THE RELATIONSHIP BETWEEN CHILD AND PARENT HEALTH ANXIETY AND ASSOCIATED CONSTRUCTS IN CHILDREN AND ADOLESCENTS WITH CONGENITAL HEART DEFECTS

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Abstract

Health anxiety refers to worries about one's health, often based on the worry that changes in bodily sensations are indicative of a serious illness. It was originally thought that health anxiety originated in adulthood, however a limited body of research has suggested the origin is likely much earlier. Little is known about the etiology or the experience of health anxiety in specialized child health populations. The purpose of this study is to examine the relationship between self-reported health anxiety and associated constructs (i.e., intolerance of uncertainty, anxiety sensitivity, *DSM-IV* anxiety disorder symptom categories) in children and adolescents with congenital heart defects (CHD) and that of one of their parents. We hypothesized that there would be a significant positive relationship between child health anxiety, parent health anxiety, and the associated constructs. Twenty-one children with CHD, ages 7 to 15 years (mean age = 11. 67, *SD* = 2.57) and 21 parents completed a battery of measures designed to assess health anxiety and associated constructs. Results demonstrated a trend toward a significant negative association between parent health anxiety and child health anxiety. A significant negative association was observed between an aspect of child health anxiety (i.e., CIAS treatment experiences subscale) and parent health anxiety. Significant positive associations were observed between child health anxiety and associated constructs and a similar pattern was observed within parent measures. This is the first study of its kind to examine the parental transmission of health anxiety within a medical population. The knowledge obtained from this study can facilitate an increase in our understanding of the psychological needs and possibly shed some light on the etiology of health anxiety within children with CHD.

Keywords: children, congenital heart defects, health anxiety, parent psychopathology

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The Relationship between Child and Parent Health Anxiety and Associated Constructs in Children and Adolescents with Congenital Heart Defects

Health anxiety, or the experience of fear that one goes through when one believes that changes in bodily sensations are indicative of a serious illness, affects a large proportion of the population (Asmundson, Abramowtiz, Richter, & Whedon, 2010; Sunderland, Newby, & Andrews, 2013). Severe health anxiety, once labeled hypochondriasis in the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (*DSM-IV*-TR; American Psychiatric Association [APA], 2000), is now captured by two diagnoses: somatic symptom disorder and illness anxiety disorder in the fifth edition (*DSM-5*; APA, 2013). Somatic symptom disorder is diagnosed when one has significant somatic symptoms along with health anxiety, whereas illness anxiety disorder is diagnosed when one has no somatic symptoms along with high health anxiety.

Health anxiety has been found to be best represented as a dimensional construct instead of the categorical construct used in the *DSM-IV* (Ferguson, 2009; Warwick & Salkovskis, 1990), as people can experience various magnitudes of health anxiety, ranging from a complete lack of concern about one's health to severe health anxiety (Asmundson et al., 2010; Salkovskis & Warwick, 1986). Minor anxiety about one's health is common, and health anxiety in its minor form can actually be adaptive, as it motivates one to get health care when in need and to avoid potential detriments to one's health (Taylor, 2004). In order to satisfy a *DSM-5* diagnosis (APA, 2013), health anxiety must be excessive, limiting one's ability to function both socially and occupationally (Asmundson et al., 2010; Delparte et al., 2015). Health anxiety becomes maladaptive when it leads to excessive personal suffering and inappropriate use of health care services (Taylor, 2004). Health anxiety can be triggered by a variety of experiences, including

typical physical symptoms (e.g., a headache), a more threatening health experience, the death of a loved one, or being exposed to stories in the media that relate to health issues (Delparte et al., 2015).

Health Anxiety in Adults

In the adult population, the prevalence rate is approximately 6% for severe health anxiety (Bleichhardt & Hiller, 2007). The cause of health anxiety is still not clear. Taylor, Thordarson, Jang, and Asmundson (2006) examined the developmental factors of health anxiety employing a twin-study methodology. Taylor and colleagues' results suggested that a genetic component does exist, but environmental influences play a more dominant role. Within adult research, early childhood experiences have been found to be potential risk factors for later health anxiety (Barsky, Wool, Barnett, & Cleary, 1994; Noyes et al., 2002). Noyes and colleagues' (2002) study found that levels of health anxiety in adults were related to self-reported personal illness, worry, and separation anxiety during their childhood, supporting the idea that childhood situations may be the root of adult health anxiety.

Health Anxiety in Children and Adolescents

Limited research exists for health anxiety in children and adolescents (Wright, Reiser, & Delparte, 2015). However, a growing body of research has suggested that health anxiety may originate much earlier than adulthood (e.g., Delparte et al., 2015; Rask, Elberling, Skovgaard, Thomsen, & Fink, 2012; Rask et al., 2015; Rask et al., 2016; Wright & Asmundson, 2003; Wright et al., 2015; Wright, Lebell, & Carleton, 2016). Research has demonstrated that health anxiety exists within children as young as 5 to 7 years old. Rask and colleagues (2012) examined the parental-reported health anxiety of children this age and results suggested that health anxiety symptoms are positively associated with the child's health problems and internalizing disorders.

More recently, Rask and colleagues (2015) examined health anxiety in a youth sample and found that health anxiety symptoms were not significantly associated with chronic physical conditions. This sample did not comprise of many children with severe chronic medical conditions (i.e., most had asthma) and did not a priori seek out children with medical conditions for their study. However, this study further suggests the existence of health anxiety within children and adolescents.

Associated Constructs

Intolerance of Uncertainty. Intolerance of uncertainty is the tendency to react in a negative way in unpredictable situations, and having negative beliefs about the consequences that may follow uncertainty (Carelton, Norton, & Asmundson, 2007; Gerolimatos & Edelstein, 2012). Research has found that IU is a trait-like characteristic that can predispose one to develop anxiety (Deacon, Abramowitz, 2008; Gerolimatos & Edelstein, 2012). There are mixed findings for this result, as other studies have failed to find a relationship between IU and health anxiety when controlling for specific factors (e.g., neuroticism, anxiety sensitivity [AS]; Boelen & Carleton, 2012; Sexton, Norton, Walker, & Norton, 2003). Most recently, Wright and colleagues (2016) examined intolerance of uncertainty (IU) and health anxiety within a youth population, ages 11-17 years old. Results demonstrated a relationship between IU and health anxiety, as well as other constructs of interest, which further establishes the existence of health anxiety within a youth population.

Anxiety Sensitivity. Anxiety sensitivity refers to the fear of anxiety-related symptoms (e.g., increased heart rate) that arise from beliefs that the sensations have adverse consequences (e.g., death, insanity; Gerolimatos & Edelstein, 2012; Taylor et al., 2007). Research has demonstrated that AS is a predictor of health anxiety (Otto, Pollack, Sachs, & Rosenbaum, 1992;

Stewart, Conrod, Gignac, & Pihl, 1998; Wright & Asmundson, 2003). Taylor et al. (2007) suggest that AS is associated with anxiety disorders as it is an anxiety amplifier, as those who become anxious can become alarmed by the arousal-related sensations, intensifying their anxiety. In both nonclinical populations (Wheaton, Deacon, Mcgrath, Berman, & Abramowitz, 2012) and specific medical populations (Jones, Hadjistavropoulos, & Gullickson, 2014), AS has been identified as a predictor of health anxiety. In children, research has also demonstrated a relationship between AS and health anxiety (Wright & Asmundson 2003; Wright, Adams Lebell, & Carleton, 2016).

Relationship between Child and Parent Mental Health

Research has demonstrated that children of parents with major mental disorders are at a heightened risk for also developing a mental disorder (Dean et al., 2010). Significant focus within the literature has been on the familial transmission of severe mental illnesses, such as bipolar disorder and schizophrenia, and the genetic nature of these risk factors (Cardno & Gottesman, 2000; Henin et al., 2005; Kendler, Gruenberg, & Kinney, 1994). Less attention has been put on more common mental disorders, such as anxiety and depression. Dean and colleagues (2010) found that regardless of the nature of the parental disorder, the risk of any psychiatric contact for the offspring was more than twice that of the offspring of parents without a mental disorder. Weissman and colleagues' (2006) study involved a 20-year follow-up of children of depressed and non-depressed parents, and results suggested that the risks of anxiety disorders and major depression were about three times higher within the offspring of depressed parents. Biederman et al. (2007) examined the longitudinal course of anxiety disorders in children of parents with and without panic disorder and major depression. Results indicated that separation anxiety disorder significantly increased the risk for the development of agoraphobia,

generalized anxiety disorder, panic disorder, and major depression, informing the need to target prevention studies to those at risk for future anxiety disorders, such as children of parents with panic disorder or depression who have symptoms of separation anxiety disorder or agoraphobia. The aforementioned research highlights the established relationship between child and parent mental health, which supports the need to examine this relationship further within a specialized population of those with medical conditions.

Relationship between Child and Parent Health Anxiety

Limited research exists regarding the relationship between child and parent somatic related disorders. To our knowledge, only four studies have explored the transmission of health anxiety from parents to children or adolescents. Marshall, Jones, Ramchandani, Stein, and Bass (2007) examined whether children of those with somatoform disorders had more abnormal health beliefs than the children of those with an organic physical disorder. Health anxiety was measured using appropriate questionnaires for the parents, adolescents, and young children. Results demonstrated that children of those with a somatoform disorder scored significantly higher on measures of health anxiety and subscales of bodily preoccupations, disease phobia, treatment experience, and effect of treatment, suggesting a difference between the health beliefs of children who have parents with different health conditions. These results suggest that when parents have a somatoform disorder their beliefs and behaviours influence those of their offspring. Marshall et al.'s (2007) results are limited due to the small sample size, but they nonetheless introduce the important idea of parental transmission of health-related anxiety to children.

