SAFETY BEHAVIOURS in GENERALIZED ANXIETY DISORDER: A CLINICAL ADULT SAMPLE AND A COMMUNITY YOUTH SAMPLE

by

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Abstract

Anxiety disorders are the most common mental health problem, affect individuals across the lifespan, and cause significant impairment and distress in a variety of life domains. Safety behaviour use has been identified as contributing to the maintenance of anxiety. The reduction of safety behaviours is a component of several adult-focused Cognitive Behavioural Therapies for anxiety. Safety behaviour use is discussed in the literature specific to individual anxiety disorders. Currently, there are few psychometrically sound measures of safety behaviours available to researchers and clinicians. The few available safety behaviour measures are associated with Social Phobia (SoP) and Panic Disorder. Few studies have examined safety behaviours associated with Generalized Anxiety Disorder (GAD). This study is composed of two separate studies: Study 1 evaluated the psychometric properties of a measure of GAD-associated safety behaviours, the Generalized Safety Behaviour Scale (GSBS), in an adult sample diagnosed with Generalized Anxiety Disorder (GAD; \( n = 36 \)) compared with adults with Social Phobia (SoP; \( n = 34 \)) and with non-anxious controls (\( n = 38 \)). The GSBS demonstrated strong internal consistency and displayed convergent validity with measures of worry and intolerance of uncertainty. Two underlying factors were identified. Construct validity of the GSBS was further assessed through one-way ANOVAs revealing that participants with GAD engaged in more frequent GAD-associated safety behaviour use than those with SoP or no anxiety. Study 2 contributed to further psychometric investigation of the GSBS and explored safety behaviour use by youth in a community sample (\( N = 175 \)). The GSBS demonstrated strong internal consistency, and good convergent validity. Two underlying factors were identified. Linear regression analysis revealed that youth with high levels of anxiety engaged in more frequent use of safety behaviours. A MANOVA analysis, grouping youth into low/moderate and at-risk/clinical levels
of anxiety, revealed that the at-risk/clinical group endorsed more frequent use of safety behaviours. Implications include a discussion of the benefits of using safety behaviours to help inform treatment sessions, the importance of developing psychometrically sound measures of safety behaviours, and the need to examine safety behaviour use in youth.
Preface

The initial development of the GSBS, and collection of the adult clinical sample, Study 1, was conducted at UBC’s Interpersonal Laboratory by Dr. Lynn Alden (UBC Psychology), Dr. Melisa Robichaud (Vancouver CBT Centre), and me. I was involved in discussions regarding initial idea development, formulating items for the GAD safety behaviour measure, conducting clinical interviews for screening of the adult sample, collecting and entering data, data analysis, and final manuscript writing.

Study 2 (youth sample) data analysis and additional psychometric analysis of the GSBS was conducted at UBC’s Anxiety Projects Laboratory by Dr. Lynn Miller (UBC Counselling and Educational Psychology and Special Education) and me. I was involved in discussions regarding initial idea development, collecting and entering data, data analysis, and final manuscript writing.

UBC Research Ethics Board approval was required to conduct all stages of this research:

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Chapter 1

Introduction

Overview

Currently seven anxiety disorders are recognized in The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association [APA], 2013): Separation Anxiety Disorder (SAD), Selective Mutism (SM), Specific Phobia (SP), Social Phobia (SoP), Panic Disorder (PD), Agoraphobia, and Generalized Anxiety Disorder (GAD). These disorders, collectively called anxiety disorders, have been shown to interfere with the lives of people of all ages, and can significantly lower individuals’ overall quality of life. Engaging in safety behaviours, actions that are defined as deliberate, unnecessary, and used to prevent or avoid a feared outcome (Clark, 2005; Clark & Wells, 1995; Dugas et al., 2007; Dugas & Robichaud, 2007), has been shown to maintain anxiety over time (Freeman, Garety, & Kuipers, 2001; Kim, 2005).

A number of studies have demonstrated that safety behaviour reduction facilitates fear reduction during treatment with adults, potentially increases the effectiveness of exposure exercises, and eventually reduces anxiety long-term (Kamphuis & Telch, 2000; Powers, Smits, & Telch, 2004; Telch et al., 2004). Less is known about the use of safety behaviours by children and youth with anxiety. Currently, the evidence-based psychological treatment of anxiety from childhood through adulthood is Cognitive Behavioural Therapy (CBT). Although adult-focused CBT for anxiety often includes the identification and reduction of safety behaviours (Craske & Barlow, 2007; Zinbarg, Craske, & Barlow, 2006), current CBT options for children and youth are just beginning to include this component (Rapee, Lau, & Kennedy, 2010; Rapee et al., 2006).
Problem Statement

Currently, few safety behaviour measures are available to identify safety behaviour use by individuals with anxiety, of those available, these measures were developed for adult populations and are limited to SoP- and PD-associated safety behaviours. The lack of standardized assessment measures of safety behaviours restricts knowledge of safety behaviour engagement, especially in anxiety disorders such as GAD, where no measure of safety behaviour exists. GAD is of special interest due to the significant costs associated with treatment, personal cost to the individual, and significant prevalence rate (Brown, Barlow, & Liebowitz, 1994; Merikangas et al., 2010). This study evaluated and refined a measure of GAD-associated safety behaviours drawing primarily from Lounsbury’s scale development model (Lounsbury, Gibson, & Saudargas, 2006). Secondly, there is limited research exploring safety behaviour use in populations other than with adult samples. This study examined safety behaviour use in a community sample of youth, due to increasing demand to look at prevention efforts (Christensen, Pallister, Smale, Hickie, & Calear, 2010; Corrieri et al., 2013) and as a next step in measure development. The following section elaborates on these two areas of interest.

Elaboration on Problem Statement

All anxiety disorders share many common features, including anxious apprehension, cognitive and behavioural avoidance, and physiological arousal to feared stimuli. Cognitive theory suggests that anxiety disorder subtypes can be distinguished from one another by perceived feared outcome. For example, SoP is characterised by a fear that social interactions will lead to criticism and rejection. GAD is believed by some to be characterised by a fear of uncertainty (Dugas & Robichaud, 2007), or by a fear of internal experiences such as uncomfortable thoughts or feelings (Roemer, Salters, Raffa, & Orsillo, 2005). Differing from the
cognitive perspective, cognitive behavioural theorists have shifted the focus from cognitive factors that may exclusively distinguish anxiety subtypes (e.g., catastrophic thinking patterns) and have added behavioural differences to cognitive feared outcomes. Behavioural differences between subtypes thus also distinguish individual disorders, such as failure to speak in specific social situations in Selective Mutism or avoidance of feared items in SP (e.g., dogs, bridges, small spaces).

Distinguishing anxiety disorder subtypes is made difficult by the number of overlapping cognitive and behavioural features, as well as the high prevalence of co-morbidity within anxiety disorders. Specifically, some researchers estimate up to 75% of treatment-seeking children and youth meet the criteria for more than one anxiety disorder subtype (Rapee, 2012). The DSM-5 also specifies high levels of co-morbidity among the anxiety disorders. For example, in children, SAD is often comorbid with SP and GAD. In adults, SAD is comorbid with SP, PD, GAD, SoP, and Agoraphobia (APA, 2013, p. 195). The number of overlapping features in anxiety disorders and the high levels of co-morbidity can make it difficult for clinicians to conduct a clear assessment of a client’s safety behaviours. The development of psychometrically sound measures of safety behaviours associated with specific anxiety disorders may alert clinicians as to which safety behaviours to watch for in order to maximize exposure sessions. Transdiagnostic treatment approaches have been developed, in part, in response to these issues of over-lapping features and co-morbidity among anxiety disorders (Barlow et al., 2011). Although these treatment approaches apply the same underlying treatment principles across mental disorders (McEvoy, Nathan, Norton, 2009), exposure to the feared stimulus or situation remains a part of the treatment. Therefore, measures of safety behaviour use associated with a specific anxiety disorder will likely enhance these exposure sessions. Second, although a small number of child-
and youth-focused CBT programs include awareness of safety behaviours (Rapee et al., 2006; Rapee et al., 2010), the manuals do not offer explicit detail regarding safety behaviour identification and reduction. Research into the use of safety behaviours by children and youth may support the inclusion of a more explicit safety behaviour-reduction component tailored to the individual’s specific feared outcome. Finally, clinicians could monitor residual safety behaviours associated with co-morbid conditions to assess the need for additional intervention.

Four standardized self-report measures are available to identify and assess the frequency of safety behaviour use in adults who suffer from anxiety disorders. Various researchers have suggested that safety behaviours may be common to all of the anxiety disorders (Freeman et al., 2007; Powers et al., 2004). One measure, Telch’s *Texas Safety Maneuver Scale (TSMS)*, assesses safety behaviours in PD (Kamphuis & Telch, 1998). Three other measures were developed to assess safety behaviours in SoP: the *Social Behaviours Questionnaire (SBQ)*; Clark et al., 1995), the *Subtle Avoidance Frequency Examination (SAFE)*; Cuming et al., 2009), and the *Social Phobia Safety Behaviours Scale (SPSBS)*; Pinto-Gouveia et al., 2003). All four assessment measures have limited psychometric data.

Currently there are no assessment measures of safety behaviour use for the remaining anxiety disorders, despite the growing hypothesis that safety behaviours are ubiquitous across all anxiety disorders. To explore safety behaviours associated with GAD, the current research study further expanded a self-report measure of GAD-associated safety behaviours, the *Generalized Safety Behaviour Scale (GSBS)*, and evaluated its psychometric properties. The GSBS was developed using steps endorsed by Lounsbury in his scale development model (Lounsbury et al., 2006). Although Lounsbury’s model includes many aspects of scale development, it is limited in its discussion of certain procedures such as the use of focus groups. Therefore, Clark and
Watson’s scale development model was used as a secondary model to guide the scale’s development (Clark & Watson, 1995). Lounsbury outlined four steps involved in scale development: construct specification, item development, scale administration, and psychometric scale analysis (Lounsbury et al., 2006). These steps, as they apply to the development of the GSBS, are described in detail in discussions of Study 1 and 2.

GAD was selected, as relatively less is known about the use of safety behaviours by individuals with GAD. GAD has also been identified as difficult to diagnose, given the frequently shifting worries an individual may endorse, overlapping criteria with other anxiety disorders (e.g., SoP and Specific Phobia), and difficulties determining what constitutes “excessive worry” versus normal worry. Identifying safety behaviours associated with GAD may assist clinicians develop and implement effective exposure exercises when conducting CBT. SoP was selected as a comparison population for this study to help assess construct validity of the GSBS. The target fear associated with SoP, social rejection, is clearly defined in the literature and a number of studies have been conducted exploring SoP-associated safety behaviours (Clark & Wells, 1995; Kim, 2005). In addition, researchers have identified high levels of co-morbidity between GAD and SoP, highlighting the need for reliable methods to distinguish the two disorders (Borkovec, Abel, & Newman, 1995; Dugas & Robichaud, 2007; Verduin & Kendall, 2003). Unlike GAD, individuals with SoP have a specific, identifiable worry target (i.e., social evaluation and rejection), making identification of associated safety behaviours potentially more obvious. Formal assessment measures of SoP-associated safety behaviours currently exist in the literature (Clark & Wells, 1995; Cuming et al., 2009; Pinto-Gouveia, Cunha, & do Céu Salvador, 2003), in contrast to GAD, which currently has no associated measures. Clark’s measure of SoP-associated safety behaviours is increasingly used in research and clinical work (Hirsch, Meynen,
& Clark, 2004; McManus, Sacadura, & Clark, 2008; Plasencia, Alden, & Taylor, 2011), and has psychometric data to support its use (Clark & Wells, 1995).

Limited research is available regarding safety behaviour use in child and youth populations (Hedtke, Kendall, & Tiwari, 2009; Kley, Tuschen-Caffier, & Heinrichs, 2012; Thomas, Daruwala, Goepel, & De Los Reyes, 2012). Study 2 is a novel examination of the use of safety behaviours by youth, ages 16 to 18. Lounsbury describes a practice in scale development where researchers “contextualize a general scale to more specific subgroups of people, usually defined by a demographic variable” (Lounsbury et al., 2006, p. 125). Scale contextualization involves altering or adapting an existing scale to make it specific to the environment (e.g., work, school) of the target population; for example, adapting an adult-focused questionnaire to be used with an adolescent population. In order to assess the GSBS in a population different from the first study with adults, a sample characterized by a different age demographic was the next logical sample for this initial stage of scale development. Clark and Watson (1995) recommended recruiting a large sample when evaluating a measure for the first time in a specific population. A community sample of youth in this study allowed for the collection of a sizeable amount of data to perform initial psychometric analysis. The age of this sample was deliberately selected. Child and youth self-report measures commonly are downward extensions of adult scales (Chorpita, Tracey, Brown, Collica, & Barlow, 1997; Comer et al., 2009; Masia-Warner et al., 2003). The GSBS was originally developed as a measure to be used with adults. The youth version of the GSBS was developed following the example of these other downward extension scales (i.e., focus group, item reconstruction, large sample initial scale testing, and psychometric analysis). Finally, this population (youth ages 16 to 18) experiences unique developmental stressors and challenges that
may lead to or exacerbate existing anxiety symptoms (Zarrett & Eccles, 2006). Further
discussion of these points is provided under the Rationale section for Study 2.

Current CBT treatments for children and youth include similar components to adult
programs, such as cognitive reappraisal, relaxation, and exposure (Barrett, Dadds, & Rapee,
1996; Kendall, 2000). CBT programs for adults have been adapted for use with juvenile
populations, with unique differences between programs often related to developmental concerns
or emphasis on cognitive or behavioural elements (Beidel & Alfano, 2011). One difference in
adult versus pediatric CBT programming is the depth of discussion regarding safety behaviour
targeting. Several researchers have found the reduction of safety behaviours during exposure
sessions enhances anxiety reduction in adults (Kamphuis & Telch, 1998; Kim, 2005; Morgan &
Raffle, 1999). However, many child- and youth-focused CBT manualized treatment programs do
not explicitly include a detailed safety behaviour-reduction component. It may be important to
determine if anxious youth engage in safety behaviours, as this may have ramifications for new
or existing treatment programs.

Objectives of this Research

This research project is composed of two studies. Study 1 contributed to the limited
research exploring safety behaviours associated with GAD by contributing data for assessing the
psychometric properties of the Generalized Safety Behaviour Scale (GSBS), a self-report
measure of GAD-associated safety behaviours. Study 2 involved a downward extension of Study
1 and contributed additional psychometric information for the GSBS. Study 2 also addressed
whether a community sample of youth with high levels of anxiety symptoms engage in more
frequent use of safety behaviours than youth with low levels of anxiety symptoms.
Study 1: Research Question

What are the psychometric properties of the *Generalized Safety Behaviour Scale* (GSBS) in a sample of adults diagnosed with GAD?

**Rationale and Hypothesis for Study 1**

Anxiety disorders share several common characteristics including anxious apprehension, cognitive and behavioural avoidance, and physiological arousal to feared stimuli (APA, 2013). These behaviours and cognitions are considered to be excessive and interfere with functioning in people diagnosed with anxiety disorders. Given the considerable overlap between the cognitive, behavioural and physiological features of all anxiety disorders, it may be difficult for clinicians to obtain a clear assessment of a client’s use of safety behaviours. Inadequate assessment of a client’s safety behaviour use may reduce the effectiveness of exposure exercises. Further discussion of the relationship between safety behaviour use and anxiety reduction via exposure exercises is provided in Chapter 2 of this document.

Currently, cognitive theorists distinguish anxiety disorders in terms of perceived feared outcome or stimulus. For example, Panic Disorder is characterized by the belief (a cognition) that body sensations signal physical catastrophe (e.g., “I’m going crazy”). Cognitive behavioural theorists have shifted from an exclusive cognitive focus to include a focus on behavioural aspects of anxious responding (e.g., excessive lock checking, refusal to ride public transportation, avoidance of bridges). In the previous example of someone with panic disorder, CBT theorists acknowledge the cognitive distress of “I’m going crazy,” but also look for behavioural indicators of panic such as refusal to ride on a bus (avoidance), repetitively monitoring one’s own heart rate (excessive checking), or staying close to home (avoidance of taking bridge to get to desired event). These intentional behaviours, designed to make the anxious person feel safe, are known
as safety behaviors. In the same example, the person excessively heart rate checking may carry a defibrillator in the car, only ride public transport with a family member, or drive over a bridge with two cell phones “in case of emergency.”

GAD was identified as a target of study due to its difficulty in diagnosis, as the disorder has overlapping criteria with other anxiety disorders, and the target of worry in GAD often shifts from problem to problem (APA, 2013), making identification of safety behaviours difficult for clinicians. There is also relatively less research available addressing the use of safety behaviours by individuals with GAD. The majority of safety behaviour research has been conducted using adult samples (Clark & Wells, 1995; Kim, 2005), and much of the research has examined safety behaviour use associated with PD, Agoraphobia, and SoP (Clark & Wells, 1995; Kamphuis & Telch, 1998; Rapee & Heimberg, 1997; Rachman, 1983).

Only four studies to date have examined safety behaviour use in youth samples, and all of these studies focused on SoP-associated safety behaviours (Hedtke et al., 2009; Hodson, McManus, Clark, & Doll, 2008; Thomas et al., 2012). Three of the four studies used small sample sizes ($N = 40$, Cuming et al., 2009; $N = 87$, Hedtke et al., 2009; $N = 42$, Kley et al., 2012), and one had large sample size ($N = 171$, Hodson et al., 2008). Additional research is needed across the lifespan for safety behaviours associated with GAD.

Despite research indicating that individuals with GAD engage in particular behaviours that fit the definition of safety behaviours, there is no measure to assess safety behaviours in clients with GAD (Borkovec & Roemer, 1995). A new measure, the Generalized Safety Behaviour Scale (GSBS) has shown promise in evaluating safety behaviour use in a sample of anxious undergraduate students ages 18 to 23 (Baker, Alden, & Robichaud, 2014). It was hypothesized that the GAD-related safety behaviour measure, the GSBS, would demonstrate adequate
psychometric properties in the form of adequate internal consistency and construct validity. To evaluate construct validity, it was hypothesized that the measure would be associated with two key GAD symptoms: excessive worry and intolerance of uncertainty. In addition, it was hypothesized that individuals diagnosed with GAD would endorse more frequent use of GAD-associated safety behaviours (as measured by the GSBS) than individuals with SoP and a control group of non-anxious individuals. SoP was selected to help assess the construct validity of the GSBS as researchers have identified high levels of co-morbidity between GAD and SoP amongst all age groups (Borkovec et al., 1995; Dugas & Robichaud, 2007; Verduin & Kendall, 2003). This high level of co-morbidity paired with common diagnostic features (e.g., anxious apprehension), creates an opportunity to determine whether GAD and SoP can be differentiated by safety behaviour domains. Aside from high levels of co-morbidity with GAD, SoP was also selected to help assess construct validity in this study as formal, self-report measures of SoP-associated safety behaviours are currently available (Clark & Wells, 1995; Cuming et al., 2009; Pinto-Gouveia et al., 2003). It is standard practice to use previously developed, psychometrically sound measures or scales when conducting research to provide a constant or standard evaluation point with which to compare the new scale (Blankertz & Cook, 1998; Coster, 2013). Of the three available measures associated with SoP, Clark’s measure is growing in popularity within the field of safety behaviour research (Kiko et al., 2012; Kley et al., 2012; Stangier, Heidenreich, & Schermelleh-Engel, 2006), and has psychometric data to support its use (Clark & Wells, 1995). This study contributed to the existing literature by refining our understanding of safety behaviour use by individuals with GAD.
Study 2: Research Questions

1. What are the psychometric properties of the Generalized Safety Behaviour Scale (GSBS) in a community sample of youth?

2. Do youth with high levels of anxiety symptoms engage in more frequent use of safety behaviours than youth with low levels of anxiety symptoms?

Rationale and Hypothesis for Study 2, Question #1

What are the psychometric properties of the Generalized Safety Behaviour Scale (GSBS) in a community sample of youth?

Study 1 and Study 2 share a rationale for developing and validating a measure of GAD-associated safety behaviours that follows Lounsbury’s scale development model (Lounsbury et al., 2006). In addition to the rationale discussed in Study 1, evaluating the psychometric properties of the GSBS in a community sample of youth may provide better phenomenological understanding (a) of whether youth engage in safety behaviours (b) if youth engage in the same safety behaviours as adults, and (c) of whether the GSBS has adequate psychometric properties when used in a youth population. When assessing a scale’s validity in various target populations, Lounsbury suggests that scales may need to be contextualized to the setting of each target population when those populations differ on some demographic variable such as age (Lounsbury et al., 2006). Contextualizing a scale involves adapting items from an original scale to more closely match the context of the target population (Bing, Davison, & Smothers, 2014). The process of scale contextualization is most frequently cited in research examining work performance and personality inventories (Bing, Whanger, Davison, & VanHook, 2004; Pace & Brannick, 2010). However, a similar process is often followed when researchers adapt an adult scale for use with children and youth. These adaptations involve rewording items to make them
developmentally appropriate. For example, the *Penn State Worry Questionnaire* (PSWQ; Meyer et al., 1990), originally developed for adults, was subjected to grammar analysis and rewording to ensure a developmentally appropriate reading level. The measure was subsequently validated using a clinical sample of children ages 7 to 17.5 (Chorpita et al., 1997). Self-report symptom measures for adults with SoP and those with Intolerance of Uncertainty were also similarly adapted and further investigated with other populations, notably youth samples (Comer et al., 2009; Masia-Warner et al., 2003). Similarly, the *GSBS* is being examined psychometrically in this paper. Study 1’s sample included adults aged 19 to 74 recruited from mental health clinics. Study 2, followed the historical practice of adapting the *GSBS* by rewording items to make them developmentally appropriate (Lounsbury et al., 2006). Specific items were also altered to provide contextually relevant examples. For example, item 13 on the adult version of the *GSBS* reads “create mental checklists before doing everyday tasks (e.g., cleaning house, taking a walk)”. The examples in the youth version were changed to doing homework and going to a friend’s house. Clark and Watson (1995) recommend using a large, heterogeneous sample when first testing a measure in a new population. Evaluating the *GSBS* with a large community sample of youth would be a logical next step in formal instrument validation.

Selecting youth as a target of study has additional benefits and implications for schools. When compared to students with externalizing behaviours such as hyperactivity and impulsivity, anxious students are less likely to be identified as needing support because they are often quiet and may not cause disruption in the classroom (Cunningham & Suldo, 2014). Teachers are in a position to observe and compare students with others in their classroom; one study indicated that teachers were able to identify up to half of the students in their classrooms who had endorsed clinically significant levels of anxiety (Cunningham & Suldo, 2014). Teachers are fallible,
however, in their ability to recognize anxiety pathology. Girls with elevated levels of anxiety are more likely to be overlooked by teachers as teachers may perceive girls to be more naturally quiet and cautious than boys (Soles, Bloom, Heath, & Karagiannakis, 2008). Teachers falsely identified 17% of students with typical levels of anxiety as overly anxious (false-positive; Cunningham & Suldo, 2014). Cunningham and colleagues suggest the need for a non-intrusive, brief assessment tool to help teachers accurately identify students who may need additional mental health services. Several studies have shown that, despite having the ability to recognize many student mental health issues, teachers frequently do not feel confident referring anxious students to mental health services (Purra et al., 1998). Teachers may lack confidence referring their concerns because of a lack of mental health training (Trudgen & Lawn, 2011). Jorm and colleagues recognized the need to have teachers in a position to offer initial mental health support to their students and developed a mental health first aid training course for high school teachers. After receiving the training, teachers demonstrated a greater knowledge of mental health issues, although no increase in student support or student mental health was found (Jorm, Kitchener, Sawyer, Scales, & Cvetkovski, 2010). These studies suggest that teachers may need additional guidance when identifying and providing initial support to students with mental health issues. It may be useful to develop a measure that teachers and school psychologists can use during consultation of student concerns as an objective measure or standard to help identify anxious students. The GSBS may ultimately provide teachers, school psychologists, and school staff with a valid assessment of behaviours associated with anxiety in youth.

It was hypothesized that the GSBS would demonstrate adequate psychometric properties in the form of internal consistency and construct validity in a youth sample. To establish construct validity, it was hypothesized that the participants’ scores on the GSBS measure would be more
highly associated with participants’ GAD-associated symptoms (i.e., worry) than symptoms of another commonly occurring youth anxiety disorder, SoP.

