Clinician Diagnoses and CGI
Appendix G Clinician Global Assessment Scale (CGAS)
Appendix H Spence Children’s Anxiety Scale - Child Version (SCAS-C)
Appendix I Spence Children’s Anxiety Scale - Parent Version (SCAS-P)
Appendix J Short Mood and Feelings Questionnaire - Parent Version (SMFQ-P)
Appendix K Short Mood and Feelings Questionnaire - Child Version (SMFQ-C)
Appendix L Fear Survey Schedule for Children Revised - Child Version (FSSC-R)
Appendix M Fear Survey Schedule for Children Revised - Parent Version (FSSC-R)
Appendix N Disgust Emotion Scale for Children – Child Version (DES-C)
Appendix O Disgust Emotion Scale for Children – Parent Version (DES-C)
Appendix R Functional Analysis Guide- BII
Appendix S Functional Analysis Guide- Animals/Objects
Chapter 6  One Session Treatment for Paediatric Blood-Injection-Injury Phobia: A controlled multiple baseline trial

This chapter includes a co-authored paper which is currently “Under Review”. The bibliographic details of the paper are:


My contribution to the paper involved: initial concept and review design; literature search and review of relevant research; data collection and data analysis; and manuscript preparation.

Dr Ella Oar  12/06/15
Dr Lara Farrell  12/06/15
Dr Allison Waters  11/06/15
Dr Elizabeth Conlon  12/06/15
Dr Thomas Ollendick 10/06/15
One Session Treatment for Pediatric Blood-Injection-Injury Phobia:

A controlled multiple baseline trial

Ella L. Oar (DPsychClin) a

Lara J. Farrell (PhD) a

Allison M. Waters (PhD) b

Elizabeth G. Conlon (PhD) a

Thomas H. Ollendick (PhD) c

Author affiliations:

a School of Applied Psychology and Menzies Health Institute QLD, Griffith University, Gold Coast Campus, Southport, QLD, Australia, 4222
b School of Applied Psychology, and Menzies Health Institute QLD, Griffith University, Mount Gravatt Campus, Mount Gravatt, QLD, Australia, 4122
c Child Study Centre, Department of Psychology, Virginia Polytechnic Institute and State University, Blacksburg, VA, USA, 24060

Corresponding author:

Ella L. Oar; School of Applied Psychology, Behavioural Basis of Health and Griffith Health Institute, Griffith University, Gold Coast Campus, Southport, QLD, Australia, 4222

TEL: +61 7 5678 8224, FAX: +61 7 5678 8291 Email: e.oar@griffith.edu.au
Highlights

- A controlled multiple baseline trial evaluated the effectiveness of an OST for BII phobia in youth.
- BII symptoms remained stable during baseline and then improved following the intervention.
- Treatment response was supported by changes across child, parent and clinician ratings.
- At 1-month follow-up 14 (58.33%) of the 24 youth were diagnosis free.
- Treatment gains were maintained with 15 (62.5%) of 24 youth diagnosis free at 3-month follow-up.
6.1 Abstract

The present study evaluated the effectiveness of a modified One Session Treatment (OST), which included an e-therapy homework maintenance program over 4 weeks for Blood-Injection-Injury (BII) phobia in children and adolescents. Using a single case, non-concurrent multiple-baseline design, 24 children and adolescents (8-18 years; 7 males, 17 females) with a primary diagnosis of BII phobia were randomly assigned to a one, two or three week baseline prior to receiving OST. Primary outcome measures included diagnostic severity, diagnostic status, and child and parent fear ratings. Secondary outcome measures included avoidance during behavioural avoidance tasks (BAT), global functioning and self and parent reported anxiety, fear and depression. Efficacy was assessed at post-treatment, 1-month, and 3-month follow-up. BII symptoms and diagnostic severity remained relatively stable during the baseline periods and then significantly improved following implementation of the intervention. Treatment response was supported by changes across multiple measures, including child, parent and independent clinician ratings. At post-treatment 8 of the 24 (33.33%) children were BII diagnosis free. Treatment gains improved at follow-ups with 14 (58.33%) children diagnosis free at 1-month follow-up and 15 (62.5%) diagnosis free at 3-month follow-up. Preliminary findings support the effectiveness of a modified OST approach for BII phobic youth with treatment outcomes improving over follow-up intervals.

Keywords: Blood phobia, Injection phobia, BII, children, intensive treatment
6.2 Introduction

Blood-Injection-Injury (BII) phobia is a severe and debilitating condition, characterised by fear and avoidance of seeing blood, receiving an injection or other invasive medical procedure, or being injured (American Psychiatric Association (APA), 2013). It occurs in as many as 0.8% to 1.3% of children and adolescents and 3 to 4% of adults (Burstein et al., 2012; Curtis et al., 1998; Depla et al., 2008; Essau et al., 2000; Kim et al., 2010) and is associated with serious health consequences. For example, adults with BII phobia report avoiding routine medical check-ups; seeing a physician; having operations; receiving medical treatment for diagnosed illnesses (e.g. asthma, diabetes and heart failure); and dental treatment (Öst & Hellström, 1997). Moreover, they may avoid certain career paths (e.g., nursing, medicine), travel for fear of receiving necessary vaccinations, and becoming pregnant (Öst et al., 1992). BII is thought to be distinct from the other phobia types in that it is associated with a stronger genetic vulnerability (Van Houtem et al., 2013) and a unique physiological (e.g., fainting) and emotional response (e.g., disgust; Olatunji, Cisler, et al., 2010).

In adults with BII, behavioural and cognitive-behavioural treatments have received empirical support with five-controlled treatment trials conducted to date (Hellström et al., 1996; Öst, Fellenius, et al., 1991; Öst et al., 1992; Öst, Lindahl, et al., 1984; Öst et al., 1989). As is evident, these trials were conducted solely by Öst and colleagues in Sweden and included the evaluation of a range of behavioral interventions including; massed or spaced exposure (e.g., confrontation of feared object or situation in a controlled manner, for a prolonged period of time), applied tension (e.g., brief tension of arms, legs and torso muscles, followed by release, not relaxation, of the muscles and implemented during exposure to BII stimuli, tension only (e.g., tension technique the same as that used in applied tension;
however, patients are not exposed to BII stimuli), applied relaxation (e.g., progressive muscle relaxation in the context of exposure to BII stimuli, and a combination of applied tension and relaxation) (Ayala et al., 2009; Öst, Lindahl, et al., 1984; Öst et al., 1989). In their systematic review of treatments for BII, Ayala and colleagues (2009) concluded that regardless of type of intervention (e.g., exposure, applied tension), treatment was equivalent, with 70 to 80% of patients responding. Despite expectations that applied tension might be associated with greater benefits given the unique physiological response associated with BII (Ayala et al., 2009), there was limited evidence for the additional effects of applied tension above and beyond exposure alone. In contrast, BII phobia has been neglected in the child and adolescent literature and no controlled studies have been conducted to date.

For youth with specific phobia, an intensive cognitive behaviour therapy (CBT) called One Session Treatment (OST) is considered a first line treatment (Ollendick & Davis, 2013). OST incorporates in vivo exposure, cognitive challenges, participant modelling, reinforced practice and psychoeducation in a single session maximised to 3 hours. Empirical support for OST has been demonstrated in 10 studies, including three large randomised controlled trials (RCT; Ollendick et al., 2015; Ollendick et al., 2009; Öst et al., 2001) and seven smaller clinical trials (Farrell, Waters, Milliner, Zimmer-Gembeck, et al., 2013; Flatt & King, 2010; Leutgeb et al., 2012; Leutgeb & Schienle, 2012; Muris et al., 1998; Muris et al., 1997; Waters, Farrell, et al., 2014) for a diverse range of specific phobia subtypes in youth, including animal (e.g., dog, cat, spider), natural environment (e.g., dark, water, heights), situational (e.g., lifts) and other (e.g., vomit, loud noises). In these studies, OST has been found to be superior to a waitlist control (Flatt & King, 2010; Ollendick et al., 2009; Öst et al., 2001), psychological placebo (Ollendick et al., 2009) and Eye Movement Desensitization and Reprocessing (EMDR) therapy (Muris et al., 1998; Muris et al., 1997). Although OST is effective for most phobic youth (50 to 80% diagnosis free), there still remain a significant
proportion of children who only partially respond or do not respond to this treatment (Ollendick & Davis, 2013). Moreover, BII has rarely been examined in these studies.

In their RCT ($n = 60$) for phobic youth, Öst et al. (2001) included 12 youth with injection phobias and 2 with blood phobias. Overall, these youth were found to respond significantly less well to treatment than youth with other types of phobia based on a post-assessment behavioural approach task. These children reportedly had difficulty differentiating the therapist from other health professionals (e.g., doctor, nurse) who they associated with previous anxiety provoking experiences, and as such, were less likely to engage in therapist assisted exposure tasks. Flatt and King (2010) also included a small number (6 participants) of youth with BII phobias; however, they did not examine differences in treatment outcome across the different types of phobia. Ollendick and colleagues (2015; 2009) specifically excluded youth with BII phobias for various reasons, including poorer treatment response in Öst et al. (2001); unique physiological response (e.g., fainting); and the complexity associated with delivering treatment to these youth (i.e., need for medical professionals).

In a recent paper, Oar, Farrell, and Ollendick (Submitted) described the development of a modified OST approach to enhance treatment outcome for BII phobia in children and adolescents and its use with two youth. The youth received individualised, case-formulation driven OST. The cases highlighted the unique challenges associated with treating BII in youth. Modifications included addressing the role of pain (e.g., psychoeducation, more graduated exposure steps), disgust (e.g., disgust eliciting exposure tasks), and fainting in the maintenance of children’s phobia. Moreover, it was recommended that parents be more actively involved throughout treatment (e.g., education session prior to OST, contingency management training, guidance regarding planning exposure tasks following treatment) and for families to participate in a structured maintenance program post-treatment.
The aim of the current study was to examine the efficacy of this modified OST in a multiple baseline controlled trial in youth (8-18 years) with a primary diagnosis of BII, who were randomly assigned to a 1-week, 2-week or 3-week baseline. This design allows for the evaluation of the efficacy of novel interventions in a controlled manner (Jarrett & Ollendick, 2012). Single case designs are endorsed by the evidence-based treatment movement (Task Force on Promotion and Dissemination, 1995) and are considered an important initial step in examining the efficacy of novel treatments. It was expected that BII symptoms and diagnostic status would remain stable during the baseline periods and then significantly improve following modified OST. Moreover, it was predicted that significant reductions would be observed from pre- to post-treatment on clinician severity ratings (CSR), diagnostic status, global functioning, behavioural avoidance during a behavioural avoidance tasks (BAT), self-reported anxiety, fearfulness and depression. Finally, it was expected that modified OST would be acceptable to families and that treatment gains would be maintained at 1- and 3-month follow-ups.

6.3 Method

6.3.1 Participants

Children and their parents were recruited through referrals from paediatricians, general health practitioners and other health professionals, and via advertising in school newsletters. Youth had to be between 8 and 18 years and meet criteria for a primary diagnosis of BII phobia according to the DSM-V. Comorbidity with other internalising and externalising disorders was permissible provided they were secondary diagnoses, or co-primary with BII. Children and adolescents were required to have at least one parent available to attend all assessment and treatment appointments. Children on psychotropic medications were required to be stabilised on their current dose for at least 6 weeks prior to entering the
trial. There were no medication changes throughout the study. Eligible families agreed to be randomly assigned to a baseline period of up to 3 weeks prior to treatment and to cease any concurrent psychological therapy from the time of their enrolment into the trial until the 3-month follow-up assessment, unless clinically required. Youth were excluded if they had a diagnosis of an Autistic Spectrum Disorder or Intellectual Impairment, reported psychotic symptoms or reported serious suicidal ideation.

Forty-seven families contacted the research team and completed an initial telephone screen. Twenty-four children and adolescents (8-18 years; 29.20% males, $M = 10.86$, $SD = 2.41$; 70.80% females, $M = 12.12$, $SD = 3.41$) participated in the trial, which was approved by the Griffith University Human Research and Ethics Committee (refer Table 6.1). Of those youth, 54.17% ($n = 13$) presented with injection phobia only, and 45.83% ($n = 11$) presented with combined BII phobia. Five children (20.80%) reported a history of vomiting when confronted with their feared stimuli, while a further 4 (16.70%) children reported a history of fainting in the presence of their feared stimuli. Seven children (25%) experienced significant physical health problems including Type 1 diabetes, chronic asthma, anaphylaxis, cerebrovascular disease and other conditions. Youth were primarily Caucasian ($n = 23$; 95.83%) and from two parent households ($n = 14$; 58.30%).
### Table 6.1  
**Participant Characteristics**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>Range = 8-18 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>Males</td>
<td>29.2%</td>
<td>(n = 7)</td>
</tr>
<tr>
<td></td>
<td>Females</td>
<td>70.8%</td>
<td>(n = 17)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td>Caucasian</td>
<td>95.83%</td>
<td>(n = 23)</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>4.17%</td>
<td>(n = 1)</td>
</tr>
<tr>
<td><strong>Type of BII Phobia</strong></td>
<td>Injection</td>
<td>54.17%</td>
<td>(n = 1)</td>
</tr>
<tr>
<td></td>
<td>Blood, Injury and Injection</td>
<td>45.83%</td>
<td>(n = 1)</td>
</tr>
<tr>
<td><strong>Physiological Response BII Stimuli</strong></td>
<td>Vomiting</td>
<td>20.8%</td>
<td>(n = 5)</td>
</tr>
<tr>
<td></td>
<td>Fainting</td>
<td>16.7%</td>
<td>(n = 4)</td>
</tr>
<tr>
<td><strong>Physical Health Conditions</strong></td>
<td>Asthma (n = 3), Diabetes (n = 1), Cerebrovascular disease (n = 1), Anaphylaxis(n = 2) &amp; Other conditions (n = 2)</td>
<td>29.17%</td>
<td>(n = 7)</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td>Two parent households</td>
<td>58.3%</td>
<td>(n = 14)</td>
</tr>
<tr>
<td><strong>Parent Tertiary Education</strong></td>
<td>Mother</td>
<td>79.2%</td>
<td>(n = 17)</td>
</tr>
<tr>
<td></td>
<td>Father</td>
<td>70.8%</td>
<td>(n = 19)</td>
</tr>
<tr>
<td><strong>Family Income</strong></td>
<td>Above 80,000</td>
<td>62.5%</td>
<td>(n = 15)</td>
</tr>
<tr>
<td></td>
<td>Range = $30 000 to &gt;$100,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Family History of Fainting when confronted with BII stimuli (Parent Report)</strong></td>
<td></td>
<td>41.67%</td>
<td>(n = 10)</td>
</tr>
<tr>
<td><strong>Family History of BII related fear/phobia (Parent Report)</strong></td>
<td></td>
<td>33.33%</td>
<td>(n = 8)</td>
</tr>
</tbody>
</table>
Most parents had a tertiary level education (mothers = 79.20% and fathers 70.80%) and combined income above $80,000 ($n = 15$, 62.50%; Range = $30,000 to >$100,000). On average children met criteria for 2.71 diagnoses including BII. Nineteen children (79.20%) had a secondary comorbid diagnosis, 15 children (62.50%) a tertiary diagnosis, and 6 children (25%) had four or more diagnoses. Comorbid diagnoses included generalised anxiety disorder (GAD), other types of specific phobia, social phobia (SoP), separation anxiety disorder (SAD), post traumatic stress disorder (PTSD), major depressive disorder (MDD), attention deficit hyperactivity disorder (ADHD) and oppositional defiant disorder (ODD). Ten of the 24 children (41.67%) were reported to have a family member (e.g., mother, father, sibling, grandfather) with a history of fainting when confronted with BII related stimuli. Parents of eight children (33.33%; 6 mothers and 2 fathers) reported currently being fearful of BII related stimuli.

6.3.2 Design

The present study evaluated the effectiveness of a modified OST for BII in youth using a single case, non-concurrent multiple baseline design (Hayes, Barlow, & Nelson-Gray, 1999; Kazdin, 1998). This involved a series of AB replications with participants randomly assigned to one of three baseline periods–1 week ($n = 8$), 2 weeks ($n = 9$) or 3 weeks ($n = 7$), using a computer-generated list of randomly permuted blocks.

6.3.3 Measures

Anxiety Disorders Interview Schedule for DSM-IV, Child and Parent Versions (ADIS-IV-C/P; Silverman & Albano, 1996). The ADIS-IV is a semi structured diagnostic interview assessing DSM-IV anxiety, mood and other disorders in children and adolescents aged 6 to 17 years. Diagnoses assigned a CSR of four or above, on a 0 (not present) to 8 (very severe)
scale, are considered clinically significant (Silverman & Albano, 1996). The ADIS-IV has well-established psychometric properties, with high levels of inter-rater and test-retest reliability (Silverman et al., 2001). Telephone administration of the ADIS-C/P has been found to be as reliable as in person delivery (Lyneham & Rapee, 2005). ADIS-C/P interviews were conducted either face-to-face or via the telephone by registered clinical psychologists and postgraduate clinicians, who had received training in ADIS-IV administration. Assessments and diagnoses were reviewed in supervision with the first (ELO) and second authors (LJF). Child and parent-derived ADIS-IV diagnoses were compared and in discussion with supervising clinical psychologists a final combined diagnostic profile was determined. The diagnosis with the highest CSR was considered the youth’s primary diagnosis. Independent assessors blind to the child’s initial presentation were used at pre-treatment, post-treatment, 1-month and 3-month follow-up. Prior to treatment and at the 1-month and 3-month follow-ups the full ADIS-C/P was administered. However, at post-treatment only the ADIS modules that were endorsed at pre-treatment were administered. Moreover, the BII related questions on the ADIS-IV Specific Phobia Module were administered to children and their parents during the baseline period and e-therapy sessions (see below) by the family’s assigned therapist to provide weekly phobia data. All ADIS-IV interviews were recorded (voice and videotaped). To assess for inter-rater reliability an independent trained assessor randomly reviewed 20% of the recordings across the time points and showed excellent agreement (primary diagnosis | = 0.89; secondary diagnosis | = .81; tertiary diagnosis | = 1.0). Of note, the ADIS-IV version was utilised to diagnose youth, as at the time of conducting this study the ADIS-V child version was not available. From DSM-IV to DSM-V only small changes were made to the diagnostic criteria for specific phobia. Alterations included adjusting the requirement that people over 18 years must recognise that fear is excessive, and also that the duration
requirement (e.g., typically lasting for 6 months or more) was extended from children to adults. Therefore, the diagnostic assessment is aligned with DSM-V criteria.

Children’s Global Assessment Scale (CGAS; Shaffer et al., 1983). The Children’s Global Assessment Scale (CGAS) is a clinician rated measure of youth’s overall functioning and level of impairment. Scores on the CGAS range from 1 (Needs constant supervision) to 100 (Superior functioning) with higher numbers indicative of higher levels of functioning. Scores 1 to 40 are indicative of serious disability, 41 to 60 moderate levels of impairment, 61 to 80 slight impairment, and 81 to 100 representing a normal and healthy level of functioning. The CGAS has favourable psychometric properties with intra-class correlations estimated at 0.84 for inter-rater reliability and 0.85 for test retest reliability over 6 months (Shaffer et al., 1983).

Idiographic Target Behaviours. Based on discussion of the youth’s symptoms during the initial assessments, children and their parents worked with the therapist prior to commencing treatment to identify three primary target behaviours related to the child’s BII symptoms. Children and their parents rated the child’s level of fear associated with the target behaviour from 0 to 8 (0 = none to 8 = very much). Example target behaviours included watching someone having an injection, holding a test tube filled with blood, or having a finger prick. Fear ratings related to the youth’s three target behaviours were averaged to provide mean child and parent fear ratings.

Spence Children’s Anxiety Scale Child and Parent Versions (SCAS-C/P; Spence, 1998). The SCAS-C/P is a self- and parent-report measure assessing anxiety symptoms in 7 to 18 year old youth. The SCAS-C consists of 44 items and one open ended (non-scored) item. For each item the child is asked to indicate which response best describes them (e.g., I am scared of going to the doctor or dentist) on a 4-point Likert scale ranging from 0 (Never True) to 3 (Always True). The SCAS-P consists of 38 items and one open ended (non-scored) item.
For each item (e.g., My child is scared of the dark) parents indicate which response best describes their child on a 4-point scale ranging from 0 (Never True) to 3 (Always True). The SCAS-C/P yields a total score and six subscale scores, which are consist with DSM-IV-TR diagnostic criteria. The SCAS-C/P has well-established reliability (e.g., Cronbach’s alpha coefficients for the total score of SCAS-C/P ranging from 0.89 to 0.92) and validity and has nationally representative norms (Nauta et al., 2004; Spence, 1998).

*Short Mood and Feelings Questionnaire Child and Parent Version (SMFQ-C/P; Angold et al., 1995).* The SMFQ-C/P is a 13-item self-report measure designed to assess depressive symptoms in children and adolescents aged 8 to 18 years. The SMFQ-C asks youth to rate a number of statements about how they have been feeling and behaving (e.g. I felt miserable and unhappy) over the past 2 weeks from 0 (Not True), 1 (Sometimes True) to 2 (Always True). Similarly, the SMFQ-P asks parents to rate how their child has been feeling and behaving (e.g., My child felt miserable and unhappy) over the past 2 weeks from 0 (Not True), 1 (Sometimes True) to 2 (Always True). The SMFQ-C/P yields a total score with a score of 8 or more considered clinically significant (Angold et al., 1995). The SMFQ-C/P has strong psychometric properties including good internal reliability (Cronbach’s $\alpha = 0.85$ for the SMFQ-C and 0.87 for the SMFQ-P)(Angold et al., 1995).

*Fear Survey Schedule for Children Revised Child and Parent Version (FSSC-R; Ollendick, 1983).* The FSSC-R is a self-report measure designed to assess fearfulness in children and adolescents aged 7 to 16 years. The measure requires youth to rate their fearfulness of 80 specific objects and situations on a 3-point Likert scale (0 = None, 1 = Some, 2 = A lot). The parent version of the FSSC-R asks parents to rate their child’s fearfulness of the same 80 specific objects and situations and uses an identical rating scale and scoring system (Weems et al., 1999). The FSSC-R yields a total score and five factor scores including fear of the unknown, fear of failure and criticism, fear of minor injury and small animals, fear
of danger and death, and medical fears. The FSSC-R has well-established reliability and validity and provides norms for youth of various ages and nationalities (Ollendick, 1983; Ollendick, King, & Frary, 1989). The FSSC-R has excellent internal consistency with Cronbach’s alpha for the total fearfulness score consistently reported to be above 0.90 (Ollendick, 1983).

**Behavioural Avoidance Tasks (BAT).** Children and adolescents completed two BATs. One BAT examined response to video BII stimuli and the other to live BII stimuli. The BII video BAT required children to watch a 5-minute video of people having blood tests and injections; the BII live BAT asked children to be prepared by a nurse for a blood test. Youth were instructed that the task was designed to elicit a moderate level of anxiety/discomfort. They were advised that the task would take 5 minutes and that they were not to perform any avoidance behaviours (e.g., covering their eyes or ears). The youth were encouraged to stay engaged in the task for as long as possible; however, they were also informed that if the task became too anxiety provoking they could terminate the task (e.g., video paused, the nurse to sit in the corner of the BAT room) whereby the child would remain seated in the BAT room for the remainder of the 5 minutes. The child’s level of avoidance during the BAT was assessed. Avoidance was rated by the clinician from 0 to 4 (0 = No avoidance - Stayed engaged in task for the entire 5 minutes, 1 = Minimal avoidance - Stayed engaged in task for the entire 5 minutes with minimal avoidance, e.g., looking away < 20 seconds, 2 = Moderate avoidance - Stayed engaged in task for the entire 5 minutes with some avoidance i.e. looking away > 20 seconds, 3 = High avoidance – Terminated that task before 3 minutes of time had elapsed and 4 = Complete avoidance - Terminated the task less than 1 minute after time commenced).

*Homework compliance (Park et al., 2014).* Homework compliance ratings were obtained at the beginning of each e-therapy maintenance session. Children and parents rated
their compliance with assigned tasks on a 7-point Likert scale ranging from 0 (*Did not complete any assigned homework*) to 6 (*Completed all homework and made efforts above and beyond assignments*). A mean homework compliance rating was calculated for each child and parent over the 4 weeks.

*Child and Parent Treatment Satisfaction (CTS, PTS; Ollendick et al., 2015).* At 1-month follow-up, children and their parents completed a questionnaire assessing their satisfaction with treatment. Both the CTS and PTS consist of 3 items rated on a 5-point Likert scale. Child items included “Overall, my treatment was helpful”, “My treatment helped me to cope better with my fear/ phobia?” and “I would recommend this treatment to a friend who had similar fears/phobias”. Parent items included “After completing their treatment my child is better able to cope with their fears/ phobia”, “Overall, my child’s treatment helped and was effective” and “I would recommend this treatment to a friend whose child had a similar problem”. The CTS and PTS each yield total scores ranging from 0 to 15, with higher scores indicating greater treatment satisfaction. The measures also had a small number of open-ended questions which asked children and parents to rate the elements of treatment they found the most or least helpful and the acceptability of the intensive format. This measure was previously used by Ollendick et al. (2015) and has sound internal consistency (Cronbach’s alpha ranging from 0.65 to 0.94).

### 6.3.4 Procedure

*Pre-treatment.* Parents or caregivers completed an initial screen during a 15-minute telephone interview to assess their child’s eligibility (refer Figure 6.1). If the child was suitable, the parent was emailed study information and consent forms and an appointment was scheduled to complete a diagnostic interview (e.g., ADIS-IV-P) over the telephone. Parents returned their signed consent forms via email.
Following the parent diagnostic interview, youth deemed appropriate completed the ADIS-IV-C and online self-report questionnaires at the Griffith University Psychology Clinic. Next, assessors reviewed diagnostic profiles with the supervising clinical psychologist in order to determine a final combined consensus diagnosis and CGAS score, and eligibility to proceed to the next stage of the study.

One week later, youth participated in a second assessment session during which they completed the two BATs (see above). Youth were randomised to the order with which they completed the BATs. To minimise interference from one BAT to the next, youth completed an alternative task (e.g., read a picture book or magazine) in between each BAT for a minimum of 15 minutes. Following the BAT, the treatment rationale was explained to the family and the child was randomly assigned to one of three baseline conditions (e.g., 1 week, 2 weeks or 3 weeks).

**Baseline.** On a weekly basis during the baseline period, youth and parents completed telephone-administered BII related questions from the ADIS-IV Specific Phobia Module and rated the youths’ target behaviours.

**Parent and Child Education Session.** Children and parents attended a one-hour education session in the week following completion of their baseline period. They received psychoeducation about BII and the child’s phobic response, and CBT-based OST for specific phobia with a focus on the principles of exposure therapy. With the assistance of the therapist the child and parent developed an example exposure hierarchy and discussed ideas for BII exposure tasks and how to prepare for these tasks (e.g., purchase ingredients to make fake blood). Parents were also taught contingency management strategies in order to reward their child for their exposure practice.

**One Session Treatment.** One week after their education session, children and adolescents completed the modified OST for BII phobia (Oar, Farrell, & Ollendick,
The treatment session involved 3 hours of graduated exposure therapy along with cognitive challenges, participant modelling, reinforced practice and psychoeducation and skills training. Youth completed a range of exposure tasks to gradually confront BII stimuli. Example tasks included watching videos of blood tests, injections, or other medical procedures; making fake blood; dry needling (e.g., acupuncture); finger pricks and observing the therapist have a blood test (with the latter administered by registered physiotherapists and nurses). In order to standardise treatment, the goal for all OST treatments was for youth to have a finger prick and blood test either within their intensive session or by the conclusion of their e-therapy maintenance program (see below). To assist in generalisation and to prevent relapse, exposure tasks were repeated multiple times and carried out across multiple contexts (e.g., psychology clinic, medical centre; Chelonis, Calton, Hart, & Schachtman, 1999; Gunther, Denniston, & Miller, 1998).

OST sessions varied from child to child as the therapist proceeded at the child’s pace and adjusted the approach based on the child’s response to various exposure tasks (e.g., fear level and behaviour). At least 3 phobic objects or situations were introduced over the course of the session (e.g., dry needling, finger pricks and blood test).

Given the ambiguous findings regarding the benefits of applied tension, above and beyond exposure therapy alone, the present study did not use applied tension (e.g., 10 to 20 seconds of tensing muscles, followed by 20 to 30 seconds of release). However, if a child’s symptoms of fainting or nausea/vomiting were interfering with their ability to engage in exposure, the session was paused momentarily (i.e., 10 minutes) and the child was encouraged to use other adaptive strategies (e.g., wiggle toes, take some slow breaths, have a drink, splash water on their face, sit or lie with his or her feet up) to cope with these physical symptoms, in order for child to be able to progress with exposure. Once children recovered, they were encouraged to re-engage in a slightly easier exposure task (see Oar, Farrell, &
Parent Involvement in Treatment. Given that anxiety disorders tend to run in families, and this may especially be the case for BII phobia (Van Houtem et al., 2013), parents were actively involved in the education session, at the end of their child’s OST, and during all e-therapy maintenance sessions. At the conclusion of the OST, children and parents briefly reviewed progress made during the session and were reminded to schedule exposure tasks at home to continue progress and prevent relapse. Following this, the therapist and family determined four exposure tasks for the child to practice over the coming week. The education session provided an opportunity to teach parents contingency management strategies. Moreover, having parents involved at the conclusion of OST session and during the e-therapy maintenance program gave them the opportunity to observe the therapist model appropriate responses to their child’s anxious behaviour.