Koteles, Freyler, Kokonyei, and Bardos (2014) examined the relationship between parents' and adolescents' health anxiety, somatosensory amplification (i.e., enhanced bodily focus and misinterpretation of bodily signs), and modern health worries (i.e., worries regarding

health threats of new technologies). Questionnaires that assessed these variables were completed by adolescents who were 14 to 19 years old, and their respective parents. Similar to that of Marshall et al. (2007), results indicated that adolescents' health anxiety, somatosensory amplification, and modern health worries were associated with respective parental ratings, suggesting that social learning may be involved in the transmission of health anxiety characteristics from parents to children. Wright, Reiser, and Delparte (2015) examined the relationship between childhood health anxiety, parent health anxiety, and associated constructs (i.e., AS and depression) within a community sample. Participants included 77 children and adolescents aged 8-17 years of age along with one of their parents. Results suggested that there was an association between childhood health anxiety, parent health anxiety and the associated constructs. No parent measure alone was predictive of child health anxiety.

Most recently, Thorgaard et al. (2016) examined the effects of maternal health anxiety on 8-17-year-old children's health complaints, emotional symptoms, and quality of life. Unique to previous studies on the parental transmission of health anxiety, Thorgaard et al. used a family-case control design that included three groups of children. One group included case children of mothers with severe health anxiety, a second group included control children of mothers who had rheumatoid arthritis (RA), and a third group included control children of healthy mothers. Results indicated that children who had mothers with severe health anxiety had significantly higher levels of health anxiety symptoms compared to children of mothers with RA, but not compared to children of healthy mothers. No significant differences emerged across the three groups with regard to the children's self-reports of their overall anxiety symptoms, physical complaints, and quality of life. However, mothers with severe health anxiety reported their children as having more emotional and physical symptoms compared to mothers in both control

groups. Thorgaard et al. concluded that maternal health anxiety only weakly affects children's own report of health anxiety, but that mothers with severe health anxiety believe that their children are more ill. Thus, this study suggests that maternal health anxiety may not be a strong risk factor for the development of health anxiety symptoms in childhood per se, but that the presence of severe health anxiety within mothers may influence the perception of their child's health.

The aforementioned research emphasizes the existence of health anxiety in children and adolescents, as well as the idea that the development of health anxiety in children may be in part due to parental transmission. The results of Wright et al. (2015) and Thorgaard et al. (2016) demonstrate the complexity of the relationship. Due to the very limited research within this specific area, as well as the complexity of the phenomenon, further exploration of the relationship between child and parent health anxiety is warranted.

Health Anxiety in Medical Populations

The point prevalence for health anxiety is 20% in medically ill adults (Tyrer et al., 2011; Warwick & Salkovskis, 1990). Health anxiety has been explored across various adult medical populations (e.g., Jones et al., 2014; Kehler & Hadjistavropoulos, 2009; Ucar et al., 2016). For example, within younger adults, research suggests that pain and weakened physical functioning are predictors of health anxiety disorders (Hadjistravopoulos, Hadjistravopoulos, & Quine, 2000). It is clear that adults with medical conditions tend to have heightened levels of health anxiety; but, limited research exists for the examination of health anxiety among children and adolescents who have medical conditions. Rask and colleagues (2015) examined health anxiety in a youth sample and found that health anxiety symptoms were not significantly associated with chronic physical conditions. This sample did not comprise of many children with severe chronic

medical conditions (i.e., most had asthma) and did not a priori seek out children with medical conditions for their study. Given that there has been very limited examination of health anxiety in children in general and, in particular, in a chronic medical population, coupled with the findings from the adult literature suggesting that individuals with medical conditions may have higher levels of health anxiety, it is important to explore health anxiety in children and adolescents with chronic medical conditions. This line of research will help to expand our knowledge of health anxiety across the lifespan as well as to extend to our knowledge base to include those with chronic medical conditions.

Congenital Heart Defects (CHD)

Congenital heart defects consist of multiple heart abnormality related syndromes, ranging in severity from minor heart murmurs to more complex heart conditions that can put a child's life in immediate danger (Lawoko & Soares, 2002). CHD is one of the world's leading birth anomalies (Reller, Strickland, Riehle-Colarusso, Mahle, & Correa, 2008). Patients with CHD who require an initial surgery will require more surgery, and potentially a heart transplant at a later age (Warnes et al., 2001). Although the survival rate has been increasing, children with CHD tend to be at an increased risk for mental health problems compared to healthy kids (Karsdorp, Everaerd, Kindt, & Mulder, 2006). The research regarding the mental health of children with CHD has been mixed. Kramer and colleagues (1989) found that children with CHD experienced increased feelings of anxiety, and this anxiety impaired many of their necessary daily activities. Rassart, Luyckx, Goossens, Apers, and Moons (2014) found that adolescents with CHD were not at an increased risk for mental health problems. A study by Fredriksen and colleagues (2009) examined behavioral and emotional problems in children and adolescents with CHD, and results indicated that children with CHD reported more problems in

comparison to their parents, and that these children experienced psychosocial problems that can affect their daily functioning. However, there were no differences between males with CHD and healthy males, and females with CHD had less anxiety than healthy females. Most recently, DeMaso and colleagues (2017) found that adolescents with single-ventricle CHD had higher rates of lifetime anxiety disorders and ADHD compared to healthy referents. One study, specifically, has demonstrated that children with CHD have higher levels of health anxiety and associated constructs (i.e., AS, IU, *DSM-IV* anxiety disorder symptom categories) than typically developing children (Oliver et al., in preparation). Due to the limited and inconsistent findings regarding the mental health of children with CHD, it is beneficial to examine this population further.

Purpose

The purpose of this study was to build upon the limited research examining the familial transmission of health anxiety and to extend this avenue of exploration to include that of a child and adolescent chronic medical population (i.e., congenital heart defects). Specifically, we examined the association between self-reported health anxiety and associated constructs (i.e., AS, IU, and *DSM-IV* anxiety disorder symptom categories) in children and adolescents with CHD and their children's parents. It was hypothesized that (1) there would be a significant positive relationship between child and adolescent health anxiety, parent health anxiety, and the associated constructs, (2) that there would be a significant positive relationship between the constructs of interest and health anxiety in children, and (3) that there would be a significant positive relationship between the constructs of interest and health anxiety in parents.

Method

Participants

Participants were 21 children and adolescents between the ages of 7-15 years and one parent per child/adolescent (i.e., 21 parents; see Table 1). Child participants had a mean age of 11.67 years (SD = 2.57). Approximately 57% of child participants were male (mean age = 10.17, *SD* = 2.33). The majority of children self-reported as Caucasian (88.9%, *n* = 16). Descriptive information regarding ethnicity was not obtained from three of the child participants. The majority of the participants resided in an urban area (85.7%, *n* = 18). The majority of children had one CHD medical condition (85.7%, *n* = 18), two children had two medical conditions (9.5%) and one child had three medical conditions (4.8%). The most common types of CHD was hypoplastic left heart syndrome 19% (*n* = 4) and ventricular septal defect (i.e., hole in the heart; 19%, *n* = 4). Aside from CHD conditions, 22.2% (*n* = 4) had an additional health condition, 16.7% (*n* = 3) had two additional health conditions, and 5.6% (*n* = 1) had three additional health conditions. The majority of the parents who participated were female (95.2%, *n* = 20). One child participant did not complete the entire battery of measures therefore this participant was excluded from the primary analyses, leaving us with 20 participants.

Child Measures

Childhood Illness Attitude Scales (CIAS; Wright & Asmundson, 2003; see Appendix A). The CIAS is a 35-item self-report measure used to evaluate fears, beliefs, and attitudes associated with health anxiety in school-aged children (Wright & Asmundson, 2005). The majority of the questions are rated on a 3-point likert scale that range from 1 (*none of the time*) to 3 (*a lot of the time*). Total scores range from 29 to 87, where higher scores indicate higher levels of health anxiety and illness behavior. Four subscales are incorporated, including fears (e.g., “Do

Table 1

Descriptive Statistics of Demographic Information for Children

	Totals		Females		Males	
Characteristics	*n*	%	*n*	%	*n*	%
	21	100	9	42.86	12	57.14
Age						
7-11	8	38.1	0	0	8	66.7
12-15	13	61.9	9	100	4	33.3
Ethnicity						
White/ Caucasian	16	76.2	7	77.8	9	75.0
East Asian	1	4.8	0	0	1	8.3
Other	1	4.8	0	0	1	8.3
CHD Medical Condition						
Transposition greater arteries	3	14.3	2	22.2	1	8.3
ASD/ VSD/ Hole in the heart	4	19.0	1	11.1	3	25.0
Coarctation of the aorta	1	4.8	0	0	1	8.3
Ebstein's Anomaly	1	4.8	1	11.1	0	0
Aortic Stenosis	1	4.8	0	0	1	8.3
Pulmonary Vein involvement	1	4.8	0	0	1	8.3
Left ventricular valve leak	1	4.8	0	0	1	8.3
Hypertrophic cardiomyopathy	1	4.8	1	11.1	0	0
Hypoplastic left heart syndrome	4	19.0	3	33.3	1	8.3
Pulmonary Stenosis	2	9.5	0	0	2	16.7
Tetralogy of Fallot	3	14.3	1	11.1	2	16.7
Tricuspid atresia	1	4.8	1	11.1	0	0
Hypoplastic right ventricle	1	4.8	1	11.1	0	0
Number of CHD Conditions						
One medical condition	18	85.7	8	88.9	10	83.3
Two medical conditions	2	9.5	0	0	2	16.7
Three medical conditions	1	4.8	1	11.1	0	0
Surgical Procedures						
Glenn Shunt	4	19.0	4	44.4	0	0
Open heart surgery	3	14.3	0	0	3	25.0
Non-specified surgery	4	19.0	1	11.1	3	25.0

