The association between stress, psychological well-being and bullying in a Britain and Trinidad adolescent population

By

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ABSTRACT

Subclinical psychotic experiences (SPEs) are non-clinical, transient and benign but can become severe along the psychosis continuum pathways. The SPEs pathway is precipitated by bio-psychosocial underpinnings (stress, peer and family functioning, bullying, depression and anxiety), fundamentally during adolescence. Therefore, this research aimed to understand the association between stress and SPEs, how this association is moderated by peer and family functioning and whether peer and family functioning at T1 predicts SPEs at T2. Another aim of the research is to determine whether there are subtypes of SPEs in this population, their prevalence, whether bullying is associated with SPEs and which subtypes are associated with bullying more than others. Common psychopathologies in adolescence depression and anxiety were also investigated in Britain and Trinidad and the findings of their social and academic consequences were described. The research found elevated levels of stress to be associated with higher levels of SPEs and bullying was associated with specific types of SPEs, particularly, perceptual abnormalities-delusional ideas (PA-DI), persecutory ideation (PI) and magical thinking (MT). Adolescents with high levels of depression and anxiety are at an increased risk of decline in peer relations and reduce academic achievement both in Trinidad and Britain. The findings of this research informs that stress and bullying are possible risk factors in the onset of SPEs and the dysfunctional impact of depression and anxiety symptoms on peer relations and school life. This signals the need to reconstitute the cognitive and behavioural aspects of adolescence by early intervention of cognitive and behavioural therapy.

DEDICATION

To my Husband-Ian, Sister-Charmyn, Niece-Coreece and Uncle-Kenneth.

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CHAPTER 1

Understanding Adolescence: Physical, and Psychosocial Challenges

The concept of adolescence is considered an invention of the 19th Century, noted as the formal recognition of adolescence and a distinct phase in life (Hall, 1904). This era heralded the period of industrialization in Western culture, when immigrants who poured into the industrialized nations replaced jobs held by teenagers and children (Remley, 1988). The cultures that existed then are of a different nature to the culture of recent times, signifying a re-conceptualization in the construct of adolescence over the years (Kaplan, 2004).

Differences in the definition of adolescence have encouraged interdisciplinary collaborations in the study of adolescent development. Consequently, a number of debates have been raised. For example, the developmental psychologists may focus their definition on physical changes in puberty. Researchers in neuroscience might place emphasis on pubertal changes in the brain structure while sociologists in their quest for information on adolescence may examine cultural differences in the entire spectrum of socialization in the adolescent phase. (Simmons & Blyth, 1987). Notwithstanding these possible variations in definition, the term adolescence is commonly understood as a time frame that describes very diverse facts of life (Kaplan, 2004).

Adolescence is a critical period characterized by changes in the physical, psychological and social status quo (Cicchetti & Rogosch, 2002; May et al., 2004) with upheavals (Hanna et al., 2001) and demanding emotional adjustment. The critical period of adolescence has potential for the manifestation of a number of mental disorders before the age of 14 years (Kessler et al.,

2005). These findings have propelled child psychiatry epidemiology to focus on the bio-psychosocial and neurological factors that influence these onsets of mental disorders. The physical changes that signal the start of adolescence is characterized by puberty. This includes the emergence of adulthood that brings with it muscular changes and both sexual and reproductive enhancement (Patton & Viner, 2007). These changes in the form of body images can alter the perceptual image of both the adolescent and others. Although these changes represent the normal transition process that takes place in adolescent growth and development, they can take on the role of stressors. The social changes can result in thoughts and behavior that can be potentially dysfunctional (Paikoff & Brooks-Gunn, 1991; Steinberg & Morris, 2001). Hunte (1975) suggested that adolescent overall well-being can be enhanced by ensuring the characteristics of the social environment are compatible with the characteristics of the adolescents. Similarly, early proponents of Stage-Environment-Fit Theory (Eccles et al., 1993) posits that adolescents are more inclined to function satisfactorily in an environment where they believe that their needs are met within the primary and secondary levels of socialization. Evidently, there may be merit in social psychologists associating puberty with the emergence of stress (Caspi et al 1993; Martin et al 2002; William & Dunlop, 1999). According to Coleman (1993), the determinant role of the environment is indicative of failure or success from childhood to maturity. This transitional stage signifies both internal and external pressure faced by the adolescent.

The quest for understanding this adolescence developmental stage also implicates the changes in brain structure and function (Casey et al., 2008) occurring in the limbic, paralimbic and prefrontal cortices of the brain. These systems are responsible for the interaction of the socio-emotional systems and cognitive control systems, which are presumed to be associated

with reward/sensation seeking and impulsivity/self-regulation, respectively (Steinberg et al., 2008; Roth et al., 2005). The socio-emotional system in flight to recompense and satisfy emotions may attend to intuitive decision-making. This system acts abruptly, especially when peer-influenced social interaction overwhelms the adolescent in the rewards of social and emotional stimuli (Steinberg, 2007). It is heightened during adolescence between ages 10 to 15 years. Contrastingly, the cognitive control system is invoked to improve the adolescent capacity to self-regulate sudden urges. The analytic component of this system facilitates the individual ability to deliberate over decisions, think rationally and inhibits the deluge of sensation seeking (Steinberg, 2007). Since this control self-regulatory system is less operative until late young adulthood stage, then the ability to self-regulate during early and middle adolescence is challenging (Zukerman, 1979; Steinberg, 2008). In other words, the maturation of the reward and sensation seeking precedes the maturation of self-regulation and impulsivity, which does not fully mature until late adolescence. Therefore, adolescents are at heightened vulnerability for risk-taking behaviours in early to mid-adolescence (Steinberg, 2008). Thus, according to the neurobiological model, adolescents are more likely than children to take risks. Adolescents begin to continuously seek novelty rewarding stimuli before the self-regulatory capabilities authentically intervene. It follows, therefore, that there is a mismatch between these two systems with their timing of development (Gardener & Steinberg, 2005).

Development of both the socio-emotional system and the cognitive control systems are also driven by critical changes in brain development (Steinberg, 2008). This occurs at the level of neurotransmitters release in the socio-emotional system and synaptic plasticity in the cognitive control systems (Grace et al., 2007; Floreso & Tse, 2007). Dopamine is the neuro-chemical basis of reward (Ernst & Spears, 2009) that plays an important role in sensation seeking and brain

reward circuitry. The neurons associated with dopamine possess firing properties which may respond to cues that signal reward delivery (Schultz et al., 2000). Neurobiological evidence has shown that the sequence of dopamine activity in the brain of adolescents comprises of a postnatal rise, preadolescence reduction and then a significant increase in early adolescence (Steinberg et al., 2008). These dopaminergic activities may exacerbate the behaviour for sensation seeking that provides potential risk markers implicated in the development of psychosis (e.g. Jacboson et al., 2009). At this age range, the sub-cortical regions of the brain areas involve in reward seeking activity appears to be enhanced through dopamine transmission release into the ventral striatum region (Doremus-Fitwater, Valinskaya, & Spear, 2010). This is an ongoing process during adolescence and, therefore, changes in the socio-emotional system are possibly dependent on changes in the dopamine system.

On the other hand, the development of the cognitive control system is characterized by continuous reconstruction indicative of learning new skills. In addition, the cognitive control system accentuates brain changes in synaptic pruning and myelination occurring in the prefrontal region of the brain (Keating 2004). The continuous rewiring, elaboration and stabilization of synaptic pruning of adolescent brain is considered a hallmark in the brain transformation of adolescence. Research has shown that during the synaptic pruning process there can be elimination of neuronal connection in brain areas of the cortical region which can lead to mental health problems (Lewis & Gonzales-Burgos, 2008). Nevertheless, at the same time, the neuronal axons sheathed with myelin accelerate the speed of electrical transmission aiding the development of cell maturation and executive functions. These functions include response inhibition, planning ahead and calculating risk vice reward (Steinberg, 2008). Evidently, the

cortical region may have the proclivity to regulate the reward-seeking behaviours of the sub-cortical region of the socio-emotional system.

Additionally, the operations of the neural system in adolescents can also be affected by the severity of exposure to substances **(**Trezza et al., 2012). The neuro-chemical release in substances induce psychotic experiences, varying by substance and severity of substance used (Bhattacharyya, 2009). Tetrahydrocannabinol (THC), found in cannabis, when present at the cannabinoid receptors, inhibits the excitability of neurons in the brain. The dose-response relationship that exists between THC and the neurons has a negative impact on how the brain functions. The obstruction in the uptake of dopamine causes a prolong stimulation of the receptors while disrupting the normal functioning of the neural system. This disruption and reduced density in neurons connections can lead to mental disorders in adolescents (Alexander-Bloch et al., 2010).