E-therapy Maintenance Program. After their OST, families completed a 4-week e-therapy maintenance program. The child’s therapist used Skype to video call the family once a week (approximately 45 minutes per call). At the commencement of each session, children and parents completed the BII related questions on the ADIS-IV Specific Phobia Module and rated the child’s target behaviours. Next, the therapist, child and parents reviewed progress with exposure practice that week, rated their homework compliance, and then problem-solved any difficulties. At the conclusion of each e-therapy session, the family and therapist collaboratively decided upon four exposure tasks the youth would practice the following week. Example tasks included, schedule an appointment with the family’s general practitioner to discuss possible vaccinations, make fake blood and visit a physiotherapist for dry needling (e.g., acupuncture). Parents were encouraged to reward their child for completing the tasks.
During the final e-therapy session relapse prevention was discussed with families and the importance of continued exposure practice to ensure long term treatment gains were maintained. A small number of youth \((n = 4)\), who had not been engaging in exposure practice, were encouraged by their therapist to complete an exposure task (e.g., have a finger prick) during the e-therapy sessions in order to provide an opportunity for continued exposure.

*Post-Treatment, 1-Month and 3-Month Follow-Up Assessments.* One week after OST (i.e., prior to e-therapy), parents and children completed a brief assessment via Skype. Parents and children were administered the Specific Phobia module of the ADIS-IV-P/C and rated their idiographic target behaviours. At 1-month follow-up (i.e., after e-therapy), parents and children returned to the GU Psychology clinic and completed a comprehensive assessment including diagnostic interviews (e.g., ADIS-IV-C/P), fear ratings associated with their idiographic target behaviours and BATs. Online self-report questionnaires were completed by children and parents at home. At 3-month follow-up diagnostic interviews and idiographic target behaviours were readministered via Skype.
Figure 6.1  Flow of participants through the study
Treatment Adherence. The majority of the treatments were carried out by the first author (ELO), a registered clinical psychologist, who completed 4 months of training in OST with the fifth author (THO). Two postgraduate clinicians assisted with five of the treatments under the supervision of the first and second authors (ELO & LJF). Postgraduate clinicians were provided with training in the treatment protocol by the first author (ELO). Postgraduate clinicians were required to observe at least two complete treatments conducted by the first author and to have the first author observe their first OST. To ensure standardisation all OST sessions were supervised by the second author (LJF). Two nurses and two physiotherapists assisted with treatment sessions and met with the first author and were provided with training regarding their role in the OST. Attempts were made to video record treatment sessions; however, as the majority of the sessions were conducted outside of the psychology clinic (e.g., physiotherapy clinic and medical centre) this was not always possible. Therapists kept a written record of all exposure tasks completed during the child’s OST and home practice assigned during the e-therapy sessions. Following each OST therapist’s rated their perceived adherence and competency in delivering the treatment on a 13-item scale, with each item rated 0 (Not at all) to 6 (Excellent). Example items included “Used modelling during the session”, “Elicited and worked with the child’s catastrophic beliefs” and “Handled difficulties in the exposure procedure”. This measure was developed by Ollendick et al. (2009) and the scores here are presented similarly to Ollendick et al. (2009), where a mean for each item is calculated and the mean range reported. Across the items in the current study, therapists rated their competence and adherence on average between 4.50 and 5.71, which is consistent with the Ollendick et al. (2009) trial.
6.4 Data Analysis

A series of repeated measures ANOVAs were conducted followed by component pairwise comparisons, to examine participant changes over time on the primary (CSR, child and parent fear ratings of target behaviours) and secondary outcome measures (CGAS, SCAS, SMFQ, FSSC-R & BAT). A Reliable Change Index (RCI; Jacobson & Truax, 1991) was calculated to determine whether the magnitude of change in children’s diagnostic severity (CSR) was statistically reliable. An RCI cut-off of 1.96 standard deviation units was used to meet criteria for reliable improvement. Test-retest reliability for the ADIS C/P was obtained from Silverman et al. (2001) for specific phobia. Clinically significant improvement, defined by Jacobson and Truax (1991) as a change of two standard deviations from the pre-treatment mean, was also assessed in relation to diagnostic severity (CSR). Furthermore, a child was considered ‘recovered’ if reliable improvement was obtained based on the RCI and if their diagnostic status on the ADIS was within the non-clinical range (ADIS, CSR < 4) (Silverman & Albano, 1996). Differences in homework compliance between youth who were recovered and those who were not recovered were also explored at 1-month and 3-month follow-up, in addition to changes to the number of comorbid diagnoses over time.

To further evaluate children’s response to the modified OST approach, single case data were analysed using the robust improvement rate difference (RIRD) technique described by Parker et al. (2011). This technique is used in single case research to describe the difference in improvement rate between the baseline period and treatment. If a lower score on an outcome measure such as the CSR or child and parent fear ratings of target behaviours indicates improvements, any data point in the treatment period, lower than all the data points in the baseline period, is considered improved. If all data points in the baseline period are higher than the data points in the treatment, so there is no overlap between scores across treatment periods, the improvement rate for the treatment is 100%. The improvement rate is
reduced by the extent that data points in the baseline are equal to or lower than any score in
the treatment period, so show evidence of improvement. These scores are overlapping data
points. To remove the overlap between two treatment periods, the minimum number of data
points needed to remove all overlap between periods are removed. The overlapping data
points are divided between the treatment and baseline. For example, if two data points have
been removed from the treatment period, one of these is assigned to the baseline as an
improved data point and one is assigned to the treatment as a not improved data point. The
RIRD is then obtained by subtracting the percentage of improved data points from the
baseline from the percentage of improved data points from the treatment for each child (see
Parker et al., 2011). Child and parent treatment satisfaction was also examined to determine
the acceptability of the modified OST approach.

6.5 Results

6.5.1 Therapy Retention

All 24 children completed the child and parent education session and OST. Twenty-
one of the 24 children completed all e-therapy maintenance sessions. Of the three children
who did not complete the maintenance sessions, one completed the first e-therapy session and
was unavailable until the 3-month follow-up assessment. The other two non-completers
undertook three of the four e-therapy maintenance sessions. All children completed the post-
treatment assessment. Three children were unavailable for the 1-month follow-up and one
child for the 3-month follow-up. Hence, on the primary outcome measures (CSR and child
and parent fear of target behaviours), 1-month and 3-month data were analysed using an
intent to treat approach with the last observation carried forward where missing data were
present (Ollendick et al., 2015; Ollendick et al., 2009; Waters, Farrell, et al., 2014). Children
and their parents completed self- and parent-report measures at pre-treatment and 1-month
follow-up. A significant minority of youth ($n = 8; 33.33\%$) and their parents ($n = 6; 25\%$) failed to complete online questionnaires at home for their 1-month follow-up despite numerous attempts by the authors to collect this data. Due to the small number of responders (e.g., $n = 16; 66.67\%$ youth and $n = 18; 75\%$ parents), completer analyses were conducted for all questionnaire measures.

### 6.5.2 Primary Outcome Measures

To establish the stability of the baseline period, ANOVAs were conducted separately for the 1-week ($n=8$), 2-week ($n=9$) and 3-week ($n=7$) baseline groups. There were no significant differences between baseline groups between pre-treatment and each of the baseline scores (i.e., 1 week, 2 weeks, or 3 weeks) for CSR and child and parent fear ratings associated with children’s ideographic target behaviours (see Figure 6.2). Hence, the baseline groups were collapsed and repeated measures ANOVAs were conducted for the overall sample ($N=24$) using pre and week one baseline data.
Figure 6.2  Mean group scores for CSR, child and parent fear ratings of target behaviours across 1 week ($n = 8$), 2 week ($n = 9$) and 3 week ($n = 7$) baseline
Diagnostic Severity. Significant differences were observed in CSR scores over time \(F(4,92) = 50.13, p < .001, \eta_p^2 = 0.69\) (refer Table 6.2). A significant reduction in CSR was found from pre to post-treatment, \(t(23) = 7.31, p < .001\), pre-treatment to 1-month follow-up, \(t(23) = 7.94, p < .001\), and pre-treatment to 3-month follow-up, \(t(23) = 8.56, p < .001\). In addition, youth’s CSR scores continued to significantly decline from post-treatment to 1 month follow-up, \(t(23) = 2.75, p = .01\), and post-treatment to 3-month follow-up, \(t(23) = 3.30, p < .001\).
Table 6.2  
*Time main effects for treatment outcome measures*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre</th>
<th>Baseline</th>
<th>Post</th>
<th>1-month follow-up</th>
<th>3-month follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSR</td>
<td>6.63 (1.06)</td>
<td>6.63 (1.06)</td>
<td>4.38 (1.47)</td>
<td>3.42 (1.82)</td>
<td>3.21 (1.69)</td>
</tr>
<tr>
<td>Target behaviour – Child Fear rating</td>
<td>6.54 (0.91)</td>
<td>6.88 (0.68)</td>
<td>3.89 (2.36)</td>
<td>3.04 (2.21)</td>
<td>2.96 (2.33)</td>
</tr>
<tr>
<td>Target behaviour – Parent Fear rating</td>
<td>6.92 (0.83)</td>
<td>6.83 (0.96)</td>
<td>4.18 (2.24)</td>
<td>3.81 (1.85)</td>
<td>3.33 (2.40)</td>
</tr>
<tr>
<td>CGAS</td>
<td>60 (6.92)</td>
<td>-</td>
<td>71.67 (11.48)</td>
<td>77.08 (9.32)</td>
<td>79.17 (8.93)</td>
</tr>
<tr>
<td>SCAS-C</td>
<td>22.37 (16.02)</td>
<td>-</td>
<td>-</td>
<td>10.94 (9.52)</td>
<td>-</td>
</tr>
<tr>
<td>SCAS-P</td>
<td>20.89 (12.49)</td>
<td>-</td>
<td>-</td>
<td>10.78 (8.70)</td>
<td>-</td>
</tr>
<tr>
<td>SMFQ-C</td>
<td>3.62 (4.33)</td>
<td>-</td>
<td>-</td>
<td>2.38 (2.96)</td>
<td>-</td>
</tr>
<tr>
<td>SMFQ-P</td>
<td>2.39 (2.30)</td>
<td>-</td>
<td>-</td>
<td>1.11 (2.34)</td>
<td>-</td>
</tr>
<tr>
<td>FSSC-R C</td>
<td>120.38 (29.22)</td>
<td>-</td>
<td>-</td>
<td>98.88 (20.64)</td>
<td>-</td>
</tr>
<tr>
<td>FSSC-R P</td>
<td>123.50 (21.29)</td>
<td>-</td>
<td>-</td>
<td>99.61 (18.93)</td>
<td>-</td>
</tr>
<tr>
<td>Number of Diagnoses</td>
<td>2.71 (1.27)</td>
<td>-</td>
<td>1.08 (0.97)</td>
<td>0.75 (0.90)</td>
<td>0.58 (0.88)</td>
</tr>
<tr>
<td>Avoidance behaviour – Live BAT</td>
<td>1.17 (1.34)</td>
<td>-</td>
<td>-</td>
<td>0.26 (0.69)</td>
<td>-</td>
</tr>
<tr>
<td>Avoidance behaviour – Video BAT</td>
<td>1.58 (1.64)</td>
<td>-</td>
<td>-</td>
<td>0.62 (1.25)</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note. CSR = Combined ADIS-C/P clinician severity rating; Target behaviours = mean fear rating of 3 idiographic target behaviours rated 0 to 8.*
**Idiographic Target Behaviours.** ANOVA for child fear ratings of target behaviours revealed significant effects across time $F(4,92) = 35.25, p < .001, \eta_p^2 = 0.61$ (refer Table 6.2). Significant reductions were observed in children’s fear ratings from pre to post-treatment, $t(23) = 5.45, p < .001$, pre-treatment to 1-month follow-up, $t(23) = 6.55, p < .001$ and pre-treatment to 3-month follow-ups, $t(23) = 6.26, p < .001$. Post-treatment improvement was maintained at 1- and 3-month follow-up.

Analysis of the parent fear ratings of target behaviours also showed significant changes over time $F(4,92) = 43.59, p < .001, \eta_p^2 = 0.66$ (refer Table 6.2). A significant reduction in parent fear ratings was found from pre- to post-treatment, $t(23) = 6.87, p < .001$, pre-treatment to 1-month follow-up, $t(23) = 8.69, p < .001$, and pre-treatment to 3-month follow-up, $t(23) = 7.39, p < .001$. Treatment gains were maintained at 3-month follow-up.

### 6.5.3 Clinically Significant Improvement and Reliable Change

Post treatment, 17 of 24 (70.83%) children showed reliable change on CSR ratings, while at 1-month follow-up, 20 of the 24 (83.33%) children evidenced reliable change and finally, at 3-month follow-up, 21 of 24 (87.50%) children showed reliable change (refer Table 6.3). In relation to clinically significant improvement at post-treatment, 12 of 24 children (50%) children were considered “improved” on the basis diagnostic interviews. At 1-month follow-up 16 of 24 (66.70%) children were “improved”, and finally at 3-month follow-up 18 of 24 (75%) were improved. Post treatment, 8 of the 24 (33.33%) children were in the non-clinical range on the basis of diagnostic interviews (ADIS CSR < 4), and showed evidence of significant reliable change. Additional treatment gains occurred at follow-ups, with 14 (58.33%) children non-clinical at 1-month follow-up and 15 (62.50%) at 3-month follow-up. Independent groups $t$ test revealed no differences between those who were ‘recovered’ and ‘not recovered’ on child rated, $t(21) = -0.09, p = 0.93$, Cohen’s $d = -0.04$, and parent rated
homework compliance $t(20) = 0.25, p = 0.80$, Cohen’s $d = 0.12$, at 1-month follow-up. Similarly, significant differences were not found between those who were ‘recovered’ and ‘not recovered’ on child rated, $t(21) = -1.39, p = 0.18$, Cohen’s $d = -0.62$, and parent rated homework compliance $t(20) = -1.12, p = 0.28$, Cohen’s $d = -0.51$, at 3-month follow-up.

In relation to diagnostic comorbidity, significant differences were observed in the total number of children’s diagnoses, over time, $F(3,69) = 40.83, p < .001, \eta_p^2 = 0.64$. A significant reduction was observed in the number of diagnoses from pre- to post-treatment, $t(23) = 6.06, p < .001$, pre-treatment to 1-month follow-up, $t(23) = 7.36, p < .001$, and pre-treatment to 3-month follow-up, $t(23) = 9.00, p < .001$. Post-treatment improvement was maintained at 1- and 3-month follow-up. Reductions were evidenced in not only the frequency of BII phobia diagnosis but across all comorbid diagnoses. Of further clinical interest at the conclusion of the OST, 58.30% ($n = 14$) children were able to have a finger prick and 45.80% ($n = 11$) were able to have a blood test or injection. Overall, 66.70% ($n = 16$) were able to have either a finger prick or blood test/ injection during the OST session with 37.5% ($n = 9$) of youth able to have both. Following their e-therapy maintenance program at 1-month follow-up this increased to 87.05% ($n = 21$) who were able to have a finger prick and 66.70% ($n = 16$) who were able to have a blood test or injection. Overall, 91.70% ($n = 22$) were able to have a finger prick or blood test/ injection by 1-month follow-up and 62.5% ($n = 15$) had both.
### Table 6.3  Percentage of youth who were reliably changed, percentage of youth who were improved and percentage of youth recovered

<table>
<thead>
<tr>
<th></th>
<th>Post</th>
<th>1-month follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage Reliably Changed</td>
<td>70.83% ($n = 17$)</td>
<td>83.33% ($n = 20$)</td>
</tr>
<tr>
<td>Percentage Improved</td>
<td>50% ($n = 12$)</td>
<td>66.67% ($n = 16$)</td>
</tr>
<tr>
<td>Percentage Recovered</td>
<td>33.33% ($n = 8$)</td>
<td>58.33% ($n = 14$)</td>
</tr>
</tbody>
</table>

*Note.* Percentage reliably changed = Reliable Change Index (RCI) > 1.96; RCI = (CSR<sub>Post</sub> – CSR<sub>Pre</sub>)/$S_{diff}$; $S_{diff} = 0.65$, Cut off 1.27; Percentage Improved = $< M_{pre-treatment} – 2 SD_{pre-treatment} = 4.52$; Percentage Recovered = Subclinical range on the ADIS-IV (CSR <4) and showed evidence of reliable change.
6.5.4 Robust Improvement Rate Difference

The baseline phase was compared to the treatment phase using the robust improvement rate difference technique (RIRD; Parker, Vannest, & Brown, 2009; Parker et al., 2011). RIRD was obtained by subtracting the improvement rate for the baseline phase from the improvement rate from the treatment phase. On average, the RIRD for CSR was 85.76% (95% CI 72.40% to 96.18%). For child fear ratings of target behaviours, the RIRD average improvement rate was 78.34% (95% CI 75.56 – 83.56%) and for parent fear ratings was 80.74% (95% CI 68.63 – 91.41%). Consistency between clinician, child and parent ratings for the RIRD were high with significant positive correlations between clinician and child ratings, \( r(22) = .77, p < .001 \), clinician and parent ratings, \( r(22) = .83, p < .001 \) and parent and child ratings, \( r(22) = .82, p < .001 \).

6.5.5 Global Functioning

An ANOVA showed significant changes to the CGAS over time \( F(3,69) = 37.43, p < .001, \eta^2_p = .62 \) (refer Table 6.2). The analysis revealed a significant improvement in CGAS from pre-treatment to post-treatment, \( t(23) = 5.29, p < .001 \). Furthermore, significant increases in CGAS were also observed from post treatment to 1-month follow-up, \( t(23) = 3.09, p < .01 \) with treatment gains maintained at 3-month follow-up.

6.5.6 Symptom Measures

Anxiety Symptoms. ANOVAs showed significant time effects for the SCAS-C, \( F(1,15) = 8.41, p < .01, \eta^2_p = .36 \) and SCAS-P, \( F(1, 17) = 30.68, p < .001, \eta^2_p = .64 \) (refer Table 6.2), whereby there was a significant decline from pre-treatment to 1-month follow-up.

Fear Symptoms. Analysis of the FSSC-R showed significant time effects for both the FSSC-R-C, \( F(1,15) = 20.45, p < .001, \eta^2_p = .58 \) and FSSC-R-P, \( F(1,17) = 46.03, p < .001, \)
$\eta_p^2 = .73$ (refer Table 6.2), with a significant decline from pre-treatment to 1-month follow-up.

Depression Symptoms. ANOVAs were conducted to examine time effects on the SMFQ-C and SMFQ-P. Significant differences were not observed pre-treatment to 1-month follow-up on the SMFQ-C. In contrast, on the SMFQ-P time effects were found, $F(1,17) = 8.98, p < .01, \eta_p^2 = .35$ with a significant decline in SMFQ-P scores observed from pre-treatment to 1-month follow-up (refer Table 6.2).

6.5.7 Avoidance Behaviour

ANOVAs showed significant time effects for the live BAT, $F(1,22) = 11.15, p < .01, \eta_p^2 = 0.34$ and video BAT, $F(1,23) = 10.80, p < .01, \eta_p^2 = 0.32$ (refer Table 6.2), with significant decreases avoidance from pre-treatment to 1-month follow-up.

6.6 Treatment Acceptability and Satisfaction

At 1-month follow-up, treatment satisfaction was rated by children and parents across 3 items on a scale ranging from 0-15. Both children ($M = 13.75; SD = 1.84$) and parents ($M = 13; SD = 2.85$) reported high satisfaction. Of the 18 parents who responded to the questionnaire, 58.3% ($n = 14$) also indicated that the treatment was “just the right length”; however, 12.5% ($n =3$) reported that one session was too short. Children rated the most helpful component of treatment as “being in the situation they feared”, whereas parents rated “having the therapist show my child how to cope with the feared situation” as the most helpful.

6.7 Discussion

Currently there are no evidence-based treatments for youth with BII. The present study provides the first controlled trial of treatment outcome for BII in children and adolescents. Overall, results provide support for the effectiveness of a modified OST
approach, which included an e-therapy maintenance program. Significant reductions in BII-related measures were observed at post-treatment and outcomes continued to improve at 3-month follow-up.

As expected, diagnostic severity (CSR) and child and parent fear ratings associated with target behaviours remained stable during the baseline phase and improved significantly following the modified OST. These changes were found across all three baseline periods (1, 2 and 3 weeks), indicating that change in BII symptoms was due to the modified OST not simply the passage of time or repeated assessments. Furthermore, single case analysis revealed greater improvement in the treatment phase relative to the baseline phase suggesting that changes were likely due to modified OST.

It was also predicted that significant reductions would be observed from pre- to post-treatment on CSR, diagnostic status, behavioural avoidance during a BAT, and child and parent reported anxiety, fear and depression. This hypothesis was partially supported. From pre-treatment to post-treatment significant reductions were observed in children’s diagnostic severity on independent assessor ratings (CSR) with continued decline at 1-month follow-up and gains maintained to 3-month follow-up. BII diagnostic severity (CSR) showed reliable change at post-treatment, 1-month follow-up and 3-month follow-up. Post treatment, 33.33% youth were diagnosis free (ADIS CSR ≤ 3), at 1-month follow-up at the completion of the e-therapy maintenance program 58.33% of youth were diagnosis free, and at 3-month
follow-up 62.5% were diagnosis free. These outcomes are comparable to other treatment studies using OST for phobic youth which show that 50 to 60% of youth are diagnosis free at follow-up (Ollendick & Davis, 2013). Differences were not observed between youth who were ‘recovered’ versus ‘not recovered’ at 1-month and 3-month follow-up in relation to homework compliance suggesting that at home practice was not critical to responding or that the measure used to assess home practice was not sensitive. Moreover, consistent with previous research, the modified OST was associated with significant reductions in children and adolescents comorbid diagnoses (Ollendick, Öst, Reuterskiöld, & Costa, 2010). Ollendick et al. (2010) suggest that an increased sense of self-efficacy, following an intensive session, may generalise so that children are better able to cope with other phobias and anxiety as well.

Significant reductions were observed in youth’s level of avoidance during the live and video BAT, from pre-treatment to 1-month follow-up. In regards to child and parent report measures of anxiety (SCAS) and fear (FSSC-R), significant reductions were observed from pre-treatment to 1-month follow-up. Significant declines were also observed in parent reports of their child’s symptoms of depression from pre-treatment to 1-month follow-up. However, no differences were observed in children’s self-reported depressive symptoms from pre-treatment to 1-month follow-up. Failure to find a difference on children’s self-reported symptoms of depression may be due floor effects; at pre-treatment, the mean of children’s self-reported depression was in normative ranges and hence there was limited room for change post-treatment. This finding is consistent with earlier studies of phobic youth conducted by Ollendick et al. (2009) and Öst et al. (2001).

Notably, at the conclusion of the OST, over half the children enrolled in the trial were able to have a finger prick, and almost half were able to have a blood test or injection.
Following their e-therapy maintenance program at 1-month follow-up, this increased to just over 80% who were able to have a finger prick, and approximately 65% who were able to have a blood test or injection. In comparison, adult BII treatment trials produce far greater outcomes such that adults were achieving 10 finger pricks, 10 to 12 subcutaneous injections and 2 to 4 blood tests (Öst, 1997) in a single session. It is evident from the present study that children with BII progress through exposure at a significantly slower pace. Prior to treatment it is important that children, their parents, other health professionals working with the family, and therapists have realistic expectations as to what can be achieved during OST.

Children and parents reported high levels of treatment satisfaction and acceptability. They indicated that the program was helpful, and that it assisted them in coping with their phobia. They also endorsed that they would recommend the treatment to a friend who had a child with a similar fear. These satisfaction ratings are consistent with existing OST treatment studies (Ollendick et al., 2015). In general, the OST (3 hours) and e-therapy maintenance program was perceived to be appropriate in regards to dose and length of treatment. Three families did however suggest that the treatment was too short. Notably, these were families of younger children (M = 8.67) and one child who had a history of chronic illness requiring multiple hospital admissions. Future studies could include a booster session for children with BII who are partial or non-responders at 1-month follow-up in order to enhance the dose of treatment.

A strength of the present study was collaboration between the health professionals involved in the OST. Engagement with other health professionals is an important adjunct to treatment for youth with BII phobia although it presents challenges from a feasibility perspective. In the current trial, the intensive treatment session was delivered in a university setting where all health professionals (e.g., physiotherapist and nurse) were available at the one site. The treatment in its current form would therefore be more amenable to delivery in
either a hospital or outpatient medical setting. Further research is needed to determine whether this approach could be delivered as effectively in routine clinical practice. For example, treatment may be more feasibly delivered in another format, such as 1.5 hour sessions over 2 days, whereby the clinician could meet with the family and a physiotherapist on the first day and then visit a nurse on the second. Moreover, a considerable amount of time was devoted to scheduling and coordinating appointments between families and the health professionals involved in the session. The practicalities in organising and delivering this treatment may therefore lend itself well to a group format. Ongoing collaborations following treatment were also important, whereby families were encouraged to book appointments with their general practitioner or physiotherapist to continue with exposure during their e-therapy maintenance program. Families were provided with a letter to give to health professionals outlining their involvement in an exposure based treatment program and the need for continued practice. Moreover, examples were provided for practitioners highlighting ways in which they could be of assistance.

Approximately one third of children and teenagers in the present study were reported to have a parent with the same fear. Despite this all parents were able to engage and participate in their child’s OST treatment session and home tasks. Clinically, it was noted that a lack of engagement in home tasks appeared to be more often the result of parent’s busy schedules and hence parent fear did not appear to effect the child’s progress during therapy sessions, although the degree to which this may have hindered at home practice is unknown, given that BII phobia has a strong family heritability. It is suggested that future studies assess parent BII diagnostic status using structured clinical interviews and explore the effects of parent BII diagnosis on treatment outcome and continued exposure practice following treatment.
The present study is not without limitations. Due to challenges associated with video recording across different treatment settings (GU psychology clinic, physiotherapy centre and medical centre), the evaluation of treatment adherence relied on therapists’ rating of their own competence and adherence to the treatment protocol. As in Ollendick et al. (2009) and Ollendick et al. (2015), a more optimal approach would have been to have independent raters observe and evaluate treatment adherence. Another limitation of the present study was the BAT administration as clinicians who administered the task rated the child’s level of avoidance and were not blind to the assessment time point or the fact that children had received an active treatment. It will be important in future research that BATs are set up to permit avoidance to be assessed by independent assessors. A significant proportion of youth and their parents did not complete questionnaires at 1-month follow-up despite numerous attempts by the authors to collect this data. Hence, the generalisability of the self-report findings is limited. The study is also limited by the predominantly Caucasian sample from middle to upper class socioeconomic backgrounds. Another limitation was the lack of follow-up beyond 3 months. During their final e-therapy session relapse prevention was discussed with families and the importance of regular continued exposure for 6 to 12 months following treatment to maintain gains. In comparison to other types of specific phobia (e.g., phobia of the dark or dogs) there are fewer chances for naturally occurring exposure opportunities to arise following treatment. If children are healthy, they may not require a vaccination or blood test for a year or more. Therefore the results are limited in terms of understanding the durability of this treatment approach beyond 3 months post-treatment. Long-term durability of this approach needs to be examined given that naturally occurring exposure opportunities may be more limited for children with this type of phobia; hence, these children may be more susceptible to a return of fear following successful treatment (Boschen, Neumann, & Waters, 2009). A booster session may be necessary to ensure treatment gains are maintained after 3
months. Moreover, future research studies need to examine and the duration and frequency of continued exposure practice required following OST to prevent a return of fear in BII phobic youth.

Despite these limitations, the present study makes a significant contribution to the literature as it is the first controlled treatment study for BII phobic youth. Preliminary findings provide support for the effectiveness of a modified OST approach for youth with BII and demonstrated that treatment outcomes were maintained up to 3-month follow-up. The multiple baseline controlled design demonstrated stability in BII symptoms across the baseline phase with significant reductions following the OST. Further research, including large randomised controlled trials is needed to provide additional support for this modified OST approach and to establish mechanisms of change and moderators of treatment response. Differences in treatment responding in terms of age and clinical presentation (e.g., children who respond with disgust, fainting or those youth with chronic health problems) needs to be further explored. The findings from this study encourage further research into time-limited, intensive treatments for BII phobia in youth.
Acknowledgements

The authors acknowledge the contributions of physiotherapist Andrea Miller and pathology nurses Jacqueline Molloy and Ruth Macalpine for their involvement in delivering the treatment. In addition we acknowledge the contributions of Michelle Tomlin, Ivan Pickert and Dipti McGowan who were involved as therapists and/or independent assessors on the trial.

The authors wish to thank the Griffith University Physiotherapy and Active Health Centre and the Griffith University Medical Centre. This research was supported by a Griffith University Areas of Strategic Investment in Chronic Disease Prevention Grant and the Griffith University Behavioural Basis of Health, Menzies Health Institute.
6.8 References


phobia: a comparison with spider phobics and healthy controls. *Psychol Med, 40*(1), 125-134. doi: 10.1017/s0033291709005972


286


291


Varni, J. W., Seid, M., & Kurtin, P. S. (2001). PedsQL 4.0: reliability and validity of the Pediatric Quality of Life Inventory version 4.0 generic core scales in healthy and patient populations. *Med Care, 39*(8), 800-812.


6.9 Chapter 6 Relevant Appendices

The following Appendices are relevant to Chapter 6, but have not been referred in text as it has been submitted for publication.