AICD Implant	1	4.8	1	11.1	0	0
Angioplasty	1	4.8	0	0	1	8.3
None	2	9.5	0	0	2	16.7
Stent placed	1	4.8	0	0	1	8.3
Angiogram	1	4.8	0	0	1	8.3
PA Band	1	4.8	1	11.1	0	0
Subaortic stenosis resection	1	4.8	1	11.1	0	0
Removal of PA valve	1	4.8	1	11.1	0	0
Repair heart	2	9.5	1	11.1	1	8.3
Pacemaker	1	4.8	0	0	1	8.3
Non-CHD Medical Condition						
None	2	9.5	1	11.1	1	8.3
Autism	1	4.8	0	0	1	8.3
ADHD	2	9.5	1	11.1	1	8.3
Sensory Processing Disorder	1	4.8	0	0	1	8.3
Brain condition	1	4.8	1	11.1	0	0
Celiac disease	1	4.8	1	11.1	0	0
Protein losing enteropathy	1	4.8	1	11.1	0	0
Depression	1	4.8	1	11.1	0	0
Anxiety	1	4.8	1	11.1	0	0
Stroke	2	9.5	1	11.1	1	8.3
Respiratory abnormality	1	4.8	0	0	1	8.3
Brain tumour	1	4.8	1	11.1	0	0

Note. Total for CHD medical conditions and surgical procedures does not total to 21 due to participants having multiple conditions/ procedures.

you worry about your health?"), help-seeking (e.g., "When you feel sick, do you tell your mom or dad?"), symptom effects (e.g., "Do strange feelings in your body stop you from going to school?"), and treatment experiences (e.g., "How many doctors have you seen in the past year?"; Wright & Asmundson, 2003). The CIAS has demonstrated excellent internal consistency in terms of its total score (α = .88 to .89; Wright & Asmundson, 2005). The current study demonstrated good internal consistency for the CIAS total score (α =.86) and good and acceptable internal consistency for the CIAS subscale scores fears (α = .81), symptom effects (α = .71), help-seeking (α = .85). However, the internal consistency for the treatment experiences subscale was poor (i.e., α = .50).

Childhood Anxiety Sensitivity Index (CASI; Silverman, Fleisig, Rabian, & Peterson, 1991; see Appendix B). The CASI is an 18-item child self-report measure. Each item is rated on a 3-point likert scale that ranges from 1 (*none*) to 3 (*a lot*). Total scores range from 18 to 54, where higher scores indicate higher levels of anxiety sensitivity (Silverman et al., 1991). Three subscales are incorporated including physical concerns (e.g., "It scares me when my heart beats fast"), social concerns (e.g., "Other kids can tell when I feel shaky"), and psychological concerns (e.g., "When I am afraid, I worry that I might be crazy"). The CASI has demonstrated good internal consistency (α = .87) and acceptable levels for test-retest reliability (Silverman et al., 1991). The current study demonstrated excellent internal consistency for both the CASI total score (i.e., α = .95) and physical concerns subscale (i.e., α = .92). Good and acceptable internal consistency was demonstrated for the psychological concerns and social concerns subscales (i.e., α = .88 and α = .76, respectively).

Spence Children's Anxiety Scale (SCAS; Spence, 1998; see Appendix C). The SCAS is a 44-item self-report measure used to assess symptoms regarding anxiety clusters in children

(Spence, 1998). Each item is rated on a 4-point likert scale that ranges from 0 (*never*) to 3 (a*lways*). Six subscales are incorporated, including separation anxiety, social phobia, obsessive-compulsive disorder, panic-agoraphobia, generalized anxiety, and fears of physical injury. This scale includes items such as "When I have a problem I feel shaky" and "I can't seem to get bad or silly thoughts out of my head" (Spence, 1998). Total scores range from 0 to 114, where higher scores indicate higher levels of anxiety. The SCAS has demonstrated high internal consistency with respect to its total score (α = .92; Essau, Muris, & Ederer, 2002; Spence, 1998). The current study demonstrated excellent internal consistency (α = .93) for the SCAS total score and good internal consistency for the separation anxiety (α = .88) and panic/agoraphobia (α = .84) subscales. Acceptable internal consistency was demonstrated for obsessive compulsive (α = .68), generalized anxiety (α = .71), and social phobia (α = .67) subscales. The remaining subscale (i.e., physical injury fears) had a very poor internal consistency value (α = .27).

Intolerance of Uncertainty Scale-Revised (IUS-R; Walker, Birrell, Rogers, Leekam, &Freestone, 2010; see Appendix D). The IUS-R is a 12-item self-report measure designed to assess IU across the lifespan, allowing comparisons across children, adolescents, and adults. The IUS-R is an adaptation of the 12-item version of the Intolerance of Uncertainty Scale (Carleton et al., 2007). Each item is rated on a 5-point likert scale ranging from 1 (*not at all like me*) to 5 (*entirely like me*). Total scores range from 12 to 60, where higher scores indicate a greater degree of intolerance of uncertainty. Two subscales are incorporated, including the prospective subscale (e.g., "When things happen suddenly, I get very upset") and the inhibitory subscale (e.g., "When I'm not sure what to do I freeze"; Walker et al., 2010). More research within clinical populations is required in order to determine psychometric validity (Carleton et al., 2007). The current study demonstrated excellent internal consistency for the IUS-R total score and the IUS-R inhibitory

subscale (i.e., α = .93 and α = .90, respectively). The IUS-R prospective subscale had good internal consistency (i.e., α = .83).

Parent Measures

Short Health Anxiety Index (SHAI; Salkovskies et al., 2002; see Appendix E). The SHAI is an 18-item self-report measure of health anxiety in adults. Each item includes four statements from which the respondent can choose the statement that best represents their experience over the past 6 months. Total scores range from 0 to 48, where higher scores indicate a greater degree of health anxiety. Two subscales are incorporated, including a 14-item subscale assessing health anxiety independent of health status, and a 4-item subscale measuring perceived negative consequences of having an illness. The SHAI has demonstrated good reliability, criterion validity, and sensitivity to treatment (Abramowitz, Deacon, & Valentiner, 2007; Salkovskies et al., 2002). For the purposes of the present study, only the SHAI total score was employed. The current study demonstrated good internal consistency for the SHAI total score (α = .82).

Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007; see Appendix F). The ASI-3 is an 18-item self-report measure that is designed to assess the tendency to fear anxiety symptoms due to the belief of their harmful consequences (e.g., "It scares me when my heart beats rapidly"). Each item is rated on a 5-point likert scale that ranges from 0 (*agree very little*) to 4 (*agree very much*). Three subscales are incorporated, including physical concerns, cognitive concerns, and social concerns. The ASI-3 has displayed convergent, discriminant, and criterion validity (Taylor et al., 2007). For the purposes of the present study, only the ASI-3 total score was employed. The current study demonstrated good internal consistency for the ASI total score (α = .88).

Intolerance of Uncertainty Scale, Short Form (IUS-12; Carleton, Norton, & Asmundson, 2007; see Appendix G). The IUS-12 is a 12-item measure that is designed to assess responses to uncertainty, ambiguous situations, and the future. The IUS-12 is a short version of the original 27-item Intolerance of Uncertainty Scale (Freeston, Rhéaume, Letarte, Dugas, & Ladoucceur, 1994). Each item is rated on a 5-point likert scale that ranges from 1 (*not at all characteristic of me*) to 5 (*entirely characteristic of me*). Two subscales are incorporated, including prospective anxiety (e.g. "I can't stand being taken by surprise") and inhibitory anxiety (e.g., "Uncertainty keeps me from living a full life"). The IUS-12 has demonstrated good internal consistency in terms of its total score and both subscale scores (Carleton et al., 2007). For the purposes of the present study, only the IUS-12 total score was employed. The current study demonstrated excellent internal consistency for the IUS-12 total score ($\alpha = .90$).

State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Luschene, Vagg, & Jacobs, 1983; see Appendix H). The STAI is a 40-item self-report measure in which respondents rate 20 items measuring their current, in-moment anxiety (e.g., "I feel nervous"; STAI-State version) and 20 items measuring their anxiety in general (e.g., "I worry too much over something that really doesn't matter"; STAI-Trait version). Each item is rated on a 4-point likert scale that ranges from 1 (*not at all/ almost never*) to 4 (*very much so/ almost always*). The STAI has demonstrated good reliability and construct validity for predicting and measuring anxiety reactions after stressors (Spielberger et al., 1983). The current study demonstrated excellent internal consistency for both state and trait versions of the STAI (i.e., $\alpha = .92$ and $\alpha = .93$, respectively).

Procedure

Recruitment began after approval from the University of Saskatchewan Behavioural Research Ethics Board had been received. Children with CHD, ages 7-15 years, were recruited from the Royal University Hospital Department of Cardiology, along with their parents. Exclusion criteria for child/adolescent participants, that is directed by a larger study (i.e., Children's Healthy Heart Camp in Saskatchewan; CHAMPS) with an intervention component, included: cardiac surgery within the last six months, cyanotic CHD, and an intellectual disability.

Consent was obtained from the parents/legal guardians of the participants, and assent from the child/adolescent participants. All children/adolescent participants completed a battery of child specific measures, and one parent of each child completed four adult specific measures. Parents provided basic demographics for themselves and their children, which include questions regarding age, sex, ethnicity, locations of residence, and the child's medical history and diagnoses. Research assistants facilitated the administration of measures to the child and parents prior to the involvement in the larger study (i.e., CHAMPS). As part of the larger study, the children also completed a variety of other physical measures. The child and parent filled out the questionnaires in separate rooms. All participants received a $10 gift card from Booster Juice as a token of appreciation of their participation.