**Rationale and Hypothesis for Study 2, Question #2**

*Do youth with high levels of anxiety symptoms engage in more frequent use of safety behaviours than youth with low levels of anxiety symptoms?*

Anxiety disorders are the most common mental health problem affecting children and youth (Schneider & In-Albon, 2010), and interfere with many critical aspects of life. For example, youth with GAD often experience extreme distress when faced with uncertain situations and tasks such as completing school assignments, or taking tests (Albano & Hack, 2004). Youth with social anxiety concerns may have trouble developing friendships and intimate relationships and experience impaired school performance (Ameringen, Mancini, & Farvolden, 2003). Consistent with adult-focused treatments for anxiety, the evidence informed approach for treating anxiety disorders in youth is CBT (Schneider & In-Albon, 2010). The CBT-based protocols to address young children with anxiety include *Cool Little Kids* (ages 3 to 6; Rapee et al., 2010), *Being Brave* (ages 4 to 7; Hirshfeld-Becker et al., 2008), *Fun FRIENDS* (ages 4 to 6; Barrett, 2007), and *Little Champions* (ages 3 to 7; Kavin, 2012). Protocols directed toward middle childhood include *Coping Cat* (ages 6 to 12; Kendall & Hedtke, 2006), *Taming Worry Dragons* (ages 8 to 12; Garland, Clark, & Earle, 2009), *Cool Kids* (ages 7 to 17; Rapee et al., 2006), and *FRIENDS for Life* (ages 7 to 10; Barrett, 2004). Protocols directed toward adolescents include *Cool Kids “Chilled”* (ages 12 to 17; Rapee et al., 2006), *C.A.T. Project* (ages 13 to 17; Kendall, Muniya, Hudsen, & Webb, 2002), *Skills for Academic and Social Success* (ages 13 to 17; Fisher, Masia-Warner, & Klein, 2004), and *Worry Taming for Teens* (ages 13 to 17; Garland, Clark, & Earle (2002). All programs, with the exception of Cool Kids (Rapee et al., 2010),
recognize the developmental differences and needs between children and adolescents, providing different activities for ages up to middle childhood (ages 6 to 12), but separate protocols and activities for those youth of secondary school age (ages 13 to 17). All programs include similar treatment components as adult-focused CBT protocols, including cognitive reappraisal, exposure, and relaxation.

Research examining safety behaviour use in pediatric samples is limited (Hedtke et al., 2009; Hodson et al., 2008; Thomas et al., 2012). As safety behaviours in studies of adults have been shown to maintain anxiety long-term, and the reduction of safety behaviours has been shown to facilitate fear reduction during treatment, further exploration of whether children and youth with anxiety also engage in safety behaviours is needed. Kendall’s *Coping Cat* and *C.A.T. Project* protocols advise clinicians to ensure that clients do not avoid anxious situations (Kendall et al., 2002; Kendall & Hedtke, 2006), but do not provide examples of subtle avoidance/safety behaviours to observe or detect during exposure activities. Similarly, Rapee and colleagues alert clinicians and parents in the *Cool Kids Child and Adolescent Anxiety Program Therapist Manual* to “be aware of safety strategies” and encourage facilitators to “build awareness of possible safety behaviours illustrating with examples particularly of those subtle behaviours that can have a large impact on the usefulness of hierarches” (Rapee et al., 2006, p. 46). Although safety behaviours are mentioned in the manual, no additional information is provided in terms of common examples of safety behaviours or strategies used to identify safety behaviours. Additional research into use of safety behaviours by children and youth may support the development of a more substantial and detailed safety behaviour component within these treatment manuals and other new and existing programs; children and youth may differ from
adults in their types of and use of safety behaviours, thus requiring unique component
development.

Developmental researchers have theorized that adolescents (described as ages 10 to 18
when living at home and in school; Arnett, 2004) represent a developmental phase distinct from
youth ages 18 to 25 (or “emerging adults”), and clearly are distinctly different from young adults
(described as ages 25 to approximately 35; Arnett, 2004; Cohen, Kasen, Chen, Hartmark, &
Gordon, 2003). Youth ages 16 to 18 were specifically selected for Study 2 as these people are
approaching adulthood in terms of cognitive growth, increasing independence, and physical
maturity. However, they are new to these processes and developmental stages, and thus the skills
and growth can be considered not fully mature or formed. High school aged students, or “youth”,
have unique developmental needs and experiences from that of either emerging adults or
younger adolescents. Youth ages 16 to 18 are often planning for significant life transitions that
involve post-secondary education, employment, independent living, and exploring romantic
relationships. Emerging adults, ages 18 to 25, are typically already engaged in these life
transitions as opposed to being in the planning stages (Arnett, 2006). Youth ages 16 to 18 have
more independence than younger adolescents (ages 10 to 15), as many have obtained their
driver’s license, hold part-time jobs, and are given more independence by parents to spend time
away from the family for longer spans of time. While older high school teens may resemble
“emerging adults” in many ways (Boeleva et al., 2014; Crockett & Beal, 2012), those in high
school continue to have a greater degree of dependence on their families, and are nascent in
experience or experimentation with adult tasks. These older adolescents are different as a group
from emerging adults due to their dependence on family resources, and enrolment in structured
secondary school education. Selecting youth ages 16 to 18 allowed for a developmental
downward extension of the study of safety behaviours by adults to safety behaviour in youth. Conducting age-related downward extensions in research is a common practice when wanting to explore a phenomenon or theory in different populations (Chorpita et al., 1997; Eiser, Mohay, & Morse, 2000; Meyer, Miller, Metzger, & Borkovec, 1990; Ziegert & Kistner, 2002). Educational researchers often include individuals to age 18 in their samples as this age range represents the upper bound of secondary school education (Fan & Wolters, 2014; Nitz, Ainsworth, Nerdel, & Prechtl, 2014; Shochet, Homel, Cockshaw, & Montgomery, 2008). Educational researchers use a variety of terms to refer to secondary school-aged individuals including “adolescents” (Garnefski, Legerstee, Kraaij, van den Kommer, & Teerds, 2002), “students” (Allison, Nativio, Mitchell, Ren, & Yuhasz, 2014; Pietsch, Walker, & Chapman, 2003), and “youth” (Schneider, O’Donnell, Stueve, & Coulter, 2012). Researchers in anxiety frequently refer to secondary school-aged individuals as “youth” (ages 14 to 17 [Conrod, Stewart, Comeau, & Maclean, 2006], ages 16 to 18 [Sclare, Michelson, Malpass, Coster, & Brown, 2014], ages 15 to 21 [Tillfors et al., 2011]). The term youth is used to refer to the community sample of participants recruited from public schools in Study 2 to remain consistent with the language used by many educational and anxiety researchers, and to reflect that this sample is distinct in several ways from people included in emerging adulthood samples. It was hypothesized in Study 2 that youth with elevated levels of anxiety symptoms would endorse more frequent use of safety behaviours than youth with lower levels of anxiety.

**Summary of Chapter 1**

Anxiety disorders share a number of features such as anxious apprehension, cognitive and behavioural avoidance, and physiological arousal. Co-morbidity within anxiety disorders is highly prevalent (Rapee, 2012). These overlapping features and co-morbidity can make the
process of identifying relevant safety behaviours difficult. There are limited measures available
to assess safety behaviour use. The four available measures are self-report, were originally
developed for use with adults, assess safety behaviours associated with Panic Disorder or safety
behaviours associated with Social Phobia. There is no available measure of safety behaviours
associated with any of the other anxiety disorders, including GAD. There is limited research
available regarding safety behaviour use in child and youth populations (Hedtke et al., 2009;
Kley et al., 2012). A small number of child and youth anxiety cognitive behaviour treatment
programs include brief discussions of or references to safety behaviours; however, none provided
a detailed discussion or explicit examples of safety behaviour use (Kendall & Hedtke, 2006;
Rapee et al., 2006). Research is needed to examine safety behaviour use in pediatric populations
to help inform treatment plans. The current research project is composed of two studies. Study 1
contributed data for determining the psychometric properties of the *Generalized Safety
Behaviour Scale (GSBS)*, a self-report measure of GAD-associated safety behaviours. Study 2
was a downward extension of Study 1 and contributed additional data regarding the
psychometric properties of the *GSBS*. Study 2 also addressed whether a community sample of
youth with high levels of anxiety symptoms engaged in more frequent use of safety behaviours
than youth with low levels of anxiety symptoms.
Chapter 2

Literature Review

Overview

This chapter details the impact that various anxiety disorders have on individuals’ quality of life. Next, a discussion of the developmental psychopathology of anxiety is presented. Following this is a section detailing the conceptual understanding and impact of a specific anxiety disorder, Generalized Anxiety Disorder (GAD). A working definition of safety behaviours, as they relate to anxiety disorders, will be developed as well as a brief overview of early research findings on safety behaviour engagement by individuals with anxiety disorders. A review of the research regarding the theoretical and clinical significance of safety behaviours will be provided, including an examination of the overlap between safety behaviour use and adaptive coping strategies. Research regarding the benefits of safety behaviour reduction during exposure treatment will be presented. A discussion follows about the limited research available exploring the use of safety behaviours by children and adolescents, and those with diverse backgrounds. This chapter concludes by addressing the lack of psychometrically sound measures of safety behaviours.

Impact and Development of Anxiety Disorders

Anxiety is a normal reaction to stress (Kyrios, Moulding, & Nedeljkovic, 2011). The experience of anxiety is necessary to alert individuals to the presence of a dangerous situation, and when present at low levels, can improve individuals’ performance on exams, in sports, and on other performance-based tasks (Tamir, Chiu, & Gross, 2007). However, when anxiety becomes excessive and significantly interferes in an individual’s life, it is considered an anxiety disorder. Anxiety disorders cause interference and distress in the lives of millions of individuals. Between 12% and 18% of North Americans suffer with an anxiety disorder in any given year.
Anxiety disorders have an earlier average age of onset than other mental disorders, with a median age of onset of 6, with half of all lifetime cases starting by age 14 years (Merikangas et al., 2010). The disabling effects of anxiety disorders are well documented (Kessler, Chiu, Demler, Merikangas, & Walters, 2005), both in pediatric and adult populations.

Anxiety disorders are described by different symptom constellations: Separation Anxiety Disorder (SAD), Selective Mutism (SM), Specific Phobia, Social Phobia (SoP), Panic Disorder (PD), Agoraphobia, and Generalized Anxiety Disorder (GAD) in the *DSM-5* (APA, 2013). Previous editions of the *DSM* included Obsessive Compulsive Disorder (OCD) and Posttraumatic Stress Disorder (PTSD) in the anxiety disorders section. However, these former anxiety disorders are currently listed under the Obsessive-Compulsive and Related Disorders and the Trauma- and Stressor-Related Disorders sections, respectively (APA, 2013).

The development of anxiety disorder subtypes appears to follow, to some extent, a developmental path, as reactions to fear and anxiety change as children mature, moving from an excessive fear of separation from loved ones, or physical events (e.g., dogs, storms, water), or people (e.g., strangers, adults), to fears influenced by cognitive interpretations (Sayfan & Lagattuta, 2009), such as fears of social rejection. The remainder of this section provides a review of the impact of each anxiety disorder subtype through a developmental lens, beginning with subtypes that typically emerge in young children.

The most common fear in infancy and early childhood is separation from the primary caregiver, or separation anxiety (Parke & Clarke-Stewart, 2010). Normally, developmentally appropriate separation anxiety usually peaks around 15 months of age, and can last until 3.5 years of age (Kerney, Sims, Pursell, & Tillotson, 2003). However, for some children, separation
concerns can extend into the early school years. When the fear of separation from parents causes significant interference and distress, a diagnosis of Separation Anxiety Disorder (SAD) may be made. Children with SAD experience extreme and excessive anxiety when away from home or separated from parents (APA, 2013). This disorder restricts and interferes with the daily activities of children and youth. These children may become isolated from peers, experience difficulty developing and maintaining friendships, and their school attendance or overall performance may suffer (Lease & Strauss, 1993). In the previous edition of the DSM, the DSM-IV-TR (2000) 4th ed., text rev., SAD was described in the “Disorders Usually First Diagnosed in Infancy, Childhood, or Adolescence” and diagnosis was restricted to those with an onset prior to 18 years of age. Research has indicated that adult SAD is prevalent and debilitating (Bogels, Knappe, & Clark, 2013) and SAD was therefore included in the “Anxiety Disorders” section of the DSM-5 (APA, 2013). Adults diagnosed with SAD are significantly anxious when separated from their children and significant others. Frequent attempts to check the location of loved ones disrupts work and social experiences (APA, 2013).

Selective Mutism (SM) was also described in the section, “Disorders Usually First Diagnosed in Infancy, Childhood, or Adolescence” in the DSM-IV-TR (APA, 2000). The diagnostic description was moved to the “Anxiety Disorders” section in the DSM-5 (APA, 2013). SM is characterized by an individual’s lack of speech in specific social situations where speech is expected, despite normal speech in other settings (APA, 2013). The onset of SM is typically prior to 5 years of age; however, a child’s issues may not become evident until the child enters school. Few studies have examined the functional impact of SM. SM is believed to interfere with children’s educational, achievement, and socialization (Bergman, Piacentini, & McCracken, 2002; Tancer & Klein, 1991). The DSM-5 does not explicitly exclude adult diagnosis of SM;
however, the examples provided and the language used is predominantly child-focused (APA, 2013). APA (2013) reported that in some cases individuals with Social Phobia may “outgrow” SM, but “symptoms of social [phobia] remain” (p. 196). More research is needed to explore possible links between SM and Social Phobia (Bogels et al., 2010).

Another fear common in early childhood, Specific Phobia, is of unfamiliar objects and situations such as dogs, insects, strangers, and darkness (APA, 2013; Rapee, Schniering, & Hudson, 2009). Specific Phobias can be diagnosed at any age; however, researchers have discovered that the majority of Specific Phobias begin in childhood approximately at the age of seven (Kessler, Berglund, et al., 2005). Although a certain amount of fear is considered normal, a diagnosis of Specific Phobia is given when the distress caused by the fear significantly interferes in a child or adult’s life. Depending on the type of Specific Phobia, individuals will go out of their way to avoid or minimize the chances of encountering the feared object or situation. Children and youth with Specific Phobias may avoid school, sporting events, sleepovers, or traveling (e.g., field trips or family vacations), or may be unable to tolerate dentist or doctor appointments (Albano, Chorpita, & Barlow, 2003). Adults with specific phobias may limit or alter their career paths if their desired job involves confronting their specific phobia (e.g., air travel, heights, and driving).

When fear and anxiety experienced in social situations begin to interfere with an individual’s life, a diagnosis of Social Phobia (SoP) is made. Youth develop the ability to compare themselves with others in middle to late childhood, ages 8 to 11 (Harter, 2006). Researchers have noted that fears of negative evaluation by peers, ridicule, and embarrassment, which reflect social anxiety, increase significantly during this developmental stage (La Greca & Harrison, 2005). Individuals with SoP believe that they will act in a way that will embarrass or
humiliate themselves and that others will judge them negatively (Clark, 1999; APA, 2013, p. 450). Researchers have estimated the lifetime prevalence of SoP for adolescents ages 13 to 18 at 9.1%, and 12.1% for adults (Kessler, Berglund et al., 2005; Merikangas et al., 2010). Without treatment, SoP has been shown to have moderate to strong stability over the lifespan (Merikangas, Avenevoli, Acharyya, Zhang, & Angst, 2002; Yonkers, Dyck, & Keller, 2001). People with SoP often experience extreme discomfort and anxiety when meeting new people, interacting with peers, and performing daily tasks. SoP is the most commonly occurring anxiety disorder of youth, with a median age of onset of 13 years in the United States (APA, 2013). Youth with SoP often experience significant distress when required to make presentations, answer a question in class, or approach the teacher for help. The anxiety may prevent them from initiating and maintaining friendships, dating relationships, as well as participating in social events such as parties. Children, ages 4 to 8, and adolescents ages 15 to 18, with SoP have been found to be less popular with peers and are more likely to be ignored, neglected, rejected, and excluded (Gazelle & Ladd, 2003; La Greca & Lopez, 1998). These negative peer interactions are hypothesized to lead to maladaptive thoughts and negative outcomes including anticipation of failure, hypersensitivity to feedback, and lower self-efficacy (Rapee & Spence, 2004). As youth transition from high school to an emerging adulthood environment, youth with SoP may struggle to integrate into new communities, or interview for jobs. Adults with SoP report their symptoms often cause them to fall short of their occupational potential, interfere with building intimate relationships, and reduce their overall quality of life (Davidson, Hughes, George, & Blazer, 1993).

Panic disorder (PD) has a median age of onset in the United States of 20 to 24 years, but can begin at any point in a person’s life (APA, 2013; Kessler, Berglund et al., 2005). PD is
characterized by the presence of recurrent and unexpected panic attacks followed by a persistent fear of having another attack. Individuals may fear that they are “going crazy” (APA, 2013, p. 209). The onset of PD occurs at a time when many individuals are finishing their education, entering the job market and forming intimate relationships. Given the interfering nature of the disorder, individuals who experience PD often experience significant interruptions in these important life milestones (Cramer, Torgerson, & Kringlen, 2005).

Agoraphobia has a median age of onset in the United States of 25 to 29 years for those without preceding panic disorder (APA, 2013). Agoraphobia is characterized by excessive anxiety when exposed to or when anticipating exposure to a number of situations including public transportation, open spaces, and crowds. The individual has a marked fear of experiencing panic-like symptoms in these situations and believes that escape will be difficult and help unavailable (APA, 2013; Pollack, Smoller, Otto, Hoge, & Simon, 2010). Individuals of all ages with Agoraphobia often avoid the feared situation, which causes significant interference in school, work, and social functioning. APA (2013) reported that “greater than one-third of individuals with agoraphobia are completely homebound and unable to work” (p. 220).

In child and youth populations with GAD, the disorder typically occurs in middle childhood, with the average age of onset occurring between 10 and 13 years of age (Fisher, Tobkes, Kotcher, & Masia-Warner, 2006; Last, Strauss, & Francis, 1987). Across all ages, APA (2013) reported the median age of onset as 30 years. Retrospective surveys conducted by other researchers (Rogers et al., 1999; Burke, Burke, Rae, & Regier, 1991) reported the age of onset to be “the decade between the late teens and the late 20s” (Kessler, Walters, & Wittchen, 2004, p. 31). Some of the controversy regarding age of onset is attributed to the use of retrospective data in the identification of age of onset (Costello, Egger, & Angold, 2005). No gender difference is
observed for affected children between the ages of 9 and 13 (Last, Hersen, Kazdin, Finkelstein, & Strauss, 1987); Lewinsohn and colleagues (Lewinsohn, Gotlib, Lewinsohn, Seeley, & Allen, 1998) found that more girls than boys are diagnosed with GAD in adolescence (mean age of 16.6). Emphasizing the need for further research, Merikangas and colleagues found a lifetime prevalence rate of 2.2% for adolescents ages 13 to 18 years, with GAD (Merikangas et al., 2010). Individuals with GAD experience chronic and often disabling worry about a number of different topics including personal health, finances, and the health of significant others. This worry is accompanied by physical symptoms such as muscle tension and fatigue (APA, 2013). Childhood onset GAD has been shown to follow a slow, insidious course. The disorder often goes undetected and individuals frequently go undiagnosed and untreated for many years (Brown et al., 1994). As with all anxiety disorders, GAD leads to significant interference and distress in a variety of life situations. Children and youth with GAD may find it difficult to concentrate in class, complete homework or relax during leisure time because of chronic, excessive worrying (Connolly & Bernstein, 2007). This excessive worrying often interferes with overall quality of life, school, and relationships, and can lead to divorce or separation in adults (Borkovec, Newman, Pincus, & Lytle, 2002).

Relative to other anxiety disorders, GAD is a relatively new area of study. A number of theories have been developed to aid in the conceptualization of GAD including Dugas’ Intolerance of Uncertainty model (IOU; Dugas, Gagnon, Ladouceur, & Freeston, 1998). Dugas’ model of GAD focuses on individuals’ negative perceptions of uncertain situations as the driving force behind the maintenance of GAD. Despite recent theories and research to conceptualize GAD, the disorder continues to suffer from definition issues. Cognitive researchers disagree as to the perceived feared situation or outcome, and little empirical work is available to examine
behavioural components of the disorder. The current research project will focus on GAD in an attempt to improve the overall conceptualization of the disorder.

Although all of the anxiety disorders cause significant interference and distress in the lives of sufferers, the current research study will focus primarily on GAD. Clinically, GAD across all age ranges is often misunderstood, difficult to diagnose (Portman, 2009), and has received less research attention than other anxiety disorders (Dugas, Anderson, Deschenes, & Donegan, 2010). Although research that examines GAD in children and youth is growing, more work is needed to understand the presentation of childhood and youth GAD. The following section expands on the previous discussion of GAD in order to provide a more detailed review of the research base and current conceptualization of GAD.

**Generalized Anxiety Disorder: Development and Impact**

GAD is often difficult to diagnose, and has received less research attention than other anxiety disorders. These difficulties arose, in part, from the frequently shifting diagnostic conceptualization of GAD. GAD was first recognized as an anxiety disorder in the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed.; *DSM-III*; American Psychiatric Association, 1980). The disorder was classified as a residual category for patients who experienced chronic, sustained anxiety without panic attacks for a minimum of one month.

In 1987, the classification of GAD was altered to account for the numerous reports of symptoms of anxiety and tension, which stemmed from worry, that were unrelated to other emotional disorders (i.e., worry about finances and the economy). The *DSM-III-R* (1987) 3rd ed., revised, identified the primary diagnostic feature of GAD to be excessive and or unrealistic worry in two or more areas for a minimum of six months (as opposed to the one month specified in *DSM-III*) (APA, 1987).
The *DSM-IV* (1994) 4th ed. contained another classification revision of GAD. This 1994 classification emphasized the process of worry/apprehensive expectation. Specifically, individuals needed to experience excessive, uncontrollable worry about a number of events or activities. This classification was the first to recognize and incorporate the lack of control over worries that individuals often experienced (Brown, O’Leary, & Barlow, 2001).

The reality that most people worry to some extent, may contribute to the under diagnosis of GAD. The *DSM-IV-TR* (2000) 4th ed., text rev. specified that to receive a GAD diagnosis, a client’s worry must be excessive and uncontrollable (APA, 2000). The determination of whether a client’s worry is excessive and uncontrollable can be a difficult and subjective process (Dugas & Robichaud, 2007). To complicate diagnosis further, worry is present in all anxiety disorders. The current *DSM-5* description of GAD has remained largely unchanged from the *DSM-IV-TR* version (APA, 2013). To address these diagnostic concerns, there has been continuous effort to improve the diagnostic reliability and validity of GAD for future editions of the *DSM* (Andrews et al., 2010).

Despite these diagnostic and conceptual issues, in the last decade there has been a trend toward research that explores the etiology, clinical presentation, and treatment of GAD (Nutt, Rickels, & Stein, 2002). This research has largely focused on adult populations, and contributes little to our understanding of the development, presentation, and treatment of GAD in children or youth (Brown et al., 2001). There is scant research available regarding the etiology and treatment of pediatric GAD (Beidel & Turner, 2005; Cartwright-Hatton, & Murray, 2008; Kertz & Woodruff-Borden, 2011).

Prior to the *DSM-IV* (1994) 4th ed., youth who presented with debilitating and chronic worry were diagnosed with Overanxious Anxiety Disorder (OAD). In the 4th edition of the *DSM*
(1994) 4th ed., OAD was subsumed under GAD, and the current DSM-5 diagnostic criteria are similar for both adults and youth. However, adults need to experience at least three out of six symptoms for a minimum of six months (i.e., restlessness, being easily fatigued, difficulty concentrating or mind going blank, irritability, muscle tension, and sleep disturbance), whereas youth only need to experience one symptom (Andrews et al., 2010; APA, 2013).

Childhood or adolescent onset GAD tends to persist throughout adulthood without treatment (Andrews et al., 2010; Dugas, Swartz, & Francis, 2004; Hoyer et al., 2009). An increasing number of studies have improved our understanding of effective treatment options for adult GAD, with Cognitive Behavioural Therapy (CBT) having established itself as one of the most effective forms of treatment (In-Albon & Schneider, 2007). The following section presents a brief overview of CBT for anxiety.

