EXAMINING THE RELATIONSHIP BETWEEN ATTACHMENT STYLE AND RESILIENCE DURING ADOLESCENCE

by

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Abstract

Introduction: Although research indicates that attachment should theoretically play a critical role in determining how youth mobilize social resources in response to experiences of distress, few researchers have integrated the perspective of attachment styles in studies investigating the development and promotion of resilience in adolescents. Knowledge of the processes underlying the ways and extent to which youth seek support to cope with stressful events may be improved by examining the distribution and stability of specific attachment styles and their relationship with resilience.

Objectives: In a representative population of adolescents, the two primary objectives of this study are to: i) Quantify the distribution of attachment styles and their stability over a six (6) month period in a large sample of the general population ; and ii) Examine the relationship between attachment styles and levels of resilience.

Methods: The data (n=1038) used for this study was obtained from Waves 6 and 7 of the British Columbia Adolescent Substance Use Survey (BASUS), a prospective cohort study of youth aged 14 to 15 years enrolled in a public secondary schools across British Columbia. Measures included were the Relationship Questionnaire developed by Bartholomew and Horowitz (1991), the 14-Item Resilience Scale (RS) developed by Wagnild and Young (1993), and sociodemographic factors (e.g. gender, socioeconomic status, and ethnicity).

Results: At baseline, secure youth made up 46% of the entire Wave 6 sample (n=692). From the 818 youth with insecure attachment styles at Wave 6, forty-four percent (n=346) were fearful, 39% (n=317) were dismissing, and 19% (n=155) were preoccupied. For youth with secure attachment at Wave 6, approximately sixty percent retained the same classification in Wave 7. Findings indicate resiliency was significantly associated with attachment style (p < 0.001) with the resulting average resiliency scores: Secure (79), Fearful (69), Preoccupied (67), and Dismissing (75).

Conclusions: These findings suggest the stability of self-reported attachment style fluctuates by attachment style. In particular, secure attachment seeming relatively stable while insecure attachment styles appeared more transitory. The significant relationship with resilience provides support for the integration of attachment style into resilience-based research, intervention and prevention strategies.

Preface

This thesis is submitted for the Master of Science degree at the University of British Columbia. The research described in the following sections are based upon a *secondary analysis* utilizing Waves 6 and 7 data collected by the BC Adolescent Substance Use Survey (<u>www.basus.ca</u>), a CIHR funded study (MOP-86729). Secondary analysis that is presented within this thesis has been approved by the UBC Behavioural Research Ethics Board (#: H14-00232) and was conducted under the supervision of Dr. Chris G. Richardson in the School of Population and Public Health, University of British Columbia, between September 2012 and August 2014. The present research study is to the best of my knowledge emerging empirical work, except where acknowledgement and references are made to previous empirical research and knowledge.

Versions of Chapter 2 and Chapter 3 will be submitted for publication consideration.

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1. Chapter 1: Introduction and Background

The concepts of attachment style, which can be thought of as a person's way of engaging and communicating with others, and resilience, which can be thought of as a person's ability to overcome adverse life events, have been examined independently by many researchers interested in adolescent health. The goal of this chapter is to provide a rational for taking an intersectional approach involving the concepts of attachment style, resilience and gender when conducting research to inform intervention and prevention strategies targeting the mental health and wellbeing of youth. Theories of resilience and attachment are posited to influence the capacity for establishing interpersonal relationships thereby playing a key role in how youth overcome distress and seek help from others (Bowlby, 1969; Rutter, 2012). The chapter begins with a brief review of evidence supporting the need for research to guide interventions that address the mental health and wellbeing of youth. The remaining sections of the Chapter provide more detailed reviews of literature on key developmental experiences associated with adolescence, the theory of attachment, and the theory of resilience. The last section of this Chapter summarizes the rationale for linking attachment style and resilience when attempting to promote the mental health and wellbeing of youth and outlines the primary research objectives for this thesis.

The World Health Organization (2014) defines health as "a state of complete physical, mental and social well-being, and not merely the absence of disease." This definition implies that the promotion of mental health should include efforts to promote positive mental health and social wellbeing as well as provide treatment for specific mental illnesses (WHO, 2014). This broadening of the conceptualization of health has been accompanied by an increased interest in considering the full range of mental health and wellbeing in mental health policy and practice guidelines.

Research on the determinants of adolescent mental health has shifted from a predominantly individual perspective focused on identifying risk factors for mental illness to a more holistic developmental approach that includes consideration of the positive domains of mental health and wellbeing and the role of communities in efforts to promote mental wellness and prevent mental illness (Brendtro, Brokenleg, & Van Bockern, 2005; Rutter, 2012; WHO, 2010). Typically, efforts focused on preventing mental illness can be classified into one of three levels: primary, secondary and tertiary prevention (WHO, 2014). The levels of prevention reflect the stage of the mental health condition that is being targeted. For instance, primary prevention aims to prevent mental illnesses from occurring whereas the aim of secondary prevention is to identify and treat mental illnesses early in the course of disease (WHO, 2014). Lastly, the goal of tertiary prevention is to develop treatments for individuals with a diagnosed mental illness that minimizes the impact of the disease on their health and quality of life (WHO, 2014).

The shift towards a prevention oriented public health perspective has prompted researchers to identify and promote a wide range of practices that help youth populations become and stay as healthy as possible as they transition into adulthood (WHO, 2014). For example, research on the social determinants of health has been used to guide the delivery of upstream healthcare services to meet the needs of youth. Strategic reports and other source documents have identified the social determinants of health to include early childhood education, socioeconomic status, gender, ethnicity, and access to healthcare services (WHO, 2014; Hertzman et al., 2001; Viner et al., 2012). Mental healthcare program and policy priorities have also included considerations guided by psychological theories of child and adolescent development and knowledge of the social determinants of health. For example, the Child and Youth Mental Health Plan for British Columbia (2003) raises concerns about, and proposes implementation strategies for the

reorganization of the mental health care system and reallocation of healthcare resources to support youth, their families, and communities. The Ministry's youth mental health plan also proposed to provide new resources for early intervention programs for specific mental illnesses such as anxiety, depression and psychosis (Ministry of Children and Youth, 2003).

Despite extensive provincial planning efforts focused on supporting child and youth mental health, the current provincial system has been described as a patchwork of youth mental health services and inconsistent programming related to the lack of a core set of services across all areas and regions (Representative for Children and Youth, 2013). The Representative for Children and Youth's (2013) report highlighted the shortage of intensive, community-based intermediate treatment and supports needed to identify and prevent mental illnesses among youth. At the same time, healthcare providers and researchers have identified the need to explore the interaction of individual and contextual factors to identify upstream programming that could be used to promote mental health and wellbeing as youth transition into early adulthood (Viner et al., 2012).

When identifying priorities for health system planning, consideration of all three aspects of mental health prevention (i.e., primary, secondary and tertiary) across all stages of the lifespan has been identified as an important means of improving health outcomes (Department of Human Services, 2005). For example, understanding how and when threats to mental health and wellbeing begin to emerge across the lifespan is essential for guiding primary prevention oriented research (Department of Human Services, 2005). Although mental health is an important domain of health to consider across the lifespan, studies indicate that many of the most common mental illnesses emerge during adolescence. For example, the Australian Victorian Burden of Disease Study (2001) has shown that the majority of adulthood mental health and substance use disorders have an onset in adolescence (see Figure 1.1). As this figure clearly

demonstrates, a strategic opportunity for promoting mental health and wellbeing across the lifespan is to develop a systematic and integrated approach to primary, secondary and tertiary mental health prevention for young people 10 to 30 years of age.



Figure 1.1.Incidence of Disease Rates per 1,000 Population by Age and Disease Grouping

Healthcare providers and youth care workers, particularly community-based programmers, have felt challenged when attempting to address the mental health needs of an increasingly diverse adolescent population. Developing frameworks to guide the systematic use of evidencebased programs in adolescent populations requires an understanding of multiple theoretical perspectives that incorporate individual and contextual factors. In particular, it is critical to understand how intersecting psychological perspectives (e.g., social, developmental, cognitive, and clinical psychology) can be used to guide researchers, medical practitioners, school and other community based stakeholders in the design and implementation of evidence-based programs to support youth mental health and wellbeing. Two commonly cited theoretical perspectives being used to guide many primary prevention oriented school-based programs as well as community-based youth mental health interventions are theories involving attachment and resilience.

From its early origins, attachment theory posits that individuals form an internal model of interpersonal behavioural patterns (i.e, an attachment style or pattern) in response to the social and emotional development experiences between children and their primary caregiver (Bowlby, 1988). Researchers have also expanded the range of experiences thought to be related to attachment to include the social bonds an individual has with family members, healthcare providers, school educators, and community organizations (Ciechanowski, Walker, Katon, & Russo, 2002); however, the theoretical origins are based on developmental psychology as the biological and emotional responsiveness to building relationships with caregivers, such as parents (Bowlby, 1969; Ainsworth, et. al., 1978).

For the purposes of this thesis, the labels attachment styles, attachment disposition, and attachment patterns are used interchangeably. Attachment patterns are theorized to function as a cognitive-affective filter for establishing relationships with others and in so doing play a critical role in how adolescents modulate stressful experiences and seek support from others (Bowlby, 1969). For example, the experience of sensitive and appropriate caregiving responses during infancy are positively associated with older teens being able to adequately cope with stress and overcome major life transitions, for example completing secondary school and moving away from home (Waters, Hamilton, & Weinfield, 2000; Beckwith, Cohen, & Hamilton, 1999; Allen & Land, 1999).

Similar to attachment theory, theories of resilience also conceptualize how youth perceive and cope with stressful situations. Although there is not a universally recognised definition of resilience, it is commonly defined as the dynamic processes and ability to mobilize resources to overcome hardship and trauma (Connor & Davidson, 2003; Brendtro, Brokenleg, & Van Bockern, 2005; Wagnild & Young, 1993). Resilience theory is focused on a strength-based perspective as it explores factors promoting healthy adolescent development. Given the important role of developing the capacity to mobilize resources in the development of resilience, it seems reasonable to postulate that attachment style may play a critical role in the development of resilience.

It is evident from the literature that attachment and resilience are frequently investigated as distinct concepts. Although this separation provides a focused research agenda for each body of research, it also appears to contribute to a fragmented understanding of social support networks and individual differences in help-seeking behaviour. For example, the literature draws an artificial distinction between attachment and resilience theories as separate components involved in guiding interpersonal relationships and social support. Given that these cognitive processes or internal representations have both been found to have consequences for youth wellbeing (Bartholomew & Horowitz, 1991; Allen & Land, 1999), research that explores the direct link between resiliency and attachment would appear to provide a more comprehensive understanding of how both concepts contribute to the mental health and wellbeing of youth.

The program of research described in this thesis is focused on investigating the relationship between attachment style and resiliency in adolescent populations. In particular, this thesis

research connects these two bodies of research areas to highlight the potential of these theories to inform one another. Possible study findings on the intersectionality of attachment and resilience theories may provide evidence to help inform tailoring youth programs in schools, health care facilities and other community settings. This study also explores the extent to which sociodemographic characteristics, specifically gender, ethnicity, and socioeconomic status, influence attachment distributions and resilience levels.

1.1. Developing Adolescents: An Overview of Key Experiences

Empirical evidence in the developmental psychology literature cites adolescence and emerging adulthood as sensitive periods in the life course (Jetha, & Segalowitz, 2012). Developmental changes in adolescence can be explored in two broad categories, specifically physical and psychosocial (Jetha, & Segalowitz, 2012). Physical development is characterized by tangible, measureable, and observable changes occurring in the human body (Jetha, & Segalowitz, 2012). These changes start to occur with the onset of puberty when youth experience a rapid increase in body size and physiological changes, such as the development of the reproductive system (Jetha, & Segalowitz, 2012). Thornburg (1982) indicated females' pubertal growth commonly starts at age ten while males begin experiencing puberty approximately eighteen months later. Research evidence indicates the brain frontal lobe synaptic network also changes during adolescence, albeit at different rates among individual youth (Jetha, & Segalowitz, 2012). The brain continues to form new synaptic connections which refine language and communication skills. These physical and neurological changes can be viewed as neurocognitive capacities that influence the development of social behaviours.

Psychosocial development in response to the neurological changes during adolescence is marked by the engagement in activities that increasingly emphasize autonomy, emotional

stability, and behavioural regulation. For example, as teens transition from being completely reliant on caregivers to becoming semi-independent adults (Jetha, & Segalowitz, 2012), they shift from a primarily family-oriented to more of a peer-oriented perspective. In middle adolescence (e.g. ages 15 to 17), adolescents have developed a mixed sex peer group and experience a decreased interest in family activities (Sanders, 2013). This shift in social functioning leads to opportunities to hone the social and behavioural skills necessary for managing adult responsibilities and stresses and navigate their social world (Jetha, & Segalowitz, 2012).

One area of particular interest to adolescent health researchers is cognitive development related to coping strategies (Jetha, & Segalowitz, 2012). Coping strategies are considered a main aspect of psychosocial competence, which enable youth to balance and mange developmental tasks (McCubbin, & Patterson, 1986). Coping strategies focus on mobilizing and improving the personal and social resources needed to overcome life stress, providing support to promote wellbeing, and assist with managing and regulating negative feelings provoked by distress or challenges (Smith & Carlson, 1997). The ability of adolescents to learn how to self-regulate behaviours and emotions has been shown to be related to their decisions to engage in high risk activities (e.g. substance use) and vulnerability to health and wellbeing threats (Wei, Heppner, Russell, & Young, 2006; Kemshall, Marsland, Boeck, & Dunkerton, 2006).

Advancing a comprehensive understanding of adolescent development is vital for health and social programmers if they are to identify strategic points of intervention to support youth wellbeing. For example, health and social service providers can assist youth in recognizing triggers, feelings, and behaviours to help them to decide whether or not to engage in risky activities, such as binge drinking, contraceptive use, and criminal activities (Sanders, 2013;

Steinberg, 2008). Community or school programs can provide youth with opportunities to cultivate their abstract thinking and practice specific coping skills. For example, the Canadian Self-Regulation Initiative (CSRI) is working with British Columbian school districts to implement self-regulation learning activities. In particular, CSRI initiatives utilize evidence from developmental and neurological research to promote techniques (e.g. flexible use of learning strategies or appropriate help-seeking) involved in strengthening students' self-regulation capacities (CSRI, 2014). At the family level, researchers have speculated that explaining to youth and their families how physical and neurological development in adolescence is associated with changes in psychosocial functioning may inform parental expectations around youth behaviour and improve caregiving practices (Sanders, 2013). Research that supports the development of interventions that facilitate adolescents' ability to mobilize resources to cope with threats to their health and wellbeing thus represents a developmentally informed approach to improving youth mental health.

1.1.1. Gender Considerations in Adolescent Research

As discussed in the previous section, youth experience a number of age-related developmental changes, such as coping with body changes, forming new interpersonal bonds, and developing autonomy from caregivers. Gender affects how adolescents manage all of these new experiences (Steensma, Kreukels, de Vries, & Cohen-Kettenis, 2013). Gender represents a social construct, which prescribes the dimensions of femininity and masculinity (Berk, 2007). These gender roles guide behavioural norms by influencing individual's everyday actions, expectations, and experiences (Steensma, Kreukels, de Vries, & Cohen-Kettenis, 2013). Research on gender differences typically examines whether biological and/or social differences

exist between boys and girls (Johnson, Greaves, & Repta, 2007). The following paragraphs discuss the development of gender identity and its role in adolescence.

Researchers investigating gender identity have found that gender-related learning begins in early childhood (Steensma, Kreukels, de Vries, & Cohen-Kettenis, 2013). The majority of children aged 18 to 24 months have the capacity to label their own and others' gender (Steensma, Kreukels, de Vries, & Cohen-Kettenis, 2013). Parenting behaviours and expectations contribute to differences in how boys and girls are socialized in society (Berk, 2007). By early childhood, most individuals acquire a cognitive appreciation of gender differences that guides their behaviour (Kohlberg, 1966).

Children are typically socialized to identify specific activities and personal characteristics as either male or female. For example, boys are likely to be more active, assertive, and directly aggressive whereas girls tend to be more fearful, emotionally sensitive, and indirectly socially aggressive (Berk, 2007). Also, boys tend to be more "things-oriented" while girls are more likely to be "people-oriented" (Perry & Pauletti, 2011). This is exhibited in the amount of time girls spend involved in interpersonal activities in comparison to the amount of time boys spend alone (Perry & Pauletti, 2011). These socialization practices teach young children to associate objects, activities, roles, or traits with a sex that follows cultural stereotypes (Steensma, Kreukels, de Vries, & Cohen-Kettenis, 2013; Berk, 2007).

In their high school years, adolescents extend the gender beliefs acquired in early childhood. The majority of adolescent boys and girls will identify with a gender role, which is often based upon their biological characteristics. Most male and female youth begin to selfidentify as being either a "man" or "woman" based upon their sex or anatomical characteristics (Steensma, Kreukels, de Vries, & Cohen-Kettenis, 2013). Researchers suggest that being a man

or woman is related to identifying with traditionally masculine characteristics (e.g. instrumental, less emotive, or higher aggression) or feminine characteristics (e.g. expressive, nurturing, or emotional; Steensma, Kreukels, de Vries, & Cohen-Kettenis, 2013; Berk, 2007). Over time, young people develop a gender identity or an image of oneself on a continuum of relatively masculine, feminine, or androgyny characteristics (Johnson, Greaves, & Repta, 2007).

Kohlberg (1966) suggests adolescent gender identity and behaviours develop gradually, taking many years and across developmental stages. This is related to the concept of *gender intensification* (Galambos, Almeida, & Peterson, 1990; Berk, 2007). Researchers suggest that with the onset of puberty, boys and girls may undergo an intensification of gender-related behavioural, attitudinal, and psychological behaviour and expectations (Galambos, Almeida, & Peterson, 1990; Berk 2007; Steensma, Kreukels, de Vries, & Cohen-Kettenis, 2013). For example, as pubertal changes extenuate sex differences in appearance, youth often shared expectations for gender-specific behaviors, with feminine roles accentuating expressive behaviours (e.g. nurturance, interpersonal bonds) and masculine roles emphasizing instrumental behaviours (e.g. independence; Galambos, Almeida, & Peterson, 1990). These gender and/or sex differences also appear to influence how youth mobilize social resources to deal with adverse circumstances (Bartholomew & Horowitz, 1991; Steensma, Kreukels, de Vries, & Cohen-Kettenis, 2013; Berk, 2007).

Hobfoll, Dunahoo, Ben-Porath, and Monnier (1994) found that gender is related to adolescents' choice in coping strategies. For example, they found men were more likely to cope by directly altering stressful circumstances (e.g. problem-based coping); however, women were more likely to cope by managing their emotional reaction to stressful circumstances or avoiding the situation (e.g. emotion-focused coping). Study findings indicate that compared to the use of

problem focused coping, the use of emotion-focused coping strategies is frequently less effective and increases the likelihood of linked mental health concerns (Hobfoll, Dunahoo, Ben-Porath, & Monnier, 1994).

In the medical literature, gender and sex are often used interchangeably (Johnson, Greaves, & Repta, 2007). The definitions of sex and gender vary between and within disciplines (CIHR, 2012). According to biologists, sex and gender are considered a classification of living organisms into binary categories of male and female (CIHR, 2012). In contrast, those informed by a bio-psycho-social perspective emphasize the social and cognitive processes including identity formation and self-labelling that refer to male and female (CIHR, 2012). Regardless of definition, research suggests that sex and/or gender differences represent a potentially important consideration when investigating the relationship between attachment style and resilience in the context of youth mental health.

1.2. Overview of Attachment Theory

Attachment theory, initially developed by Bowlby (1969), places interpersonal relationships within an ethological, cognitive, and developmental framework (Ainsworth, 1979; Sroufe & Waters, 1977). Research findings characterize attachment as a disposition by which an individual will seek contact and proximity with another person, especially in times of distress (Bowlby, 1969, Ainsworth, 1979). Attachment styles are primarily established in early infancy based largely on the promptness and responsiveness of caregivers most involved in childrearing. From this perspective, the attachment construct refers to an internal motivational behavioural system (i.e., a pattern of behavioural responses) that is activated when an individual feels threatened (Bowlby, 1969). For example, a secure attachment style motivates a young person to seek protection and security from their attachment-figures when they feel threatened (Bowlby,

1969; Ainsworth, 1979). Attachment patterns evolve over time to maintain a sense of security and efficiently organize the way and extent to which a person relates to others.

Attachment dispositions or styles influence the way in which individuals connect to others and how they perceive themselves. In other words, attachment styles can influence the degree to which an adolescent avoids or requires closeness with others and their reliance on self vs others for positive appraisal (Bartholomew & Horowitz, 1991). Ainsworth (1979) and Bowlby (1969) have indicated that attachment is a disposition to seek contact and proximity with caregivers (i.e. attachment-figures), especially during times of distress. Attachment theory thus provides a model to understand social relationships essential to personal feelings of security.

In attachment theory, internal working models (IWMs) are described as cognitive models developed in response to differential caregiving received (Bowlby, 1969). These IWMs are shaped by early childhood experiences of repeatedly interacting with attachment-figures and are guided by two primary attachment dimensions. Bowlby (1969) characterized these dimensions as IWMs established by the model of self (e.g. perception of how valuable or not in view of attachment-figure) and a model of others (e.g. responsiveness and consistency of the caregiver). The early attachment bond between the primary caregiver and infant appears to function as an internal cognitive model for future relationships (Bretherton & Munholland, 1999). Thus, IWMs build a foundation for organizing, responding to and understanding social relationships.

There are several main aspects involved in the activation of the attachment system, specifically proximity seeking, secure base and separation distress (Bowlby, 1969). First, *proximity seeking* is the extent to which a child will seek out the support from their attachmentfigure (Ainsworth, 1989). This is related to the experience of danger or distress and to the sensitivity and responsiveness of the attachment-figure. The *secure base* arises when infants

begin to move away from their caregivers to explore their environment, except in periods of distress (Sroufe & Waters, 1977). The attachment system becomes activated when the infant feels distressed and seeks out their attachment-figure. The *separation distress* is the extent that separation from the attachment-figure creates distress or anxiety (Ainsworth et al., 1978). The attachment system may become deactivated when the infant has ended the stressful situation (e.g. separation) and achieved physical proximity with the attachment-figure. In so doing, the attachment-figure meets the physical needs of the child as well as supporting the infant's development of emotional regulation skills (Ainsworth et al., 1978). Bowlby (1969) argued that as an individual develops beyond infancy the interpersonal or social contexts which activate or deactivate the attachment system will vary, which influences their overall attachment style over the life course.