Results

Descriptive Statistics and Preliminary Analyses

Descriptive statistics were computed for demographic information and for the study questionnaire subscales and total scores (see Tables 1-3). An independent sample t-test was computed to examine potential gender differences across our child participants with respect to age. Results demonstrated that female child participants were significantly older than male child

Table 2

Descriptive Statistics for Child Measures.

Measure	**Total** **M (SD)**	**Females** **M (SD)**	**Males** **M (SD)**	***t***	**P**
CIAS Total score	50.9 (8.1)	50.1 (9.9)	51.7 (6.7)	0.421	0.679
Fears	19.2 (4.2)	18.9 (5.1)	19.4 (3.6)	0.265	0.794
Help seeking	18.8 (4.1)	17.9 (4.4)	19.5 (3.9)	0.848	0.407
Treatment experience	6.9 (1.4)	7.3 (1.3)	6.6 (1.4)	1.153	0.264
Symptom Effects	6.1 (1.6)	6.0 (1.6)	6.2 (1.7)	0.249	0.806
CASI Total score	29.4 (8.9)	28.2 (4.9)	30.3 (11.5)	0.497	0.625
Physical Concerns	15.8 (5.4)	15.1 (2.7)	16.4 (6.9)	0.505	0.619
Social Concerns	9.7 (2.5)	9.6 (2.2)	9.7 (2.8)	0.149	0.883
Psychological Concerns	3.9 (1.65)	3.4 (0.5)	4.2 (2.2)	0.837	0.413
SCAS Total score	26.2 (16.1)	24.9(11.4)	27.3 (19.7)	0.320	0.753
Separation Anxiety	3.4 (3.9)	2.9 (1.8)	3.8 (5.2)	0.508	0.618
Social Phobia	6.2 (3.3)	6.2 (3.1)	6.1 (3.7)	0.085	0.933
Obsessive Compulsive	4.7 (2.9)	3.9 (2.6)	5.3 (3.2)	1.056	0.305
Panic/ agoraphobia	3.5 (4.1)	3.2 (3.3)	3.7 (4.9)	0.265	0.794
Physical injury fears	3.7 (2.2)	3.9 (2.3)	3.6 (2.3)	0.244	0.810
Generalized anxiety	4.7 (2.9)	4.8 (2.5)	4.7 (3.4)	0.045	0.965
IUS-R Total score	26.9 (10.2)	24.9 (8.5)	28.6 (11.6)	0.808	0.429
Prospective IU	16.9 (5.6)	15.1 (4.5)	18.4 (6.2)	1.314	0.205
Inhibitory IU	10.1 (5.6)	9.8 (4.2)	10.3 (5.6)	0.221	0.828

Note. Statistical analyses for children with CHD (n = 20). CIAS = Childhood Illness Attitude Scales; SCAS = Spence Children's Anxiety Scale; CASI = Children's Anxiety Sensitivity Index; IUS-R = Intolerance of Uncertainty Scale-Revised.

Table 3

Descriptive Statistics for Parent Measures

Measure	**Mean**	***SD***
SHAI Total Score	11.25	5.56
IUS-12 Total Score	26.95	8.71
ASI-3 Total Score	14.42	10.09
STAI-S Total Score	29.39	8.80
STAI-T Total Score	34.09	9.75

Note. Statistical analyses for parents of children with CHD (n = 21). SHAI = Short Health Anxiety Index; IUS-12 = Intolerance of Uncertainty Scale, Short Form; ASI-3 = Anxiety Sensitivity Index-3; STAI-S = State-Trait Anxiety Inventory State Version; STAI-T = State-Trait Anxiety Inventory Trait Version.

participants, t (19) = 4.15, $p < .01$, (i.e., 13.67 years versus 10.17 years). Independent sample t-tests were also computed to examine potential gender differences across total scores from child measures of health anxiety, anxiety sensitivity, intolerance of uncertainty, and *DSM-IV* anxiety disorder symptom categories. No statistically significant gender differences were observed. Please see Table 2 for results.

Bivariate correlations were computed between age and total scores on child measures of health anxiety, anxiety sensitivity, intolerance of uncertainty, and *DSM*-IV anxiety disorder symptom categories to examine potential age differences in the constructs of interest. The correlation between age and the SCAS separation anxiety subscale was statistically significant, r (18) = -.47, $p < .04$. The correlation between age and the SCAS obsessive compulsive subscale was also statistically significant, r (18) = -.65, $p < .003$. Results suggested that younger children had higher levels of both separation anxiety and obsessive compulsive symptom clusters. No other statistically significant associations between age and the aforementioned measures were found.

Associations Between Child Health Anxiety, Parent Health Anxiety, and Associated Constructs

It was hypothesized that there would be a significant positive relationship between child health anxiety, parent health anxiety, and the associated constructs (IU, AS, and anxiety disorder constructs). Bivariate correlations were computed between CIAS total and subscale scores, SHAI total scores, and measures of the associated constructs in order to examine this hypothesis (see Table 4). Our hypothesis was not supported. In fact, a significant negative association was observed between CIAS treatment experiences subscale and parent health anxiety (as measured by the SHAI total scores), r (18) = -.48, $p < .04$. Further, a negative association nearing

Table 4

Correlations between child health anxiety, parental health anxiety, and associated constructs

Measures	SHAI	IUS-12	ASI-3	STAI-S	STAI-T
CIAS Total	-.43	-.45*	-.29	-.20	-.39
Fears	-.35	-.30	-.20	-.01	-.16
Help-seeking	-.22	-.51*	-.30	-.30	-.50*
Symptom effects	-.29	-.39	-.02	-.25	-.34
Treatment experiences	-.48*	-.22	-.20	.03	.06
SCAS Total	-.20	-.14	-.04	.21	.09
Separation anxiety	-.38	-.22	-0.20	.04	-.11
Social phobia	-.18	.01	-.04	-.05	.08
Obsessive compulsive	.01	-.15	.05	.46*	.26
Panic/agoraphobia	-.04	-.08	.03	.35	.16
Physical injury fears	-.06	-.17	.08	.01	-.07
Generalized anxiety	-.28	-.09	-.05	.23	.10
IUS-R Total	.05	.13	.14	.39	.41
CASI Total	-.10	-.11	.02	.34	.18

Note. CIAS = Childhood Illness Attitude Scales; SCAS = Spence Children's Anxiety Scale; CASI = Children's Anxiety Sensitivity Index; IUS-R = Intolerance of Uncertainty Scale-Revised; SHAI = Short Health Anxiety Index total score; IUS-12 = Intolerance of Uncertainty Scale, Short Form total score; ASI-3 = Anxiety Sensitivity Index-3 total score; STAI-S = State-Trait Anxiety Inventory State Version total score; STAI-T = State-Trait Anxiety Inventory Trait Version total score. All *DSM-IV* anxiety disorder symptom categories are subscales from the SCAS measure. *$p < .05$.

significance was observed between the CIAS total scores and SHAI total scores is, r (18) = -.43, p = .058.

With respect to the association between child health anxiety (as measured by the CIAS total and subscale scores) and other parent completed measures of interest, results demonstrated a significant negative association between the CIAS total scores and the IUS-12 total scores, r (18) = -.45, $p < .05$, as well as between the CIAS help-seeking subscale and the IUS-12 total scores, r (18) = -.51, $p < .03$, and between the CIAS help-seeking subscale and the STAI-T total scores, r (18) = -.50, $p < .03$. No other correlations between measures of child health anxiety (CIAS) and parent associated constructs were statistically significant.

To determine if any parent variables best predicted child health anxiety, a multiple linear regression using direct entry was computed. The SHAI total (parent health anxiety), IUS-12 total (parent intolerance of uncertainty) and the STAI-T total (parent trait anxiety symptoms) were included as predictors in the model, and the dependent variable was the CIAS total (child health anxiety). These predictors were chosen because there was an association demonstrated in existing study (i.e., Wright et al., 2015). The regression model was not statistically significant, F (3, 16) = 2.33, p = .113, R^2 = .30.

Association Between Child Health Anxiety and Associated Constructs

Anxiety symptoms. We hypothesized that there would be a significant positive relationship between the constructs of interest and health anxiety in children. Bivariate correlations were computed between CIAS subscale and total scores and subscales of measures of the associated constructs in order to test this hypothesis (see Table 5). Our hypothesis was partially supported. Specifically, a statistically significant association was found between the CIAS total scores and the SCAS separation anxiety subscale scores, r (18) = .45, p = .05. Results

Table 5

Associations Between Measures of Child Health Anxiety and Constructs of Interest

Measure	CIAS Total	CIAS Fears	CIAS HS	CIAS TE	CIAS SE
CASI Total	.23	.54*	-.23	.17	.22
Physical concerns	.26	.57**	-.21	.24	.17
Social concerns	.28	.49*	-.14	.12	.38
Psychological concerns	-.01	.34	-.36	-.05	.04
SCAS Total	.15	.47*	-.31	.14	.20
Separation anxiety	.45*	.65**	-.02	.23	.43
Social phobia	.16	.43	-.19	.06	.14
Obsessive-compulsive	.17	.37	-.15	.12	.17
Panic/ agoraphobia	-.11	.22	-.52*	.19	.02
Physical injury fears	-.17	.06	-.35	-.28	.10
Generalized anxiety	.15	.46*	-.28	.23	.10
IUS-R Total	-.03	.25	-.24	-.02	-.15
Prospective	.04	.28	-.13	-.10	-.10
Inhibitory	-.10	.20	-.35	.06	-.20

Note. Higher scores indicate a more extreme response in the direction of the construct assessed. CIAS = Childhood Illness Attitude Scales; HS = Help Seeking; TE = Treatment Experience; SE = Symptom Effects; CASI = Children's Anxiety Sensitivity Index; SCAS = Spence Children's Anxiety Scale; IUS-R = Intolerance of Uncertainty Scale-Revised. All *DSM-IV* anxiety disorder symptom categories are subscales from the SCAS measure *$p < .05$. ** $p < .01$.

also demonstrated a statistically significant association between the CIAS fears subscale scores and the SCAS total scores, r (18) = .47, p = .04, as well as between the CIAS fears subscale scores and two of the SCAS subscales, separation anxiety, r (18) = .65, p = .002, and generalized anxiety, r (18) = .46, p = 04. Lastly, results demonstrated a statistically significant negative association between the CIAS help-seeking subscale scores and the SCAS panic/ agoraphobia subscale scores, r (18) = -.52, p = .02.