Treatment for Anxiety

CBT is considered a reliable, evidence-based approach for the treatment of adult anxiety disorders (Hofmann & Smits, 2008). Although adult-focused CBT programs share core components such as cognitive restructuring, psychoeducation, and exposure, anxiety disorder specific manualized programs have been developed that tailor these components to the clients’ specific feared outcome. A meta-analysis of other adult-focused CBT efficacy meta-analyses (Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012) found numerous studies showing CBT as an effective treatment approach for anxiety disorders. For example, CBT for adults with SoP demonstrated a medium to large effect size immediately following treatment as compared to control or waitlist treatments (Gil, Carrillo, & Meca, 2001). In addition, CBT for Panic Disorder in combination with applied relaxation was superior to use of medications alone (Mitte, 2005).
Research investigating psychotherapy for children and youth has progressed over the last several years. A number of researchers have conducted randomized controlled trials (RCTs) subsequently improving the treatment of children and youth with anxiety (In-Albon & Schneider, 2007). A meta-analysis conducted by In-Albon and Schneider (2007) revealed that CBT is effective for treating children and youth, ages 6 through 18 (mean age was 10.9 years), with anxiety. All but five of the 24 studies reviewed did not differentiate between types of anxiety disorders; only five studies examined the effects of CBT on a group of children and youth with a specific anxiety disorder, SoP (Baer & Garland, 2005; Beidel, Turner, & Morris, 2000; Gallagher, Rabian, & McCloskey, 2004; Hayward et al., 2000; Spence, Donovan, & Brechman-Tooussaint, 2000). The other studies conducted treatments for non-specific anxiety in groups of children and youth (In-Albon & Schneider, 2007). These authors discuss the need for additional research into treatments addressing specific anxiety disorders such as GAD.

In order to develop an effective treatment, it is important to understand which factors contribute toward and maintain the anxiety. One factor found to maintain anxiety for adults with anxiety disorders is the use of safety behaviours. If safety behaviour engagement is seen as a critical target of treatment in GAD, it is important to understand if safety behaviour use and treatment is similar for pediatric populations.

Safety Behaviours: Definition and Overview

Researchers have used different terms to refer to what is called “safety behaviours” (Clark, 1988), including “safety-seeking behaviours” (Hedtke et al., 2009; Salkovski, Clark, & Gelder, 1996), “subtle avoidance behaviour” (Rapee & Heimberg, 1997), and “cognitive avoidance” (Dugas et al., 1998). All of these terms, however, refer to activities that are deliberate, unnecessary, and are used to prevent or avoid a feared outcome (Clark, 2005; Clark & Wells,
The concept of safety behaviours is used to explain why individuals continue to experience anxiety even after repeated exposure to feared events with no negative outcomes (Freeman et al., 2001; Kim, 2005; Salkovskis et al., 1999). Exposure, seen as the engine of treatment, is the act of deliberately exposing oneself to the feared outcome in incremental steps, whereby the anxious person gradually develops tolerance to increased physiological arousal and, over time, engages in new learning regarding the feared outcome. For instance, if a person is afraid of having a panic attack on a bridge, exposure involves planned and accelerated experiences with bridges, from looking at pictures of bridges to approaching and gradually walking or driving across a bridge. A safety behaviour, in this model, acts as a “safety net” of sorts, whereby the person feels that in order to be exposed to the feared stimulus, she or he must do something to feel safe. In the bridge example, the person, during exposure activities, may need to hold a cell phone, which is the safety behaviour, that acts both as a cognitive safety valve (“I feel safer, knowing that if I have a cell phone, I can call for help if I start to have a panic attack”) and a behavioural safety mechanism (holding onto the cell phone). Thus holding onto a cell phone does not allow for habituation because the person will likely attribute the lack of feared outcome (e.g., having a panic attack on a bridge) to his use of the safety behaviour.

Researchers have proposed different explanations as to how safety behaviours prevent reduction or elimination of fear, known as “extinction”. Salkovskis and colleagues (1999) proposed that people attribute the lack of the feared outcome to the safety behaviour, and therefore do not learn that the feared outcome will not occur (Freeman et al., 2001). For example,
a socially anxious person who avoids eye contact believes that the reason he was not rejected was due to his lack of eye contact, or the “safety” mechanism. Kim (2005) suggested that safety behaviours require people to maintain a self-focus, thereby exhausting the cognitive processing capacity that would otherwise be used to process threat disconfirming information. Another team, Clark and Wells (1995), hypothesized that safety behaviours may actually increase anxiety symptoms. For example, a socially anxious person who fears that others will see his hands tremble and therefore reject him socially (feared outcome), may tightly grip a glass (safety behaviour) to avoid trembling, thereby increasing the trembling as a result of the overly tight grip. Clark and Wells also suggested that safety behaviours might influence others in a way that confirms the individual’s feared outcome. For example, an individual who self-monitors when speaking (safety behaviour) to avoid looking silly or saying something odd (feared outcome) may appear distant from others, resulting in unfriendly encounters, thus maintaining anxiety long-term (Clark, 1999).

**Background**

The concept of engaging in safety behaviours has its roots in animal conditioning studies (Seligman, 1968; Skinner, 1948). Researchers demonstrated that animals experience fewer anxiety symptoms when presented with a safety signal, or the use of neutral cues conditioned to be associated with the absence of a painful stimulus. For example, Miller (1948) trained rats to escape shock delivered in one compartment, by entering another shock-free compartment. Even when this shock-free escape route was altered to require the rats to perform a complex behaviour (turn a wheel), the rats continued to escape to this “safe” compartment despite the complicated behaviours required to enter. Leclerc (1985) demonstrated in another study that if a platform was systematically inserted into a compartment after a rat had been shocked, the rat would jump onto
the “safe” platform where no shock was delivered. In these examples, both the safe compartment and the safe platform signal an absence of shock, but both require additional work or tasks by rats. Running to the safe compartment and jumping to the safe platform can be seen as “safety-seeking behaviours.” Importantly, these behaviours appear to prevent the animal from learning that the shock will no longer occur.

Rachman (1976; 1984a; 1984b) was the first to apply the concept of safety signals to humans in his research on agoraphobia. He proposed that people associate the presence of certain safety signals with a “period of relative or complete freedom from the relevant fear/discomfort/pain” (Rachman, 1984a, p. 635). He noted that a safety signal can be either external or internal. A safety signal can be a trusted companion, a bottle of anti-anxiety medication, calming thought exercises, or the knowledge that home is close by (Lohr, Olatunji, & Sawchuk, 2007). Rachman (1983) suggested that the systematic use of these safety-signals could enhance treatment sessions by allowing the anxious individual increased mobility and freedom from fear. Manipulating safety signals (having the anxious individual attend a party with his/her trusted companion) could therefore result in an increase in adaptive behaviours.

Rachman’s ideas were broadened and adapted to Social Phobia (SoP). Safety behaviours, or “subtle avoidance behaviours” (Rapee & Heimberg, 1997) figure prominently in contemporary models of SoP. For example, Clark and Wells (1995) proposed that individuals with SoP engage in a variety of behaviours to prevent negative outcomes. For example, to prevent rejection or imagined social scrutiny, a person may speak softly, avoid eye contact and stay on the periphery of groups, not eat or drink in public, sit near the back of the room, and rehearse what to say before speaking. In line with Salkovskis’ perspective (Salkovskis et al., 1999), Clark and Wells (1995) view safety behaviours as maladaptive actions that impede
cognitive change. They believe that these behaviours maintain self-focused attention and anxiety, and can even bring about the feared outcome.

Researchers such as Borkovec, Dugas, and their colleagues, describe behaviours in their various models of GAD. Borkovec and colleagues have described excessive worry, which is the key feature of GAD, as “a chain of thoughts and images, negatively affect-laden and relatively uncontrollable” (Borkovec, Robinson, Pruzinsky, & DePree, 1983, p.10). Researchers have suggested that the excessive and uncontrollable nature of the worry is a key characteristic of GAD. Distinguishing between GAD-type worry and the worry associated with other anxiety subtypes can be difficult as all anxiety disorder subtypes by definition are characterized by worry. However, research has suggested that youth (ages 7 to 18) with GAD have been shown to report greater worry than youth with other anxiety disorders and youth without anxiety, as measured by the *Penn State Worry Questionnaire for Children (PSWQ-C)*; Chorpita et al., 1997). Research has also shown that adults with GAD worry excessively and uncontrollably about the future more so than adults with other anxiety disorders (Dugas et al., 1998). Worry themes also appear to distinguish GAD specific worry from general worry present in other anxiety disorders (Sanderson & Barlow, 1990). Specifically, individuals with GAD worry more frequently about minor events than individuals with another anxiety disorder. Individuals with GAD worry about a wide variety of topics, and typically switch worry topics once one problem has been resolved (Van der Heiden, Methorst, Muris, & Van der Molen, 2011). Individuals with other anxiety disorders do not endorse constant worry about a number of seemingly unrelated topics.

These studies suggest that individuals with GAD engage in a unique type of worry not present in other anxiety disorders. Several researchers have referred to this specific GAD-type worry as “chaining”, as one worry immediately leads to another (Brown et al., 2001; Zinbarg et
al., 2006). Dugas and colleagues suggest that GAD-type worry is fuelled by an intolerance of uncertainty (Dugas & Robichaud, 2007). This fear of uncertainty may lead to internal conflicts where individuals with GAD both attempt to predict future threats (“what if I get in a car accident” or “what if I get a terminal illness”), but also try to avoid the experience of negative emotions accompanying these predictions. For example, an anxious individual planning a trip may feel it necessary to predict future, hypothetical threats such as the plane crashing or the luggage getting lost. Thinking about these hypothetical threats produces significant levels of anxiety that the individual does not want to experience. In order to reduce this conflict, the individual does such things as attempts to learn everything about the situation before entering it (i.e., over-prepare), makes excessive lists (both physical and mental), tries to suppress unpleasant thoughts/images from the mind, and tries to focus on pleasant thoughts (Dugas & Koerner, 2005; Ladouceur, Talbot, & Dugas, 1997; see also Borkovec, Alcaine, & Behar, 2004; Borkovec, Ray, & Stober, 1998; Breitholtz, Johansson, & Öst, 1999; Dugas et al., 1998; Dugas & Robichaud, 2007; Dugas et al., 2007). These covert and overt actions are adopted to prevent negative internal (i.e., fear) experiences, and external, uncertain outcomes. A main element in cognitive treatments of GAD is the identification and reduction of these overt and covert behaviours (Dugas & Robichaud, 2007).

Despite the growing number of studies exploring the relationship between safety behaviours and anxiety, questions have been raised regarding the murkiness of the construct itself (e.g., Thwaites & Freeston, 2005). Of particular concern has been the distinction between maladaptive safety behaviours and adaptive coping strategies. More specifically, both safety behaviours and adaptive coping strategies are used to manage situations perceived to be problematic. In terms of definitions, safety behaviours are primarily defined as acts that are
deliberate, covert or overt, and are intended to escape or avoid feared outcomes, and are
unnecessary (Clark & Wells, 1995). Coping behaviours are defined as “cognitive and
behavioural strategies used to manage distress and address problems of daily living that cause
distress” (Folkman & Moskowitz, 2004, pg. 746). Both safety behaviours and adaptive coping
strategies appear to be driven by cognitive appraisals of a situation as problematic.

To complicate this discussion, a single behaviour can function as both a safety behaviour
and a coping strategy (Salkovskis et al., 1996). Relaxation was identified by Kamphuis and
Telch (1998) as a behaviour used by individuals diagnosed with Panic Disorder. Relaxation can
be seen as a coping strategy, as it is often a component of treatment for Panic Disorder.
Conversely, relaxation can become a safety behaviour if the individual engages in it to avoid or
reduce the chances of experiencing a panic attack for fear of catastrophic outcomes such as
having a heart attack. Traditionally, adaptive coping strategies are considered effective strategies
to address issues and concerns (Folkman & Moskowitz, 2004), whereas safety behaviours are
seen as maladaptive, as their use can result in long-term maintenance of anxiety (Clark & Wells,
1995). Behavioural function appears to be a primary factor in distinguishing the two constructs.
Safety behaviours are used to escape or avoid a feared outcome, whereas coping strategies are
used to manage anxiety through adaptive means, such as problem solving, in order to reduce
distress.

At present, no definitive boundaries have been established between safety behaviours and
adaptive coping strategies. One distinction made by Thwaites and Freeston (2005) is that safety
behaviours seek to avoid or prevent a feared, but hypothetical catastrophe, whereas adaptive
coping strategies seek to reduce or manage anxiety in the face of concrete, non-hypothetical
problems. For example an individual may engage in deep breathing (safety behaviour) to avoid a
racing heart and imagined heart attack (hypothetical catastrophe), whereas another individual may engage in deep breathing (adaptive coping strategy) before confronting an argumentative co-worker (concrete, non-hypothetical problem). Another potential way of distinguishing safety behaviours from adaptive coping strategies is to determine the intention of the behaviour. An example presented by Thwaites and Freeston (2005), is of two people sitting near the door in a restaurant. One individual is sitting near the door for the view, and to avoid the noise from the kitchen, whereas the other wishes to ensure a quick exit should he experience shortness of breath. Empirical research is needed to explore these potential distinguishing features. A study by Hedtke and colleagues (2009) examined the use of safety behaviours and coping strategies by anxious youth ($N = 87$) ages 7 to 13 engaged in individual CBT. Exposure sessions were videotaped and coded for safety behaviour use and coping behaviour. Operational definitions for safety behaviours and coping were used to help coders identify these behaviours. Safety behaviour was defined as “behavior used to prevent perceived danger or end an aversive condition” and coping was defined as “behavior to manage anxiety”. Examples of each type of behaviour were also provided to the coders. Consistent with research on adult use of safety behaviours, safety behaviour use, but not coping, was found to interfere with fear reduction during exposure sessions. However, coping was not found to be associated with better treatment outcome, as hypothesized. The authors cited definition and measurement issues as primary obstacles in distinguishing and exploring safety behaviours versus coping. Specifically, coders may have had difficulty distinguishing a participant’s behaviour as either coping or as a safety behaviour. Further, they recognized that participants’ coping behaviours may have been under-recorded, as coping strategies often occur internally, such as through mental self-talk (Hedtke et al., 2009).
Currently, there is little mention of safety behaviour use in children and youth. Only four published studies appear in a PsycInfo electronic library search using key words “safety behaviours” “anxiety and children/youth” from 1950 until the present. One study (Hodson et al., 2008) demonstrated that Clark and Wells’ (1995) model of SoP could be extended to children. Specifically, when a sample of 171 youth, ages 11 to 14 were split into high and low social anxiety groups, youth exhibiting higher anxiety endorsed more frequent use of safety behaviours commonly associated with SoP, than did youth with low anxiety. Another study examined the psychometric properties of an adult-focused self-report measure of SoP-associated safety behaviours (SAFE; Cuming et al., 2009) in a sample of 40 anxious and non-anxious adolescents, ages 14 to 17. The SAFE was able to distinguish clinical levels of SoP from non-clinical levels (Thomas et al., 2012). The third study, previously discussed, examined safety behaviour and coping strategies in a sample of 87 anxious youth, ages 7 to 13 (Hedtke et al., 2009). The fourth study compared safety behaviour use by a small sample of youth with SoP (n = 21), ages 8 to 13, who met partial SoP criteria (n = 21), and those with no anxiety (n = 21), as measured by a modified version of the Social Behavior Questionnaire (SBQ; Clark et al., 1995). Youth with SoP reported the highest frequency of safety behaviour (Kley et al., 2012). As safety behaviour use has been shown to maintain anxiety in adults, these studies highlight the importance of conducting further research into the manifestation and effects of safety behaviour use in children and youth.

There is limited research examining anxiety and subsequent safety behaviour use by adults, youth or children from diverse backgrounds. The term diversity, in context of research with human populations, is inclusive of distinct characteristics, qualities, or elements, is multi-faceted and can be defined as “difference based on one’s sexual orientation, ethnicity, income, religion,
and appearance” (Blaine, 2013, p. 18). For this study, the word diversity will be reflective of differences in ethnicity, gender, socioeconomic status (SES), and age. In relation to one facet of diversity, ethnicity is associated with varying experiences of anxiety. Throughout the following discussion of ethnicity and anxiety, the ethnic descriptions and labels reported are those used by the authors of the specific cited study.

Anxiety disorders are manifest across ethnic groups (Cooley & Boyce, 2004; Costello, Farmer, Angold, Burns, & Erkanli, 1997); there is a limited but growing body of research examining how individuals of different ethnicities develop and respond to anxiety symptoms (Okazaki, Liu, Longworth & Minn, 2002; Sibrava, et al., 2013). For example, African American youth (ages 11 to 14) who experienced negative life events and low social support reported higher overall anxiety than those with fewer negative life events and more social support. European youth also experienced higher overall anxiety when they had less social support, but no association was found between anxiety and negative life events (Lewis, Byrd, & Ollendick, 2012). African American adults were less likely to report meeting with a mental health provider than White adults (Robins & Regier, 1991; Swartz et al., 1998). Inconsistent findings were reported for African American youth regarding social anxiety. A study by Kingery, Ginsburg and Alfano (2007), found that African American youth, ages 14 to 19, reported more somatic and panic symptoms than White youth, who reported higher levels of social and school anxiety. Another study found no difference in clinical presentation for social phobia in African American versus White preadolescent youth (Ferrell, Beidel & Turner, 2004). Negative stigma for mental health problems within the Latino population has been associated with greater somatic expression of emotional disorders (Varela et al., 2004), as the somatic expression of mental illness may be seen as more culturally acceptable (Kirmayer & Young, 1998). Family cohesion
within Latino families has been linked to lower stress, and fewer behaviour problems (Hovey & King, 1996; Marsiglia, Parsai, & Kulis, 2008). Family discord was associated with 12-month prevalence of almost all anxiety disorders for Latino adults in the United States; however, the authors reported that combining all Latino subgroups into one sample may confound results. For example, they found that the relationship between GAD and family discord was strongest for Cuban participants and weakest for Puerto Rican participants (Priest & Denton, 2012).

The cultural patterns of Asian Americans have been described as a highly interdependent family framework with clearly defined family roles (Sue & Sue, 1990). Individuals from Asian cultures have traditionally been perceived as “mentally resilient” and therefore thought to experience fewer mental health issues (Bagley, 1993; Sue & Morishima, 1982). This perception has contributed to the labelling of Asian Americans as the “model minority” (Lee, 1994). Researchers have found that Asian American youth and adults who internalize this label may not seek help for mental health or school-related issues, as they are embarrassed for not upholding the model minority label (Inman & Yeh, 2007; Lee et al., 2009; Zhou, Sm, & Xin, 2009). In addition, Asian Americans were found to underutilize mental health services in schools and the community (Kim & Omizo, 2003; Ling, Okazaki, Tu, & Kim, 2014; Yang & WonPat-Borja, 2006). Data from the National Latino and Asian American Study (NLAAS; Alegria et al., 2004) revealed that Asian Americans with a probable mental health diagnosis had lower rates (34.1%) of engaging in any type of mental health service than did the general population with a probable mental health diagnosis (41.1%; Abe-Kim et al., 2007). Symptoms and expressions of anxiety may also be perceived differently based on ethnic background. For example, in an international study conducted in China, dizziness was found to be a prominent symptom for participants experiencing panic disorder or GAD (Park & Hinton, 2002). Individuals from China, Cambodia,
and Vietnam often attribute anxious states, such as panic, to organ dysfunction such as a weak heart or a weak kidney (Hinton, Park, Hsia, Hofmann, & Pollack, 2009; Hinton, Pich, Marques, Nickerson, & Pollack, 2010). As North America becomes increasingly ethnically diverse, research on acculturation and mental health has increased (Yoon, Langrehr, & Ong, 2011). Acculturation, a process of cultural socialization to mainstream culture, is currently conceptualized as being bilinear and multidimensional (i.e., across knowledge, values, behaviours, and cultural identity), occurring when individuals interact with varying social contexts (Kim & Abreu, 2001; Schwartz, Unger, Zamboanga, & Szapocznik, 2010; Yoon et al., 2011). Berry’s theory of acculturation (Berry & Same, 1996) has significantly impacted current conceptualizations of the acculturation process (Yoon et al., 2013). Berry described three factors that may influence acculturating groups: mobility, voluntariness, and permanence. Those individuals who move to a new culture rather than have the new culture move to them (mobility), are willing to learn about the new culture (voluntariness), and are permanently settled into the culture (permanence) may experience the acculturation process differently than those without these factors (Berry & Sam, 1996). A large meta-analysis examining acculturation and mental health found that acculturation language (i.e., using the language of the mainstream culture) was positively related to positive mental health (Yoon et al., 2013). This finding suggested that competence in the mainstream culture’s language allowed individuals to cope and flourish in the new culture (Yoon et al., 2012).

Few research studies examine whether individuals of any ethnic background endorse different types of safety behaviours. Powers and colleagues examined whether ethnicity moderated the deleterious effects of safety behaviours on the reduction of anxiety during treatment. Ethnicity was not found to moderate treatment outcome (Powers et al., 2004). Sloan
and Telch (2002) identified the ethnic breakdown of the adult sample in their study of the effects of safety-seeking behaviour and guided threat reappraisal on fear reduction during exposure to claustrophobic fear inducing situations. No differences were found between ethnic groups on pre-treatment measures, although ethnic differences were not analyzed post-treatment. Although not referred to as safety behaviours, Cook and Hayes (2010) found that unwillingness to experience unpleasant psychological experiences and the tendency to avoid one’s internal and external environments were associated with greater general psychological distress in an adult Asian American sample. This avoidance is consistent with the safety behaviour literature, which indicates that failure to attend to one’s unpleasant psychological experiences maintains anxiety long-term (Kamphuis & Telch, 2000; Telch et al., 2004). To our knowledge, safety behaviour use by individuals of differing ethnic background has not been examined with youth or child populations. Given that people of different ethnic backgrounds may understand, experience, and react to anxiety differently, it is possible that they may also differ in their use of safety behaviours.

Another aspect of diversity is gender (the term gender is often used interchangeably with the term sex, but for this study gender is the preferred term). Gender differences are often reported in research on anxiety (Faravelli, Scarpato, Castellini, & Sauro, 2013; Kessler, 2003; Leach, Christensen, & Mackinnon, 2008). Females, both children and adults, have been found to have consistently higher prevalence rates of anxiety disorders than males (Beidel & Turner, 2005; McLean, Asnaani, Litz, & Hofmann, 2011). For children, gender differences become more pronounced during late childhood or early adolescence (Albano & Krain, 2005; Roza, Hofstra, van der Ende, & Verhulst, 2003). One study found that children’s gender orientation (socialization toward either masculine or feminine behaviors) was related to level of fear.
Feminine orientation was associated with greater fear levels than masculine orientation (Muris, Meesters, & Knoops, 2005). One study examined whether gender differences in anxiety were affected by ethnicity. Women had higher lifetime prevalence rates (33.3%) compared to men (22%) of anxiety disorders across the assessed ethnic groups, but European American woman with anxiety disorders engaged in greater mental health services than women and men of other ethnicities such as African Americans (McLean et al., 2011). Gender is often not included as a variable in safety behaviour research. Researchers frequently report the gender breakdown of their samples, but gender analysis is rarely explicitly reported. As with ethnicity, gender appears to be an important variable to consider when examining safety behaviour use as males and females may use different types of safety behaviours or differ in the frequency of their safety behaviour use.

Contributing to other features of diversity is socioeconomic status (SES), a variable that is highly influential in psychopathology (McLaughlin, Costello, Leblanc, Sampson, & Kessler, 2012; Rutter, 2003). Lower SES and limited parental education have been linked with a higher likelihood of developing an anxiety disorder (Last, Perrin, Hersen, & Kazdin, 1992; Velez, Johnson, & Cohen, 1989). In young children, lower SES has been linked to fears of physical injury, violence, and rats, whereas high SES has been associated with school-related fears, fear of heights, and car accidents (Staley & O’Donnell, 1984). Researchers have also suggested that youth with anxiety disorders being served by clinics for low-income families are more likely to have comorbid psychological issues (Southam-Gerow, Chorpita, Miller, & Gleacher, 2008). Researchers have found that lower SES in adults has been linked to greater persistence and frequency of mental illness symptoms (Lorant, Deliege, Eaton, Robert, Philippot, & Ansseau, 2003). Some researchers have explored whether ethnicity and SES interact to contribute to the
development of anxiety disorders. One study found that regardless of SES, Hispanics and Non-Hispanic Blacks, ages 15 to 54, had a lower risk of developing a psychiatric disorder than Non-Hispanic Whites (Breslau, Kendler, Su, Gaxiola-Aguilar, & Kessler, 2005). Researchers in the area of safety behaviours have not yet reported SES as a variable of study.