1.3. Neurological Considerations Related to Attachment Experiences

The importance of infancy and childhood is related to developing brain structures responsible for building capacity to mediate social and emotional functioning across the lifespan (Siegel, 2012). These capacities begin to develop during the early years of life, and appear to be influenced by interpersonal experiences (Siegel, 2012). This is often referred to as *experiencedependent* development, which occurs when the creation or maintenance of neural pathways develops in response to social experiences (Siegel, 2012). For instance, the orbitofrontal brain region (e.g. central to emotional regulation, empathy, autobiographical memory, and adapting to external environmental factors) may be influenced by interpersonal experiences during childhood (Siegel, 2012). Autobiographical memories (e.g. times, places, accompanying feelings, and past events or experiences) can be explicitly shared with others (Mastin, 2010). This is an aspect involved in social, emotional, and cognitive development within the orbitofrontal brain region that is formed by the caregiver's behaviour (e.g. timing and intensity of response) and nonverbal signals (e.g. facial expression, voice tone; Mastin, 2010; Siegel, 2012). For example, securely attached youth often experience consistent and responsive caregiving, which helps to create a coherent understanding of self and others (Siegel, 2012). Contextual factors thus influence the brain structure by leading to either the maintenance of existing neural connections, or by the experience-driven formation of new neural pathways (Siegel, 2012).

During infancy, individuals have an *implicit* form of memory available that includes emotional, perceptual, and behavioral components (Siegel, 2012). The establishment of implicit memories involves the generalizations of repeated social experiences, often referred to *mental models or* similarly IWMs. Implicit memories are encoded to form the earliest forms of learning shown to impact emotions, behaviours, and mental models of self and others (Siegel, 2012). In addition to implicit models, Tulving and colleagues (1994) indicated that in childhood individuals start to develop an *explicit* memory that includes factual (e.g. semantic) and autobiographical (e.g. episodic) forms of memory. The frontal regions of the neocortex begin to mature as the child grows older thereby activating the formation of autobiographical memories.

Although many neural pathways are associated with specific functions they also frequently interact. The brain has two hemispheres: the right and left. The left hemisphere is involved in primarily linguistic processes and interpreter function (e.g. cause-effect relationships, true/false distinctions; Siegel, 2012). The right hemisphere is involved in somatosensory processes regulating affective expression and autobiographical recall (Seigel, 2012) and includes the prefrontal cortex, which assists with regulating bodily function (e.g. nervous system), attuned communication (e.g. socially responsive), and potentially social and moral behavior (Schore, 1996; Elliott, Dolan, & Frith, 2000; Siegel, 2012).

Although the two brain hemispheres are anatomically isolated, they are linked by bands of tissue (e.g. the corpus callosum and the anterior commissures) that form in early life (Trevarthen, 2005, Siegel, 2012). The holistic integration among the numerous brain regions influences the ways in which the entire brain functions (Siegel, 2012). However, childhood maltreatment or trauma has been linked to impairing the development of the corpus callosum in addition to weakening the whole brain development (De Bellis, 2005; Siegel, 2012). For instance, adverse attachment experiences may potentially disrupt brain development, which contributes to the inability to form a coherent integrated neural system (Siegel, 2012). The patterns of attachment styles demonstrated by these teens suggests that their adverse experiences have resulted in distinct patterns of brain functioning. For example, dismissing youth often state they cannot recall childhood events, which could be an indication of a different process of brain activation and encoding of neural pathways (Siegel, 2012).

In relation to attachment style, empirical evidence supports the notion that certain brain capacities are functioning in a distinctive way among insecurely attached young people due to the paucity of their autobiographical recollection (Siegel, 2012). Adverse attachment experiences are also theorized to contribute to a predisposition for mental illness across the life course by changing the brain's neuroendocrine response to distress (Liu et al., 1997; Siegel, 2012). Currently, there is a dearth of attachment focused research investigating the impact of attachment experiences on brain function; however, there is an emerging convergence of empirical evidence from developmental psychology, cognitive neuroscience, and attachment research suggesting that certain types of communication patterns within emotionally connected relationships appears to be essential to understanding the experiential world in which young people's brains develop (Siegel, 2012).

1.4. Attachment Patterns

Ainsworth (1989) reported that attachment frameworks or IWMs are embedded in neurobiological circuits that evolve in response to the caregiver-child relationship. These attachment processes are also influenced by cognitive processes and environmental stimuli (Bowlby, 1969; Ainsworth, 1989). In this way, the contextual factors (e.g. quality of caregiving and responsiveness of attachment-figure) contribute to individual differences (e.g. cognitive appraisal of self or help seeking behaviours) in attachment styles (Ainsworth, 1989). Many factors influence children's attachment development, such as, the quality and consistency of parenting and how the child responds to their caregiver (Bowlby, 1969; Ainsworth, 1989). Although the exposure to both positive and negative caregiving experiences in early childhood will vary and impact attachment trajectory, a relatively stable pattern of attachment eventually forms (Bowlby, 1969).

Interest in attachment theory led Ainsworth and colleagues (1978) to investigate variations in attachment patterns. Individual differences amongst infant attachment patterns were originally observed in the Strange Situation Procedure developed by Ainsworth. The procedure involved observing toddlers' behaviour when in contact with their mothers, then when separated from their mothers, and finally when reunited with them (Ainsworth, 1979). From study observations, Ainsworth identified two broad attachment patterns: secure and insecure. Researchers continue to utilize these broad categories of attachment (e.g. insecure vs secure), but have expanded Ainsworth's research outside of early childhood into other developmental periods (e.g. adolescence and adulthood) as well as broadened the attachment classification into four attachment styles or dispositions (Bartholomew & Horowitz, 1991). Attachment style differences and similarities are characterized by the IWMs formed to organize thoughts, feelings, and

relationships (Allen & Land, 1999). The next sections of this chapter provide a general description of secure and insecure attachment characteristics as they relate to adolescence.

1.4.1. Secure Attachment

Secure attachment styles will likely develop from persistent relationships with a reliable and nurturing attachment-figure. In Ainsworth's study of mother-infant dyads, secure children typically welcome their caregiver's return after separation. These securely attached children, if distressed, may seek proximity and will be readily comforted by their caregiver (Bowlby, 1969; Ainsworth, 1979). Their attachment-figure provides a secure base from which they are able to confidently explore their surroundings. Researchers studying early childhood attachment security have expanded their investigations of attachment security into other developmental periods, such as adolescence.

Adolescents classified with a secure attachment style show better outcomes on agerelated developmental tasks compared with insecurely attached individuals (Lapsley, Rice, & Fitzgerald, 1990). For example, Lapsley, Rice, and Fitzgerald (1990) found academic achievement and wellbeing was significantly associated with attachment to caregivers and peers. Furthermore, their study indicated securely attached youth were more successful in transitioning from home into college compared to insecurely attached peers (Lapsley, Rice, & Fitzgerald, 1990). A more detailed review of secure attachment is provided in Chapter 2 as part of the description of Bartholomew's Four Category Model.

1.4.2. Insecure Attachments

Although the majority of children and youth appear to have a secure attachment style (Bartholomew & Horowitz, 1991; Allen & Land, 1999; Colle, & Del Giudice, 2011), researchers have tended to focus their efforts on the development of insecure attachment styles. The following text provides a general overview of insecure attachment characteristics with a more detailed discussion of the three insecure attachment style subtypes provided in Chapter 2 as part of the description of Bartholomew's Four Category Model.

Children and adolescents with attachment-figures who do not consistently respond to their signal of distress are more likely to form insecure attachment patterns (Bowlby, 1970). For example, children not provided with appropriate care become uncertain about the availability of others to provide support in times of distress and may develop emotional problems (Ainsworth, 1979; Bowlby, 1970). Children considered insecurely attached may also show ambivalent behaviour toward their attachment-figure. Insecure children also tend to be difficult to comfort and may avoid proximity of caregivers (Bowlby, 1970; Ainsworth, 1979; Bartholomew & Horowitz, 1991).

Integrating attachment theory into a broader developmental framework has the potential to improve our understanding of adolescent mental health and wellbeing, particularly the development of insecure attachment patterns (Lee & Hankin, 2009). Attachment research tells us that insecurely attached adolescents often report histories of psychopathology, difficulty with day-to-day functioning, school dropout, relationship troubles, and misuse of drugs/alcohol (Penzerro & Lein, 1995; Davila, Burge, & Hammen, 1997; Scroufe, Carlson, Levy, & Egeland, 1999; Abela et al., 2005; Kassel, Wardle, & Roberts, 2007). Insecure attachment does not appear to directly cause mental illnesses, but early childhood attachment, family context, and social experiences may influence developmental pathways that are closely linked to the development of mental illness and health concerns (Lee & Hankin, 2009). Attachment insecurity can thus be considered both a vulnerability to impaired adolescent mental health and wellbeing as well as a

broader difficulty mobilizing social resources to address stressful events including but not limited to the emergence of mental illness (Lee & Hankin, 2009).

The causes and consequences of insecure attachment have been investigated by many researchers (Cyr, Euser, Bakermans-Kranenburg, & Van Ijzendoorn, 2010). Study findings have indicated that insecure attachments are more likely to develop when there is a developmental disruption, such as childhood maltreatment, unresponsive parenting, or parental mental health problems (Abela, et al., 2005; Davila, Burge, & Hammen, 1997). Insecure youth are frequently raised in high-risk settings where they are more likely to experience adverse events (Bakermans-Kranenburg et al., 2011). Adverse life experiences include living in institutional care, parental divorce, parental mental illness or addiction, and/or childhood maltreatment (Bowlby, 1969, 1970). Insecure children tend to have experienced inconsistent or discouraging responses such as rejection when seeking proximity with caregivers when facing distress (Ainsworth, 1979). Study findings indicate that the experience of adverse life events tends to activate the core IWMs associated with insecure attachment styles (Bowlby, 1970; van Ijzendoorn, Juffer, & Duyvesteyn, 1995).

Researchers have also found that insecure individuals repeatedly misunderstand environmental or interpersonal cues (Penzerro & Lein, 1995). For example, insecurely attached adults deny or diminish the importance of attachment with others, are unable to recall past events, and/or idealize previous experiences (Waters, Hamilton, & Weinfield, 2000). Youth with insecure attachment styles report difficulty maintaining or forming interpersonal relationships (Penzerro & Lein, 1995; Bowlby, 1970). Many insecurely attached adolescents also distort communication with others in addition to holding negative expectations of others and/or themselves (Allen & Land, 1999). These negatively skewed perceptions disrupt their ability to

establish or maintain interpersonal relationships (Waters, Hamilton, & Weinfield, 2000). Attachment insecurity may also negatively influence help seeking behaviours or mobilizing social supports (Allen & Land, 1999). Although an insecure attachment style cannot be perceived as pathological, researchers and clinicians are able to reflect on its status as a risk factor associated with a youth's ability to develop and maintain his or her mental health and wellbeing (van Ijzendoorn, Juffer, & Duyvesteyn, 1995).

1.4.3. Gender Differences in Attachment Style

The basic tenants of attachment theory do not predict gender differences in attachment styles (Bowlby, 1969, 1970). It was traditionally expected that males and females were equally likely to be either insecure or secure (Ainsworth, 1979). This viewpoint was consistent with Bowlby's (1969) attachment model emphasizing the evolutionary function of relational bonds.

Research studies utilizing the interview-based assessments of attachment reported no gender differences in the distribution of attachment styles in adult populations (Cyr, Euser, Bakermans-Kranenburg, & Van Ijzendoorn, 2010). In contrast, studies utilizing the Relationship Questionnaire developed by Bartholomew (1990) reported the presence of gender differences; specifically, females were more likely to be classified as preoccupied and males were more likely to report dismissing attachment styles (Bartholomew & Horowitz, 1991; Scharfe & Bartholomew, 1994). Research studies exploring peer relationships have also found evidence of gender differences by attachment styles (Cyr, Euser, Bakermans-Kranenburg, & Van Ijzendoorn, 2010; Del Giudice & Belsky, 2010). For example, investigators using self-report attachment questionnaire assessments have found that males tend to report greater levels of dismissing or avoidant attachment whereas females were more likely to be preoccupied or anxiously attached (Cyr, Euser, Bakermans-Kranenburg, & Van Ijzendoorn, 2010; Del Giudice & Belsky, 2010).

Research findings of gender differences in attachment styles may reflect the social and cultural views regarding social and emotional differences between genders. Shaver and colleagues (1991) found secure attachment correlated with both masculinity and femininity; preoccupied attachment related to femininity; and lastly, avoidant attachment appeared to be associated with masculinity. A meta-analysis of romantic attachment noted that community-based studies tend to show more consistent patterns of gender differences than those studies based on college-student samples (Del Giudice & Belsky, 2010). However, Del Guidice and Belsky (2010) suggest the homogeneity of college samples is an issue, which may, in turn, further compound the sex-atypical characteristics of males enrolled in first year sciences classes who commonly participate in research studies (e.g. primary middle class, Caucasian, aged 18 – 22).

Gender discrepancies may represent the variation of socialization between males and females (Leadbeater, Kuperminc, Blatt, & Hertzog, 1999). Researchers have speculated that females experience more socialization supporting self-regulation and sensitivity to interpersonal issues (Leadbeater, Kuperminc, Blatt, & Hertzog, 1999). Due to higher interpersonal relationship sensitivity, females experience more stressful life events involving others, and rely more heavily on support from peers and caregivers for coping, and social competence (Leadbeater, Kuperminc, Blatt, & Hertzog, 1999). In contrast, these same researchers propose that males are at greater risk for externalizing problems because of dispositional differences in aggression and socialization practices that emphasise self-assertion and underemphasize empathy and selfregulation (Leadbeater, Kuperminc, Blatt, & Hertzog, 1999). Researchers suggest gender differences in attachment styles evident socially acceptable behaviour in how males and females form relationships (Tamres, Janicki, & Helgeson, 2002; Reis, Senchak, & Soloman, 1985).

Research findings obtained from a large cross-cultural study of 62 countries provided further evidence for gender differences in adult populations (e.g. college samples) within insecure attachment patterns (Schmitt et. al., 2004). Study findings showed gender differences in selfreported attachment styles across cultures, with an overall moderate effect size of d=.18 (Schmitt et. al., 2004). Cohen's (1992) effect size is a way to quantify the difference between two groups (e.g. males and females; insecure and secure). For example, Schmitt and colleagues (2004) computed effect sizes for each cultural region as the magnitude of males with dismissing attachment was substantially higher than the level of dismissing attachment among females. Similarly, researchers have found that males in East Asian cultures have lower ratings of dismissing attachment whereas males from Southeast Asian and African cultures had higher rates of dismissing style (Van Ijzendoorn & Sagi, 2001, Schmitt, et. al. 2004). Differences in socially acceptable behaviour in relating to others may explain a significant portion of the gender variation within attachment styles. Although studies of adult populations have observed gender differences, it is unclear whether gender differences in attachment patterns generalize to adolescents.

From a methodological perspective, when gender has been investigated, researchers have tended to examine main effects, for instance differences in the distribution of males and females across attachment classifications (Mikulincer & Nachson, 1991). Researchers also commonly analyze gender as a covariate in multivariate analyses when gender differences are observed in the distribution of attachment styles (Kobak & Sceery, 1998; Bartholomew & Horowitz, 1991). However, when gender differences are not observed in attachment distributions or outcome variables, the data is commonly summarized and gender is not treated as an exploratory variable (Ammaniti, Van Ijzendoorn, Speranza, & Tambelli, 2000; Searle & Meara, 1999). Although the

aforementioned methods do explicitly incorporate the concept of gender, research is needed to determine if gender and attachment patterns interact to influence developmental outcomes related to youth mental health and wellbeing.

1.5. Stability of Attachment Patterns Over Time

As described earlier, the attachment process begins in early childhood with attachment-figure relationships. Attachment patterns are shaped from experiencing emotionally connected or, conversely, emotionally unresponsive relationships with others. Empirical research indicates that when family or social contexts remain consistent throughout early childhood then attachment patterns tend to stabilize (Sroufe & Waters, 1977). The following paragraphs provide a brief overview of the development of attachment styles over time with Chapter 2 providing a more detailed exploration of attachment style stability during adolescence.

Research focusing on attachment pattern stability began with efforts to identify the most common stable attachment styles (Thompson, 2000). Attachment style is theorized to become stable by an active process whereby an adolescent processes and organizes social information that is used to validate their IWMs in an ongoing persistent manner (Scharfe and Bartholomew, 1994; Fraley, 2002; Hamilton, 2000). Researchers have found that the stability of family structures increases the likelihood of IWMs enduring over time, for instance from infancy to adolescence (Waters, Weinfield, & Hamilton, 2000).

Once established, it was originally theorized that attachment patterns remain relatively stable across the lifespan, providing an internal framework to guide strategies to cope with distress and form interpersonal relationships (Bowlby, 1969). However, research evidence indicates that adolescents vary in the extent to which their attachment styles remain stable over time (Thompson, 2000).

In summary, adolescence is considered a sensitive period for many developmental processes, which may be linked to triggering stability or change in attachment patterns. Adolescence can also be viewed as an opportunity for young people to reconceptuatilize past problematic attachment experiences (Allen & Land, 1999). The cognitive and relational experiences occurring in adolescence may influence IWMs related to perception of the self and others and in so doing lead to changes in attachment style (Chango, Mcelhaney, & Allen, 2009). Additionally, empirical evidence shows that early childhood attachment experiences influence on attachment patterns tends to diminish over time when youth create peer attachments (Scroufe, Egeland, & Kreutzer, 1990). Differences in youth attachment styles thus appear to be influenced by both past and current attachment experiences (Wienfield, Whaley, & Egeland, 2004; Hamilton, 2000; Sroufe & Waters, 1977). It is important to note that adolescents tend to engage in interpersonal relationships that are compatible with their attachment pattern which subsequently reinforces their current attachment style (Hamilton, 2000). However, precisely how stable attachment patterns or frameworks remain over time is still controversial (Hamilton, 2000).

1.6. Overview of Resilience

Resilience provides a framework for health researchers to understand the multiple ways in which adolescents effectively cope with hardships (Connor & Davidson, 2003; Wagnild & Young, 1993; Vanderbilt-Adriance & Shaw, 2008). Resilience is characterized as dynamic processes encompassing ongoing reciprocal interactions between youth and their surroundings, which helps them successfully cope with distress and seek social supports (Connor & Davidson, 2003; Wagnild & Young, 1993; Vanderbilt-Adriance & Shaw, 2008). Fundamental to resilience is the presence of risk and protective factors, the latter of which either promotes wellbeing or mitigates risk factors associated with health declines (Fergus & Zimmerman, 2005; Werner &

Smith, 2001). A risk factor or 'vulnerability' refers to individual aspects (e.g. coping skills; Rutter, 2006) and environmental factors (e.g. parental mental illness, foster care; Luthar & Sexton, 2007; Atkinson, 2013) that increase the likelihood of lowering resilience levels (Fergus & Zimmerman, 2005; Masten et al., 1999). From this perspective, resilience is not a static state or characteristic but rather a capacity to deal with adversity that develops over time (Fergus & Zimmerman, 2005; Rutter, 2006).

Resilience research has shifted from identifying risk factors associated with low (or high) resilience to exploring processes and mechanisms underlying the development of resilience over time (Rutter, 2012). For example, recent research has attempted to identify and understand the strategies adolescents use to overcome challenges (Rutter, 2012). These approaches connect internal cognitive models or mental operations (e.g. coping strategies) and social experiences (e.g. interpersonal relationships; Rutter, 2012). Researchers are also increasingly investigating how risk and protective factors interact with one another at various levels of the environment (Rutter, 2006). For example, researchers have suggested that the intricate connections between adolescent characteristics, family support, and community resources are most likely the best predictors of adolescents' ability to cope with stressful life events (Rutter, 2012; Atwool, 2006; Fergus & Zimmerman, 2005). These researchers have also maintained that resilience levels can be improved by encouraging positive support within families, school educators, and communities (e.g. health practitioners, mentors) in addition to reducing risk factors experienced by youth (Rutter, 2012; Brooks, 2006; Fergus & Zimmerman, 2005). Of these areas, study findings indicate that family support is the most influential predictor of resilience levels among adolescents (Brooks, 2006). However, teachers, peers, mentors, and community health

practitioners also appear to play a key role in facilitating healthy adolescent development (Sanders, 2013; Brendtro, Brokenleg, & Van Bockern, 2005).

A comprehensive understanding of the factors that either enhance or reduce the likelihood of youth resilience levels is critical for researchers, practitioners, and policy makers. Based on study findings, it is clear that the relationships between risk factors, protective factors, resilience, and youth development represent a complex dynamic process (Connor & Davidson, 2003; Wagnild & Young, 1993; Vanderbilt-Adriance & Shaw, 2008). The close relationships amongst these factors suggests that researchers should consider intersectional approaches involving multiple theories and factors in order to improve the understanding of resilience and guide the development of effective interventions (Atwool, 2006; Svanberg, 1998). Research into the ways in which multiple factors (e.g. attachment and resilience traditionally studied independently) interact to promote mental health and wellbeing represents one area of future research (Atwool, 2006; Svanberg, 1998). Given the role attachment style appears to play in adolescents' ability to mobilize social resources, its relationship with the development and maintenance of resilience in adolescence represents a potentially important area of scientific investigation.

1.7. Linking Resilience and Attachment Theories to Inform Youth Programming

It is well-documented in the literature that evidence-informed youth program transformations involving the intersections of theories are needed in communities to improve adolescent mental health and wellbeing (Svanberg, 1998; Bucci, Roberts, Danquah, & Berry, 2014; Moretti, Obsuth, Craig, & Bartolo, 2014). A shift towards a strength-based perspective requires careful consideration by youth care providers as well as systemic process changes, program evaluations, and further research (Hammond, 2010). A strength-based perspective is a shift away from research and practice emphasizing vulnerabilities and challenges towards an understanding that
youth have strengths, resources, and the ability to overcome adversities (Collins, & Laursen, 2004). In keeping with the WHO model of health, strength-based models allow for practitioners to promote physical, mental and social wellbeing of adolescents, and not merely focus on the absence of disease (Collins, & Laursen, 2004). Researchers and clinicians have increasingly emphasized the importance of strength-based perspectives and practices in youth mental health programs, often in the form of resilience-oriented intervention frameworks (Fast & Collin-Vezina, 2010).

Resilience-informed services are based upon the perspective that youth and their families have strengths, resources, and the capability to overcome hardship and/or trauma (Hammond, 2010). These programs aim to help youth establish secure, trusting, and confidence to mobilize social supports, such as trusting adults, peers, and families (Fast & Collin-Vezina, 2010; Hammond, 2010). Many resilient-informed programs for youth focus on enhancing wellbeing (e.g. building self-esteem), increasing school readiness, and encouraging parent-child relationships (Hammond, 2010). Resilience programs may also be focused on helping youth overcome past traumatic experiences, such as discrimination, foster care, or child abuse (Atkinson, 2013). Research indicates that effective health and social practices (e.g. child welfare services) incorporated strategies that promote protective factors and minimize risk factors in the lives of youth (Thomas & Reifel, 2010).