Anxiety sensitivity. Results demonstrated a statistically significant association between the CIAS fears subscale scores and the CASI total scores, r (18) = .54, p = .01. Results also demonstrated a statistically significant association between the CIAS fears subscale scores and the CASI physical concerns subscale scores, r (18) =.57, p = .01. Lastly, results demonstrated a statistically significant association between the CIAS fears subscale scores and the CASI social concerns subscale scores, r (18) = .49, p = .03.

Intolerance of uncertainty. No statistically significant associations were found between the CIAS total and subscale scores and the IUS-R total and subscale scores. Thus, results suggest that there is no relationship between health anxiety and intolerance of uncertainty within this child sample, unlike what our second hypothesis expected.

Association Between Parent Health Anxiety and Associated Constructs

It was hypothesized that there would be a significant positive relationship between the constructs of interest and health anxiety in parents. Bivariate correlations were computed between the SHAI total scores and the totals scores of the measures of associated constructs in order to test this hypothesis (see Table 6). Our hypothesis was mainly supported. Results demonstrated a significant association between the SHAI total scores and the ASI-3 total scores, r (19) = .64, p = .002, and the STAI-T, r (19) = .50, p = .022. Further, results demonstrated an

Table 6

Associations Between Measures of Parent Health Anxiety and Constructs of Interest

Measure	SHAI Total
IUS-12	.38
ASI-3	.64**
STAI-S	.36
STAI-T	.50*

Note. SHAI = Short Health Anxiety Index total score;

IUS-12 = Intolerance of Uncertainty Scale, Short Form total score;

ASI-3 = Anxiety Sensitivity Index-3 total score;

STAI-S = State-Trait Anxiety Inventory State Version total score;

STAI-T = State-Trait Anxiety Inventory Trait Version total score.

*$p < .05$. ** $p < .01$

association that approached significance between the SHAI total scores and the IUS-12 total, $r(19) = .38$, $p = .092$.

Discussion

Health anxiety refers to the experience of fear that one goes through when one believes that changes in their bodily sensations may indicate a serious illness (Asmundson, Abramowtiz, Richter, & Whedon, 2010). A growing body of research has suggested that health anxiety may originate much earlier than adulthood, as evidence has suggested that children and adolescents experience concerns regarding their health (e.g., Delparte et al., 2015; Rask, Elberling, Skovgaard, Thomsen, & Fink, 2012; Rask et al., 2015; Wright & Asmundson, 2003; Wright et al., 2015; Wright, Lebell, & Carleton, 2016). Due to the dominating thought that health anxiety originates in adulthood, there is a limited body of research on health anxiety in children and adolescents, and little is known about the etiology of health anxiety. Currently, only one study has examined health anxiety within a specific child and adolescent medical population (i.e., Oliver et al., in preparation), and no research has examined the relationship between child and parent health anxiety within a medical population. The current study is the first study to examine the association between child and parent health anxiety and associated constructs in populations of children and adolescents with a specific chronic physical condition. The purpose of this study was to examine self-reported health anxiety and associated constructs (i.e., intolerance of uncertainty, anxiety sensitivity, *DSM-IV* anxiety disorder symptom categories) in children and adolescents with CHD as well as in one of their parents, in order to examine the relationship between child and parent health anxiety and associated constructs. We hypothesized that there would be a significant positive relationship between child health anxiety, parent health anxiety, and the associated constructs.

Our first and primary hypothesis was not supported. Interestingly, an association between one aspect of child health anxiety was significantly associated with parent health anxiety, but in the negative direction. Specifically, the CIAS treatment experiences subscale demonstrated a significant negative association with parent health anxiety (as measured by the SHAI total scores). Further, the association between overall child health anxiety (CIAS total scores) and parent health anxiety (SHAI total scores) approached significance, again in a negative direction.

Previous existing research examining the relationship between child and parent health anxiety has demonstrated a positive relationship (Koteles, Freyler, Kokonyei, & Bardos, 2014; Marshall et al., 2007; Thorgaard et al., 2016; Wright, Reiser, & Delparte, 2015), in contrast to the present findings. The present findings, albeit tentative given the small sample size, suggests a different relationship. Specifically, these finding appear to suggest that as child/adolescent health anxiety reduces parent health anxiety increases. What might explain these findings? First, this was the first study to examine the parental transmission of health anxiety within a child medical population, specifically with CHD. It is possible that there is something inherently different about this population compared to typically developing children that causes this unique relationship. Past research has only considered parent medical populations with healthy children (e.g., Thorgaard et al., 2016), and not child medical populations with healthy parents. For example, it is possible that the existence of CHD in one's child increases the parent's health anxiety, but decreases the child's health anxiety, as the child may increasingly become aware that they have an illness that will be taken care of by their parent. The more the parent worries, the less the child may feel the need to worry about their own health. Thorgaard et al. (2016) found that maternal health anxiety may not be a strong risk factor in the development of health anxiety symptoms in children, but that the presence of severe health anxiety within mothers may

influence the perception of their child's health, such that they believe their children are more ill. Thus, in the current study, the presence of CHD in one's child may heighten the parent's health anxiety and perception of the child's health, but not necessarily increase their child's health anxiety.

Second, it is possible that as the child/adolescent becomes more familiarized with their health condition that their health anxiety decreases, while their parents experience an elevation in their own health anxiety. Specifically, it may be that during the process of the parent gaining more knowledge about their child's CHD they become more aware of their own physical health, becoming hypervigilant for any physical changes in their bodies and inferring that those physical changes could be indicative of a health condition. Our finding that there was a significant negative correlation between the treatment experiences aspect of child health anxiety and parent health anxiety is also inconsistent with past research, as Wright et al. (2015) found a significant positive relationship between the two. These present findings are tentative, as a larger sample size is required to help clarify this relationship. Additionally, because this is the first study to examine the relationship between child and parent health anxiety within a specific medical population, more research is required on this topic to deepen our understanding.

A statistically significant negative association was also found between child health anxiety and parent intolerance of uncertainty (i.e., IUS-12 total scores), as well as between the CIAS help-seeking subscale and parent intolerance of uncertainty and trait anxiety. In a similar vein to the above interpretation, as the children with CHD reduce their need to seek help in others, their parent's overall anxiety may increase because they are unsure whether their child is receiving adequate health attention. This decrease may also coincide with an increase in parents' intolerance of uncertainty. As their child is demonstrating less help-seeking behavior parents

may become more uncomfortable with uncertainty of their child's health condition and status.

Aside from the relationship explored between child/adolescent and parent health anxiety, a significant positive relationship was observed between child/adolescent obsessive compulsive symptoms and parent state anxiety. Possibly as parents become more anxious in the moment (e.g., in an acute situation), their child feels an increased need obsessively ensure that they have done things right, or do certain things repeatedly. Future research is required to substantiate these findings further.

Our second hypothesis was only partially supported. The association between child health anxiety (i.e., CIAS total scores) and anxiety sensitivity (i.e., CASI total scores) neared significance. The CIAS fears subscale was significantly associated with the CASI total scores, and psychological and social concerns subscales. Overall child/adolescent health anxiety (i.e., CIAS total scores) was also significantly associated with separation anxiety symptoms (as measured by the SCAS separation anxiety subscale). Further, the CIAS fears subscale demonstrated a significant association with overall child anxiety symptoms (as measured by the SCAS total scores), separation anxiety symptoms (as measured by the SCAS separation anxiety subscale), and generalized anxiety symptoms (as measured by the SCAS generalized anxiety subscale). These findings are consistent with previous research (Oliver et al., in preparation) in a CHD child/adolescent population as well as in a typically developing child/adolescent sample (Wright et al., 2016). It is anticipated that with an increased sample size the association between child/adolescent health anxiety and anxiety sensitivity will be strengthened. However, these preliminary findings do further validate the relationship between anxiety sensitivity and health anxiety in children in general. Research suggests that AS is a predictor of health anxiety (Otto, Pollack, Sachs, & Rosenbaum, 1992; Stewart, Conrod, Gignac, & Pihl, 1998; Wright &

Asmundson, 2003), and that AS is associated with anxiety disorders because it is an anxiety amplifier, such that those who become anxious can become alarmed by the arousal-related sensations which can intensify their anxiety (Taylor et al., 2007).

However, unlike Oliver and colleagues (in preparation) and Wright and colleagues (2016), no association was observed between child health anxiety (i.e., CIAS total scores) and intolerance of uncertainty (i.e., IUS-R). The current findings may be limited due to the small sample size. However, in both populations of bereaved adults and healthy adults, it has been found that there is no relationship between intolerance of uncertainty and health anxiety when controlling for factors such as neuroticism and anxiety sensitivity (Boelen & Carleton, 2012; Sexton, Norton, Walker, & Norton, 2003). It is a possibility that results from our population of children with CHD follow a similar pattern to these results, but future research is required to better understand this relationship.