The common use of illegal/illicit substance is considered one of the prevailing risky behavioural factors that characterize adolescence and the rise in morbidity (Aldridge, 2008; Degenhardt & Hall, 2001; Ali et al., 2010). More so, international comparison figures on the prevalence of substance use ranges between 45% for the highest and 15% for the lowest among the adolescent populations (Krontil et al., 2010; Arpa, 2011; Johnston et al., 2011). Not only is there an increasing use of substances among adolescents but also, of equal importance, is the concurrent rise in rate of mental health problems relative and non-relative to the use of these substances (World Health Organisation, 2001, 2002; Collishaw et al., 2010). The already debilitating effects of cannabis use when coexisting with psychopathologies can increase the intensity of the symptomatic effects of psychosis or incipient psychosis.

One can deduce that the deregulations of these neurochemical challenges interacting with the neurobiological driven systems and their processes, mental health problems seem to be almost inevitable (Steinberg, 2006). Also, the physical changes that occur, coupled with social interactions, when accumulated can lead to psychopathology. This highlights how important it is to understand neurochemical, neurobiological and bio-psychosocial underpinnings as risk for mental disorder in the development of the adolescent. Most interestingly, not all adolescents are faced with these derailments in spite of the similar processes they go through. This indicates that there are factors and mechanism responsible for the differences in these outcomes, such as, the level of stress experienced by these changes.

Adolescents experience a myriad of stress related events in their lives which differ in magnitude, duration and importance. The events can be minor or major which can lead to either very little effect or very serious and debilitating changes. The minor events can exert minor stress and may include daily hassles from parents and peers. On the other hand, major events can exert major stress and may include death of a family or close friend. Although research focused mostly on major life events (see review Beards et al., 2013; Du Bois et al, 1992; Seiffge-Krenke, 2000), the accumulative effects of daily life stressors seem to have a significant impact on adolescent functioning (Munroe, 1983; Tessner et al.,2011). As such, the daily hassles during adolescence contribute to a number of mental health problems including subclinical psychotic experiences and depression and anxiety (Collip et al., 2013; Janssen et al., 2004; Stueve et., 1998; Grant et. al., 2006).

Subclinical psychotic experiences (SPEs) are present in the general population particularly among adolescence (Poulton et al., 2000; Lauren et al., 2007; Scott et al., 2008; van Os et al., 2009) during which time it is at its highest peak (Verdoux et al., 1998). These

experiences are not yet at the psychosis threshold and may not reach the stage for a need of care and frequently deemed as transient (Wiles et al, 2006; van Os et al., 2009; Dominguez et al., 2011). With respect to non-transient SPEs they can be considered as being distributed along a continuum, characterized by severity as it proceeds along the part to the most extreme end where the clinical features are located (Cougnard et al., 2007). Therefore, SPEs have a quantitative and qualitative association with psychosis in relation to attenuated severity and similarity, respectively (Yung et al., 2007). The prevalence rate in the general population varies from 1% (Eaton et al., 1991) to 17% (van Os et al., 2000). Such variations can be as a consequence of the measuring tool employed and whether one investigates single specific symptom or numerous symptoms. The intensity, frequency and persistence of SPEs can be as a result of underlying risk factors (De Loore et al., 2007). Studies have shown that there are a number of risks factors associated with SPEs including stress, younger ages, ethnic minority, females and other psychopathologies (see review Linscot & van Os, 2012).

The findings of community studies in both developing and developed countries provide evidence that a considerable amount of adolescents who are affected by the debilitating effects of depression and anxiety. A study conducted on adolescents in a rural community of Africa showed that the prevalence of affective disorders is 51.7% with 23.8% categorized as at risk and severely at risk, respectively, for affective disorders (Langhaug et al., 2010). In comparison, a lower lifetime prevalence of mood disorders exists in the developed countries such as the United States of America (U.S.A) which shows a rate of 14.3% (Merikangas et al., 2010). Studies have illustrated that the peak adolescent age group, 15-17 years, also marks a critical period in the development of affective disorders (Petersen et al 1993), compared with the age group between 12 and 14 years. This suggests changes in the prevalence of mental disorders, even within the

adolescent period. Merikangas et al (2010) has identified a rise from 5% to 20% in affective disorders during early adolescence through peak adolescence. This increase in affective disorder seems to facilitate vulnerability for subsequent mood disorders in early and middle adulthood (Gregory et al., 2007).

The long term effects and the severity of mental disorders play a crucial role in the impact that may occur in varying degrees (Mueser et al., 2002). The differences in the impact of these mental disorders may depend upon moderating factors that will attenuate or exacerbate the severity of these disorders. These factors are numerous and can be reflective of the many diverse paths to mental disorders. They can also be conceptualized in accordance with their interaction with other factors, such as age and stage of development that have implications on the outcome of these mental disorders. For example, a positive peer relationship can have a positive influence on the self-worth and self-esteem of the adolescent, rendering protection against mental disorders (Hartup, 1999). Studies have shown that adolescent cling more to their peers than family, especially when there is a lack of family cohesion (Gauze et al., 1996). However, in spite of the importance of peers in adolescence, family functioning also plays an influential role in adolescent development. Adolescent who garner support from both parents and peers function better than adolescents who have support from either one or neither of the two (Raja et al., 1992; Young et al., 2005). The close allegiance that exists among peers encourages them to transform their appearances, likes, dislikes and behaviour to identify with each other (Kiesner et al., 2003). Yet, within the group there may be inequality in physical, mental, social or financial power which can create problems of exclusion (Farrington, 1993). It is suggested that both the internal and external conditions of the peer group can create an unpleasant environment that becomes

potentially difficult for peers to adapt. The behaviours involve in adaptation to such environment can lead to negative adjustment outcomes, such as bullying.

There are international studies identifying bullying as a prevalent behavioural problem among young people worldwide, especially during adolescence both at home and in the school environment (Craig et al., 2009). Studies conducted in both private and public schools in the U.S. estimate the prevalence of bullying between 10% and 30% (Nansel et al., 2001; Kowalski & Limber, 2007). Another study suggests that13% of students were bullies (or perpetrators of bullying), 10.6% were bullied and 6.3% were bully-victims (Wang et al 2009). This repeated oppression of the less powerful may lead the being bullied to experience negative psychological well-being (Invarrson et al., 2005; Sweating et al., 2006) and social dysfunction (Kim et al., 2005), both in the short- and long-term (Hammen et al., 2008). These adverse states may arise from the physiological changes in the adolescent in relation to the hypothalamic-pituitary-adrenal (HPA) axis responding to the stress associated with being bullied (Heim et al., 2000). Some studies have found that bullies also experience some level of mental (Juvonen et al., 2006**)** and behavioural problems (Kim & Leventhal, 2008). Research demonstrates that those who react to bullying victimization (bully-victims) by resorting to bullying behaviours themselves show the poorest psychosocial functioning and highest estimates in mental health (Kaltiala-Heino et al., 2000).

Both internalizing disorders and externalizing behaviours are characterized by age and gender differences that facilitates in the epidemiology of these illness. Age and gender differences in the prevalence and prognosis of mental illness are most relevant to the developmental aspects of adolescents (Rutter, 1989). For example, studies demonstrating that there are changes in prevalence and course of illness are especially intriguing and fill gaps in the

literature (Cohen et al., 1993; Michel et al., 2009). Research expounding on age and gender differences and their impact on mental health and offers a better understanding and identification of factors that can provide necessary information to improve health. Cross-national studies with adolescents have demonstrated that older females had higher risk of health problems (Torsheim et al., 2006). Another cross-national study showed that females had higher internalizing problems while males experience externalizing problems (Verhulst et al., 2003). Moreover, there is evidence that female adolescents are more inclined to be stressed and this facilitates vulnerability to mental illness (Derdikman-Eiron et al., 2011; Steinberg, 2001; Nolen-Hoeksema & Girgus, 1994). Many studies documented that there is a 2:1 ratio that exist for females to males in the likelihood of being diagnosed with generalized anxiety and major depression (Meyer et al., 1990; Nolen-Hoeksema, 1987). There is also evidence that females score much higher on self-reporting anxiety than males (Mineka et al., 1998).

In summary, the short- and long-term effects of mental health have been known to create dysfunction in the lives of adolescents, a problem occurring in many different countries across the world (Schleider et al., 2015; Belfer, 2008; Rescorla et al., 2007). Within this context, there is still much that is unknown about the association between subclinical psychotic experiences, stress, depression and anxiety, bullying experience and functioning within the adolescent period. Hence, it is my intention that the following studies will add to the literature on mental health in adolescence.