The integration of attachment theory into the resilience frameworks grounding many youth programs appears to represent an opportunity to improve our understanding of both concepts and is so doing enhance our ability to intervene effectively. Integrating theories of attachment into research on the development of resilience-informed intervention and prevention strategies may help researchers identify critical program components that promote protective factors and

minimize risk factors (Hammond, 2010; Moretti, Obsuth, Craig, & Bartolo, 2014). For example, adolescents with an insecure attachment style might benefit from experiential activities (e.g. role plays and reflective exercises; Moretti, Obsuth, Craig, & Bartolo, 2014). While adolescents with a secure attachment style might benefit from collaborative partnerships and joint-problem solving with caregivers (Moretti, Obsuth, Craig, & Bartolo, 2014). In summary, the intersection of attachment and resilience theories to promote wellbeing is a research area that is particularly relevant to public health practitioners and community development programmers. It provides an opportunity for researchers and clinicians to design prevention and early interventions that are grounded in theory and upon implementation contribute to the development of effective coping strategies and improved the mental health and wellbeing of youth (Moretti, Obsuth, Craig, & Bartolo, 2014; Hammond, 2010).

1.8. Research Aims and Justification

In recent years, researchers and clinicians have identified the ability to effectively cope with stress or bounce back from adverse events as an important component of healthy adolescent development (Hemmeter, Ostrosky, & Fox, 2006). Attachment theory provides a framework into understanding how youth develop various patterns of engaging with others, especially in times of distress. Knowledge of the processes underlying the ways and extent to which youth seek support to cope with stressful events may be improved by examining the distribution and stability of specific attachment styles and their relationship with resilience. In a representative population of adolescents, the two primary objectives of this study are to:

- Quantify the distribution of attachment styles and their stability over a six (6) month
 period in a large sample of the general population; and
- ii) Examine the relationship between attachment styles and levels of resilience.

The first objective is addressed in Chapter 2, which presents the results of a study examining the distribution and stability of attachment styles among high school students in British Columbia. Chapter 3 addresses the second objective by presenting the results of a second study focused on examining the relationship between attachment styles and levels of resilience. Concluding remarks and recommendations for future research are provided in Chapter 4.

2. Chapter 2: Attachment Distributions in Adolescence

2.1. Introduction

The current chapter addresses two concerns regarding attachment in adolescence. First, in a large, representative sample of youth, this study uses a self-report attachment measure to describe the distribution of attachment styles. Second, the study investigates patterns of change in adolescent attachment styles over a six month period.

As described in Chapter 1, attachment theory proposes a developmental model in which youth develop along a distinct social-biological pathway across the lifespan with specific emphasis on the importance of the organization of the affectional bonds that begin in infancy. Bowlby (1969) described attachment as an instinct to form relationships with others, and to form coping strategies to seek and maintain proximity with attachment-figures (e.g. parents or caregivers). These attachment experiences contribute to the development of a set of neurological processes or internal working models that are activated when creating bonds with attachmentfigures that help ensure that infants and children receive the care that they need. Scharfe and Bartholomew (1994) propose that resulting patterns of establishing and maintaining interpersonal relationships continues to influence psychosocial behaviour throughout the lifespan.

Attachment theory postulates that the individual need for attachment with others exists throughout the life course (Ainsworth, 1989). As adolescents engage with others, their attachment styles influence their understanding of self and how they engage in relationships with others (Penzerro & Lein, 1995). Several studies have focused from infancy to late adolescence on the development of attachment styles, some reporting stability (Hamilton, 2000; Zimmerman & Becker-Stoll, 2002) and others not (Weinfield, Scroufe, & Egeland, 2000; Thompson, 2000). Although the bulk of attachment research has tended to focus on childhood (e.g., how do

attachment styled develop) or adulthood (e.g., is adult dysfunction related to insecure attachment in infancy and early childhood), attachment researchers have recently become interested in bridging the understanding of attachment across these developmental periods by examining the distribution and stability of attachment styles in adolescence.

Understanding the stability of attachment styles has also become of particular interest to health researchers as they seek to understand how to effectively promote youth mental health and wellbeing. For example, a persistently insecure attachment style suggests negative views of the self and/or others, which influences how a youth (in)effectively mobilizes social supports to cope with stressors. In other words, attachment styles represent *internal working models (IWMs)* that guide new experiences, and in the in case of insecure attachment tend to reinforce maladaptive coping strategies. These maladaptive approaches to overcome stressful situations may lead to long-term difficulties for youth to form social bonds and fully engage in the health, educational, and social services available to them (Shapiro & Levendosky, 1999; Wei, Heppner, Russell, & Young 2006).

The integration of attachment theories into research exploring how youth seek support from others provides a basis for coping strategies over time and across circumstances (Shapiro & Levendosky, 1999). For example, researchers suggest individuals with higher levels of attachment anxiety are more likely to use a hyperactivating coping strategy (Wei, Heppner, Russell, & Young, 2006). Individuals employing this type of coping strategy may overreact to their negative thoughts or feelings and in so doing inappropriately mobilize social supports (Wei, Heppner, Russell, & Young, 2006). In contrast, individuals with higher attachment avoidance may rely on deactivating strategies that tends to involve suppressing their negative feelings to increase distance from others and avoid disappointment caused by others' unresponsiveness (Wei, Heppner, Russell, & Young, 2006). As a result, coping strategies based upon insecure attachment styles become maladaptive as the youth employs the internal processes, generally associated with preoccupied or avoidant coping styles, in future relationships with others (Shapiro & Lavendosky, 1999).

2.2. Attachment Style Stability from Infancy to Adolescence

A basic tenant of attachment theory is that early IWMs, thereby attachment styles, remain relatively stable across the life course (Bowlby, 1969). Longitudinal empirical evidence indicating attachment styles remain relatively stable from infancy into adolescence has been recently accumulating (Hamilton, 2000; Main, Hesse, & Kaplan, 2005; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). For instance, Hamilton (2000) found that many attachment styles observed in late adolescence persisted from infancy. Empirical evidence also shows the majority of young people maintain the same attachment classification from infancy into later developmental periods (Main, Hesse, & Kaplan, 2005; Waters, Weinfield, & Hamilton, 2000; Thomspon, 2000). Researchers utilizing the Strange Situation Procedure developed by Ainsworth (1978) also reported infant classification rates remained consistently stable across infancy into adolescence, ranging from 53% to 96% reporting the same attachment classification (Ravitz et al., 2010; Waters, Weinfield, & Hamilton, 2000; Hamilton, 2000).

As described in the literature overview in Chapter 1, attachment theory indicates that the stability of IWMs stem from attachment experiences with the caregiver from infancy continuing into childhood and adolescence. Attachment-figure bonds in early childhood are also theorized to influence psychosocial functioning across the entire lifespan (Bowlby, 1969; Sharfe & Bartholomew, 1994; Penzerro & Lein, 1995). Given that the development of attachment patterns in adolescence is primarily influenced by caregiving during early childhood, studies investigating

attachment transformation or instability have gathered caregiver observations to gain insight into the perceptions that impact how the caregiver interacts with their child (Wienfield, Whaley, & Egeland, 2004). For example, to observe attachment patterns over time, Wienfield, Whaley, and Egeland (2004) regularly assessed mother-child dyads starting in infancy until their child turned 19 years old. Their longitudinal study findings show that maternal caregivers perceive infants originally classified as secure, who then changed to an insecure classification as requiring more care (Wienfield, Whaley, & Egeland, 2004). Parents of adolescents in the secure – insecure group perceived their child as demanding substantially higher level of responsiveness and sensitivity (Wienfield, Whaley, & Egeland, 2004). Specifically, infants in the secure – insecure group were reported by caregivers as needing more stimulation to respond, had shorter attention spans, and displayed physical discomfort during caregiving compared to infants who were stably secure (Wienfield, Whaley, & Egeland, 2004).

Attachment pattern changes are not random, but rather they appear to be influenced in an ongoing fashion by the attachment-figures availability and responsiveness (Wienfield, Whaley, & Egeland, 2004). A young person's sense of security can diminish when the support of the attachment-figure is not readily available in a consistent manner or there is a major disruption in the parent-child relationship by separation or loss (Greenberg, 1999; Hamilton, 2000). The internal mental representations of self and others are thus considered to be malleable in that they may change over time in response to novel ongoing caregiving experiences (Weinfield, Scroufe, & Egeland, 2000). For example, when attachment-figures improve their availability and responsiveness with their child in a consistent manner, this often corresponds with a change from insecure to secure attachment pattern in their children (Wienfield, Whaley, & Egeland, 2004). These findings confirm earlier research indicating that attachment classification stability or

transformation is related to changes in the family and/or caregiving behaviours (Weinfield, Scroufe, & Egeland, 2000; Weinfield, Whaley, & Egeland, 2004; Hamilton, 2000).

As indicated earlier, attachment theory suggests IWMs established in early childhood tend to become increasingly resistant to change in a persistent social environment (Bowlby, 1969; Fraley, 2002; Hamilton, 2000). Stability in attachment patterns thus appears to be the result of stable social or contextual environments rather than pre-existing personal characteristics (Hamilton, 2000). Although attachment dispositions may change in response to new sustained interpersonal experiences (Wienfield, Whaley, & Egeland, 2004), over the course of childhood the IWMs become less consciously accessible and may be less susceptible to change (Hamilton, 2000). For instance, previous evidence of attachment stability indicated attachment patterns in infancy predicted significant aspects of psycho-social development many years afterwards (Thompson, 2000). Researchers were able to make predictions about adolescent attachment patterns based on early childhood experiences by identifying the stability and quality of caregiving over time (Main, Kaplan, & Cassidy, 1985; Hamilton, 2000). For instance, Main, Kaplan, and Cassidy (1985) reported that in almost every assessment conducted, toddlers initially classified as insecure-avoidance displayed an avoidant style at age 6.

Further support for the link between persistent reinforcing experiences and stable attachment styles comes from evidence suggests the stability of insecure attachment is maintained by constantly experiencing one or more negative life events (Hamilton, 2000). Insecure attachment styles tend to co-occur with either ongoing or past adverse experiences, such as childhood maltreatment and parental death or divorce (Allen & Land, 1999). Insecurely attached young people may perceive other people more negatively and have more interpersonal conflicts (Allen & Land, 1999). Further, insecurely attached youth report low rates of self-esteem and help seeking behaviour (Bartholomew & Horowitz, 1991). These challenges in coping with stressful experiences have been linked with difficulty in everyday life functioning. Young people with stable insecure attachment styles also tend to experience more mental health concerns compared to youth with stable secure attachments (Scroufe, Carlson, Levy, & Egeland, 1999; Davila, Burge, & Hammen, 1997).

Although attachment patterns should become stable over time if the quality of caregiving continues to reinforce the early childhood attachment model, it appears that attachment patterns of adolescents can adjust over time in response to new, reinforcing attachment experiences (e.g. forming peer friendships or romantic relationships). Researchers have proposed that adolescents and adults engage in an active information gathering process that stimulates feedback either confirming or disconfirming their existing models of self and others developed in childhood or early adolescence (Main, Kaplan, Cassidy, 1985; Scharfe & Bartholomew, 1994; Thompson, 2000; Waters, Weinfield, & Hamilton, 2000). For example, previous study findings indicate factors, such as parental loss, serious illness, or moving to a new town or school, have the potential to affect changes in attachment styles among adolescents (Fraley, 2002).

The stability and change in attachment patterns can be understood in terms of how they are mediated by youth's mental representations or IWMs of themselves and interpersonal relationships (Allen & Land, 1999). Adolescence is a developmental period that requires careful examination due to the emerging social and physiological changes that appear closely related to their attachment style (Greenberg, 1999). For example, middle aged adolescents (e.g. ages 15 to 17) begin to develop mixed sex peer groups, which could provide opportunities to improve relationship building skills thereby influencing changes in attachment styles (Sanders, 2013; Hamilton, 2000; Thompson, 2000). Although research findings support a model of persistent

reinforcement resulting in increasing attachment stability, adolescents also experience numerous age-specific life stressors that may challenge their attachment styles. Adolescence is thus considered a sensitive development period that is associated with developing social skills, cognitive abilities, and independence from primary caregivers (Viner, et al., 2012).

Researchers have also speculated that the adolescent attachment system may involve specific functional elements that are not needed in early childhood but are important to manage the experiences encountered by adolescents (Greenberg, 1999). For example, researchers propose that attachment patterns may change in response to typical teenage-related life events, such as coping with leaving parents' home, social competency with peers, or academic achievement (Scharf, Mayseless, & Kivenson-Baron, 2004; O'Connor, et al., 2011; Matsen & Coatsworth, 1998). These major life transitions may contribute to the ongoing re-evaluation and restructuring of IWMs (Scharf, Mayseless, & Kivenson-Baron, 2004; Scharfe & Bartholomew, 1994). This potential for the re-evaluation and restructuring of IWMs is of particular interest interventionists seeking to develop programs to promote mental health and wellbeing in adolescence via school and community based programming.

2.3. Examining Internal and Contextual Factors Influence on Adolescent Attachment

Evidence shows various internal cognitive processes influence attachment styles and their stability during adolescence (Pietromoaco, DeBuse, & Powers, 2013). Researchers suggest critical developments in cognitive functioning and affect regulation impact attachment pattern instability during adolescence. For example, some have claimed that growing cognitive and linguistic capacities facilitate the expression of new, more intricate attachment patterns (Crittenden, 2000; Maggi, Irwin, Siddiqi, & Hertzman, 2010). Youth also begin to develop higher levels of abstract reasoning and problem-solving abilities (Raikes & Thompson, 2003;

Crittenden, 2000). Moreover, meta-cognition and memory retention improves in adolescence, which enhances youth perspective taking skills (Raikes & Thompson, 2003). These cognitive changes are critical components of youth development that may also contribute to IWM restructuring (Raikes & Thompson, 2003; Crittenden, 2000), especially involving more sophisticated models of the self and others (Davila, Burge, & Hammen, 1997). There is also some empirical evidence suggesting that some attachment instability during adolescence is normal component of adolescent development (Crittenden, 2000; Davila, Burge, & Hammen, 1997).

Exposures to specific external or contextual factors activate attachment pattern changes during adolescence. In a recent study, childhood maltreatment emerged as an important factor associated with attachment patterns in the future (Waters, Weinfield, & Hamilton, 2000; Hamilton, 2000). Other studies have found that youth classified with stable insecure or secure – insecure attachment patterns commonly experienced childhood maltreatment (Bowlby, 1988; Weinfield, Scroufe, & Egeland, 2000; Wienfield, Whaley, & Egeland, 2004). Youth with stable insecure attachment patterns were also more likely to experience maltreatment at an earlier age compared to teens that changed from insecure to secure attachment patterns (Wienfield, Whaley, & Egeland, 2004). Higher rates of attachment stability were observed among children raised by caring attachment-figures whereas lower attachment stability was observed among a maltreated group of children (Egeland & Scroufe, 1981; Wienfield, Whaley, & Egeland, 2004). Not experiencing adverse life events in childhood appears to be a general indicator of attachment pattern security and stability.

In summary theorists indicate that caregiving experiences with the primary attachmentfigure in childhood become a foundation for other interpersonal relationships in adolescence

(Bowlby, 1988; Bartholomew & Horowitz, 1991). However, evidence indicating that patterns of attachment may change in childhood and adolescence suggests that researchers need to consider the impact of caregiver-child bonds and romantic relationships (Bartholomew & Horowitz, 1991) as well as other attachment experiences (e.g, teachers/mentors) that fall outside these narrowly defined relationships (Bowlby, 1970; Allen & Land, 1999). Further research examining the stability of attachment styles among adolescents is needed.

2.4. Conceptualization and Measurement of Attachment Patterns

Researchers are increasingly aware of the importance of supporting the healthy development of adolescents. Knowledge of attachment processes during adolescence extends our understanding beyond infancy and differentiates the developmental needs of youth from infants and adults. The development periods with the least amount of research measuring attachment ranges from mid-childhood to mid-adolescence (Greenberg, 1999). This is exemplified by the limited number of assessment tools available for assessing the attachment styles of adolescents compared to other developmental periods (e.g. infancy or adulthood).

There are three broad types of attachment measures, which include interviews, caregiverreports, and self-report. Apart from caregiver reports, most attachment measures used in the study of adolescents were originally developed for use either in infant or adult populations (Greenberg, 1999). For instance, the measures commonly utilized for quantifying adolescent attachment include the Romantic Attachment Scale (Hazan & Shaver, 1990), Adult Attachment Interview (Main, Kaplan, & Cassidy, 1985), and Attachment Interview and Self-Report (Bartholomew & Horowitz, 1991). The lack of validation of these attachment style assessment tools in adolescent populations indicates that caution is warranted when interpreting the findings from studies using these measures. The main issue arising from application of attachment instruments intended for adults in a youth population is the age-appropriateness of the content of the measurement tool. The majority of attachment measurements have not been adjusted to complement the developmental needs in adolescence (Allen & Land, 1999). For example, a frequently utilized assessment method in adult populations involves self-reports on various factors connected to romantic relationships. In romantic relationship self-reports, researchers speculate that the ways in which adults relate to their romantic partners is akin to how they related to their initial caregivers (Hazan & Shaver, 1990). However, the majority of adolescents have not or are just beginning to initiate romantic attachment style (Main, Hesse, & Kaplan, 2005). In response to these concerns, the Adult Attachment Interview (Main, Kaplan, & Cassidy, 1985) has been adapted for youth ages 16 to 25 to identify the developmental needs sensitive in late adolescence and early adulthood (Shaver, Belsky, & Brennan, 2000). There is a lack of research validating this tool for assessing attachment classifications among adolescents (Bartholomew & Horowitz, 1991).

From a methodological perspective, the correlation or congruity of classifications over time is influenced by both the stability of the construct being measured and the reliability of the measure. The use of continuous single-item instruments to measure attachment patterns makes it difficult to estimate the extent in which stability rates are affected by measurement unreliability (Scharfe & Bartholomew, 1994). The ability to generate reliability estimates using multi-item scales represents one approach to gauging the reliability of an instrument from the stability of the construct. Alternatively, assessments involving multiple raters or different methods of assessment could be evaluated. However, these procedures have not been implemented or are not able to be used in population-level research; for example, it would be very resource intensive to

conduct in depth personal interviews with large sample sizes. In response to the need for a brief self-report measure of attachment, Bartholomew & Horowitz (1991) worked to establish the construct validity of a four-category attachment model that could be used to guide the development of self-report measures.

2.4.1. Bartholomew's Four-Category Model

A conceptual extension of the three attachment styles (e.g. secure, avoidant, and anxiousresistant) identified by Ainsworth (1989) was introduced by Bartholomew (1990; Bartholomew & Horowitz, 1991). Researchers investigating attachment in adults and adolescents have developed various measures to assess the original styles identified by Ainsworth (1989) in her Strange Situation Study. For instance, Hazan and Shaver (1980) developed a three-type classification, within the context of romantic relationships, to conceptualize attachment patterns in adults. Similarly, Main and colleagues (1985) developed the Adult Attachment Interview, which conceptualizes their three-category attachment framework. Bartholomew's four-category model integrated these 3-category attachment concepts; and expanded the conceptual framework to a four-category model to enhance the precision of attachment knowledge (Bartholomew & Horowitz, 1991). Bartholomew developed both a semi-structured interview and self-report version of the instrument to quantify a four-prototype expansion of the traditional three attachment classifications (Bartholomew & Horowitz, 1991).

The previous three-category classifications of attachment styles varied in how they operationalized the avoidant insecure attachment patterns, either as fearful (Hazan & Shaver, 1990) or dismissing (Main, Kaplan, & Cassidy, 1985). This variation in how researchers classified avoidant attachment patterns was identified as a potential source of diverging evidence related to establishing patterns of avoidance-based attachment styles. That is, the single avoidant

classification might conceal theoretically different insecure attachment patterns. Bartholomew advanced the formulation of attachment constructs by conceptualizing how avoidant adolescents and adults differed in their conscious responsiveness to attachment-figures.

		Model of Self (Dependence)					
		Positive (low)	Negative (high)				
f Others lance)	Positive (low)	Secure Comfortable with intimacy and autonomy	Preoccupied Preoccupied with relationships				
Model o (Avoid	Negative (high)	Dismissing Dismissing of intimacy Counter-dependent	<i>Fearful</i> Fearful of intimacy Socially avoidant				

Figure 2.1. Bartholomew's (1990) Four-Category Attachment Classification.

The rectified four-attachment category conceptualized IWMs in terms of two dimensions: dependence and avoidance. Figure 2.1 illustrates how the attachment dimensions produce a bivariate contingency model with four classifications to explain internal representations (e.g. self vs. others) and attitudes of each (e.g. positive vs. negative). In other words, these dichotomized dimensions can be mapped in terms of "dependence" (e.g. reliance on self vs others for positive appraisal) and "avoidance" (e.g. degree to which the adolescent avoids or requires closeness with others). Bartholomew (1990) suggested two distinct patterns of avoidance attachment to counterpart these notions. Bartholomew (1990) identified four attachment styles, which align with Bowlby's (1969) original concept of IWMs and quantified each pattern on a continuum. Theoretically, the four-prototype attachment classification is closer to the original tenants of attachment proposed by Bowlby (1969, 1970) who theorized that IWMs consisted of two main aspects. First, attachment-figures are assessed to be responsive to signals of distress. Secondly, individuals evaluate the likelihood that the attachment-figure will respond in a helpful way. The first feature is comparable to a *model of others* whereas the second aspect is similar to *model of self*. These dimensions allow the four-prototype attachment model to quantify attachment patterns, specifically secure, dismissing, preoccupied, or fearful.

Secure attachment styles have been linked to early childhood experiences of caregiving sensitivity and timely response to needs (Beckwith, Cohen, & Hamilton, 1999). Secure toddlers will positively greet or approach their caregiver upon reunion after a brief separation and do not show signs of anger (Ainsworth, 1979). Toddlers with secure attachment styles understand there is a caregiver available while they explore their surroundings (Ainsworth, 1979). Children and adolescents with secure attachment styles report fewer adverse life events, such as childhood maltreatment, compared to insecurely attached young people (Beckwith, Cohen, & Hamilton, 1999).

Securely attached youth experience higher successes in mobilizing supports and resources involved in fostering positive adolescent development. Research findings demonstrate securely attached individuals have developed superior problem-solving skills, greater wellbeing, more life satisfaction, better social-emotional adjustment, and increased social competency with peers (Rice, FitzGerald, Whaley, & Gibbs, 1995; Lapsley, Rice, & Fitzgerald, 1990). Kobak and Sceery (1988) reported that securely attached youth are more capable of regulating their emotions and behaviour. Furthermore, study findings show secure adolescents are able to evaluate both positive and negative characteristics about themselves (Mikulincer, & Nachshon,

1991). Secure youth also demonstrate higher positive psychological adjustment (Cooper, Shaver, & Collins, 1998).

Securely attached adolescents also appear to rely internally for self-worth and show a desire for intimacy with others (Bartholomew & Horowitz, 1991) and typically score substantially higher on their ratings of intimacy with peers (Bartholomew & Horowitz, 1991). Securely attached youth frequently report positive interpersonal relationships and a sense of being accepted by others. Securely attached youth typically exhibit cooperation with others and actively engage in novel situations (Mennen & O'Keefe, 2005). They also tend to experience more positive interactions with peers (Allen & Land, 1999).