Our third hypothesis was for the most part supported, as consistent with previous research, a significant positive association was found between parent health anxiety (i.e., SHAI total scores) and anxiety sensitivity (i.e., ASI-3 total scores) and trait anxiety (i.e., STAI-T). Further, the association between parent health anxiety and intolerance of uncertainty (i.e., IUS-12 total scores) and state anxiety (i.e., STAI-S) approached significance. With a larger sample size, it is expected that the latter two associations would also become significant. Our findings are consistent with previous adult research conducted in non-clinical populations (Wheaton, Deacon, Mcgrath, Berman, & Abramowitz, 2012) as well as with that found in specific medical populations (Jones, Hadjistavropoulos, & Gullickson, 2014), where anxiety sensitivity has been identified as a predictor of health anxiety. The current study also adds to the existing literature on the association between health anxiety and IU within adults, as previous research has also found

that IU is a trait-like characteristic that can predispose one to develop anxiety (e.g., Boelen, & Carleton, 2012; Deacon, Abramowitz, 2008; Gerolimatos & Edelstein, 2012). Thus, the current study, along with previous research, supports the consensus that IU and AS are associated constructs of health anxiety in adult populations.

Limitations

There are several limitations to the current study that require attention. First, this study is a part of a larger study in which strict exclusion criteria was required and the sample size was already determined. We anticipated having 32 participants in each group, however, at the time of data analysis we had 40 participants (i.e., 20 children and 20 parents). Thus, these findings may not generalize well due to the very small sample size and the analyses may be underpowered. We hope to recruit more participants in the future with ongoing data collection, which will improve the generalizability of our results and further our understanding of the relationship between child and parent health anxiety.

Second, this study is limited due to the strict exclusion criteria associated with the larger study that the current study is a part of. The exclusion criteria noted that children who had surgery within the last six months, those with cyanotic CHD, and children with an intellectual disability could not participate in the study. Thus, those with more severe forms of CHD and those with intellectual disabilities were not included in this study, and including these children may have provided us with a fuller and representative sample of the entire population of children and adolescences with CHD. Having a more diverse population of children with CHD would allow us to better understand the psychological phenomena within this health population, and how it relates to that of their parents.

Third, another limitation within our data collection process was the use of self-reports in order to assess our constructs of interest. During data collection, research assistants were

available to facilitate the self-reports to the children. The research assistants did not direct any responses and tried not to influence the child's choices, but simply provided explanation for measure items when required. However, the child's responses potentially could have been influenced by the assistance provided. In the current study, a direction provided by Oliver et al. (in preparation) was used, as the parents and children were separated into two different rooms to complete study measures. This strategy was employed in an attempt to eliminate any potential response bias due to parental presence (i.e., parent may have influenced their child's response directly or indirectly). It is also still possible, due to the nature of self-report measures, that the social desirability response bias influenced responses, which is the tendency to respond favorably in regards to socially desirable norms rather than respond in a way that may seem socially undesirable (Zerbe & Paulhus, 1987). Future studies may want to employ a combination of self-report measures and other means of measurement, such as behavioral or observational measures, in order to get a more well-rounded document of the psychological phenomena within this health population. For example, future studies can employ diagnostic interviews that use the *DSM-5* criteria, as this may strengthen the methodology and allow for the specific recruitment of parents who have disorders characterized by health anxiety and their children (Wright et al., 2015).

Fourth, another limitation is related to the low internal consistency score in the CIAS treatment experiences subscale and the SCAS physical injury fears subscale (i.e., $\alpha = .50$ and $\alpha = .27$, respectively). The strength of the alpha coefficients is affected by the length of the scale (Streiner, 2003), and the lower CIAS and SCAS values may be due to having three to five items in each subscale. Poor internal consistency of these subscales may impact the strength of our findings; however, the internal consistency across the majority of total and subscale scores from

the measures employed in the current study ranged from excellent to acceptable.

Future Directions

The current study was the first of its kind to explore the association between child and parent health anxiety and associated constructs in children and adolescents with CHD. Improved understanding of health anxiety across childhood and adolescence is critical, as knowledge can facilitate early identification of clinically significant health anxiety and potentially prevent inappropriate and dangerous medical investigations or procedures to take place, and may prevent the unnecessary use of health care resources than can be associated with clinical levels of health anxiety. Additional knowledge about the etiology of childhood health anxiety and how it is maintained, and clarification of the role parents/ guardians play in its development is key. This information is critical to informing development and execution of tailored interventions. Although our findings are only tentative, given our small sample size, the acquired findings expands our understanding of health anxiety within this specific medical population, and sheds some light on the etiology of health anxiety. The current study can act as a stepping stone for further research in the area.

Because the current study was restricted to using participants with less severe forms of CHD and without intellectual disabilities, future research may want to examine the relationship between child health anxiety and parent health anxiety and associated constructs in children and adolescents with more severe types of CHD. This may allow for a better understanding of whether these children have higher levels of health anxiety, and whether their parents play a similar or different role in the transmission of health anxiety. If so, this knowledge can allow for additional support implemented for a more specialized child/adolescent group and their parents. The current study also only took data from one of the children's parents, and this ended up being all mothers except for one father. We may be missing important information from father's.

Research has found that fathers can play a major role in the development of child anxiety and anxiety disorders in typically developing children (Bogels & Phares, 2008; Last, Hersen, Kazdin, Orvashel, & Perrin, 1991). Future research may want to collect data from both parents/ caregivers, in order to get a more thorough examination of the potential role parents play in the transmission of health anxiety to their child. It may also be beneficial to collect the medical history of parents as well, to see if the medical status of a parent may influence child/adolescent health anxiety in children with CHD. For instance, research has found that children of parents who have a physical health condition have increased levels of anxiety and somatization, and that these parents may increase treatment seeking for their children for minor symptoms (e.g., Crane & Martin, 2004; Noyes et al., 2005; Romer et al., 2002; Thastum et al., 2009). Inclusion of parental health information in future studies would expand our knowledge of the role this factor may play in child/adolescent health anxiety in general, and in this specific health population.

An additional avenue of research may be to include siblings. In order to gain a more thorough understanding of the parental transmission of health anxiety in a specialized child health population (such as CHD), it may be beneficial to collect data from the whole family. This methodological modification would allow researchers to compare health anxiety in offspring with and without a medical condition, and examine how parental health anxiety may relate. Past research has found that parental health anxiety is positively associated with child health anxiety in non-medical populations (Koteles et al., 2014; Marshall et al., 2007; Thorgaard et al., 2016; Wright et al., 2015). However, this type of family dynamic (e.g., offspring with a chronic health condition and those without) may shape the relationship between child/adolescent and parent health anxiety or the psychological functioning of family in general so it is unknown the direction of findings following this research direction.

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Appendix A

Childhood Illness Attitude Scales (CIAS)

Directions: Below are a number of questions. Read each question carefully and put an X on the line in front of the words that best answers the question. There are no right or wrong answers. Remember, find the words that best answers the question.

Question			
1. Do you worry about your health?	___ None of the time	___ Sometimes	___ A lot of the time
2. Are you worried that you might get really sick in the future?	___ None of the time	___ Sometimes	___ A lot of the time
3. Does the thought of being sick scare you?	___ None of the time	___ Sometimes	___ A lot of the time
4. If you have pain, do you worry that it may be caused by a bad sickness?	___ None of the time	___ Sometimes	___ A lot of the time
5. If pain lasts for a week or more, do you tell your mom or dad?	___ None of the time	___ Sometimes	___ A lot of the time
6. If pain lasts for a week or more, do you ask your mom or dad if you can go to the doctor?	___ None of the time	___ Sometimes	___ A lot of the time
7. If pain lasts for a week or more, do you believe that you have a bad sickness?	___ None of the time	___ Sometimes	___ A lot of the time
8. Do you try not to have habits that may be bad for you, such as smoking, drinking, or drugs?	___ None of the time	___ Sometimes	___ A lot of the time
9. Do you try not to eat foods that may not be good for you (such as junk food)?	___ None of the time	___ Sometimes	___ A lot of the time
10. Do you check your body to find out if there is something wrong?	___ None of the time	___ Sometimes	___ A lot of the time
11. Do you believe that you are really sick, but the doctors do not know why?	___ None of the time	___ Sometimes	___ A lot of the time
12. When you feel sick, do you tell your mom or dad?	___ None of	___ Sometimes	___ A lot of

	the time		the time
13. When you feel sick, do you ask your mom or dad if you can go to the doctor?	___ None of the time	___ Sometimes	___ A lot of the time
14. Do you ask your mom or dad for medicine?	___ None of the time	___ Sometimes	___ A lot of the time
15. When your doctor tells you that you are not sick, do you not believe him/her?	___ None of the time	___ Sometimes	___ A lot of the time
16. If a doctor tells you what he/she found, do you soon begin to believe that you might have another sickness?	___ None of the time	___ Sometimes	___ A lot of the time
17. Are you afraid of news that reminds you of death?	___ None of the time	___ Sometimes	___ A lot of the time
18. Does the thought of dying scare you?	___ None of the time	___ Sometimes	___ A lot of the time
19. Are you afraid that you might die soon?	___ None of the time	___ Sometimes	___ A lot of the time
20. Are you afraid that you might have cancer?	___ None of the time	___ Sometimes	___ A lot of the time
21. Are you afraid that you have something wrong with your heart?	___ None of the time	___Sometimes	___ A lot of the time
22. Are you afraid that you have another bad sickness? Which sickness?_____	___ None of the time	___Sometimes	___ A lot of the time
23. When you read or hear about a sickness, do you think that you might have that sickness?	___ None of the time	___Sometimes	___ A lot of the time
24. When you have a strange feeling in your body, do you find it hard to think about something else?	___ None of the time	___Sometimes	___ A lot of the time
25. When you have a strange feeling in your body, do you worry about it?	___ None of the time	___Sometimes	___ A lot of the time
26. When you have a strange feeling in your body, do you tell your mom or dad?	___ None of the time	___ Sometimes	___ A lot of the time
27. When you have a strange feeling in your body, do you ask	___ None of	___ Sometimes	___ A lot of