Appendix A Ethics Approval from Griffith University
Appendix B Information and Consent Form for BII Phobic Youth
Appendix D Telephone Screen
Appendix E Demographic Questionnaire BII and Animal Phobia
Appendix F Composite Diagnoses and CGI
Appendix G Clinician Global Assessment Scale (CGAS)
Appendix H Spence Children’s Anxiety Scale - Child Version (SCAS-C)
Appendix I Spence Children’s Anxiety Scale - Parent Version (SCAS-P)
Appendix J Short Mood and Feelings Questionnaire - Child Version (SMFQ-C)
Appendix K Short Mood and Feelings Questionnaire - Parent Version (SMFQ-P)
Appendix L Fear Survey Schedule for Children Revised - Child Version (FSSC-R)
Appendix M Fear Survey Schedule for Children Revised - Parent Version (FSSC-R)
Appendix R Functional Analysis Guide- BII
Appendix T Idiographic Target Behaviours – Child Version
Appendix U Idiographic Target Behaviours –Parent Versions
Appendix V Behavioural Avoidance Task – Actual Stimuli
Appendix W Behavioural Avoidance Task – Video Stimuli
Appendix Z Homework Compliance – Child Version
Appendix AA Homework Compliance – Parent Version
Appendix AB Therapist Adherence and Competence
Appendix AC Treatment Satisfaction - Child Version (CTS)
Appendix AD Treatment Satisfaction – Parent Version (PTS)
Chapter 7 Patterns of response and remission following a One Session Treatment for Blood-Injection-Injury Phobia in Youth

This chapter includes a co-authored paper which is currently “Under Review”. The bibliographic details of the paper are:


My contribution to the paper involved: initial concept and review design; literature search and review of relevant research; data collection and data analysis; and manuscript preparation.

Dr Ella Oar 12/06/15
Dr Lara Farrell 12/06/15
Dr Elizabeth Conlon 12/06/15
Dr Allison Waters 11/06/15
Dr Thomas Ollendick 10/06/15
Patterns of response and remission following a One Session Treatment for Blood-Injection-Injury Phobia in Youth

Ella L. Oar (DPsychClin)\textsuperscript{a}
Lara J. Farrell (PhD)\textsuperscript{a}
Elizabeth G. Conlon (PhD)\textsuperscript{a}
Allison M. Waters (PhD) \textsuperscript{b}
Thomas H. Ollendick (PhD) \textsuperscript{c}

Author affiliations:
\textsuperscript{a}School of Applied Psychology and Menzies Health Institute QLD, Griffith University, Gold Coast Campus, Southport, QLD, Australia, 4222
\textsuperscript{b}School of Applied Psychology and Menzies Health Institute, Griffith University, Mount Gravatt Campus, Mount Gravatt, QLD, Australia, 4122
\textsuperscript{c}Child Study Centre, Department of Psychology, Virginia Polytechnic Institute and State University, Blacksburg, VA, USA, 24060

Corresponding author:
Ella L. Oar, School of Applied Psychology and Menzies Health Institute, Griffith University, Gold Coast Campus, Southport, QLD, Australia, 4222
TEL: +61 7 5678 8224, FAX: +61 7 5678 8291 Email: e.oar@griffith.edu.au
7.1 Abstract

Blood-Injection-Injury (BII) phobia is a severe and impairing disorder that has been understudied in youth. The present study aimed to define patterns of response and remission following a modified One Session Treatment (OST) including an e-therapy maintenance program for children and adolescents with BII phobia. Moreover, characteristics of different responder groups were examined in order to determine correlates of a poorer response. Youth \( n = 20; 8-18 \) years were categorised into four responder groups (e.g., immediate remitter, delayed remitter, partial responder and non-responder) based upon defined criteria for remission. Immediate remitters to treatment were more likely to have a primary diagnosis of injection phobia, rather than a combined blood and injection phobia. Non-responders reported significantly greater disgust sensitivity at pre-treatment and were more likely to have a comorbid diagnosis of social phobia. In regards to within session change, youth who achieved the exposure goal of having a blood test during treatment had a significantly stronger treatment response. These preliminary findings may assist clinicians in the planning and delivering of intensive cognitive behavioural treatment approaches for BII phobia in youth.
7.2 Introduction

Cognitive behavioural treatments (CBT), delivered in either a spaced or intensive format, have been found to be highly efficacious for animal, natural environment, and situational phobias in both adults and youth (Ayala et al., 2009; Ollendick & Davis, 2013). Indeed, multiple sessions of exposure-based treatments as well as the one session treatment (OST) approach developed by Öst (1989) are now considered well-established treatments (Ollendick & Davis, 2013). Of note however, the efficacy of these approaches with BII phobias is less clear; moreover, youth with BII phobia have largely been excluded from randomised controlled trials (RCT) evaluating OST for phobic youth (Ollendick et al., 2015; Ollendick et al., 2009) due to the complexities associated in the delivery of treatment for these youth (i.e., need for medical professionals, see Oar, Farrell, & Ollendick, Submitted), their unique physiological response (e.g., fainting) and arguably poorer treatment response (Öst et al., 2001). Indeed, youth with BII phobia relative to animal phobia have been characterised as being more severe, having greater impairment, more comorbid generalised anxiety disorder, and more severe danger expectancies in a recent clinical phenomenology study (Oar, Farrell, Waters, & Ollendick, Submitted). To date, only one controlled trial has examined the efficacy of a modified OST for BII phobia in children and adolescents (Oar, Farrell, Waters, Conlon, et al., Submitted). This study used a single case non-concurrent multiple baseline design of 24 youth with primary BII phobia (8-18 years) randomly assigned to either a 1, 2 or 3 week baseline prior to receiving OST and an e-therapy maintenance program. BII symptoms and diagnostic severity were found to remain relatively stable during baseline; however, following implementation of a modified OST, significant improvements were observed. At post treatment, 33.33% of children were BII diagnosis free, and continued improvement was
observed following an e-therapy maintenance program, with 58.33% of youth BII diagnosis free at 1-month follow-up and 62.5% at 3-month follow-up.

Thus, while there is preliminary support for an intensive behavioural treatment for BII phobia in youth, data suggest there are interesting patterns of response following this treatment, with approximately 30% of children demonstrating an immediate response following just one 3-hour OST, another 30% benefiting from a further four weekly e-therapy maintenance sessions, and a final 40% who do not demonstrate an adequate response (Oar, Farrell, Waters, Conlon, et al., Submitted). Studies that define treatment response and remission, and identify predictors of response are an important step in moving towards more patient-centred, individualised approaches to treatments and improved outcomes. Treatment response can be defined as a meaningful reduction in symptoms, while remission is usually defined as a more conservative and stringent criterion than response, occurring when a patient no longer meets symptom criteria for a disorder and experiences no more than minimal symptoms (Ginsburg et al., 2011; Storch, Lewin, De Nadai, & Murphy, 2010). Recently, Ginsburg et al. (2011) reported on the remission rates of anxious youth who received treatment as part of the Child/Adolescent Anxiety Multimodal Study (CAMS), whereby remission was defined as (1) absence of all targeted study anxiety disorders (Generalised Anxiety Disorder, Social Phobia and Separation Anxiety Disorder), (2) a clinical global impression severity scale (CGI-S) score of a one or two, reflecting minimal symptoms and finally, (3) a CGI improvement scale (CGI-I) score of one, indicating that a child is very much improved. Currently, there are no well-established criteria for defining response and remission in the child phobia literature.

Across the large RCTs for phobic youth, remission rates (defined as no longer meeting diagnostic criteria for specific phobia on the Anxiety Disorder Interview Schedule (Silverman and Albano (1996)) range from 25% to 90% (Farrell, Waters, Milliner, Zimmer-Gembeck, et
al., 2013; Ollendick et al., 2015; Ollendick et al., 2009; Öst et al., 2001; Silverman et al., 1999; Waters, Farrell, et al., 2014). Given the distinct clinical features of BII phobia (Oar, Farrell, Waters, & Ollendick, Submitted) and the limited evidence base of OST for the treatment of this disorder in youth, the present study aimed to describe and characterise the response patterns and remission rates of children and adolescents following OST for BII phobia, as described in Oar, Farrell, Waters, Conlon, et al. (Submitted). Specifically, this study had two aims; the first, to define response and remission patterns for youth following a controlled trial of OST and e-therapy maintenance for BII phobia and to examine psychological characteristics associated with different groups of children (i.e., remitters/responders versus non-responders); and the second, to examine patterns of the within treatment change (i.e., within session change on phobic beliefs, fear and disgust ratings, and degree of compliance with at-home exposure practice across e-therapy) in regards to response at post-treatment and 1- and 3-month follow-up. Based upon the existing child phobia and anxiety literature, three subgroups of youth were expected in terms of response patterns following treatment - remitters (absence of diagnosis), partial responders (reduction in symptoms but still meet criteria), and non-responders (no change in symptoms or diagnosis). It was anticipated that non-responders would experience greater symptomology and impairment. Exploratory analyses were also conducted to examine differences in the baseline psychological characteristics (e.g., BII phobia subtype, disgust sensitivity, comorbidity) between the responders groups across a range of variables. Additionally, it was predicted that non-responders would show less change in their coping estimates during the OST, report a lesser reduction in their fear and disgust ratings and be less likely to have a blood test. Finally, it was expected that non-responders would be less compliant with homework during the e-therapy maintenance program.
7.3 Method

7.3.1 Participants and Procedure

Twenty-four children and adolescents (8-18 years; \( M = 11.75, SD = 3.15 \)) who met DSM-V criteria for a primary diagnosis of BII phobia participated in a multiple baseline controlled trial of modified OST (Oar, Farrell, Waters, Conlon, et al., Submitted), with youth randomly assigned to a 1, 2 or 3 week baseline. OST was delivered over a single 3 hour session and incorporated CBT techniques such graduated exposure, cognitive restructuring, participant modelling, contingency management and education and skills training (Davis III & Ollendick, 2005; Zlomke & Davis III, 2008). Following this intensive session, children completed a 4-week e-therapy maintenance program (45 minute Skype call per week) during which children’s progress with at home exposure was discussed and any challenges were problem solved. Treatment outcome was assessed at post-treatment, 1-month and 3-month follow-up by blind independent raters. Inter-rater reliability for Oar, Farrell, Waters, Conlon, et al. (Submitted) controlled trial was primary diagnosis \( | = 0.89 \); secondary diagnosis \( | = .81 \); and tertiary diagnosis \( | = 1.0 \).

For the purposes of this study, four children and adolescents were excluded because of missing data at 1-month and/or 3 month follow-up. Due to this missing data their treatment response could not be reliably described and due to the small sample size we were unable to reliably impute missing data. Thus, the final sample was 20 children and adolescents (8-18 years; \( M = 11.55, SD = 3.14 \)). For a full description of the clinical trial, including inclusion and exclusion criteria and detailed methodology see Oar, Farrell, Waters, Conlon, et al. (Submitted).
7.3.2 Measures

7.3.2.1 Measures Used to Define Response and Remission Patterns

Anxiety Disorders Interview Schedule for DSM-IV, Child and Parent Versions (ADIS-IV-C/P; Silverman & Albano, 1996). Diagnostic status, phobia severity and comorbidity were determined using the ADIS-IV-C/P. Child and parent-derived ADIS-IV diagnoses were compared and a final combined diagnostic profile was determined. History of fainting in the presence of phobic stimuli and family history of the same fear were also assessed during ADIS-IV interviews. The ADIS has demonstrated excellent inter-rater and test-retest reliability (Silverman et al., 2001).

Clinical Global Impressions-Improvement Scale (CGI-I; Guy, 1976). The CGI-I was used to assess improvement and response to treatment. The CGI-I asks clinician’s to rate improvement in a person’s functioning compared to their pre-treatment functioning on a 7-point scale ranging from 1 (Very much improved since the initiation of treatment) to 7 (Very much worse since the initiation of treatment).

7.3.2.2 Measures used to Characterise Response and Remission Patterns

7.3.2.2.1 Baseline Variables

Disgust Emotion Scale for Children Child and Parent Versions (DES-C; Muris et al., 2012). The DES-C is a reliable and valid 30-item self-report measure designed to assess disgust sensitivity in children and adolescents. The child and parent versions were used. Internal consistency in the current study for the child (Cronbach’s α = 0.94) and parent measure (Cronbach’s α = 0.93) was high.

Mutilation Questionnaire (MQ; Klorman et al., 1974). The MQ (modified for use with children) is a 30-item true/false scale designed to assess fears of blood, injury and mutilation. Children completed this measure. Internal consistency for the present study was Cronbach’s alpha = 0.90.
Injection Phobia Scale – Anxiety (IPS-Anx; Öst et al., 1992). The IPS-Anx (modified for use with children) is an 18-item self-report measure completed by children to assess anxiety and avoidance of situations involving injections. Internal consistency was high for the present study, Cronbach’s alpha = 0.94.

7.3.2.2 Within Treatment Variables

Estimates of Coping (Ollendick et al., 2009). A semi-structured interview was carried out with children and teenagers prior to treatment to elicit their idiographic beliefs associated with their phobia. After identifying their three strongest phobic beliefs, the children and teenagers were asked to indicate how sure they were that they could ‘cope’ if their belief were to occur rated on a 9 point Likert scale (0 = Not at all sure I could cope to 8 = Extremely sure - I know I could). The ratings of coping were averaged across the three beliefs to provide a mean estimate of coping, which was obtained at each assessment and follow-up point, as well as at the start and end of the OST.

Fear and disgust ratings. Subjective ratings of fear and disgust were obtained from the child prior to and following the completion of each exposure task during the OST. The clinician asked youth to rate from 0 to 8 (0 = none, 2 = a little, 4 = some, 6 = a lot and 8 = very much) how scared they felt (fear) and how disgusted they felt (disgust). On average, children completed three to four exposure tasks per hour. Across the session, pre-exposure task ratings and post-exposure task ratings were averaged to obtain an overall mean rating for the OST session.

Dry Needling, Finger Pricks and Blood Test. Whilst every OST was individualised to target each child’s primary fears, standardised goals were established and worked towards across each OST, including having children exposed to (1) dry needling (i.e., acupuncture), (2) finger pricks, and (3) blood tests (in this order). Therefore, the major goal for all OST treatments was for youth to have a blood test, ideally within their intensive OST session, and
if not, by the conclusion of their e-therapy maintenance program. Frequencies with which these goals occurred are presented.

*Homework compliance (Park et al., 2014).* Homework compliance ratings were obtained at the commencement of each e-therapy maintenance session. Children and parents rated their adherence to assigned exposure tasks on a 7-point Likert scale, ranging from 0 (*Did not complete any assigned homework*) to 6 (*Completed all homework and made efforts above and beyond assignments*). A mean homework compliance rating was calculated for each child and parent based on their e-therapy maintenance program.

### 7.4 Results

#### 7.4.1 Remission and Response following OST

Children and adolescents were categorised into four groups (immediate remitter, delayed remitter, partial responder and non-responder) based on their pattern of responding following OST. At each assessment time point (post-treatment, 1-month follow-up, 3-month follow-up) youth were evaluated using the following three criteria:

1. Absence of BII phobia diagnosis on the basis of the ADIS-IV: Consensus diagnostic profiles (e.g., based upon child and parent ADIS-IV interview) were used for the purposes of the present study (see Oar, Farrell, Waters, Conlon, et al. (Submitted) for full details of consensus of diagnoses). A diagnosis assigned a Clinician Severity Rating (CSR) of less than four was considered diagnosis free. This criterion has frequently been used in other phobia and anxiety disorder RCTs to describe remission (e.g., Ginsburg et al., 2011; Ollendick et al., 2015; Ollendick et al., 2009; Öst et al., 2001; Silverman et al., 1999).

2. Improvement as assessed by the CGI-I: A score of one or two on the CGI-I was considered remitted. CGI-I scores have previously been used to define remission
in other trials evaluating psychological and pharmacological approaches to the treatment of child anxiety disorders (Ginsburg et al., 2011; Storch et al., 2010; Wagner et al., 2004).

(3) Evidence of reliable change in diagnostic severity: A Reliable Change Index (RCI; Jacobson & Truax, 1991) was calculated to determine whether the magnitude of the change in children’s CSR was statistically reliable. An RCI cutoff of 1.96 standard deviation units was used to meet criteria for reliable improvement in the Oar, Farrell, Waters, Conlon, et al. (Submitted) clinical trial. RCI has been used to describe clinically significant improvement in previous OST trials for phobic youth (Öst et al., 2001).

Children were categorised across each of these criteria at each time point (see Table 7.1). On this basis, 5 youth (25%) had an immediate and robust response following OST, and met all three criteria for remission at post assessment and each assessment thereafter. Eight youth (40%) were considered delayed remitters and met only one or two remission criteria at post-treatment and 1-month follow-up; however, by 3-month follow-up they had a full response and met all three criteria for remission. Two youth (10%) were considered to be partial responders to treatment, whereby at post-treatment and 1-month follow-up they showed evidence of reliable change and achieved a full response based on all three criteria; however, this was not maintained at 3-month follow-up indicating relapse on the ADIS-IV. Finally, five youth (25%) were considered non-responders to treatment and met either no criteria or only one of the three criteria at post assessment and follow-ups.
Table 7.1  Percentage of children in each responder group meeting remission criteria

<table>
<thead>
<tr>
<th>Responder Group</th>
<th>Post-Treatment</th>
<th>1-month Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ADIS &lt; 4</td>
<td>CGI = 1 or 2</td>
</tr>
<tr>
<td>Immediate Remitter (n = 5)</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Delayed Remitter (n = 8)</td>
<td>12.5%</td>
<td>50%</td>
</tr>
<tr>
<td>Partial Responder (n = 2)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Non-Responder (n = 5)</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

*Note.* Immediate remitter = Immediate and robust response following OST, and met all three criteria for remission post treatment or follow-ups; Delayed remitter = met only one or two remission criteria at post-treatment and 1-month follow-up; however, by 3-month follow-up met all three criteria for remission; Partial responders = post-treatment and 1-month follow-up they showed evidence of reliable change and achieved a full response at 1-month follow-up; however, this was not maintained at 3-month follow-up; Non-responders = met either no criteria or only one of the three criteria at post assessment or follow-ups.
Of note, one of the children in the partial responder group had a diagnosis of Type 1 diabetes. This child required daily insulin injections, which were endured with significant distress. Since this child had a complex presentation with a comorbid medical condition and was receiving a concurrent medical intervention, she was removed from all further analyses. The other child in the partial responder group had a severe presentation at pre-treatment, made minimal improvement during the OST, but substantial improvements by 1-month, and then experienced a relapse. Therefore, for the purpose of this study and on the basis of the 3-month follow-up assessment, this child was re-categorised as a non-responder. Table 7.1 presents the response definitions and responding patterns across the three remission criterion at each time point.

### 7.4.2 Data Analysis

Tables 7.2 and 7.3 present descriptive data on age, gender, and baseline characteristics. Non-parametric ANOVA and $t$ tests, including the Kruskal-Wallis and Mann-Whitney U tests were conducted to examine between group differences on baseline variables. To examine patterns of change during the OST session and across follow-ups, within group changes in children’s coping estimates and fear and disgust ratings during OST were analysed using Wilcoxon tests, which are non-parametric analogues of repeated measures $t$ tests. Moreover, a non-parametric ANOVA (e.g., Kruskal-Wallis) was conducted to examine between group differences on homework compliance. Figure 7.1 and Table 7.4 present descriptive data on within treatment variables.

### 7.4.3 Baseline Variables

The immediate remitter group ($n = 5; M = 12.40; 8-17$ years) consisted of late adolescent females ($n = 2; 17$ years) and males in their middle childhood ($n = 3; 8$ years, 9
years and 11 years). In comparison, youth in the non-responder group \((n = 6; M = 10.83; 9-13\) years) were almost exclusively young adolescent females \((n = 5)\). There were considerably higher rates of injection only phobia \((n = 4; 80\%)\) in the immediate remitter group in comparison to other groups, which had relatively equal proportions of both injection only and combined BII (Table 7.2).

The Kruskal-Wallis test produced a significant group difference for child reported disgust sensitivity, \(\chi^2, N = 7.02, p = .03\). Follow-up analysis using a Mann-Whitney \(U\) test found that the non-responder group reported significantly greater disgust sensitivity than the immediate remitter group \((U = 2.00, p = .02)\) and the delayed remitter group \((U = 7.00, p = .03)\).

Significant differences were not found between the responder groups in relation to child reported fears of blood, injury and mutilation (MQ-C). Similarly, there were no significant differences in child reported anxiety and avoidance of situations involving injections (IPS-Anx). Of interest, the difference between the groups in relation to fears of blood, injury and mutilation (MQ-C) approached significance \((p = 0.09)\) and inspection of the means revealed that those in the immediate remission group reported being substantially less fearful of blood, injury and mutilation than youth in the delayed remitter and non-responder group. This is consistent with the aforementioned finding that those in the immediate remitter group were more likely to have an injection only phobia in comparison to other groups No significant group differences were found on other baseline variables (see Table 7.2).

The only comorbid disorder, which differed between the groups, was social phobia (see Table 7.3). Notably, youth in the non-responder group \((n = 4; 66.7\%)\) were more likely to have a diagnosis of Social Phobia than those in the immediate remitter \((n = 0; 0\%)\) and delayed remitter \((n = 1; 12.5\%)\) groups.
<table>
<thead>
<tr>
<th>Table 7.2 Baseline Characteristics</th>
<th>Immediate Remitter ($n = 5$)</th>
<th>Delayed Remitter ($n = 8$)</th>
<th>Non Responder ($n = 6$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age $M (SD)$</strong></td>
<td>12.40 (4.34)</td>
<td>12 (3.42)</td>
<td>10.83 (1.33)</td>
</tr>
<tr>
<td></td>
<td>8-17 years</td>
<td>8-18 years</td>
<td>9-13 years</td>
</tr>
<tr>
<td><strong>Gender (% Female)</strong></td>
<td>2 (40%)</td>
<td>6 (75%)</td>
<td>5 (83.30%)</td>
</tr>
<tr>
<td><strong>Type of BII Phobia</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injection</td>
<td>4 (80%)</td>
<td>4 (50%)</td>
<td>3 (50%)</td>
</tr>
<tr>
<td>BII</td>
<td>1 (20%)</td>
<td>4 (50%)</td>
<td>3 (50%)</td>
</tr>
<tr>
<td><strong>Phobia Severity (CSR)</strong></td>
<td>6 (0.71)</td>
<td>7 (1.31)</td>
<td>6.50 (1.23)</td>
</tr>
<tr>
<td><strong>Number of Comorbid Diagnosis</strong></td>
<td>3.00 (0.71)</td>
<td>2.50 (1.20)</td>
<td>3.17 (1.33)</td>
</tr>
<tr>
<td><strong>Physiological Response</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of Fainting</td>
<td>1 (20%)</td>
<td>2 (25%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>History of Vomiting</td>
<td>0 (0%)</td>
<td>2 (25%)</td>
<td>2 (33.30%)</td>
</tr>
<tr>
<td>Family History of BII fears</td>
<td>3 (60%)</td>
<td>5 (62.50%)</td>
<td>4 (66.70%)</td>
</tr>
<tr>
<td><strong>Disgust</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DESC-C</td>
<td>30.20 (13.05)</td>
<td>38.38 (23.84)</td>
<td>67.83 (20.3)</td>
</tr>
<tr>
<td>DESC-P</td>
<td>58 (18.67)</td>
<td>52.50 (18.78)</td>
<td>54.17 (28.6)</td>
</tr>
<tr>
<td><strong>BII Symptoms</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MQ-C</td>
<td>7.60 (4.83)</td>
<td>14 (7.56)</td>
<td>15.67 (5.54)</td>
</tr>
<tr>
<td>IPS-Anx-C</td>
<td>29.40 (9.97)</td>
<td>38.38 (16.58)</td>
<td>46.67 (18.00)</td>
</tr>
</tbody>
</table>

*Note.* BII = Blood-Injection-Injury; CSR = Combined ADIS-C/P clinician severity rating; DESC = Disgust Emotion Scale for Children; MQ = Mutilation Questionnaire; IPS-Anx-C = Injection Phobia Scale – Anxiety – Child version. Means are reported in the present table given that medians were equivalent.
Table 7.3  **Comorbid Diagnoses**

<table>
<thead>
<tr>
<th>No. of Comorbid Dx</th>
<th>Immediate Remitter</th>
<th>Delayed Remitter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>M (SD)</em></td>
<td></td>
</tr>
<tr>
<td>3.00 (0.71)</td>
<td>2.50 (1.20)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phobia n (%)</th>
<th>Immediate Remitter</th>
<th>Delayed Remitter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal</td>
<td>2 40%</td>
<td>4 50%</td>
</tr>
<tr>
<td>Natural Environment</td>
<td>1 20%</td>
<td>1 12.5%</td>
</tr>
<tr>
<td>Situational</td>
<td>0 0%</td>
<td>0 0%</td>
</tr>
<tr>
<td>Other</td>
<td>2 40%</td>
<td>3 37.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GAD n (%)</th>
<th>Immediate Remitter</th>
<th>Delayed Remitter</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 60%</td>
<td>5 62.5%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SoP n (%)</th>
<th>Immediate Remitter</th>
<th>Delayed Remitter</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0%</td>
<td>1 12.5%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SAD n (%)</th>
<th>Immediate Remitter</th>
<th>Delayed Remitter</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0%</td>
<td>0 0%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PTSD n (%)</th>
<th>Immediate Remitter</th>
<th>Delayed Remitter</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0%</td>
<td>1 12.5%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MDD n (%)</th>
<th>Immediate Remitter</th>
<th>Delayed Remitter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 20%</td>
<td>0 0%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADHD n (%)</th>
<th>Immediate Remitter</th>
<th>Delayed Remitter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 20%</td>
<td>0 0%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ODD n (%)</th>
<th>Immediate Remitter</th>
<th>Delayed Remitter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 20%</td>
<td>0 0%</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Dx = Diagnoses; GAD = Generalised Anxiety Disorder; SoP = Social Phobia; Separation Anxiety Disorder; PDSD = Post traumatic Stress Disorder; MDD = Major Depressive Disorder; ADHD = Attention Deficit Hyperactivity Disorder; ODD = Oppositional Defiant Disorder.
7.4.4 Within Treatment Variables

Estimates of Coping. Two children were excluded from the analyses because of missing data (one child in the immediate remitter group was missing estimates of coping during the OST while another child in the delayed remitter group was missing coping ratings at the 1-month follow-up).

Inspection of Figure 7.1 shows that the coping estimates of those in the immediate remitter group increased from the start of OST to the end of OST and were maintained across the 1 and 3-month follow-up periods. However, the expected significant increase in coping from the beginning to the end of OST was not supported statistically (Wilcoxon \( z = -1.46, p = .14 \)), possibly due to the small sample size (n = 4). The mean increase in coping from the start of OST was 1.96, which is similar to that found for the delayed remitter group (\( M = 1.71 \)), supporting this conclusion. In accord, the increase in coping estimates for the delayed remitters (n = 7) was significant from the start of OST to the end of OST (Wilcoxon \( z = -2.02, p = .04 \); refer Figure 7.2), and was maintained from the end of OST to 1-month follow up (Wilcoxon \( z = -1.28, p = .20 \)). In addition, significant increases were found from 1-month to 3-month follow-up (Wilcoxon \( z = -2.21, p = .03 \)).

Finally, there was a trend for those in the non-responder group (n = 6) to report increased coping from the start of OST to the end of OST (refer Figure 7.1); however, this difference was not statistically significant (Wilcoxon \( z = -1.75, p = .08 \)). Moreover, no significant changes were found for the non-responders in their estimates of coping from the end of OST to 1-month follow-up (Wilcoxon \( z = -.52, p = .60 \)) or from 1-month follow-up to 3-month follow-up.

Fear ratings. Wilcoxon tests showed significant time effects for fear ratings during OST across all the groups; immediate remitters, (Wilcoxon \( z = -2.02, p = .04 \); refer Table
delayed remitters (Wilcoxon z = -2.52, p = .01) and non-responders, (Wilcoxon z = -2.20, p = .03). A significant reduction in fear ratings from the start of OST to the end of OST was evident.

Disgust ratings. Wilcoxon tests were conducted to examine time effects on disgust ratings. Significant differences were not observed from the start of OST to the end of OST on disgust ratings for the immediate remitters (Wilcoxon z = -1.60, p = .11) and delayed remitters (Wilcoxon z = -1.21, p = .23). In contrast, time effects were found (Wilcoxon z = -2.20, p = .03) for the non-responders, with a significant decline in disgust ratings observed from the start of OST to the end of OST (refer Table 7.4).

Dry Needling, Finger Pricks and Blood Test. All children and adolescents, regardless of responder group, were able to have dry needling (i.e., acupuncture) during the OST. All youth in the immediate remitter group (n = 5; 100%) were able to have a finger prick during the OST, while in comparison, only 25% (n = 2) of those in the delayed remitter group and 33.3% (n = 2) of children in the non-responder group completed this exposure task. However, by the conclusion of the e-therapy maintenance program this increased to 87.5% (n = 7) in the delayed remitter group and 83.3% (n = 5) in the non-responder group. Notably, a large proportion of youth in the immediate remitter group (n = 4; 80%) were able to have a blood test during the OST. This further increased to all youth in the group (n = 5; 100%) by the conclusion of the e-therapy maintenance program. Similarly, by the conclusion of the e-therapy maintenance program the majority of youth (n = 6; 75%) in the delayed remitter group were able to have a blood test. In the non-responder group, no child had a blood test during the OST or e-therapy maintenance program.
Homework Compliance. Significant differences were not observed between the groups, in relation to child ($\chi^2$, $N = 2.13, p = .34$) and parent ($\chi^2$, $N = 1.21, p = .55$) reported homework compliance during the e-therapy maintenance program (refer Table 7.4).
Figure 7.1  Coping estimates for youth in each of the responder groups during OST and at follow-up.