A young person who develops a positive view of both oneself and others is also more likely to be classified with secure attachment (Bartholomew & Horowitz, 1991). A secure adolescent has a sense of love and worthiness in addition to an expectation that other people are generally caring and responsive (Bowlby, 1969). Secure attachments provide adolescents with feelings of confidence, safety, and comfort (Allen & Land, 1999). As such, a secure attachment pattern includes both a positive representation of self and others. The positive appraisals and interpersonal relationships observed in adolescents with secure attachment contribute to the greater likelihood of positive health outcomes across the life course (Lapsley, Rice, & Fitzgerald, 1990; Kobak & Sceery, 1988).

In summary, attachment security influences the positive development of internalized mental representations in which adolescents interact with others and form interpersonal relationships (Waters, Weinfield, & Hamilton, 2000). Empirical evidence found adolescents who report secure attachments with others are rated as less anxious and hostile by caregivers and peers (Kobak & Sceery, 1988). These securely attached young people perceive themselves of being worthy of

acceptance and are more likely to view other people as favourable and trustworthy. Research findings suggest stably secure adolescents also report fewer mental health issues (Davila, Burge, & Hammen, 1997). Overall, the secure attachment style is generally associated with healthy development in adolescence (Allen & Land, 1999).

In contrast to the findings on secure attachment styles, the failure to develop attachment security can lead to social and health difficulties (Sroufe, Carlson, Levy, & Egeland, 1999; Abela et al., 2005; Kassel, Wardle, & Roberts, 2007). Adolescents who report a positive view of oneself and negative views of others are classified with *dismissing-avoidant attachment*. Bartholomew (1990) identified dismissing-avoidance from the single avoidant classification. Youth classified as dismissing generally avoid intimacy with others and rely on themselves for positive self-worth. Specifically, youth with dismissing-avoidant styles have been characterized as possessing "a defensive maintenance of self-sufficiency and dismissal of attachment needs" (Bartholomew & Shaver, 1998, pg. 27). Dismissing-avoidant adolescents are considered as defensively self-assertive individuals, who refute negative affect, and lessen importance of attachment needs. Research findings show those individuals with dismissing-avoidant scored highest on self-confidence, but lower scores on interpersonal relationships (Bartholomew & Horowitz, 1991). In comparison with secure and preoccupied, dismissing-avoidant individuals have lower rates for factors related to relationship closeness (e.g. ability to depend on others, self-disclosure, and intimacy; Bartholomew & Horowitz, 1991).

Dismissing attachment style characteristics include a range of negative social-emotional behaviour. Nearly one third of adolescents with dismissing attachment styles experience one or more negative life events, for example parental divorce or childhood maltreatment (Beckwith, Cohen, & Hamilton, 1999). Adolescents with dismissing attachment styles may not be able to

recall early childhood memories or they normalize adverse parental behaviour (Beckwith, Cohen, & Hamilton, 1999). Children with dismissing attachment styles were more likely to be reared by caregivers who engaged in less sensitive behaviour throughout early childhood (Beckwith, Cohen, & Hamilton, 1999). Dismissing youth also tend to disengage from interpersonal relationships. Attachment characteristics associated with having a dismissing style include avoiding discussion with others, idealizing past relationships, minimizing importance of past challenges, and displaying emotional invulnerability (Allen & Land, 1999). Those with a dismissing attachment style thus show a pattern opposite to the preoccupied classification in almost every respect.

Preoccupied attachment was previously known as anxious-ambivalent, which was introduced in Hazan and Shaver's (1985) work on attachment. Researchers have suggested that the label *preoccupied* from the four category attachment framework better conceptualizes the interpersonal dynamic observed in this attachment style (Feeney, Noller, & Hanrahan, 1994). Regardless of labels, preoccupied attached adolescents typically desire intimacy and depend on others for their positive self-worth. These individuals generally have positive views of others, but a negative view of oneself. Study findings indicate this attachment pattern is associated with an increased level of preoccupation with relationships and need for approval from others (e.g. by revealing negative perception of self-worth). A preoccupied individual holds a sense of unworthiness combined with a positive appraisal of others, which leads the individual to strive for self-acceptance by attaining approval from others.

Adolescents with preoccupied attachment style experience lower levels of autonomy and tend to internalize problems (Allen & Land, 1999). These behaviours are associated with higher rates of depression and suicide (Allen & Land, 1999). Youth with preoccupied attachment styles

tend to have histories of negative life events, for example serious physical illness, parent death, and/or child abuse (Beckwith, Cohen, & Hamilton, 1999). However, preoccupied adults disclose confusion about past adverse childhood experiences (Allen & Land, 1999). In short, youth who develop a negative view of oneself and a positive view of others are classified with a preoccupied attachment style.

A young person who develops a negative view of oneself and a negative view of others are classified with *fearful-avoidant attachment*. Individuals classified with fearful-avoidant report lower levels of emotional closeness with others (Bartholomew & Shaver, 1998). Young people with fearful attachment generally perceive themselves as undeserving of receiving support from others and view others as distrusting (Hazan & Shaver, 1990). Youth with a fearful-avoidant attachment style often self-report lower self-esteem and higher distress and discomfort when becoming too close with others. Fearful adolescents have low scores on selfconfidence; additionally, fearful youth score substantially lower than secure or preoccupied adolescents on rates of self-disclosure, ability to rely on others, and intimacy (Bartholomew & Horowitz, 1991). Individuals classified with fearful-avoidant attachment styles are categorized with "a conscious fear of anticipated rejection by others" (Bartholomew & Shaver, 1998, pg. 27). Fearful individuals protect oneself against distress by avoiding close relationships linked with an expectation that other people will be negatively predisposed, for example untrustworthy and unresponsive. By avoiding interpersonal relationships, fearful-avoidant individuals protect themselves against anticipated rejection from others. Study findings have found that avoidant attachment styles are associated with both a desire for intimate relationships as well as an uncomfortableness with closeness (Hazan & Shaver, 1990). These insecure individuals often

struggle to balance their attachment need to maintain a state of closeness and distance in relationships.

Similar to Bartholomew's model, previous attachment frameworks could correspondingly be dichotomized as positive or negative. These models equivalently associate negative viewpoints with identifying others as unreliable or rejecting whereas positive views are linked with perceiving others as responsive and caring. Both the model of self and others jointly delineate four prototype attachment classifications (e.g. secure, preoccupied, dismissing, and fearful). In brief, three of these attachment patterns (e.g. secure, preoccupied, and dismissing) theoretically counterpart the Adult Attachment Interview categories (e.g. secure/autonomous, dismissing and preoccupied; Main, Kaplan, & Cassidy, 1985). Additionally, three of four attachment patterns (e.g. secure, preoccupied, and fearful) relate to Hazan and Shaver's (1990) romantic relationship self-report categories (e.g. secure, anxious/ambivalent, and avoidant).

Bartholomew's (1990) four-category attachment measure, known as the Relationship Questionnaire, was compared with two other attachment measurements to validate the hypothesized constructs. Empirical evidence supports the correspondence of attachment dimensions between attachment measures. For instance, Bartholomew and Shaver (1988) found in their research study that the classifications obtained from two attachment measures, in particular Adult Attachment Interview and the Relationship Questionnaire, were significantly related. A subsequent study by Brennan, Shaver, and Tobey (1991) also showed that the classifications observed from the Bartholomew's and Hazan and Shaver's measurement instruments were significantly associated.

The four-category attachment classification approach to quantifying attachment also appears to have merit when considering youth populations. Empirical evidence exploring the

validity and reliability of Bartholomew's model supports the use of the Relationship Questionnaire for an assessment of adolescent attachment patterns, beyond the empirical work completed with university undergraduate populations (Sharfe & Bartholomew, 1994). Furthermore, the self-report attachment measurement considers both models of self and others, which is well suited to adolescence when youth initiate autonomy seeking and forming peer relationships. Researchers have advised that the age of population in which the attachment measurement was designed to explain should not be overlooked (Bartholomew, 1990).

2.5. Research Objectives

The present study is largely exploratory in nature and addresses concerns closely linked to the tenets of attachment theory. Although the theory of attachment styles indicates that attachment style should be stable by adolescence, several studies have found that adolescents may be prone to attachment fluctuations. The present study aims to provide further insights into the distribution of attachment patterns and their stability during adolescence by addressing the following research objectives:

Objective 1: To describe the distribution of attachment styles in a general population sample of adolescents.

Objective 2: To examine the stability of attachment styles over a six (6) month period in a general population sample of adolescents.

2.6. Methods

The data analyzed for this research study was drawn from the British Columbia Adolescent Substance Use Survey (BASUS). BASUS was a large prospective cohort study that began in 2009 with a focus on examining the relationship between psychosocial functioning and highschool students' opinions and experience with tobacco, alcohol, cannabis, and other illicit drugs. Every 6 months participants self-reported on a wide range of questions regarding family, psychological development, personal health and wellbeing, community, school, and peers.

Recruitment was conducted by the BASUS Research Team members contacting School District Superintendents across BC to receive approval to contact individual public secondary school principals. Promotion of the study was done by BASUS staff conducting presentations in participating schools, having school principals and/or other school staff distribute information packages to students as part of their school orientation materials in September. The information packages included a pamphlet describing the study, an information letter for guardians, and study promotional materials (e.g. locker magnet with study web link and toll-free contact phone number). Other promotional activities to raise awareness of the research project included advertisements in student newspapers and school posters.

The survey was accessible for students to participate at their convenience by logging into the BASUS website (www.basus.ca). Students registered with the online survey system and created usernames by either using their email address or creating an alternative username (e.g. explained on the web survey). Once students registered, they were presented with a consent form. Upon consenting, the students were presented with eligibility screening questions. To be eligible for this study, participants had to be a minimum age of 13 and attending a BC secondary school. Participants self-identified their age and school enrolment. In addition, participants needed to have the ability to read and complete an English internet-based survey.

Participants completed the survey at baseline and every six months. Non-responses for questions or measure items were permitted. The survey administration occurred in the autumn and spring of each academic year until 2012 winter. Although participants had the option to complete the survey across multiple time settings (i.e., they could logon and complete an

unfinished survey at any time), most completed the survey on one sitting which took participants approximately 45 minutes to finish. Each participant was given a \$25 honorarium for partial or full completion of the online survey. Participants received follow-up reminders online (e.g. email and/or Facebook), short message service (SMS) text, and traditional letters (via postal mail if requested). The mean participation rate was 20% among all potentially eligible students in participating schools with response rates ranging from 0% to 80% across individual schools. There are numerous potential influences on the variation in response rates. For example, insufficient time or resources for school administrators to promote the survey as the survey was conducted during an ongoing labour dispute which resulted in many teachers refusing to engage in non-care activities. Another reason for the wide response rates may be the wide range in number of eligible students within individual schools. Some schools had fewer than 10 eligible students which may have contributed to wide fluctuations in response rates.

2.6.1. Ethical Considerations

There are several ethical considerations with this study. Participants were provided with an informed consent upon registering for the online survey. Participants were given the opportunity to ask questions, which were responded by the BASUS Research Coordinator and/or the Primary Investigator. In order to maintain confidentiality, the survey system including all raw data was stored on a secure server at the Arthritis Research Centre (ARC) of Canada in Vancouver, British Columbia. Participants were given resource information for youth services, such as counselling resources, on the BASUS survey homepage. The original BASUS study was approved by participating School Districts, secondary schools and the UBC Behavioural Ethics Board (application #: H08-02841-A011). The secondary analysis undertaken for the present study was approved by the UBC Behavioural Ethics Board (e.g. application #: H14-00232). The BASUS

research was supported by the Canadian Institutes of Health Research (CIHR) funding scheme (project number 07-3631).

2.6.2. Measurements

Demographics. A short demographic survey was included in the web-based survey. Participants self-reported gender, age, grade and ethnic background.

Participants identified their gender as either male or female.

Parental education was included as an indicator for socioeconomic status for adolescents. Participants identified the highest education obtained by their father and mother. For the purposes of this thesis, the categories for reporting parents' education levels were collapsed from 7 levels to 4 levels in order to reduce the number of response options with low cell counts. The levels included "below high school," "high school," "some college or trades," and "undergraduate degree or higher."

Self-reported household financial situation was used as an additional indicator of socioeconomic status. For the purposes of this thesis, the categories for participants describing how much their family has in comparison to their peers were collapsed from 7 levels to 3 levels (e.g. above average, average, or below average) in order to reduce the number of response options with low cell counts. Researchers have suggested that this subjective measure is a valid and reliable predictor of socioeconomic status among youth populations (Jeon, Ha, & Choi, 2013).

Participants were provided with a check list of ethnicities that is widely used in public health and psychosocial research, such as the 2008 BC Adolescent Health Survey (McCreary Centre Society, 2009). The ethnic and racial descriptions were collapsed into four categories to maintain adequate sample sizes of each group: Aboriginal (e.g. First Nation and Metis), Asian (e.g.

Chinese, Japanese, Korean, Filipino, South East Asian, South Asian, and West Asian), other (Latin American, Black, and Other), and Caucasian. The categories are considered nonoverlapping because if a participant selected Aboriginal with other ethnicities, s/he was coded as Aboriginal. A second example of non-overlapping categories is that when both Asian and Caucasian were reported, the ethnicity was coded as Asian.

Attachment Styles. Participants' attachment styles were assessed using the Relationship Questionnaire (RQ; Griffin & Bartholomew, 1994). The four-type attachment classification developed by Bartholomew and colleagues (1990) aims to measure four attachment styles: secure, fearful, preoccupied, and dismissing. The RQ consists of short paragraphs with descriptions of attachment styles as they relate to close relationships with others in general (see appendix to review RQ scale; Griffin & Bartholomew, 1994).

The RQ is used to categorize participants into their best fitting attachment pattern. First, participants were asked to read all four descriptions and choose the *one* paragraph that best describes the way they generally feel in close relationships with others (e.g. overall style). As such, youth are rating a corresponding attachment style as the single, best fitting attachment pattern that describes them. Second, participants rate the extent to which each of the *four* attachment styles describes their usual style in relationships. Participants rated each style using a 7-point scale to gauge the extent each particular attachment style paragraph corresponds to their personality. Each of the four attachment pattern paragraphs utilizes a seven-point Likert rating ranging from 7=very accurately describes me to 1=doesn't describe me. The highest rated attachment paragraph is used to classify participants into their attachment style.

However, a problem emerges when two or more attachment styles are rated equivalently high. To deal with this, the rating provided for characterizing their overall attachment style in how they generally feel with interpersonal relationships is used to pick the appropriate style. If a participant chose a best fitting attachment pattern that was not one of the highest individual ratings, the logical insistency was deemed to warrant excluding the participants from the data set and further analysis. Furthermore, if there was a tie for highest rating and an overall attachment style was not chosen, there was little option but to remove the participant's data from analysis. Data was excluded in accordance with Bartholomew and Horowitz's (1991) recommendation in dealing with inconsistent attachment responses (i.e., when ties among individual ratings did not include the indicated overall attachment rating).

As mentioned, the overall and specific paragraph ratings were used for classifying youth attachment patterns in the present study. First, the participants placed a check mark to the letter paragraph (as shown below) corresponding to the pattern that best described them.

1. OVERALL Attachment style:

_____ A. It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not accept me.

_____B. I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others.

_____ C. I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them.

_____ D. I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.

Subsequently, each of the attachment descriptions were presented again and youth were then asked to indicate how well or poorly each attachment pattern relates to their interpersonal relationship style.

- 1. STYLE A RATING: Secure (e.g. 7=describes me to 1=doesn't describe me)
- 2. STYLE B RATING: Fearful (e.g. 7=describes me to 1=doesn't describe me)
- 3. STYLE C RATING: Preoccupied (e.g7=describes me to 1=doesn't describe me)

STYLE D RATING: Dismissing (e.g. 7=describes me to 1=doesn't describe me)
 A copy of the RQ can be found in the Appendix.

Past studies have validated this relatively brief attachment measure (Bartholomew & Horowitz, 1991). Self-reported attachment patterns obtained by the RQ are moderately correlated with interview ratings of each attachment style, ranging from .22 to .50 (Griffin & Bartholomew, 1994). Previous findings indicate the test-retest reliability of the single-item ratings averages .60 over eight months among first year college participants with a median age of 19 (Shaver & Brennan, 1992). Study findings provide support for the argument that insecure attachment is less reliable in regards to test-retest reliability and more susceptible to environmental context (Shaver & Brennan, 1992; Baldwin & Fehr, 1995; Davina, Burge, & Hammen, 1997).

2.7. Data Analysis

Descriptive statistics were used to examine the participant characteristics, specifically gender, ethnicity, socioeconomic status, and attachment patterns. Following the Canadian Institute for Health Research guidelines (2014), gender differences were examined by conducting stratified analyses. Data was aggregated and analyzed using Microsoft Excel 2010 and IBM SPSS Statistics Version 22 for Windows. Frequencies of each attachment style were calculated for BASUS Waves 6 and 7. Statistical analyses of categorical data were conducted using Pearson's Chi-square analysis.

Longitudinal analysis was carried out on data collected during six-month interval between spring 2012 (BASUS Wave 6) and fall/winter 2012 (BASUS Wave 7). The McNemar's Chisquare analysis was used to examine the changes in self-reported attachment styles (e.g. secure and insecure) from Wave 6 to Wave 7. All reported p-values are two-sided and ninety-five percent confidence intervals were calculated.

2.7.1. Data Preparation

The first step in preparing the data was to identify a cohort of eligible participants in Wave 6 of BASUS (n=1872) for analysis based on age and valid responses to the RQ (see Figure 2.2). Second, a review of responses was completed to quantify the number of missing observations. A number of participants completed only a subset of the measures examined in this study, thus providing valuable data on some measures and no data on others. For all key measures (e.g. RQ and demographic characteristics) the majority of cases had no missing values. There are two types of non-response leading to missing observations. The *unit non-response* is defined when the entire data collection is incomplete (e.g. a participant was a member of the BASUS cohort but did not participate in wave 6) whereas an *item non-response* is when partial data are available (e.g. participates in a wave, but individual items in the survey are missing; Schafer & Graham, 2002).

Of the Wave 6 sample, 203 participants did not complete the attachment measure and were excluded from the study. A review of the attachment observations was completed to determine which cases should be discarded due to inconsistent responding. Inconsistent observations were identified by determining if respondents rated two or more attachment styles equivalently. The

majority of these 2-way ties were resolved by utilizing the respondents' overall attachment style as the tie-breaker. However, if these respondents did not indicate an overall attachment style, their data was excluded from analysis. Additionally, respondents with a 3-way tie for highest rating (i.e., their highest individual ratings did not include their selected overall attachment style) their data was also excluded from analysis. In other words, participants who provided clearly inconsistent responses were excluded from analyses. To illustrate this ineligibility, the following is an example of inconsistent and tied responses:

- 1. OVERALL: Selected Attachment style (e.g. Style A)
- 2. STYLE A Rating: Secure (e.g. 1)
- 3. STYLE B Rating: Fearful (e.g. 3)
- 4. STYLE C Rating: Preoccupied (e.g. 6)
- 5. STYLE D Rating: Dismissing (e.g. 6)

Of the 1669 eligible youth who completed the attachment measures in Wave 6, 125 (7.5%) provided inconsistent responses and were excluded from further analysis. Of the remaining 1544 with attachment data, 21 participants were excluded from analysis because they were outside the age range of 14 to 16 years of age. An additional 10 youth did not meet the grade eligibility as they were not enrolled in grade 9 to 11 at the time of the survey.

As shown in Figure 2.2, a similar process to that described above was undertaken for Wave 7. Of the 1513 eligible participants in Wave 6, 1200 completed Wave 7 yielding an initial follow-up rate of 79%. Of these 1200 participants who completed both waves, 91 did not provide attachment data in Wave 7, 69 provided inconsistent responses on the RQ in Wave 7 and 2 youth reported being in grades outside the range. The final follow-up rate of eligible participants in Wave 6 was 69% (n=1038). Given losses to follow up can introduce bias, an investigation of

loss to follow-up associated with attachment styles was conducted, which found that failure to participate in Wave 7 was not associated with attachment style.

Figure 2.2. Data Preparation Flow Chart



2.8. Results

2.8.1. Sample Characteristics

Of the 1513 eligible participants in Wave 6 of this survey, 3 participants did not report their gender. These 3 participants were excluded from the gender stratified descriptive analysis presented in Table 2.1. From Wave 6, 896 (59%) were female and 614 (41%) were male. In comparison, the 2011/12 BC Ministry of Education statistics for all public secondary school students across all grades (e.g. grades 8 to 12) reported slightly fewer females (49%) compared to males (51%) enrolled in British Columbia secondary schools (Province of British Columbia, 2014). The majority of participants in this study were aged 15 (53%). Over half of the cohort (51%) self-reported Caucasian, 12% (n=168) identified as Aboriginal, 34% (n=496) indicated Asian, and 4% (n=52) reported an ethnicity classified as Other. This demographic profile is very similar to the 2011/12 provincial education statistics, which reported that nearly 12% of students attending public school in British Columbia self-identified as Aboriginal. Furthermore, the McCreary Centre's highly representative (n= 29,440) 2008 BC Adolescent Health Survey reported that 54% of their adolescent respondents self-identified "European" and 33% identified an Asian ethnicity and 12% identified as Aboriginal. The sample characteristics from the Wave 6 BASUS were also compared to participant characteristics reported in McCreary Centre Society's 2008 BC Adolescent Health Survey (n= 29,440) participant characteristics. The similar patterns of ethnicities between the sample of BASUS participants examined in this study and the descriptive reports from McCreary Centre's 2008 BC Adolescent Health Survey suggest that results found in this study are generalizable to youth currently enrolled in secondary schools in British Columbia.

As shown in Table 2.1, substantial gender differences in grade levels among young people were found in Wave 6 ($\chi^2 = 14.38$, p < 0.001). Females were more likely to be in higher grade levels and males were more likely to be in lower grade levels. A chi-square test of independence was performed to examine the relation between gender and various socioeconomic indicators: household financial situations and parental education levels. The association between gender and self-reported household financial income (χ^2 =26.93, p<0.01), maternal education level (χ^2 =8.55, p<0.05) and parental education (χ^2 =11.95, p<0.01) were all significant.