There are numerous studies that examine age differences as a variable in anxiety development (Briggs-Gowan, Horwitz, Schwab-Stone, Leventhal, & Leaf, 2000; Egger & Angold, 2006; Hobbs, Anderson, Slade, & Andrews, 2014; McEvoy, Grove, & Slade, 2011; Ollendick, Matson, & Helsel, 1985). There appears to be a developmental sequence in the fears held by children, youth, and adults beginning in infancy with fears of loud noises and loss of physical support and progressing (13 years and older) to fears of social interaction, and economic catastrophes (Miller, 1983; Ollendick et al., 1985). Researchers found that the developmental nature of these fears was consistent across differing ethnic groups (Ollendick et al., 1985). In general very young children, ages 0 to 5 years, feared specific things or events, whereas those aged 6 through adulthood endorsed more abstract fears (Beidel & Alfano, 2011).

Regarding age of onset, Separation Anxiety Disorder and Specific Phobias typically occur earliest around age five to seven (Kessler, Berglund et al., 2005) with Panic Disorder, Agoraphobia, and GAD occurring in the mid-20s (Kessler et al., 2004; Kessler, Berglund et al., 2005).

In summary, cognitive theorists propose that anxiety disordered individuals use safety behaviours to avoid feared outcomes. The nature of the feared outcome varies across the disorders; however, reliance on safety behaviours has the maladaptive effect of maintaining the individual’s fear and avoidance. Reducing safety behaviours is currently considered a key aspect of treatment for these conditions, yet little research has examined safety behaviour use in certain
anxiety disorders, notably GAD. Less research attention has attended to safety behaviour use by children and youth, different genders, and diverse groups including those from differing ethnic and SES backgrounds. The following section presents a discussion of the literature on safety behaviour reduction.

**Safety Behaviour Reduction**

A number of studies have demonstrated that the reduction of safety behaviours facilitates fear reduction during treatment. Kamphuis and colleagues examined the effects of safety behaviours on maintenance of fear in people with specific phobias. Kamphuis and Telch (2000) found that phobic individuals who were required to perform a distracting task while engaged in exposure experienced little fear reduction. In contrast, individuals who were instructed to focus on their threatening cognitions while participating in exposure therapy experienced increased fear reduction. A related study found similar results; individuals with claustrophobia instructed to engage in a distracting task experienced less anxiety reduction than a non-distracted group (Telch et al., 2004). Powers et al. (2004) demonstrated that the availability of safety aids for individuals with claustrophobia was enough to interfere with fear reduction. For example, individuals who had the option of opening a window experienced less anxiety reduction than people who lacked this option. Finally, Sloan and Telch (2002) found that participants who continued to use safety behaviours during a fear-inducing task continued to have high levels of anxiety, whereas directing participants to focus on the threat and engage in reappraisal of their fears resulted in reduced anxiety and claustrophobia fears. These studies suggested that it may be beneficial for individuals to experience fully their anxiety in a feared situation in order to process cognitively disconfirming evidence, thereby reducing anxiety in future situations, or fear extinction.
Several studies have examined safety behaviour reduction in SoP. Wells et al. (1995) used a within-subjects design to compare the effects of using safety behaviours in a social task. Participants ($N = 8$) displayed decreased anxiety and reductions in threat-related beliefs when they reduced their reliance of safety behaviours. Morgan and Raffle (1999) reported that safety behaviour reduction contributed to anxiety reduction beyond exposure alone in individuals with SoP. Similarly, Kim (2005) examined the effectiveness of safety behaviour reduction using either a cognitive or an extinction rationale. Participants ($n = 15$) who were asked to evaluate the effects of reducing safety behaviours displayed greater decrease in social anxiety than those ($n = 15$) who focused on anxiety-reduction alone. These studies demonstrate that when in a feared social situation, individuals with SoP may benefit more when instructed to reduce safety behaviours.

Cognitive behavioural therapy has been shown to be effective for adults with GAD (Borkovec & Ruscio, 2000; Borkovec & Whisman, 1996; Chambless & Gillis, 1993). Despite these positive findings, some studies investigating CBT have demonstrated that only a portion of individuals treated met acceptable functioning criteria (Borkovec & Whisman, 1996). In one study, Borkovec and colleagues (2002) attempted to increase the effectiveness of CBT for GAD by including applied relaxation and self-control desensitization components. The results revealed no increase in effectiveness, prompting Borkovec and colleagues to suggest that research is needed to explore alternative foci within the CBT framework. One direction suggested was to develop methods to help individuals to attend to the present moment and address their intolerance of uncertainty (Borkovec et al., 2002). One way to test the uncertainty suggestion would be to incorporate a safety behaviour reduction component into CBT sessions; however, little empirical research has examined safety behaviour reduction in people with GAD. Initial
steps have been taken by Dugas in the development of a CBT protocol for GAD, which includes a reduction in safety behaviour use. For example, a client may be asked to send a low priority email without repeated checking or to make a decision without seeking reassurance from others (Dugas & Robichaud, 2007). Cognitive theorists believe that this reduction in safety behaviour results in lower levels of anxiety when approaching future uncertain situations; however, empirical studies are needed to explore safety behaviour use by individuals with GAD.

Although few studies have examined the use of safety behaviours in anxious children and youth, it is hypothesised that a number of safety behaviours used by children and youth will be similar to those used by adults, but other safety behaviours may differ due to developmental differences. Studies have identified that similar feared outcomes are expected by both anxious youth and adults within specific anxiety disorder subtypes (Albano et al., 2003; APA, 2000, p. 429-484). For example, children, youth, and adults with SoP fear social rejection and embarrassment; similarly, children, youth, and adults with a specific phobia of dogs fear being attacked or bitten. As safety behaviours are used in order to prevent or avoid a feared outcome, individuals with a shared feared outcome may be more likely to engage in similar types of behaviours to prevent or avoid the feared outcome. As the feared outcome for each anxiety disorder may be common amongst all people, it is likely that individuals within a particular anxiety disorder engage in similar safety behaviours to prevent or avoid their particular feared outcome. However, the type of safety behaviour used may be influenced by an individual’s age or developmental stage. For example, an adult with SoP may change jobs (safety behaviour) after receiving a poor evaluation (feared outcome), whereas an adolescent with SoP may begin skipping class (safety behaviour) as the result of a poor evaluation.
Further, there is evidence of homotypic continuity (i.e., continuity of a disorder that is similar to a type shown earlier in life) within anxiety disorder subtypes (Bittner et al., 2007; Ferdinand, Dieleman, Ormel, & Verhulst, 2007). These findings suggest that anxiety experienced in childhood may be similar to anxiety experienced in youth and adulthood, although symptoms may be expressed differently in childhood. If the experience of anxiety is similar among children, youth, and adults, this suggests that the use of safety behaviours may also be similar. Preliminary studies exploring safety behaviour use by children and youth support the theory that this population engages in similar safety behaviours to adults. Researchers used an existing measure (Thomas et al., 2012), or adapted adult-focused measures by removing certain items (Hodson et al., 2008), altering item language, or adding additional items (Kley et al., 2012) to assess safety behaviours in children and youth. These studies found that participants endorsed similar behaviours as were identified by adults using these measures.

Although the number of empirical studies varies per anxiety disorder, safety behaviours appear to be used by adults pervasively among the anxiety disorders (Clark & Wells, 1995; Deacon & Maack, 2008; Kamphuis & Telch, 1998; Powers et al., 2004; Rachman, 2004; Salkovskis et al., 1996; Steil & Ehlers, 2000). Despite this use of safety behaviours across anxiety disorders, unique safety behaviours have historically, and continue to be, discussed in terms of specific anxiety disorder. For example, avoiding eye contact and speaking softly are considered SoP-associated safety behaviours, whereas holding onto a chair or leg tensing are considered PD-associated safety behaviours. The current definition of safety behaviours indicates that people engage in safety behaviours in order to reduce or avoid a feared outcome. As feared outcome differs among anxiety disorder, this suggests that individuals experiencing
each anxiety disorder will engage in unique safety behaviours. The following section presents a more detailed discussion of this issue.

**Safety Behaviours and Anxiety Disorders**

Current nosology distinguishes anxiety disorders primarily in terms of the situation or stimulus that is feared. Implicit in the cognitive perspective is the assumption that these fears arise from exaggerated or inaccurate beliefs about the danger value of the feared stimulus. According to Borkovec and Dugas, GAD is characterized by the belief that uncertain events may lead to negative consequences (i.e., “If I lose my job, I’ll be useless”) (Borkovec et al., 1998; Clark & Wells, 1995; Dugas & Robichaud, 2007). Contemporary CBT theorists have begun to place more emphasis on behavioural elements, such as safety behaviours, in cognitive models. Given the number of overlapping features, distinguishing anxiety disorders can be difficult, especially with the high prevalence of co-morbidity within anxiety disorders. Specifically, some researchers estimate between 40-60% of anxious youth meet the criteria for more than one anxiety disorder (Kashani & Orvaschel, 1990). The *DSM-5* (APA, 2013) also specifies high levels of co-morbidity between the anxiety disorders. Given the number of overlapping features in anxiety disorders, and frequently occurring comorbid anxiety disorders, assessment of safety behaviours by clinicians may prove difficult. GAD is often difficult to diagnose (Portman, 2009), and has received less research attention than other anxiety disorders (Dugas, Anderson, Deschenes, & Donegan, 2010). Further, research exploring the development and presentation of GAD in children and youth is often inconsistent (Rapee et al., 2009).

GAD was selected as a focus to contribute to the conceptual understanding and treatment of this anxiety disorder through the exploration of GAD-associated safety behaviours. Some researchers have identified a number of physical behaviours engaged in by individuals with
GAD, such as reassurance-seeking and excessive preparation (Woody & Rachman, 1994; Wells, 2006). A number of theories attempt to explain the motive behind these behaviours. Woody and Rachman (1994) hypothesized that individuals engage in these behaviours to avoid hypothetical, future or present catastrophes. Dugas hypothesized that individuals with GAD find uncertainty disturbing and anxiety-provoking (Dugas et al., 2004). These individuals engage in such behaviours in order to gain certainty over uncertain situations. These physical behaviours appear to fit the current definition of safety behaviours engaged with an exclusive goal to help prevent or avoid feared outcomes or internal experiences. Only one study to date has examined GAD-associated safety behaviour use by adults (Beesdo-Baum et al., 2012). Researchers asked a sample of adults \( n = 56 \) with GAD and a sample of healthy controls \( n = 33 \) to identify and monitor behaviours they used to control or prevent worries. Participants identified behaviours such as “tried to distract myself”, “sought reassurance from other people”, and “avoided watching the news”. Findings indicated that participants with GAD engaged in more behaviour to control or prevent worries than the healthy controls. Researchers highlighted the need for a standardized measure of GAD-associated safety behaviours, and research to identify whether these safety behaviours are unique to GAD pathology (Beesdo-Baum et al., 2012). Identification and measurement of GAD-associated safety behaviours may provide researchers with a better understanding of GAD as a unique disorder. Regarding treatment, clinicians would know which safety behaviours to watch for in order to maximize exposure sessions. Third, targeting safety behaviour may prompt researchers to explore whether safety behaviour reduction in youth improves anxiety reduction during exposure. Fourth, more child- and youth-focused CBT programs, may consider more explicit information regarding identification and reduction of safety behaviours specific to the youth’s diagnosis. Finally, clinicians of clients with co-morbid
concerns may plan whether the co-morbid condition needs additional intervention by monitoring for residual safety behaviours.

To aid in the identification and measurement of GAD-associated safety behaviours, a measure of GAD-associated safety behaviours is required. However, despite research pointing to the ubiquitous use and detrimental outcome of safety behaviour use, there are surprisingly few standardized measures to assess safety behaviour use in adults, and no measures for children or youth. The following section elaborates on the existing research, and provides details of the recent development of a measure of GAD-associated safety behaviours.

**Assessment of Safety Behaviours**

Although cognitive theorists and recent research suggest that the concept of safety behaviours have heuristic value for understanding and treating anxiety disorders, questions remain about how such behaviours are best measured. In the context of treatment, clinical researchers typically use interview procedures. For example, Morgan and Raffle (1999) had participants recall and list safety behaviours that they usually used when anxious in certain situations. Clark (2001) supplements clinical interviews with videotapes of patients in social tasks. Specifically, participants are asked to first use and then abandon safety behaviours. The therapist (researcher) and client then review the tapes to identify specific safety behaviours and evaluate their effects. No research is available on the reliability and validity of these methods. In addition, interview and observation assessment procedures are time-consuming and expensive.

Another approach to assessment of safety behaviour use has been the use of self-report measures. There are four such measures, although psychometric data for these measures are limited, and all four are designed to be used with adults. Telch’s *Texas Safety Maneuver Scale* (*TSMS*), was developed to assess safety behaviours in Panic Disorder (Kamphuis & Telch,
The authors reported good internal consistency. Preliminary support for convergent and divergent validity is presented; the TSMS was positively associated with measures of anxiety and panic-related cognitions in a clinical sample (Kamphuis & Telch, 1998).

The other three measures were developed to assess safety behaviours in SoP. The Social Behaviours Questionnaire (SBQ; Clark et al., 1995) is increasingly used in research and clinical work (Hirsch et al., 2004; Plasencia et al., 2011). The authors report that the measure has adequate internal consistency and converges with a measure of SoP-associated symptom severity (Clark et al., 1995). In addition, exploratory factor analysis of a modified version of the SBQ identified two underlying factors: Avoidance and Impression Management (Plasencia et al., 2011). Another instrument is the Subtle Avoidance Frequency Examination (SAFE; Cuming et al., 2009). The SAFE was found to have strong internal consistency, demonstrated convergent validity with a measure of SoP, and discriminant validity with a measure of stress and depression (Cuming et al., 2009). The final instrument is the Social Phobia Safety Behaviours Scale (SPSBS; Pinto-Gouveia et al., 2003). The SPSBS has reported moderate test re-test reliability, and in support of concurrent validity, was found to correlate with a measure of SoP (Pinto-Gouveia et al., 2003).

No child- or youth-focused assessment measure of safety behaviours exists. Therefore, researchers who wish to explore safety behaviour use in youth must choose between the four adult-focused safety behaviour measures available. If safety behaviour reduction is shown to improve anxiety reduction in youth, future research will be needed to explore the use of these adult-focused safety behaviour measures with youth. Children and youth may differ in their selection of safety behaviours given their developmental level and ability to influence their environment compared to adults, or the behaviours may be similar. For example, adults with SoP
may consume alcohol (safety behaviour) at social gatherings to avoid appearing anxious and being socially rejected (feared outcome). Alcohol consumption is not a safety behaviour in which children and young adolescents can legally or readily engage, although research is increasingly tracking adolescents and alcohol use (Behrendt, Wittchen, Hofler, Lieb, & Beesdo, 2009; Benjamin, Harrison, Settipani, Brodman, & Kendall, 2013).

Strengths of self-report measures include ease of administration, speed of completion, and scoring simplicity (Miller & Hays, 2000; Paterson, Potoski, & Capitano 2002; Paulhus & Vazire, 2007). They allow participants to respond at their own rate, and the instruments may prompt participants to identify safety behaviours that they may not be able to generate on their own. Self-report measures can also be used to assess covert safety behaviours. Weaknesses of using self-report instruments include the limited support for reliability and validity (Peterson & Mitchell, 2005). Instruments may not include behaviours in which a person engages. In addition, safety behaviour measures are only available for Panic Disorder and SoP, and were developed using adult samples (Clark et al., 1995; Cuming et al., 2009; Kamphuis & Telch, 1998; Pinto-Gouveia et al., 2003). Results regarding the reliability of children’s self-reports of anxiety (Edelbrock, Costello, Dulcan, Kalas, & Conover, 1985; Silverman & Eisen, 1992) are mixed. For example, children ages 6 to 11 were less reliable in their ratings of anxiety symptoms than children ages 12 to 17, except when reporting symptoms associated with separation anxiety, when they were more reliable (Silverman & Eisen, 1992). In addition, parent-child agreement regarding anxiety ratings is generally low regardless of the child’s age or gender (Engel, Rodrigue, & Geffken, 1994). Although more research is needed regarding the reliability of self-reported anxiety by children of different ages, older youth (ages 16 to 18) appear to be reliable
informants of their anxiety symptoms (Silverman & Ollendick, 2005), although they are subject to the previously discussed limitations.

An additional limitation to the use of self-report measures is that individuals may engage in socially desirable responding. Researchers have demonstrated that adults and youth periodically report socially desirable behaviours and attitudes when completing self-report measures (Huang, Liao, & Chang, 1998). These researchers theorize that individuals respond in socially desirable ways to project a good impression, avoid criticism, conform to social norms, protect their self-concept, and obtain social approval (Crowne & Marlow, 1964; Huang et al., 1998). Logan and colleagues (2008) found that youth scoring high on a measure of social desirability reported fewer depressive and anxiety symptoms than youth scoring low on social desirability (Logan, Claar, & Scharff, 2008). Socially desirable responding has detrimental effects on the reliability of self-report measures by creating false relationships or obscuring relationships between variables (van de Mortel, 2008). As psychological research often presents participants with sensitive or controversial questions, researchers should consider measuring the potential confounding effects of socially desirable responding by including a measure of social desirability.

**Development of the Generalized Safety Behaviour Scale**

As part of an unpublished Masters research study, a measure of GAD-associated safety behaviours was developed (Generalized Safety Behaviour Scale (GSBS); Baker et al., 2014). Lounsbury’s model of scale development recommended that researchers define the construct to be measured prior to item development (Lounsbury et al., 2006). The GSBS was developed to measure safety behaviours associated with GAD. One conceptualization of GAD is Dugas’ Intolerance of Uncertainty model (IOU, Dugas & Robichaud, 2007), which suggests that those
with GAD perceive uncertainty to be threatening and unfair. Dugas’ IOU model was selected as the conceptual framework for the development of the GSBS as 1) it provided a definable target of fear, uncertainty, and 2) it has been incorporated into a CBT program for adults with GAD. The next step recommended by Lounsbury’s model was item development, beginning with the creation of an item pool. An initial list of safety behaviours was created with the assistance of an expert in the field of GAD. The use of a content expert in the initial stages of scale development helps ensure that the items are representative of the relevant content to be assessed by the measure (Lounsbury et al., 2006; Sterba, Egger, & Angold, 2007). Although not listed as a recommended step by Lounsbury, other scale development theorists recommend the use of a focus group to further refine items (DeVellis, 2003; Krueger & Casey, 2000). Therefore, the list of safety behaviours was given to a focus group of adults diagnosed with GAD. The safety behaviours initially identified included procrastination, following a rigid schedule, reassurance-seeking, avoidance, and over-preparation. The members of the focus group provided feedback to the research team regarding the wording and relevance of each item. As recommended by Clark and Watson (1995) preliminary psychometric pilot testing on a large convenience sample was conducted using an undergraduate university student sample (N = 328; Baker et al., 2014). The GSBS is a 15-item measure assessing safety behaviours associated with GAD. Respondents are asked to “indicate how often [they] use each behaviour in order to reduce or avoid worry.” Examples include: “do everything yourself”, and “avoid making decisions”. Items are rated on 6-point Likert-type scales (never – always) with the first column indicating “yes, but not to reduce worry”. The 15 items are summed to yield a total score. Internal consistency in a university undergraduate sample was found to be adequate for a preliminary research measure (α = 0.76) (Nunnally, 1978; Nunnally & Bernstein, 1994; Streiner, 2003). The measure demonstrated good
test-retest reliability, \( r = 0.94 \), and was correlated with a widely used measure of worry (Penn State Worry Questionnaire, \( r = 0.47 \)).

Objectives of Research

The current research is composed of two studies. Study 1 contributed data for determining the psychometric properties of a newly developed measure of GAD relevant safety behaviours, the Generalized Safety Behaviour Scale (GSBS) with a clinical sample of adults diagnosed with GAD. It was hypothesized that the GSBS would demonstrate adequate psychometric properties in the form of adequate internal consistency and construct validity. For construct validity, it was hypothesized that the measure would be associated with two key GAD symptoms: worry and intolerance of uncertainty. In addition, it was hypothesized that individuals diagnosed with GAD would endorse more frequent use of GAD-associated safety behaviours (as measured by the GSBS) than individuals with SoP and a control group of non-anxious individuals.

Given the limited research exploring safety behaviour use by youth, Study 2 was a developmental downward extension of Study 1. The first goal of Study 2 was to contribute data for determining the psychometric properties of the GSBS with a community sample of high school students. In order to study safety behaviours in a youth sample, the GSBS needed to be adapted to ensure that it was developmentally appropriate for use in this new population. This process of adapting a scale for use with a new population is described as “contextualizing” by Lounsbury in his scale development model, and is considered a common practice in the measure development process (Lounsbury et al., 2006, p. 125). It was hypothesized that the GSBS would demonstrate adequate psychometric properties in the form of adequate internal consistency and construct validity. For construct validity, it was hypothesized that the measure would be more highly associated with GAD symptoms than symptoms of another anxiety disorder. A second
goal of Study 2 was to determine the relationship of students’ self-reported anxiety scores and
the use of safety behaviours. It was hypothesized that individuals with elevated levels of anxiety
symptoms would endorse more frequent use of safety behaviours than individuals with low
levels of anxiety symptoms.

Summary of Chapter 2

Anxiety disorders cause interference and distress in the lives of many children, youth, and
adults (Kyrios et al., 2011). GAD has received less research attention than other anxiety
disorders, and this particular anxiety disorder’s definition has been shaped and changed over
much of the last three decades. Although interest is increasing, little is known about the
development, prevalence, and treatment of GAD in children and youth (In-Albon & Schneider,
2007).

The reduction of safety behaviours is a common component of several CBT programs for
adults. Questions exist regarding the conceptual boundaries of the safety behaviour construct.
Safety behaviours and adaptive coping strategies share several conceptual features, and
currently, distinctions between the constructs remain theoretical (Thwaites & Freeston, 2005).
Scant research has been conducted exploring safety behaviour use by anxious children or youth,
There is also limited research that explores safety behaviour use by individuals who differ in
ethnicity, gender, SES, and age. Few psychometrically sound measures are available to assess
safety behaviour use by adults with anxiety (Clark et al., 1995; Cuming et al., 2009; Kamphius &
Telch, 1998; Pinto-Gouveia et al., 2003), and there is limited research identifying safety
behaviours associated with GAD. Study 1 contributed data for determining the psychometric
properties of the Generalized Safety Behaviour Scale (GSBS) with a clinical sample of adults
diagnosed with GAD. A common practice in the scale development process involves adapting an
existing measure for use in a new population (Lounsbury et al., 2006). Currently, there are no measures of safety behaviours adapted for use with children or youth. Therefore, the first goal of Study 2 was to contribute data for determining the psychometric properties of the GSBS with a community sample of high school students ages 16 to 18. A second goal of Study 2 was to examine the use of safety behaviours in a community sample of high school students. This study helped determine the relationship of students’ self-reported anxiety scores and the use of safety behaviours.

The following section, Chapter 3, provides details regarding the participants, measures, and analyses involved in Study 1 and 2. Brief discussions are presented for both studies, which review the main findings and offer preliminary implications of the results. Chapter 4 provides an overview of the current research followed by a general discussion. The study’s strengths and limitations are described, and the chapter concludes with a discussion of directions for future research.
Chapter 3

This chapter reviews the procedures and findings of two independent studies, which form the basis of this dissertation. Both studies contributed data for determining the psychometric properties of a newly developed measure, the Generalized Safety Behaviour Scale (GSBS), in a clinical adult sample and in a community youth sample. Each study is described in terms of participants, measures used, data collection procedures, and data analysis. Both studies contribute new information to the literature on safety behaviour use in clinical and community populations and may have implications for anxiety treatment or future research directions. Given the limited availability of safety behaviour measures, the GSBS is an important contribution to the study of safety behaviours in both adults and youth. A brief discussion is provided of each study’s findings.