Note. ☑ = Blood test
### Table 7.4  **Within Treatment Characteristics**

<table>
<thead>
<tr>
<th></th>
<th>Immediate Remitter</th>
<th></th>
<th>Delayed Remitter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( n = 5 )</td>
<td></td>
<td>( n = 8 )</td>
<td></td>
</tr>
<tr>
<td>Fear rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average pre exposure task</td>
<td>3.43 (0.93)</td>
<td></td>
<td>4.23 (1.50)</td>
<td></td>
</tr>
<tr>
<td>Average post exposure task</td>
<td>0.82 (0.60)</td>
<td></td>
<td>0.94 (0.51)</td>
<td></td>
</tr>
<tr>
<td>Disgust rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average pre exposure task</td>
<td>0.48 (0.81)</td>
<td></td>
<td>1.09 (1.38)</td>
<td></td>
</tr>
<tr>
<td>Average post exposure task</td>
<td>0.03 (0.07)</td>
<td></td>
<td>0.46 (0.68)</td>
<td></td>
</tr>
<tr>
<td>Dry Needling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During OST</td>
<td>5 (100%)</td>
<td></td>
<td>7 (100%)*</td>
<td></td>
</tr>
<tr>
<td>Finger Prick</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During OST</td>
<td>5 (100%)</td>
<td></td>
<td>2 (25%)</td>
<td></td>
</tr>
<tr>
<td>During e-therapy maintenance program</td>
<td>5 (100%)</td>
<td></td>
<td>7 (87.5%)</td>
<td></td>
</tr>
<tr>
<td>Blood Test ( n ) (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During OST</td>
<td>4 (80%)</td>
<td></td>
<td>4 (50%)</td>
<td></td>
</tr>
<tr>
<td>During e-therapy maintenance program</td>
<td>5 (100%)</td>
<td></td>
<td>6 (75%)</td>
<td></td>
</tr>
<tr>
<td>Homework Compliance ( M ) (SD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child</td>
<td>3.75 (0.90)</td>
<td></td>
<td>4.34 (1.14)</td>
<td></td>
</tr>
<tr>
<td>Parent</td>
<td>3.60 (0.63)</td>
<td></td>
<td>4.09 (1.25)</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Two children (one delayed remitter and one non-responder) were not offered dry needling due to unavailability of the physiotherapist.
7.5 Discussion

The present study aimed to define patterns of response and remission in youth following an intensive OST and e-therapy maintenance program. Conservative criteria for remission (e.g., ADIS <4; CGI of 1 or 2; Evidence of reliable change on symptom measures) were used to categorise children and adolescents based upon their pattern of responding at post treatment (e.g., 1 week after OST), 1-month follow-up and 3-month follow-up. Contrary to expectations, four responder groups emerged. Twenty-five percent of youth were found to have an immediate and robust response to OST, while the majority of youth (40%), showed initial improvements following OST, but did not achieve a full response until 3-month follow-up (delayed remitter). A small proportion of youth (10%) were found to be partial responders, and finally, 25% of children and teenagers did not respond and showed limited change following OST and across follow-up. Of interest, two children fell within the partial responder group. One of these children was excluded due to her comorbid diagnosis of Type 1 diabetes and the other subsumed into the non-responder group. It is likely that larger studies would find a greater number of youth falling into this category, characterised by a reduction in symptoms but not achieving complete remission, or having a return of symptoms following an initial response. Larger trials are required in order to better understand this sub-group of youth.

Across controlled trials for OST there has been considerable variability in post treatment remission rates, with rates ranging from 25% to 90% of youth no longer meeting diagnostic criteria (Farrell, Waters, Milliner, Zimmer-Gembeck, et al., 2013; Ollendick et al., 2015; Ollendick et al., 2009; Öst et al., 2001; Waters, Farrell, et al., 2014). Moreover, less intensive cognitive behavioural therapy approaches (e.g., 10 weekly sessions) for phobic youth report recovery rates ranging from 55% to 88% at post treatment (Silverman et al.,
Our findings for remission (25%) are somewhat lower than those reported in other studies of phobic youth. It should be noted however that these studies either did not include youth with BII or included only small numbers. In addition, by 3-month follow-up, 65% of youth in the current trial were remitted. The large controlled trials of OST for phobic youth report long-term (e.g., 1-month and 6-month) remission rates between 45% and 90%. While preliminary, these findings suggest that a small proportion of youth with BII have an immediate response to OST with the majority requiring a longer period of time to achieve remission.

A further aim of the present study was to examine the psychological characteristics associated with each of the responder groups. Of note, youth who were immediate remitters were more likely to have a primary diagnosis of injection phobia only, in comparison to the delayed remitters and non-responder groups, which had relatively equal proportions of youth with injection only and combined BII phobia.

Youth in the non-responder group reported significantly greater disgust sensitivity than the immediate and delayed remitters. Whilst BII phobia has been found to be associated with disgust in the adult literature, there appears to be evidence that disgust may be more strongly correlated with blood related fears than injection fears (Olatunji, Lohr, et al., 2007; Olatunji, Sawchuk, et al., 2010; Öst, 1992; Page, 2003). Indeed, these results albeit preliminary suggest that non-responders may be more likely present with blood fears in combination with injection fears and furthermore be higher in disgust sensitivity. This finding is consistent with research from the adult literature which has found that disgust may be more resistant to extinction than fear (Olatunji, Smits, et al., 2007). Experimental studies have found that while exposure leads to decreases in both fear and disgust, the decline in fear is significantly greater than the decline in disgust. Researchers have proposed that individuals with BII phobias may require longer and more frequent exposure sessions, in addition to
completing exposure tasks specifically designed to target disgust to enhance their treatment outcome (Hirai et al., 2008). While preliminary, the present study’s findings support this, and highlight the need for clinicians too not only assess the level of children’s disgust sensitivity prior to treatment for BII phobia, but also to consider this in treatment planning. Youth with heightened disgust sensitivity may require a greater dose of treatment including exposure tasks designed to elicit a disgust response (e.g., watching blood drip from a finger).

In addition, non-responders were more likely to have a comorbid diagnosis of social phobia than the other groups. Interestingly, this finding is consistent with that of Ginsburg et al. (2011) who found that an absence of social phobia predicted remission for anxious youth involved in the CAMS trial. Indeed, the presence of a social phobia has been shown to be difficult to treat and is associated with poorer responding relative to other child anxiety diagnoses (Kendall, Settipani, & Cummings, 2012). These findings are therefore consistent with the emerging literature and suggest that children with comorbid social phobia may do better by targeting this disorder as the primary disorder and treating it before other anxiety disorders.

The present study also explored correlates of within session change in relation to response and remission. Contrary to expectation, all responder groups showed increases in coping estimates during OST. However, while the immediate remitters and delayed remitters continued to improve in coping estimates following OST, those in the non-responder groups showed limited change beyond the session. Unexpectedly, all responder groups show significant decreases in fear ratings over the OST session. Of interest, the non-responder group also reported significant declines in disgust ratings over the OST session. Those in the immediate remitter and delayed remitter groups reported very little disgust during the OST session. Thus, while the non-responders showed a significant decline in disgust they had higher rates of disgust at the commencement of the session. Taken together, these findings
suggest that disgust does decline during exposure treatment; however, the disgust sensitivity at pre-treatment is associated with a poorer response, therefore, children high on disgust sensitivity may need a stronger dose of exposure, or additional cognitive strategies to directly target disgust appraisals, in order to alter severity of symptoms for BII phobic youth.

Of clinical importance, one of the strongest indicators of treatment responding within OST was whether children and teenagers were able to have a blood test. During the OST session 80% of the immediate remitters were able to have a blood test. Moreover, by completion of the e-therapy maintenance program all children (100%) in the immediate remitter group and 75% of those in the delayed remitter group were able to have a blood test, while none of the children in the non-responder group had a blood test. This finding has significant clinical implications and suggests that if youth have been unable to have a blood test by the conclusion of the e-therapy maintenance program a booster OST may be necessary, whereby the clinician should continue to engage in exposure therapy with the youth until they have been able to achieve this goal.

This study is not without limitations, most notably, the sample size was very small, with only descriptive and exploratory analyses able to be conducted. Whilst further research with larger samples of BII phobic youth is needed to confirm the present study’s findings, these preliminary data provide some guidance in understanding potential predictors of poorer response (i.e., blood phobia, disgust sensitivity, comorbid social phobia, unable to achieve the goal of having a blood test). Another limitation of this study was the exclusion of the child who had co-occurring Type 1 diabetes. While necessary, given the scope of the present study, this is an area in need of further research, given the significant and daily impairment experienced by these youth with comorbid health problems. Moreover, this population may respond differently to OST and potentially benefit from a less intensive approach to treatment and more regular ongoing support. One baseline characteristic, which was not explored in the
present study, was the child’s pre-treatment level of motivation to overcome their fear.
Clinically, it was observed that the young adolescent girls in the non-responder group often had poor motivation and were not as engaged in treatment as other youth. Given the focused and time limited nature of intensive treatments, child motivation and engagement in treatment is essential (Öst et al., 2001). Child motivation may be an important predictor of treatment outcome that has yet to be explored systematically. Finally, another limitation of the present study was the lack of follow-up beyond 3-months. In comparison to other phobia types (e.g., dog, dark and heights) youth with BII phobia and their parents must actively plan exposure opportunities, for example, by scheduling a doctor’s appointment for a vaccination or booking a physiotherapist for dry needling. Moreover, if children are healthy they may not require a vaccination or blood test for a number of months or even years. Future research needs to establish the long-term patterns of remission for these youth, to determine whether they need to schedule continued opportunities for exposure long term (e.g., 6 monthly or yearly) to maintain treatment gains.

These limitations notwithstanding, the present study makes an important, albeit preliminary, contribution to the existing literature. On the basis of the findings reported here it appears that youth who have a diagnosis of blood phobia, higher disgust sensitivity, and/or co-occurring social phobia may not respond as well to an intensive OST for BII phobia. Treatment for these youth may need to be augmented to include a greater dose of exposure therapy or involve specific exposure tasks to target these correlates of poorer remission (e.g., disgust). Moreover, youth who have social phobia may require treatment for this disorder prior to engaging in treatment for their specific phobia. Notably, the most reliable marker of treatment remission within OST and by the conclusion of the e-therapy maintenance program appeared to be whether children were able to achieve the goal of having a blood test. Therefore, achieving this goal in exposure therapy should indeed be the therapeutic goal for
every child, with perhaps a longer course of treatment provided in order to achieve this goal for those more reluctant and fearful children.

The development of effective intensive treatments for youth with BII phobia is imperative, given the debilitating nature of this disorder and the need for rapid intervention, particularly in health care settings if a child requires medical attention. The findings of the present study highlight different response patterns and may assist clinicians in more effectively planning, delivering and evaluating individualised treatment approaches for BII in youth in order to maximise outcomes.
7.6 References


Page, A. C. (2003). The role of disgust in faintness elicited by blood and injection stimuli. *Journal of Anxiety Disorders, 17*(1), 45-58. doi: [http://dx.doi.org/10.1016/S0887-6185(02)00169-X](http://dx.doi.org/10.1016/S0887-6185(02)00169-X)


of paroxetine in children and adolescents with social anxiety disorder. *Archives of General Psychiatry, 61*(11), 1153-1162. doi: 10.1001/archpsyc.61.11.1153

7.7 Chapter 7 Relevant Appendices

The following Appendices are relevant to Chapter 7, but have not been referred in text as it has been submitted for publication.

Appendix A Ethics Approval from Griffith University
Appendix B Information and Consent Form for BII Phobic Youth
Appendix D Telephone Screen
Appendix E Demographic Questionnaire BII and Animal Phobia
Appendix F Composite Diagnoses and CGI
Appendix N Disgust Emotion Scale for Children – Child Version (DES-C)
Appendix O Disgust Emotion Scale for Children – Parent Version (DES-C)
Appendix P Mutilation Questionnaire – Child Version (MQ-C)
Appendix Q Injection Phobia Scale – Child Version (IPS-Anx-C)
Appendix X Threat Appraisal Ratings
Appendix Y Fear and Disgust Ratings
Appendix Z Homework Compliance – Child Version
Appendix AA Homework Compliance – Parent Version
Chapter 8  General Discussion

Of the phobia subtypes, Blood-Injection-Injury (BII) phobia is one of the most complex and debilitating. A substantial body of research has examined the clinical features, aetiology, maintenance and treatment of adult BII phobia, yet comparatively little is known about BII in youth. As summarised in Chapter 2, there are a number of important areas of research in need of empirical investigation within childhood BII phobia. Despite being a relatively prevalent mental health disorder in children and adolescents, BII phobia remains largely under-studied among paediatric samples. While researchers in the child phobia field have speculated that BII phobia in youth may have a distinct clinical presentation, this is yet to be explored – with no clinical studies to date systematically examining the psychological characteristics of this phobia subtype in children and teenagers. Further, it is apparent from the emerging adult literature that BII phobia may have a number of unique factors involved in its pathogenesis, such as fainting, disgust, pain and perceived control; however, research with youth has not yet examined whether these characteristics are implicated in the childhood expression of the disorder. Moreover, as highlighted in Chapter 2, there is limited evidence for the treatment of BII phobia in children and adolescents with only a few case studies and small numbers of youth included in randomised control trials (RCTs) (Öst et al., 2001; Thompson, 1999). More recently, children with BII phobia have been excluded from large RCTs (Ollendick et al., 2015; Ollendick et al., 2009) due to their presumed unique clinical presentation (e.g., fainting), their potentially poorer treatment response and the suggestion that treatment delivery may be more challenging (e.g., involvement of health professionals).
This thesis sought to empirically address these proposed, yet currently unstudied, complexities associated with BII phobia in children and adolescents by conducting a series of four clinical studies. The first study consisted of a review of aetiological models and the current status of treatment research, and as such, proposed an integrated cognitive behavioural model of BII phobia in children and adolescents to guide assessment and formulation driven approaches to treatment for these youth. Moreover, the study described possible modifications to a traditional One Session Treatment (OST) approach to augment treatment outcome. The second study systematically examined the psychological characteristics of BII phobia in youth, relative to youth with animal phobia, in order to identify unique and shared features of this phobia subtype. The third study provided a preliminary examination of the efficacy of OST and an e-therapy maintenance program for BII phobia youth using a multiple baseline controlled trial. The final study examined patterns of response and remission following OST for BII phobia, and additionally, explored the psychological characteristics and within treatment change (in relation to coping, fear ratings and homework compliance) associated with different treatment response patterns. The purpose of this general discussion is to summarise the findings across each of the four studies and integrate this new knowledge within the context of the current literature, highlighting implications for clinical practice and future research.

8.1 Study 1 – Outcomes and Implications

It has been suggested that there are a number of unique challenges associated with the delivery of treatment for BII phobic youth. In Study 1 a cognitive behavioural model of BII phobia in children and adolescents was proposed. The model was developed based upon reviewing and integrating existing theoretical models of childhood specific phobia and adult BII phobia. The model was proposed in order to inform individualised and formulation-driven
approaches to treatment. Indeed, Öst et al. (2001) found that BII phobic youth responded significantly less favourably to a traditional OST approach than youth with other types of phobia. This model highlights the need for assessing across a broad range of relevant psychological correlates, including disgust, pain, the propensity to faint or vomit, and family history of BII phobia, in order to tailor treatment to the unique needs of each child.

Following this, case studies were presented that described the treatment response of two children with a primary diagnosis of BII phobia (8 and 11 years). The first case (Louise) followed a standard OST format (e.g., 3-hour exposure session, without continued therapist support) while the second case study involved a formulation driven approach to delivering OST, based upon the proposed cognitive behavioural model, with adaptations to address BII specific maintaining factors hypothesised to be essential to target in order to maximise treatment outcome. A number of modifications to standard OST were suggested including strategies to address the role of pain (e.g., more incremental approach to exposure, additional psychoeducation), disgust (e.g., disgust eliciting exposure tasks) and fainting in the maintenance of children’s phobia. Given the role of parent psychopathology and parent practices in the maintenance of children’s fear, it was recommended that parent’s receive additional education prior to OST, in addition to contingency management training and guidance regarding planning exposure tasks after treatment. Moreover, in order to enhance compliance with exposure practice post OST it was suggested that families participate in a structured e-therapy maintenance program.

As discussed in Chapter 1, a typical OST approach for child specific phobia would include providing families with the rationale for the intensive treatment approach prior to commencing OST. Families are informed that the OST is a ‘kick start’ in helping their child overcome their fear, whereby the child has an opportunity to confront their feared stimuli with the assistance of a therapist during the massed exposure session. The importance of continued
practice to maintain their treatment gains and generalise outcomes is also emphasised to families. Continued practice following OST represents a significant challenge for youth with BII phobia. Unlike other types of phobias, such as a dark or dog phobias, naturally occurring opportunities for exposure are less frequent as most children are not routinely exposed to BII stimuli. For example, if children are healthy they may not require a vaccination or blood test for months or even years. Hence, to maintain and enhance treatment gains and to protect against the return of fear for BII phobic youth, parents need to actively create opportunities for exposure for their children, for example, scheduling doctor’s or dentist appointments, taking their child to blood collection centres, purchasing medical supplies and ingredients to make fake blood. The e-therapy maintenance component of the modified treatment was thought to be essential in addressing these obstacles and facilitating ongoing progress. Parents were educated in the importance of continued exposure practice following treatment from the outset and as such were informed that the e-therapy sessions were indeed an active and essential part of treatment. The pilot data presented in this study provided preliminary support for both the feasibility and effectiveness of cognitive behavioural approaches for the treatment of BII phobic youth.

8.2 Study 2 – Outcomes and Implications

Study 2 examined the clinical features of BII phobia in youth relative to an age and gender matched group of youth with animal phobia. Children and adolescents with BII phobia were found be more severe and to experience greater interference in their family, school and social life. They were also more likely to have a physical health condition and comorbid diagnosis of generalised anxiety disorder (GAD). Phobic youth also differed in terms of their threat appraisals, with BII phobic youth reporting more exaggerated danger expectancies and
tending to focus their fear on physical symptoms (e.g., nausea and faintness) in comparison to youth who had animal phobia.

Contrary to expectations, differences were not observed between BII and animal phobic youth in relation to disgust sensitivity. The levels of disgust reported by youth in Study 1 were elevated in comparison to non-clinical adult samples (approximately two standard deviations above the mean) and as expected comparable to levels of disgust reported by adults with clinical BII and spider phobia (i.e., within one standard deviation of the mean reported by Sawchuk et al., 2000). However, the heightened levels of disgust in Study 1 were not considerably different to that reported in previously published data with non-selected community control youth (aged 8 to 12 years; Muris et al., 2012). Of note, in both our data and that of non-selected community youth (Muris et al., 2012), variability in self-reported disgust was substantial, suggesting considerable individual variance in the experience of disgust among child and adolescent samples.

Research with well-defined non-clinical samples is needed, as well as with other phobia subtypes, to improve our understanding of the nature of disgust sensitivity among youth with and without specific subtypes of phobia. Moreover, alternative methods of assessment (e.g., physiological measures such as heart rate or facial electromyography) may further clarify the nature of disgust experiences for youth with BII and/or animal phobia. This study provides preliminary evidence that BII phobia in youth represents a more severe and debilitating phobia subtype with unique clinical characteristics that may benefit from a modified treatment approach to improve outcomes.

Anecdotally, it was observed that even within BII phobia there are substantive differences in children’s clinical presentation. For example, some BII phobic youth report extreme physiological responding, such as fainting or vomiting, when confronted with their feared stimuli. Moreover, a proportion of BII phobic youth experience not only high levels of
fear, but also disgust, when exposed to BII stimuli. The focus of fear also varies within BII phobia, with some youth endorsing beliefs associated with harm and danger, particularly in relation to pain, in comparison to others who fear physical symptoms such as fainting, vomiting, dizziness and shortness of breath they experience when confronted with their feared stimuli. BII phobia is a highly heterogeneous disorder in youth, which appears distinct from other phobia subtypes, and thus, an individualised and formulation driven approach to assessment and treatment appears to be an appropriate recommendation on the basis of Study 1 and Study 2.

8.3 Study 3 - Outcomes and implications

The effectiveness of the modified OST developed in Study 1 was evaluated in a multiple baseline controlled trial in Study 3. Twenty-four children and adolescents (8-18 years) with a primary diagnosis of BII phobia were randomly allocated to a 1, 2 or 3 week baseline. Efficacy was assessed 1 week after OST and at 1- and 3-month follow-up. As expected BII symptoms and phobia severity remained relatively stable during the baseline periods and then significantly improved following the modified OST. At post treatment 33.33% of youth were free of their BII phobia diagnosis. Youth continued to improve over follow up intervals with 58.33% diagnosis free at one1-month follow-up and 62.5% at 3-month follow-up. Treatment response was supported across child, parent and clinician ratings.

Study 3 findings provide preliminary support for the effectiveness of an intensive cognitive behavioural treatment (CBT) for BII phobia in children and adolescents. The treatment protocol included all the standard OST components (e.g., in vivo exposure, cognitive challenges, participant modelling, reinforced practice, psychoeducation) in addition to the BII specific adaptions discussed in Study 1. Our findings for percentage of youth diagnosis free (33.33%) following OST are somewhat lower at post treatment (50% to 90%)
than the large RCT for phobic youth (Ollendick et al., 2015; Ollendick et al., 2009; Öst et al., 2001; Silverman et al., 1999). Of note however, by 3-month follow-up, 62.5% of youth in the trial were diagnosis free, consistent with the large RCTs of OST for phobic youth, which report long-term (e.g., 1-month and 6-month) remission rates between 45% and 90%. The development of cost effective and efficient treatment approaches that deliver rapid reductions in fear is essential for BII phobia given its debilitating nature and the potential effects it may have on children’s physical health. Intensive treatment approaches like this modified OST hold great promise.

Previous RCT for childhood phobia have excluded BII phobic youth in part due to difficulties associated with the delivery of treatment for these youth (Ollendick et al., 2015; Ollendick et al., 2009). Indeed, engagement with other health professionals was an important adjunct to treatment for youth with BII phobia, which at times presented challenges from a feasibility perspective. During their OST, children were exposed to dry needling from a physiotherapist, and finger pricks and blood tests from a pathology nurse. Prior to their involvement in the trial, the physiotherapist and pathology nurses received training in how to appropriately interact with anxious youth and their role in treatment delivery. All health professionals involved in the intensive treatment session worked from the one site (e.g., Griffith University Gold Coast campus), which provided a relatively straightforward opportunity for multi-disciplinary involvement in children’s therapy. The treatment in its current form is likely to be more amenable to delivery in either a hospital or outpatient medical setting. Further research is needed to determine whether this approach could be delivered as effectively in routine clinical practice. In the community for example, treatment may be more feasibly delivered in a spaced format, such as 1.5 hour sessions over two days, whereby the clinician could meet with the family at a physiotherapist on the first day and then visit a nurse on the second. Moreover, a considerable amount of time was devoted to
scheduling and coordinating appointments between families and the health professionals involved in the session. The question of whether OST could potentially be delivered in a group format is an interesting one, which may provide a more efficient model of coordination and treatment delivery; although, the degree to which OST maintains its effectiveness in group modality raises an empirical question for further research.

### 8.4 Study 4 – Outcomes and Implications

Study 4 described and characterised children and adolescents patterns of response and remission following OST for BII phobia (e.g., Study 3). Twenty-five percent of youth were found to experience an immediate and robust remission following OST, while the majority of youth (40%) were delayed remitters who showed some improvements following OST although they did not achieve complete remission criteria until 3-month follow-up. A further 10% of youth were classified as partial responders (improved but not remitted), and finally, 25% of youth did not respond and showed limited change following OST and across follow-ups. Immediate remitters were more likely to have a primary injection phobia, while non-responders had increased rates of social phobia and heightened levels of disgust sensitivity. The strongest indicator of successful treatment response, on the basis of this largely descriptive paper, was whether youth were able to have a blood test during their OST or by the conclusion of the e-therapy maintenance program.

Following OST, the majority of youth (40%) showed a delayed pattern of treatment responding whereby they reported an initial improvement but did not achieve full remission until 3-month follow-up, while a smaller proportion of youth had an immediate response. It is suggested therefore, that most children with BII do indeed require the inclusion of an e-therapy maintenance program to continue to make gains and achieve remission at follow-up. The e-therapy maintenance sessions involved reviewing progress with exposure practice,
collaboratively deciding upon exposure tasks for the coming week, and most importantly problem solving any difficulties associated with ongoing exposure. The sessions were relatively brief, typically 45 minutes and were of particular importance for a sub-set of youth who may have been faltering in ongoing at-home practice. E-therapy offers a novel adjunct to traditional OST, potentially augmenting treatment response through ongoing support of at home exposure practice, which arguably supports generalisation of gains made during the OST. This less intensive and low-dose maintenance program complements OST, reducing the time burden on families (e.g., less time required travelling to and from psychology appointments) and providing a gradual phasing out of therapist involvement as families become equipped with the knowledge and skills to plan and carry out their own ongoing exposure tasks (Ollendick et al., 2015; Silverman & Kurtines, 1996).

Study 4 found preliminary evidence to suggest that heightened disgust sensitivity is associated with poorer treatment response following OST. Prior to delivering treatment, it is recommended that practitioners assess BII phobic youth’s disgust sensitivity and consider this in their treatment planning. Treatment may be enhanced for these youth by including exposure tasks designed to elicit disgust. For example, in BII fearful adults, Hirai et al. (2008) compared the effectiveness of traditional exposure therapy to exposure therapy supplemented with additional exposure tasks aimed at eliciting disgust. In the fear-disgust condition, participants received additional disgust-targeted psychoeducation (e.g., how to avoid infection and contamination when handling hypodermic needles) and completed three disgust provoking exposure tasks including (1) finger paint with blood while wearing gloves and then remove gloves and touch face, (2) hold a hypodermic needle and then touch their hair with the same hand, and (3) hold an open vial of blood and then touch their arms with the hand that had held the blood vial. Results showed that both the fear and fear-disgust treatments led to significant reductions in anxiety and avoidance associated with injection and blood stimuli.
Both treatments led to similar reductions in disgust responses to BII related stimuli and disgust sensitivity. However, inspection of effect sizes showed that the fear-disgust group reported a greater reduction in symptoms relative to the fear only group. Furthermore, given that poorer response was associated with increased disgust sensitivity in the current study, it may be that these youth require a stronger dose of treatment. Olatunji, Smits, et al. (2007) examined declines in fear and disgust in BII fearful adults following exposure to threat relevant stimuli. Exposure was found to lead to significant decreases in both fear and disgust; however, the decline in fear (as evidenced by a steeper decay slope) was significantly greater than the observed decline in disgust. This finding suggests that disgust may be more resistant to extinction than fear in BII phobia (Olatunji, Smits, et al., 2007). Moreover, given the rate at which disgust extinguishes, the authors suggested that BII phobics may require longer and more frequent exposure sessions.

Interestingly, one of the strongest indicators of treatment response in Study 4 appeared to be whether youth were able to have a blood test (during OST or during the e-therapy maintenance program). On the basis of these results, it is recommended that the target goal of treatment for all youth with BII should be having a blood test, and furthermore, that treatment might continue until this goal is achieved. Indeed, in the adult literature, OST for BII phobia typically involves multiple injections and a blood test. For example, Öst (1997) reports typically achieving 10 finger pricks, 10 to 12 subcutaneous injections and 2 to 4 blood tests during a single session. The degree to which treatment might be even more successful with multiple blood tests is another important area for empirical investigation. From Study 1 and Study 3 it appears that children and teenagers with BII progress through exposure at a substantially slower pace than adults. It is important that children, their parents, other health professionals working with the family, and therapists have realistic expectations as to what can be achieved during OST and pace the session according to the child’s level of fear and
motivation for change.

8.5 **Strengths and Limitations of the Program of Research**

The present program of research has a number of notable strengths. Firstly, the series of studies addresses a considerable gap in the child phobia literature. For example, Study 1 is the first to propose a cognitive behavioural model of BII phobia in youth, which can be used to inform individualised formulation driven approaches to treatment. Study 2 is the first of its kind to provide a systematic description of the unique and shared clinical features of BII phobia in a clinical sample of children and adolescents. As previously discussed, BII phobic youth have largely been excluded from large RCTs for childhood specific phobia. Study 3 is the first controlled treatment trial for this phobia subtype, providing preliminary support for CBT. Finally, to date no study has been published that describes different patterns of treatment response following OST. These studies provide a solid foundation for continued research into the assessment of treatment of BII phobia in children and adolescents, an area that has generally been neglected in the child literature to date.

Another strength of this series of studies is their clinical utility and the degree to which the findings of the studies inform the conceptualisation and treatment of BII phobia in children and adolescents. Collectively, these studies provide a framework for clinicians to guide assessment and also to assist them to identify the factors involved in the development and maintenance of BII phobia in youth. A formulation driven approach is recommended whereby treatment components can be matched to the presenting symptoms and maintaining characteristics unique to each child, in order to maximise outcome. Additionally, Study 4 highlights the need for clinicians to identify youth who may require a stronger dose of treatment or other such adaptions to maximise outcome.
The research methodology used in each of the studies was also a notable strength. All studies included primary BII phobic youth diagnosed with the ADIS-IV C/P, which is considered the gold standard diagnostic interview for the assessment of anxiety disorders in youth. Moreover, assessments were multi-informant (e.g., child, parent and clinician) and multi-modal including diagnostic interviews, self-report questionnaires, all of which had sound psychometric properties, and behavioural observation tasks.

Study 2 included two well-defined samples of youth with either a primary BII phobia or primary dog phobia. To ensure that shared features of the phobia subtypes did not impact findings, youth with comorbid BII and dog phobia were excluded from the study resulting in more homogenous comparison groups. Study 3 evaluated the effectiveness of a modified OST for BII phobia in youth using a single case, non-concurrent multiple baseline design (Hayes et al., 1999; Kazdin, 1998). This experimental design allows for the systematic evaluation of the efficacy of novel interventions in a controlled manner (Cowart & Ollendick, 2011; Jarrett & Ollendick, 2012; Ollendick, 1995). Single case designs are endorsed by the evidence-based treatment movement (Task Force on Promotion and Dissemination, 1995). All studies used independent raters to conduct diagnostic interviews who were blind to experimental conditions and children’s history to ensure valid and unbiased assessments of children’s current functioning.