Table 2.1 Wave 6 Participant Characteristics

Characteristic	Gender							
	Male			Females			Total Sample	
	N	%	95% C.I.		%	95% C.I.	N	<u>%</u>
Total	614	40.7	38.2 - 43.2	896	59.2	56.7 - 61.7	1510	100
Grade ^A								
Grade 9	286	46.6	42.7 - 50.5	330	36.8	33.7 - 40.0	616	40.8
Grade 10	325	52.9	48.9 - 56.9	560	62.5	59.3 - 65.6	885	58.6
Grade 11	3	0.5	-	6	0.7	-	9	0.6
$Total^{\ \ }$	614	100		896	100		1510	100
Age								
14 years old	157	25.6	22.3 - 29.2	194	21.7	19.1 - 24.5	351	23.3
15 years old	308	50.2	46.2 - 54.1	491	54.8	51.5 - 58.0	799	52.9
16 years old	149	24.3	20.8 - 27.3	211	23.6	20.9 - 26.4	360	23.8
$Total^{¥}$	614	100		896	100		1510	100
Ethnicity ^B								
White	326	54.7	50.7 - 58.7	425	48.8	45.5 - 52.1	751	51.2
Aboriginal	69	11.6	9.3 - 14.4	99	11.4	9.4 - 13.7	168	11.5
Asian	179	30.0	26.5 - 33.8	317	36.4	33.3 - 39.6	496	33.8
Other	22	3.7	2.5 - 5.5	30	3.4	2.4 - 4.9	52	3.5
Total [¥]	596	100		871	100		1467	100
Household Income ^A								
Above Average	290	49.1	45.1 - 53.1	359	41.4	38.2 - 44.7	649	44.5
Average	195	33.0	29.3 - 36.9	318	36.7	33.5 - 40.0	513	35.2
Below Average	106	17.9	15.1 - 21.2	190	21.9	19.3 - 24.8	296	20.3
$Total^{¥}$	591	100		867	100		1458	100
Maternal Education ^B								
Below High School	30	5.5	3.9 - 7.8	56	7.0	5.5 - 9.0	86	6.4
High School	120	22.1	18.8 - 25.7	184	23.1	20.3 - 26.1	304	22.7
Some College or Trades	132	24.3	20.9 - 28.0	234	29.3	26.3 - 32.6	366	27.3
Undergraduate degree or higher	262	48.2	44.0 - 52.4	324	40.6	37.3 - 44.0	586	43.7
$Total^{\frac{\gamma}{4}}$	544	100		798	100		1342	100
Paternal Education ^A								
Below High School	32	6.0	4.3 - 8.3	65	8.4	6.7 - 10.6	97	7.4
High School	105	19.6	16.5 - 23.2	126	16.3	13.9 - 19.1	231	17.7
Some College or Trades	140	26.2	22.6 - 30.1	255	33.0	29.8 - 35.4	395	30.2
Undergraduate degree or higher	258	48.2	44.0 - 52.5	326	42.2	38.8 - 45.7	584	44.7
$Total^{¥}$	535	100		772	100		1307	100
n < 0.01, $n < 0.05$								

^A p < 0.01; ^B p < 0.05[¥] Difference in sub-total proportion of males and females reflect those participants that did not respond to items

2.8.2. Distribution of Attachment Patterns

Prior to assessing the stability of adolescent attachment styles, the frequencies of attachment styles in both Waves 6 and 7 were examined as well as their associations with participants' gender. The frequencies of youth attachment styles at both Wave points are described below.

Wave 6. Table 2.2 presents comparison results of attachment styles and socio-demographic characteristics from Wave 6. Using the four attachment categories, secure youth made up 46% of the entire Wave 6 sample (n=692). From the 818 youth with insecure attachment styles, forty-four percent (n=346) were fearful, 39% (n=317) were dismissing, and 19% (n=155) were preoccupied. Chi-square analyses were conducted to assess the bivariate relationship between each demographic variable and overall attachment classification.

Substantial gender differences in attachment styles among young people were found in Wave 6 ($\chi^2 = 27.85$, p < 0.001). Females were more likely to be classified as fearful and males were more likely to report dismissing attachment. A chi-square test of independence was performed to examine the relation between attachment styles and household financial situations. The relation between these variables in Wave 6 was significant (χ^2 =41.94, p<0.01). Securely attached youth were more likely to describe their household income as above average. Ethnicity was unrelated to adolescents' attachment patterns.

Wave 7. At the Wave 7 assessment, as shown in Table 2.3, approximately forty percent of participants (n=438) reported secure attachment. In Wave 7, 600 youth were classified with one of the three insecure attachment styles. Of the insecure attachment styles, forty-six percent (n=274) were fearful, 31% (n=186) were dismissing, and 23% (n=140) were preoccupied.

Pearson's chi-square analysis for Wave 7 revealed significant gender differences in youth attachment styles ($\chi^2 = 53.48$, p < 0.001). In this wave, 50% of males self-reported secure
attachment in comparison to 38% of females with reported secure attachment. As in Wave 6, more female participants reported fearful attachment styles whereas more males were likely to be categorized with dismissing attachment. Substantial household income differences in attachment styles among young people were found in Wave 7 ($\chi^2 = 34.91$, p < 0.01).

						Adolescent	Attachn	nent						
Characteristic		Secur	a Style					Insecu	re Styles				Total	
		Secure Style			Fe	arful	Preoccupied			Dismissing			Sample	
	n	%	95% C.I.	n	%	95% C.I.	n	%	95% C.I.	n	%	95% C.I.	n	%
Total	692	45.8		346	22.9		155	10.3		317	21.0		1510	100
Sex ^A														
Male	298	48.5	44.6 - 52.5	106	17.3	14.4 - 20.5	54	8.8	6.8 - 11.3	156	25.4	22.1 - 29.0	614	100
Female	394	44.0	40.8 - 47.2	240	26.8	24.0 - 29.8	101	11.3	9.3 - 13.5	161	18.0	15.6 - 20.6	896	100
Total *	692	45.8		346	22.9		155	10.3		317	21.0		1510	100
Age														
14 years old	176	50.3	45.1 - 55.5	62	17.7	14.1 - 22.1	38	10.9	8.0 - 14.6	74	21.1	17.2 - 25.7	350	100
15 years old	361	45.1	41.7 - 48.6	187	23.4	20.6 - 26.4	81	10.1	8.2 - 12.4	171	21.4	18.7 - 24.4	800	100
16 years old	155	43.1	38.0 - 48.2	97	26.9	22.6-31.8	36	10.0	7.3 - 13.5	72	20.0	16.2 - 24.4	360	100
Total *	692	45.8		346	22.9		155	10.3		317	21.0		1510	100
Ethnicity														
White	352	46.8	43.3 - 50.4	170	22.6	19.8 - 25.7	74	9.8	7.9 - 12.2	156	20.7	18.0 - 23.8	752	100
Aboriginal	73	43.2	36.0 - 50.7	45	26.6	20.5 - 33.8	17	10.1	6.4 - 15.5	34	20.1	14.8 - 26.8	169	100
Asian	225	45.4	41.0 - 49.8	115	23.2	19.7 - 27.1	48	9.7	7.4 - 12.6	108	21.8	18.4 - 25.6	496	100
Other	22	41.5	29.3 - 54.9	12	22.6	13.5 - 35.5	11	20.8	12.0 - 33.5	8	15.1	7.9 - 27.1	53	100
Total ${}^{\text{¥}}$	672	45.7		342	23.3		150	10.2		306	20.8		1470	100
Household Income ^A														
Average	327	50.2	46.4 - 54.1	133	20.4	17.5 - 23.7	61	9.4	7.3 - 11.9	130	20.0	17.1 - 23.2	651	100
Average Below	233	45.4	41.2 - 49.8	116	22.6	19.2 - 26.4	47	9.2	7.0 - 12.0	117	22.8	19.4 - 26.6	513	100
Average	106	35.7	30.5 - 41.3	89	30.0	25.0 - 35.4	44	14.8	11.2 - 19.3	58	19.5	15.4 - 24.4	297	100
$Total^{\frac{y}{4}}$	666	45.6		338	23.1		152	10.4		305	20.9		1461	100

Table 2.2 Wave 6 Participant Attachment Patterns

^A p < 0.01[¥]Difference in sub-total proportion of attachment styles reflect those participants that did not respond to items

						Adolescen	t Attacł	ment						
Characteristic		Saan	Style				Ι	nsecure	e Styles				Tot	al
		Secure	Style		Fear	ful	Preoccupied				Dism	issing	Sample	
	Ν	%	95% C.I.	N	%	95% C.I.	Ν	%	95% C.I.	n	%	95% C.I.	n	%
Total	438	42.2		274	26.4		140	13.5		186	17.9		1038	
Sex ^A														
Male	189	50.3	45.2 - 55.3	56	14.9	11.7 - 18.8	41	10.9	8.1 - 14.5	90	23.9	19.9 - 28.5	376	100
Female	249	37.6	34 - 41.4	218	32.9	29.5 - 36.6	99	15.0	12.4 - 17.9	96	14.5	12.0 - 17.4	662	100
$Total^{*}$	438	42.2		274	26.4		140	13.5		186	17.9		1038	100
Age														
						12 .0 -								
14 years old	26	49.1	36.1 - 62.1	11	20.8	33.5	8	15.1	7.9 - 27.1	8	15.1	7.9 - 27.1	53	100
15 years old	175	45.9	41.0 - 51.0	84	22.0	18.2 - 26.5	57	15.0	11.7 - 18.9	65	17.1	13.6 - 21.2	381	100
16 years old	234	39.3	35.4 - 43.2	177	29.7	26.2 - 33.5	73	12.2	9.9 - 15.1	112	18.8	15.9 - 22.1	596	100
17 years old	3	37.5	-	2	25.0	-	2	25.0	-	1	12.5	-	8	100
$Total^{¥}$	438	42.2		274	26.4		140	13.5		186	17.9		1038	100
Ethnicity														
White	210	42.7	38.4 - 47.1	126	25.6	22.0 - 29.7	67	13.6	10.9 - 16.9	89	18.1	14.9 - 21.7	492	100
Aboriginal	45	43.3	34.2 - 52.9	26	25.0	17.7 - 34.1	13	12.5	7.5 - 20.2	20	19.2	12.8 - 27.8	104	100
Asian	160	40.3	35.6 - 45.2	115	29.0	24.7 - 33.6	54	13.6	10.6 - 17.3	68	17.1	13.7 - 21.2	397	100
Other	14	46.7	30.2 - 63.9	5	16.7	7.3 - 33.6	3	10.0	3.5 - 25.6	8	26.7	14.2 - 44.5	30	100
$Total^{¥}$	429	41.9		272	26.6		137	13.4		185	18.1		1023	100
Household Income ^A														
Above Average	201	45.9	41.3 - 50.6	103	23.5	19.8 - 27.7	53	12.1	9.4 - 15.5	81	18.5	15.1 - 22.4	438	100
Average	161	43.9	38.9 - 49.0	90	24.5	20.4 - 29.2	49	13.4	10.3 - 17.2	67	18.3	14.6 - 22.5	367	100
Below Average	66	31.6	25.7 - 38.2	75	35.9	29.7 - 45.6	34	16.3	11.9 - 21.9	34	16.3	11.9 - 21.9	209	100
$Total^{*}$	428	42.2		268	26.4		136	13.4		182	17.9		1014	100
$A = \langle 0, 0 \rangle$														

Table 2.3 Wave 7 Participant Attachment Patterns

^A p < 0.01[¥] Difference in sub-total proportion of attachment styles reflect those participants that did not respond to items

2.8.3. Adolescent Attachment Pattern Stability

Table 2.4 presents the results of the cross-tabulations of Wave 6 and Wave 7 attachment classifications. For youth with secure attachment at Wave 6, approximately sixty percent retained the same classification in Wave 7. The proportion of stable secure attachment styles was similar among boys (68%, 95%CI 61-74) and girls (62%, 95%CI 56-67). Girls who went from being insecure at Wave 6 to secure at Wave 7 were fairly evenly distributed among the three insecure styles. For female respondents who were fearful at Wave 6, over half were fearful six months later whereas approximately 36% of fearful males reported the same attachment in Wave 7. Nearly forty percent of those males who identified themselves as dismissing in Wave 6 retained the same classification at Wave 7. However, males who were initially classified as preoccupied or dismissing at Wave 6, a substantial amount were classified as secure at Wave 7 (e.g., 38% of preoccupied and 40% of dismissing shifted to a secure attachment style). The findings from the computation of the McNemar's test to investigate if there is a trend toward or away from security over time by gender differences is presented following Table 2.4.

T •4• 1	Follow-up (Wave 7)													
Initial (Wave 6)		Secure Style			Insecure Styles								То	tal
(Wave 0)					Fee	arful		Preoccupied			Dismissing			Sample
	n	%	95% C.I.	Ν	%	95% C.I.	Ν	%	95% C.I.	Ν	%	95% C.I.	n	%
Males														
Secure	120	67.8	60.6 - 74.2	13	7.3	4.3 - 12.2	16	9.0	5.6 - 14.2	28	15.8	11.2 - 21.9	177	100
Fearful	18	25.7	16.9 - 37.0	25	35.7	25.5 - 47.4	10	14.3	8.0 - 24.3	17	24.3	15.8 - 35.5	70	100
Preoccupied	13	38.2	23.9 - 55.0	5	14.7	6.5 - 30.1	11	32.4	19.1 - 49.2	5	14.7	6.5 - 30.1	34	100
Dismissing	38	40.0	30.7 - 50.1	13	13.7	8.2 - 22.0	4	4.2	1.7 - 10.3	40	42.1	32.7 - 52.2	95	100
Total	189	50.3	45.2 - 55.3	56	14.9	11.7 - 18.8	41	10.9	8.1 - 14.5	90	23.9	19.9 - 28.5	376	100
Females														
Secure	178	61.8	56.1 - 67.2	51	17.7	13.7 - 22.5	26	9.0	6.2 - 12.9	33	11.5	8.3 - 15.7	288	100
Fearful	28	15.6	11.0 - 21.6	101	56.1	48.8 - 63.2	30	16.7	11.9 - 22.8	21	11.7	7.8 - 17.2	180	100
Preoccupied	17	21.8	14.1 - 32.2	26	33.3	23.9 - 44.4	30	38.5	28.5 - 50.0	5	6.4	2.8 - 14.1	78	100
Dismissing	26	22.4	15.8 - 30.8	40	34.5	26.5 - 42.5	13	11.2	6.7 - 18.2	37	31.9	24.1 - 40.9	116	100
Total	249	37.6	34.0 - 41.4	218	32.9	29.5 - 36.6	99	15.0	12.4 - 17.9	96	14.5	12.0 - 17.4	662	100
Total Sample														
Secure	298	64.1	59.6 - 68.3	64	13.8	10.9 - 17.2	42	9.0	6.8 - 12.0	61	13.1	10.4 - 16.5	465	100
Fearful	46	18.4	14.1 - 23.7	126	50.4	44.2 - 56.5	40	16.0	12.0 - 21.1	38	15.2	11.3 - 20.2	250	100
Preoccupied	30	26.8	19.5 - 35.7	31	27.7	20.2 - 36.6	41	36.6	28.3 - 45.8	10	8.9	4.9 - 15.7	112	100
Dismissing	64	30.3	24.5 - 36.8	53	25.1	19.8 - 31.4	17	8.1	5.1 - 12.5	77	36.5	30.3 - 43.2	211	100
Total	438	42.2		274	26.4		140	13.5		186	17.9		1038	

Table 2.4 Cross-Tabulations of Attachment Style Patterns

	Time 2 (W7)							
		Insecure Styles (%)	Secure Style (%)	Total (%)				
Initial	Insecure Styles (%)	303 (73%)	71 (29%)	374 (56%)				
(W6)	Secure Style (%)	110 (27%)	178 (71%)	288 (44%)				
	Total (%)	413 (62%)	249 (38%)	662 (100%)				

Table 2.5 Bivariate Table of Female Attachment Style Over Six Months

To accommodate the paired nature of the data across waves, a McNemar's Chi-square test with Yates correction was performed to examine the difference in attachment styles at initial assessment (e.g. Wave 6) and subsequent attachment styles six months later at Time 2 (e.g. Wave 7) among female students. The test indicated that there was a statistically significant difference in the distribution of attachment styles over the six-month period ($\chi^2 = 8.19$, p < 0.01).

Table 2.6 Bivariate Table of Male Attachment Style Over Six Months

		Time	e 2 (W7)		
		Insecure Styles	Secure Style	Total	
		(%)	(%)	(%)	
Initial	Insecure Styles	130 (70%)	69 (35%)	199 (53%)	
(W6)	Secure Style	57 (32%)	120 (68%)	177 (47%)	
	Total	187 (50%)	189 (50%)	376 (100%)	

For male adolescents, a McNemar's test with Yates correction was performed to determine if there was a statistically significant difference in the distribution of attachment styles between initial assessment (e.g. Wave 6) and later assessment at Time 2 (e.g. Wave 7). The results of this test indicate that that were not statistically significant differences ($\chi^2 = 1.05$, p = 0.31).

2.9. Discussion

The present study examined the distribution and stability of attachment styles among high school students in British Columbia. Adolescence was chosen for exploration in this study because it is a developmental stage in which youth appear particularly vulnerable to the effects of novel stresses associated with the transition to more independent living. For instance, adolescence is associated with increased vulnerability to the onset of many mental illnesses (Department of Human Services, 2005) and the initiation of maladaptive coping strategies associated adolescents' decisions to engage in high risk activities, such as, substance use (Wei, Heppner, Russell, & Young, 2006; Kemshall, Marsland, Boeck, & Dunkerton, 2006). This potential vulnerability has attracted the attention of school programmers who wish to develop interventions to help adolescents cope with challenging situations as they transition into healthy adults (Bucci, Roberts, Danquah, & Berry, 2014). Given the role of attachment styles in adolescent psychosocial development and the lack of research on the distribution of adolescent attachment styles in general population samples of adolescents, a key objective of this study was to quantify the distribution of attachment styles in adolescence using data collected from a large sample of youth enrolled in the British Columbia Adolescent Substance Use Survey (BASUS).

The results from the BASUS Wave 6 sample indicated that 46% of participants had secure attachment styles, 23% fearful, 10% were preoccupied and 21% were classified as having a dismissing attachment style. This pattern of results was surprisingly similar to those observed in other adolescent and early adulthood studies (Cyr, Euser, Bakermans-Kranburg, & Van Ijzendoorn, 2010; Del Giudice, 2009) and adds to the validation evidence of the RQ. For example, Bartholomew and Horowitz (1991) found the attachment distribution of young adults (e.g. ages 18 to 22) was 47% secure, 18%, dismissing, 14% as preoccupied, and 21% were classified as fearful.

The association between socioeconomic status (SES) and adolescent attachment style was statistically significant and followed a direction supported by the literature. For example, the present study found that youth who were insecurely attached were among the lowest SES. In particular, youth with fearful and preoccupied attachment styles were overrepresented in the lower SES positions. In the current study, attachment styles were associated with household financial situations. Specifically, forty-five percent (n=649) of the sample described their household's financial situation (i.e. how much money their family has) as above average, 35% (n=513) reported average household levels, and 20% (n=296) indicated below average financial situations. This finding is supported by the research of Schmitt and colleagues (2004) who found that across 54 counties, stress and economic hardship (e.g. indexed by national per capita income), were strongly associated with attachment styles as assessed by the RQ. Other studies have also found that low socioeconomic status in adolescence is associated with increased risk of experiencing stressors ranging from frequent residence changes, childhood maltreatment, and high crime neighbourhoods (Allen, Mcelhaney, Kuperminc, & Jodl, 2004). These adverse experiences may make it more challenging for youth to develop a secure attachment pattern (Allen, Mcelhaney, Kuperminc, & Jodl, 2004). The current study has thus provided a description of the distribution of attachments styles and adds to the literature validating the RQ by linking attachment security to environmental factors, such as household income levels that is strongly supported by theory.

In terms of gender, substantial gender differences in attachment styles among young people were found in Wave 6. These differences were related to the prevalence of insecure styles as

forty-six percent of the sample was classified as secure and this did not vary substantially across gender. Although few gender differences have been found in studies of attachment (Cyr, Euser, Bakermans-Kranenburg, & Van Ijzendoorn, 2010), the present study found females were more likely to be classified as fearful and males were more likely to report dismissing attachment. The current study findings show male attachment pattern distribution was 48% secure and 25% dismissing. Similarly, a meta-analytical study reported an attachment distribution for males of 48% secure and 33% dismissing (Del Giudice, 2009). The higher rates of dismissing styles among males is supported by research indicating that males are less likely to express their emotions or seek emotional support in times of distress (Tamres, Janicki, & Helgeson, 2002). Dismissing youth also typically describe themselves as self-sufficient and show little need for intimacy and closeness with others (Del Giudice, 2009). As such, the current findings are consistent with previous studies that have also found that insecure males are more likely to be classified with dismissing attachment compared to other insecure attachment styles (Beckwith, Cohen, & Hamilton, 1999).

In comparison, girls have been found to have higher rates of preoccupied and fearful attachment styles (Schmitt, et. al., 2004; Bartholomew & Horowitz, 1990; Scharfe & Bartholomew, 1994; Brennan, Shaver, & Tobey, 1991). Preoccupied youth commonly describe themselves as desiring closeness and feel uncomfortable when not involved in close relationships (Del Giudice, 2009). Within the context of normal or mildly stressful environments, insecurely attached females tend to adopt preoccupied, help seeking strategies which keep them in close contact with social supports (Del Giudice, 2009). These teens may eagerly seek social relationships or experience more internalizing problems (Del Giudice, 2009). In contrast,

fearfully attached girls are more likely to experience fear of rejection and distrust of others (Bartholomew & Horowitz, 1991).

The second major objective of this study was to explore the stability of attachment styles over a time period of 6 months. The results of this study indicate that the majority (52%) of attachment patterns in adolescents aged 14 to 16 years of age remained stable over 6 months. In agreement with existing literature, the most stable style was secure where 64% of the participants remained secure. This degree of consistency is explained by researchers who state that youth with a secure attachment style are more likely to be living in a persistently stable supportive environment (Hamilton, 2000; Waters, Weinfield, & Hamilton, 2000; Weinfield, Whaley, & Egeland, 2004). The finding also adds to current empirical evidence indicating that between 50% and 80% of adolescents retain the same attachment style classification over periods of time ranging from weeks to months (Hamilton, 2000; NICHD Early Child Care Research Network, 2001). Further, Shaver and Brennan (1992) indicate categorical attachment responses are approximately 70% stable over eight months, which is a similar assessment timespan as the present study. Similarly, researchers have found that attachment styles in both mainstream and high-risk populations tend to moderately stabilize by middle adolescence (Allen, Mcelhaney, Kuperminc, & Jodl, 2004).

As previously noted, the present study found 64% of securely attached young people retained the same attachment disposition six months later. Past studies demonstrated stability rates are the highest among secure attachment patterns (Davina, Burge, & Hammen, 1997; Bartholomew & Horowitz, 1991). Scoufe and Waters (1977) found secure attachment at one point of time establishes the probability for secure relationships at consequent time points. Furthermore, empirical evidence indicates securely attached youth also tend to report a secure attachment

pattern consistently over time (Rice, FitzGerald, Whaley, & Gibbs, 1995). Researchers have also found that stable secure attachment is associated with academic achievement in college due to persistently supportive relationships with peers and parents (Rice, FitzGerald, Whaley, & Gibbs, 1995).