Study 1: Overview

Study 1 contributed data for determining the psychometric properties of a measure of GAD relevant safety behaviours, the Generalized Safety Behaviour Scale (GSBS), with a clinical sample of adults. It was hypothesized that the GSBS would demonstrate adequate psychometric properties in the form of internal consistency and construct validity. For construct validity, it was hypothesized that the measure would be associated with two key symptoms of GAD: worry and intolerance of uncertainty. In addition, it was hypothesized that a) individuals diagnosed with GAD would endorse more frequent use of GAD-associated safety behaviours (as measured by the GSBS) than individuals with SoP, b) individuals with SoP would endorse more frequent use of SoP-associated safety behaviours than individuals with GAD, and c) individuals diagnosed with GAD or SoP would endorse more frequent use of these specific safety behaviours than a control sample of non-anxious individuals.
Method: Study 1

Power Analysis

Regarding construct validity for the GSBS, an a priori power analysis for a one-way between groups ANOVA was conducted using the program G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009), to determine the minimum number of cases per group needed to detect a medium to large effect size. The analysis indicated that a minimum of 33 cases per group for a total sample size of 99 was necessary to achieve power, \((1 – \beta)\) set to 0.80, to detect a medium to large effect size, \(f = 0.32\) (Cohen, 1977) when employing the traditional 0.05 criterion of statistical significance.

Participants

A sample of treatment-seeking individuals with Generalized Anxiety Disorder \((n = 36)\) and Social Phobia \((n = 34)\) were recruited through the Anxiety Disorders Clinic, a public mental health clinic, the Interpersonal Research Lab at a large university, and from advertisements posted in businesses in a large urban metro area. In addition, a sample of individuals without anxiety \((n = 38)\) was recruited via advertisements posted in businesses in a large urban metro area. Table 1 presents the demographic information for Study 1 \((N = 108)\) participants.
Table 1

Demographic Information for Adult Clinical Sample

<table>
<thead>
<tr>
<th>Demographics</th>
<th>GAD</th>
<th>SoP</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Size (n)</td>
<td>36</td>
<td>34</td>
<td>38</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>36.1%</td>
<td>58.8%</td>
<td>36.8%</td>
</tr>
<tr>
<td>Female</td>
<td>63.9%</td>
<td>41.2%</td>
<td>63.2%</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>30.6%</td>
<td>73.5%</td>
<td>47.4%</td>
</tr>
<tr>
<td>Married</td>
<td>52.8%</td>
<td>14.7%</td>
<td>39.5%</td>
</tr>
<tr>
<td>Divorced</td>
<td>16.7%</td>
<td>11.8%</td>
<td>13.2%</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>77.8%</td>
<td>73.5%</td>
<td>48.7%</td>
</tr>
<tr>
<td>Asian</td>
<td>11.1%</td>
<td>11.8%</td>
<td>46.2%</td>
</tr>
<tr>
<td>Other</td>
<td>11.1%</td>
<td>14.7%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>44.9 (14.4)</td>
<td>30.3 (9.3)</td>
<td>40.6 (19.3)</td>
</tr>
<tr>
<td>Range</td>
<td>21 - 71</td>
<td>19 - 53</td>
<td>19 - 74</td>
</tr>
</tbody>
</table>

Note. GAD = Generalized Anxiety Disorder; SoP = Social Anxiety Disorder; SD = standard deviation

Measures

To assess primary diagnosis, the Anxiety Disorders Interview Schedule Adult Version, Fourth Edition (ADIS-IV; Brown, Di Nardo, & Barlow, 1994) was administered over the phone or in person in the University Lab by the primary investigator or a trained graduate level research assistant. Data collection for this research study spanned the transition between the DSM-IV-TR and the DSM-5. To maintain consistency, the DSM-IV-TR was used as a diagnostic framework throughout data collection. Therefore, the available ADIS-IV, which is aligned with DSM-IV-TR
diagnostic criteria, was considered an appropriate diagnostic tool for this study. Further, no significant changes were made to the diagnostic criteria for Social Phobia or Generalized Anxiety Disorder in the *DSM-5*. Participants were included in the study if they had a primary diagnosis of GAD or SoP, or if they had no anxiety disorder. Participants completed a battery of self-report questionnaires and a demographic information sheet. Anxiety symptoms were assessed through a series of pencil/paper standardized self-report measures designed to assess key elements of GAD. These measures were mailed to or given to the participants and returned to the University Lab via mail or in person, once completed. Safety behaviour use was assessed through two pencil/paper questionnaires designed to highlight safety behaviours believed to be associated with both of the above anxiety disorder subtypes.

**Diagnostic measure.**

*Anxiety Disorders Interview Schedule: Fourth Edition (ADIS-IV; Brown et al., 1994).* The *ADIS-IV* is a widely used, standardized, semi-structured clinical interview that allows for differential diagnoses between anxiety disorders and other, often comorbid disorders such as mood disorders. The *ADIS-IV* is aligned with the diagnostic criteria provided by the *DSM-IV-TR* (2000) 4th ed., text rev. for Axis I disorders (APA, 2000). The *DSM* diagnoses are rated on a 0–8 clinical severity scale with a rating of 4 or above indicating clinical significance or diagnosis. The *ADIS-IV* has demonstrated inter-rater reliability from acceptable to excellent (Brown, Di Nardo, Lehman, & Campbell, 2001).

**Symptom measures.**

*Penn State Worry Questionnaire. (PSWQ; Meyer et al., 1990).* The *PSWQ* is a standardized pencil/paper measure of 15 items that assess the frequency and intensity of worry. Respondents are asked to “circle a number (1 to 5) that best describes how typical or
characteristic each item is of [them]”. Examples include “I am always worrying about something” and “once I start worrying I can’t stop”. Each item is rated on a 5-point Likert-type scale, ranging from 1 = not at all typical to 5 = very typical. The measure displays strong internal consistency, $\alpha = 0.94$ and high test-retest reliability ($r = 0.92$) among college students, as well as demonstrated convergent and divergent validity (Meyer et al., 1990). Recent research by Brown (2003) has suggested that the *PSWQ* measures a single underlying construct conceptualized as excessive/uncontrollable worry.

**Intolerance of Uncertainty Scale.** (*IUS*; Buhr & Dugas, 2002; Freeston, Rheaume, Letarte, Dugas, & Ladouceur, 1994). The *IUS* is a standardized pencil/paper measure of 27 items that assess the belief that uncertainty is unacceptable. Respondents are presented with various “statements, which describe how people may react to the uncertainties of life.” They are asked to “describe to what extent each item is characteristic of [them]”. Examples include “uncertainty makes life intolerable” and “when I am uncertain, I can’t go forward”. Each item is rated on 5-point Likert scales (1 = not at all characteristic of me; 5 = entirely characteristic of me). Strong internal consistency, $\alpha = 0.94$ was reported in an undergraduate student population, and evidence of convergent validity was established using a measure of worry. Test-retest reliability, $r = 0.74$, over 5 weeks was also demonstrated (Buhr & Dugas, 2002). Strong internal consistency, $\alpha = 0.93$ was found in a clinical sample of anxious adults, and evidence of convergent validity was established using symptom measures of a variety of anxiety disorder subtypes including PD, GAD, SoP, and OCD (McEvoy & Mahoney, 2011).

**Safety behaviour measures.**

**Social Behaviours Questionnaire.** (*SBQ*; Clark et al., 1995). The *SBQ* is a standardized pencil/paper measure of 25 items that assess safety behaviour use associated with social anxiety.
Respondents are asked to “circle the word which best describes how often [they] do the following things when [they] are anxious in or before a social situation.” Examples are: “try not to attract attention”, “avoid eye contact” and “rehearse sentences in your mind”. Items are rated on a 4-point scale (always, often, sometimes, never). The measure has high internal consistency, $\alpha = 0.80$ and demonstrates convergent validity with a measure of SoP-associated symptom severity (Clark et al., 1995).

**Generalized Safety Behaviour Scale.** (GSBS; Baker et al., 2014). The GSBS is a standardized pencil/paper measure of 15-items developed to assess safety behaviours associated with GAD. Respondents are asked to “indicate how often [they] use each behaviour in order to reduce or avoid worry.” Examples include: “do everything yourself”, and “avoid making decisions”. Items are rated on 6-point Likert-type scales (never – always) with the first column indicating “yes, but not to reduce worry”. The 15 items are summed to yield a total score. Internal consistency in a university sample was found to be adequate (Nunnally, 1978; Nunnally & Bernstein, 1994; Streiner, 2003) for a preliminary research measure ($\alpha = 0.76$; Baker et al., 2014). The measure demonstrated good test-retest reliability, $r = 0.94$, and was found to converge with a widely used measure of worry (*Penn State Worry Questionnaire*, $r = 0.47$).

**Procedure**

Individuals who sought treatment through the Anxiety Disorders Clinic, a publicly funded mental health clinic in a large urban area, were given a letter explaining the study and inviting them to participate. For those interested, eligibility was determined based on the results of an *Anxiety Disorders Interview Schedule, Fourth Edition* (ADIS-IV; Brown et al., 1994) assessment. All assessments and the resulting diagnoses were supervised by a registered psychologist at the Clinic. The registered clinical psychologist was trained in and had extensive experience
administering and interpreting *ADIS-IV* assessments. Those participants diagnosed with GAD or SoP were given a questionnaire battery to complete and return at their first treatment session. Recruitment also involved advertisements posted throughout a large urban metro area; one version recruited anxious individuals and the second version was designed to recruit individuals without anxiety. Interested individuals were instructed (via the advertisement) to contact the primary investigator. For all participants including those in the non-anxious group, formal diagnostic status was confirmed by one of three trained graduate students using a shortened version of the *ADIS-IV* (Brown et al., 1994). These graduate students were masters and doctoral level clinical psychology students who had received extensive training and supervision conducting *ADIS-IV* assessments by a registered clinical psychologist. A registered clinical psychologist supervised initial interviews until the graduate students were considered competent to conduct the interviews independently. Interviews were conducted over the telephone and recorded. Due to computer and recording issues, approximately three quarters of the recorded interviews for participants in the GAD group were deleted prior to conducting inter-rater reliability checks (i.e., review of auditory recordings of interviews). Inter-rater reliability checks were conducted on the remaining recordings of the GAD sample. Cohen’s *k* was run to determine if there was agreement between two raters’ diagnoses for GAD. There was 91% agreement between the two raters, (Cohen’s *k* = 0.90 *p* < 0.001; Landis & Koch, 1977). Of the reliability checks completed, three participants did not meet diagnostic criteria for GAD and/or SoP and were not included in the final GAD sample (*n* = 36). To determine inter-rater reliabilities regarding the deleted recordings, the completed pencil/paper *ADIS-IV* diagnostic protocols were reviewed by a supervising university-based registered clinical psychologist post interview. The diagnostic status rendered by the registered clinical psychologist was then
compared to the diagnosis rendered by the graduate student. In cases where there was diagnostic disagreement between the graduate student and the registered clinical psychologist, those participants were excluded from the study. One participant was excluded in this manner after a graduate student rendered a GAD diagnosis and the registered psychologist rendered no diagnosis. This process and similar procedure is reported in the psychiatry literature where an expert uses existing records and interview data to render diagnoses for study participants (Oiesvold et al., 2013; Tang, Liu, Lai, Liu, & Chen, 2005). Inter-rater reliability checks were conducted on 20% of the SoP sample ($n = 34$). There was 100% agreement (Cohen’s $k = 1.00$, $p < 0.001$) between raters regarding diagnosis of SoP. Participants were included if their primary diagnosis was GAD, SoP, or if they did not meet diagnostic criteria for any anxiety disorder. Those who met criteria for the study were mailed a package containing all of the self-report measures and a consent letter. Once the package and consent had been returned, a debriefing letter and stipend ($20 for non-anxious and $30 for anxious) was mailed to the participant.

Analysis: Study 1

Psychometric Analysis of the GSBS: Factor Analysis

The GSBS was administered to 108 participants and all scores were used. The 15 items of the GSBS were subjected to exploratory factor analysis (EFA) using SPSS Version 21. EFA was used to identify a parsimonious representation of the associations among the items of the GSBS. No previous measures of GAD-associated safety behaviours have been developed, therefore no a priori model was assumed. EFA is data-driven and allows for the examination of latent factors in the absence of a priori models (Fabrigor, Wegener, MacCallum, & Strahan, 1999). Preliminary assumption testing revealed moderate non-normality for the GSBS (skewness = -0.53, $SE = 0.23$ [negative skew]; kurtosis = -0.15, $SE = 0.46$). Principle Axis Factoring (PAF) was selected as the
extraction technique as it accounts for moderate to severe deviations from normality (Costello & Osborne, 2005). Direct Oblimin (oblique) rotation was selected given the expected correlation between any identified factors (Costello & Osborne, 2005). Prior to performing EFA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed that all of items correlated ($r \geq 0.3$) with at least one other item (see Table 2). The Kaiser-Meyer-Olkin value of sampling adequacy was 0.81, exceeding the recommended value of 0.6 (Kaiser, 1970). Bartlett’s Test of Sphericity (Bartlett, 1954) reached statistical significance, $\chi^2(105) = 678.53, p < 0.001$, supporting the factorability of the correlation matrix. Lastly, the diagonals of the anti-image correlation matrix were also all over 0.5, indicating sampling adequacy for each variable (Field, 2005).
Table 2

*Summary of Intercorrelations for GSBS Items with Adult Clinical Sample*

<table>
<thead>
<tr>
<th>Items</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>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>---</td>
<td>0.46**</td>
<td>---</td>
<td>0.45**</td>
<td>0.36**</td>
<td>---</td>
<td>0.33**</td>
<td>0.28**</td>
<td>0.38**</td>
<td>---</td>
<td>0.44**</td>
<td>0.36**</td>
<td>0.41**</td>
<td>0.46**</td>
<td>---</td>
</tr>
</tbody>
</table>

*Note.* *p* < 0.05; **p* < 0.01
Factor analysis suggested the presence of four factors with Eigenvalues exceeding 1 (5.13, 1.51, 1.31, 1.15), explaining 36.65%, 10.78%, 9.34%, and 8.25% of the variance of the GSBS respectively. An inspection of the screeplot suggested a break after the second factor. A two-factor solution was further supported by the results of Parallel Analysis (Horn, 1965), which showed two significant factors with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (15 variables x 108 respondents). The two-factor solution explained a total of 47.43% of the variance of the GSBS items. Fourteen items loaded onto one of the two identified factors with most displaying moderate to strong loadings (Tabachnick & Fidell, 2011). One cross-loading item (item 10) was identified (i.e., item that loaded at 0.35 or higher on two or more factors). An examination of the response distribution for this item revealed a leptokurtic distribution indicating that most participants endorsed “sometimes” putting off unpleasant decisions or tasks. This pattern of endorsement for this item may indicate that delaying unpleasant decisions or tasks is either a common behaviour engaged in by many adults, or that the wording of the item may need to be altered to be more specific for GAD-type behaviour. This item was removed from the pool of items as is common practice when conducting EFA (Matsunga, 2010). This pool of 14 items was subjected to EFA using PAF extraction and Direct Oblimin (oblique) rotation. Identical eigenvalues and variance percentages were produced and the resulting two-factor solution explained the same amount of variance (47.43%) of the GSBS as did the 15-item GSBS. All 14 items loaded onto one of the two identified factors. No cross-loading items were identified. The internal consistency of the GSBS was not significantly changed by the deletion of the item (α = 0.87). Items displayed low to moderate extracted communalities (see Table 3), suggesting the need for continued item development (Costello & Osborne, 2005). Nine items displayed moderate loadings on Factor 1
(range: 0.34 to 0.79), and demonstrated good internal consistency ($\alpha = 0.81$). Factor 1 items included avoidance behaviours as well as behaviours that involved taking on too much of a task or responsibility, and can be labelled “Avoidance and Over-involvement”. Five items displayed moderate loadings on Factor 2 (range: -0.40 to -0.87), and demonstrated good internal consistency ($\alpha = 0.81$). Factor 2 items included reassurance-seeking and list-making behaviours. The negative factor loadings indicated that these items may represent a “Tolerance of Uncertainty when Making Decisions and Completing Tasks” factor. The intercorrelation between Factor 1 and 2 was $r = -0.52$. Means, standard deviations, and alphas for the 14-item GSBS and its subscales are presented in Table 4. The measure demonstrated strong internal consistency ($\alpha = 0.87$; total score).
### Table 3

*Factor Loadings and Commonalities of GSBS in Clinical Adult Sample*

<table>
<thead>
<tr>
<th>GSBS Items</th>
<th>Factor Loadings</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Take too much responsibility for loved ones’ activities.</td>
<td>0.79</td>
<td>0.58</td>
</tr>
<tr>
<td>4. Avoid thinking about your concerns by keeping yourself busy.</td>
<td>0.74</td>
<td>0.42</td>
</tr>
<tr>
<td>11. Have a very predictable routine for everyday activities.</td>
<td>0.61</td>
<td>0.39</td>
</tr>
<tr>
<td>15. Repeatedly call loved ones to check that they are okay.</td>
<td>0.51</td>
<td>0.28</td>
</tr>
<tr>
<td>3. Try to avoid making decisions.</td>
<td>0.50</td>
<td>0.29</td>
</tr>
<tr>
<td>1. Do excessive research before making minor decisions.</td>
<td>0.44</td>
<td>0.46</td>
</tr>
<tr>
<td>14. After exhausting many resources, make an impulsive decision at the last minute.</td>
<td>0.41</td>
<td>0.25</td>
</tr>
<tr>
<td>2. Refuse to delegate tasks, even small ones.</td>
<td>0.36</td>
<td>0.24</td>
</tr>
<tr>
<td>9. Avoid doing new or spontaneous things.</td>
<td>0.34</td>
<td>0.20</td>
</tr>
<tr>
<td>12. Seek reassurance from many people for small decisions or problems.</td>
<td>-0.04</td>
<td>0.72</td>
</tr>
<tr>
<td>8. Ask several of your friends for their opinions when you are making minor decisions.</td>
<td>-0.09</td>
<td>0.65</td>
</tr>
<tr>
<td>7. Make extensive lists for everyday tasks.</td>
<td>0.18</td>
<td>0.31</td>
</tr>
<tr>
<td>6. Over-prepare for school/work tasks.</td>
<td>0.30</td>
<td>0.42</td>
</tr>
<tr>
<td>13. Create mental checklists before doing everyday tasks.</td>
<td>0.31</td>
<td>0.38</td>
</tr>
</tbody>
</table>

*Note. GSBS = Generalized Safety Behaviour Scale.*
Table 4

Means, Standard Deviations, and Cronbach's Alpha Values for the 14-item GSBS and its Subscales in the Clinical Adult Sample

<table>
<thead>
<tr>
<th>Scale</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoidance and Over-involvement</td>
<td>108</td>
<td>23.10</td>
<td>6.44</td>
<td>0.81</td>
</tr>
<tr>
<td>Tolerance of Uncertainty when Making Decisions and Completing Tasks</td>
<td>108</td>
<td>12.89</td>
<td>4.80</td>
<td>0.81</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>35.99</td>
<td>10.00</td>
<td>0.87</td>
</tr>
</tbody>
</table>

Psychometric Analysis of the GSBS: Construct Validity

The GSBS (total score) converged with a standardized measure of worry (Penn State Worry Questionnaire, \(r = 0.70, p < 0.001\)), and a measure of intolerance of uncertainty (Intolerance of Uncertainty Scale, \(r = 0.71, p < 0.001\)). To further assess construct validity of the GSBS, one-way ANOVAs were conducted on the GSBS and the Social Behaviours Questionnaire (SBQ) with diagnostic group as the between subjects factor (GAD; \(n = 36\), SoP; \(n = 34\), non-anxious; \(n = 38\)).

The 15-item GSBS (15-GSBS) and the SBQ were given to and returned by 108 participants. All GSBS data were used. One participant did not complete one-half of the SBQ, resulting in no total score for that participant (107 SBQ responses total). Preliminary analyses were completed and revealed moderate non-normality of the distribution of scores for the 14-item GSBS (14-GSBS; Shapiro-Wilk statistic (108) = 0.96, \(p < 0.05\); skewness = -0.5 \(SE = 0.23\) [negative skew]; kurtosis = -0.15 \(SE = 0.46\)). However, the one-way ANOVA design has been demonstrated to be robust to moderately non-normal data (Glass, Peckham, & Sanders, 1972; Harwell, Rubinstein, Hayes, & Olds, 1992; Lix, Keselman, & Keselman, 1996). The distribution of scores for the SBQ
were normally distributed (Shapiro-Wilk statistic \(107\) = 0.98, \(p > 0.05\)). No univariate outliers (greater than 3 standard deviations) were identified for responses on any of the measures. The assumption of linearity was met for all measures. Homogeneity of variance was tested using Levene’s test for equality of variances. Response variances for the \(SBQ\) among the groups were equal (Levene’s Statistic \(2, 104\) = 0.15, \(p > 0.05\)). However, homogeneity of variance was violated for responses among the groups on the \(14-GSBS\) (Levene’s Statistic \(2, 105\) = 4.19, \(p < 0.05\)). To accommodate this assumption violation, Welch’s F’ was used as the test of overall model significance (Welch, 1951).

**Demographic Analyses**

No significant differences were identified for responses on the \(14-GSBS\) or the \(SBQ\) across the diagnostic groups for the demographic information collected (see Table 5 for categorical demographic variables). For participants in the clinical GAD group, there were no significant differences found for responses on the \(14-GSBS\) or the \(SBQ\) for gender or marital status. Anxiety disorders are evident across ethnic groups (Cooley & Boyce, 2004), and the development and response to anxiety can differ among ethnicities (Okazaki et al., 2002). Therefore, it was important to determine whether participants in different ethnic groups differed in their safety behaviour use. Participants with GAD in the Caucasian group obtained the highest mean score on the \(14-GSBS\). Participants with GAD in the Asian group obtained the second highest mean, and participants with GAD in the third or “other” ethnicity group obtained the lowest mean. There was a significant mean difference for responses on the \(14-GSBS\) between those in the Caucasian group and those in the “other” ethnicity group (see Table 6 for categorical demographic variables for adults in the clinical GAD group). To determine whether this difference affected the results, analyses were run with and without the “other” ethnicity group
and no differences in final results were identified. For participants in the clinical SoP group and the non-anxious group, there were no significant differences found for responses on the 14-GSBS or the SBQ for any of the demographic information collected (see Tables 7 and 8). Table 9 presents the Pearson correlation coefficients between all Study 1 measures, and Table 10 presents the means, standard deviations, and Cronbach’s alpha values for the measures in Study 1.