CHAPTER 2

Subclinical Psychotic Experiences and Stress: Cross-sectional and Longitudinal Evidence

2.0 Overview of the literature

This chapter reviews the literature on the aetiology and mechanisms underlying subclinical psychotic experiences (SPEs). It will summarize the literature which addresses the association between SPEs and stress and how such association is moderated by family and peer functioning. Research on the role of stress will be identified and summarized illustrating evidence of its association with SPEs. The effects of depression and anxiety on interpersonal relationships and academic attainment will be explained in relation to the co-occurrence of anxiety and depression

The review presented will also explain how the SPEs and stress concept was identified, the history, nature and development of SPEs and stress and their prevalence in the general population, in addition to the role of psychosocial stress in SPEs. Both longitudinal and cross-sectional evidence is presented on the association between stress and SPEs. The chapter is concluded with evidence of family and peer functioning as moderators in the association between stress and SPEs. The research paper completed in relation to this chapter will identify gaps in the literature which this PhD aims to fill.

2.1 Historical perspective of subclinical psychotic experiences

More than four decades ago James Chapman (1966), in his article *The Early signs of Schizophrenia,* expounded on individual experiences by patients preceding the diagnosis of schizophrenia. This study was conducted on 40 young in-patients from two Scotland Hospitals who were able to report their personal experiences with the aim of identifying the symptoms

characteristic of incipient schizophrenia. Although Chapman's work resulted from the paucity of information on early clinical symptoms of schizophrenia, the few researchers who ventured into this quest focused and build on their predecessors' findings. The attempts made include description of the features of schizophrenia, deliberating on case records and establishing an agreed classification. For example, medical professionals indicated that schizophrenia is synonymous with the operationalization of the ego in a dysfunctional state where the individual experiences decrease levels of reality, cognition, affect and physiological urges (see review Bellak, 1958). More specifically, Gillies (1958) demonstrated that the genesis of the symptoms involve should be traced to enable a more in-depth diagnostic procedure. He emphasized that such approach is necessary to avoid the presence of symptoms being undetected for a long period. However, Gillies' findings were similar to other essential symptoms identified by predecessors including dissociated thought processes, volition and affect and autistic withdrawal with the feature of obscuring its identity from noticeable ways for lengthy periods (Bleuler, 1911). The *"Comparative Matching"* system approach (Raven, 1950) has shed light on a classification of experiences objectively stated. This methodology generated information that captured the variations in the criteria involve in diagnosing early schizophrenia. Hallucination, delusion, magical thinking and persecutory ideation, defines this phenomenological state.

These early research do offer insight for future investigations into the precursors of the onset of schizophrenia. More so, the intervening of psychiatrists in making diagnoses also facilitated the systematic model in the development of psychosis in the 20th century which was conceptually defined as a psychosis-continuum by researchers in the 19th century. Strauss (1969) interviewed 119 acute psychiatric cases and found that during diagnostic assessments there was an indication of a continuum in their experiences leading up to clinical delusions and

hallucinations. He further indicated that these experiences, due to continuous relative nature and not distinct contradictory qualities, they require careful assessments. Such findings have fostered recognition of susceptibility of psychosis at one end of the psychosis spectrum and frank psychosis at the other. To add credence to this hypothesis there was further diagnostic investigation of the psychosis continuum conceptualization. Claridge (1997) in his quest for determining the course of psychosis assume that there is an existing continuum along this pathway where normalcy prevails before. His conceptual choice of schizotypy, although can stimulate debates, characterizes a multidimensional states of subtle symptoms that lacks specificity and can therefore go unrecognized. Continuing into the 20th century van Os et al (2000) conducted a study with trained interviewers at inception and clinicians for re-interviewing persons with clinical psychosis. The baseline data (N=7076) of the National Mental Health Survey and Incidence Study (NEMESIS) was utilized. He found that both clinical symptoms and non-clinical symptoms were similarly associated with depression, demographic risk factors, such as, female gender, single marital status, lower income and lower level education.

2.2 Nature and development of subclinical psychotic experiences

Recent developmental models of psychosis have indicated that both clinical psychosis and subclinical psychotic experiences (SPEs) exist on the continuum of an extended psychosis phenotype (van Os et al., 2000; Johns & van Os 2001). The presence of SPEs assumes some risk for later psychotic experiences in adulthood as identified in a sample from the Dunedin Multidisciplinary Health and Development longitudinal study (Poulton et al., 2000). Psychiatric interviews at both ages 11 and 26 years indicated that psychotic symptoms at age 11 predicted schizophreniform at age 26. Even though the children with strong symptoms were at the odd of 16 in having schizophreniform as against those without symptoms, the children with weak

symptoms were also at increased risk of the disorder with a 5 times odds. This finding is consistent with the psychosis continuum concept notwithstanding shortened age limit for developing schizophrenia (Hafner et al., 1993). Furthermore, the linear relationship that existed between the strength of symptoms at age 11 and age 26 indicates that the risk factors in childhood can be the same risk factors in adulthood.

Studies have shown that for a large percentage of people, SPEs are transient (van Os et al., 2009; Dominguez et al., 2011). Thus for most individuals, SPEs are likely to be short lived, mild and naturally resolve without any form of intervention (Nelson & Yung, 2009), including in the absence of illness, distress and non-help seeking (Dominguez et al., 2011). This indicates that people who experience SPEs may not be symptomatic of impending psychotic disorder. Rather, SPEs may be common phenomenon within normal functioning in healthy individuals. This is supported by the evidence that subclinical psychotic experiences are much more prevalent in the general population than psychotic disorder (Verdoux et al., 2002; Scott et al., 2006; Barragan et al., 2011; Nelson & Yung, 2009; Hanssen et al., 2005) A number of studies have reported the prevalence rate of SPEs in the general population, ranging from as low as 1% to as high as 17% (van Os et al., 2001, 2009; Wiles et al., 2006; Eaton et al., 2007), especially among young people (Yung et al., 2009). Hanssen et al. (2005) found that just 8% of people experiencing SPEs between the age of 18 to 64 transition to full blown psychosis. A study conducted in Germany (Early Developmental Stages of Psychopathology) showed that by 8-year follow-up, 22% of participants experience SPEs between ages 14-17 years and 30-40% developed psychotic disorder during the T2 and T3 of a four time period of data collection (Dominguez et al., 2009).

A number of studies have identified subtypes of SPEs in the general population (Yung et al., 2009, 2006; Armando et al., 2010). Using the CAPE, Yung et al (2006) identified three

subtypes of SPEs in a sample of young Australians aged 15-24 years. These included bizarre experiences; persecutory ideas and magical thinking. The authors found that all three subtypes of SPEs were associated with distress, although bizarre experiences having the strongest association. Another study conducted by Yung et al (2009) with secondary school students between the ages of 13-17 years, four subtypes of SPEs was identified: bizarre experiences, perceptual abnormalities, persecutory ideas and magical thinking. Again, all subtypes were associated with distress with bizarre experiences and perceptual abnormalities most strongly associated with distress. Armando et al., (2010) also identified four subtypes of SPEs: bizarre experiences, perceptual abnormalities, persecutory ideas and grandiosity Some SPEs that may confer greater risk for psychosis than others (Yung et al., 2006). As such it is important to determine the prevalence SPEs in the general population.

Studies have reported on the prevalence of the various SPEs subtypes, with estimates ranging from 0.6%-97.9% (Yung et al., 2006, 2009; Armando et al., 2010; Nishida et al., 2010; Barragan et al., 2011). More than three decades ago Posey & Losch (1983) reported that 71% of healthy college students experienced hallucinations, while Cox and Cowling (1989) found that 50% of college students experienced delusions. Following up was Dhossche et al (2002) who found auditory and visual hallucinations 5% and 2% respectively, in a sample of 914 adolescents from the Netherlands. A more recent study done on 1261 Australian adolescents, age 13-17 years, illustrated 8% prevalence in hallucinations (Scott et al., 2009). In a British study of children age 9-12 years, 29.9% reported auditory hallucinations and 28.3% visual hallucinations (Laurens et al., 2007). These results suggest that there are variations in the prevalence of SPEs subtypes and, therefore, this warrants further investigations.