This program of research is not without limitations. Most notably, the small sample sizes involved in the present studies may have lacked adequate statistical power to detect differences. For example, in Study 2, between group differences may have been unpowered to detect meaningful differences between BII phobic youth and animal phobic youth, particularly in relation to differences in youth’s parent reported physiological responding (e.g., history of fainting or vomiting in the presence of feared stimuli). Of note, five youth in the BII phobia group reported a history of fainting in the presence of their feared stimuli,
while a further five reported a history of vomiting. By contrast there were no youth in the animal phobia group who had a history of fainting or vomiting in the presence of their feared stimuli. However, while this difference was notable, it was not significantly different.

Moreover, in Study 4, small group sizes resulted in low power to detect significant baseline differences across groups or within session change within each group, which was particularly evident in relation to coping estimates for the immediate remitter group \((n = 5)\). Whilst each study was designed and analysed with the sample size in mind, clearly, larger studies with adequately powered samples are needed in order to provide confirmatory support for preliminary findings reported in these studies.

Additionally, the majority of youth included in the sample were primarily injection phobic \((n = 17)\), with only a small number of youth meeting criteria for combined BII phobia \((n = 8)\). As discussed in Chapter 2, there appears to be distinct differences in the clinical features of injection and blood phobia in adults, with blood phobia possibly representing a more severe form of the disorder and associated with greater disgust sensitivity (Olatunji, Lohr, et al., 2007; Olatunji, Sawchuk, et al., 2010; Öst, 1992; Page, 2003). Larger samples, which have equal groups of youth across the various sub-types within BII, would assist in examining the unique characteristics within this heterogeneous phobia among youth. Along similar lines, the present sample included only a small number of youth who had co-occurring medical conditions such as asthma and Type 1 diabetes. Anecdotally, these youth reported long histories of repeated direct negative conditioning experiences associated with their medical treatments. During diagnostic interviews these children and parents often endorsed symptoms of post traumatic stress in relation to these experiences. In Study 4, one of these youth was excluded and another was a non-responder to treatment, hence it is unclear whether the OST including e-therapy maintenance program is indeed as effective for these children and adolescents. Moreover, whilst assessments were carried out by independent evaluators at
each time point following treatment they were not conducted by blinded assessors at pre-
treatment leading to a potential assessor bias in Study 2.

The results pertaining to all the studies may be limited in generalisability due to the
demographics of the samples included. All of studies almost exclusively included Caucasian
youth with the exception of one child of Asian heritage who participated in studies 2, 3 and 4.
Future research should aim to include more ethnically diverse samples. Moreover, findings
from Study 2 are somewhat limited in generalisability due to the inclusion of only one control
group of youth, namely animal phobic youth. Thus it remains unclear whether BII phobia is
distinct from the other phobia subtypes such as natural environment and situational in youth.

Another notable limitation was the non-inclusion of a measure of child motivation for
treatment. Clinically, it was observed that the young adolescent girls in the non-responder
group often had poor motivation and were not as engaged in treatment as other youth. Given
the focused and time limited nature of intensive treatments, child motivation and engagement
in treatment is essential (Öst et al., 2001). Interestingly, in two of the large RCTs for phobic
children and adolescents (Ollendick et al., 2009; Öst et al., 2001) those youth who had low
motivation were excluded from participation. Thus, child motivation may be an important
predictor of treatment outcome that has yet to be explored systematically.

Across the studies there were some instances whereby data was missing. Overall,
retention in the treatment was excellent (i.e., 100% at post-treatment and 95.8% at 3-month
follow-up); however, the return of child and parent report questionnaires at follow-up was
very low, despite numerous attempts from the author to collect these data. Thus, the findings
related to changes in self-report measures following a modified OST are limited and require
further investigation in larger trials.

Finally, Study 3 and Study 4, which examined the modified OST and patterns of
response and remission following treatment would have benefited from longer-term follow-
up. Both studies included assessments of youth out to 3-month follow-up. Future studies should evaluate youth at 6-months to 12-months post-treatment and beyond, in order to examine long-term outcome in BII phobic youth.

8.6 Future Directions

These studies make a significant contribution to the very limited research into BII phobia among children and adolescents. However, there is still much to be learned in order to better understand and effectively treat this complex and debilitating disorder in youth. In Study 1 a cognitive behavioural model of BII phobia was proposed. Many of the components of the model are derived from the adult literature and need to be assessed empirically in youth. For example, the model proposes that disgust plays a significant role in the development and maintenance of BII phobia in youth. Almost all the research relating to disgust and BII phobia has been carried out with adult samples and to date studies have not been conducted with clinical samples of BII phobic youth. This is similarly the case in relation to pain, fainting and perceived control. Hence, future research is needed to examine these underlying mechanisms associated with BII phobia in children and adolescents. It is hoped that the CBT model proposed can be used as a framework and foundation to guide research in this area.

Another area that requires further investigation is the phenomenology of BII phobia in youth. While Study 2 presents an important first step in characterising these children and adolescents, it was limited to BII phobia relative to dog phobia. Existing research in the child literature has found that youth with natural environment phobia are more likely to present with co-occurring conditions (e.g., GAD and SAD), have a poorer quality of life and report greater somatic symptoms in comparison to children and adolescents with animal phobia (Ollendick, Raishevich, et al., 2010). Moreover, adult studies have found that BII phobia and
situational phobia are associated with greater impairment than other phobia types (Depla et al., 2008). Future studies that compare across all of the phobia subtypes in clinical samples of youth are needed to determine the nature of differences across the broad range of specific phobias. Moreover, research is needed to examine the unique clinical features within BII phobia, given that there appears to be distinctively different presentations, with some children presenting with primary blood fears, others with primary injection fears, and a proportion who present with a combination of fears (e.g., blood, injection and injury). In the adult literature, only one study to date (Öst, 1992) has compared primary blood versus primary injection phobia on a range of sociodemographic, cognitive, physiological and behavioural variables. On the basis of that study, Öst (1992) concluded that whilst the two presentations share numerous similarities, blood phobia may be a more severe form of BII phobia. Whilst the current studies were under-powered to investigate differences between children with varying BII presentations (blood versus injection fears), it was anecdotally observed that youth with blood fears appeared to be more severe in their presentation. Study 4 noted a greater proportion of these youth in the non-responder group, which was not surprising to the author given clinical observations with these youth.

Of the youth who participated in the controlled trial, approximately one third were reported to have a parent with the same fear. As BII phobia has one of the strongest heritability’s of the phobia subtypes (Van Houtem et al., 2013), it is suggested that future studies assess parent BII diagnostic status using structured clinical interviews and explore the effects of parent BII diagnosis on treatment outcome and home exposure practice. Clinically, it was noted that a lack of engagement in home tasks appeared to be more often the result of parent’s busy schedules and hence parent fear did not appear to effect child progress during therapy sessions. The degree to which parent BII fears may have hindered the OST and home practice is however currently unknown and is worthy of further investigation. Furthermore,
consideration of the degree to which parents should be actively involved in treatment requires further research. It may be that younger children benefit from a stronger dose of parental involvement relative to adolescents (see Wei & Kendall, 2014).

While Study 3 and Study 4 provide preliminary support for the efficacy of a modified OST for BII phobic youth, in addition to identifying potential correlates of treatment responding worthy of further investigation (e.g., BII subtype and disgust sensitivity), further research including large RCTs with long term follow-ups are needed to provide additional support for this approach and to establish mechanisms of change and moderators of treatment response. Moreover, the efficacy of the intensive approach in larger samples of children with chronic illness and comorbid BII phobia is also imperative. An intensive approach to BII treatment is likely to be most beneficial in a medical outpatient or hospital setting where children may be more likely to experience acute BII symptoms and require efficient management of such in order to receive medical care. The risks of not effectively managing these symptoms may include poor medical intervention and prognosis for the child in regards to their health, as well as poorer psychological outcomes including significant BII phobia, general anxiety and distress, as well as risk for post traumatic stress.

8.7 Summary and Conclusions

BII phobia in children and adolescents is a severe and debilitating disorder that has largely been neglected in the existing literature. There appears to be unique underlying mechanisms involved in the development and maintenance of this disorder in youth that require adaptations to established treatment approaches to maximise treatment outcome. Preliminary evidence has now been found for a modified approach to OST including an e-therapy maintenance program with remission rates at follow-up consistent with large RCTs for youth with other types of specific phobia. The findings emanating from this series of
studies are hoped to provide a framework for clinicians and researchers to better understand BII phobia in children and adolescents. These studies provide a foundation for future research aimed at advancing knowledge and practice for BII in youth, thus improving treatment outcome and longer term prognosis for children and adolescents who suffer from this complex and debilitating disorder.
8.8 References


356


With Anxiety Disorders: Findings From the CAMS. *Journal of Consulting and Clinical Psychology, 79*(6), 806-813. doi: 10.1037/a0025933


Mogg, K., & Bradley, B. P. (2006). Time course of attentional bias for fear-relevant pictures in spider-fearful individuals. *Behaviour Research and Therapy, 44*(9), 1241-1250. doi: [http://dx.doi.org/10.1016/j.brat.2006.05.003](http://dx.doi.org/10.1016/j.brat.2006.05.003)


Page, A. C. (2003). The role of disgust in faintness elicited by blood and injection stimuli. *Journal of Anxiety Disorders, 17*(1), 45-58. doi: [http://dx.doi.org/10.1016/S0887-6185(02)00169-X](http://dx.doi.org/10.1016/S0887-6185(02)00169-X)


Poulton, R., & Menzies, R. G. (2002). Non-associative fear acquisition: a review of the evidence from retrospective and longitudinal research. *Behaviour Research and Therapy, 40*(2), 127-149. doi: [http://dx.doi.org/10.1016/S0005-7967(01)00045-6](http://dx.doi.org/10.1016/S0005-7967(01)00045-6)


doi: [http://dx.doi.org/10.1016/0005-7967(77)90041-9](http://dx.doi.org/10.1016/0005-7967(77)90041-9)


doi: [http://dx.doi.org/10.1016/j.ijpsycho.2010.05.007](http://dx.doi.org/10.1016/j.ijpsycho.2010.05.007)


375


Varni, J. W., Seid, M., & Kurtin, P. S. (2001). PedsQL 4.0: reliability and validity of the Pediatric Quality of Life Inventory version 4.0 generic core scales in healthy and patient populations. *Med Care, 39*(8), 800-812.


379


APPENDIX A ETHICS APPROVAL FROM GRIFFITH UNIVERSITY

GRIFFITH UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE

11-May-2012

Dear Dr Farrell

I write further to your application for a variation to your approved protocol "Novel Treatment of Phobias in Children and Teenagers" (GU Ref No: PSY/03/09/HREC). This request has been considered by the Chair.

The Chair resolved to approve the requested variation:

These variations relate specifically to children and adolescents with Blood Injury and Injection (BII) Phobia. Following our earlier correspondence children and adolescents with a BII phobia will receive a One Session Treatment (OST) but will not be randomized to DCS or placebo given their fear of needles and therefore their inability to have the required blood tests.

This decision is subject to ratification at the next meeting of the HREC. However, you are authorised to immediately commence the revised project on this basis. I will only contact you again about this matter if the HREC raises any additional questions or comments about this variation.

Regards

Chris Rose'Meyer
Policy Officer, Research Ethics and Governance
Office for Research
G39 3.56 Gold Coast Campus
Griffith University
ph: +61 (0)7 5552 7227
fax: +61 (0)7 5552 9058
email: c.rosemeyer@griffith.edu.au
web:

Cc:

At this time all researchers are reminded that the Griffith University Code for the Responsible Conduct of Research provides guidance to researchers in areas such as conflict of interest, authorship, storage of data, & the training of research students. You can find further information, resources and a link to the University's Code by visiting

PRIVILEGED, PRIVATE AND CONFIDENTIAL
This email and any files transmitted with it are intended solely for the use of the addressee(s) and may contain information which is confidential or privileged. If you receive this email and you are not the addressee(s) [or responsible for delivery of the email to the addressee(s)], please disregard the contents of the email, delete the email and notify the author immediately
APPENDIX B INFORMATION AND CONSENT FORM FOR BII PHOBIC YOUTH

Contact Details
School of Applied Psychology
Griffith University
Gold Coast Campus
Telephone: (07) 55528224
Fax: (07) 5552 9261

Information Sheet for BII Phobia

Project Title: Novel Treatment of Phobias in Children and Teenagers

Chief Investigator: Dr Ella Milliner (PhD Candidate)
Associate Investigators: Dr Lara Farrell, A/Prof Allison Waters, Dr Harry McConnell and Prof Tom Ollendick

Purpose of the study
The current study aims to examine the effectiveness of an intensive one session cognitive behavioural treatment (CBT) for children and adolescents (age 7 – 18 years) who have a Specific phobia of Blood, Injury and Injections. A phobia can be defined as a fear that is both excessive and unreasonable. The fear is usually brought on by seeing or experiencing a specific object, event, or situation (e.g., injections, animals, heights, thunderstorms), or by the expectation that the feared object or situation may be present. Phobias can last a long time and are not usually healthy because they lead the child to avoid the object or situation that he/she fears. For many children and their parents, phobias are highly disruptive.

All children in this project will receive one intensive session of CBT called One-Session Exposure Treatment. The treatment is called One-Session Exposure Treatment because it is delivered in one long session, lasting up to 3 hours in duration. The treatment is thought to “work” because the child is taught a number of skills to deal with the feared situation. These skills include both cognitive (thoughts) and behavioural (action) skills to aid the child in approaching the feared object or situation. In addition, during treatment, the child is exposed gradually to the feared situation in a highly structured, safe, and controlled manner. This treatment is delivered only to your child, however, parents will complete a 1 hour education session alone with the therapist prior to the treatment.

What participation in this study involves
To accomplish the scientific goals of this project, your child will be monitored for a brief period prior to the treatment (either 1, 2 or 3 weeks) and then following this you will complete a 1 hour parent education session and your child will complete a 3 hour long exposure therapy session with a therapist. Monitoring is important for us to evaluate the stability of your child’s fears, prior to our treatment.
In order to determine whether the treatment is effective, you and your child will be asked to complete some online questionnaires, as well as a structured diagnostic interview and behavioural tasks at beginning of treatment, following treatment, and at 1-month, 3-month and 12 month follow-ups. The diagnostic interview is a type of clinical interview and will tell us what type and how severe your child’s phobia and other types of anxiety might be at each assessment. During the monitoring period, you and your child will complete a brief questionnaire daily and will be telephoned once a week to complete a short interview and additional questionnaires.

The assessments before and after treatment will be held at the University. The first session will involve your child completing a diagnostic interview and a “behavioural approach task” (BAT) so that we can see how your child goes with facing their feared object, while the second session will involve your child completing some questionnaires and two additional BAT’s. These tasks take approximately 30 minutes each. The first BAT will involve your child watching a video of people having an injection and blood tests. The second BAT will involve your child being prepared for a blood test (e.g., having a tourniquet placed on their arm and their elbow wiped with alcohol). Finally, your child will complete a third BAT that will involve them watching a 5 minute video chosen to elicit moderate levels of fear and anxiety. A range of videos, from commercially available movies and television shows (e.g., Monster House, The BFG), will be used for the task. Videos will be individually selected for your child in consultation with you and will be developmentally appropriate. During the tasks your child will be asked to rate how fearful he or she feels. Their heart rate will also be monitored during the tasks by placing a heart rate monitor band around their chest. This is to help us to learn about differences in how children with and without phobias respond. You will be asked to wait for your child in a nearby therapy room during these tasks. All the tasks are voluntary and hence your child only has to complete as much of the task as they wish to.

After the treatment, we will also ask you to be involved in a home maintenance program for the first month following treatment and will telephone or skype you weekly to provide you with support. The program will involve us working with you and your child to develop a list of tasks your child could complete to assist them in continuing to overcome their fear. Tasks may include taking your child to the doctor for a vaccination/blood test or visiting a physiotherapist for dry needling. We will then contact you by phone and email to complete the 1-month, 3-month and 12-month diagnostic interview and online questionnaires. This is to help us assess the long-term outcomes from the treatment.

All sessions you attend at the University will be videotaped. This is done to document that our interviewers and therapists carefully follow the research protocol. In addition, you can choose whether or not to allow these videos to be used for other scholarly purposes. This option is described in more detail in the Consent Form.

In sum, the information collected from questionnaires, behavioural tasks, interviews, and diary reports will help us determine how much progress your child makes as a result of treatment.
Participation is voluntary
Your child’s and your own participation in this study is voluntary and neither you nor your child is under any obligation to consent to participate in this study. Non-participation will not involve any penalty and will not affect your child’s standing at Griffith University. If you choose to allow your child to participate, he or she may discontinue participation at any time without penalty or without providing an explanation.

Confidentiality and privacy statement
All data from this study will be kept confidential. Numerical codes only will be used for identifying data and no personal identifying details will be stored with the responses collected from children. The data collected from this research will be reported in general terms only and will not involve identifying information about children who participated. Computer records will be password protected and hard copy data will be stored in a locked filing cabinet in the School of Applied Psychology, Griffith University for a period of 25 years and will then be destroyed.

Privacy Statement. The conduct of this research involves the collection, access and / or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the University’s Privacy Plan at http://www.griffith.edu.au/about-griffith/plans-publications/griffith-university-privacy-plan or telephone (07) 3735 5585.

Risks associated with this research
Participation in this study may make your child feel uncomfortable when they are exposed to their feared object. Additionally, children and adolescents with blood, injury and needle phobias may faint or feel nauseous when exposed to their feared stimuli. However, this is an important part of treatment and overcoming the fear and the treatment is conducted in a safe, controlled environment with trained therapists. Children will also answer some questions about anxiety or other feelings that could make them feel uncomfortable. Moreover, children do not have to answer any questions or discuss any topics that make you feel uneasy nor will they ever be asked to do anything they are not prepared to do. During the treatment session children will complete a range of exposure tasks to assist them in gradually facing their fear these tasks may include watching videos of blood tests or injections or other medical procedures, sitting in a doctors waiting room or office, dressing in hospital gowns and gloves, making fake blood, examining a syringe (without the needle attached), having a tourniquet placed on their arm, holding a capped needle against their skin. Towards the end of the 3 hour session if your child or adolescent feels comfortable they may hold a syringe with the needle attached, inject saline into an injection pad and observe someone having a blood test. These later tasks will be carried out under the supervision of a registered health practitioner (nurse or doctor or phlebotomist).
**Dry Needling and Blood Tests**
Furthermore, if your child/adolescent has progressed sufficiently and feels confident to do so, they may have drying needling administered by a qualified physiotherapist or a blood test given by a registered phlebotomist. The risks of dry needling include discomfort at the site of the puncture, temporary local swelling, bruising or minor bleeding, nausea, faintness or drowsiness from the procedure and rarely the needle getting stuck, bent or broken, infection, metal allergy, pneumothorax (collapsed lung) and miscarriage in pregnant women. Additional precautions will be taken and dry needling may not be used if your child—has a blood clotting disorder, immune disease, epilepsy, cancer or malignant disease, diabetes, a cardiac condition, Hepatitis A, B or C, is Aids/HIV Positive, is taking blood thinning medications or steroids, has an infection or artificial implants (e.g., pacemaker), is allergic to metals, significant fatigue, drowsiness or history of fainting, areas of reduced feeling or numbness, mastectomy or axillary clearance. The registered/qualified physiotherapist will meet with you to discuss your child’s risk and complete a brief screen of their health prior to administering dry needling to ensure they are safe to receive the procedure. The risks of drawing blood from a vein include discomfort at the site of puncture; possible bruising and swelling around the puncture site; rarely an infection; and, faintness from the procedure.

**Benefits of this research**
Results of this study may help us determine ways to improve our treatments for children with a specific phobia. Such a development would allow us to share this information with other mental health professionals and to assist them in working with other families. Although no guarantee of treatment outcome can be provided to you, it is anticipated that this treatment will benefit your child. Feedback will be provided after each assessment time-point.

**The ethical conduct of this research**
Griffith University conducts research in accordance with the National Statement on Ethical Conduct in Human Research. If potential participants have any concerns or complaints about the ethical conduct of the research project they should contact the Senior Manager, Research Ethics and Integrity on 3735 5585 or research-ethics@griffith.edu.au.

**Providing written informed consent**
If you agree to allow your child to take part in this study and your child wants to participate in the study, please complete the attached Consent Form. Please do not hesitate to contact the research team on the contact details provided above if you wish to discuss the study in any way. Thank you for considering the participation of your child in our research study.
Contact Details
School of Applied Psychology
Griffith University
Gold Coast Campus
Telephone: (07) 55528224
Fax: (07) 5552 9261

Consent Form

Project Title: Novel Treatment of Phobias in Children and Teenagers
Chief Investigator: Dr Ella Milliner (PhD Candidate)
Associate Investigators: Dr Lara Farrell, A/Prof Allison Waters, Dr Harry McConnell
and Prof Tom Ollendick

By signing below, I confirm that:
1. I have read and understand the study as outlined in the Information Sheet provided.
2. I have had an opportunity to ask questions and have had them answered.
3. I hereby acknowledge the above and give my voluntary consent for my child’s participation in this study.
4. I understand that I am able to contact the research team at the contact details above, to clarify any questions.
5. I understand the risks and potential benefits involved.
6. I understand that my child’s participation is voluntary and he/she is free to withdraw from the study at any time without consequences.
7. I understand that I can contact the Manager, Research Ethics, at Griffith University Human Research Ethics Committee on 07 3735 5585 (or research-ethics@griffith.edu.au) if I have any concerns about the ethical conduct of the study.
8. I understand that treatment sessions will be videotaped to ensure the integrity of the research project and will then be erased.
9. I am also expressing my wishes about other ways my child’s data can be used. I understand that my choice of how data are used is voluntary and does not affect my child’s participation in any way. I understand that I may alter my decision at any time (please tick).

______ I only want my child’s data to be used in a format that conceals his/her identity. No individual information about them or my family that could identify us may be used for scholarly purposes, such as classroom teaching, research presentations at conferences, and professional workshops. Specifically, no videotapes or video clips of me or my child can be used for these scholarly purposes.

______ I give my permission for the project to use our information including videotapes and video clips for scholarly purposes of education and training (classroom teaching, workshops, and research presentations). Since I am giving my permission for use of video materials, I realize that my identity might be able to be determined by those who watch or see these videos. I understand however that my name or the name of my child will not be used in these presentations.

_________________________ _________________________    ___________
Parent/Guardian’s Name  Parent/Guardian’s Signature     Date
APPENDIX C INFORMATION AND CONSENT FORM FOR ANIMAL PHOBIC YOUTH

Contact Details
School of Applied Psychology
Griffith University
176 Messines Ridge Road
Mt Gravatt  Q  4122
Telephone: (07) 3735 3349

Information Sheet for Attention Training

Project Title: Novel Treatment of Phobias in Children and Teenagers

Chief Investigator: A/Prof Allison Waters
Associate Investigators: Dr Lara Farrell, Dr Evelin Tiralongo, Dr Harry McConnell, Prof Melanie Zimmer-Gembeck, Dr Caroline Donovan, Prof Tom Ollendick
Student Investigators: Dr Ella Milliner (PhD Candidate), Carly Roberts (Honours Candidate), Kate Delaforce (Honours Candidate)

Purpose of the study
You are invited to participate in a study funded by Griffith University that will determine how well a single session of computer-based training designed to help children control their attention improves treatment outcomes from a well-established cognitive-behavioural treatment (CBT) delivered in a single session for children who have specific phobias. A phobia can be defined as a fear that is both excessive and unreasonable. The fear is usually brought on by seeing or experiencing a specific object, event, or situation (e.g., animals, heights, thunderstorms), or by the expectation that the feared object or situation may be present. Phobias can last a long time and are not usually healthy because they lead the child to avoid the object or situation that he/she fears. For many children and their parents, phobias are highly disruptive.

All children in this project will receive one intensive session of CBT called One-Session Exposure Treatment. The treatment is called One-Session Exposure Treatment because it is delivered in one long session, lasting up to 3 hours in duration. The treatment is thought to “work” because the child is taught a number of skills to deal with the feared situation. These skills include both cognitive (thoughts) and behavioural (action) skills to aid the child in approaching the feared object or situation. In addition, during treatment, the child is exposed gradually to the feared situation in a highly structured, safe, and controlled manner. This treatment is delivered only to your child, however, there will be a 30 minute educational session about the treatment held with you at the end of the treatment.
Immediately before starting the treatment session, one-third of the children in the study will complete computer-based attention training where they focus attention on non-threat stimuli in the form of happy and calm faces, one-third will focus their attention on threat stimuli (angry faces) while the other third will focus attention equally to angry and non-threat faces. Recent scientific work with anxious adults and children, including research by the investigators on this project, have found that focusing attention on non-threat versus threat stimuli has different but enhancing effects on improving outcomes from CBT, and this is why we are studying attention training in conjunction with One-Session Exposure Treatment in this project.

As indicated above, this is a project funded by Griffith University and it is approved by the Griffith University Human Research Ethics Committee. A/Prof Waters, Dr Lara Farell, Dr Caroline Donovan, and Prof Zimmer-Gembeck have expertise in childhood anxiety disorders and childhood development and will oversee the clinical assessment and treatment of children, and Prof Ollendick is an international expert is One-Session Exposure Treatment and childhood psychopathology. Dr Tiralongo is a pharmacist and Dr McConnell is a neuropsychiatrist, however, they are involved in another part of this study.

What participation in this study involves
To accomplish the scientific goals of this project, your child will be randomly (by chance) assigned to the Attention Training Positive+One-Session Treatment condition, the Attention Training Threat+One-Session Treatment condition or the Attention Training Control+One Session Treatment condition. The attention training task for all three groups involves pressing a key on the computer when an asterisk probe appears after either the angry face, happy face or calm face, presented in pairs of either happy-calm or angry-calm adult faces. Children then complete the one 3-hour long exposure therapy session with a therapist followed by a 30 minute educational session with you at the end of the treatment.

In order to determine whether the treatment is effective, you and your child will be asked to complete some questionnaires, as well as a structured diagnostic interview and a computer task prior to the beginning of treatment, following treatment, and at 1-month, 3-month, and 12-month follow-ups. The diagnostic interview is a type of clinical interview and will tell us what type and how severe your child’s phobia and other types of anxiety might be at each assessment.

The assessments before and after treatment will be held at the University over two separate sessions. The first will involve the diagnostic interview and questionnaires, while the second session will involve your child completing a “behavioural avoidance task” so that we can see how your child goes with the feared object. For example, if your child is afraid of dogs, he or she will be asked to approach a dog in a room and to rate how fearful he or she feels during this test. You will be asked to wait for your child in a nearby therapy room during this task.

After the treatment, we will also ask you to keep a diary of how things are going for the first month following treatment.

We will then contact you by phone and via the post to complete the 1-month, 3-month and 12-month diagnostic interview and questionnaires. This is to help us assess the long-term outcomes from the treatment.
All sessions you attend at the University will be video-taped. This is done to document that our interviewers and therapists carefully follow the research protocol. In addition, you can choose whether or not to allow these videos to be used for other scholarly purposes. This option is described in more detail in the Consent Form.

In sum, the information collected from questionnaires, behavioural tasks, interviews, and diary reports will help us determine how much progress your child makes as a result of treatment.

**Participation is voluntary**
Your child’s and your own participation in this study is voluntary and neither you nor your child is under any obligation to consent to participate in this study. Non-participation will not involve any penalty and will not affect your child’s standing at Griffith University. If you choose to allow your child to participate, he or she may discontinue participation at any time without penalty or without providing an explanation.

**Confidentiality and privacy statement**
All data from this study will be kept confidential. Numerical codes only will be used for identifying data and no personal identifying details will be stored with the responses collected from children. The data collected from this research will be reported in general terms only and will not involve identifying information about children who participated. Computer records will be password protected and hard copy data will be stored in a locked filing cabinet in the School of Applied Psychology, Griffith University for a period of 25 years and will then be destroyed.

**Privacy Statement.** The conduct of this research involves the collection, access and / or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the University’s Privacy Plan at http://www.griffith.edu.au/about-griffith/plans-publications/griffith-university-privacy-plan or telephone (07) 3735 5585.

**Risks associated with this research**
Participation in this study may make your child feel uncomfortable when they are exposed to their feared object. However, this is an important part of treatment and overcoming the fear and the treatment is conducted in a safe, controlled environment with trained therapists. Children will also answer some questions about anxiety or other feelings that could make them feel uncomfortable. Children will also view happy and angry faces however, these are no different to the types of facial expressions children encounter as part of every-day life. Moreover, children do not have to answer any questions or discuss any topics that make you feel uneasy nor will they ever be asked to do anything they are not prepared to do.

**Benefits of this research**
Results of this study may help us determine ways to improve our treatments for children with a specific phobia. Such a development would allow us to share this information with other mental health professionals and to assist them in working with other families. Although no guarantee of treatment outcome can be provided to you, it is anticipated that this treatment will benefit your child. Feedback will be provided after each assessment time-point.
The ethical conduct of this research
Griffith University conducts research in accordance with the National Statement on Ethical Conduct in Human Research. If potential participants have any concerns or complaints about the ethical conduct of the research project they should contact the Senior Manager, Research Ethics and Integrity on 3735 5585 or research-ethics@griffith.edu.au.