The present study findings indicate there are gender differences in trend toward or away from security over time; in particular, there were significant findings in regards to women's attachment trends. Researchers suggest females experience generally more socialization that supports self-regulation and increased sensitivity to interpersonal issues (Leadbeater, Kuperminc, Blatt, & Hertzog, 1999). Females experience increasing more stressful life events involving others in which they rely more on social support for coping and wellbeing (Leadbeater, Kuperminc, Blatt, & Hertzog, 1999). Past research studies indicated attachment styles are moderately stable and observed changes potentially reflect cognitive and social variability (Baldwin & Fehr, 1995; Davina, Burge, & Hammen, 1997; Siegel, 2012). This variability may represent a second period attachment sensitive that could be adaptive for some youth – this apparent potential for change provides support for the potential of gender-based interventions to shift attachment styles.

It is also possible that poor reliability may explain the level of change observed in this study. However, for both males and females, greater change was associated with insecure attachment styles. This is consistent with empirical evidence indicating that the attachment patterns undergoing the most fluctuations tend to be related to insecure attachment styles rather than secure attachment (Egeland & Farber, 1984; Davila, Burge, and Hammen, 1997; Rice, FitzGerald, Whaley, & Gibbs, 1995). For example, research findings show approximately 30% of adolescent attachment pattern changes over time (Davila, Burge, & Hammen, 1997). In particular, youth who experience most change tend to be exposed to adverse environmental experiences (e.g. parents were separated, divorced, never married, or deceased), which might be linked to the lack of persistency to create stable IWMs (Davila, Burge, & Hammen, 1997).

Theoretical insights have appeared in the literature in the past few decades regarding the implications of attachment theory for adolescent development. Attachment patterns may have a critical role in the developmental process by its influence on basic patterns of psychosocial development. The current research study provides empirical evidence of the high stability among participants with secure attachment, but moderate instability of insecure attachment patterns among youth. The observed rates of attachment style changes are comparable to those found in previous studies (e.g., Sharfe & Bartholomew, 1994) and support the notion that during adolescence, youth may be reassessing previous attachment experiences when building peer relationships, autonomy from caregivers, and perspective-taking skills (Thompson & Raikes, 2003; Allen & Land, 1999). This potential for change, especially among those with insecure attachment styles can be viewed as supporting the potential of interventions to help youth develop stable secure attachment styles.

2.9.1. Limitations and Future Analyses

The present study provides empirical evidence on the distribution and stability of adolescent attachment patterns for a large general population sample of adolescents. However, there are aspects of the study design and sample that could potentially limit the generalizability and validity of these conclusions. First, this study is based on the assumption of developmental continuity in attachment patterns. Previous study findings provide support of attachment pattern organization from infancy through adulthood in low-risk samples (Main, Kaplan, & Cassidy, 1985; Hamilton, 2000). The present study assumes that adolescents' current attachment style reflects their attachment experiences earlier in life. However, the Relationship Questionnaire

measures current state of mind and it is possible that experiences in high-school with peers and adult mentors may influence responses to the RQ more than early childhood experiences with caregivers implicated by the underlying theory of attachment. The interpretation of the RQ attachment styles reported in this study thus need to be interpreted with caution and substantiated with longitudinal research that prospectively traces attachment-figure relationships, psychosocial characteristics, and changes in attachment patterns from early childhood through to adolescence and adulthood.

Second, volunteer bias associated with enrolment in the BASUS cohort study challenges the external validity of the current study. For instance, youth who voluntarily participated at their school may be different in some way from the general adolescent population (Hernan, Hernandez-Dias, & Robins, 2003). For example, the majority of participants in the present study were female (59%). However, the 2011/12 BC Ministry of Education statistics for all public secondary school students across all grades (e.g. grades 8 to 12) reported slightly fewer females (49%) compared to males (51%) enrolled in British Columbia secondary schools (Province of British Columbia, 2014). The McCreary Centre Society (2009) reported nearly 58% of high school student respondents have ever tried drinking alcohol in comparison to 55% of similarly aged respondents in BASUS (Richardson, Kwon, & Ratner, 2013). Furthermore, 30% of youth in the BC Adolescent Health Survey reported using marijuana in comparison to 27% of the BASUS participants (Richardson, Kwon, & Ratner, 2013). It should be noted that a very different pattern of results may be found when examining youth who are not enrolled in school (e.g., homeless or run away youth) or youth who are attending alternative education programs.

Third, there appears to be numerous associations among factors, specifically attachment, age, gender and socioeconomic status. A limitation of this study is it did not include a multivariate

analysis looking at these factors together to adjust for their potential effect on stability of attachment and explore the various interactions among them. The reliance on bivariate associations does not account for the potential combined influence of these various factors (e.g. age, gender, income) on attachment style stability over time. Comprehensive multivariate modelling studies are needed to provide researchers with the opportunity to explore the dynamic relationships between attachment stability and psychosocial characteristics (e.g. gender and age) as youth begin to transition from being completely reliant on caregivers to becoming semiindependent adults.

The final limitation is that the developing nature of attachment style experienced by some adolescents may not uniquely fit into any one single attachment style (Scharfe & Bartholomew, 1994). Rather, young people may report a mix of perspectives in the context of relationships with others (Scharfe & Bartholomew, 1994). For the purposes of this study we chose to follow the scoring recommendations of the RQ's authors and thus classified respondents into a single attachment style (Bartholomew & Horowitz, 1991). Although this categorical approach is encouraged by attachment theorists', it does not fully use the rating scale data for each attachment style provided by participants. This data may contain valuable information on the development of attachment styles and future research studies exploring the relative advantages of measuring attachment styles in terms of a four-category framework in comparison to continuous attachment measures is needed.

2.9.2. Conclusion

This research presented in this chapter proves further evidence towards understanding the distribution of attachment styles among youth. Similar to other studies (e.g., Bartholomew & Horowitz, 1991; Del Giudice, 2009), this study found that the majority of youth were securely

attached, however, there were notable differences in the attachment distributions between boys and girls. The gender difference results of this study are consistent with previous studies, which found females tended to be classified as fearful or preoccupied and males tended to classified dismissing (Bartholomew & Horowitz, 1991; Cyr, Euser, Bakermans-Kranenburg, & Van Ijzendoorn, 2010; Del Giudice & Belsky, 2010). These results support the need for future studies to incorporate gender differences in attachment research investigating youth psychosocial development.

The current study extends attachment research in adolescence in terms of both the measurement and application of the attachment construct in a representative youth population. The analyses indicated that despite the many developmental and social changes experienced by adolescents, there is a tendency for adolescents with secure attachment styles to retain their stable attachment styles. This is supported by research indicating that attachment continuity is largely predicted by the stability of protective factors (Davila, Burge, & Hammen, 1997). However, the findings of this study also indicate that attachment patterns, particularly insecure patterns, are susceptible to change in response to environmental and developmental factors (Bowlby, 1969; NICHD Early Child Care Research Network, 2001; Waters, Weinfield, & Hamilton, 2000). Although researchers have examined attachment patterns across the lifespan as well as the possibility attachment style transformations (e.g., Allen & Land, 1999; Lapsley, Rice, & FitzGerald, 1990), more work is needed to identify the processes underlying changes in attachment style that occur in adolescence.

Documenting the distribution of attachment styles in adolescence is an important first step in understanding the development of the attachment system during this critical developmental period. Identifying predictors of future change in levels of attachment security is a critical next

step toward creating empirically supported intervention and prevention strategies that foster youth mental health and wellbeing. The findings presented in this chapter indicate that changing adolescents' attachment styles is possible. Furthermore, several researchers have recently suggested that such change is more likely to occur adolescence due to the developmental sensitivity associated with this stage of human development (Moretti, Obsuth, Craig, & Bartolo, 2014).

In terms of implications for public health and clinical medicine, attachment-informed frameworks for interventions are beginning to be utilized in some clinical settings. For example, therapists and psychiatrists have suggested using attachment theory as the foundation for treatment of youth transitioning out of foster care or child welfare services (Bucci, Roberts, Danquah, & Berry, 2014; Thomas & Reifel, 2010). The utilization of an attachment-based or attachment-informed approach has also been recommended for youth who are resistant to engaging in medical or psychosocial treatment as this approach shifts service providers from making simple decisions based on individual behaviours to considering more complex patterns of observed behaviour around program participation and how programming might be altered to improve engagement across different attachment styles. For example, Obsuth, Moretti, Holland, Braber, and Cross (2006) used an attachment framework to design an intervention for youth with conduct disorder and their caregivers. Caregivers engaged in the program reported feeling more competent with parenting and noted a reduction of problem behaviours by youth. These types of interventions have the potential to make meaningful transformations in the lives of many youth as they can permanently shift how teens view themselves and others as they develop the psychosocial skills necessary to successfully transition from adolescence to independent living as adults (Obsuth, Moretti, Holland, Braber, & Cross, 2006).

3. Chapter 3: Examining the Association between Resilience and Attachment

3.1. Introduction

There is growing evidence in the public health and mental health literature that links the experience of adverse experiences in adolescence (e.g., parental divorce, foster care) with an increased risk of engaging in a number of problematic health-related behaviours including substance use, poor academic achievement or drop out, involvement in crime and in extreme cases suicide (Fergus & Zimmerman, 2005; Kemshall, Marsland, Boeck, & Dunkerton, 2006; Kerr, DeGarmo, Leve, & Chamberlain, 2014; Payton et al., 2000; Daining & DePanfilis, 2007). Despite the struggles that many teens experience, empirical evidence from the past thirty years has consistently shown that many adolescents are able to overcome significant adverse circumstances and develop into healthy adults who function well in communities (Werner & Smith, 2001). The phenomenon of successfully coping with hardship has been characterized by researchers as resiliency (Connor & Davidson, 2003).

In the present study, attachment styles are theoretically viewed as playing an essential role in a persons' capacity to effectively mobilize social resources in times of distress. Within attachment theory, the ability to mobilize social resources is viewed as a developmental construct, resulting from previous relational experiences with others. We propose that the capacity to effectively mobilize social resources associated with specific attachment styles represents an important factor that is associated with adolescents' ability to establish resiliency. The purpose of the present study is to build on the information presented in Chapter 2 by providing a brief review of the literature on the concept of resilience and its' relationship with attachment style. This review can be viewed as providing the theoretical rationale for research objectives of the study presented in this Chapter that are centred on exploring the relationship

between adolescents' attachment style and resilience. Similar to the study presented in Chapter 2, the current study uses data from a large general population sample of adolescents who participated in the British Columbia Adolescent Substance Use Survey (BASUS) to investigate the association between self-reported measures of attachment style and resilience. A review of the concept of resilience is provided next, followed by a review of literature outlining the connection between resiliency and youth mental health and wellbeing and the potential connection between resilience and attachment theories.

3.1. What is Resilience?

Resilience is characterized as the dynamic processes involving a series of ongoing reciprocal transactions between adolescents and their environment to successfully cope with hardship and trauma (Connor & Davidson, 2003; Wagnild & Young, 1993; Vanderbilt-Adriance & Shaw, 2008). Resilience does not suggest invulnerability to hardships, instead it represents an ability to effectively deal with distressful circumstances (Olsson et al., 2003). From this perspective, resilience is not a static state or characteristic but rather a capacity to deal with adversity that appears to develop over time.

The conceptual foundations associated with concept of resilience involve the development of five key characteristics (Wagnild & Young, 1993). The five characteristics that define resilience are classified as perseverance, equanimity, meaningfulness, self-reliance, and existential aloneness (Wagnild, 2009). *Perseverance* describes the ability of the individual to keep going despite adversity or the struggle to cope with stressful circumstances (Wagnild, 2009). A youth with *equanimity* is described as holding a holistic or balanced life perspective, which enables them to "sit loose and take what comes" or show a sense of humour (Wagnild, 2009). This is generally accompanied by the realization that there is a purpose in life or *meaningfulness* to live

(Wagnild, 2009). *Self-reliance* helps determine how well a youth is able to recognize and rely on their personal capabilities as well as learn from previous successes to support and guide their behavior (Wagnild, 2009). And lastly, youth with *existential aloneness* typically have a sense of uniqueness and potential freedom (Wagnild, 2009; Wagnild & Young, 1993). Specifically, existential aloneness is developed when the adolescent realizes each individual is unique, and although there are shared experiences, some situations are experienced alone (Wagnild, 2009).

The potential to circumvent the potential negative health outcomes associated with the experience of adverse events in adolescence has led many researchers to investigate the characteristics that enable vulnerable adolescents to persevere rather than become overwhelmed in challenging circumstances (Wagnild, 2009; Rutter, 2012; Vanderbilt-Adriance & Shaw, 2008). Research on resilience has thus increased substantially over the past several decades (Fergus & Zimmerman, 2005) and it now represents a key concept in our understanding of perseverance across the life course and how youth "bounce back" and deal with various challenges presented from early childhood to early adulthood. The emphasis on the reciprocal relationships between the individual and their environments situates the theory of resiliency within an ecological perspective that plays a vital role in organizing the dynamic processes associated with its' development.

3.2. Development of Resilience from a Research Perspective

Although many researchers of adolescent health focus on the implication of risk exposures in adolescence, the theoretical base of resilience includes a significant emphasis on understanding strengths rather than deficits (Connor & Davidson, 2003). Much of the existing research on resilience has focused on exploring the role of differences in personality, family environment, and external supports in terms of their ability to explain individual differences in the extent to

which adolescents are able to overcome hardships (Masten et al., 1999; Werner & Smith, 2001). Research into resilience is also frequently positioned as a means of understanding healthy development despite risk exposures, either at the individual or social level. Additionally, empirical evidence indicates that resilience may extend beyond individuals to social groups (i.e., communities) despite the tendency of many researchers to focus on individual psychological and social contexts as distinct phenomena (Atwool, 2006).

In the literature, resilience has been conceptualized as either a process or outcome based approach. The process-based approach examines the mechanisms or processes that act to modify the impact of risk exposures and the developmental processes that assist youth to effectively adapt (Olsson et al., 2003). The adaptation to situations can involve personal, familial, or environmental circumstances (Olsson et al., 2003; Kolar, 2011). Researchers in this area work toward understanding the process of adaptation by assessing both risk exposures and protective factors (Olsson et al., 2003). Risk exposures can intensify the individual reaction to adversity (e.g. increasing vulnerability) and protective factors can mitigate negative responses to adversity (e.g. enhancing resiliency). This approach contributes to investigating resilience also frequently considers the shared responsibility among self, families, and social system as opposed to solely considering resilience from an individual persons perspective.

In contrast, an outcome-based approach understands resilience as outcomes of adaptive coping strategies (Olsson et al., 2003). Research in this area typically defines outcomes in terms of competent social behaviour or effective functioning in adolescent populations (Olsson et al., 2003). Thus, an outcome-based approach aims to understand the processes and factors that account for adaptive coping strategies despite facing adversities (Olsson, et al., 2003). In particular, researchers generally define resilient outcomes in terms of positive wellbeing,

adaptive coping strategies, and social competence (Mancini & Bonanno, 2009; Kolar, 2011; Olsson et al., 2003).

Individual factors (e.g., personality) can influence the dynamics of the resilience process that can also be influenced by the contextual factors (e.g. supportive caregiving). The dynamic interplay between individual and social factors influence on resilience is relevant for program developers who view resilience as a modifiable characteristic, which youth-friendly programs are able to support. Improving the extent to which adolescents are able to marshal resources from within their social context to overcome adversity has been identified as an important opportunity to improve youth health and wellbeing (Payton et al., 2000).

3.3. Reviewing the Intersectionality of Resiliency, Attachment and Youth Wellbeing

Resilience and attachment research both aim to enhance the understanding of factors and related processes that contribute to adolescent mental health and wellbeing. Over the decades, researchers have systematically investigated the role of many factors involved in reducing or promoting adolescent wellbeing. For example, researchers have reported that some adolescents find the journey to adulthood much more difficult to navigate and experience more adversities than their peers (McCreary Centre Society, 2006). Many of these young people have a life course that is filled with stressors or obstacles that have to potential to seriously disrupt healthy development and contribute to poorer resilience oriented outcomes, insecure attachment styles, and diminished mental health and wellbeing (McCreary Centre Society, 2006). Increasing our knowledge of the ways in which these established factors interact to foster healthy development is critical for researchers hoping to develop systems to identify vulnerable adolescents and inform the content of tailored interventions focused helping adolescents transition into healthy adults.

Resilience and mental health and wellbeing are related phenomena in that both are strongly associated with the severity and/or accumulated experience of risk factors over time (Larm, Hodgins, Tengstrom, & Larsson, 2009). For example, research on resilience has examined a number of different risk factors ranging from parental mental illnesses (Luthar & Sexton, 2007), low socioeconomic status (Kim-Cohen, Moffit, & Taylor, 2004), adverse life events (e.g. child maltreatment or foster care; Masten et al., 1999), and cumulative risk (Fergus & Zimmerman, 2005). These experiences can be thought of as risk factors that have been linked to lower resilience levels in youth populations.

Within attachment theory, it is hypothesized that the experience of similar adverse experiences, such as chronic poverty, childhood maltreatment or foster care, have been identified as risk factors that increase the likelihood of insecure attachment styles (Atwool, 2006; Bowlby, 1988). For example, Bakermans-Kranenburg and colleagues (2011) stated that insecurely attached youth are often raised in high-risk settings where they are more likely to experience more risk factors. Similarly, researchers examining vulnerable adolescent populations (e.g. inner city youth) indicate that these youth have a history of being exposed to a higher number of risk factors (e.g., childhood maltreatment) that are known to contribute to lowering resilience levels (Vanderbilt-Adriance & Shaw, 2008). These researchers have linked the rise in risk factor severity or number of experiences to decreased resilience levels, activations of insecure attachment processes, and increased mental health concerns reported in adolescence (Vanderbilt-Adriance & Shaw, 2008). Further support documenting the impact of adverse experience on future psychosocial development have been reported by researchers who have found that the accumulation of adverse experiences increases the risk of maladjustment among adolescents (Luthar, Cicchetti, & Becker, 2000; Werner & Smith, 2001; Vanderbilt-Adriance & Shaw, 2008).

In terms of relationship to mental health and wellbeing, research suggests there is a link between lower resiliency and reduced mental health and wellbeing in adolescence (McCreary Centre Society, 2006). For example, low resilience levels have been associated with higher levels of mental health and wellbeing concerns (e.g. depression, substance misuse) in youth in both cross-sectional (Prinstein, Boergers, & Spirito, 2001) and longitudinal studies (Resnick, et al., 1997). Further, teens with lower resilience levels report more mental health concerns and behavioural problems (Nasvytiene, Lazdauskas, & Leonaviciene, 2012; Fergus & Zimmerman, 2005). Empirical evidence exploring youth wellbeing has also linked low resiliency with the most common forms of mental illness, such as depression and anxiety (Nasvytiene, Lazdauskas, & Leonaviciene, 2012; Betancourt, Meyers-Ohki, Charrow, & Hansen, 2013). Youth with low resilience levels also tend to experience more interpersonal difficulties, conduct problems, substance use, and school dropout (Fergus & Zimmerman, 2005; Kemshall, Marsland, Boeck, & Dunkerton, 2006; Kerr, DeGarmo, Leve, & Chamberlain, 2014; Payton et al., 2000). Similarly to youth with low resilience levels, insecurely attached teens are more likely to report mental health problems and struggle with daily functioning (Davila, Burge, & Hammen, 1997). Study findings have also found that insecure attachment styles increase the risk of school dropout, substance use, and homelessness (Penzerro & Lein, 1995; Allen & Land, 1999).

Given the growing research evidence suggesting varying attachment styles influence how adolescents seek and respond to social support, the relationship between attachment style and development of resilience appears to represent an area of research requiring further investigation (Atwool, 2006; Rutter, 2006). In particular, the theoretical framework associated with research

into adolescent attachment styles involves the study of cognitive models (e.g., Internal Working Models that influence the extent to which youth are able to effectively mobilize social resources in times of distress) that appear relevant to investigations on the processes underlying individual differences in resiliency. For example, one of the most widely reported predictors of resilience is the presence of a positive and secure relationship (Kenny et al., 2002; Rutter, 2012; Matsen & Coatsworth, 1998). Additionally, family support and having supportive person outside the family have also been associated with resilience (Atwool, 2006; Kolar, 2011). Arguably, attachment style would appear to play a pivotal role in these underlying mechanisms that are central to the development of resilience.

In summary, researchers are under increasing pressure from interventionists to improve our understanding of why some youth will improve from or avert negative health outcomes despite experiencing adversities (Kolar, 2011). Understanding what enables some young people to harness available psychosocial resources and achieve positive health outcomes despite experiencing adverse life events will provide pertinent evidence for developing effective youth mental health interventions and promotion strategies. As previously explained, one aspect of resiliency theory is that the ability to mobilize support from others can help buffer a young person from the negative impact of adversity in his or her life (Masten & Coatsworth, 1998). To date, there is an abundance of research studies on resilience, however, few have investigated the connection to attachment style which has resulted in very little cross-pollination between these two large programs of research.

3.4. Research Objectives

The goal of this study is to contribute to the literature on adolescent mental health and wellbeing by examining the relationship between attachment style and resilience among

adolescents. Adolescence was chosen as the focus in the current study because it is a critical turning point in the lifespan in promoting wellbeing and the focus of many resilience oriented interventions. The following research objectives investigate the role that attachment may play in promoting resiliency by examining the relationship between attachment style and levels of resilience.

Objective 1: To quantify differences in resilience across attachment styles.

Objective 2: To examine the relationship between resilience (e.g. outcome) and attachment style (e.g. explanatory) taking into consideration potential confounders (e.g. socioeconomic status, ethnicity, age, and sex).

3.5. Methods

The data analyzed for this research study was drawn from the British Columbia Adolescent Substance Use Survey (BASUS). BASUS was a large prospective cohort study that began in 2009 with a focus on examining the relationship between psychosocial functioning and highschool students' opinions and experience with tobacco, alcohol, cannabis, and other illicit drugs. Every 6 months participants self-reported on a wide range of questions regarding family, psychological development, personal health and wellbeing, community, school, and peers.

Recruitment was conducted by the BASUS Research Team members contacting schools across BC to receive approval from School District Superintendents and the individual public secondary school principals. Promotion of the study was done by BASUS staff conducting presentations in participating schools, having school principals and/or other school staff distribute information packages to students as part of their school orientation materials in September. The information packages included a pamphlet describing the study, an information letter for guardians, and study promotional materials (e.g. locker magnet with study web link and toll-free contact phone number). Other promotional activities to raise awareness of the research project included advertisements in student newspapers and school posters.

The survey was accessible for students to participate at their convenience by logging into the BASUS website (www.basus.ca). Students registered with the online survey system and created usernames by either using their email address or creating an alternative username (e.g. explained on the web survey). Once students registered, they were presented with a consent form. Upon consenting, the students were presented with eligibility screening questions. To be eligible for this study, participants had to be a minimum age of 13 and attending a BC secondary school. Participants self-identified their age and school enrolment. In addition, participants needed to have the ability to read and complete an English internet-based survey.