The dynamism of the psychosis continuum has led researchers to seek a better understanding of the underlying mechanisms that lead to transience and the link between the phenotype expression and clinical significance. In doing so, there was focus on genetic and epidemiological studies, both in a community and clinical population (Armando et al., 2010; Varghese et al., 2011; Lichtenstein et al., 2009; Weiser et al., 2005). These studies illustrated that there are other underlying factors with shared liabilities that may moderate or escalate SPEs including depression (Yung et al., 2006, 2009; Armando et al., 2010), cannabis use (Schubart et al., 2011; Van Gastel et al., 2012) genetic vulnerability (Schiffman et al., 2002; Shakoor et al., 2015;), urbanization (van Os et al., 2001), and psychosocial stress (Armando et al 2012; Hides et al., 2009). The longer the SPEs persist the greater the risk of developing a psychotic disorder (Dominguez et al., 2009, 2011).

Research illustrates that the persistence of SPEs can be exacerbated by environmental risk factors and further progress to psychosis (Wigman et al., 2012). One study investigating the course of SPEs over time showed four separate groups including low, decreasing, increasing and persistent SPEs over time (Wigman et al., 2011). Interestingly, the increasing and persistent group showed the strongest association with the environmental risk factors that also predict clinical psychosis (Wigman et al., 2011; van Os et al., 2009). These factors include urbanicity, life events before 11 years and trauma before 11 years and cannabis use before 16 years.

SPEs decline with age and are associated with the younger age even within the adolescent phase (Verdoux et al., 1998). This may be indicative of poor maturational processes occurring in the brain that may be linked to the cognitive control system responsible for self-regulation (Steinberg, 2007). Thus adolescence represents the pinnacle of the presence of SPEs after which there is a decline as the adolescent approaches young adulthood (Verdoux et al., 1998; Kelleher

et al., 2012). As younger age impacts on the presence of SPEs so does gender. In the Early Developmental Stages of Psychopathology (EDSP) sample, Spauwen et al (2003) found that the risk of developing SPEs was higher for younger males than females even after controlling for other risk factors. Contrastingly, another study by Wigman et al (2011) demonstrated that females had greater experiences of all subtypes of SPEs except grandiosity which were more prevalent in males. In addition, females showed a stronger association between SPEs and association with distress. All these subtypes associated with females showed strongest association with distress. It is well documented that psychosocial factors such as stress may contribute the development of SPEs, particularly, when stress is cumulative (van Winkel et al., 2008). Furthermore, individuals with a high susceptibility to psychosis and experiencing lifetime patterns of stress may experience high levels of SPEs (Miller et al., 2002).

2.2.1 Methods of measurement for SPEs.

Variations in the prevalence and individual differences of SPEs, especially hallucinations and delusions, have been determined by methods of measurement such as self-report questionnaires and interviews, used separately or in combination. There is evidence that self-report is a valid method for screening SPEs in the general population (Hanssen et al., 2003; Horwood et al., 2008). The same is true of interview-rated methods (van Os et al., 2009). Furthermore, there is evidence that both methods of measurement are on par in relations to accuracy in detecting SPEs (Kelleher et al., 2011), notwithstanding the assumptions that self-report questionnaires can overestimate the presence of SPEs while interview can be long and tedious (Keheller et al., 2012a). Employing both self-report and interview rated methods of measuring SPEs is recommended to capturing more generalized findings (Grano et al., 2011), although this is not always feasible. Many studies have relied on the Composite International

Diagnostic Interview (CIDI), which is intermediary to both self-report and interview based in that it is administered by trained psychologists and psychiatrist who ask the questions and the answers of the interviewed participants are auto recorded. It is a self-report scaled developed and designed to measure delusional ideation in the normal population.

The most commonly used self-report questionnaires for identifying SPEs in the general population are the Peters Delusional Inventory (PDI; Peters et al., 1999) and the Community Assessment of Psychic Experience (CAPE; Brenner et al., 1996; Stefanis et al., 2002). The PDI is a self-report scaled developed and designed to measure delusional ideation in the normal population. The items of the PDI were adapted from the Present State Examination, with additional words such as 'as if'. This 40-item multidimensional measurement tool assesses distress, preoccupation and conviction which incorporates 8 categories including, (1) delusions of control; (2) misinterpretation, misidentification and delusion of reference; (3) delusions of persecution; (4) expansive delusions; (5) delusions concerning various types of influence and primary delusions; (6) other delusions; (7) simple delusions based on guilt, depersonalization, hypochondriasis; (8) thought reading, insertion echo and broadcasting.

Subsequently a shortened version of the PDI was developed into a 21-item version (PDI-1; Peters et al., 2004) which has the same psychometric properties as the PDI-40. This inventory was further used as a template for the Community Assessment of Psychic Experiences (CAPE; Brenner et al., 1996; Stefanis et al., 2002) for assessing SPEs in the general population. This 42-item scale is also multidimensional comprising of 20-positive symptoms, 14-negative symptoms and 8-depressive symptoms, all investigating frequency and distress associated with SPEs.

2.3 Historical overview and definition of stress

The term 'stress' held a technical focus as far back in 14th century (Lumsden, 1981) using physics as the prominent discipline, analogized to humans, in the explanation of stress. The literature suggests that Walter Cannon (1932) may have been the first to conceptualize stress in the way we now understand it to relate to humans. He examined how the biological system responds to the effects of severe or prolonged stressors. However, these usages have evolved in the 20th century to other disciplines. The transition, mainly to the behavioural sciences, has greatly influenced the idea that stress is an external demand on the biological (Cannon, 1932), social (Boyce, 2007; Baum et al., 1983) and psychological (Boyce et al., 1995) equilibrium of the individual. In their studies, these behaviourists illustrated significant inconsistencies and confusion in explaining the concept of stress. For example, in the medical profession, stress suggests psychological and physiological reaction to unpleasant stimuli, while sociologists focus on the social disequilibrium that is consequential of external interference.

According to the Oxford Dictionary of Psychology, stress is defined as "psychological and physical strain or tension generated by physical, emotional, social, economic or occupational circumstances, events or experiences that are difficult to manage or endure" (Colman, 2009 p. 735). McGrath (1970) defined stress as "from psychological stress to the emotions", similar to that of Lazarus (1993), who noted of four concepts that should be considered when making assumptions on the stress process:

1. The response to stress is associated with how the person relates to the environment.
2. An evaluation: a physiological or psychological response that ciphers how the external causation is received (i.e. the individual must evaluate the environment which will be exhibited by a physiological or psychological response or both).

3. Coping processes in handle stressful events (i.e. how the individual copes with the stimulus from the environmental impact to the nervous system reaction).
4. Stress reaction involving a complex pattern of effects on mind and body.

2.3.1 Nature of Stress

It is argued that stress is captured in the way people perceive events. For instance, Folkman and Lazarus (1991) define stress as a relationship between person and environment that is perceived by the person to be taxing on his or her resources at the time. Interestingly, individuals assimilate stress in different ways that elicits different responses which are internally and externally motivated. It is suggested, therefore, that the mechanisms involved in the stress response system can be chemical, environmental or psychological in nature (Frankenhaeuser, 1994; Lazarus & Folkman, 1984; Sarafino, 1997).

In addition to the mechanisms underlying stress, the literature suggests that there is also an entire process involved in the definition and operation of stress encompassing four features including the stimuli (Levine & Ursin, 1991), the experience (Levine & Ursin, 1991), the response (Steriade, 1996) and the feedback from the stress response. The stimuli are contextualized prior to arousal, hence the subjective evaluation on whether the stimulus is negative or positive and what to expect from the meaning of the stimuli. It is in this light that researchers have debated the appropriateness of the features involved in the definition. They also take into consideration the different cognitive appraisals that influence stress at different developmental phases. Consistent with this argument, Grant et al. (2003) defined stress as "environmental events or chronic conditions that objectively threaten the physical and/or psychological health or well-being of individuals of a particular society". When a stimulus evokes arousal and stress is experienced, the individual response may be specific or unspecific.

A specific response brings about the altering of the stimulus response system. This alteration facilitates a storage place for outcome expectancies to exist (Levine & Ursin, 1991). Notwithstanding all these differences in definition, the main tenet underpinning definitions focuses on external stimuli that adversely affect the bio-psycho-social equilibrium of the individual (Cohen et al 1995).

Stress has been expounded in many different models in the literature, including physiological, psychological and environmental or social stress (Mason, 1975; McNamara, 2000) which can be experienced all at once or any one at a time (Auerbach & Grambling, 1998). The focus on these types of stress was developed within the scope of physiological (Selye, 1976) and cognitive psychology (Lazarus, 1966; Lazarus & Folkman 1984). A physiological response is triggered when physiological or biological changes occur within the individual during a stressful encounter. This argument is supported by neurobiological evidence of the involvement of the hypothalamic pituitary adrenal (HPA) axis, which is altered under stress, more so in younger individuals (Von Werne Baes et al., 2012).