Providing written informed consent
If you agree to allow your child to take part in this study and your child wants to participate in the study, please complete the attached Consent Form. Please do not hesitate to contact the research team on the contact details provided above if you wish to discuss the study in any way. Thank you for considering the participation of your child in our research study.
Information Sheet for DCS

Project Title:   Novel Treatment of Phobias in Children and Teenagers
Chief Investigator:  A/Prof Allison Waters
Associate Investigators: Dr Lara Farrell, Dr Evelin Tiralongo, Dr Harry McConnell, Prof Melanie Zimmer-Gembeck, Dr Caroline Donovan, Dr Nigel Collings, Prof Tom Ollendick
Student Investigators: Dr Ella Milliner (PhD Candidate), Carly Roberts (Honours Candidate), Kate Delaforce (Honours Candidate)

Contact Details:

Dr Allison Waters
School of Applied Psychology
Griffith University
Mt Gravatt Campus
Email: A.Waters@griffith.edu.au
Phone: 07 3735 3434

Dr Lara Farrell
School of Applied Psychology
Griffith University
Gold Coast Campus
Email: L.Farrell@griffith.edu.au
Phone: 55528224 / 0402 203808

Purpose of the study
You are invited to participate in a study funded by Griffith University that will determine how well a single dose of D-Cycloserine improves treatment outcomes from a well-established cognitive-behavioural treatment (CBT) delivered in a single session for children who have specific phobias. A phobia can be defined as a fear that is both excessive and unreasonable. The fear is usually brought on by seeing or experiencing a specific object, event, or situation (e.g., animals, heights, thunderstorms), or by the expectation that the feared object or situation may be present. Phobias can last a long time and are not usually healthy because they lead the child to avoid the object or situation that he/she fears. For many children and their parents, phobias are highly disruptive.

All children in this project will receive one intensive session of CBT called One-Session Exposure Treatment. The treatment is called One-Session Exposure Treatment because it is delivered in one long session, lasting up to 3 hours in duration. The treatment is thought to “work” because the child is taught a number of skills to deal with the feared situation. These skills include both cognitive (thoughts) and behavioural (action) skills to aid the child in approaching the feared object or situation. In addition, during treatment, the child is exposed
gradually to the feared situation in a highly structured, safe, and controlled manner. This
treatment is delivered only to your child, however, there will be a 30 minute educational
session about the treatment held with you at the end of the treatment.

As indicated above, this is a project funded by Griffith University and it is approved by the
Griffith University Human Research Ethics Committee. A/Prof Waters, Dr Lara Farell, Dr
Caroline Donovan, and Prof Zimmer-Gembeck have expertise in childhood anxiety disorders
and childhood development and will oversee the clinical assessment and treatment of
children, Dr Tiralongo is a pharmacist who will oversee the medication compounding and
dispensing components of the study, Dr McConnell is a neuropsychiatrist who will oversee
the medical aspects of the study, Dr Nigel Collings is a child psychiatrist who will review
children before starting treatment, and Prof Ollendick is an international expert is One-
Session treatments and childhood psychopathology.

What participation in this study involves
In addition to receiving the one-session exposure therapy treatment, you and your child will
also participate in assessment sessions. In order to determine whether the treatment is
effective, you and your child will be asked to complete some questionnaires, as well as a
structured diagnostic interview prior to the beginning of treatment, following treatment, and
at 1 month, 6 month, and 12-month follow-ups. The diagnostic interview is a type of clinical
interview and will tell us what type and how severe your child’s phobia and other types of
anxiety might be at each assessment. Because we will be prescribing D-Cycloserine (or
placebo), your child will also undergo a psychiatry review.

Treatment
Immediately before starting the one-session exposure treatment session, half of the children in
the study will receive one single dose of D-Cycloserine while the other half will receive a pill
placebo (an inactive pill). The medication, D-Cycloserine, is actually an antibiotic medication
approved by the Food and Drug Administration (FDA) and the Therapeutic Goods Authority
Australia (TGA) to treat tuberculosis, but recent scientific work with anxious adults and
children, including research by the investigators on this project, have found it to be effective
in improving outcomes from CBT, and this is why we are studying D-Cycloserine in
conjunction with One-Session Exposure Treatment.

If you decide to take part in this study, your child will be randomly assigned (much like the
flip of a coin) to receive, in addition to one session exposure therapy, either D-Cycloserine
(DCS) or placebo. This means:

- A placebo is a substance that looks like and is given in the same way as DCS but
  contains no medicine, for example a sugar pill.
- A placebo is used in research studies to show what effect a treatment has compared
  with taking nothing at all. If your child is assigned to receive placebo, he/she will not
  receive the benefits or be exposed to the risks of the DCS, if there are any (any risks or
  benefits are described below).
- Your child will have a 1 in 2 chance of receiving DCS and a 1 in 2 chance of receiving
  placebo.

You, your child, the study researchers, and psychiatrist will not know whether your child is
receiving placebo or DCS, but that information is available from the study pharmacist if it is
needed.
Psychiatry Review & Blood Tests

After completing the initial clinic assessments (information below), a physician (Dr Nigel Collings, Child Psychiatrist) will conduct a brief medical physical exam with your child to ensure your child’s general well-being and suitability for this treatment (at no charge to you). Afterwards, your child will be required to have a blood test (within the week) at QLD Medical Laboratories (QML), where they will have about 12 ml of blood drawn so we can check to see if your child is healthy. QML will provide us with a report of these blood tests. If your child would like, they can have some numbing medicine on the place where the blood will be taken to reduce the mild pain from the needle. Your child will only have the physical and blood drawn immediately before therapy. There will be no costs to you for these tests.

In regards to taking a small dose of DCS, there is the possible risk of harm to an unborn foetus (more below under know risks). Because of this, we require all female children who are menstrual to undertake a pregnancy screen which will be tested from the blood sample taken (as above). This is to ensure suitability into the trial and ensure the safety of all involved. Sexually active young men should also be aware of these possible risks and take precaution using appropriate contraception (i.e., condoms).

Your child’s regular medical treatment or review of psychiatric medication will not be part of this research study. You should consult with your own medical practitioner as needed, and consult about your child’s ongoing medication dosing before and after treatment. Unless advised otherwise by your physician, you should not alter your child’s medications during this research. We require that your child is on a stable dose of any pre-prescribed medications prior to starting this program; which means your child should be at the highest prescribed dose of their medications for a period of at least 6 weeks prior to commencing our assessments.

Clinic Assessments

The clinic assessments before and after treatment will be held at the University over two separate sessions. The first will involve the diagnostic interview and questionnaires, while the second session will involve your child completing a “behavioural avoidance task” so that we can see how your child goes with the feared object. During this task, you would be asked to stay in a nearby therapy room while she or he faces a fearful situation. For example, if your child is afraid of dogs, he or she will be asked to approach a dog in a room and to rate how fearful he or she feels during this test.

After the treatment, we will also ask you to keep a diary of how things are going for the first month following treatment.

We will then contact you by phone and via the post to complete the 1-month, 3-month and 12-month diagnostic interview and questionnaires. This is to help us assess the long-term outcomes from the treatment.

All sessions you attend at the University will be video-taped. This is done to document that our interviewers and therapists carefully follow the research protocol. In addition, you can choose whether or not to allow these videos to be used for other scholarly purposes. This option is described in more detail in the Consent Form.
In sum, the information collected from questionnaires, behavioural tasks, interviews, and diary reports will help us determine how much progress your child makes as a result of treatment.

**Benefits of this research**
Your child may or may not personally benefit from participating in this study. Your child will receive a comprehensive diagnostic evaluation, and medical physical. Your child will have a 50% chance of receiving DCS treatment in addition to the one session exposure therapy. The DCS may be effective in reducing symptoms, but this is not guaranteed. If your child is randomized to receive placebo, he/she may not receive any benefits beyond that of attending psychotherapy. However, he/she will not be exposed to any risks of the drug.

We cannot tell how much your child will benefit from taking DCS because its effects on your child’s anxiety are not totally understood. There is some evidence that DCS is associated with improvement in overcoming fears. Results of this study may help us determine ways to improve our treatments for children with a specific phobia. Such a development would allow us to share this information with other mental health professionals and to assist them in working with other families. Although no guarantee of treatment outcome can be provided to you, it is anticipated that this treatment will benefit your child. Feedback will be provided after each assessment time-point.

**Risks of Being a Part of this Research Study**
Participation in this study may make your child feel uncomfortable when they are exposed to their feared object. However, this is an important part of treatment and overcoming the fear and the treatment is conducted in a safe, controlled environment with trained therapists. Children will also answer some questions about anxiety or other feelings that could make them feel uncomfortable. Moreover, children do not have to answer any questions or discuss any topics that make you feel uneasy nor will they ever be asked to do anything they are not prepared to do.

**D-Cycloserine**
Your child may have unpleasant or harmful side effects from taking DCS. Some that are possible include drowsiness, headache, nervousness, and very rarely vertigo, seizures, and depression. It is also possible that it will not improve your child symptoms. In our previous research we have not had any adverse reactions.

The risks of drawing blood from a vein include discomfort at the site of puncture; possible bruising and swelling around the puncture site; rarely an infection; and, uncommonly, faintness from the procedure.

There are also known risks of using antibiotics when not necessary, such that it could impair general health through impacting on good bacteria in your child’s body. Furthermore, although the use of all antibiotics can cause drug-resistance, the dose that will be used in this trial is significantly smaller than the recommended dose to treat TB and furthermore, is only administered once, versus the daily use in treating TB. It is therefore highly unlikely that the use of the DCS in this trial will have any clinical impact with regard to a child’s general health or drug resistance.
If you wish to discuss the information above or any discomforts you may experience, you may ask questions now or call the Principal Investigator or contact person listed on the front page of this form.

There are no potential discomforts or risks associated with taking the placebo. However, the placebo does not help anxiety, so if your child is randomized to placebo he/she may experience less improvement in his/her symptoms. However, every child will receive exposure therapy which is the well-established treatment for phobias and anxiety.

**Risk to Unborn Children**
DCS may include risks to your child, or to the embryo or foetus if your child becomes pregnant, which are currently unknown. Therefore, if your child is a female who is capable of becoming pregnant, and is sexually active, or plans to be sexually active during this study, your child must use a reliable way of preventing pregnancy during and for 30 days after this study. For this study, females who are not capable of becoming pregnant are those who have not had their first menstrual period will not need to do anything. Reliable ways to prevent pregnancy are: no sexual intercourse, double barrier methods (for example, a condom or diaphragm along with a sperm-killing jelly), or an intrauterine device (IUD). Hormonal contraceptives (the pill, or contraceptive implants or injections) are also acceptable, as long as you have been using them long enough for them to be effective. Please check with your doctor to see if this is the case.

Sexually active male subjects must use an approved form of birth control and may not donate sperm from the time they sign consent through 30 days after the last dose of study drug. If your child is not currently sexually active, and during the course of this study, your child becomes sexually active, he/she must use an acceptable form of contraception described above. If your child suspects that she or, if male, a female partner has become pregnant while participating in the study, please contact Dr Farrell and your GP.
All females who are capable of being pregnant will be screened for pregnancy in the laboratory tests as a study precaution, by way of blood test.

**In Case of Illness or Injury**
Call an investigator listed on the first page in the event your child gets sick or injured while on this study. In addition, seek medical advice from your GP. If your child has an emergency, go to the closest emergency room or clinic for treatment.

In the event that your child sustains an injury or illness as a result of participating in this research, please be aware that medical treatment for the injuries or illness may not be available from the University. The University does not maintain an emergency department nor does it provide medical treatment in all disciplines of medicine. If your child become ill or sustains an injury which you believe is related to your child’s participation in this research, immediately contact one of the persons listed on page 1, and if emergency care is needed seek emergency attention from your child’s nearest local hospital.

**Insurance Policy**: Griffith University has an insurance policy (AON Insurance: Policy number Q30843751) covering this treatment trial, which includes compensation by the insurer for illness or injury that results directly from participation in this study. For a copy of the complete insurance policy, please contact the University Manager of Insurance and Risk Management, Mr Trevor Case, on (07) 37357971 or t.case@griffith.edu.au.
Participation is voluntary
Your child’s and your own participation in this study is voluntary and neither you nor your child is under any obligation to consent to participate in this study. Non-participation will not involve any penalty and will not affect your child’s standing at Griffith University. If you choose to allow your child to participate, he or she may discontinue participation at any time without penalty or without providing an explanation.

Your child may be removed from the study without your consent if:

- Your child does not qualify to be in the study because he/she does not meet the study requirements. Ask the Principal Investigator if you would like more information about this.
- Your child needs a medical treatment not allowed in this study.
- The investigator decides that continuing in the study would be harmful to your child.
- Study treatments have a bad effect on your child.
- Your child becomes pregnant, and the study treatment could be harmful to the baby.
- Your child is unable to keep appointments or take study drugs as directed.
- The study is cancelled and/or other administrative reasons.

Confidentiality and privacy statement
All data from this study will be kept confidential. Numerical codes only will be used for identifying data and no personal identifying details will be stored with the responses collected from children. The data collected from this research will be reported in general terms only and will not involve identifying information about children who participated. Computer records will be password protected and hard copy data will be stored in a locked filing cabinet in the School of Applied Psychology, Griffith University for a period of 25 years and will then be destroyed.

Privacy Statement. The conduct of this research involves the collection, access and / or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the University’s Privacy Plan at http://www.griffith.edu.au/about-griffith/plans-publications/griffith-university-privacy-plan or telephone (07) 3735 5585.

The ethical conduct of this research

Griffith University conducts research in accordance with the National Statement on Ethical Conduct in Human Research. If potential participants have any concerns or complaints about the ethical conduct of the research project they should contact the Senior Manager, Research Ethics and Integrity on 3735 5585 or research-ethics@griffith.edu.au.

Providing written informed consent
If you agree to allow your child to take part in this study and your child wants to participate in the study, please complete the attached Consent Form. Please do not hesitate to contact the
research team on the contact details provided above if you wish to discuss the study in any way. Thank you for considering the participation of your child in our research study.
Contact Details
School of Applied Psychology
Griffith University
176 Messines Ridge Road
Mt Gravatt  Q  4122
Telephone: (07) 3735 3349

Consent Form

Project Title: Novel Treatment of Phobias in Children and Teenagers
Chief Investigator: A/Prof Allison Waters
Associate Investigators: Dr Lara Farrell, Dr Evelin Tiralongo, Dr Harry McConnell, Prof Melanie Zimmer-Gembeck, Dr Caroline Donovan, Prof Tom Ollendick
Student Investigators: Dr Ella Milliner, Carly Roberts, Kate Delaforce

By signing below, I confirm that:
1. I have read and understand the study as outlined in the Information Sheet provided. I have had an opportunity to ask questions and have had them answered. I hereby acknowledge the above and give my voluntary consent for my child’s participation in this study.
2. I understand that I am able to contact the research team at the contact details above, to clarify any questions.
3. I understand the risks and potential benefits involved.
4. I understand that my child’s participation is voluntary and he/she is free to withdraw from the study at any time without consequences.
5. I understand that I can contact the Manager, Research Ethics, at Griffith University Human Research Ethics Committee on 07 3735 5585 (or research-ethics@griffith.edu.au) if I have any concerns about the ethical conduct of the study.
6. I understand that treatment sessions will be video-taped to ensure the integrity of the research project and will then be erased.
7. I am also expressing my wishes about other ways my child’s data can be used. I understand that my choice of how data are used is voluntary and does not affect my child’s participation in any way. I understand that I may alter my decision at any time (please tick).

______ I only want my child’s data to be used in a format that conceals his/her identity. No individual information about them or my family that could identify us may be used for scholarly purposes, such as classroom teaching, research presentations at conferences, and professional workshops. Specifically, no videotapes or video clips of me or my child can be used for these scholarly purposes.

______ I give my permission for the project to use our information including videotapes and video clips for scholarly purposes of education and training (classroom teaching, workshops, and research presentations). Since I am giving my permission for use of video materials, I realize that my identity might be able to be determined by those who watch or see these videos. I understand however that my name or the name of my child will not be used in these presentations.

_________________________ _________________________ ___________
Parent/Guardian’s Name  Parent/Guardian’s Signature   Date
APPENDIX D TELEPHONE SCREEN

Child's Name __________________________ Date of Inquiry_____________________________

Gender  M   F   Date of Contact ____________________________

Date of Birth___________________________ Age__________________________________________

Parent’s Name______________________________________________________________

Address
_______________________________________________________________________________
_______________________________________________________________________________

☐ Phone (Home) _________________________  (Mobile) ___________________________________

Best Times to Call ___________ Leave Message ☐ Yes ☐ No

Email________________________________________________________________________________________

Referral Source______________________________________________________________

Interviewer’s Name _____________________________________________

Specific Phobia
Some children are very scared of seeing blood, visiting the doctor or dentist, looking at someone who has been injured and having an injection. Has your child ever fainted when confronted with blood or having an injection?
_______________________________________________________________________________________________
_______________________________________________________________________________________________
_______________________________________________________________________________________________
_______________________________________________________________________________________________

Is this fear impacting on child’s or family life? (e.g., Home life, School, Friendships)
_______________________________________________________________________________________________
_______________________________________________________________________________________________
_______________________________________________________________________________________________

Specific Phobia Treatment History
Has your child ever had treatment for their phobia?
☐ Yes      ☐ No
If Yes, What type of treatment was it?
- ☐ CBT with exposure
- ☐ CBT without exposure
- ☐ Medication
- ☐ Other (e.g., counselling, psychotherapy)

**Screen for Other Problems**

*Does your child have any other difficulties? For example other worries, sadness or depression, social, learning or behaviour problems.*

<table>
<thead>
<tr>
<th>Other Anxiety Disorders</th>
<th>☐ Yes ☐ No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mood problems? E.g., low mood, depressed</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>- If yes, current Suicidal Ideation</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Learning problems?</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>- Do they have an IEP?</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Attention / concentration problems?</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Speech language problems?</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Social problems?</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Have they ever been diagnosed with ASD or PDD</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>- If yes by who?</td>
<td>__________________________</td>
</tr>
<tr>
<td>Behaviour problems?</td>
<td>☐ Yes ☐ No</td>
</tr>
</tbody>
</table>

*Has your child ever been diagnosed with another condition?*

For example OCD/ADHD/PDD/ASD ☐ Yes ☐ No

If yes, by who? __________________________ How long ago? _______________

-----------------------------------------------------------------------------

-----------------------------------------------------------------------------

-----------------------------------------------------------------------------

-----------------------------------------------------------------------------

**IF THE CHILD APPEARS ELIGIBLE DISCUSS WITH THE PARENT STUDY INFORMATION**

*Do you have any questions regarding participation?*

*Are you interested in participating in the study? ☐ Yes ☐ No*

Comments

-----------------------------------------------------------------------------

-----------------------------------------------------------------------------

-----------------------------------------------------------------------------

-----------------------------------------------------------------------------
**Study Criteria**

**Inclusion**

- ♦ Between 7 and 18 years ☐ Yes ☐ No
- ♦ Likely Primary Diagnosis of BII Phobia ☐ Yes ☐ No
- ♦ Willingness to be assigned to Baseline ☐ Yes ☐ No
- ♦ continue with same medication for duration ☐ Yes ☐ No
- ♦ Same dosage for at least past 1 month ☐ Yes ☐ No
- ♦ Willing to undergo psychological treatment ☐ Yes ☐ No
- ♦ IQ greater than 80 or average school perform. ☐ Yes ☐ No
- ♦ At least 1 parent able to attend sessions ☐ Yes ☐ No

**Exclusion**

- ♦ Concurrent treatment (psychological therapy) ☐ Yes ☐ No
- ♦ Serious Suicidal Risk ☐ Yes ☐ No
- ♦ Likely DSM-IV diagnosis of:
  - Clinical Obsessive Compulsive Disorder ☐ Yes ☐ No
  - Schizophrenia ☐ Yes ☐ No
  - Pervasive Developmental Disorder ☐ Yes ☐ No
  - Primary major depression ☐ Yes ☐ No
  - Primary Behavioural Disorder ☐ Yes ☐ No
  - Organic mental disorder ☐ Yes ☐ No

**Outcome of Screening**

☐ Eligibility questionable. Consult with team and call back
☐ Not eligible due to ___________________________________________
☐ Not interested in study because _______________________________________
☐ Repeated attempts to contact without success
☐ Appears eligible for study and will be emailed information packet & allocated to therapist for an assessment.
APPENDIX E DEMOGRAPHIC QUESTIONNAIRE BII AND ANIMAL PHOBIA

Contact Details Checklist

Child Details
Surname: _______________ Given Name/s: ___________ Gender: ______________
D.O.B: _________________ Age: Yr: _____ Mth:_____ Grade: _________________
School: ________________________

Parent Details
Name: _____________________ DOB: _________ Relationship to child: _________
Address: ______________________________________________________________________
Contact numbers: Home: ________________ Mob:_____________________
Work: ________________ Email: _____________________________________________

Relative/ friend we could contact (should you relocate) who would always be in contact with you.
Name: ____________________________ Relationship to child: _____________________
Address: ______________________________________________________________________
Contact numbers: Home: ________________ Mob:_____________________
Work: ________________ Email: _____________________________________________
**Child Details**

Your child’s age (in years and months):

---

Your child’s gender:

- Male [ ]
- Female [ ]

---

Your child’s country of birth:

---

Is English your child’s first language?

- Yes [ ]
- No [ ]

---

If no, what is your child’s first language?

---

Does your child have a learning disability?

- Yes [ ]
- No [ ]

---

Has your child previously been diagnosed with any mental health diagnoses (e.g. ADHD, anxiety)?

- Yes [ ]
- No [ ]

---

If yes, please describe (include when diagnosis was made):

---

Has your child received any treatment (either psychological or with medication) for any mental health diagnoses?

- Yes [ ]
- No [ ]

---

If yes, please describe (include when and where):

---

Does your child currently have any mental health diagnoses?

- Yes [ ]
- No [ ]

---

If yes, please describe (include what diagnosis was made):

---

Is your child currently receiving any treatment for anxiety or other problems?

- Yes [ ]
- No [ ]

---

Is your child currently on any medication?

- Yes [ ]
- No [ ]

---

Does your child have any physical health diagnoses (e.g., asthma)?

- Yes [ ]
- No [ ]

---

If yes, please describe:
Parent/Guardian Details

Marital Status of parent/s or guardian/s:
Married ☐ Separated ☐ Widowed ☐
Divorced ☐ Defacto ☐ Single - never married ☐

Who does your child live with?:
Both parents ☐ Father ☐ Other ☐
Mother ☐ Grandparents ☐ Please Specify:__________________

Does your child live with a sibling/s? Yes ☐ No ☐
Number:__________

How many hours per week does your child spend in paid or unpaid childcare?
1-3 hours ☐ 4 – 6 hours ☐ 7 – 9 hours ☐
10-12 hours ☐ 13 –16 hours ☐ more than 16 hours ☐

Mother’s usual occupation:_______________ Currently employed? Yes ☐ No ☐
Full time ☐ Part time ☐

Father’s usual occupation:_______________ Currently employed? Yes ☐ No ☐
Full time ☐ Part time ☐

Approximate Household Yearly Income (in $): (child's primary residence)
up to 10,000 10,001 - 20,000 20,001 - 30,000 30,001 - 40,000 40,00 - 50,000
50,001 - 60,000 60,001 - 70,000 70,001 - 80,000 80,001 - 90,000 90,001 - 100,000
over 100,000

Approximate Household Yearly Income (in $): (child's other residence)
up to 10,000 10,001 - 20,000 20,001 - 30,000 30,001 - 40,000
40,00 - 50,000 50,001 - 60,000 60,001 - 70,000 70,001 - 80,000
80,001 - 90,000 90,001 - 100,000 over 100,000

Mother’s highest level of education:
Year 10 ☐ Year 12 ☐ Tertiary ☐
Other ☐ Please Specify______________________________
Father’s highest level of education:

- Year 10 ☐
- Year 12 ☐
- Tertiary ☐
- Other ☐
- Please Specify ____________________________

Mother’s age: ______________ Father’s age: ______________

Has the child’s mother previously been diagnosed with an anxiety or depressive disorder or other type of mental illness?

Yes ☐ No ☐

If yes, please describe (include when diagnosis was made):

_________________________________________________________________________

Does the child's mother have a fear of blood, injury or injections? Yes ☐ No ☐

Does the child's mother have a history of fainting at the sight of blood or while having a blood test or injection?

Yes ☐ No ☐

Has the child’s father previously been diagnosed with an anxiety or depressive disorder or other type of mental illness?

Yes ☐ No ☐

If yes, please describe (include when diagnosis was made):

_________________________________________________________________________

Does the child's father have a fear of blood, injury or injections? Yes ☐ No ☐

Does the child's father have a history of fainting at the sight of blood or while having a blood test or injection?

Yes ☐ No ☐

Does anyone in the child's extended family have a history of fainting at the sight of blood or while having a blood test or injection?

Yes ☐ No ☐

When faced with the object/ situation (e.g., ________________) they fear has your child ever

- Vomited ___________ Yes ☐ No ☐
- Gagged ___________ Yes ☐ No ☐
- Felt Nauseous ___________ Yes ☐ No ☐
<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Felt Dizzy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fainted (e.g. became unconscious for a short period of time)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Any other extreme reaction?</td>
<td>----------------------------------</td>
<td></td>
</tr>
</tbody>
</table>
# COMPOSITE CLINICIANS DIAGNOSES AND CGI

**Subject ID_____________________
Assessment Time     Time 1             Time 2                 Time 3     Time 4
Pre-tx    Post tx  1 month F/u  3 month F/u**

Date__________________________  Interviewer____________________

<table>
<thead>
<tr>
<th>Absent</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Very Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Slightly disturbing/really disabling</td>
<td>Definitely disturbing/disabling</td>
<td>Markedly disturbing/disabling</td>
<td>Very severely disturbing/disabling</td>
</tr>
</tbody>
</table>

## CURRENT DSM-IV DIAGNOSES

**Principal__________________________________________
CSR____________
Second___________________________________________
CSR____________
Third____________________________________________
CSR____________
Forth_____________________________________________
CSR____________
Fifth______________________________________________
CSR____________
Sixth______________________________________________
CSR____________

## CGI

1. **Severity of illness**

Considering your total clinical experience with this phobic children and adolescents, how mentally ill is the patient at this time?

<table>
<thead>
<tr>
<th>0 = Not assessed</th>
<th>4 = Moderately ill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = Normal, not at all ill</td>
<td>5 = Markedly ill</td>
</tr>
<tr>
<td>2 = Borderline mentally ill</td>
<td>6 = Severely ill</td>
</tr>
<tr>
<td>3 = Mildly ill</td>
<td>7 = Among the most extremely ill patients</td>
</tr>
</tbody>
</table>

2. **Global improvement from pre treatment (Time 1 Assessment)**
Rate total improvement whether or not, in your judgement, it is due entirely to treatment. Compared to their condition before the phobia treatment study, how much have they changed?

0 = Not assessed  4 = No change
1 = Very much improved  5 = Minimally worse
2 = Much improved  6 = Much worse
3 = Minimally improved  7 = Very much worse

APPENDIX G CLINICIAN GLOBAL ASSESSMENT SCALE (CGAS)

Childrens Global Assessment Scale (CGAS)

1. Select a score from 1-100 (Rate within 5 level increments)
2. Rate the child/adolescents most impaired level of general functioning during the period rated by selecting the lowest level which describes his/her functioning on a hypothetical continuum of health-illness
3. Rate the child/adolescents in five level increments e.g. 35, 65, 90
4. Rate actual overall functioning regardless of treatment or prognosis, using the descriptions below as a guide:

100-91 Superior functioning
90-81 Good functioning
80-71 No more than a slight impairment in functioning
70-61 Some difficulty in a single area, but generally functioning pretty well
60-51 Variable functioning with sporadic difficulties
50-41 Moderate degree of interference in functioning
40-31 Major impairment to functioning in several areas
30-21 Unable to function in almost all areas
20-11 Needs considerable supervision
10-1 Needs constant supervision

Principle reference

Description
The Childrens Global Assessment Scale (CGAS) is a measure developed by Schaffer and colleagues at the Department of Psychiatry, Columbia University to provide a global measure of level of functioning in children and adolescents. The measure provides a single global rating only, on scale of 0-100. In making their
rating, the clinician makes use of the glossary details to determine the meaning of the points on the scale.

**CGAS Glossary**
Rate the patient’s most impaired level of general functioning for the specified time period by selecting the *lowest* level which describes his/her functioning on a hypothetical continuum of health-illness. Use five level increments (e.g., 35, 50, 85). Rate actual functioning regardless of treatment or prognosis. The examples of behaviour provided are only illustrative and are not required for a particular rating.
Superior functioning in all areas (at home, at school and with peers); involved in a wide range of activities and has many interests (eg., has hobbies or participates in extracurricular activities or belongs to an organised group such as Scouts, etc); likeable, confident; ‘everyday’ worries never get out of hand; doing well in school; no symptoms.

Good functioning in all areas; secure in family, school, and with peers; there may be transient difficulties and ‘everyday’ worries that occasionally get out of hand (eg., mild anxiety associated with an important exam, occasional ‘blowups’ with siblings, parents or peers).

No more than slight impairments in functioning at home, at school, or with peers; some disturbance of behaviour or emotional distress may be present in response to life stresses (eg., parental separations, deaths, birth of a sib), but these are brief and interference with functioning is transient; such children are only minimally disturbing to others and are not considered deviant by those who know them.

Some difficulty in a single area but generally functioning pretty well (eg., sporadic or isolated antisocial acts, such as occasionally playing hooky or petty theft; consistent minor difficulties with school work; mood changes of brief duration; fears and anxieties which do not lead to gross avoidance behaviour; self-doubts); has some meaningful interpersonal relationships; most people who do not know the child well would not consider him/her deviant but those who do know him/her well might express concern.