Participants completed the survey at baseline and every six months. Non-responses for questions or measure items were permitted. The survey administration occurred in the autumn and spring of each academic year until 2012 winter. Although participants had the option to complete the survey across multiple time settings, it took participants approximately 45 minutes to complete in one time setting. Each participant was given a \$25 honorarium with partial or full completion of the online survey. Participants received follow-up reminders online (e.g. email and/or Facebook), short message service (SMS) text, and traditional letters (via postal mail if requested). Of the participating high-schools, the mean participation rate in potential eligible grades was 20% with response rates ranging from 0% to 80% depending on school. There are several possible influences on the variation in response rates. For instance, there could have been insufficient time or resources for school administrators to promote the survey as the survey was conducted during an ongoing labour dispute that resulted in many teachers refusing to engage in non-care activities. Another reason for the wide response rates may be the result of the wide

range in number of eligible students within individual schools. For example, some schools had fewer than 10 eligible students, which may have contributed to wide fluctuations in response rates.

3.5.1. Ethical Considerations

There are several ethical considerations that pertain to this study. For instance, participants were given an informed consent upon registering for the online survey. Participants were provided with the opportunity to ask questions, which were answered by the BASUS Research Coordinator and/or the Primary Investigator. In order to maintain confidentiality, the survey system including all raw data was stored on a secure server at the Arthritis Research Centre (ARC) of Canada in Vancouver, British Columbia. Participants were provided with resource information for youth services, such as counselling resources, on the BASUS survey homepage. The original BASUS study was approved by the UBC Behavioural Ethics Board (application #: H08-02841-A011) as well as the secondary analysis undertaken for the present study (e.g. application #: H14-00232). The BASUS research was supported by the Canadian Institutes of Health Research (CIHR) funding scheme (project number 07-3631).

3.5.2. Measurements

Outcome Variable. The 14-Item Resilience Scale (RS) developed by Wagnild and Young (1993) was used to assess resilience levels. Self-report survey methods are one of the most common techniques used to study resilience (Wagnild & Young, 1993). Wagnild and Young (1993) were among the earliest researchers to utilize a survey measure of resilience when developing the RS. Initially, their resilience measurement tool was developed with an adult population sample, but it has since been applied to different age groups and languages (Wagnild, 2009).

RS is a self-report measure consisting of 14 items using a 7-point Likert rating (e.g.

1=strongly disagree to 7=strongly agree). Resilience observations are summed up to provide a single total score. The scale includes five items reflecting self-reliance (e.g. items 1, 5, 7, 12, and 14), three items reflecting meaningfulness (e.g. items 2, 9, and 13), two items referring to equanimity (e.g. items 3 and 10), and lastly, two items reflecting existential aloneness (e.g. items 4 and 11). The RS-14 has only been used since 2008, but previous research studies validated its psychometric properties and reported a reliability of $\alpha = .93$ (Wagnild, 2009).

Explanatory Variables – Demographics. Participants reported the highest education achieved by their father and/or mother. The categories for reporting parents' education levels were collapsed from 7 levels to 4 levels in order to reduce the number of response options with low cell counts. The levels included the following: below high school (reference category), high school, some college or trades, and undergraduate degree or higher.

Self-reported household financial situation was measured as a continuous variable to indicate socioeconomic status. The categories for participants to indicate how much their family has in comparison to their peers were collapsed from 7 levels to 3 levels (e.g. above average, average, or below average) to reduce low cell counts. This subjective measure has been found to be a valid and reliable predictor of socioeconomic status in a national sample of youth (Jeon, Ha, & Choi, 2013)

The ethnic and racial descriptions were collapsed into the following four categories: Aboriginal (e.g. First Nation and Metis), Asian (e.g. Chinese, Japanese, Korean, Filipino, South East Asian, South Asian, and West Asian), Other (Latin American, Black, and Other), and Caucasian (reference category). The categories are considered non-overlapping because if a participant selected Aboriginal with other ethnicities, s/he was coded as Aboriginal. A second

example of non-overlapping categories is when both Asian and Caucasian were reported, the ethnicity was coded as Asian.

Attachment Styles. The Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991) is a self-report measure of attachment styles. Respondents define how they feel about interpersonal relationships by indicating one of the four attachment paragraphs best describes them (e.g. overall style). Respondents rate the extent to which the four paragraphs describe their secure, fearful, preoccupied, and dismissing attachment styles. Respondents are asked to rate the paragraphs on a 7-point scale (e.g. 7=very accurately describes me to 1=doesn't describe me). Each participant was classified based upon their responses provided to the overall and specific paragraph ratings.

As discussed in Chapter 2, the RQ was used to classify participants into their best fitting attachment pattern. Participating youth read all four attachment prototypes and indicated the pattern that best described how they normally feel in interpersonal bonds (e.g. overall style). Next, youth rated the extent to which each of the four attachment prototypes characterized their typical perspective in relationships with others. However, an issue arises when two or more attachment styles are rated equivalently high (e.g. 2-way tie between attachment styles). To deal with this, the rating participates indicated for describing their overall attachment style in how they generally feel with interpersonal relationships was used. If the participant did not choose a best fitting or overall attachment style, the researcher excluded the participants from the data set and analysis. Furthermore, participant's data were excluded from analysis when there was a 3-way tie for highest rating and an overall attachment style was not indicated (i.e., their overall rating was not one of their highest individually rates attachment styles). Past studies have

validated this relatively brief attachment measure (Bartholomew & Horowitz, 1991). A copy of the RQ can be found in the appendix.

3.5.3. Data Analysis

Mean resilience scores were calculated for each attachment style and a one-way ANOVA procedure was used to test for significant differences in resilience scores across attachment styles. Multiple linear regression was used to examine the relationship between attachment style (secure as reference) and resilience after adjusting for key sociodemographic variables (e.g. gender, ethnicity, socio-economic status, age) that might confound the relationship. Similar to the approach presented in Chapter 2 and in accordance with recommendations of agencies such as the CIHR Institute of Gender and Health, we including gender models as a covariate model to examine the effect of gender on the resilience outcome. The interaction term of attachment by gender was also examined to test for possible effect modification of gender on the relationship between attachment style and resilience (i.e., does the relationship between attachment style and resilience differ across gender).

3.5.3.1. Imputation of Missing Data

In multivariate analyses, such as those in the present study, it is frequently important to maintain sample sizes by minimizing the loss of cases because of incomplete data. In the past, it was common practice to simply delete cases with missing values. However, current theory proposes that such procedures may actually introduce more bias than would be caused by data imputation (Schafer & Graham, 2002). Therefore, an understanding of when and under what assumptions multiple imputations should be considered prior to analyses.

Missing value analysis was conducted to determine the extent of missing values. Given missing values, several basic decisions were necessary. Missing value analysis explored patterns

of missingness to examine if data were missing completely at random (MCAR; Schafer & Graham, 2002). MCAR occurs when the probability of missingness is not associated to both the observed values and variables with missing values (Buhi, Goodson, & Neilands, 2008; Schafer & Graham, 2002). In the present study, the missing at random (MAR) assumption is applied, which indicates the missingness depends on the values of variables that were measured (Buhi, Goodson, & Neilands, 2008; Harrell, 2001; Schafer & Graham, 2002). Harrell (2001) recommends imputation when the missingness is associated with observations, but the observed values related to missingness cannot be simultaneously missing. Measures with 15% or less of missing values were considered acceptable. Variables with more than 15% missing were excluded from analysis. Multiple imputations were implemented given the proportion of missingness is $\leq 15\%$. Multiple imputations use random draws from the conditional distribution of the target variable given observed values (Harrell, 2001). All variables in the multivariate model were used as predictors and outcomes in the multiple imputation analysis. The imputation is repeated five times with each repetition resulting in a "completed" dataset used in analysis. Statistical estimates are determined from pooled estimates from the 5 imputed datasets to obtain estimates of the population. Multiple imputation estimates were obtained using SPSS Statistics Version 22 for Windows.

3.6. Results

3.6.1. Sample Characteristics

Of the 1257 eligible participants in Wave 7 of this survey, 776 (62%) were female and 480 (38%) were male. One participant did not self-report gender and was subsequently excluded from the gender stratified results presented in Table 3.1. Approximately 43% (n=518) of participants rated their household's financial situation (i.e. how much money their family has) as

above average, 36% (n=431) reported average household levels, and 21% (n=253) indicated below average financial situations. The majority of adolescents in this cohort were aged 16 (58%). Over half of the Wave 6 BASUS participants (51%) self-reported as Caucasian, 12% (n=168) identified as Aboriginal, 34% (n=496) indicated Asian, and 4% (n=52) reported an ethnicity classified as Other. This is very similar to the 2011/12 provincial education statistics, which reported that nearly 12% of students attending public school in British Columbia selfidentified as Aboriginal. The Wave 6 BASUS sample was compared to the participant characteristics reported in McCreary Centre Society's 2008 BC Adolescent Health Survey (n= 29,440). The highly representative 2008 BC Adolescent Health Survey reported that 54% of their adolescent respondents self-identified "European" and 33% identified an Asian ethnicity and 12% identified as Aboriginal/First Nations.

As shown in Table 3.1, substantial gender differences in socioeconomic status among young people were found in Wave 7. Chi-square tests of independence were performed to examine the relation between gender and various socioeconomic indicators: household financial situations and parental education levels. The association between gender and self-reported household financial income (χ^2 =19.56, p<0.01), maternal education level (χ^2 =12.83, p<0.01) and parental education (χ^2 =11.52, p<0.01) were all significant.

Table 3.1	Wave 7	Participant	Characteristics
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Characteristic									
		Ma	le		Fen	nales	Total Sample		
	N	%	95% C.I.	Ν	%	95% C.I.	n	%	
Grade									
Grade 9	6	1.3	-	3	0.4	-	9	0.7	
Grade 10	164	34.5	30.3 - 38.9	232	30.2	27.0 - 33.5	396	31.8	
Grade 11	306	64.3	60.0 - 68.5	534	69.4	66.1 - 72.6	840	67.5	
$Total^{\ }$	476	100		769	100		1245	100	
Age									
14 years old	28	5.9	4.1 - 8.4	36	4.7	3.4 - 6.4	64	5.1	
15 years old	184	38.9	34.6 - 43.4	274	35.6	32.2 - 39.0	458	36.8	
16 years old	261	55.2	50.7 - 59.6	460	59.7	56.2 - 63.2	721	58.0	
Total [¥]	473	100		770	100		1243	100	
Ethnicity									
White	241	51.4	46.9 - 55.9	350	45.9	42.4 - 49.5	591	48.0	
Aboriginal	53	11.3	8.7 - 14.5	83	10.9	8.9 - 13.3	136	11.0	
Asian	157	33.5	29.4 - 37.9	304	39.9	36.5 - 43.4	461	37.4	
Other	18	3.8	2.4 - 6.0	25	3.3	2.2 - 4.8	43	3.5	
$Total^{\ \ \ }$	469	100		762	100		1231	100	
Household Income ^A	,							200	
Above Average	217	47.5	42.9 - 52.1	301	40.4	36.9 - 44.0	518	43.1	
Average	153	33.5	29.3 - 37.9	278	37.3	33.9 - 40.9	431	35.9	
Below Average	87	19.0	15.7 - 22.9	166	22.3	19.4 - 25.4	253	21.0	
Total *	457	100		745	100		1202	100	
Maternal Education ^A									
Below High School	26	6.2	4.3 - 9.0	49	7.2	5.5 - 9.3	75	6.8	
High School	76	18.2	14.8 - 22.2	147	21.5	18.6 - 24.7	223	20.2	
Some College or	100	25.9	21.0 20.2	222	22.6	20.2 26.2	221	20.0	
I rades Undergraduate	108	25.8	21.9 - 30.2	223	32.0	29.2 - 30.2	331	30.0	
degree or higher	208	49.8	45 0 - 54 5	266	38.8	353-425	474	43.0	
Total $\frac{1}{2}$	200 418	100		<u>-</u> 685	100	5515 1215	1103	100	
Paternal Education ^A	110	100		005	100		1105	100	
Below High School	21	5.2	3.4 - 7.8	50	7.6	5.8 - 9.8	71	6.7	
High School	78	19.2	15.7 - 23.3	111	16.8	14.1 - 19.8	189	17.7	
Some College or		-,				,			
Trades	105	25.9	21.8 - 30.3	223	33.7	30.2 - 37.4	328	30.7	
Undergraduate									
degree or higher	202	49.8	44.9 - 54.6	277	41.9	38.2 - 45.7	479	44.9	
Total ¥	406	100		661	100		1067	100	
Numerical Variable	Μ	SD	95% C.I.	Μ	SD	95% C.I.	\mathbf{M}	SD	
Resilience	76.2	16.6	75.6 - 76.9	72.9	15.3	72.4 - 73.3	74.2	15.9	
Cronbach Alpha	0.96			0.95			0.95		

 $p^{A} = 0.01$ [#]Difference in sub-total proportion of males and females reflect those participants that did not respond to items

3.6.2. Resilience Levels Across Attachment Styles

The average resilience levels across each of the four attachment styles is shown in the sideby-side boxplots presented in Figure 3.2. The mean resilience level of participants with preoccupied attachment exhibited lowest resilience levels (M = 67.42, SD = 16.02) compared with the participants with secure attachment (M = 79.13, SD = 14.30). A one-way Analysis of Variance (ANOVA) was conducted to test for statistically significant differences in resilience scores across attachment styles. The ANOVA indicated that there was a significant difference in the mean resilience levels for attachment categories, F(3, 1061) = 40.2, p < 0.001. The results suggest that at least one attachment style's resilience mean differs from the rest. Post hoc analyses were conducted given the statistically significant ANOVA test. As shown in Figure 3.3, Tukey's Honesty Significant Difference (HSD) test was conducted on all possible pairwise contrasts. The following pairs of groups were found to be significantly different (p < 0.05): fearful-secure, preoccupied – secure, dismissing-secure, dismissing-fearful, and dismissing preoccupied.





Figure 3.2 Tukey's (HSD) Post-Hoc Analysis for Wave 7 ANOVA



3.6.2.1. Checking Model Assumptions

Prior to the regression model analysis, basic descriptive statistics were calculated and measures of skewness and kurtoses of continuous variables were examined to test for significant violations of normality. The data were also examined for univariate outliers. A small number of outliers were found; however the observations were kept in the dataset as they posed no overall threat to the integrity of the model (see discussion of Leverage values). A check of the reliability of the Resilience Scale yielded Cronbach's alphas for boys and girls of .96 and .95, respectively. Frequencies of observed data suggest moderate non-normality on the Resilience Scale. The distribution presented in Figure 3.1 illustrates the range of observed values:





Leverage values associated with the final multivariate regression model were also examined with exploratory variables age, gender, and socioeconomic status regressed onto resilience.
Huber and colleagues (1996) suggests the following criteria when considering the appropriateness of leverage values, specifically values less than .20 are considered safe; values between .20 and .50 are considered risky; and values equal to .50 or above should be excluded. The assessment of leverage values in the present study indicated all values are within the safe range. Data were screened graphically to explore the degree to which the assumptions of linearity and homoscedasticity (see appendix for diagnostic plots). Scatterplots created in SPSS plotted standardized residuals against the standardized predicted values. There were no curved, funnelling, or alarming shape patterns. Thus, the assumptions for linearity and equality of variances were deemed to have been met.

3.6.2.2. Regression Model Findings

Regression analyses with all the exploratory variables in the equation resulted in a significant R^2 , but interaction terms involving attachment and gender in the final step were not statistically significant and were removed from the final model. The analyses reported thus do not include interaction coefficients involving gender and attachment style. Regression analysis with all the variables in the equation was significant, $R^2 = 0.12$, F(11, 881) = 11.53, p < 0.001. When examining the intercept for Model 5, the mean of resilience is 78.75 (95% CI 71.89, 85.62), when controlling for attachment styles and demographic variables.

As shown in Table 3.2, there was a significant association between resilience level and attachment style with insecure attachment styles being associated with lower resilience levels. For example, the coefficient estimate for fearful participants indicates that compared to participants with a secure attachment style, having a fearful style is associated with a reduction in resilience scores of 9.5 points (95% CI -11.6, -7.4) after controlling for ethnicity, gender, socio-economic status (SES), and age. The coefficient estimate for preoccupied attachment shows the

predicted resilience score decreases the most at 11 points (95% CI -13.6, -8.4), when controlling for socio-demographic variables (e.g. gender, ethnicity SES, and age). Further, the coefficient estimate for dismissing attachment tells us when controlling for socio-demographic characteristics, the reported resilience score decreases the least at only 3.8 points (95% CI -6.1, -1.4). Resilience scores for females were 1.6 points (95% CI -3.4, -0.2) lower compared to males, after controlling for attachment styles and socio-demographic variables. Improvements in socioeconomic status correspond to small but significant gains of 0.9 points (95% CI 1.6, 0.2) on the Resilience Scale.

			Regression Models		
Variables	Model 1	Model 2	Model 3	Model 4	Model 5
	β (95% C.I.)	β (95% C.I.)	β (95% C.I.)	β (95% C.I.)	β (95% C.I.)
Attachment					
Secure (ref)	1	1	1	1	1
Fearful	-10.4 (-12.4, -8.3)***	-10.4 (-12.5, -8.3)***	-10.0 (-12.1, -7.8)***	-9.5 (-11.6, -7.4)***	-9.5 (-11.6, -7.4)***
Preoccupied	-11.7 (-14.3, -9.1)***	-11.7 (-14.3, -9.1)***	-11.5 (-14.1, -8.9)***	-11.0 (-13.6, -8.4)***	-11.0 (-13.6, -8.4)***
Dismissing	-3.7 (-6.1, -1.4)**	-3.7(-6.0, -1.3)**	-3.8 (-6.1, -1.4)**	-3.8 (-6.1, -1.4)**	-3.8 (-6.1, -1.4)**
Ethnicity					
Aboriginal		-1.9 (-4.7, 0.8)	-1.9 (-4.6, 0.9)	-1.3 (-4.1, 154)	-1.3 (-4.1, 1.5)
Asian		-1.2 (-3.1, 0.6)	-1.1 (-2.9, 0.7)	-0.4 (-2.2, 1.5)	-0.4 (-2.2, 1.5)
Other		-3.4 (-8.1, 1.3)	-3.4 (-8.1, 1.3)	-2.0 (-6.7, 2.8)	-2.0 (-6.7, 2.8)
Sex					
Female			-1.9 (-3.7, -0.1)*	-1.6 (-3.4, 0.2)	-1.6 (-3.4, -0.2)*
Socio-Economic Status					
Household Income				0.9 (1.6, 0.2)**	0.9 (1.6, 0.2)**
Maternal Education				0.5 (-0.7, 1.7)	0.5 (-0.7, 1.7)
Paternal Education				1.3 (0.2, 2.5)*	1.3 (0.2, 2.5)*
Demographics					
Age					0.1 (-1.3, 1.4)
$R^{2}_{ADJ.}$ Total	0.097	0.095	0.097	0.118	0.117

Table 3.2 Association of psychosocial characteristics with adolescents' resilience levels

p < 0.05; ** p < 0.01; *** p < 0.001

3.7. Discussion

This study examined data from high-school 1257 students who participated in the British Columbia Adolescent Substance Use Survey (BASUS) to explore the relationship between resilience and attachment style. The bivariate analyses indicated that there is a significant association between resilience level and attachment style with insecure attachment styles being associated with lower resilience levels. For example, youth with a preoccupied attachment had the lowest resilience level compared to the other attachment styles. In contrast, youth with dismissing attachment experienced the least amount of decrease in their overall resilience score in comparison to securely attached teens. Overall, the findings supported the hypotheses that attachment style is related to resiliency.

A series of multiple regression models were then used to examine the extent to which attachment styles were associated with resiliency while controlling for potential confounders. The results of the regression models indicated that increased socioeconomic status was associated with small but significant increases in resilience. For example, although maternal education was not related to resilience levels, adolescents with more educated fathers were more likely to report higher resilience levels. Furthermore, as subjective ratings of household finance levels increased, so did resilience levels. These finding are supported by resilience literature in that socioeconomic status has frequently been identified as an important determinant of adolescent resiliency (Vanderbilt-Adriance & Shaw, 2008, Rutter, 2006; Kim-Cohen et al., 2004).

The current study results also suggest that girls experienced lower levels of resilience than did boys. However, the interaction with attachment style was not significant suggesting that the relationship between attachment style and resilience does not vary across gender. This finding

appears to be supported by previous studies that showed that females report lower resilience levels than do males (Wagnild, 2009). Study findings suggest women with lower resilience levels report more symptoms of psychological and physical distress (Wagnild, 2009). Further, a meta-analysis found in two studies females had lower resilience scores compared to males, however in the remaining ten research studies found no gender-related differences or it was not reported (Wagnild, 2009).

The significantly higher levels of resilience found in adolescents with secure attachment styles is supported by examining the role of parenting practices on resilience. For example, resilience studies have concluded that appropriate responsive and consistent parenting approaches are essential in fostering positive adjustment among youth (Fergus & Zimmerman, 2004. Research on positive parental factors, such as affection, confidence, and higher education, in combination with consistent parenting in combination with appropriate discipline practices have been found to predict higher resilience levels. Werner and Smith (2001) highlighted factors associated with the resilient group included the capacity to mobilize supportive responses from multiple caregivers. Furthermore, Werner and Smith (2001) highlight that one trusting relationship with an adult contributed to higher resilience levels. These findings combined with the results found in this study thus provide support for the idea that attachment styles represent a potentially important mechanism through which relationships with primary caregivers and other trusted adults form internal working models (ie attachment styles) that influence the development of resiliency in adolescence.

Correspondingly, from an attachment perspective, research evidence shows early childhood attachment appears to have a lifelong impact on an individual's capacity to build healthy relationships (Masten & Coastworth, 1998; Hertzman et al., 2001). Attachment theorists indicate

various distinctions underpinning social competencies; for example, attachment researchers indicate that youth with secure attachment have better overall emotional adjustment compared to those with insecure attachment patterns. Similarly, Main, Kaplan, and Cassidy (1985) found secure children more likely to be self-reliant and emotionally secure compared to insecure children.

Support for role of attachment is also emerging in the area of social neuroscience where the attachment system is considered to be a "hard-wired" aspect of brain functioning associated with how infants' early experiences directly shape the organization of their IWMs (Siegel, 2012; Ainsworth, 1979). Attachment experiences include the activation of neural brain networks that responds to sensory exposures from the environment (Siegel, 2012). These functions are largely malleable and likely multi-dimensional with situational variation occurring due to numerous factors, such as intrinsic memory, stressful life events, and the internal state of the individual. Particular brain circuits (e.g. groups of neurons linked to systems of the brain) become activated to create various mental processes (Siegel, 2012). Social experiences thereby influence the function of neural systems, which may potentially shape the structure of the brain at a critical malleable phase and thus influence functioning across the life course (Siegel, 2012).

Empirical neuroscience evidence also suggests the brain remains malleable or flexible to ongoing social experiences throughout the lifespan (Siegel, 2012). The ability of attachment styles to change over time may be connected to the ability of the brain to remain plastic in response to social experiences (Siegel, 2012). This plasticity in certain functions that moderate how teens responds to their environment can thus be viewed as combining to shape the resilience developed in late childhood and adolescence. In other words, resilience can be viewed as the

outcome of the collective prefrontal cortical functions, which are substantially influenced by young people's attachment experiences.