your mom or dad if you can go to the doctor?	the time		the time
28. Has your doctor told you that you have a sickness? If yes, what sickness?_____	___Yes	___ No	
29. How many times have you seen your doctor in the last year?	___ 0 times	___ 1-2 times	___ 3 or more
30. How many doctors have you seen in the past year?	___ 0	___ 1-2	___ 3 or more
31. How often have you been treated (had to take medicine or had surgery) during the past year?	___ 0 times	___ 1-2 times	___ 3 or more
32. If you have had treatments in the last year, what were they? _____			
The next three questions concern feelings in your body (for example, pain, aches, pressure in your body, breathing problems, being tired etc.)			
33. Do strange feelings in your body stop you from going to school?	___ None of the time	___Sometimes	___ A lot of the time
34. Do strange feelings in your body stop you from enjoying yourself?	___ None of the time	___Sometimes	___ A lot of the time
35. Do strange feelings in your body stop you from keeping your mind on what you are doing?	___ None of the time	___ Sometimes	___ A lot of the time

Appendix B

Children's Anxiety Sensitivity Index (CASI)

Directions: A number of statements which boys and girls use to describe themselves are given below. Read each statement carefully and put an X on the line in front of the words that describe you. There are no right or wrong answers. Remember, find the words that best describe you.

1. I don't want other people to know when I feel afraid.
None
Some
A lot

2. When I cannot keep my mind on my schoolwork I worry that I might be going crazy.
None
Some
A lot

3. It scares me when I feel "shaky".
None
Some
A lot

4. It scares me when I feel like I am going to faint.
None
Some
A lot

5. It is important for me to stay in control of my feelings.
None
Some
A lot

6. It scares me when my heart beats fast.
None
Some
A lot

7. It embarrasses me when my stomach growls (makes noise).
None
Some
A lot

8. It scares me when I feel like I am going to throw up.
None
Some

A lot

9. When I notice that my heart is beating fast, I worry that there might be something wrong with me.
None
Some
A lot

10. It scares me when I have trouble getting my breath.
None
Some
A lot

11. When my stomach hurts, I worry that I might be really sick.
None
Some
A lot

12. It scares me when I can't keep my mind on my schoolwork.
None
Some
A lot

13. Other kids can tell when I feel shaky.
None
Some
A lot

14. Unusual feelings in my body scare me.
None
Some
A lot

15. When I am afraid, I worry that I might be crazy.
None
Some
A lot

16. It scares me when I feel nervous.
None
Some
A lot

17. I don't like to let my feelings show.
None
Some

A lot

18. Funny feelings in my body scare me.
None
Some
A lot

Appendix C

SPENCE CHILDREN'S ANXIETY SCALE

PLEASE PUT A CIRCLE AROUND THE WORD THAT SHOWS HOW OFTEN EACH OF THESE THINGS HAPPEN TO YOU. THERE ARE NO RIGHT OR WRONG ANSWERS.

1. I worry about things.....Never Sometimes Often Always

2. I am scared of the dark.....Never Sometimes Often Always

3. When I have a problem, I get a funny feeling in my stomach……..Never Sometimes Often Always

4. I feel afraid.....……. Never Sometimes Often Always

5. I would feel afraid of being on my own at home.....……...……... Never Sometimes Often Always

6. I feel scared when I have to take a test.....…… Never Sometimes Often Always

7. I feel afraid if I have to use public toilets or bathrooms.....……...…. Never Sometimes Often Always

8. I worry about being away from my parents.…….…. Never Sometimes Often Always

9. I feel afraid that I will make a fool of myself in front of people.....Never Sometimes Often Always

10. I worry that I will do badly at my school work..…….……Never Sometimes Often Always

11. I am popular amongst other kids my own age.....……..... Never Sometimes Often Always

12. I worry that something awful will happen to someone in my family.....Never Sometimes Often Always

13. I suddenly feel as if I can't breathe when there is no reason for this..... Never Sometimes Often Always

14. I have to keep checking that I have done things right (like the switch is off, or the door is locked).....…….. Never Sometimes Often Always

15. I feel scared if I have to sleep on my own.…… Never Sometimes Often Always

16. I have trouble going to school in the mornings because I feel nervous or afraid..……...Never Sometimes Often Always

17. I am good at sports.....…….....Never Sometimes Often Always

18. I am scared of dogs.....……..... Never Sometimes Often Always

19. I can't seem to get bad or silly thoughts out of my head....…….....Never Sometimes Often Always

20. When I have a problem, my heart beats really fast.....……...Never Sometimes Often Always

21. I suddenly start to tremble or shake when there is no reason for this.....Never Sometimes Often Always

22. I worry that something bad will happen to me.....……...Never Sometimes Often Always

23. I am scared of going to the doctors or dentists. …….....Never Sometimes Often Always

24. When I have a problem, I feel shaky.....……Never Sometimes Often Always

25. I am scared of being in high places or lifts (elevators).……....Never Sometimes Often Always

26. I am a good person.....….. Never Sometimes Often Always

27. I have to think of special thoughts to stop bad things from happening (like numbers or words).....…….…… Never Sometimes Often Always

28 I feel scared if I have to travel in the car, or on a Bus or a train..... Never Sometimes Often Always

29. I worry what other people think of me ……..Never Sometimes Often Always

30. I am afraid of being in crowded places (like shopping centres, the movies, buses, busy playgrounds).……...Never Sometimes Often Always

31. I feel happy.....……...Never Sometimes Often Always

32. All of a sudden I feel really scared for
no reason at all.……..Never Sometimes Often Always

33. I am scared of insects or spiders.....……Never Sometimes Often Always

34. I suddenly become dizzy or faint when
there is no reason for this..... Never Sometimes Often Always

35. I feel afraid if I have to talk in front of my class..…….…Never Sometimes Often Always

36. My heart suddenly starts to beat too quickly
for no reason.……..Never Sometimes Often Always

37. I worry that I will suddenly get a scared
feeling when there is nothing to be afraid of …….. Never Sometimes Often Always

38. I like myself.....…….. Never Sometimes Often Always

39. I am afraid of being in small closed places,
like tunnels or small rooms……...Never Sometimes Often Always

40. I have to do some things over and over again
(like washing my hands, cleaning or putting things in a certain
order)....…….....Never Sometimes Often Always

41. I get bothered by bad or silly thoughts or pictures
in my mind.…….……..Never Sometimes Often Always

42. I have to do some things in just the right
way to stop bad things happening.....…….. ……... Never Sometimes Often Always

43. I am proud of my school work.....…..……..... Never Sometimes Often Always

44. I would feel scared if I had to stay away from
home overnight.…….……Never Sometimes Often Always

45. Is there something else that you are really afraid of?.....……..… YES NO
Please write down what it is

_____

_____

_____

How often are you afraid of this thing?.....…..Never Sometimes Often Always

Appendix D

Intolerance of Uncertainty Scale

Below are a series of statements. Please read each statement carefully and circle which box best describes you.

1	**When things happen suddenly, I get very upset P**	Not at all like me	A bit like me	Moderately like me	Very like me	Entirely like me
2	**It bothers me when there are things I don't know P**	Not at all like me	A bit like me	Moderately like me	Very like me	Entirely like me
3	**People should always think about what will happen next. This will stop bad things from happening P**	Not at all like me	A bit like me	Moderately like me	Very like me	Entirely like me
4	**Even if you plan things really well, one little thing can ruin it P**	Not at all like me	A bit like me	Moderately like me	Very like me	Entirely like me
5	**I always want to know what will happen to me in the future P**	Not at all like me	A bit like me	Moderately like me	Very like me	Entirely like me
6	**I can't stand it when things happen suddenly P**	Not at all like me	A bit like me	Moderately like me	Very like me	Entirely like me
7	**I should always be prepared before things happen P**	Not at all like me	A bit like me	Moderately like me	Very like me	Entirely like me
8	**Feeling unsure stops me from doing most things I**	Not at all like me	A bit like me	Moderately like me	Very like me	Entirely like me
9	**When I'm not sure what to do I freeze I**	Not at all like me	A bit like me	Moderately like me	Very like me	Entirely like me
10	**When I don't know what will happen, I can't do things very well I**	Not at all like me	A bit like me	Moderately like me	Very like me	Entirely like me
11	**The smallest concern can stop me from doing things I**	Not at all like me	A bit like me	Moderately like me	Very like me	Entirely like me
12	**I must get away from all things I am unsure of I**	Not at all like me	A bit like me	Moderately like me	Very like me	Entirely like me

Original Questionnaire: Freeston, M. H., Rheaume, J., Letarte, H., Dugas, M. J., & et al. (1994). Why do people worry? *Personality and Individual Differences, 17*(6), 791-802.

Appendix E

SHAI

Instructions: Each question in this section consists of a group of four statements. Please read each group of statements carefully and then select the one which best describes your feelings, over the past week. Identify the statement by choosing the letter next to it, i.e., if you think that statement (a) is correct, choose statement (a); it may be that more than one statement applies, in which case, please choose any that are applicable.

1. (a) I do not worry about my health.
   (b) I occasionally worry about my health.
   (c) I spend much of my time worrying about my health.
   (d) I spend most of my time worrying about my health.