Variable functioning with sporadic difficulties or symptoms in several but not all social areas; disturbance would be apparent to those who encounter the child in a dysfunctional setting or time but not to those who see the child in other settings.

Moderate degree of interference in functioning in most social areas or severe impairment of functioning in one area, such as might result from, for example, suicidal preoccupations and ruminations, school refusal and other forms of anxiety, obsessive rituals, major conversion symptoms, frequent anxiety attacks, poor to inappropriate social skills, frequent episodes of aggressive or other antisocial behaviour with some preservation of meaningful social relationships.

Major impairment of functioning in several areas and unable to function in one of these areas (ie., disturbed at home, at school, with peers, or in society at large, eg., persistent aggression without clear instigation; markedly withdrawn and isolated behaviour due to either mood or thought disturbance, suicidal attempts with clear lethal intent; such children are likely to require special schooling and/or hospitalisation or withdrawal from school (but this is not a sufficient criterion for inclusion in this category).

Unable to function in almost all areas eg., stays at home, in ward, or in bed all day without taking part in social activities or severe impairment in reality testing or serious impairment in communication (eg., sometimes incoherent or inappropriate).

Needs considerable supervision to prevent hurting others or self (eg., frequently violent, repeated suicide attempts) or to maintain personal hygiene or gross impairment in all forms of communication, eg., severe abnormalities in verbal and gestural communication, marked social aloofness, stupor, etc.
Needs constant supervision (24-hour care) due to severely aggressive or self destructive behaviour or gross impairment in reality testing, communication, cognition, affect or personal hygiene.
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Statement</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I worry about things.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>2</td>
<td>I am scared of the dark.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>3</td>
<td>When I have a problem, I get a funny feeling in my stomach.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>4</td>
<td>I feel afraid.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>5</td>
<td>I would feel afraid of being on my own at home.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>6</td>
<td>I feel scared when I have to take a test.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>7</td>
<td>I feel afraid if I have to use public toilets or bathrooms.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>8</td>
<td>I worry about being away from my parents.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>9</td>
<td>I feel afraid that I will make a fool of myself in front of people.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>10</td>
<td>I worry that I will do badly at my school work.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>11</td>
<td>I am popular amongst other kids my own age.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>12</td>
<td>I worry that something awful will happen to someone in my family</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>13</td>
<td>I suddenly feel as if I can't breathe when there is no reason for this.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>14</td>
<td>I have to keep checking that I have done things right (like the switch is off, or the door is locked).</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>15</td>
<td>I feel scared if I have to sleep on my own.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>16</td>
<td>I have trouble going to school in the mornings because I feel nervous or afraid.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>17</td>
<td>I am good at sports.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>18</td>
<td>I am scared of dogs.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>19</td>
<td>I can't seem to get bad or silly thoughts out of my head.</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>
20. When I have a problem, my heart beats really fast. 0 1 2 3
21. I suddenly start to tremble or shake when there is no reason for this. 0 1 2 3
22. I worry that something bad will happen to me. 0 1 2 3
23. I am scared of going to the doctor or dentist. 0 1 2 3
24. When I have a problem, I feel shaky. 0 1 2 3
25. I am scared of being in high places or lifts (elevators)…………..…… 0 1 2 3
26. I am a good person……………………………………………………..….. 0 1 2 3
27. I have to think of special thoughts to stop bad things from happening (like numbers or words)………………………………………… 0 1 2 3
28. I feel scared if I have to travel in the car, or on a bus or a train… 0 1 2 3
29. I worry what other people think of me……………………………... 0 1 2 3
30. I am afraid of being in crowded places (like shopping centres, the movies, buses, busy playgrounds)……………………………………… 0 1 2 3
31. I feel happy………………………………………………………………..…. 0 1 2 3
32. All of a sudden I feel really scared for no reason at all……………..…... 0 1 2 3
33. I am scared of insects or spiders……………………………..…………… 0 1 2 3
34. I suddenly become dizzy or faint when there is no reason for this…………………………………………………………………………… 0 1 2 3
35. I feel afraid if I have to talk in front of my class……………………..…… 0 1 2 3
36. My heart suddenly starts to beat too quickly for no reason…………… 0 1 2 3
37. I worry that I will suddenly get a scared feeling when there is nothing to be afraid of………………………………………………………………... 0 1 2 3
38. I like myself………………………………………………………………...… 0 1 2 3
39. I am afraid of being in small closed places (like tunnels or small rooms).…………………………………………………………………………………… 0 1 2 3
40. I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order)………………..…… 0 1 2 3
41. I get bothered by bad or silly thoughts or pictures in my mind………… 0 1 2 3
42. I have to do some things in just the right way to stop bad things from happening……………………………………………………………………. 0 1 2 3

43. I am proud of my school work………………………………………………. 0 1 2 3

44. I would feel scared if I had to stay away from home overnight………….. 0 1 2 3

45. Is there something else that you are really afraid of?

Please circle: YES NO

Please write down what it is that you are really afraid of:

_____________________________________________________________________

How often are you afraid of this thing / situation? …………………………… 0 1 2 3
APPENDIX I  SPENCE CHILDREN’S ANXIETY SCALE - PARENT VERSION (SCAS-P)

SCAS-P

Below is a list of items that describe children. For each item please circle the response that best describes your child. Please circle the 3 if the item is Always True, 2 if the item is Often True, 1 if the item is Sometimes True or if it is Never True please circle the 0. There are no right or wrong answers.

Please answer all items.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never True</td>
<td>Sometimes True</td>
<td>Often True</td>
<td>Always True</td>
</tr>
<tr>
<td>1. My child worries about things.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. My child is scared of the dark.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. When my child has a problem, s(he) complains of having a funny feeling in his/her stomach.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. My child complains of feeling afraid.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. My child would feel afraid of being on his/her own at home.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. My child is scared when s(he) has to take a test.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. My child is afraid when s(he) has to use public toilets or bathrooms.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. My child worries about being away from us / me.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. My child feels afraid that s(he) will make a fool of him/herself in front of people.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10. My child worries that s(he) will do badly at school.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11. My child worries that something awful will happen to someone in our family.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12. My child complains of suddenly feeling as if s(he) can’t breathe when there is no reason for this.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Score Options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------------------------------------</td>
<td>---------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>My child has to keep checking that (s)he has done things right (like the switch is off, or the door is locked).</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>My child is scared if (s)he has to sleep on his/her own.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>My child has trouble going to school in the mornings because (s)he feels nervous or afraid.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>My child is scared of dogs.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>My child can’t seem to get bad or silly thoughts out of his/her head.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>When my child has a problem, (s)he complains of his/her heart beating really fast.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>My child suddenly starts to tremble or shake when there is no reason for this.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>My child worries that something bad will happen to him/her.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>My child is scared of going to the doctor or dentist.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>When my child has a problem, (s)he feels shaky.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>My child is scared of heights (e.g., being at the top of a cliff).</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>My child has to think special thoughts (like numbers or words) to stop bad things from happening.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>My child feels scared if (s)he has to travel in the car, or on a bus or train.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>My child worries what other people think of him/her.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>My child is afraid of being in crowded places (like shopping centres, the movies, buses, busy playgrounds).</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>All of a sudden my child feels really scared for no reason at all.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>My child is scared of insects or spiders.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>My child complains of suddenly becoming dizzy or faint when there is no reason for this.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>My child feels afraid when (s)he has to talk in front of the class.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>My child complains of his/her heart suddenly starting to beat too quickly for no reason.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>My child worries that (s)he will suddenly get a scared feeling when there is nothing to be afraid of.</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
34. My child is afraid of being in small closed places (like tunnels or small rooms). 0 1 2 3

35. My child has to do some things over and over again (like washing his/her hands, cleaning or putting things in a certain order). 0 1 2 3

36. My child gets bothered by bad or silly thoughts or pictures in his/her head 0 1 2 3

37. My child has to do certain things in just the right way to stop bad things from happening. 0 1 2 3

38. My child would feel scared if s/he had to stay away from home overnight. 0 1 2 3

39. Is there anything else that your child is really afraid of? Please circle either YES or NO.

   YES                  NO

If YES, please write down what it is, and fill out how often s/he is afraid of this thing / situation:

____________________________________________________________________________________________ 0 1 2 3

____________________________________________________________________________________________ 0 1 2 3

____________________________________________________________________________________________ 0 1 2 3
APPENDIX J SHORT MOOD AND FEELINGS QUESTIONNAIRE - CHILD VERSION (SMFQ-C)

**SMFQ-C**

This form is about how you might have been feeling or acting recently.

For each question please tick how much you have felt or acted this way, *in the past two weeks*.

If a sentence was true about you most of the time, tick TRUE
If it was only sometimes true, tick SOMETIMES
If a sentence was not true about you, tick NOT TRUE

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I felt miserable or unhappy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I didn't enjoy anything.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I felt so tired I just sat around and did nothing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I was very restless.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I felt I was no good anymore.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I cried a lot.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I found it hard to think properly or concentrate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I hated myself.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I felt I was a bad person.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>I felt lonely.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>I thought that nobody really loved me</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>I thought I could never be as good as others.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I did everything wrong.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX K SHORT MOOD AND FEELINGS QUESTIONNAIRE - PARENT VERSION (SMFQ-P)

This form is about how your child might have been feeling or acting recently.
For each question please tick how much she or he has felt or acted this way, in the past two weeks.
If a sentence was true about your child most of the time, tick TRUE
If it was only sometimes true, tick SOMETIMES
If a sentence was not true about you, tick NOT TRUE

1. S/he felt miserable or unhappy. ............................................

2. S/he didn't enjoy anything at all. .............................................

3. S/he felt so tired s/he just sat around and did nothing. ............

4. S/he was very restless. ..........................................................

5. S/he felt s/he was no good anymore. ....................................

6. S/he cried a lot. .................................................................

7. S/he found it hard to think properly or concentrate. ..............

8. S/he hated him/herself. ......................................................

9. S/he felt s/he was a bad person. .........................................

10. S/he felt lonely. ...............................................................
11 S/he thought that nobody really loved him/her ..........  
12 S/he thought s/he could never be as good as others. ........  
13 S/he felt s/he did everything wrong..........................
FSSC-R

DIRECTIONS: A number of statements which boys and girls use to describe the fears they have are given below. Read each carefully and put an X in the box in front of the words that best describe your fear. There are no right or wrong answers. Remember, find the words which best describe how much fear you have.

1. Giving an oral report . . . . . . . . □ None □ Some □ A lot
2. Riding in the car or bus . . . . . . . . □ None □ Some □ A lot
3. Getting punished by mother . . . . . . . . □ None □ Some □ A lot
4. Lizards . . . . . . . . . . . . . . . □ None □ Some □ A lot
5. Looking foolish . . . . . . . . . . . □ None □ Some □ A lot
6. Ghosts or spooky things . . . . . . . □ None □ Some □ A lot
7. Sharp objects . . . . . . . . . . . □ None □ Some □ A lot
8. Having to go to the hospital . . . . . . □ None □ Some □ A lot
9. Death or dead people . . . . . . . . □ None □ Some □ A lot
10. Getting lost in a strange place . . . . □ None □ Some □ A lot
11. Snakes . . . . . . . . . . . . . . □ None □ Some □ A lot
12. Talking on the telephone . . . . . . □ None □ Some □ A lot
13. Roller coaster or carnival rides . . . . □ None □ Some □ A lot
14. Getting sick at school . . . . . . . . □ None □ Some □ A lot
15. Being sent to the principal . . . . . . □ None □ Some □ A lot
16. Riding on the train . . . . . . . . □ None □ Some □ A lot
17. Being left at home with a sitter . . . . □ None □ Some □ A lot
18. Bears or wolves . . . . . . . . . . . . . □ None □ Some □ A lot
19. Meeting someone for the first time . . . . □ None □ Some □ A lot
20. Bombing attacks—being invaded . . . . □ None □ Some □ A lot
21. Getting a shot from the nurse or doctor. . . □ None □ Some □ A lot
22. Going to the dentist . . . . . . . . . . . □ None □ Some □ A lot
23. High places like mountains . . . . . . □ None □ Some □ A lot
24. Being teased . . . . . . . . . . . . . □ None □ Some □ A lot
25. Spiders . . . . . . . . . . . . . □ None □ Some □ A lot
26. A burglar breaking into our house . . . □ None □ Some □ A lot
27. Flying in an airplane . . . . . . . . . □ None □ Some □ A lot
28. Being called on by the teacher . . . . □ None □ Some □ A lot
29. Getting poor grades . . . . . . . . . □ None □ Some □ A lot
30. Bats or birds . . . . . . . . . . . . . □ None □ Some □ A lot
31. My parents criticizing me . . . . . . □ None □ Some □ A lot
32. Guns . . . . . . . . . . . . . □ None □ Some □ A lot
33. Being in a fight . . . . . . . . . . . □ None □ Some □ A lot
34. Fire—getting burned . . . . . . . . □ None □ Some □ A lot
35. Getting a cut or injury . . . . . . . □ None □ Some □ A lot
36. Being in a big crowd . . . . . . . . □ None □ Some □ A lot
37. Thunderstorms . . . . . . . . . . . □ None □ Some □ A lot
38. Having to eat some food I don’t like . . □ None □ Some □ A lot
39. Cats . . . . . . . . . . . . . □ None □ Some □ A lot
40. Failing a test . . . . . . . . . . . . □ None □ Some □ A lot
41. Being hit by a car or truck . . . . . □ None □ Some □ A lot
42. Having to go to school . . . . . . . □ None □ Some □ A lot

426
43. Playing rough games during recess . . . . □ None □ Some □ A lot
44. Having my parents argue . . . . . . . . . □ None □ Some □ A lot
45. Dark rooms or closets . . . . . . . . . □ None □ Some □ A lot
46. Having to put on a recital . . . . . . . . . □ None □ Some □ A lot
47. Ants or beetles . . . . . . . . . . . . . □ None □ Some □ A lot
48. Being criticized by others . . . . . . . . . □ None □ Some □ A lot
49. Strange looking people . . . . . . . . . □ None □ Some □ A lot
50. The sight of blood . . . . . . . . . . . . □ None □ Some □ A lot
51. Going to the doctor . . . . . . . . . . ◐ None □ Some □ A lot
52. Strange or mean looking dogs . . . . . . □ None □ Some □ A lot
53. Cemeteries . . . . . . . . . . . . . . . □ None □ Some □ A lot
54. Getting a report card . . . . . . . . . □ None □ Some □ A lot
55. Getting a haircut . . . . . . . . . . . □ None □ Some □ A lot
56. Deep water or the ocean . . . . . . . □ None □ Some □ A lot
57. Nightmares . . . . . . . . . . . . . □ None □ Some □ A lot
58. Falling from high places . . . . . . . □ None □ Some □ A lot
59. Getting a shock from electricity . . . . □ None □ Some □ A lot
60. Going to bed in the dark . . . . . . . □ None □ Some □ A lot
61. Getting car sick . . . . . . . . . . . □ None □ Some □ A lot
62. Being alone . . . . . . . . . . . . . □ None □ Some □ A lot
63. Having to wear clothes different from others. □ None □ Some □ A lot
64. Getting punished by my father . . . . □ None □ Some □ A lot
65. Having to stay after school . . . . . . □ None □ Some □ A lot
66. Making mistakes . . . . . . . . . . . □ None □ Some □ A lot
67. Mystery movies . . . . . . . . . . . . □ None □ Some □ A lot
68. Loud sirens

69. Doing something new

70. Germs or getting a serious illness

71. Closed spaces

72. Earthquakes

73. Terrorists

74. Elevators

75. Dark places

76. Not being able to breathe

77. Getting a bee sting

78. Worms or snails

79. Rats or mice

80. Taking a test
APPENDIX M FEAR SURVEY SCHEDULE FOR CHILDREN REVISED - PARENT VERSION

(FSSC-R)

FSSR-C/P

DIRECTIONS: A number of fears are listed below. To the best of your ability, please indicate how much fear (none, some or a lot) your child has to each fear item. Read each item carefully and put an X in the box in front of the word(s) that best describe your child’s fear. This may be hard to do, but try your very best. There are no right or wrong answers. Thank you.

1. Giving an oral report

2. Riding in the car or bus

3. Getting punished by mother

4. Lizards

5. Looking foolish

6. Ghosts or spooky things

7. Sharp objects

8. Having to go to the hospital

9. Death or dead people

10. Getting lost in a strange place

11. Snakes

12. Talking on the telephone

13. Roller coaster or carnival rides
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>None</th>
<th>Some</th>
<th>A lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Getting sick at school</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>15</td>
<td>Being sent to the principal</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>16</td>
<td>Riding on the train</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>17</td>
<td>Being left at home with a sitter</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>18</td>
<td>Bears or wolves</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>19</td>
<td>Meeting someone for the first time</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>20</td>
<td>Bombing attacks—being invaded</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>21</td>
<td>Getting a shot from the nurse or doctor</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>22</td>
<td>Going to the dentist</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>23</td>
<td>High places like mountains</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>24</td>
<td>Being teased</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>25</td>
<td>Spiders</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>26</td>
<td>A burglar breaking into our house</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>27</td>
<td>Flying in an airplane</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>28</td>
<td>Being called on by the teacher</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>29</td>
<td>Getting poor grades</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>30</td>
<td>Bats or birds</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>31</td>
<td>My parents criticizing me</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>32</td>
<td>Guns</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Question</td>
<td>None</td>
<td>Some</td>
<td>A lot</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
<td>------</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td>33</td>
<td>Being in a fight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Fire—getting burned</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Getting a cut or injury</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Being in a big crowd</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Thunderstorms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Having to eat some food I don’t like</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Cats</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Failing a test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Being hit by a car or truck</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Having to go to school</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>Playing rough games during recess</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Having my parents argue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Dark rooms or closets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Having to put on a recital</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>Ants or beetles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>Being criticized by others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>Strange looking people</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>The sight of blood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Going to the doctor</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
52. Strange or mean looking dogs . . . . . . . . . . None Some A lot
53. Cemeteries . . . . . . . . . . . . . . None Some A lot
54. Getting a report card . . . . . . . . . . None Some A lot
55. Getting a haircut . . . . . . . . . . None Some A lot
56. Deep water or the ocean . . . . . . . . . . None Some A lot
57. Nightmares . . . . . . . . . . . . . . None Some A lot
58. Falling from high places . . . . . . . . . . None Some A lot
59. Getting a shock from electricity . . . . None Some A lot
60. Going to bed in the dark . . . . . . . . . . None Some A lot
61. Getting car sick . . . . . . . . . . . . . . None Some A lot
62. Being alone . . . . . . . . . . . . . . None Some A lot
63. Having to wear clothes different from others. None Some A lot
64. Getting punished by my father . . . . . None Some A lot
65. Having to stay after school . . . . . . . . . . None Some A lot
66. Making mistakes . . . . . . . . . . . . . . None Some A lot
67. Mystery movies . . . . . . . . . . . . . . None Some A lot
68. Loud sirens . . . . . . . . . . . . . . None Some A lot
69. Doing something new . . . . . . . . . . None Some A lot
70. Germs or getting a serious illness . . . None Some A lot
<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>71. Closed spaces</td>
<td>□ None □ Some □ A lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>72. Earthquakes</td>
<td>□ None □ Some □ A lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>73. Terrorists</td>
<td>□ None □ Some □ A lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>74. Elevators</td>
<td>□ None □ Some □ A lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75. Dark places</td>
<td>□ None □ Some □ A lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>76. Not being able to breathe</td>
<td>□ None □ Some □ A lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>77. Getting a bee sting</td>
<td>□ None □ Some □ A lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>78. Worms or snails</td>
<td>□ None □ Some □ A lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>79. Rats or mice</td>
<td>□ None □ Some □ A lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80. Taking a test</td>
<td>□ None □ Some □ A lot</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX N DISGUST EMOTION SCALE FOR CHILDREN – CHILD VERSION (DES-C)

Rate how disgusting you think each of the following things are from ‘0 = Not at all Disgusting’ to ‘4 = Extremely Disgusting’.

For example – *I would find .....*
1. A smelly rubbish bin in the park 0 1 2 3 4
   A little bit disgusting

Please answer all items.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Not at all disgusting</strong></td>
<td><strong>A little bit disgusting</strong></td>
<td><strong>Somewhat disgusting</strong></td>
<td><strong>Very disgusting</strong></td>
<td><strong>Extremely disgusting</strong></td>
<td></td>
</tr>
<tr>
<td>1. A slice of bread with green mould on it</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The smell of the toilets at school?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Having blood taken from your arm?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Watching an operation?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. A glass of off milk?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. The smell of human poo?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. A snake?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. A bottle with your blood?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. The mutilated body of a dog that has been run over?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. The smell of vomit?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. An old hamburger that has turned green?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. The sight of a large slug?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Having a needle in your arm?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
14. A dead person that you don't know? ......................................................... 0 1 2 3 4
15. A pile of rotting lettuce? ............................................................................. 0 1 2 3 4
16. The smell of a city tip? .................................................................................. 0 1 2 3 4
17. A person injured in a car accident? ................................................................. 0 1 2 3 4
18. Holding a needle? .............................................................................................. 0 1 2 3 4
19. An old cup of coffee with mould in it? ............................................................. 0 1 2 3 4
20. The sight of a mouse in the house? ................................................................. 0 1 2 3 4
21. Photos of wounded soldiers? .......................................................................... 0 1 2 3 4
22. Receiving a needle in your mouth? ................................................................. 0 1 2 3 4
23. A piece of rotting steak? .................................................................................. 0 1 2 3 4
24. The smell of sweat? .......................................................................................... 0 1 2 3 4
25. A sewer rat? ..................................................................................................... 0 1 2 3 4
26. A dead animal that has been lying on the road for some time? .................... 0 1 2 3 4
27. The smell of wee? .............................................................................................. 0 1 2 3 4
28. Seeing a spider? ............................................................................................... 0 1 2 3 4
29. A small tube of your blood? ............................................................................. 0 1 2 3 4
30. A stray cat? ..................................................................................................... 0 1 2 3 4
Rate how disgusting your child would perceive the following objects/stimuli to be, from '0 = Not at all disgusting' to '4 = Extremely disgusting'.

For example – My child would think …….

1. A smelly rubbish bin in the park  
   0  1  2  3  4  
   A little bit disgusting

Please answer all items.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1 little bit disgusting</th>
<th>2 somewhat disgusting</th>
<th>3 very disgusting</th>
<th>4 extremely disgusting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
18. Handling an injection needle? ................................................................. 0 1 2 3 4
19. An old cup of coffee with mould in it? ....................................................... 0 1 2 3 4
20. The sight of a mouse in the house? ............................................................. 0 1 2 3 4
21. Photos of wounded soldiers? ................................................................. 0 1 2 3 4
22. Receiving an anaesthetic injection in the mouth? ...................................... 0 1 2 3 4
23. A piece of rotting steak? ........................................................................ 0 1 2 3 4
24. The smell of sweat? .................................................................................. 0 1 2 3 4
25. A sewer rat? ............................................................................................. 0 1 2 3 4
26. A dead animal lying on the road for some time? ...................................... 0 1 2 3 4
27. The smell of urine? .................................................................................. 0 1 2 3 4
28. The sight of a spider? ................................................................................ 0 1 2 3 4
29. A small vial of your blood? ...................................................................... 0 1 2 3 4
30. A stray cat? ............................................................................................. 0 1 2 3 4
Appendix P Mutilation Questionnaire – Child Version (MQ-C)

Answer the following either True or False as you feel they describe you. If the statement is true most of the time or mostly true for you, you should answer true. If it is mostly false or false most of the time, mark it false.

1. I could not remove the hook from a fish that was caught...................................... True  False
2. I would feel gross if I saw a brain in a bottle during a science lesson................. True  False
3. If I see a badly injured person on TV, I turn my head away............................... True  False
4. I do not like looking at pictures of accidents or injuries..................................... True  False
5. Visiting and seeing sick or injured people in hospital does not bother me........ True  False
6. The smell of a doctor or dentist office makes me tense and uncomfortable..... True  False
7. I cannot stand the sight of a dead animal......................................................... True  False
8. Watching a butcher chop meat makes me nervous........................................... True  False
9. I would like to be a doctor or nurse................................................................. True  False
10. I would feel faint if I saw someone with a wounded eye............................... True  False
11. Watching people use sharp power tools makes me nervous.......................... True  False
12. Getting an injection or seeing someone else get one bothers me a lot............. True  False
13. I feel sick when I see blood............................................................................ True  False
14. I like learning about how doctors operate and treat sick people.................... True  False
15. Injuries, accidents and blood worry me more than anything else.................. True  False
16. I would never watch a doctor perform an operation....................................... True  False
17. When I see an accident I feel worried.............................................................. True  False
18. Seeing a bad cut would not bother me as long as it had been cleaned and stitched True  False
19. Using very sharp knives makes me nervous.................................................... True  False
20. Not only do cuts and wounds upset me but seeing people with amputated limbs (e.g., missing a leg), large scars or plastic surgery also bothers me........ True  False
21. If it was possible, it would be interesting to see inside a living human body using a camera ................................................................. True   False
22. I am frightened at the idea of someone taking a blood sample from me.... True  False

23. I don’t think anyone could help a person with a bloody wound without feeling a little bit upset....................................................................................................................... True  False

24. I am terrified by the idea of having surgery.................................................. True  False

25. I am scared by the thought that I might some day have to help a person who has been badly hurt in a car wreck........................................................... True  False

26. I shake when I think about accidentally cutting myself................................... True  False

27. The sight of dried blood is gross...................................................................... True  False

28. Blood and gore upsets me the same amount as it upsets my friends...... True  False

29. The sight of an open wound makes me want to vomit .............................True  False

30. I could never clean a wound........................................................................ True  False
APPENDIX Q INJECTION PHOBIA SCALE – CHILD VERSION (IPS-ANX-C)

Below are a number of statements that boys and girls use to describe their worry about having needles and injections. Read each carefully and circle the number that best describes your worry. There are no right or wrong answers. Please answer all items.

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not worried</td>
<td>A little bit worried</td>
<td>Some what worried</td>
<td>Very worried</td>
<td>Extremely worried</td>
</tr>
</tbody>
</table>

How worried would you feel about -

1. Giving a blood sample by having your finger pricked.........................0 1 2 3 4
2. Having a needle in your arm...............................................................0 1 2 3 4
3. Looking at a picture of a needle.........................................................0 1 2 3 4
4. The smell of a hospital........................................................................0 1 2 3 4
5. Having a numbing injection at the dentist..........................................0 1 2 3 4
6. Having a blood test (e.g., a needle in your vein and blood withdrawn)..0 1 2 3 4
7. Watching another person have a blood test.........................................0 1 2 3 4
8. Getting an injection in your bottom....................................................0 1 2 3 4
9. Looking at a picture of a person having a needle................................0 1 2 3 4
10. Listening to someone talking about injections.....................................0 1 2 3 4
11. Looking at and touching the veins in your arm.................................0 1 2 3 4
12. Watching a video about a person getting a needle... .......................0 1 2 3 4
13. Watching another person getting a needle.........................................0 1 2 3 4
14. Watching a person in a nurse uniform..............................................0 1 2 3 4
15. Having your ears pierced...................................................................0 1 2 3 4
16. Getting a vaccination.(e.g., an injection of medicine to stop you from getting sick).................................................................0 1 2 3 4
17. Getting an intravenous injection (e.g., a needle in your vein that connects to tubes and a bag of medicine) .................................................0 1 2 3 4

441
18. Watching another person having their finger pricked

0 1 2 3 4
These questions are designed to provide a general guide to conducting the functional analysis. These prompts are not meant to be structured interview questions. Instead, they are intended to be reminders and suggestions for important areas to cover in the functional analysis.

► Begin the interview with informal conversation and rapport-building topics.

► Provide the following rationale for the functional analysis:

- Work together to figure out exactly what it is that is scary for you about needles and seeing blood and going to the doctors.
- So that we can help you
- Detectives looking for clues to help us solve the mystery of your fear
- Find out the thoughts you have that make you scared
- I will ask lots of questions
- To help me understand your fear so that we can tackle it next session

► What is it about the (needles/blood/doctors) that makes you to be afraid?
► What do you think will happen when you have a shots/ see blood/go to the doctors?

**Injection**
- Close your eyes - Imagine that you walk into the doctors office and see a needle on the table.
- What thoughts pop into your mind?
- What is scary about that?
- Is it what you see?
- Does the size of the needle make a difference?
- Is it what you might feel?
- Imagine that you cannot leave the room
- What will happen?
- What do you think the doctor would do?
- What is the worst that could happen when you encounter a needle?
- Do you think it is dangerous?
- How would you die?
- What usually happens when you go to the doctors?
- When do you feel the most scared about before, during or after needle?
- Imagine watching someone else have a needle?
- What feelings do you get in your body when you are near needles?
- Are you afraid of those feelings?

Examples -
Thoughts of unbearable pain, disgust regarding the needle penetrating skin.
Needle will break off in body and eventually puncture internal organ
Needle will puncture vital organ and person will slowly bleed to death.
Blood

- Close your eyes - Imagine that you walk into a room and there is someone standing with a bleeding cut in their leg?
- What thoughts pop into your mind?
- What is scary about that?
- Is it what you see?
- Colour
- Consistency – Thick and runny
- Is it what you smell
- Is it dangerous
- What happens if you see blood? What do you do?
- Does it make a difference if it is your blood?
- What is the worst that could happen if you are bleeding?
- What would happen if mum and dad weren’t with you?
- And then what would happen?
- What feelings do you get in your body when you see blood?
- Nausea, Faint, Cold sweat, unpleasant sensation stomach, tunnel vision, ringing in the

1) Child believes that:

► How likely (what are the chances) is it that this will really happen?

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>going</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>to</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>happen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A little chance that it will happen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some chance of it happening</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very likely to happen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definitely going to happen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

► Do you think something bad would happen to you in particular? Or do you think something bad would happen to someone else, like me, if I were in that situation?