Table 5

*Means and Standard Deviations of Categorical Demographics for the 14-item GSBS and SBQ in Adult Clinical Sample*

<table>
<thead>
<tr>
<th>Demographics</th>
<th>14-GSBS</th>
<th></th>
<th>SBQ</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( n = 108 )</td>
<td>( n = 107 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>35.00 (9.37)</td>
<td></td>
<td>32.48 (17.32)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>39.75 (10.48)</td>
<td></td>
<td>26.48 (13.39)</td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>35.87 (9.73)</td>
<td></td>
<td>31.43 (14.98)</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>36.74 (9.65)</td>
<td></td>
<td>25.34 (13.76)</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>34.47 (12.22)</td>
<td></td>
<td>29.93 (19.75)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>36.65 (10.27)</td>
<td></td>
<td>29.75 (14.79)</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>34.80 (10.27)</td>
<td></td>
<td>25.92 (18.03)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>34.36 (7.63)</td>
<td></td>
<td>31.73 (13.15)</td>
<td></td>
</tr>
</tbody>
</table>

*Note. 14-GSBS = 14-item Generalized Safety Behaviour Scale; SBQ = Social Behaviour Scale*
Table 6

*Means and Standard Deviations of Categorical Demographics for the 14-item GSBS and SBQ in Adult GAD Clinical Sample*

<table>
<thead>
<tr>
<th>Demographics</th>
<th>14-GSBS</th>
<th>F</th>
<th>Sig.</th>
<th>SBQ</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>42.00 (7.42)</td>
<td>F(1,34) = 0.01</td>
<td>$p &gt; 0.05$</td>
<td>32.17 (10.80)</td>
<td>F(1,33) = 0.90</td>
<td>$p &gt; 0.05$</td>
</tr>
<tr>
<td>Female</td>
<td>42.13 (8.02)</td>
<td></td>
<td></td>
<td>27.91 (13.39)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>43.45 (8.10)</td>
<td>F(2,33) = 0.25</td>
<td>$p &gt; 0.05$</td>
<td>29.91 (12.00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>41.37 (7.62)</td>
<td></td>
<td></td>
<td>27.17 (13.33)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>41.83 (8.28)</td>
<td></td>
<td></td>
<td>35.00 (11.24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>43.96 (6.89)</td>
<td>F(2,33) = 4.84</td>
<td>$p &lt; 0.05$</td>
<td>31.81 (11.71)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>37.25 (9.71)</td>
<td></td>
<td></td>
<td>16.25 (14.55)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>33.75 (3.69)</td>
<td></td>
<td></td>
<td>26.00 (9.59)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. 14-GSBS = 14-item Generalized Safety Behaviour Scale; SBQ = Social Behaviour Scale*
Table 7

*Means and Standard Deviations of Categorical Demographics for the 14-item GSBS and SBQ in Adult SoP Clinical Sample*

<table>
<thead>
<tr>
<th>Demographics</th>
<th>14-GSBS</th>
<th>F</th>
<th>Sig.</th>
<th>SBQ</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>34.60 (6.59)</td>
<td>F(1,32) = 0.60</td>
<td><em>p &gt; 0.05</em></td>
<td>41.95 (14.48)</td>
<td>F(1,32) = 1.42</td>
<td><em>p &gt; 0.05</em></td>
</tr>
<tr>
<td>Female</td>
<td>36.86 (10.44)</td>
<td></td>
<td></td>
<td>36.43 (11.37)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>35.60 (8.92)</td>
<td>F(2,31) = 0.29</td>
<td><em>p &gt; 0.05</em></td>
<td>39.52 (13.90)</td>
<td>F(2,31) = 1.99</td>
<td><em>p &gt; 0.05</em></td>
</tr>
<tr>
<td>Married</td>
<td>33.40 (7.16)</td>
<td></td>
<td></td>
<td>32.40 (11.68)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>37.75 (6.50)</td>
<td></td>
<td></td>
<td>49.75 (4.35)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>35.12 (7.84)</td>
<td>F(2,31) = 0.11</td>
<td><em>p &gt; 0.05</em></td>
<td>38.96 (12.50)</td>
<td>F(2,31) = 0.14</td>
<td><em>p &gt; 0.05</em></td>
</tr>
<tr>
<td>Asian</td>
<td>36.75 (15.97)</td>
<td></td>
<td></td>
<td>42.50 (25.85)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>36.60 (2.61)</td>
<td></td>
<td></td>
<td>41.00 (5.10)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* 14-GSBS = 14-item Generalized Safety Behaviour Scale; SBQ = Social Behaviour Scale
Table 8

Means and Standard Deviations of Categorical Demographics for the 14-item GSBS and SBQ in Adult Non-Anxious Sample

Non-Anxious  
\( n = 38 \)

<table>
<thead>
<tr>
<th>Demographics</th>
<th>14-GSBS</th>
<th>( F )</th>
<th>Sig.</th>
<th>SBQ</th>
<th>( F )</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>29.07 (10.44)</td>
<td>( F(1,36) = 0.50 )</td>
<td>( p &gt; 0.05 )</td>
<td>19.21 (17.49)</td>
<td>( F(1,36) = 0.00 )</td>
<td>( p &gt; 0.05 )</td>
</tr>
<tr>
<td>Female</td>
<td>31.54 (10.29)</td>
<td></td>
<td></td>
<td>19.29 (10.34)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>31.61 (9.36)</td>
<td>( F(2,35) = 1.65 )</td>
<td>( p &gt; 0.05 )</td>
<td>21.11 (11.49)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>32.00 (10.30)</td>
<td></td>
<td></td>
<td>20.80 (14.19)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>23.00 (12.19)</td>
<td></td>
<td></td>
<td>8.00 (12.67)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>27.89 (9.78)</td>
<td>( F(2,35) = 1.51 )</td>
<td>( p &gt; 0.05 )</td>
<td>14.68 (9.00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>33.76 (9.44)</td>
<td></td>
<td></td>
<td>24.29 (15.08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>30.00 (21.21)</td>
<td></td>
<td></td>
<td>20.00 (22.63)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. 14-GSBS = 14-item Generalized Safety Behaviour Scale; SBQ = Social Behaviour Scale
Table 9

Pearson Correlation Values for Study 1 Measures

<table>
<thead>
<tr>
<th></th>
<th>14-GSBS</th>
<th>SBQ</th>
<th>PSWQ</th>
<th>IUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-GSBS</td>
<td>1</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>SBQ</td>
<td>0.54**</td>
<td>1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>PSWQ</td>
<td>0.70**</td>
<td>0.49**</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>IUS</td>
<td>0.71**</td>
<td>0.48**</td>
<td>0.77**</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. **p ≤ 0.01; 14-GSBS = 14-item Generalized Safety Behaviour Scale; SBQ = Social Behaviours Scale; PSWQ = Penn State Worry Questionnaire; IUS = Intolerance of Uncertainty Scale.

Table 10

Means, Standard Deviations, and Cronbach’s Alpha Values for Study 1 Measures

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-GSBS</td>
<td>108</td>
<td>36.99</td>
<td>10.00</td>
<td>0.87</td>
</tr>
<tr>
<td>SBQ</td>
<td>107</td>
<td>29.06</td>
<td>15.42</td>
<td>0.93</td>
</tr>
<tr>
<td>PSWQ</td>
<td>107</td>
<td>49.71</td>
<td>15.32</td>
<td>0.96</td>
</tr>
<tr>
<td>IUS</td>
<td>92</td>
<td>65.76</td>
<td>22.39</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Note. 14-GSBS = 14-item Generalized Safety Behaviour Scale; SBQ = Social Behaviours Scale; PSWQ = Penn State Worry Questionnaire; IUS = Intolerance of Uncertainty Scale.

A one-way ANOVA was conducted on the 14-GSBS with diagnostic group (GAD, SoP, non-anxious) as the between subjects factor. Frequency of GAD-associated safety behaviour use varied across the three groups, $F(2, 105) = 15.31, p < 0.001, \eta^2 = 0.23$. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for the GAD group ($M = 42.08, SD =$
7.70) was significantly higher than that of the SoP group \((M = 35.53, SD = 8.32), p < 0.05\). The effect size for this difference \((d = 0.82)\) was medium to large (Cohen, 1988). The mean score for the GAD group was also significantly higher than that of the non-anxious group \((M = 30.63, SD = 10.28), p < 0.05\). The effect size for this difference \((d = 1.26)\) was large (Cohen, 1988).

Similarly, a one-way ANOVA was conducted on the \(SBQ\) with diagnostic group (GAD, SoP, non-anxious) as the between subjects factor. Frequency of SoP-associated safety behaviour use varied across the three groups, \(F(2, 104) = 21.96, p < 0.001, \eta^2 = 0.30\). Post-hoc comparisons using the Tukey HSD test indicated that the mean score for the SoP group \((M = 39.68, SD = 13.38)\) was significantly higher than that of the GAD group \((M = 29.37, SD = 12.57), p < 0.05\). The effect size for this difference \((d = 0.79)\) was medium to large (Cohen, 1988). The mean score for the SoP group was also significantly higher than that of the non-anxious group \((M = 19.26, SD = 13.19), p < 0.05\). The effect size for this difference \((d = 1.54)\) was large (Cohen, 1988).

**Discussion: Study 1**

Study 1 contributed to the further development of the *Generalized Safety Behaviour Scale (GSBS)*, a self-report measure of GAD-associated safety behaviours in a sample of adults diagnosed with GAD. Through factor analysis, one of the 15 items was dropped as it cross-loaded (loaded onto more than one factor) and was moderately endorsed by the majority of participants. A two-factor solution explained 47.43\% of the variance in GSBS responses. Factor 1, labelled “Avoidance and Over-involvement”, comprised 9 items and demonstrated good internal consistency. Items loading on this factor included avoidance behaviours as well as behaviours that involved taking on too much of a task or responsibility. Factor 2, labelled “Tolerance of Uncertainty when Making Decisions and Completing Tasks”, comprised five items and demonstrated good internal consistency. Items loading on this factor included
reassurance-seeking and list-making behaviours. Future measure development will help to more clearly identify and define these latent factors. The GSBS is the first GAD-associated safety behaviour measure, and EFA allowed for an exploration of the various types or subscales of safety behaviours endorsed by individuals with GAD. EFA is often used to explore the underlying constructs in newly developed measures (Kline, 1994). The items were developed using Dugas’ Intolerance of Uncertainty model, which identified uncertainty as the target of fear. Dugas described behaviours aimed at increasing certainty engaged in by adults with GAD (Dugas & Robichaud, 2007). The current analyses contributed to Dugas’ conceptual model of GAD by providing information on how these behaviours co-vary (i.e., subscales). Subscales may also provide clinicians with themes of safety behaviours to watch for, making it easier to monitor safety behaviour use during exposures. Lastly, the calculation of subscales provides future researchers who may use the GSBS additional information regarding the psychometric properties of the measure. Although this study contributed preliminary data towards content validity of the GSBS, scale development is an on-going process (Lounsbury et al., 2006). This study also provided preliminary reliability data for the GSBS in the form of internal consistency. It may also be useful to determine whether the GSBS is sensitive to changes in safety behaviour use during treatment.

The measure demonstrated strong internal consistency and converged with standardized measures of worry and intolerance of uncertainty. Further support for construct validity of the GSBS was provided through two one-way ANOVAS. These analyses identified significant mean differences on both measures of safety behaviour use by individuals with GAD and SoP. Specifically, individuals with GAD engaged in more frequent use of GAD-associated safety behaviours than did individuals diagnosed with SoP, and more so than non-anxious individuals.
Results also showed that individuals diagnosed with SoP engaged in more frequent use of SoP-associated safety behaviours than did individuals diagnosed with GAD and non-anxious individuals. The mean differences in safety behaviour use between the SoP and GAD groups were smaller than the mean differences between both anxiety groups and the non-anxious groups. This finding suggests that there is some overlap in the safety behaviours used by individuals with GAD and those with SoP. A certain degree of overlap between socially anxious and generalized anxious people was expected because the diagnostic criteria for GAD include fear of social situations (APA, 2013).

The results of Study 1 found a significant response difference by ethnicity on the GSBS for participants in the GAD group. Specifically, there was a significant mean difference on the 14-GSBS responses between those with GAD in the Caucasian group and those with GAD in the “other” group. It is difficult to meaningfully interpret this significant difference given the small sample size of the “other” group (n=11). Although there is within group heterogeneity in the Caucasian and Asian groups, the “other” group consisted of individuals identifying as Indo-Canadian, First Nations, and Hispanic, as well as those who indicated “other” on their demographic form but did not indicate their ethnicity in the space provided. This finding points to the need for additional research with a specific focus on cross-cultural safety behaviour use. No other significant response differences were identified on either of the two safety behaviour measures for gender, ethnicity, or marital status.

Study 1 examined the psychometric properties of the GSBS using a clinical sample of adults. Given the limited research exploring safety behaviour identification and use by children and youth, Study 2 examined safety behaviour use and the psychometric properties of the GSBS using a community sample of youth.
Study 2: Overview

Study 2 contributed data for determining the psychometric properties of the GSBS with a community sample of high school students ages 16 through 18. It was hypothesized that the GSBS would demonstrate adequate psychometric properties in the form of adequate internal consistency and construct validity. Regarding construct validity, it was hypothesized that the measure would be more highly associated with GAD symptoms than symptoms of another anxiety disorder, SoP. A second goal of Study 2 was to examine the use of safety behaviours in a community sample of high school students. It was hypothesized that individuals with elevated levels of anxiety symptoms would endorse more frequent use of safety behaviours than would individuals with low levels of anxiety symptoms.

Method: Study 2

Power Analysis for Study 2

An a priori power analysis for a linear multiple regression was conducted using the program G*Power 3.1 (Faul et al., 2009), to determine the minimum sample size needed to detect a medium effect size. The analysis indicated that a minimum sample size of \( N = 55 \) was necessary to achieve power, \((1 - \beta)\) set to 0.80, to detect a medium effect size, \( f^2 = 0.15 \) (Cohen, 1977) when employing the traditional 0.05 criterion of statistical significance.

Participants

A community sample \((N = 175; \text{females} = 126, \text{males} = 49)\) of high school students, in grades 11 \((n = 117)\) and 12 \((n = 58)\), was recruited from three high schools in a large urban school district. Schools were invited to participate after being matched by socioeconomic status (SES; i.e., the largest schools in high SES and low SES areas were equally invited). Sixty one percent of the sample came from a school within a high SES, or “most advantaged” environment.
(Human Early Learning Partnership, 2009). The remaining 39% of the sample came from two schools within a low SES, or “most disadvantaged” environment (Human Early Learning Partnership, 2009). The mean age of the sample was 17 years of age (range = 16 to 18 years). The majority of the sample identified as Asian (61%), followed by Caucasian (26%), and other (13%). Forty-eight percent of the sample endorsed speaking a language other than English in their family home, although all participants were fluent in English. Language spoken in the home was included as a variable of interest to provide additional contextual details for Study 2’s sample, as there is significant diversity in languages spoken in the large urban school district used for recruiting (Languages in B.C., 2012, p. 3). The ethnic makeup of this community youth sample was not representative of the ethnic makeup of Canada and Western North America (Statistics Canada, 2013), but the sample did represent public school ethnic composition in this urban setting (British Columbia Teachers’ Federation, 2012). Issues pertaining to the representativeness of Study 2’s sample are discussed in the Strengths and Limitations section.

Measures

Participants completed a battery of self-report questionnaires. Anxiety symptoms were assessed through a standardized questionnaire designed to evaluate key elements of several anxiety disorder subtypes, specifically GAD and SoP. Safety behaviour use was assessed through questionnaires designed to highlight safety behaviours believed to be associated with both of the above anxiety disorder subtypes.

Symptom measures.

Multidimensional Anxiety Scale for Children. (MASC; March, 1997; March, Parker, Sullivan, Stallings, & Conners, 1997). The MASC comprises 39 items that assess child anxiety symptoms across four major factors: physical symptoms, social anxiety, harm avoidance, and
separation anxiety. Respondents are asked to consider “how [they] have been thinking, feeling or acting recently.” They are asked to “circle the number that shows how often the statement is true of [them]”. Examples include “I worry about other people laughing at me” and “I try to do everything exactly right”. Each item is rated on 4-point Likert scales (0 = never true about me; 3 = often true about me). Strong internal consistency, $\alpha = 0.90$ was reported in a sample of 8 to 16 year olds, and evidence of convergent validity was established using a widely used measure of anxiety in children (March et al., 1997). Test-retest reliability was determined using Intraclass Correlation Coefficient (ICC) analysis at 3 weeks and 3 months. The mean ICC from time 1 to time 2 was 0.79, and from time 2 to time 3 was 0.93 (March et al., 1997). Additional studies have found satisfactory test-retest reliability and excellent stability across all factors for the MASC with adolescents ages 17 and 18 (March, Sullivan, & Parker, 1999). The MASC total score was used as a measure of overall anxiety in the current study.

**Liebowitz Social Anxiety Scale for Children and Adolescents.** (LSAS-CA; Masia-Warner et al., 2003). The LSAS-CA comprises 24 items that assess child social anxiety symptoms. Respondents are told, “this measure assesses the way that social anxiety plays a role in your life across a variety of situations.” Respondents are asked to “read each situation carefully and answer two questions about that situation”. The two questions are “how anxious or fearful [do] you feel in the situation”, and “how often [do] you avoid the situation”. Respondents are asked to focus on the last week when considering the situations. Examples include “participating in work groups in the classroom”, and “talking with other kids you don’t know well”. Each item is rated twice on 4-point Likert scales (fearful: 0 = none; 3 = severe: avoid: 0 = never; 3 = usually). Strong internal consistency, $\alpha = 0.97$ was reported in a sample of non-anxious 7 to 18 year olds,
and in a sample of 7 to 18 year olds diagnosed with SoP, $\alpha = 0.95$. Evidence of convergent validity was established using another measure of social anxiety (Masia-Warner et al., 2003).

**Penn State Worry Questionnaire for Children.** (*PSWQ-C*; Chorpita et al., 1997). The *PSWQ-C* comprises 16 items that assess worry in children. Respondents are asked to “circle the phrase that best describes how true each item is of [them]. Examples include “many things make me worry” and “once I start worrying I can’t stop”. Each item is rated according to four options (*never true, rarely true, often true*, and *always true*). Good internal consistency, $\alpha = 0.89$ was reported in a community sample of students ages 6 to 18. Evidence of convergent validity was established using a subscale of worry from a measure of child anxiety. Using a clinical sample of children ages 7 to 17.5, the *PSWQ-C* was found to differentiate individuals diagnosed with GAD from those diagnosed with other anxiety disorders. Test-retest reliability was determined with the clinical sample, $r = 0.92$ over a one week span (Chorpita et al., 1997).

**Intolerance of Uncertainty Scale for Children.** (*IUS-C*; Comer et al., 2009). The *IUS-C* comprises 27 items that assess the belief that uncertainty is unacceptable. Respondents are asked “how well do these statements describe you?” Examples include “surprise events upset me greatly” and “it’s not fair that we can’t predict the future”. Each item is rated on 5-point Likert scales ($1 = \text{not at all}; 5 = \text{very much}$). Strong internal consistency was reported for a community sample of children ages 7 to 17, $\alpha = 0.91$, and for a sample of children (ages 7 to 17) diagnosed with an anxiety disorder, $\alpha = 0.94$. Evidence of convergent validity was demonstrated with a measure of reassurance-seeking and a measure of worry (Comer et al., 2009).

**Safety behaviour measures.**

Safety behaviours were assessed with the measures used in Study 1: *Social Behaviours Questionnaire (SBQ)*, and an adapted version of the *Generalized Safety Behaviour Scale (GSBS)*.
The GSBS was originally developed for use with adults. To assess the measure’s performance with a youth sample, the existing 15 items were slightly modified, or contextualized as Lounsbury’s model suggests (Lounsbury et al., 2006), to match academic interests (youth sample) rather than vocational interests (adult sample). The youth sample’s unique developmental needs and experiences were considered, and attention was given to language and relevant context (e.g., school setting versus work environment). Six of the 15 items were slightly altered. Scale development researchers recommend the use of a focus group to assess the viability of a modified scale (DeVellis, 2003; Krueger & Casey, 2000). Therefore, a focus group was convened consisting of 14 students in a Grade 11 classroom in western Canada to assess the modified GSBS. Participants individually completed the GSBS and were given time to write comments or questions in the margins of the measure. A subsequent group discussion allowed the session facilitator (classroom teacher) to identify common concerns and questions. The focus group feedback was used to finalize the 15 items of the adapted GSBS.

**Procedure**

All high schools in a large, ethnically and economically diverse urban school district were mailed an invitation to participate in the study. Schools were selected to ensure representation of both high and low SES environments. The primary investigator and a co-investigator met with the principals/counselors of the selected schools and discussed the study. The primary investigator scheduled time with the appropriate classroom teachers, and spoke briefly with the students before their class began. After speaking with the class, the primary investigator distributed parental consent forms and student assent forms, and informed them that the study would take place in two weeks’ time. Only those students with a signed parental consent form and a signed student assent form were eligible to participate in the study. During a designated
day, participants completed study measures in a classroom in their school specifically identified for the study. All participants completed the assessments within approximately 20 to 30 minutes, and were supervised by the investigator. To encourage participation in the study, all participants at each school were entered into a draw for a $20 gift certificate, and each school was offered the opportunity to receive a free informational parent education session, provided by the primary investigator, on the specific topic of childhood/youth anxiety.

Analysis: Study 2

Psychometric Analysis of the GSBS

The 15-item GSBS and the SBQ were administered to and returned by 175 participants. All GSBS data were used. One participant did not complete one-half of the SBQ, resulting in no total score for that participant (174 SBQ responses total). The 15 items of the GSBS were subjected to exploratory factor analysis (EFA) using SPSS Version 22. As no research has examined GAD-associated safety behaviour use by youth, no a priori model was specified. EFA allowed for the examination of the underlying factor structure of the GSBS in the youth sample in the absence of an a priori model (Fabrigar et al., 1999). Maximum Likelihood extraction and Direct Oblimin (oblique) rotation were selected given the expected correlation between any identified factors (Costello & Osborne, 2005). Prior to performing EFA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed that the majority of items correlated (\( r \geq 0.30 \)) with at least one other item (see Table 11). The Kaiser-Meyer-Oklin value of sampling adequacy was 0.81, exceeding the recommended value of 0.6 (Kaiser, 1970). Bartlett’s Test of Sphericity (Bartlett, 1954) reached statistical significance, \( \chi^2(105) = 617.02, p < 0.001 \), supporting the factorability of the correlation matrix. Lastly, the diagonals of the anti-image correlation matrix exceeded 0.50, indicating sampling adequacy for each variable (Field, 2005).
Table 11

*Intercorrelations for GSBS Items in Community Youth Sample*

<table>
<thead>
<tr>
<th>Items</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>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>0.21**</td>
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<td></td>
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<tr>
<td>3</td>
<td>0.18*</td>
<td>0.25**</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>0.01</td>
<td>0.22**</td>
<td>0.24**</td>
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<tr>
<td>5</td>
<td>0.12</td>
<td>0.25**</td>
<td>0.18*</td>
<td>0.33**</td>
<td>---</td>
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<tr>
<td>6</td>
<td>0.20*</td>
<td>0.25**</td>
<td>0.07</td>
<td>0.13</td>
<td>0.17*</td>
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<tr>
<td>7</td>
<td>0.32**</td>
<td>0.19*</td>
<td>0.16*</td>
<td>0.08</td>
<td>0.14</td>
<td>0.20**</td>
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<tr>
<td>8</td>
<td>0.36**</td>
<td>0.25**</td>
<td>0.40**</td>
<td>0.16*</td>
<td>0.16*</td>
<td>0.12</td>
<td>0.31**</td>
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<tr>
<td>9</td>
<td>0.21**</td>
<td>0.23**</td>
<td>0.46**</td>
<td>0.06</td>
<td>0.10</td>
<td>-0.02</td>
<td>0.18*</td>
<td>0.29**</td>
<td>---</td>
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<tr>
<td>10</td>
<td>-0.04</td>
<td>0.18*</td>
<td>0.37**</td>
<td>0.31**</td>
<td>0.12</td>
<td>-0.01</td>
<td>0.01</td>
<td>0.28**</td>
<td>0.24**</td>
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<tr>
<td>11</td>
<td>0.19*</td>
<td>0.23**</td>
<td>0.27**</td>
<td>0.04</td>
<td>0.23**</td>
<td>0.16*</td>
<td>0.22**</td>
<td>0.26**</td>
<td>0.34**</td>
<td>0.27**</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>12</td>
<td>0.32**</td>
<td>0.21**</td>
<td>0.45**</td>
<td>0.22**</td>
<td>0.14</td>
<td>0.16*</td>
<td>0.23**</td>
<td>0.59**</td>
<td>0.40**</td>
<td>0.36**</td>
<td>0.42**</td>
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<tr>
<td>13</td>
<td>0.24**</td>
<td>0.39**</td>
<td>0.31**</td>
<td>0.22**</td>
<td>0.20*</td>
<td>0.25**</td>
<td>0.36**</td>
<td>0.48**</td>
<td>0.22**</td>
<td>0.18*</td>
<td>0.37**</td>
<td>0.49**</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>0.17*</td>
<td>0.32**</td>
<td>0.36**</td>
<td>0.22**</td>
<td>0.31**</td>
<td>0.19*</td>
<td>0.20**</td>
<td>0.29**</td>
<td>0.16*</td>
<td>0.32**</td>
<td>0.19*</td>
<td>0.27**</td>
<td>0.28**</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>0.05</td>
<td>0.06</td>
<td>0.16*</td>
<td>0.02</td>
<td>0.23**</td>
<td>0.14</td>
<td>0.10</td>
<td>0.18*</td>
<td>0.22**</td>
<td>0.14</td>
<td>0.31**</td>
<td>0.28**</td>
<td>0.18*</td>
<td>0.28**</td>
<td>---</td>
</tr>
</tbody>
</table>