2. (a) I notice aches/pains less than most other people (of my age).
   (b) I notice aches/pains as much as most other people (of my age).
   (c) I notice aches/pains more than most other people (of my age).
   (d) I am aware of aches/pains in my body all the time.

3. (a) As a rule I am not aware of bodily sensations or changes.
   (b) Sometimes I am aware of bodily sensations or changes.
   (c) I am often aware of bodily sensations or changes.
   (d) I am constantly aware of bodily sensations or changes.

4. (a) Resisting thoughts of illness is never a problem.
   (b) Most of the time I can resist thoughts of illness.
   (c) I try to resist thoughts of illness but am often unable to do so.
   (d) Thoughts of illness are so strong that I no longer even try to resist them.

5. (a) As a rule I am not afraid that I have a serious illness.
   (b) I am sometimes afraid that I have a serious illness.
   (c) I am often afraid that I have a serious illness.
   (d) I am always afraid that I have a serious illness.

6. (a) I do not have images (mental pictures) of myself being ill.
   (b) I occasionally have images of myself being ill.
   (c) I frequently have images of myself being ill.
   (d) I constantly have images of myself being ill.

7. (a) I do not have any difficulty taking my mind off thoughts about my health.
   (b) I sometimes have difficulty taking my mind off thoughts about my health.
   (c) I often have difficulty in taking my mind off thoughts about my health.
   (d) Nothing can take my mind off thoughts about my health.

8. (a) I am lastingly relieved if my doctor tells me there is nothing wrong.
(b) I am initially relieved but the worries sometimes return later.
(c) I am initially relieved but the worries always return later.
(d) I am not relieved if my doctor tells me there is nothing wrong.

9. (a) If I hear about an illness I never think I have it myself.
(b) If I hear about an illness I sometimes think that I have it myself.
(c) If I hear about an illness I often think I have it myself.
(d) If I hear about an illness I always think that I have it myself.

10. (a) If I have a bodily sensation or change I rarely wonder what it means.
(b) If I have a bodily sensation or change I often wonder what it means.
(c) If I have a bodily sensation or change I always wonder what it means.
(d) If I have a bodily sensation or change I must know what it means.

11. (a) I usually feel at very low risk for developing a serious illness.
(b) I usually feel at fairly low risk for developing a serious illness.
(c) I usually feel at moderate risk for developing a serious illness.
(d) I usually feel at high risk for developing a serious illness.

12. (a) I never think that I have a serious illness.
(b) I sometimes think that I have a serious illness.
(c) I often think that I have a serious illness.
(d) I usually think that I have a serious illness.

13. (a) If I notice an unexplained bodily sensation I don't find it difficult to think about other things.
(b) If I notice an unexplained bodily sensation I sometimes find it difficult to think about other things.
(c) If I notice an unexplained bodily sensation I often find it difficult to think about other things.
(d) If I notice an unexplained bodily sensation I always find it difficult to think about other things.

14. (a) My family/friends would say I do not worry enough about my health.
(b) My family/friends would say I have a normal attitude about my health.
(c) My family/friends would say I worry too much about my health.
(d) My family/friends would say I am a hypochondriac.

For the following questions, please think about what it might be like if you had a serious illness of a type which particularly concerns you (such as heart disease, cancer, multiple sclerosis and so on). Obviously you cannot know for definite what it would be like; please give your best estimate of what you think might happen, basing your estimate on what you know about yourself and serious illness in general.

15. (a) If I had a serious illness I would still be able to enjoy things in my life quite a lot.
(b) If I had a serious illness I would still be able to enjoy things in my life a little.
(c) If I had a serious illness I would still be almost completely unable to enjoy things in my life.
(d) If I had a serious illness I would be completely unable to enjoy life at all.

16. (a) If I developed a serious illness there is a good chance that modern medicine would be able to cure me.
(b) If I developed a serious illness there is a moderate chance that modern medicine would be able to cure me.
(c) If I developed a serious illness there is a very small chance that modern medicine would be able to cure me.
(d) If I developed a serious illness there is no chance that modern medicine would be able to cure me.

17. (a) A serious illness would ruin some aspects of my life.
(b) A serious illness would ruin many aspects of my life.
(c) A serious illness would ruin almost every aspect of my life.
(d) A serious illness would ruin every aspect of my life.

18. (a) If I had a serious illness I would not feel that I had lost my dignity.
(b) If I had a serious illness I would feel that I had lost a little of my dignity.
(c) If I had a serious illness I would feel that I had lost quite a lot of my dignity.
(d) If I had a serious illness I would feel that I had totally lost my dignity.

Appendix F

ASI-3

For each statement below, please choose the response that best represents how well the statement describes you.

	Agree very little	Agree a little	Somewhat agree	Agree a lot	Agree very much
1. It is important for me not to appear nervous.	0	1	2	3	4
2. When I cannot keep my mind on a task, I worry that I might be going crazy.	0	1	2	3	4
3. It scares me when my heart beats rapidly.	0	1	2	3	4
4. When my stomach is upset, I worry that I might be seriously ill.	0	1	2	3	4
5. It scares me when I am unable to keep my mind on a task.	0	1	2	3	4
6. When I tremble in the presence of others, I fear what people might think of me.	0	1	2	3	4
7. When my chest feels tight, I get scared that I won't be able to breathe properly.	0	1	2	3	4
8. When I feel pain in my chest, I worry that I'm going to have a heart attack.	0	1	2	3	4
9. I worry that other people will notice my anxiety.	0	1	2	3	4
10. When I feel "spacey" or spaced out I worry that I may be mentally ill.	0	1	2	3	4
11. It scares me when I blush in front of people.	0	1	2	3	4
12. When I notice my heart skipping a beat, I worry that there is something seriously wrong with me.	0	1	2	3	4
13. When I begin to sweat in a social situation, I fear people will think negatively of me.	0	1	2	3	4
14. When my thoughts seem to speed up, I worry that I might be going crazy.	0	1	2	3	4
15. When my throat feels tight, I worry that I could choke to death.	0	1	2	3	4
16. When I have trouble thinking clearly, I worry that there is something wrong with me.	0	1	2	3	4
17. I think it would be horrible for me to faint in public.	0	1	2	3	4
18. When my mind goes blank, I worry there is something terribly wrong with me.	0	1	2	3	4

Appendix G

IUS

Please circle the number that best corresponds to how much you agree with each item

	Not at all characteristic of me	A little characteristic of me	Somewhat characteristic of me	Very characteristic of me	Entirely characteristic of me
1. Unforeseen events upset me greatly.	1	2	3	4	5
2. It frustrates me not having all the information I need.	1	2	3	4	5
3. Uncertainty keeps me from living a full life.	1	2	3	4	5
4. One should always look ahead so as to avoid surprises.	1	2	3	4	5
5. A small unforeseen event can spoil everything, even with the best of planning.	1	2	3	4	5
6. When it's time to act, uncertainty paralyses me.	1	2	3	4	5
7. When I am uncertain I can't function very well.	1	2	3	4	5
8. I always want to know what the future has in store for me.	1	2	3	4	5
9. I can't stand being taken by surprise.	1	2	3	4	5
10. The smallest doubt can stop me from acting.	1	2	3	4	5
11. I should be able to organize everything in advance.	1	2	3	4	5
12. I must get away from all uncertain situations.	1	2	3	4	5

Appendix H

STAI-S

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right* now, that is, ***at this moment.*** There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

		Not at all	**Somewhat**	**Moderately so**	**Very Much so**
1.	I feel calm ……	1	2	3	4
2.	I feel secure……	1	2	3	4
3.	I am tense……	1	2	3	4
4.	I feel strained ……	1	2	3	4
5.	I feel at ease ……	1	2	3	4
6.	I feel upset ……	1	2	3	4
7.	I am presently worrying over possible misfortunes...	1	2	3	4
8.	I feel satisfied ……	1	2	3	4
9.	I feel frightened ……	1	2	3	4
10.	I feel comfortable ……	1	2	3	4
11.	I feel self-confident ……	1	2	3	4
12.	I feel nervous ……	1	2	3	4
13.	I am jittery ……	1	2	3	4
14.	I feel indecisive ……	1	2	3	4
15.	I am relaxed ……	1	2	3	4
16.	I feel content ……	1	2	3	4
17.	I am worried ……	1	2	3	4
18.	I feel confused ……	1	2	3	4
19.	I feel steady ……	1	2	3	4
20.	I feel pleasant ……	1	2	3	4

STAI-T

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel ***in general.*** There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

		Almost Never	**Sometimes**	**Often**	**Almost always**
1.	I am happy ……	1	2	3	4
2.	I am content……	1	2	3	4
3.	I am satisfied with myself ……	1	2	3	4

4.	I feel pleasant ……	1	2	3	4
5.	I feel secure ……	1	2	3	4
6.	I lack self-confidence ……	1	2	3	4
7.	I feel inadequate.....	1	2	3	4
8.	I feel like a failure..……	1	2	3	4
9.	I am a steady person..……	1	2	3	4
10.	I wish I could be as happy as others seem to be	1	2	3	4
11.	I make decisions easily……	1	2	3	4
12.	I am ‘calm, cool, and collected’…….	1	2	3	4
13.	I feel rested...……	1	2	3	4
14.	Some unimportant thought runs through ..... my mind and bothers me	1	2	3	4
15.	I worry too much over something that..... doesn’t really matter	1	2	3	4
16.	I get in a state of tension or turmoil as I think.. over my recent concerns and interests	1	2	3	4
17.	I have disturbing thoughts …….	1	2	3	4
18.	I take disappointments so keenly that I can't... put them out of my mind	1	2	3	4
19.	I feel that difficulties are piling up so that I..... can't overcome them	1	2	3	4
20.	I feel nervous and restless.……	1	2	3	4