► If the worst thing did happen, what would happen? Would you die? Be seriously injured? Hurt a lot?

► Overall then, how bad would it be if it did happen?

[Phobia Specific Example: e.g., If your heart starts racing or you start feeling dizzy, how bad would that be?]
<table>
<thead>
<tr>
<th>Not bad at all</th>
<th>A little bit bad</th>
<th>Quite Bad</th>
<th>Very Bad</th>
<th>Very, very Bad</th>
</tr>
</thead>
</table>

- If this did actually happen, how sure are you that you could handle it or deal with it (the situation, your thoughts, and feelings) right then (i.e. cope with it)?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all sure</td>
<td>A little bit sure</td>
<td>Quite Sure</td>
<td>Very Sure</td>
<td>Extremely Sure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- I know I could cope!

2) Child believes that:

________________________________________________________________________
________________________________________________________________________

How likely (what are the chances) is it that this will really happen?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not going to happen</td>
<td>A little chance that it will happen</td>
<td>Some chance of it happening</td>
<td>Very likely to happen</td>
<td>Definitely going to happen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Do you think something bad would happen to you in particular? Or do you think something bad would happen to someone else, like me, if I were in that situation?

- If the worst thing did happen, what would happen? Would you die? Be seriously injured? Hurt a lot?

If it happened, how bad would that be?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not bad at all</td>
<td>A little bit bad</td>
<td>Quite Bad</td>
<td>Very Bad</td>
<td>Very, very Bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- If this did actually happen, how sure are you that you could handle it or deal with it (the situation, your thoughts, and feelings) right then (i.e. cope with it)?
3) Child believes that:

________________________________________________________________________
________________________________________________________________________

How likely (what are the chances) is it that this will really happen?

0 1 2 3 4 5 6 7 8
Not going to happen A little chance that it will happen Some chance of it happening Very likely to happen Definitely going to happen

If it happened, how bad would that be?

0 1 2 3 4 5 6 7 8
Not bad at all A little bit bad Quite Bad Very Bad Very, very Bad

► If this did actually happen, how sure are you that you could handle it or deal with it (the situation, your thoughts, and feelings) right then (i.e. cope with it)?

0 1 2 3 4 5 6 7 8
Not at all sure A little bit sure Quite Sure Very Sure Extremely Sure – I know I could cope!

► Have you ever harmed or injured or very very scared in this situation?
Have you ever heard about someone being harmed or surprised? 
Have you read about it? 
Have you seen it on TV?

► Do you know anything about the blood, injury and injections?
APPENDIX S FUNCTIONAL ANALYSIS GUIDE- ANIMALS/OBJECTS

These questions are designed to provide a general guide to conducting the functional analysis. These prompts are not meant to be structured interview questions. Instead, they are intended to be reminders and suggestions for important areas to cover in the functional analysis.

► Begin the interview with informal conversation and rapport-building topics.

► Provide the following rationale for the functional analysis:

“We are going to try to work together to figure out exactly what is scary for you, so that we can find the most accurate and helpful way to help you with it here. We will be detectives together on the trail of the phobia, to find exactly the thoughts you have that make you so scared. I will be asking you lots of questions, and you will need to help me understand all about this fear so that we can tackle it together in the next session. Any questions?”

► What is it about the (snake/bug/dog) that leads you to be afraid?
  Is it the size?
  The way it moves?
  The noises it makes?
  It might bite?
  The color?
  Its body, such as legs, claws, etc?

► What do you think will happen when you see this (thing that scares you):
  In the yard?
  In your home?
  In the woods?
  Would you run away? Feel sick?

1) Child believes that:

________________________________________________________________________
________________________________________________________________________

► How likely (what are the chances) is it that this will really happen?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not going to happen</td>
<td>A little chance that it will happen</td>
<td>Some chance of it happening</td>
<td>Very likely to happen</td>
<td>Definitely going to happen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Do you think it would bite you in particular? Or do you think it might bite someone else, like me, if I were touching it?

If the (animal/insect/snake) did bite, what would happen? Would you die? Be seriously injured? Hurt a lot?

Overall then, how bad would it be if it did happen?

[Phobia Specific Example: eg. If you did get bitten how bad would that be?]

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not bad at all</td>
<td>A little bit bad</td>
<td>Quite Bad</td>
<td>Very Bad</td>
<td>Very, very Bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If this did actually happen, how sure are you that you could handle it or deal with it (thoughts, feelings, and the situation) right then (i.e. cope with it)?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all sure</td>
<td>A little bit sure</td>
<td>Quite Sure</td>
<td>Very Sure</td>
<td>Extremely Sure – I know I could cope!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2) Child believes that:

How likely (what are the chances) is it that this will really happen?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not going to happen</td>
<td>A little chance that it will happen</td>
<td>Some chance of it happening</td>
<td>Very likely to happen</td>
<td>Definitely going to happen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If it happened how bad would that be?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not bad at all</td>
<td>A little bit bad</td>
<td>Quite Bad</td>
<td>Very Bad</td>
<td>Very, very Bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

449
If this did actually happen, how sure are you that you could handle it or deal with it (thoughts, feelings, and the situation) **right then** (i.e. cope with it)?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
</table>
| Not at all sure | A little bit sure | Quite Sure | Very Sure | Extremely Sure – I know I could cope!

3) Child believes that:

How likely (what are the chances) is it that this will really happen?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
</table>
| Not going to happen | A little chance that it will happen | Some chance of it happening | Very likely to happen | Definitely going to happen

If it happened how bad would that be?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
</table>
| Not bad at all | A little bit bad | Quite Bad | Very Bad | Very, very Bad

If this did actually happen, how sure are you that you could handle it or deal with it (thoughts, feelings, and the situation) **right then** (i.e. cope with it)?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all sure</td>
<td>A little bit sure</td>
<td>Quite Sure</td>
<td>Very Sure</td>
<td>Extremely Sure – I know I could cope!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Have you ever been bitten, hurt, surprised, or anything like that by the (snake/dog/insect)?
   Have you ever heard about someone being bitten or surprised?
   Have you read about it?
   Have you seen it on TV?

Do you know anything about the habits of (snakes/insects/dogs), such as what they eat and how they sleep?
1. __________________________

How scared do you feel about (1)? Past week

0 1 2 3 4 5 6 7 8
Not at all A little Some A lot Very much

How disgusted/gross/icky do you feel about (1)? Past week

0 1 2 3 4 5 6 7 8
Not at all A little Some A lot Very much

2. __________________________

How scared do you feel about (2)? Past week

0 1 2 3 4 5 6 7 8
Not at all A little Some A lot Very much
3. _______________________

How scared do you feel about (3)? Past week

<table>
<thead>
<tr>
<th>Not at all</th>
<th>A little</th>
<th>Some</th>
<th>Alot</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

How disgusted/gross/icky do you feel about (3)? Past week

<table>
<thead>
<tr>
<th>Not at all</th>
<th>A little</th>
<th>Some</th>
<th>Alot</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
### BII Target Behaviours – Parent

1. ________________________

How scared does your child feel about (1)? Past week or past day

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all</td>
<td>A little</td>
<td>Some</td>
<td>Alot</td>
<td>Very much</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How disgusted/gross/icky does your child feel about (1)? Past week or past day

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all</td>
<td>A little</td>
<td>Some</td>
<td>Alot</td>
<td>Very much</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. ________________________

How scared does your child feel about (2)? Past week or past day

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all</td>
<td>A little</td>
<td>Some</td>
<td>Alot</td>
<td>Very much</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How disgusted/gross/icky does your child feel about (2)? Past week or past day

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all</td>
<td>A little</td>
<td>Some</td>
<td>Alot</td>
<td>Very much</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. ______________________

How scared does your child feel about (3)? Past week or past day

0  1  2  3  4  5  6  7  8
Not at all  A little  Some  Alot  Very much

How disgusted/gross/icky does your child feel about (3)? Past week or past day

0  1  2  3  4  5  6  7  8
Not at all  A little  Some  Alot  Very much
APPENDIX V BEHAVIOURAL AVOIDANCE TASK – ACTUAL STIMULI

BAT INSTRUCTIONS – Blood Injury and Injection Phobia (Actual Stimuli)

Height: _____________________  Weight: _____________________

Set up Heart Rate Equipment

“I have to go and organise our next activity. I am going to leave the room for five minutes, and let you watch this television show. Just sit quietly and watch the show and I will be back in five minutes. Do you have any questions before I go?”

Turn on the television and leave the lights ON.

☐ HR (Start Baseline)

☐ HR (End Baseline 5 ½ Minutes)

“During our next activity I will be asking you to rate two different types of feelings, one feeling is scared, and the other is disgusted. Scared looks like this (Show the child/adolescent a picture of a scared face) and disgusted looks like this (Show the child/adolescent a picture of a disgusted face). Tell me something that might make you feel scared (e.g., afraid, nervous, anxious, worried, frightened)? Tell me something that might make you feel disgusted (e.g., Gross, Yuck, Eew, Repulsive, Revolting)? (If child is unsure provide examples of each. A roller coaster is scary, but a rotting piece of steak is disgusting). Great you’ve got it! Now I need you to follow me to another room for our next activity.”

Lead the child/adolescent into the BAT room and have them sit in the chair. Have the ‘nurse’ sitting in the opposite corner of the room. Once the task commences have the nurse put on gloves and place a stethoscope around their neck. On the table have a syringe, tourniquet, alcohol wipe, blood test tubes, bandaid and cotton wool under a cover.

“We are now going to do an activity that will make you feel somewhat uncomfortable. I will only ask you to do it for 5 minutes. I want you to try your best and do the activity for as long as you can without covering your eyes or ears or moving in your chair. If you feel you need to stop because you can not go on any longer just let me know by putting your hand up like this [put hand up as a stop sign] and the activity will stop. I will be in another room but will be able to see you on the video cameras in this room. If you need stop the activity we will pause where we are and wait for the remaining time to pass.

Remember that this activity has been chosen on purpose to be difficult for you. This is nurse _____. I would him/her to prepare you for a blood test. You will not be having a blood test you will just be prepared for one. There are a number of steps involved when preparing someone for a blood test. For example the first step involves having the nurse place the tourniquet (e.g., the strap on your arm) on your arm, the second involves wiping your arm with an alcohol wipe and so on. I want you to try as hard as you can not to move your arm while the nurse is preparing you. Remember if you want to stop the task you must put your hand up like this [put hand up as a stop sign] and the activity will stop. I will be in another room but will be able to see you on the video cameras in this room. If you need stop the activity we will pause where we are and wait for the remaining time to pass.

Ensure that the child understands that the task is optional and that the child is in control of how much s/he does
“Before we begin, I’d like you to tell me how scared you feel about having the nurse prepare you for a blood test. Use the 0-8 scale we used in the interview where 0 = Not at all and 8 = Very much.”

**Pre BAT Fear SUDS**

0 1 2 3 4 5 6 7 8

Tell me how disgusted you feel about having a nurse prepare you for a blood test from 0-8 scale where 0 = Not at all and 8 = Very much.”

**Pre BAT Disgust SUDS**

0 1 2 3 4 5 6 7 8

**Phobic Belief**

What do you worry will happen while you are prepared for a blood test?

What might be difficult for you about being prepared for a blood test? *(Record the child’s strongest phobic belief)*

__________________________________________________________________________________________

__________________________________________________________________________________________

__________________________________________________________________________________________

__________________________________________________________________________________________

**(1) How much do you believe___________________ is true?** *(Truth Rating)*

0 1 2 3 4 5 6 7 8

**(2) How likely is it that___________________________ will happen?** *(Probability Rating)*

0 1 2 3 4 5 6 7 8

**(3) If_________________________ did happen how bad would that be for you?** *(Severity Rating)*

0 1 2 3 4 5 6 7 8

**(4) If_________________________ did happen how confident are you that you could deal with this?** *(Coping Rating)*

0 1 2 3 4 5 6 7 8

“Before we begin, we need to wait about 30 seconds. You can just wait quietly in the chair.”

☐ HR (Start 30 Seconds)

☐ HR (End 30 Seconds)

“Okay, tell me how scared you are feeling right now, from 0 to 8, about doing this task.”

**Mid Fear BAT SUDS**

0 1 2 3 4 5 6 7 8

“Okay, tell me how disgusted you are feeling right now, from 0 to 8, about doing this task.”

**Mid Disgust BAT SUDS**

0 1 2 3 4 5 6 7 8

Okay, now we are going to start”
Record the highest step completed by child/adolescent (Avoidance) Time in BAT = _______

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No avoidance</td>
</tr>
<tr>
<td>1</td>
<td>Minimal avoidance</td>
</tr>
<tr>
<td>2</td>
<td>Moderate avoidance</td>
</tr>
<tr>
<td>3</td>
<td>High avoidance</td>
</tr>
<tr>
<td>4</td>
<td>Complete avoidance</td>
</tr>
</tbody>
</table>

After the child indicates that he/she wants to stop and/or when he/she has completed all of the required steps, ask the child the following question. If the child terminates that BAT task early have the nurse move to the corner of the room and sit still. Be sure to ask while the child is still in the BAT room, and engaged in the final step (e.g., still in the room, watching the video):

☐ HR (End of BAT)

“Okay, tell me how scared you are feeling right now, from 0 to 8”

Post Fear BAT SUDS

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

“Tell me how disgusted you are feeling right now, from 0 to 8”

Post Disgust BAT SUDS

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

☐ HR (End of 5 Minutes) ONLY COMPLETE IF CHILD TERMINATES TASK PREMATURELY

“Okay, tell me how scared you are feeling right now, from 0 to 8”

Post Fear BAT SUDS

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

“Tell me how disgusted you are feeling right now, from 0 to 8”

Post Disgust BAT SUDS

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Following completion of the task have the nurse leave the room and take the stimuli with them.

“Now I need to go and pack up our other room quickly. I am going to leave the room again for five minutes. I need you to just sit quietly. Just sit as still and as quietly as possible.

☐ HR (Start Recovery)

☐ HR (End Recovery 5 Minutes)
“Okay, tell me how scared you are feeling right now, from 0 to 8”

Recovery Fear BAT SUDS

0  1  2  3  4  5  6  7  8

“Tell me how disgusted you are feeling right now, from 0 to 8”

Recovery Disgust BAT SUDS

0  1  2  3  4  5  6  7  8
APPENDIX W BEHAVIOURAL AVOIDANCE TASK – VIDEO STIMULI

BAT INSTRUCTIONS – Blood Injury and Injection Phobia (Video Stimuli)

Height: _____________________  Weight: _____________________

Set up Heart Rate Equipment

“I have to go and organise our next activity. I am going to leave the room for five minutes, and let you watch this television show. Just sit quietly and watch the show and I will be back in five minutes. Do you have any questions before I go?”

Turn on the television and leave the lights ON. (N.B. Non arousing cartoon)

☐ HR (Start Baseline)

☐ HR (End Baseline 5 ½ Minutes)

“During our next activity I will be asking you to rate two different types of feelings, one feeling is scared, and the other is disgusted. Scared looks like this (Show the child/adolescent a picture of a scared face) and disgusted looks like this (Show the child/adolescent a picture of a disgusted face). Tell me something that might make you feel scared (e.g., afraid, nervous, anxious, worried, frightened)? Tell me something that might make you feel disgusted (e.g., Gross, Yuck, Eww, Repulsive, Revolting)? (If child is unsure provide examples of each. A roller coaster is scary, but a rotting piece of steak is disgusting). Great you’ve got it! Now I need you to follow me to another room for our next activity”

Lead the child/adolescent into the BAT room and have them sit in the chair. Have a TV sitting in the room covered by a cloth with the BII video playing. When the task commences remove the cloth.

“We are now going to do an activity that will make you feel somewhat uncomfortable. I will only ask you to do it for 5 minutes. I want you to try your best and do the activity for as long as you can without covering your eyes or ears or moving in your chair. If you feel you need to stop because you can not go on any longer just let me know by putting your hand up like this [put hand up as a stop sign] and the activity will stop. I will be in another room but will be able to see you on the video cameras in this room. If you need stop the activity we will pause where we are and wait for the remaining time to pass.

Remember that this activity has been chosen on purpose to be difficult for you. I would like you to watch a video of blood tests and injections and to try as hard as possible to continue watching for 5 minutes. Please do not look away or cover your eyes or ears or move in your chair. I want you to try your best and watch for as long as you can. Okay, now to make sure that you understand, I would like you to tell me what it is that I’ve asked you to do.”

Ensure that the child understands that the task is optional and that the child is in control of how much s/he does

“Before we begin, I’d like you to tell me how scared you feel about watching the video for five minutes. Use the 0-8 scale we used in the interview where 0 = Not at all and 8 = Very much.”

Pre BAT Fear SUDS

0 1 2 3 4 5 6 7 8

Tell me how disgusted you feel about watching the video for five minutes from 0-8 scale where 0 = Not at all and 8 = Very much.”

461
<table>
<thead>
<tr>
<th>Pre BAT Disgust SUDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4 5 6 7 8</td>
</tr>
</tbody>
</table>
Phobic Belief
What do you worry will happen while you watch the video of blood tests and injections? What might be difficult for you about watching a video of someone having a blood test? What might you be scary for you about watching the video?

(Record the child’s strongest phobic belief)
__________________________________________________________________________________________
__________________________________________________________________________________________
__________________________________________________________________________________________

(1) How much do you believe____________________ is true? (Truth Rating)

0 1 2 3 4 5 6 7 8

(2) How likely is it that _________________________ will happen? (Probability Rating)

0 1 2 3 4 5 6 7 8

(3) If _________________________ did happen how bad would that be for you? (Severity Rating)

0 1 2 3 4 5 6 7 8

(4) If _________________________ did happen how confident are you that you could deal with this? (Coping Rating)

0 1 2 3 4 5 6 7 8

“Before we begin, we need to wait about 30 seconds. You can just wait quietly in the chair.”

☐ HR (Start 30 Seconds)

☐ HR (End 30 Seconds)

“Okay, tell me how scared you are feeling right now, from 0 to 8, about doing this task.”

Mid Fear BAT SUDS

0 1 2 3 4 5 6 7 8

“Okay, tell me how disgusted you are feeling right now, from 0 to 8, about doing this task.”

Mid Disgust BAT SUDS

0 1 2 3 4 5 6 7 8

“Okay, now we are going to start the video”

<table>
<thead>
<tr>
<th>Record the highest step completed by child/adolescent (Avoidance) Time in BAT =</th>
</tr>
</thead>
<tbody>
<tr>
<td>0  No avoidance</td>
</tr>
<tr>
<td>1  Minimal avoidance</td>
</tr>
<tr>
<td>2  Moderate avoidance</td>
</tr>
<tr>
<td>3  High avoidance</td>
</tr>
<tr>
<td>4  Complete avoidance</td>
</tr>
</tbody>
</table>

After the child indicates that he/she wants to stop and/or when he/she has completed all of the required steps, ask the child the following question. If the child terminates that BAT task early pause the video;
however leave it so the picture is still on display. Be sure to ask while the child is still in the BAT room, and engaged in the final step (e.g., still in the room, watching the video):
☐ HR (End of BAT)

“Okay, tell me how scared you are feeling right now, from 0 to 8”

Post Fear BAT SUDS
0 1 2 3 4 5 6 7 8

“Tell me how disgusted you are feeling right now, from 0 to 8”

Post Disgust BAT SUDS
0 1 2 3 4 5 6 7 8

☐ HR (End of 5 Minutes) ONLY COMPLETE IF CHILD TERMINATES TASK PREMATURELY

“Okay, tell me how scared you are feeling right now, from 0 to 8”

Post Fear BAT SUDS
0 1 2 3 4 5 6 7 8

“Tell me how disgusted you are feeling right now, from 0 to 8”

Post Disgust BAT SUDS
0 1 2 3 4 5 6 7 8

Following the completion of the task turn off the television and move it to corner of the room and cover with a sheet.

“Now I need to go and pack up our other room quickly. I am going to leave the room again for five minutes. I need you to just sit quietly. Just sit as still and as quietly as possible.

☐ HR (Start Recovery)

☐ HR (End Recovery 5 Minutes)

“Okay, tell me how scared you are feeling right now, from 0 to 8”

Recovery Fear BAT SUDS
0 1 2 3 4 5 6 7 8

“Tell me how disgusted you are feeling right now, from 0 to 8”

Recovery Disgust BAT SUDS
0 1 2 3 4 5 6 7 8
APPENDIX X THREAT APPRAISAL RATINGS

ID#____________

Date:____________

Child Phobic Beliefs

- Use Fear Thermometer for ratings of fear and disgust the three laminated scales for belief-related questions (i.e., how likely, how bad, and coping).

Three phobic beliefs:

1. _______________________________________________________________________
2. _______________________________________________________________________
3. _______________________________________________________________________

<table>
<thead>
<tr>
<th>Phobic Beliefs</th>
<th>Fear</th>
<th>Disgust</th>
<th>How likely?</th>
<th>How bad?</th>
<th>Cope?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phobic Belief #1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phobic Belief #2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phobic Belief #3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Within OST Phobic Beliefs

- Use Fear Thermometer for ratings of fear and the five laminated scales for belief-related questions (i.e., scared, disgusted, how likely, how bad, and coping).

Three phobic beliefs:

4. ________________________________________________________________________
5. ________________________________________________________________________
6. ________________________________________________________________________

<table>
<thead>
<tr>
<th>Phobic Beliefs</th>
<th>Fear</th>
<th>Disgust</th>
<th>How likely?</th>
<th>How bad?</th>
<th>Cope?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start of Treatment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phobic Belief #1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phobic Belief #2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phobic Belief #3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>End of Hour 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phobic Belief #1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phobic Belief #2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phobic Belief #3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>End of Hour 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phobic Belief #1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phobic Belief #2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phobic Belief #3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>End of Hour 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phobic Belief #1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phobic Belief #2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phobic Belief #3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# SUDS Ratings

<table>
<thead>
<tr>
<th>PRE-SUDS</th>
<th>EXPOSURE STEP</th>
<th>POST-SUDS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hour One</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 1. _______  
   _______ | 1. ___________________________  
   ___________________________ | 1. _____  
   _____ |
| 2. _______  
   _______ | 2. ___________________________  
   ___________________________ | 2. _____  
   _____ |
| 3. _______  
   _______ | 3. ___________________________  
   ___________________________ | 3. _____  
   _____ |
| 4. _______  
   _______ | 4. ___________________________  
   ___________________________ | 4. _____  
   _____ |
| **Hour Two** |               |           |
| 5. _______  
   _______ | 5. ___________________________  
   ___________________________ | 5. _____  
   _____ |
| 6. _______  
   _______ | 6. ___________________________  
   ___________________________ | 6. _____  
   _____ |
| 7. _______  
   _______ | 7. ___________________________  
   ___________________________ | 7. _____  
   _____ |
| 8. _______  
   _______ | 8. ___________________________  
   ___________________________ | 8. _____  
   _____ |
<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>_______</td>
<td>_______</td>
<td>9.</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>10.</td>
<td>_______</td>
<td>_______</td>
<td>10.</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>11.</td>
<td>_______</td>
<td>_______</td>
<td>11.</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>12.</td>
<td>_______</td>
<td>_______</td>
<td>12.</td>
<td>_______</td>
<td>_______</td>
</tr>
</tbody>
</table>
Child Homework Adherence

1. Did not complete any assigned homework
2. Completed little of assigned homework
3. Completed some assigned homework, but less than 50%
4. Completed approximately 50% of assigned homework
5. Completed most of assigned homework
6. Completed all assigned homework
7. Completed all homework and made efforts above and beyond assignments
Parent Homework Adherence

1. Did not complete any assigned homework
2. Completed little of assigned homework
3. Completed some assigned homework, but less than 50%
4. Completed approximately 50% of assigned homework
5. Completed most of assigned homework
6. Completed all assigned homework
7. Completed all homework and made efforts above and beyond assignments
## Therapist adherence/competency in treatment session

*General scale:*

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>Yes, but poorly</td>
<td>Yes, but inadequate</td>
<td>Satisfactory</td>
<td>Good</td>
<td>Very good</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

1. Created a good and trustful therapeutic relationship with the child __________
2. Provided general instructions before the start of the exposure __________
3. Provided specific instructions during the exposure session __________
4. Gave factual information about the object/situation __________
5. Dealt with questions as they arose in session __________
6. Continued with exposure exercises during the session __________
7. Guided the child in the exposure procedure __________
8. Used modeling during the session __________
9. Used verbal reinforcement during the session __________
10. Elicited and worked with the child’s catastrophic beliefs __________
11. Efficient use of time and pacing during the session __________
12. Described how to continue with self-exposure after the session __________
13. Handled difficulties in the exposure procedure __________

Where did the session take place: _____________________________________________

Exercises conducted: 1. _____________________________________________
2. _____________________________________________
3. _____________________________________________

472
Comments:
Overall, my treatment was helpful.

1 Strongly Disagree
2 Disagree
3 Neutral
4 Agree
5 Strongly Agree

My treatment helped me to cope better with my fear/ phobia.

1 Strongly Disagree
2 Disagree
3 Neutral
4 Agree
5 Strongly Agree

Following my treatment, my fear level has:

1 Greatly Increased
2 Slightly Increased
3 Stayed the Same
4 Slightly Decreased
5 Greatly Decreased

Following my treatment, my avoidance (e.g., staying away from the thing I fear) level has:

1 Greatly Increased
2 Slightly Increased
3 Stayed the Same
4 Slightly Decreased
5 Greatly Decreased

How successful do you think the treatment was in teaching you to deal with your fears/ phobia?
I would recommend this treatment to a friend who had similar fears / phobias.

About My Therapist

I liked my therapist

My therapist seemed to understand what I was feeling

During treatment, my therapist let me do what I wanted to do at my pace.

I felt like my therapist was on my side.
I felt like my therapist didn’t really care about me.

1
Strongly Disagree

2
Disagree

3
Neutral

4
Agree

5
Strongly Agree

My therapist helped me overcome my fears.

1
Strongly Disagree

2
Disagree

3
Neutral

4
Agree

5
Strongly Agree

**What were the most important parts of treatment for me?**

Read the different parts of treatment in the last column. Please rank order the different parts of treatment to show which part you think was the most important in helping you reduce your fears and which was the least important. For example, if you think the information we provided you about fears was the most important thing, rank it #1. On the other hand, if you think feeling the fear and learning that you could cope with it was the most important thing, rank it #1. Do you understand? Okay, please make your rankings. There are no right or wrong answers.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Part of Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st (Most important)</td>
<td>Information about the object/ situation you feared</td>
</tr>
<tr>
<td>2nd</td>
<td>Having the therapist actually show me how to deal with the feared object/ situation</td>
</tr>
<tr>
<td>3rd</td>
<td>Actually being in the situation that I feared</td>
</tr>
<tr>
<td>Rank</td>
<td>Benefit</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>4th</td>
<td>Feeling the fear and learning that I could cope with it</td>
</tr>
<tr>
<td>5th</td>
<td>Feeling in control of the treatment situation</td>
</tr>
<tr>
<td>6th</td>
<td>Support of the therapist</td>
</tr>
<tr>
<td>7th</td>
<td>(Least Important)</td>
</tr>
<tr>
<td></td>
<td>Learning to thinking about the thing I feared in a different way</td>
</tr>
</tbody>
</table>

**THANK YOU!**

**APPENDIX AD TREATMENT SATISFACTION – PARENT VERSION (PTS)**

After completing their treatment, my child compared with other children his/her age is now:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all fearful</td>
<td>A little bit fearful</td>
<td>Somewhat fearful</td>
<td>Very fearful</td>
<td>Very, very fearful</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After completing their treatment, my child compared to other children his/her age is now:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all avoidant</td>
<td>A little bit avoidant</td>
<td>Somewhat avoidant</td>
<td>Very Avoidant</td>
<td>Very, very avoidant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After completing their treatment my child is better able to cope with his/her fears/phobias.
After completing their treatment, my child’s fears/phobias now interfere with his/her life:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>A little bit</td>
<td>Quite a bit</td>
<td>Very much</td>
<td>Very, very much</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

My child’s treatment helped ME understand more about phobias, how they are caused, and how they might be treated.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Neutral</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

My child’s treatment helped ME learn ways to assist my child overcome his/her fears/phobias.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Neutral</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

My child’s treatment helped ME to cope better with my child’s fears/phobias.
Overall, my child’s treatment helped and was effective.

I would recommend this program to a friend whose child has a similar problem.
About the Treatment

Think about the length of the treatment. Which statement matches your belief about the treatment length:

The treatment was just the right length (One session – 3 hours)

The treatment was too long

The treatment was too short – my child needed more time and sessions.

Any other comments? Feel free to make comments about any aspects of the assessment or treatment.

**Importance of Treatment Ranking for my Child:**

Please rank order the different parts of treatment to show which part you think was the most important for reducing your child’s fear and which was the least important. Put the ranking before the various components. For example, if you think “Support of the Therapist” was the most important component rank it #1. If however, you think “My child being in the feared situation” is the most important rank it #1, etc. Thank you.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Part of Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Information about the feared object/ situation</td>
</tr>
<tr>
<td>2nd</td>
<td>Having the therapist actually show my child how to deal with the feared object/ situation</td>
</tr>
<tr>
<td>3rd</td>
<td>My child actually being in the feared situation</td>
</tr>
<tr>
<td>4th</td>
<td>My child feeling the fear and learning that she or he could cope with it</td>
</tr>
<tr>
<td>5th</td>
<td>Feeling in control of the treatment situation</td>
</tr>
<tr>
<td>6th</td>
<td>Support of the therapist</td>
</tr>
<tr>
<td>7th (Least Important)</td>
<td>My child learning to think about the thing she or he feared in a different way</td>
</tr>
</tbody>
</table>

THANK YOU!