The psychological approach to stress encompasses the emotional and cognitive response to the stressor and can be considered as the main conduit to arousal of physiological dysregulation (Schlotz et al 2008; Van Praag et al., 2004; Campbell & Ehlert, 2012). Lazarus and Folkman (1984) emphasized the impact of the stressor attributing to the degree of perception in how potentially distressing it is and how difficult the situation is for the individual to cope. Similarly, Cox & Griffith (1995), in their contribution to the psychological approach to stress, focused on the cognitive processes underpinning stressful encounters.

Social stress relates to social structures and environmental situations that may induce pressure causing negative effects to the body and mind (von Dawans et al., 2012). These social

structures include the family and peer relations. Negative situations during interaction may lead to social stress on the individual (for example, Spear, 2000; Mc Cubbin et al., 2014), especially at critical periods in development where bio-psychosocial changes already exert a level of pressure that can lead to mental health issues (Schmeelk-Cone & Zimmerman; Michaud et al., 2006; Garber, 2013**)**. This suggests, therefore, that adolescence may be a particular risk period for social stress.

2.3.2 Types of stress

The literature also identified three type of stress that can be externally experienced by adolescents with both acute and chronic severity. These three types of stressors can each cover a wide scope of events namely normative stressful events, non-normative stressful events and daily hassles (Suldo et al., 2008). The focus of this thesis will be on daily stress although all other types of stress can be experienced simultaneously (Auerbach & Grambling, 1998). Normative stress refers to taxing demands derived from changes surrounding adolescence puberty, transitions with school, family, peers and academics. The inevitable nature of this type of stress has some level of prediction considering that all adolescents will experience these events at sometime in their life (Coleman & Hendry, 1999). Non-normative stressful events refer to life events that can influence trauma in the lives of adolescents and attaches a sensitive mode and include events such as divorce, death of a loved one, injury and natural disasters**.** Daily hassles are less taxing on the mind of adolescent than non-normative stress. However, while they can be minor, they may have a more chronic nature since they are irritating, frustrating and distressing on a daily basis (Kanner et al 1981). This type of stress is environmentally inclined and can influence parent-child fights and troubled friendship (McCubbin & Figley, 2014). Therefore, the

accumulative effects of daily hassles can effectively predict psychopathology (Kanner et al., 1981).

2.3.3 Different ways of measuring stress.

How we measure stress, over the years, has highlighted a number of methodological challenges. There is focus on two approaches including the checklist (general and specialized) which is self-reported, and the interview. The general checklist has the advantage of offering a wide cross-section of both negative and positive events that are relevant and representative. Their continuous revision and improvement have gained prominence for usage in the literature and plays a role in the development of adolescent (Burnett & Fanshawe, 1997; Coddington et al., 1980; Compas et al., 1987; Patterson & McCubbin 1983; Newcomb et al., 1981) and child (Bryne et al., 1990; Deutsch et al., 1989; Sandier et al., 1986) measures. With regards to specific populations and specific events, researchers use more specialized checklists. However, the specificity of these measures tends to exclude other societal groups, as well as not investigating a range of other potentially stressful experiences. Investigators identified that the European middle-class focus usually used in the development of these measures creates bias against minority groups and some of their circumstances that lead to stressors (Miller et al., 2002). In an attempt to rectify this situation, researchers developed measures with items indexing minority communities (Hastings & Kelley, 1997; Richter & Martinez, 1993) while at the same time focusing on broader range of stressors that may be pertinent (Nyborg & Curry, 2003). These adjustments were accompanied with additional measures for middle-class white (Roosa et al., 1988, 1990). The self-report checklist is the most widely used measure and justifiably so considering its advantages. These include ease in administering, being comprehensive in measuring stressors for specific population, facilitating data for large sample groups, and

strengthening the ability for test of association to find an effect. In spite of their strengths a number of drawbacks have been identified in the stressors checklist approach.

Critiques have argued that firstly, notwithstanding the improvements of the checklist method of assessment, the personal opinion of what is a stressor has personalized the meaning of items that consequentially prevents comparative analyses for cross-culture samples in the specialized checklist (Grant et al. 2004). This indicates that the measure is not empirically sound and can give rise to spurious information. Secondly, the personal emotional states that are differently experience by different people, as a consequence of the same stressful event may be inaccurately assessed by the personal meanings of each item. For example, losing an aunt may be differently experienced by different people depending on the quality of relationship that existed with that family member (Duggal et al., 2000). Thirdly, in regard to the specialized checklist in particular, there is a deficiency in the type and number of stressful events that can be investigated which can lead to validity issues (Duggal et al., 2000). Finally, checklists lack information on date and time of the events that can be useful to clinicians in treating the effects of stressors.

Interview method for measuring stressors was developed to counteract the methodological limitations of the checklist. Interviews are characterized by the contextual assessment of the degree of threat posed by stressors. The narrative nature of occurrences enables the interviewer to systematically understand, note and rate the conditions surrounding the events. In other words when, where, how and what time the event occurred (Rudolph & Hammen, 1999), facilitating the formulation of list of "objective" indicators of stressors. Addressing biases in mood, personal meaning and recall of event and when they occur is useful (Mc Quaid et al., 2000; Simon et al., 1993). However, these strengths do not avoid the limitations, such as truthfulness in sharing information that may carry a level of shame or law

involvement (Singleton & Straits, 1999), its infrequent use (Grant et al., 2004), time consumption involve in administering the interview and requirement of a trained interviewer and objective threat-rater.

2.3.4 Stressful life events vs Daily stress

There is compelling evidence in the literature that both stressful life events and daily hassles are strongly associated with SPEs (Malla & Norman, 1992; De Loore et al., 2007; Barrantes-Vidal et al., 2013), however, there may be differences in association. Considering the assumption that SPEs exist on the schizophrenia-spectrum (Gooding et al., 2005), studies comparing both stressful life events and daily hassles focused on this group of individuals. Tessner et al (2011) in his longitudinal study on adolescent 12-18 years found that daily hassles are associated more with the frequency of SPEs while stressful life event were associated with severity of SPEs. Another study of younger children found that the more severe forms of life events and their accumulative effects seem to strengthen the effects of SPEs. The frequent exposure to daily stressors emanating from peer and teachers show higher scores on measures of SPEs than those experiencing life events (Cullen et al., 2014).

There is sufficient evidence that the quality of family functioning in adolescence is based on the influential nature of stressors and moderators in the development of psychopathology (Greenberger et al., 2000; Steinberg & Morris, 2001). Studies have shown that daily hassles and stressful life events are almost inevitable as changes occur in the family, mainly as a result of a family's growth and development (Boss, 2002). This characteristic of stress suggests that both daily hassles and stressful life events are parallel, yet different, in their influential capacity for inducing stress. In addition, the stability of stress is found to be greater in daily hassles than in stressful life events, thereby creating cumulative stress which can lead to problematic family functioning (Crnic et al., 2005). On the other hand, stressful life events are more severe in nature,

and can disrupt the family system ever so often causing instability and a high risk stress situation (Carter & McGoldrick, 1989). A study investigating the strength of association between family functioning and stress found that daily hassles were responsible for a decrease in pleasurable activities between adolescent and parents, whereas stressful life events influenced increased conflicts (Crnic et al., 2005).

With respect to peer functioning, daily hassles among peers can have negative effects, especially when the presence of some of these very peers arouse discomfort and therefore can create high levels of stress (van Roekel et al., 2015). Although adolescents have the opportunity to choose their peers relationships, the conflict that may exist in these peer groups can be very stressful (Laursen, 1993). According to General Strain Theory (Agnew, 1992) stressful life events have the proclivity to evoke anger among peers and reduce one's ability to settle conflicts with their peers free of violence. However, these conflicts can be resolved creatively through teachers training in conflict resolution and students training in mediation (Aber et al., 1998).

2.3.5 Stress and Adolescence

Taking into consideration the hyperbole challenges involve in adolescence growth and development, the study of stress in adolescents is of great interest. The initiator and early proponent of the study of adolescence**,** G. Stanley Hall (1904), in his work *Adolescence* highlighted the "storm and stress" of adolescence. This concept of adolescent stress is reflective of a seemingly subtle inherent characteristic that is universal and biological. He fashioned his concept of stress to that of Lamarckian evolution which signifies a hereditary element involve in disturbing memories that are passed on to descendants. Therefore, the conundrum underpinning the psychological, biological and physical changes in the adolescent appears to be an inevitable pathway to stress (Eccles et al. 1993; Steinberg & Levine, 1997; Lerner & Steinberg, 2009).