Over the past decades, there is growing literature focused on both attachment and resiliency. However, there has been very little research that actively investigates the extent to which these two concepts relate to each other. For example, there are very few published research articles that reflect on risk and resilience while also referring to attachment (Masten, Best, & Garmezy, 1990; Masten, 2001; Masten & Coatsworth, 1998). This is somewhat surprising given that researchers have indicated that the adaptation system of attachment is strongly connected to individual competence, which is closely related to underlying concepts of resilience (Masten & Coatsworth, 1998). Moreover, research evidence shows resilient adolescents consistently report having at least one trusting and supportive adult in their life (Werner & Smith, 2001).

In terms of applied implications, the findings of this study suggest that researchers consider incorporating an attachment framework into their efforts to promote resiliency. The four-prototype attachment model used in this study provides an approach that highlights how knowledge of adolescents models of self and others might assist health and social service providers understand the health seeking behavior of youth in distress. By training health and social service providers (e.g., program staff working with street youth) to recognize and respond to the attachment styles of youth, they may be better able to engage youth in services and decrease any outward resistance or fears demonstrated by adolescents seeking support (Bucci, Roberts, Danquah, & Berry, 2014). Thus, this may increase the likelihood of creating trusting relationships over time, which promotes program engagement and intervention success (Bucci, Roberts, Danquah, & Berry, 2014).

Several intervention studies have explored attachment-informed programming to support youth and their families (Bucci, Roberts, Danquah, & Berry, 2014). One of the goals of this approach is to lessen the difficulties of insecurely attached youth, who might be experiencing lower resilience levels, in recognizing and effectively engaging with sources of support (Bucci, Roberts, Danquah, & Berry, 2014). Often, these youth adopt mistrust in health providers or abstain from community programs (Bucci, Roberts, Danquah, & Berry, 2014). For example, acknowledging attachment styles among young people can foster a collaborative bond focused towards building empathy and responsiveness involved in developing resilience (Mennen & O'Keefe, 2005; Bucci, Roberts, Danquah, & Berry, 2014). Being able to recognize and adapt services to insecure attachment styles may also play a pivotal role in outreach programs focused on supporting at-risk or street entrenched youth.

Another possible applied intervention lies in the potential to promote resilience by modifying attachment styles through targeted intervention. Many health practitioners, school educators, and youth organizations are working to promote positive mental health and wellbeing among teens. To do this, they use a continuum of approaches, such as population-wide intervention strategies blended with targeted approaches (Fronlich & Potvin, 2008). For example, targeted universalism resilience programs have the potential to enhance overall resilience levels in adolescent populations as well as identify the obstacles faced by insecurely attached youth, and tailor strategies to address the barriers faced by insecurely attached in mobilizing social supports. However, further research is needed to understand how to incorporate attachment knowledge into population-wide youth resilience programs.

3.7.1. Limitations and Future Analyses

A limitation of this study is the reliance on cross-sectional data, which does not support the establishment of a causal relationship between attachment style and resilience. Comprehensive longitudinal studies are needed to provide researchers with the opportunity to explore the dynamic relationships between resilience levels, psychosocial characteristics such as attachment style, as children and adolescents develop and encounter stressful challenges. The second limitation, specifically volunteer bias, challenges the external validity of this study. In particular, students who voluntarily participated may be different in some way from the general youth population (Hernan, Hernandez-Dias, & Robins, 2003). To investigate this potential limitation the sample representativeness was investigated by comparing Wave 6 BASUS participant characteristics to McCreary Centre Society's 2008 BC Adolescent Health Survey (n= 29,440) participant characteristics. In regards to substance use, the McCreary Centre Society (2009) reported nearly 58% of high school student respondents have ever tried drinking alcohol in comparison to 55% of similarly aged respondents in BASUS (Richardson, Kwon, & Ratner, 2013). Furthermore, 30% of youth in the BC Adolescent Health Survey reported using marijuana in comparison to 27% of the BASUS participants (Richardson, Kwon, & Ratner, 2013). The similar patterns of ethnicities and rates of substance use between the sample of BASUS participants examined in this study and large scale descriptive reports from 2008 BC Adolescent Health Survey indicate that results found in this study are generalizable to youth currently enrolled in secondary schools in British Columbia. It should be noted that a very different pattern of results may be found when examining youth who are not enrolled in school (e.g., homeless or run away youth) or who are attending alternative education programs.

3.7.2. Conclusion

This purpose of this study was to examine the association between attachment style and resilience level in a large sample of adolescents with an additional objective related to assessing the role of gender. The findings are supported by existing research and suggest that attachment theory may contribute to levels of resilience in youth. There has been limited work in exploring the potential of attachment and resilience theories to inform one another (Svanberg, 1998). However, attachment theory appears to provide insight into resilience theory by highlighting the implication of interpersonal relationships as the key component involved in resilience levels, especially aspects of resilience related to youths' ability to effectively mobilize social resources in times of distress.

Adopting the attachment paradigm as a framework for the development of resilienceinformed prevention and early intervention appears to hold great promise (Svanberg, 1998). It may assist health and social programmers to identify adolescents with insecure attachment styles as more vulnerable in comparison to secure attachment to provide direction for prevention and intervention strategies to adapt their programing to engage these youth (Atwool, 2006). The intersectionality of these theories also reframes the connection between protective and risk factors, which indicates the potential role of internal working models as one of the underlying mechanisms mediating the experience of adverse childhood events and mental health and wellbeing in adolescence and adulthood (Atwool, 2006).

4. Chapter 4: Discussion and Concluding Remarks

This thesis provided a review of the theories of attachment and resilience and developed a theoretical rationale that supporting the presence of a significant association between attachment style and resiliency in adolescence. The two major research objectives of this study were thus to: i) Quantify the distribution of attachment styles and their stability over a six (6) month period in a large sample of the general population of adolescents; and ii) Examine the relationship between their attachment styles and levels of resilience. The first objective was addressed in Chapter 2, which outlines study findings on the distribution of adolescents' attachment styles and their stability. The second major research objective was addressed in Chapter 3, which provides evidence on the relationship between attachment styles and levels of resilience report by adolescents.

As reviewed throughout this thesis, attachment theory provides a developmental framework in which adolescents develop along a social-biological pathway (Bowlby, 1969; Ainsworth et al., 1978; Shapiro & Levendosky, 1999). Attachment theory emphasizes that the development and organization of affectional bonds starts during infancy and persists through childhood into adulthood (Bowlby, 1969). Attachment has thus been characterized as the ability to form interpersonal bonds and develop coping strategies to seek and maintain proximity with attachment-figures (Bowlby, 1969; Ainsworth et al., 1978; Bartholomew & Horowitz, 1991). Previous attachment experiences, particularly those in experienced early childhood when the attachment system is developing, contribute to forming a set of neurological processes or IWMs that become activated when establishing relationships with others and in situations of distress. Internal working models provide a framework for mental representations when perceiving the self, others, and social environment (Bowlby, 1969). Attachment theory suggests learning the

function of IWMs are vital to understanding how individuals segregate, omit, and disintegrate information (Bowlby, 1969). Theorists cite IWMs as a framework for cognitions used to appraise social situations, motivational behaviour, and maintain a coherent self-image (Bartholomew & Horowitz, 1991). In this way, the theory proposes a mechanism (ie, attachments styles) through which experiences in childhood can promote or detract from future capacity to maintain mental health in wellbeing, especially in times of adversity.

The current study demonstrated a degree of attachment stability. For example, the present study found moderate stability of attachment security among youth aged 14 to 16 in a six-month interval (e.g. 64%). Several longitudinal studies have reported stability of attachment style rates ranging from 50% to 80% (NICHD Early Child Care Research Network, 2001; Scharfe & Bartholomew, 1994; Fraley, 2002).Past studies using the Relationship Questionnaire reported moderate stability of attachment styles over an eight month timespan, with 61% of males and 71% of females retaining attachment security (Scharfe & Bartholomew, 1994). Other investigators reported an overall 70% correspondence rate in attachment style over a four-year interval (Kirkpatrick & Hazan, 1994).

Furthermore, study results highlight the fact that some attachment styles are more stable than others. For example, previous studies found securely attached youth reported the same pattern consistently over time (Rice, FitzGerald, Whaley, & Gibbs, 1995; Thompson, 2000). Additionally, research evidence revealed a rather high stability for the male dismissing category, whereas the preoccupied classification was less stable. The current study indicates the stability of self-reported attachment style appears to vary by style with the most stable appearing to be secure attachment styles. The stability of secure attachment is predicted by the persistency of

attachment beliefs and experiences typically associated with the development of a secure attachment style (Davina, Burge, & Hammen, 1997).

In contrast, the current study found adolescents with insecure attachment were more likely to experience higher fluctuations in attachment patterns. Recent research has also challenged the assumption that attachment styles remain stable throughout the lifespan (Cozzarelli, Karafa, Collins, & Tagler, 2003). Researchers have suggested that some individuals change their attachment style in moderately short time spans (Cozzarelli, Karafa, Collins, & Tagler, 2003) with some studies finding that approximately 30% of research participants changed their attachment style over various time periods (Lopez & Gormley, 2002). Baldwin and Fehr (1995) suggested psychological variability rather than instability of self-report attachment measurement is influencing observed changes in attachment style. From this perspective, there should be a number of age-related experiences (e.g. autonomy) and stressors (e.g. unresponsive parenting) associated with adolescence that have the potential to influence attachment style transformation. However, it is important to note that the theory predicts that a change of attachment patterns is more likely to be associated with a persistent continuing process rather than a single event or period (Thompson, 2000).

Encouragingly, the distribution of attachment styles in this study's cohort is similar to what has been found in other studies (Bartholomew & Horowitz, 1991; Cyr, Euser, Bakersman-Kranburg, & Van Ijzendoorn, 2010). The first study, described in Chapter 2, found the majority (e.g. 64%) of secondary school students reported secure attachment. In regards to insecure attachment styles, study findings indicated that 23% of participants were classified as fearful, 21% as dismissing, and lastly, 10% as preoccupied. These attachment distributions are similar to

attachment distributions in previous research studies (Bartholomew & Horowitz, 1991; Cyr, Euser, Bakersman-Kranburg, & Van Ijzendoorn, 2010).

As described in the previous chapters of this thesis, attachment theory can potentially assist social and health providers in making intervention decisions for adolescents seeking healthcare (Thomas & Reifel, 2010). For example, acknowledging attachment styles between adolescents and attachment-figures can encourage a collaborative bond focusing on building empathy and responsiveness (Mennen & O'Keefe, 2005; Bucci, Roberts, Danquah, & Berry, 2014; Moretti, Obsuth, Craig, & Bartolo, 2014). An attachment-based approach can also lessen the difficulties of insecurely attached youth in engaging with social support providers because they often adopt mistrust in health providers or abstain from community programs. For instance, health, education, and social service providers could use attachment styles to guide how to effectively engage adolescents in healthcare programming (Bucci, Roberts, Danquah, & Berry, 2014). The possibility of developing specific initiatives focused on investigating factors associated with changing attachment styles may also provide insight in how to tailor youth intervention and prevention strategies.

In regards to gender, the present study found meaningful differences between boys and girls. Specifically, more boys identified with the dismissing attachment disposition whereas girls were more likely to indicate fearful or preoccupied attachment styles. In terms of implications for resilience programing related to enhancing mental health and wellbeing, dismissing males are less likely to express their feelings or seek social support to cope with stressful circumstances (Tamres, Janicki, & Helgeson, 2002). On the other hand, preoccupied females are more likely to desire closeness with others and depend on them for their feelings of positive self-worth (Allen & Land, 1999; Bartholomew & Horowitz, 1991; Del Giudice, 2009). Further, preoccupied girls

report difficulty with self-regulating negative affect and decreased self-competence (Allen & Land, 1999). These gender differences demonstrate the importance of considering gender in this type of research and provide information on how the attachment styles of youth could influence the way youth engage in resilience promoting interventions (e.g., dismissing males may not actively seek out support) and the gender specific vulnerabilities (e.g., preoccupied females may benefit from interventions that boost self-esteem) that could be targeted for intervention. Attachment styles are thus becoming more widely recognized as important factors to be considered when attempting to understand how youth cope with difficulties (Hamiliton, 2000; Allen & Land, 1999).

Although existing research indicates that attachment should theoretically play a critical role in determining how adolescents' mobilize social resources in response to experiences of distress, few researchers have integrated the perspective of attachment styles in studies investigating the development and promotion of resilience in adolescents. Despite this limitation, research on resilience has contributed to improving our understanding of youth mental health and wellbeing by identifying protective and risk factors which influence health and social outcomes (Rutter, 2006).

As described in the literature review presented in Chapter 3, resilience is defined as a dynamic process which encompasses a series of continual reciprocal interactions between adolescents and their social surroundings to assist them to cope with stressful circumstances (Connor & Davidson, 2003; Vanderbilt-Adriance, & Shaw, 2008). Researchers indicate resilience is not invulnerability to adverse experiences, but rather an ability to effectively cope with distress (Connor & Davidson, 2003; Wagnild, 2009). Resilience research has been growing over the decades to understand how youth bounce back from challenging situations (Fergus &

Zimmerman, 2005) with this research forming the basis of many adolescent intervention programs.

Both resilience and attachment research suggest insecurely attached youth and low resilient teens are more likely to report difficulties with day-to-day functioning as well as experience more mental health concerns (Davila, Burge, & Hammen, 1997). Research evidence has also linked low resilience levels as well as attachment insecurity with higher school dropout rates, increased likelihood to engage in substance misuse and homelessness (Penzerro & Lein, 1995; Allen & Land, 1999). The significant association between attachment style and resiliency reported in this thesis combined with the aforementioned findings provides strong support for an inter-related relationship between attachment style, resiliency and adolescent mental health and wellbeing.

The results of this research have considerable implications for strategically identifying prevention and intervention points. In particular, the results of the work presented in this thesis highlight the potential benefit of tailoring resilience-based interventions to address the psychosocial characteristics of adolescents with fearful and preoccupied attachment styles. Current interventions often have youth engage in schools that address issues of social and emotional wellbeing or the prevention of risky behaviour (e.g. substance misuse). Researchers have started to explore the effectiveness of attachment-informed programming to help support youth and their families develop attachment security (Bucci, Roberts, Danquah, & Berry, 2014; Moretti, Obsuth, Craig, & Bartolo, 2014), however this research is in its infancy..

Educating service providers working with youth regarding the attachment informed relational needs of youth, may enable them to tailor supports to decrease any outward resistance or fear of engagement experienced by insecure adolescents (Bucci, Roberts, Danquah, & Berry, 2014).

Thus, this may increase the likelihood of creating trusting relationships over time, which promotes program engagement and success. This information can be utilized by not only adults who work with youth (e.g. teachers, healthcare providers), but also for adults who offer formal support to youth via resilience-informed mentoring programs. (Furnivall, 2011; Rhodes & Lowe, 2008) For instance, when designing matches between mentors and youth, the role of attachment styles has a substantial impact on whether the mentoring relationship will be successful or not. However, if mentors understand the attachment style of their youth mentees, they will be more able to meet the needs of the youth and in so doing develop a stable relationship (Furnivall, 2011; Rhodes & Lowe, 2008).

4.1. Limitations

Although the findings in this study provide initial support for stability of adolescent attachment patterns, a few limitations should be noted. First, the use of self-report instruments to gather information about psychosocial characteristics from participants may have introduced measurement bias. Although public health research frequently utilizes self-report measures, inaccurate reporting and response biases may produce imprecise results or ambiguous associations between variables. Specifically, several attachment researchers have suggested that the use of self-report instruments with insecure individuals may result in bias related to defense strategies to minimize emotion and self-evaluation thereby making self-disclosure less likely (Rothbard & Shaver, 1994). However, empirical evidence indicates youth are capable of reflecting on and reporting their psychological experiences and equally accurate as adults in their responses (Moskowitz & Schwarz, 1982). For instance, Sourander, Helstelae, and Helenius (1999) found that adolescents provided more objective information than their parents across problematic situations, for example reporting negative caregiving behaviours. Further, researchers suggest when the subjective experiences of the youth participant are of primary interest, self-report can provide meaningful insight and be predictive of outcomes (Morris et al., 2002).

As discussed in Chapters 2 and 3, participants volunteered to participate in the BASUS project, which could contribute to bias in the sample. Volunteer bias challenges the external validity of the present research study because youth who volunteer to participate may differ in some way from the wider population (Hernan, Hernandez-Dias, & Robins, 2003). Consequently, the observations in the study may not be representative of all young people, merely of those that choose to volunteer. Previous studies investigating healthy volunteer bias indicate volunteers, in general, are more educated and come from higher socioeconomic classes (Rosenthal & Rosnow, 1975). However, representativeness was investigated by comparing the profiles of participants who completed Wave 6 of BASUS participant characteristics to McCreary Centre Society's 2008 BC Adolescent Health Survey (n= 29,440) participant characteristics. The McCreary Centre Society (2009) reported nearly 58% of respondents have ever tried drinking alcohol in comparison to 55% of similarly aged respondents in BASUS (Richardson, Kwon, & Ratner, 2013). Furthermore, 30% of youth in the BC Adolescent Health Survey reported using marijuana in comparison to 27% of the BASUS participants (Richardson, Kwon, & Ratner, 2013; McCreary Centre Society, 2009). The similar patterns of substance use between the sample of BASUS participants examined in this study and the McCreary Centre Society's 2008 BC Adolescent Health Survey suggest that results found in this study are generalizable to youth currently enrolled in secondary schools in British Columbia. It should be noted that a very different pattern of results may be found when examining youth who are not enrolled in school (e.g., homeless or run away youth) or who are attending alternative education programs.

Relatedly, a potential issue utilizing a volunteer sample may include an overly homogeneous sample of participants from the upper socioeconomic levels of the population. which may limit the ability of this study's findings to be generalized to all adolescents.

4.2. Concluding Statement

Overall, the research presented in this thesis contributes to the current literature by providing a theoretical rationale and empirical evidence supporting the need to incorporate attachment theory into resilience oriented research targeted towards adolescents. It provides both practical and theoretical implications for future research examining the intersection of attachment and resilience theories. At the very least, the intersection of resilience and attachment knowledge offers an opportunity to explore the influence of trusting and supportive adults in the lives of youth. For instance, how can we foster the ability of youth to reach out and form interpersonal bonds that enable them to engage in available social supports and in so doing enhance their capacity to develop and maintain a high level of mental health and wellbeing. .

In terms of study strengths, this study adds an emerging dimension to research involving resiliency and attachment by confirming that there are resilience level differences between insecure and secure attachment styles among youth. It provides an opportunity to consider the underlying reasons why some "resilient" youth engage and effectively utilize available social and health supports while others spiral downward in an unending cycle of increasingly adverse experiences coupled with increasingly negative health outcomes. Moreover, this research supports the recommendation of researchers that new research should focus on working towards improving our understanding of the underlying mechanisms involved in promotion and maintenance of mental health and wellbeing (Luthar, Ciccetti & Becker, 2000).

Further research is needed to examine the factors and developmental periods that are associated with disrupting the link between early and later attachment styles. Empirical evidence is needed to clarify the resilience level differences found between insecure and secure attachment styles and improve our understanding of how attachment styles influence the psychosocial functioning of adolescents. Future studies are also needed to explore the role in attachment in resilience levels using samples of youth from varying ethnic and cultural backgrounds.

In recent years, there has been an increasing emphasis in research and healthcare settings for adolescents that emphasizes strength-based approaches focused on promoting positive experiences and mitigating risk factors (Werner & Smith, 2001; Hammond, 2010). Youth attachment patterns can provide public health researchers a conceptual framework to further understand this complex developmental period. Of particular research interest are studies examining the association between secure attachment with adolescent social and psychological wellbeing. The knowledge attained from attachment stability during adolescence could initiate additional research to help improve long-term engagement in mental health interventions and prevention approaches.

In closing, this research presented in this thesis links two bodies of literature that have remarkable potential to inform one another. As described in the preceding chapters, the intersection of attachment and resiliency represents a perspective that appears to have the potential to provide valuable insight into the underlying mechanisms involved in developing and maintaining positive mental health and wellbeing in adolescence.

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Appendix

The Relationship Questionnaire Scale

Following are four general relationship styles that people often report. Place a checkmark next to the letter corresponding to the style that best describes you or is closest to the way you are.

_____ A. It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not accept me.

_____ B. I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others.

_____ C. I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them.

_____ D. I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.

Please rate each of the following relationship styles according to the extent to which you think each description corresponds to your general relationship style.

A. It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not

1	2	3	4	5	6	7
Disagree	agree Neutral/				Agree	
Strongly	trongly			Mixed		

B. I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others.

1	2	3	4	5	6	7		
Disagree	Disagree Neutral/					Agree		
Strongly			Mixed			Strongly		

C. I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them.

1	2	3	4	5	6	7	
Disagree	isagree Neutral/			Agree			
Strongly			Mixed	Mixed			

D. I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.

1	2	3	4	5	6	7		
Disagree			Neutral/	Neutral/				
Strongly			Mixed			Strongly		

The 14-Item Resilience Scale[™] (RS-14[™])

Please read the following statements. To the right of each you will find seven numbers, ranging from "1" (Strongly Disagree) on the left to "7" (Strongly Agree) on the right. Click the circle below the number which best indicates your feelings about that statement. For example, if you strongly disagree with a statement, click the circle below "1". If you are neutral, click "4", and if you strongly agree, click "7", etc. You must answer every question to submit the test for scoring.

		Strongly Disagree						Strongly Agree	/ >
1	. I usually manage one way or another.	1	2	3 0	4	5 0	6 0	7 0	
2	. I feel proud that I have accomplished things in life	1 . O	2 O	3 O	4	5 O	6 O	7 0	
3	. I usually take things in stride.	1	2 0	3 O	4	5 0	6 0	7 0	
4	. I am friends with myself.	1 0	2	3 O	4 O	5 O	6 0	7 0	
5	. I feel that I can handle many things at a time.	1 0	2 0	3 0	4 0	5 0	6 0	7 0	
6	. I am determined.	1 0	2	3 O	4 O	5 O	6 0	7 0	
7	I can get through difficult times because I've experienced difficulty before.	1 0	2 0	3 O	4 0	5 0	6 0	7 0	
8	. I have self-discipline.	1 0	2	3 O	4 O	5 O	6 O	7 O	
9	. I keep interested in things.	1 0	2 0	3 0	4 0	5 0	6 0	7 0	
1	0. I can usually find something to laugh about.	1 O	2	3 O	4 O	5 O	6 0	7 0	
1	1. My belief in myself gets me through hard times.	1 0	2 0	3 0	4 0	5 0	6 0	7 0	
1	2. In an emergency, I'm someone people can general rely on.	ly 1 O	2	3 O	4 O	5 O	6 0	7 0	
1	3. My life has meaning.	1 0	2 0	3 0	4 0	5 0	6 0	7 0	
1	 When I'm in a difficult situation, I can usually find my way out of it. 		2	3	4	5 O	6 0	07	

Diagnostic Plots for Regression Assumptions



Regression Standardized Residual for Resilience (Wave 7)