*Note.* *p* < 0.05; **p* < 0.01
Factor analysis suggested the presence of four factors with Eigenvalues exceeding 1 (4.32, 1.44, 1.38, 1.12), explaining 28.8%, 9.6%, 9.2% and 7.4% of the variance of the GSBS respectively. An inspection of the screeplot suggested a break after the third factor. A three-factor solution was further supported by the results of Parallel Analysis (Horn, 1965), which showed three significant factors with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (15 variables x 175 respondents). The three-factor solution explained a total of 47.6% of the variance of the GSBS items. Twelve items loaded onto one of the three identified factors with most displaying moderate to strong loadings (Tabachnick & Fidell, 2011). Two cross-loading items (6, and 10) were identified (i.e., items that load at 0.35 or higher on two or more factors). One item (item 15) did not load on any of the three identified factors. An examination of the response distributions for items 6 (“over-prepare for school/work tasks”) and 15 (“repeatedly contact/text loved ones to make sure they are ok”) revealed significantly positively skewed distributions. These results may indicate that youth in this sample do not engage in these specific safety behaviours, that the items were poorly worded, or the items were not representative of the specific safety behaviour. The response distribution for item 10 (“put off unpleasant decisions or tasks”) was similar to the leptokurtic distribution identified in Study 1 for this item. This response pattern indicated that most youth in the sample endorsed “sometimes” putting off unpleasant decisions or tasks. This pattern of endorsement for this item may indicate that delaying unpleasant decisions or tasks is a common behaviour engaged in by many youth. These three items were removed from the pool of items as is suggested practice when conducting EFA (Matsunga, 2010). This pool of 12 items was subjected to EFA using Maximum Likelihood extraction and Direct Oblimin (oblique) rotation. Factor analysis suggested the presence of three factors with Eigenvalues exceeding 1 (3.92, 1.34, 1.07),
explaining 32.67%, 11.12%, and 8.9% of the variance of the GSBS respectively. An inspection of the screeplot suggested a break after the second factor. A two-factor solution was further supported by the results of Parallel Analysis (Horn, 1965), which showed two significant factors with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (12 variables x 175 respondents). The two-factor solution explained a total of 43.80% of the variance of the GSBS items. All 12 items loaded onto one of the two identified factors. No cross-loading items were identified. The internal consistency of the GSBS was not changed by the deletion of the three items ($\alpha = 0.81$). Items displayed low to moderate extracted communalities (see Table 12), indicating a need for additional item development (Costello & Osborne, 2005). The two identified factors were similar to the two-factor solution identified in Study 1. Eight items displayed moderate loadings on Factor 1 (range: 0.33 to 0.88), and demonstrated good internal consistency ($\alpha = 0.80$). Factor 1 items included reassurance-seeking and list-making behaviours, and similar to Study 1, can be labelled “Intolerance of Uncertainty when Making Decisions and Completing Tasks”. Four items displayed moderate loadings on Factor 2 (range: 0.45 to 0.61); however, Factor 2 demonstrated low internal consistency ($\alpha = 0.61$). The low internal consistency may be due, in part, to the small number of items that loaded onto Factor 2. Additional item development is needed to determine if the items in Factor 2 represent a unified factor. Similar to Study 1, Factor 2 items included avoidance behaviours and behaviours that involved taking on too much of a task or responsibility. Factor 2 can be labelled “Avoidance and Over-involvement”. The intercorrelation between Factor 1 and 2 was $r = 0.54$. Means, standard deviations, and alphas for the GSBS and its subscales are presented in Table 13.
The 12-GSBS demonstrated good internal consistency ($\alpha = 0.81$) in this sample of 175 respondents. The measure demonstrated construct validity through convergence with the Intolerance of Uncertainly Scale (IUS-C, $r = 0.45, p < 0.001$), and the Penn State Worry Questionnaire (PSWQ-C, $r = 0.37, p < 0.001$). The 12-GSBS was also correlated with a standardized measure of social anxiety symptoms, the Liebowitz Social Anxiety Scale for Children and Adolescents (LSAS-CA, $r = 0.45, p < 0.001$).
Table 12

*Factor Loadings and Commonalities for GSBS (12 item) in Community Youth Sample*

<table>
<thead>
<tr>
<th>GSBS Items</th>
<th>Factor Loadings</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Seek reassurance from many people for small decisions or problems.</td>
<td>0.88</td>
<td>0.65</td>
</tr>
<tr>
<td>8. Ask several of your friends for their opinions when you are making minor decisions.</td>
<td>0.74</td>
<td>0.51</td>
</tr>
<tr>
<td>13. Create mental checklists before doing everyday tasks.</td>
<td>0.54</td>
<td>0.42</td>
</tr>
<tr>
<td>9. Avoid doing new or spontaneous things.</td>
<td>0.52</td>
<td>0.25</td>
</tr>
<tr>
<td>3. Try to avoid making decisions.</td>
<td>0.50</td>
<td>0.34</td>
</tr>
<tr>
<td>11. Have a very predictable routine for everyday activities.</td>
<td>0.46</td>
<td>0.25</td>
</tr>
<tr>
<td>1. Do too much research before making minor decisions.</td>
<td>0.43</td>
<td>0.18</td>
</tr>
<tr>
<td>7. Make extensive lists for everyday tasks.</td>
<td>0.33</td>
<td>0.17</td>
</tr>
<tr>
<td>5. Take too much responsibility for loved ones’ activities.</td>
<td>-0.08</td>
<td>0.33</td>
</tr>
<tr>
<td>14. After researching many options, make an impulsive decision at the last minute.</td>
<td>0.15 0.48</td>
<td>0.33</td>
</tr>
<tr>
<td>2. Try to do everything yourself.</td>
<td>0.14 0.46</td>
<td>0.30</td>
</tr>
<tr>
<td>4. Avoid thinking about your concerns by keeping yourself busy.</td>
<td>0.01 0.45</td>
<td>0.21</td>
</tr>
</tbody>
</table>

*Note. GSBS = Generalized Safety Behaviour Scale.*
Table 13

Means, Standard Deviations (SD), and Cronbach’s Alpha Values for the GSBS (12 item) and its Subscales in the Community Youth Sample

<table>
<thead>
<tr>
<th>Scale</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intolerance of Uncertainty when Making Decisions and Completing Tasks</td>
<td>175</td>
<td>18.76</td>
<td>6.56</td>
<td>0.80</td>
</tr>
<tr>
<td>Avoidance and Over-involvement</td>
<td>175</td>
<td>10.01</td>
<td>3.42</td>
<td>0.61</td>
</tr>
<tr>
<td>Total</td>
<td>175</td>
<td>28.77</td>
<td>8.66</td>
<td>0.81</td>
</tr>
</tbody>
</table>

Safety Behaviour Analysis

Of the demographic information collected (i.e., gender, age, school, ethnicity, grade, and language spoken at home), none of the variables significantly influenced responding on the 12-GSBS (see Table 14). Despite the sample being heavily populated with students from Asian backgrounds, scores on the 12-GSBS did not significantly differ by ethnicity, $F(2,172) = 0.45, p > 0.05$. The magnitude of the differences in the means for Asians versus Caucasians (mean difference = 1.37, 95% CI: -2.00 to 4.75) was small according to Cohen’s d ($d = 0.14$).

The main analysis of Study 2 was conducted to test the hypothesis that youth with elevated levels of anxiety symptoms would endorse more frequent use of safety behaviours than would individuals with low levels of anxiety symptoms. Two linear regressions were conducted to assess the ability of a measure of overall anxiety symptoms ($MASC$; total score) to predict frequency of safety behaviour use ($12$-GSBS and $SBQ$). Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, collinearity or homoscedasticity. No univariate outliers (greater than 3 standard deviations) were identified. Of the demographic information collected (i.e., age, ethnicity, language at home, gender, grade, and school), none of
the variables were significant in the model and therefore no demographic variables were included in the main analyses. Socially desirable responding was assessed using the MASC’s Inconsistency Index. Index scores greater than or equal to 10 are considered problematic and possibly indicative of socially desirable responding. No issues were identified in the current sample. The MASC total score was used as an overall measure of anxiety as it includes items that assess key elements of anxiety such as physical symptoms, panic, social concerns, and worry. Table 15 presents the Pearson intercorrelation co-efficients between Study 2 measures, and Table 16 presents the means, standard deviations, and Cronbach’s alpha values for the measures in Study 2.
Table 14

*Means and Standard Deviations for Categorical Demographic Variables on the GSBS (12 item) in Community Youth Sample*

<table>
<thead>
<tr>
<th>Demographics</th>
<th>12-GSBS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Size (N)</td>
<td>175</td>
<td></td>
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</tr>
<tr>
<td>12-GSBS Total Score</td>
<td>28.77 (8.66)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>27.67 (8.96)</td>
<td>$F(1,173) = 1.08$</td>
<td>$p &gt; 0.05$</td>
</tr>
<tr>
<td>Female</td>
<td>29.19 (8.53)</td>
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<tr>
<td>School</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>High School #1</td>
<td>28.72 (8.91)</td>
<td>$F(2,172) = 0.68$</td>
<td>$p &gt; 0.05$</td>
</tr>
<tr>
<td>High School #2</td>
<td>27.91 (9.20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School #3</td>
<td>30.44 (6.35)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>27.96 (8.08)</td>
<td>$F(2,172) = 0.39$</td>
<td>$p &gt; 0.05$</td>
</tr>
<tr>
<td>Asian</td>
<td>29.23 (8.55)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>28.26 (8.66)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 11</td>
<td>29.12 (8.50)</td>
<td>$F(1,173) = 0.59$</td>
<td>$p &gt; 0.05$</td>
</tr>
<tr>
<td>Grade 12</td>
<td>28.05 (9.00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language at Home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>27.84 (8.53)</td>
<td>$F(2,172) = 1.20$</td>
<td>$p &gt; 0.05$</td>
</tr>
<tr>
<td>Chinese</td>
<td>30.07 (8.24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>28.92 (10.00)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Standard deviations are in parentheses. 12-GSBS = 12-item *Generalized Safety Behaviour Scale.*
Table 15

*Pearson Correlation Values for Study 2 Measures*

<table>
<thead>
<tr>
<th></th>
<th>MASC</th>
<th>12-GSBS</th>
<th>SBQ</th>
<th>IUS-C</th>
<th>PSWQ-C</th>
<th>LSAS-CA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MASC</strong></td>
<td>1</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>12-GSBS</strong></td>
<td>0.49**</td>
<td>1</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>SBQ</strong></td>
<td>0.55**</td>
<td>0.52**</td>
<td>1</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>IUS-C</strong></td>
<td>0.63**</td>
<td>0.45**</td>
<td>0.49**</td>
<td>1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>PSWQ-C</strong></td>
<td>0.57**</td>
<td>0.37**</td>
<td>0.30**</td>
<td>0.62**</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td><strong>LSAS-CA</strong></td>
<td>0.67**</td>
<td>0.45**</td>
<td>0.62**</td>
<td>0.60**</td>
<td>0.44**</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note. MASC = Multidimensional Anxiety Scale or Children; 12-GSBS = 12-item Generalized Safety Behaviour Scale; SBQ = Social Behaviors Scale; IUS-C = Intolerance of Uncertainty Scale for Children; PSWQ-C = Penn State Worry Questionnaire for Children; LSAS-CA = Liebowitz Social Anxiety Scale for Children and Adolescents.*
Table 16

Means, Standard Deviations, and Cronbach’s Alpha Values for Study 2 Measures

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>MASC</td>
<td>175</td>
<td>54.49</td>
<td>10.34</td>
<td>0.91</td>
</tr>
<tr>
<td>12-GSBS</td>
<td>175</td>
<td>28.77</td>
<td>8.66</td>
<td>0.81</td>
</tr>
<tr>
<td>SBQ</td>
<td>174</td>
<td>24.34</td>
<td>10.89</td>
<td>0.87</td>
</tr>
<tr>
<td>IUS-C</td>
<td>175</td>
<td>68.88</td>
<td>18.22</td>
<td>0.93</td>
</tr>
<tr>
<td>PSWQ-C</td>
<td>174</td>
<td>28.30</td>
<td>9.01</td>
<td>0.92</td>
</tr>
<tr>
<td>LSAS-CA</td>
<td>175</td>
<td>49.94</td>
<td>22.83</td>
<td>0.94</td>
</tr>
</tbody>
</table>

Note. MASC = Multidimensional Anxiety Scale or Children; 12-GSBS = 12-item Generalized Safety Behaviour Scale; SBQ = Social Behaviors Scale; IUS-C = Intolerance of Uncertainty Scale for Children; PSWQ-C = Penn State Worry Questionnaire for Children; LSAS-CA = Liebowitz Social Anxiety Scale for Children and Adolescents.

The first regression analysis was conducted with the 12-item GSBS. The first linear regression revealed that MASC scores, or overall anxiety symptoms, explained a significant amount of variance ($R^2 = 0.24$) in GAD-associated safety behaviour use (12-item GSBS), $F(1, 173) = 54.22, p < 0.001$. The second linear regression revealed that MASC scores explained a significant amount of variance ($R^2 = 0.30$) in SoP-associated safety behaviour use ($SBQ$), $F(1, 172) = 72.88, p < 0.001$.

As an extension of the regression analyses, a multivariate analysis of variance (MANOVA) was conducted to determine if participants who self-reported At-Risk or Clinically Significant levels of anxiety on the MASC engaged in more frequent safety behaviour use (12-GSBS, SBQ) than participants experiencing low or average levels of anxiety (see Table 17). The score
reported by the MASC author (March, 1997), for Clinically Significant anxiety, is $T = 65$. At-Risk levels of anxiety on the MASC total score are identified as scores at or above $T = 50$ (March, 1997). In the current sample, 19% of participants self-reported anxiety levels in the Clinically Significant range. When including participants who reported At-Risk levels of anxiety, the percentage of the sample with elevated self-report anxiety rose to 68% of the total sample ($N = 175$). Other researchers have reported that their community sample of youth scored higher than the original MASC standardization sample (Baldwin & Dadds, 2007) indicating that percentage of At-Risk and Clinically Significant participants is not unusual in community samples. However, it is possible that the youth in Study 2 were more anxious than expected for various reasons. Further discussion of this issue is presented in the Discussion section of Study 2 and in the discussion presented in Chapter 4 of this research study. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with no violations identified. Chi-square tests of independence were conducted to determine whether ethnicity, gender, or SES varied in proportion across the At-Risk/Clinically Significant group and the low/average group. No significant association was found between ethnicity and clinical grouping, $\chi^2 (2, n = 175) = 0.71, p > 0.05$, between gender and clinical grouping, $\chi^2 (1, n = 175) = 0.94, p > 0.05$, or between SES and clinical grouping, $\chi^2 (1, n = 175) = 0.56, p > 0.05$. A one-way ANOVA revealed that there were no significant differences between the clinical groups in terms of age, $F(1, 173) = 0.54, p > 0.05$. There was a statistically significant difference between the At-Risk/Clinically Significant group and the low/average anxiety group on the combined dependent variables (12-item GSBS and SBQ), $F(2, 171) = 22.22, p < 0.001$; Pillai’s Trace = 0.21. The effect size for this difference ($\eta^2 = 0.21$) was large (Cohen, 1988). This result indicates
that participants with At-Risk and Clinically Significant levels of self-reported anxiety engage in more frequent use of GAD and SoP associated safety behaviours than those with low and average levels of anxiety. These analyses suggest that the 12-GSBS and the SBQ are useful tools to distinguish youth with high self-reported anxiety from those with low to average anxiety.

Table 17

*Group Differences Between Low/Average and Clinical/At-Risk on Safety Behaviour Use (12-GSBS and SBQ)*

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Square</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-GSBS</td>
<td></td>
<td>df(1,172)</td>
<td>= 21.02</td>
<td>&lt; 0.001</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>Low/Avg. Anxiety</td>
<td></td>
<td>df(1,172)</td>
<td>= 21.02</td>
<td></td>
<td>24.66</td>
<td>55</td>
</tr>
<tr>
<td>Clinical/At-Risk</td>
<td></td>
<td>df(1,172)</td>
<td>= 21.02</td>
<td></td>
<td>30.77</td>
<td>119</td>
</tr>
<tr>
<td>SBQ</td>
<td></td>
<td>df(1,172)</td>
<td>= 40.81</td>
<td>&lt; 0.001</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>Low/Avg. Anxiety</td>
<td></td>
<td>df(1,172)</td>
<td>= 40.81</td>
<td></td>
<td>17.35</td>
<td>55</td>
</tr>
<tr>
<td>Clinical/At-Risk</td>
<td></td>
<td>df(1,172)</td>
<td>= 40.81</td>
<td></td>
<td>27.57</td>
<td>119</td>
</tr>
</tbody>
</table>

*Note. 12-GSBS = 12-item Generalized Safety Behaviour Scale; SBQ = Social Behaviours*

Discussion: Study 2

Two research questions were addressed by Study 2: a) What are the psychometric properties of the newly developed *Generalized Safety Behaviour Scale (GSBS)* in a community sample of youth? b) Do youth with high levels of anxiety symptoms engage in more frequent use of safety behaviours than youth with low levels of anxiety symptoms?

The results of Study 2 found no significant response differences for ethnicity, gender, grade level, age, language spoken at home, or school site on the two safety behaviour measures.
These analyses, which had not been reported in previous safety behaviour research, indicated that the assessed diversity variables did not affect safety behaviour use within this sample. These results are in contrast to the result in Study 1 that found a significant mean difference between adults (Caucasian group versus “other” group) with GAD regarding their responses on the GSBS. The “other” groups in Study 1 (n = 11) and Study 2 (n = 23) were both small and consisted of individuals from a number of different ethnicities (e.g., Indo-Canadian, Hispanic, First Nations). These issues make it difficult to provide a meaningful interpretation of the difference in findings between Study 1 and 2. However, these inconsistencies indicate the need for more focused research exploring cross-cultural variables and how they relate to safety behaviour use in different age groups.

This research provided psychometric information for the first GAD-associated safety behaviour measure validated in a community youth sample. As in Study 1, the GSBS demonstrated good internal consistency. A two-factor solution explained 43.80% of the variance in GSBS responses, which was similar to the two-factor solution identified in Study 1. As with Study 1, the calculation of subscales in Study 2 contributed to Dugas’ conceptual model of GAD by describing how the behaviours described in his research co-vary. Study 2 further contributed to this model of GAD by determining that anxious youth (ages 16 to 18) also engage in these behaviours. Future measure development and analysis is needed to determine whether a two-factor structure is reliable. The GSBS converged with a measure of intolerance of uncertainty and a measure of worry.

The results of this study showed that youth with higher levels of anxiety, as measured by the Multidimensional Anxiety Scale for Children (MASC), engaged in more frequent use of both GAD-associated safety behaviours and SoP-associated safety behaviours than did youth with
lower levels of anxiety. An additional analysis using the MASC determined that youth who rated themselves as experiencing at-risk or clinical levels of anxiety, or 68% of the sample, engaged in more frequent safety behaviour use (both GAD and SoP-associated safety behaviours) than those who rated themselves as experiencing low to average anxiety. Although other researchers have reported higher participant anxiety ratings than the original MASC standardization sample, the youth in Study 2 may have been more anxious than average. For example, anxious youth may have self-selected to participate in Study 2 once they understood that the research focused on anxiety. Additionally, data collection was completed near the end of the school year when many participants were preparing to take exams and transition to university, which may have elevated their anxiety level. This research contributes important preliminary information regarding safety behaviour use by youth. These results are consistent with the few studies that examine safety behaviour use in youth (Hedtke, et al., 2009; Hodson et al., 2008; Kley et al., 2012; Thomas et al., 2012), and suggest that youth, similar to adults, engage in safety behaviours when they experience anxiety. Additional research is needed to examine specific relationships between anxiety symptom measures and specific safety behaviours in an adolescent sample.

Summary of Chapter 3

Study 1 of the current research project provided psychometric data for the GSBS. To further assess construct validity, Study 1 examined whether adults diagnosed with GAD endorsed more frequent use of GAD-associated safety behaviours than adults with SoP and a control group of non-anxious adults.

A sample ($N = 108$) of treatment-seeking adults with GAD ($n = 36$), SoP ($n = 34$), and a sample of adults without anxiety ($n = 38$) was recruited. The Anxiety Disorders Interview Schedule Adult Version, Fourth Edition (ADIS-IV; Brown et al., 1994) was administered by the
primary investigator or a trained graduate level research assistant to determine primary anxiety diagnosis (or no anxiety diagnosis). Participants meeting criteria for a primary diagnosis of GAD or SoP or no anxiety disorder were included in the study. Self-report measures were distributed and returned by mail.

A two-factor solution explained 47.43% of the variance in GSBS responses. The two factors were labelled “Avoidance and Over-involvement” and “Tolerance of Uncertainty when Making Decisions and Completing Tasks”. Both factors demonstrated moderate internal consistency ($\alpha = 0.81$). The GSBS demonstrated strong internal consistency ($\alpha = 0.88$), and was significantly associated with a standardized measure of worry and a measure of intolerance of uncertainty. Two one-way ANOVAs were conducted to further assess construct validity of the GSBS by determining whether mean differences existed for GAD-associated safety behaviour use and SoP-associated safety behaviour use by individuals with GAD and SoP. Results provided support for construct validity as adults with GAD endorsed more frequent use of GAD-associated safety behaviours (as measured by the GSBS) than those with SoP and those with no anxiety. Effect sizes for these differences ranged from medium ($d = 0.79$) to large ($d = 1.54$). A significant mean difference regarding responses on the GSBS was found between adults in the Caucasian group and those in the “other” group. Although this difference was difficult to interpret given the small sample size of the “other” group and the heterogeneity of the cultural groups included in this group, this finding indicates that there is a need to further explore cross-cultural variables that may be related to safety behaviour use.

Study 2 of the current research project used a community sample of high school students (grades 11 and 12) to provide additional psychometric data for the GSBS, a measure of GAD-associated safety behaviours. A secondary goal of Study 2 was to determine whether individuals
with elevated levels of anxiety symptoms endorsed more frequent use of safety behaviour than do individuals with low levels of anxiety symptoms.

A sample ($N = 175$) of high school students in grades 11 and 12 was recruited from three high schools. Participants completed self-report measures during a supervised, pre-determined time within their school.

The GSBS demonstrated good internal consistency ($\alpha = 0.81$), and was significantly associated with a standardized measure of worry and a measure of intolerance of uncertainty. The measure was also significantly associated with a measure of SoP symptoms. A two-factor solution explained a total of 43.80% of the variance in GSBS responses. The two factors were labelled “Intolerance of Uncertainty when Making Decisions and Completing Tasks” and “Avoidance and Over-involvement”. The first factor demonstrated moderate internal consistency ($\alpha = 0.80$), but the second factor demonstrated poor internal consistency ($\alpha = 0.61$).

Two linear regressions were conducted to assess the ability of a measure of overall anxiety symptoms (MASC) to predict frequency of safety behaviour use (GSBS and SBQ). Analyses revealed that MASC scores predicted significant variance in both the GSBS and the SBQ. No significant differences were found regarding safety behaviour use for any of the demographic variables assessed. An additional analysis, multivariate analysis of variance (MANOVA), revealed that at-risk and clinically significant anxiety groups, as defined by MASC T-scores, endorsed more frequent use of GAD and SoP-associated safety behaviours. The majority of Study 2’s youth participants reported At-Risk to Clinically Significant levels of anxiety, as per MASC T-scores. It is possible that anxious youth were more interested in participating in this research than their less anxious counterparts, given the study’s focus on anxiety. Additionally,
participants were preparing to take exams and/or transition to university during data collection, which may have increased their anxiety.
Chapter 4

This chapter begins with an overview of the current research study. A general discussion is provided, which describes the overall significance and contribution of the research study as a whole. The theoretical, practical, and research implications of the current study are discussed. The chapter concludes with a description of the research’s strengths and limitations, including potential directions for future research given the findings.

Overview

Anxiety disorders are the most common mental health disorder in adults, youth, and children (Merikangas et al., 2010). Untreated anxiety disorders significantly interfere with school achievement, relationship development, employment and overall quality of life (Kessler, Chiu et al., 2005). Safety behaviour use has been found to contribute to the maintenance of anxiety. Several adult-focused Cognitive Behaviour Therapy (CBT) programs include a safety behaviour-reduction component as safety behaviour reduction has been found to enhance fear reduction during exposure exercises for adults (Kamphuis & Telch, 2000). Although less research is available on use of safety behaviours by children and youth, one study found use of safety behaviours to interfere with fear reduction during exposure sessions (Hedtke et al., 2009). Identification of safety behaviours is necessary before they can be targeted for reduction during treatment. There are a limited number of standardized safety behaviour measures. Study 1 and Study 2 of the current research contributed to the development of a self-report measure of GAD-associated safety behaviours, the Generalized Safety Behaviour Scale (GSBS). Study 1 assessed the psychometric properties of this measure in a sample of treatment-seeking adults diagnosed with Generalized Anxiety Disorder (GAD). Study 2 assessed the psychometric properties of the GSBS in a community sample of youth.
Study 1 examined safety behaviour use by adults, ages 19 to 74; study 2 of this research explored the use of safety behaviours by a community sample of youth ages 16 to 18. The GSBS, a measure of GAD-associated safety behaviours, originally developed for use with adults, was adapted for a youth population using Lounsbury’s theory of scale development as a guide. A large community sample of youth allowed for the collection of sufficient data. Youth were specifically selected because they characterize an age group that is developmentally distinct from the adults in Study 1 (e.g., attending high school, dependent on parents in many ways, living at home), and may engage in different patterns or frequencies of safety behaviour use. Therefore, this age group represented the next logical step in the downward extension of the study of safety behaviours to a younger population. Both studies contribute new information regarding the use of safety behaviours by individuals with anxiety and assess the psychometric properties of a new measure of GAD-associated safety behaviours, the GSBS.