Some early researchers posited that adolescence void of stress is in itself abnormal and can signal psychopathic personality (Freud, 1958, 1968).

There is substantive evidence that supports the potentially volatile nature of stress during adolescents. There are also individual differences between adolescents when they are faced with challenging events during growth and development. These differences suggest, therefore, that there is variability in perception of stimulus and the response mechanisms employed (Stroud et al., 2009).The way in which adolescents respond to stress is likely to be influenced by the less developed and late maturing cognitive control self-regulatory system, as well as, the social, cognitive and behavioural changes that occur in this critical period (Karoly, 1993**)**. With the increase of neurobiological studies on adolescence and stress, evidence of interference on the brain during transition from youth to adulthood shows that the prefrontal cortex is a hub for structural changes and late maturity. In this region of the brain, the hypothalamic pituitary gonadal (HPG) axis releases gonadal steroids hormones that are responsible for puberty in adolescence. Stress impedes the functioning on the HPG axis (Chrousos et al., 1998).

Research has also demonstrated that there are underlying social mechanisms that consistently contributes to the stressful life of adolescents. These include factors such as general, family and peer functioning, and school difficulties. Although there are other elements involved, those mentioned will be the focus of this study. There is the notion that adolescents spend most of their time socializing with their peers and, to a lesser extent, their family. As such, the major influence of stress experienced may have it genesis in peer relationship and family functioning, either as a positive or negative influence (see review Kuiper et al., 1992). Considering (i) the many different ways in which stressful life experiences affect the growth and development of adolescent, (ii) how adolescents are particularly vulnerable to stress, and (iii) that stress in related

to SPEs and psychopathology, it is important to investigate how the family and peer functioning impacts on the interaction between stress and mental health in adolescents.

2.3.6 The association between stress and subclinical psychotic experiences

Stress has been identified as one of the predictable socio-environmental factors that play a role in the course of psychosis. The etiology of psychosis has implicated stressful life events as one of the risk factors involve in the development of psychotic disorder both in the general and clinical population (Beard et al., 2013). A relatively large number of researches have shown that life events, both independent and dependent on the individual, may increase the risk of psychotic disorders and SPEs. A review and meta-analysis study found that adults with psychosis are over two to eight times more likely to report life event preceding the onset of psychosis (see review, Beards et al., 2013). This is consistent with the vulnerability hypothesis or stress-diathesis model for schizophrenia (Fowles, 1992), which posits that environmental factors, such as stress, may interact with already existing vulnerability (e.g. genetic predisposition) in precipitating the development of psychosis.

Epidemiological studies, both cross-sectional and longitudinal, have shown that short-term and long-term life stressors also contribute to SPEs (Tessner et al., 2011). In the case of non-clinical populations, those reporting SPEs were two to seven times more likely to have experienced negative life events than those without SPEs (Beards et al., 2013). In addition, the additive effect of adverse life events may increase the risk for psychotic disorder, suggesting a dose-response relationship between stress and SPEs along the continuum of psychosis (van Winkel et al, 2008).

The severity and type of stressful life event may be underlying factors that can differentiate the impact of stress on SPEs, to clinical symptoms of full blown psychosis (De

Loore et al., 2007; Lataster et al., 2009; van Winkel et al., 2008). Studies have shown that individuals with schizophrenia were more likely to have experienced moderated to severe life events, such as physical maltreatment, in the three months preceding illness onset compared to individuals without schizophrenia (see review Beards et al., 2013). The short-term function of stress that underlies the stress-psychosis dynamics suggests that minor daily stressors may also be indicative of a more cumulative effect on the manifestation of psychosis (Horan et al., 2005). Myin-Germeys & van Os (2007) show substantive evidence of the association between minor daily stressors and SPEs. In a 10-year longitudinal population based study of 3021 adolescents, life events prior to baseline assessment were associated with SPEs and remained three years later (Lataster et al., 2012).

2.4 The role of family functioning in stress

Social and environmental influences play a role in the experience of stress (Compas, 1997; Bentall & Fernyhough, 2008). Two such influences are family and close friends which are the primary source of socialization (Laursen & Collins 2009). Based on such closeness there is the suggestion that the family can be a major pathway to producing stress. Therefore, family functioning can be considered as a primary factor in moderating the effects of stressful daily hassles (Pollock et al., 2015). Supportive families fulfill the need for cushioning the effects of stressful life events (Ringdal et al., 2007), allowing these adolescents to adequately adjust through their growth and development (Jaffee et al., 2007). On the other hand, a dysfunctional family life can impede these processes during adolescents (Reitz et al., 2014), thereby contributing emotional instability.

Additionally, parental communication styles, including hostility and disapproval of peers and other social relationships, have also shown to increase the stress of children (Wagner et al.,

1996; Berry et al., 2006). Young people who feel secure and loved by their parents are less likely to be impacted by daily stress than adolescents stress and insecure parental ties (Patterson et al., 1989).

Understanding how family functioning affects the well-being of adolescents may provide insight into factors that may influence daily stress in adolescents. This information would be useful in developing programs to promote the importance of good family relations, and implementing interventions that will assist dysfunctional families in supporting adolescents who are in stressful situations.

2.5 The role of family functioning in the development of subclinical psychotic experiences

Cross sectional research into family functioning and SPEs has shown that insecure attachment can predict psychotic symptoms both in nonclinical and clinical samples (Meins et al., 2008). Furthermore, research identifying symptom-specific SPEs illustrates that Persecutory Ideations and Bizarre Experiences are significantly and positively associated with poor peer and family functioning (Yung et al., 2006).

Longitudinal studies also illustrated an association between SPEs and interpersonal functioning, particularly, peer functioning and family functioning (Collip et al., 2011**)**. Some studies suggest that SPEs in the general population can become persistent when they interact with deficient interpersonal functioning (van Os et al., 2000; Dominguez et al., 2009; Smeets et al., 2012). Rossler et al. (2007) showed that negative social functioning such as dysfunctional family lives are predictors of significant levels of SPEs over long periods. There is evidence that the association seems to be unidirectional where interpersonal functioning precedes subclinical psychotic experiences (Hafner et al., 1999; Addington & Addington, 2005). Collip et al. (2013) also found that poor family functioning precedes the occurrence of SPEs rather than SPEs

predicting family functioning. The unidirectional association of family functioning and subclinical psychotic experiences indicates that family functioning predicts subclinical psychotic experiences and not vice versa. Studies have shown that there seems to be a linear relationship between environmental risks factors and the persistence of SPEs, especially when baseline SPEs are present (Cougnard et al., 2007; Dominguez et al., 2009; Spauwen et al., 2006b).

There is conclusive evidence to suggest that both SPEs and stress are common among adolescents in the general population and can be influenced by social factors. Overall, family functioning seems to be influential in the severity and longevity of both SPEs and stress. Such assumption is provided by studies investigating, independently, the association between family functioning and SPEs (MacBeth et al., 2008) or family functioning and stress (Pollock et al., 2015). However, no study to date investigated the role of family functioning, overtime, in the association between SPEs and stress. This association is useful in understanding the role family and peer functioning play within this association and how the changes in family functioning overtime will affect the level of SPEs. These findings will add to this gap in the literature, as well as have implications for promotions and programs supporting positive family functioning in the growth and development of adolescents.

2.6 The role of peer functioning in stress

Positive and healthy peer relationships are also paramount to the growth and development of adolescents (Lauren et al., 1996; Rubin et al., 2005), particularly so when family functioning declines (Asmussen & Larson, 1991). When peer relationships are unfavourable a number of psychosocial challenges, including stress, can lead to dysfunctional adjustments (Bagwell et al., 2005). Research has shown that elevated stress levels are associated with separation from peers which can eventuate to suicide in adolescents (Hawton et al., 1996). Furthermore, these elevated

stress level can preclude the adolescent from coping with future stress (Lopez & DuBois, 2005), as well as, influence functional and structural deterioration.

Empirical evidence has shown that there is a relationship between the physiological response to stress and the under-developed socio-emotional system in adolescents. This suggests that adolescents who fall out of favour in peer groups demonstrate higher levels of stress reactivity than adolescents who enjoy favoritism with their peer group (see Murray-Close, 2013). The emotional insecurity that generates within these fall outs may also contribute to a level of mistrust, and negative behavours by the adolescents (Patterson et al., 1991) Therefore, one can assume that peer functioning plays a vital role in maintaining a good social support system (Wentzel, 1998; Wentzel et al., 2010), a buffer against the harmful effects of bullying (Hodge et al., 1999) and a protective factor against the ills of dysfunctional family relations (Gauge et al., 1996). The absence of these fundamental criteria for good peer relations can result in aggression and other negative reactions resulting from stress.

Considering that there are differences in how individuals react to stress when alone, the same can be attributed to peer groups in relation to males and females. On investigation of these differences, it was found that interaction in peer groups were more prosocial, conversational and self-disclosed for females than for males. Social cognitions demonstrated that females focus on interdependence among friends, show grave concern for the consequences of anger and for friends who are stressed. Females also value peer evaluation (Rose & Rudolph, 2006) more than males. However, according to the attribution theorist (Weiner, 1985) the differences in reactivity to stress is associated with the different types of stressors.

The varying types of stressful events that occur in the lives of adolescents may also play a vital role in gender differences observed in peer relations. Research has shown that the different

types of stressors affect males and females differently (Gore et al., 1993; Rudolph & Hammen, 1999; Rudolph, 2002; Leadeater et al., 1995; Bakker et a., 2012). Such findings may be as a result of the strong sense of value such as closeness and disclosure that females place on friendship. On the other hand, males are casual and association oriented (Cooper & Ayers-Lopez, 1985; Youniss & Smollar, 1985). Rudolph & Hammen, (1999) found that females in peer groups report more interpersonal type stress such as intimate partners and family issues while males report stressors relating to academic failure and unlawful behaviours. According to the Stress-Generation Model (Hammen, 1991), specific types of stressful life events can be caused by the individual misdemeanors and, therefore, could have been avoidable. Contrastingly, some stressful life events can be independent of the individual due to unavoidable circumstances surrounding the occurrence of the event (Larson & Ham, 1993; Wagner & Compas, 1990). Rudolph & Hammen (1999) found that males have a greater likelihood of experiencing the effects of independent stressors than females. Conversely, females have been found to report more dependent and independent stressors than males (Hankin et al., 2007).

In addition to gender differences across types of stress and events, there is also age related differences. Rudolph & Hammen, (1999) investigated aggregate stress in peer relationships and found that younger adolescents experience lower levels of stress than older adolescents. These findings were similar for interpersonal and non-interpersonal events in both older and younger adolescents. The results to this study suggest that there is an age relatedness to stress and that younger adolescents are less in control of events and function better in parent-child relationship rather than peer relations. Therefore, it is important to examine age differences to stress reactivity in peer relations among adolescents' ages 13-16 years.

Children and adolescents who are attached to supportive peers do have high levels of self-esteem, positive sense of emotions, socially acceptable behaviours and good interpersonal skills (Wentzel & Muenks, 2016). Research has shown that these positive attributes that result from positive peer functioning can facilitate engagement in school (Wentzel , 2005) and growth within peer groups (Dworkin & Hansen, 2003). The bond existing in these peer groups can foster affection which in turn helps to ameliorate the negative effects of stress and mental disorders (Peer, 2006).

2.7 The role of peer functioning in the development of subclinical psychotic experiences

At the general population level, SPEs are found to be associated with poor social functioning in adolescents. Data from the Avon Longitudinal Study of Parents and Children (ALSPAC) showed that adolescent with SPEs had poor peer functioning even after adjusting for emotional and behaviour problems (Asher et al., 2013). Similarly, social functioning, gender, and age all precede and mediate subclinical psychotic experiences in a unidirectional nature with increased risk for psychotic disorder (Collip et al., 2011; Schubart et al., 2011).

There is a dearth of research on the association between peer relation and the development of SPEs both cross-sectionally and longitudinally. Cross sectional research into peer functioning and subclinical psychotic experiences have indicated that poor peer function is a criteria for psychopathologies including subclinical psychotic experiences (Sroufe et al., 2000). The results of poor peer functioning signify a level of stress in which reactivity to such stress can, in turn, lead to psychotic-like experiences. Considering the emotional disturbance that emanate from poor peer relationship it is possible that these emotions can impact negatively on SPEs by worsening the situation (Ames et al., 2014). A recent study done on children 9-12 years with heightened risk for schizophrenia, found that peer relation resulted in a greater frequency of

stressors and was strongly correlated to psychotic like experiences (Cullen et al., 2014). With high risk groups it may be important to follow-up with longitudinal studies that will enable prediction of SPEs by stressors that are severe.

Results of a longitudinal study have demonstrated that as the quality of peer functioning deteriorates there is a stronger likelihood for the development of SPEs with a linear relationship (Sullivan et al., 2013). Sullivan and colleagues examined children ages 7 and 11 and found that improved peer relations were associated with SPEs. Improved peer relationship resulted in a decrease in SPEs from age 7-11 years. This indicates that the better the quality of the peer relationships the less is the likelihood of experiencing SPEs.

In summary, there is evidence suggesting that peer functioning plays a pivotal role in the development of both stress and SPEs: poor peer functioning can precipitate stress as well as SPEs. One can deduce, therefore, that positive peer functioning can reduce the effects of both stress (Hartup, 1992; Rubin et al., 1998; Pietrzak et al., 2010) and SPEs (Bryne & Morrison, 2010). However, most of the few studies conducted on the association of peer functioning and stress and SPEs have investigated them separately (i.e. the association between peer functioning and stress, the association between peer functioning and SPEs). To our knowledge, no study investigated the moderating role of peer functioning in the association between stress and SPEs. Such information is important for the implication of positive peer functioning in adolescents who experience stress which can further precipitates SPEs.

2.8 The role of moderators

Moderators are defined as "variables that establish a change in the direction and/or strength of the relationship between a dependent variable and an independent variable" (Baron &

Kenny, 1986 p. 1174). Thus, they influence the impact between the dependent variable and the independent variables (Zedeck, 1971). In stress and mental health research moderators are conceptualized as risk or protective factors that ameliorates the likelihood of manifesting into psychopathology. This suggests that there will be individual differences in the responses to the same stress stimulus taking into consideration the significance of the moderator (Zedeck, 1971).

Moderators in the association between stressors and mental health problems in adolescents tend to be a) child characteristics including age, sex ethnicity, cognition, competence and coping style: and b) environment context such as schools, family, peer and social support (Grant et al., 2006). Although these variables can act as both moderators and mediators, there is the argument that there can be overlaps in the use of these two concepts (Holmbeck, 1997). Understanding the moderating role of peer functioning in the association between stress and SPEs is important for knowledge of who might be at greatest risk for SPEs during the stressful adolescent period. It also provides targets for intervention.

CHAPTER 3

Bullying and Subclinical Psychotic Experiences in Adolescents

3.0 The concept of bullying

In addition to stress, bullying can be considered another risk factor for mental health in young people. The imprecision and inconclusiveness surrounding the definition of bullying may be as a result of other synonymous words such as aggression. Some researchers describe bullying as aggressive behaviour at any one time (Olweus, 1993), while others identify bullying as repeated aggression (Olweus (1999, pp. 10–11). Such different views on bullying may have contributed to the difficulties in identifying the different forms of bullying behaviour. To overcome these difficulties studies done on bullying generalizes the meaning, which overall, is indicative of the victimization of one individual to another with intended harm.

3.1 Etymological and historical perspective of bullying.

In the 15th century, the word "bully" was derived from words that reflected positive affection, such as "lover" and "sweetheart". However, by the 17th century, the meaning had changed to be "harasser of the weak" followed by "bully" in 1710 (Allanson et al., 2015). Evidence of the early meaning of bullying illustrates the ancient use of this concept. It has been reviewed in contemporary research, after a prolonged gap before pervading the literature. Burk (1897) published the initial significant journal on bullying among adolescents. Following a lapse in time, Scandinavian researchers heighten investigations leading to a development in the area of study following the 1970s.

3.2 Bullying definition changes over time

During the 19th century bullying was defined as "repeated oppression of a less powerful person, physical or psychological, by a more powerful person." (Farrington, 1993). Other earlier definition include "a person is bullied when he or she is exposed, repeatedly over time, to negative actions on the part of one or more other students" (Olweus, 1993, p. 9). The differences in the definition have evolved throughout the years. However, common characteristics include repetitious bullying behaviour, consciously causing physical and psychological harm, as well as, imbalance and unjust use of power. The prevailing social context which defines bullying does not preclude situational adjustments where the concept is being operationalized for the first time. As such, there is an increase in the study of bullying, within various perspectives and disciplines. The definition was arguably revised to better understand the role of each individual within the bullying dynamics.