Ethnicity, gender, socioeconomic status (SES), and age are variables that may influence anxiety disorder presentation, as well as safety behaviour use. Anxiety and anxiety treatment is understood and experienced differently by individuals of diverse ethnic backgrounds (Lewis-Fernandez et al., 2010). Gender differences are often reported regarding prevalence of anxiety, with women experiencing a higher prevalence of anxiety disorders than men (Beidel & Turner, 2005; McLean et al., 2011). Low SES has been associated with a higher likelihood of developing an anxiety disorder (Last et al., 1992). SES may also influence what children fear, with low SES children fearing concrete events and high SES children fearing abstract situations (Staley & O’Donnell, 1984). Differences in fear content may affect the safety behaviours used by individuals of differing levels of SES. Safety behaviour research has been conducted more extensively on adults with anxiety (Clark & Wells, 1995; Salkovskis et al., 1999). Safety
behaviours have been shown to interfere with the processing of disconfirming information generated through exposure exercises, and therefore maintain anxiety over time (Kim, 2005; Sloan & Telch, 2002). Further discussion of these issues is provided in the General Discussion section.

**General Discussion**

A new measure of GAD-associated safety behaviours, the *GSBS*, was found to be a promising research and clinical assessment tool in both studies. Study 1 addressed the following research question: what are the psychometric properties of the *Generalized Safety Behaviour Scale (GSBS)* in a sample of adults? A sample of treatment-seeking adults (*n* = 70) diagnosed with GAD and SoP were recruited through mental health facilities in western Canada. A non-anxious sample (*n* = 38) of adults was recruited to serve as a comparison group. Study 2 addressed the following research questions: 1) What are the psychometric properties of the newly developed *Generalized Safety Behaviour Scale (GSBS)* in a community sample of youth? 2) Do youth with high levels of anxiety symptoms engage in more frequent use of safety behaviours than youth with low levels of anxiety symptoms? A large sample of grade 11 and 12 students (*N* = 175) was recruited from three high schools in a large urban school district. The results from the two studies were consistent in finding that individuals with higher anxiety symptoms engage in more frequent safety behaviour use than individuals with less anxiety. Both studies contributed new information regarding safety behaviour use by adults and youth.

The current research contributed to the further development of the *GSBS*. The measure demonstrated strong internal consistency across a clinical adult sample and a community youth sample. As expected, the measure converged with standardized measures of worry (*PSWQ; PSWQ-C*) and intolerance of uncertainty (*IUS; IUS-C*) in the clinical adult sample and the
community youth sample, respectfully. Additional psychometric research is needed to determine adequately the measure’s construct validity. Similar underlying factor structures were identified for the clinical adult sample and the community youth sample. Two-factor solutions were found in the clinical adult and the community youth sample explaining 47.43% and 43.80% of the variance in GSBS responses, respectfully. Both solutions identified similar underlying factors: “Tolerance/Intolerance of Uncertainty when Making Decisions and Completing Tasks”, and “Avoidance and Over-involvement”. In the clinical adult sample, both factors had moderate internal consistency. In the community youth sample, the first factor had moderate internal consistency, but the second factor demonstrated poor internal consistency, which indicated a need for further item development. Additional research is needed to determine the reliability of these latent factors in these populations. The identification of these subscales contributed information to Dugas’ Intolerance of Uncertainty model of GAD by describing how these behaviours hang together, or co-vary. These subscales may also provide clinicians and school personnel who use the GSBS with a simpler way to identify themes of safety behaviours engaged in by their clients or students with generalized anxiety. In addition, researcher using the GSBS will benefit from knowing the psychometric properties and underlying structure of the measure.

In Study 2, the poor internal consistency of the second factor of the GSBS indicates the need for additional item development. The current version of the GSBS may not include sufficient examples of safety behaviours engaged in by youth with high general anxiety. The use of larger, heterogeneous focus groups may help to provide a larger pool of potential GSBS items.

The current research provides psychometric information for the first GAD-associated safety behaviour measure validated in a community youth sample. Lounsbury suggests that scale refinement is an on-going process (Lounsbury et al., 2006), thus additional research is needed to
further refine and develop the items of the GSBS and assess its psychometric properties in other populations through the use of pediatric and community samples of children, for example.

It may also be useful to determine whether the GSBS is sensitive to changes in safety behaviour use during treatment. Additional research is needed to explore whether frequency of safety behaviour use is associated with anxiety disorder severity. The GSBS contributes to the available safety behaviour assessment measures, and may help expand the study of safety behaviours, especially in the area of GAD.

Overall, the GSBS appears to be a promising measure of GAD-associated safety behaviours. The measure has demonstrated adequate to strong psychometric properties when validated in an undergraduate sample (Baker et al., 2014), a clinical adult sample (Study 1), and in a community sample of youth (Study 2). Although limited research exists that explores safety behaviour use by children and youth, the concept of safety behaviours has been theoretically extended to these populations (Hodson et al., 2008; Thomas et al., 2012). As more research is conducted to explore safety behaviour use in these populations, further development and refinement of the GSBS and other measures of safety behaviour use will be needed (Lounsbury et al., 2006). Validating the GSBS in community and clinical samples of children, and further validation studies with youth and adults are necessary next steps. The current research helps meet a significant need for youth-validated measures of safety behaviours. Researchers have primarily used adult measures of safety behaviours to assess pediatric safety behaviour use (Hodson et al., 2008; Thomas et al., 2012). The GSBS may assist researchers who wish to study GAD-associated safety behaviour use in youth and adults.

The results of this research study contribute unique information to the conceptualization of GAD-associated safety behaviours. Consistent with cognitive behavioural theory that associates
specific safety behaviours with perceived feared outcomes (Clark & Wells, 1995; Kamphuis & Telch, 1998; Salkovskis et al., 1999), this research contributed construct validity information for the GSBS by determining that adults diagnosed with GAD endorsed more frequent use of GAD-associated safety behaviours than adults with SoP, and more so than non-anxious adults. This research builds on and addresses a main issue highlighted by Beedo-Baum and colleagues (2012): the need for research to determine whether GAD is associated with specific safety behaviours. These results suggest that GAD is characterized by specific safety behaviours in addition to excessive worry, and contribute to the conceptual understanding of GAD as an anxiety disorder subtype.

These findings also have treatment implications. For example, safety behaviour use may be re-evaluated at the end of treatment to determine if additional treatment is needed for a secondary anxiety disorder. Clinicians may also watch for specific safety behaviours when planning and discussing exposure exercises with their clients. Research into transdiagnostic treatment approaches indicates that tailoring a treatment approach to a specific diagnosis may not be necessary for anxiety reduction (Ellard, Fairholme, Boisseau, Farchione, & Barlow, 2010; McEvoy et al., 2009; Norton & Barrera, 2012). However, transdiagnostic approaches include exposure exercises as an integral component of treatment (Barlow et al., 2011), indicating the need for identification and reduction of safety behaviours. Therefore, measures of safety behaviour use associated with a specific feared outcome will likely support and improve the effectiveness of exposure sessions within anxiety disorder specific treatments and transdiagnostic treatment models.

Less is known about safety behaviour use by children and youth. This research contributes unique information about the use of safety behaviours by youth ages 16 to 18. Individuals who
reported higher levels of overall anxiety symptoms endorsed more frequent use of both GAD and SoP-associated safety behaviours. Additionally, when split into low/moderate and at-risk/clinical groups, individuals who rated themselves as experiencing at-risk to clinically significant levels of anxiety endorsed more frequent use of safety behaviours than those rating themselves as low to moderately anxious. Consistent with the few studies that have examined safety behaviour use by children and youth, this research suggests that similar to adults with anxiety, youth engage in safety behaviours when trying to avoid a perceived feared outcome (Hedtke et al., 2009; Hodson et al., 2008; Kley et al., 2012; Thomas et al., 2012).

Both Study 1 and 2 investigated GAD- and SoP-associated safety behaviour use in relationship to other variables of influence in anxiety acquisition: ethnicity, gender, SES, and age. Although anxiety is manifest across ethnicities (Lewis-Fernandez et al., 2010), less is known about the safety behaviour use of individuals of diverse ethnic backgrounds. Given that individuals from different ethnicities may experience anxiety in unique ways, they may also engage in differing patterns and types of safety behaviours. For example, Asian Americans tend to report feeling dizzy when anxious (Park & Hinton, 2002). As a result of this anxiety symptom, they may report more frequent use of safety behaviours such as holding onto a stationary object, sitting down, or closing their eyes when feeling anxious than would a person of European American descent who is less likely to report this symptom. In the current study, few significant differences were identified regarding safety behaviour use among the assessed ethnic groups. In Study 1, Caucasian participants with GAD obtained the highest mean score on the GSBS. Asian participants with GAD obtained the second highest mean score and participants in the “other” ethnic group obtained the lowest mean score on the GSBS. A significant mean difference was identified between the Caucasian group and the “other” ethnicity group on the GSBS. Limited
conclusions can be drawn from this finding given the diverse ethnicities and small number of participants included in the “other” category. However, this finding may signal the need for additional research exploring safety behaviour use by individuals of varying ethnic backgrounds.

In Study 2, no significant differences were found for any demographic variables including ethnicity. In both studies the “other” group was small and consisted of varying ethnic groups (e.g., Indo-Canadian, Hispanic, First Nations). Additional research is needed to explore safety behaviour use by individuals cross-culturally and of different ages. Regarding gender, differences in anxiety disorder prevalence are often reported in the anxiety disorder literature, with women experiencing higher anxiety disorder prevalence than men (Beidel & Turner, 2005; McLean et al., 2011); however, there is a lack of research examining whether men and women differ in their use of safety behaviours. In the current study, no significant differences were found regarding safety behaviour use by gender in the adult or youth studies. Additionally research has indicated that individuals from low-SES backgrounds are more likely to develop an anxiety disorder than those from high-SES backgrounds (Last et al., 1992), and level of SES may influence an individual’s target of worry (Staley & O’Donnell, 1984). For example, an individual from a low-SES background may be worried about physical health (Denney, Krueger, & Pampel, 2014) or financial issues (Santiago, Wadsworth, & Stump, 2011), whereas an individual from a high-SES background may be worried about educational attainment or job advancement. Research is needed to explore whether these differing worry targets result in differences in safety behaviour use. In the current study, no significant differences were found regarding safety behaviour use by SES in the adult or youth studies.

This study’s findings contribute to the small number of studies examining safety behaviour use by youth. Overall, this study’s results are generally consistent with previous studies of adult
safety behaviour use, which found no significant difference for safety behaviour use across gender or ethnic groups (Powers et al., 2004; Sloan & Telch, 2000). Regarding youth-focused safety behaviour research, this research was the first to report the ethnic and SES composition of the sample, and explicitly reported that these variables did not influence safety behaviour use. Given the preliminary nature of the exploration of diversity and safety behaviour use, the discussion of diversity variables within this study considered each variable (i.e., ethnicity, gender, SES, and age) and its link to safety behaviour use individually. However, these variables have been shown to be linked in complex, dynamic ways that makes it difficult to consider one variable in isolation (Anderson, Bulatao, & Cohen, 2004). Future research is needed to explore the interplay of these diversity variables as they relate to safety behaviour use.

The results of this research suggest that researchers and clinicians may want to consider including specific safety behaviour reduction modules in youth-focused CBT programs. This additional research may help inform the development of youth-focused CBT programs. Future research will need to continue to expand this focus to include additional anxiety disorders in order to inform theoretical cognitive-behaviour anxiety models for children and youth and subsequent treatment development.

The results of the current study have school-based implications. As students spend a good deal of time at school, teachers have the opportunity to observe students over time. Research has indicated that teachers are able to recognize anxiety in some students (Cunningham & Suldo, 2014). Many educators feel unprepared and hesitant to refer these students to mental health services, potentially because of a lack of mental health training (Trudgen & Lawn, 2011). Informing teachers, through consultation with a school psychologist, about safety behaviours may provide these professionals with more objective criteria to identify anxious students.
Measures such as the GSBS may provide teachers and school-based mental health professionals with a quick, low cost list of these behaviours that are associated with higher levels of anxiety during consultation to discuss potentially at-risk students. This process may reduce unnecessary referrals and improve the identification of over-looked students (e.g., anxious girls), by focusing on observable behaviours (e.g., reassurance-seeking) instead of a lack of behaviour (e.g., quiet, withdrawn). This process may also shorten the delay between the identification and treatment of students.

**Strengths and Limitations of the Research**

A strength of Study 1 was the inclusion of a non-anxious comparison group of adults, allowing for a more detailed analysis of safety behaviour use in people diagnosed with GAD. Both studies extended the original psychometric development of the GSBS, which was validated on an undergraduate sample. This cross-sample validation to a clinical adult sample and a community youth sample allows the GSBS to contribute to anxiety research in these populations. Consistent with contemporary scale development procedures, both studies involved the use of a focus group to assist in the item development of the GSBS (DeVellis, 2011; Krueger & Casey, 2000). By using research and professional experience as well as focus group input, the GSBS items are more likely to reflect a variety of relevant safety behaviours in these adult and youth populations (DeVellis, 2011; Loesch & Vacc, 1993; Lounsbury et al., 2006; Nassar-McMillan & Borders, 2002).

Inter-rater reliability checks were conducted for the majority of participants in the GAD group via paper/pencil agreement in Study 1. Audio recordings are a preferred way to conduct inter-rater reliabilities, but given several technical issues with computer files, this option was not available in this study. I conducted nearly half of the ADIS-IV interviews of Study 1. Although I
received extensive training and supervision on proper ADIS-IV use, and had experience diagnosing anxiety disorders, my involvement as an author may have introduced bias into my diagnoses. Attempts to reduce this potential bias involved inter-rater reliability checks for 20% of the SoP diagnoses, 25% of the GAD diagnoses, and reviews of completed interview protocols for GAD diagnoses and non-anxious classifications by a registered psychologist.

All data collected for both studies were in the format of self-report measures. Self-report measures limit the type of information reported to that which the participant is aware of and willing to record. A multi-method approach involving interviews, self-report measures, observations and other behavioural measures may allow a more complete assessment of safety behaviour use. Further, Study 1 questionnaires were sent and received via mail, thus limiting the conclusions regarding independence of measure completion. Study 2 included a large, ethnically diverse sample. However, the majority (61%) of the sample for Study 2 identified as Asian, and 48% of the sample endorsed a language other than English was the primary language spoken in the family home. All participants, however, were fluent in speaking English. The study’s sample was representative of the public school ethnic composition in the urban setting where the study was conducted (British Columbia Teachers’ Federation, 2012). However, the sample was not representative of the ethnic makeup of Canada and Western North America (Statistics Canada, 2013). Therefore, the generalizability of the results to the greater population is limited, despite no statistical difference in safety behaviour use based on ethnic background. Researchers have examined whether first generation adult and child immigrants differ in their reports of physical and emotional well-being from those of second generation immigrants (Mendoza, Javier, & Burgos, 2007; Rumbaut, 2004). Garcia Coll discussed an “immigrant paradox” (Garcia Coll & Marks, 2011), to describe the findings that first generation immigrants exhibited better
developmental outcomes (i.e., better physical health and lower levels of risk behaviour) despite having access to fewer social and economic resources than their second generation counterparts (Bui & Thongniramol, 2005; Mendoza et al., 2007; Willgerodt & Thompson, 2005). However, little research had been done examining this paradox with adolescents and internalizing behaviour. A recent study by Katsiaficas and colleagues found that second generation immigrant adolescents (average age of 16) endorsed lower levels of internalizing symptoms than first generation immigrant adolescents which is counter to the immigrant paradox description (Katsiaficas, Suarez-Orozco, Sirin, & Gupta, 2013). The authors emphasized that many factors including family- and individual-level of acculturation may affect anxiety and general well-being. Language spoken by the individual has been used as a proxy measure of an individual’s level of acculturation (Kang, 2006), although most researchers understand that assessing acculturation is multi-dimensional, and would ideally involve an assessment of values, cultural-identity, and social behaviours (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). The participants in Study 2 were required to speak fluent English, which may be used as an indicator of acculturation. As initial research has indicated that second generation adolescents report less internalizing symptoms than first generation adolescents, in terms of Study 2, there may be less discrepancy between anxiety levels reported by native-born students and students from non-Caucasian backgrounds who speak fluent English in school.

The Multidimensional Anxiety Scale for Children (MASC), which was used as a measure of overall anxiety in Study 2, was developed as a self-report screening measure. As a screening measure, the MASC did not provide sufficient information for diagnosis of Study 2 participants. Therefore, the results of Study 2 cannot be generalized to youth with diagnosed anxiety disorders. The community sample of youth recruited for Study 2 allowed for initial research into
safety behaviour use by youth, and the further psychometric development of the GSBS. The 
GSBS was developed for use in clinics, community health centers, hospitals, and schools.
Community sampling research (Study 2) would be more consistent with the framework for an
effectiveness rather than efficacy study. Effectiveness studies are noted by use of representative
settings, decreased participant exclusion criteria (Stewart & Chambless, 2009), larger samples
(Sturm, Unutzer, & Katon, 1999), and real world settings (Garvik, Idsoe, & Bru, 2014). The 
MASC was selected as an assessment measure, similar to other effectiveness studies where
screening measures are commonly used (Compton, Nelson, & March, 2000; Miller et al., 2011)
with nonclinical populations. The ADIS-IV, a diagnostic clinical interview, is often used in
efficacy research (Bodden et al., 2008). However, as the GSBS was also developed for use in
hospital settings, additional research will be needed to examine safety behaviour use in a sample
of clinically anxious youth.

The MASC’s standardization sample was limited in representation of Asian Americans
(March, 1997). Cross-cultural research in anxiety has indicated that individuals with an Asian
background may experience and understand anxiety in unique ways from individuals from other
ethnic backgrounds (Hinton et al., 2009; Lewis-Fernandez et al., 2010). For example, Asian
American individuals tend to view mental illnesses such as anxiety disorders as controlled by
willpower (Arkoff, Thaver, & Elkind, 1966; Zheng, Siu, & Xin, 2009). As Asian individuals
were not fully represented in the MASC’s standardization sample (March, 1997), the measure
may not adequately assess the unique aspects of this ethnic group’s experience of anxiety.
However, some researchers have begun to assess the MASC’s psychometric properties in
samples of Asian students. Cross-cultural research has demonstrated that translated versions of
the MASC are appropriate for use with Taiwanese and Chinese youth, and have the same four
factor structure as that found using the original American sample (Yao et al., 2007; Yen, Yang, Wu, Hsu, & Cheng, 2010). Further, there were no differences across the identified ethnic groups in responses on the MASC for either safety behaviour measure (GSBS and SBQ). In addition, the proportion of individuals identified by the MASC as At-Risk/Clinically Significant or low/average was equivalent across the three identified ethnic groups in Study 2. These findings indicated that the identified ethnic groups in Study 2 were comparable in their responding for all independent and dependent variables included in the analyses. For both studies, only safety behaviours associated with SoP and GAD were examined. Research is needed that examines safety behaviours typically associated with other anxiety disorders. The majority of Study 2’s sample (68% of participants) endorsed At-Risk or Clinically Significant anxiety on the MASC, indicating that this sample was more anxious than would be expected for youth in this age range. Anxious students may have been more interested in participating in this study given the topic of research. In addition, recruitment occurred during the latter part of the school year when students were approaching final exams and planning to graduate high school. The anxious nature of this sample may limit the generalizability of the findings.

**Future Research Directions**

Much remains to be known about safety behaviour use by children, youth and adults. The results of this research support recent work indicating that youth engage in safety behaviours when experiencing anxiety (Hodson et al., 2008; Kley et al., 2012; Thomas et al., 2012) in similar ways to adults. This research broadened the focus of previous research by investigating safety behaviours associated with generalized anxiety and social anxiety disorders in both youth and adults. Research exploring safety behaviour use by children and youth continues to lag behind research involving adult samples. Research published up to and including 2012 indicates
a growing interest in pediatric safety behaviour use; however, the majority of studies limit their focus to SoP-associated safety behaviours (Kley et al., 2012; Thomas et al., 2012). Research is needed to explore safety behaviour use by children and youth with other anxiety disorders. This research will contribute to theoretical models of child and youth anxiety and may inform cognitive behaviour treatment for anxiety.

Researchers have begun to explore whether safety behaviour use during exposure sessions interferes with treatment outcome for children and youth (Hedtke et al., 2009). The results from this single study indicate that, similar to adult studies, use of safety behaviours by youth during exposure predicted poorer treatment outcome. Additional studies are needed to determine if systematically reducing safety behaviours facilitates fear reduction during exposure sessions for children and youth. Findings from these studies will help inform the development of child- and youth-focused CBT manualized programs for anxiety. Presently, many available treatment programs do not include a detailed safety behaviour-reduction component (Benjamin et al., 2011).

This research explored the use of safety behaviours associated with GAD in an adult and youth sample. GAD was selected as a focus of this research given the difficulties with diagnosis, shifting conceptualization of the disorder, and co-morbidity with other disorders. This research and Beedo-Baum and colleagues’ (2012) research examining the effects of safety behaviour reduction by adults with GAD highlighted the need for further research into GAD-specific safety behaviours.

Further research is needed to explicitly study safety behaviour use across ethnic groups and gender. Although not the main focus of the current study, a review of the safety behaviour literature revealed an absence of research questions addressing ethnicity or gender and safety
behaviour use. Researchers frequently report their sample’s gender composition, but only occasionally report ethnic composition. This breakdown of sample composition occurs even less often in child- and youth-focused safety behaviour research. Our increasingly socially and ethnically diverse world of research examining anxiety disorders will need to focus more attention on issues and differences of culture as they relate to safety behaviours.

Although beyond the scope of this research, the safety behaviour construct is in need of clearer conceptual boundaries. Empirical research is needed to help define the boundaries between safety behaviours and other constructs, such as adaptive coping (Thwaites & Freeston, 2005). Clearer conceptual boundaries may improve the accuracy of safety behaviour identification by researchers and clinicians. Hedtke and colleagues (2009) cited difficulties distinguishing between safety behaviours and coping strategies in their study that examined children’s use of these behaviours during exposure sessions. Further, a specific behaviour such as relaxation, can potentially serve as both a safety behaviour and a coping strategy. It is important that clinicians are able to reliably distinguish between these constructs so as not to interfere with fear reduction during exposure sessions.

Identification and measurement of safety behaviours is limited by the few available standardized self-report safety behaviour measures for both adults and youth. The majority of these measures were developed to assess SoP-associated safety behaviours (Clark et al., 1995; Cuming et al., 2009; Pinto-Gouveia et al., 2003). The GSBS demonstrated strong psychometric properties when tested using undergraduates, clinically anxious adults, and a community sample of youth, thus contributing to the limited available measures. Additional psychometric research is needed in order to improve the measure’s generalizability to different populations (Lounsbury et al., 2006). As with the GSBS revisions in Study 2, the unique developmental needs and
experiences of the target age range will need to be considered when exploring this measure’s use in different populations.

Further research is needed to determine the psychometric properties of available safety behaviour measures across a variety of community and clinical samples. Research using multi-method identification and assessment of safety behaviours could also contribute to the study of safety behaviours. Interviews and observations of participants’ use of safety behaviours have been useful (Clark, 2001; Hedtke et al., 2009), and may provide a more comprehensive assessment of safety behaviour use when supplemented with self-report measures. A multi-method assessment approach would likely help identify and assess both overt and covert safety behaviours. This approach may also help identify safety behaviours that are not readily apparent to the participant.
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