The categories of bullying behaviour lay the foundation to identifying the characteristics of the powerful, powerless and reactions from the powerless. These categories include bullies, victims of bullies and bully-victims respectively. Bullies are individuals who are considered the perpetrators of undesirable actions. Victims of bullying are the people who are in receipt of abusive behaviours by the bully. Bully-victims are those individuals who were victims of bullying and retaliated by bullying others. In addition to the three characteristics, there are those who are by-standers and refrain from participating in the actions so as to avoid undeserved abuse or to indirectly sanction the abuse on the victim (Espelage et al., 2000). In addition to the characteristics of bullying, the different types of bullying are of equal importance. These include physical, psychological, relational or social and, the most recent, cyber bullying. Physical bullying involves hitting, kicking and even pushing whereas, calling someone names, bossing

around peers and harassing and attacking repeatedly and in a hurtful manner, are considered forms of psychological bullying (Olweus, 1993). These types of bullying are direct in nature, as oppose to exclusion of peers and spreading rumours which are classified as indirect and encompasses social and relational oppression (Crick & Grotpeter, 1995). The negative impact of bullying on the social and psychological well-being of adolescents has encouraged greater research into the prevalence of these behaviours (Nansel et al., 2001; Salmivalli, 2002).

3.3 Prevalence and pattern of bullying among adolescents internationally

Research indicates that the rate of bullying among adolescents is a growing concern and needs to be addressed immediately. The prevalence rate of "ever being bullied" range from 15% to 70% around the world (King et al., 1994; US Department of Education, 1999). At international level, investigations on bullying prevalence highlight a wide variation across countries in the hemispheres. A large study comprising of 202, 056 students in 40 countries in Europe and North America found that bullying rates were 8.6% in Sweden and 45.2 % in Lithuania among boys and 4.8% to 35.8% in these countries respectively for girls (Craig et al., 2009). Even though these rates represent combined results of the bully, bullied and bullying victim, they mirror results from another study showing the enormous variations in prevalence between countries. Due et al. (2005) found the lowest rate was 6.3% in Swedish girls and the highest was 41.4% for boys in Lithuania.

The wide variations among countries may be reflective of a number of social and cultural differences including economic status. For instance, research into bullying prevalence identified higher rates of bullying in low income countries (between12% and 100%), whereas high income countries, in the Global School-based Health Survey 2008 (GSHS), reported prevalence rate between 20% to 40% (Due & Holstein, 2008). The higher prevalence in low income countries

may be as a result of low income risk factors such a poverty which in turn leads to violence. The moral detachment associated with violence can influence bullying in the school environment, especially when the situation is culturally related (Menesini et al., 2003).

3.3.1 Prevalence and pattern of bullying in the Caribbean

There is a paucity of research conducted on bullying in the Caribbean. One study (Ruprah & Sierra, 2014) reported the highest prevalence rate for bullied youths in Jamaica (15%) and the lowest rate in Guyana (7%). Data from the Global School Health Survey on 66 countries found the prevalence rate for bullied children in the Caribbean overall was 37%. Furthermore, Jamaica (42%) and Guyana (37%) reported prevalence rates exceeding the international average rates (Due et al., 2008) and also showing a large difference between these two countries. Other data from the Caribbean documented that 29% of adolescents has been bullied in the past 30 days with a frequency of being bullied at least once to as high as five times (Ruprah & Sierra, 2014).

In Trinidad and Tobago a Global Health School-based Survey (2007) recorded 20.8% students being bullied in the past 30 days at least once (Procope-Beckles, 2007). Due and colleagues (2008) found a 22% prevalence rate for bullying in Trinidad and Tobago, although, the most recent estimate of bullying is approximately 30% (Trinidad & Tobago Newsday, 2014). The rise in bullying rates indicates that the bullying in Trinidad & Tobago is similar, on average, to developed countries and also relatively similar to that of the entire Caribbean. This rise is seen in a Global Health School-based Survey (2007) which recorded 20.8% students being bullied in the past 30 days at a frequency of one day or more (Procope-Beckles, 2007).

In relation to violence, teen gang activities in Trinidad and Tobago have been on the rise in the last ten years and are one of the main focuses for the Government. These young persons are within aged 10 to 19 years and are influential in the schools population (Katz & Fox, 2010).

In Trinidad and Tobago the steady rise in bullying behaviours is evident in the pleas for help by student who are victims and are prevented from attending school on a regular basis. At present, one in every three students skips school due to fear of being bullied (Deosaran, 2004). Two case examples follow:

Case 1: Keegan Hunte, a student of Mucurapo Secondary School, suffered a broken ankle after he was attacked by four school-mates. He was subsequently threatened by a relative of one of his attackers (Trinidad and Tobago Newsday, November 30th, 2014).

Case 2: Marc Hodge did not attend classes at Malick Senior Comprehensive School for the entire term because he was afraid after being threatened by students of Mt. Hope Secondary School (Trinidad and Tobago Newsday, November 30th, 2014).

These high levels of bullying have led to further investigation into the consequences of bullying behaviour, particularly in the area of learning and mental health and adjustment problems. Even though some students are made to believe that bullying is a normal part of the school system, there is evidence of adverse effects of bulling on educational attainment and social and psychological well-being. Due et al (2008) found that adolescents who are being bullied weekly had as much as a four-fold increase risk of psychiatric symptoms. This suggests that bullying may contribute to mental health problems in those that are at risk (Nansel et al., 2001).

3.4 Bullying and subclinical psychotic experiences: cross-sectional evidence

A meta-analysis study investigating the association between childhood adversities and psychosis found a significant association between bullying and risk for psychosis after controlling for confounders (Varese et al., 2012). A number of studies have demonstrated cross-sectional association between bullying and subclinical psychotic experiences. (Campbell et. al.,

2007; Gromann et al., 2013; Horrevorts et al., 2014; Valmaggia et al., 2015). Two studies found that bullying doubled the risk of SPEs in childhood and adolescence (Lataster et al., 2006; Schreier et al., 2009).

3.4.1 Bullying and subclinical psychotic experiences: longitudinal evidence.

Longitudinally, there is evidence that children reporting being bullied at younger ages are at a higher risk of experiencing SPEs in the future. For example, Fisher et al (2012) found a strong association between bullying and SPEs in 8 year old children. Similar findings from a population-based cohort study showed adolescents who experiencing being bullied at the age of 10, experience higher levels of SPEs at age 18 (Wolke et al., 2014). This assumption was made for the bully, the victim and the bully-victim.

Recent data suggests that the frequency at which children and adolescents are bullied play a crucial role in the persistence of SPEs (van Dam et al., 2012). Adolescents bullied frequently experience more persistent SPEs, suggesting that transient SPEs are associated with less frequent bullying (Mackie et al., 2011). More interestingly, studies have shown that frequency in bullying is associated with persistence of SPEs in a linear manner, as bullying frequency increases SPEs persist (van Dam et al., 2012).

CHAPTER 4

The Impact of Depression and Anxiety on Academics Achievement and Peer Functioning

4.1 Depression and anxiety in adolescence.

More than five decades ago, early researchers assumed that depression and anxiety was inevitable in the growth and development of adolescents (Douvan & Adelson, 1966; Offer 1969). Numerous studies have shown that the most frequently occurring, burdensome and chronic, conditions in adolescence are depression and anxiety. Substantively, they are common in sequence and highly co-occurring (Maser & Cloninger, 1990; Lewinsohn et al, 1995; Merikangas et al, 1998; La Greca & Lopez, 1998; Mineka et al, 1998; Angold et al, 1999; Kessler et al 2003; Patel et al., 2007; Matthew et al 2011; Copeland et al 2013). There is a temporal feature with the sequential existence of anxiety and depression in children and adolescents (Dobson, 1985; Brady & Kendall, 1992). There is compelling evidence that anxiety precedes depression and is more likely to be experienced by younger children (Kovasc et al., 1989; Orvaschel et al., 1995; Wittchen et al., 2000; Essau, 2003; Fichter et al., 2010; Cummings et al., 2014). On the other hand, initial depressive symptoms and disorders are usually experienced during early adolescence (Gotlib & Hammen, 1992) and is often the outcome of pre-existing anxiety morbidity (Starr et al., 2016).

4.2 Prevalence of depression and anxiety in adolescents

A World Health Organization study conducted in 17 countries, incorporating persons ages 18-35, illustrated a lifetime depression rate of 3.3% to 21% in Nigeria and the USA

respectively. Higher lifetime rates were found with the anxiety disorder with China reporting the lowest of 4.8% and the USA having the highest rate of 31% (Kessler et al., 2007). More interestingly, a study conducted on undergraduate students, ages 15-26, in 24 countries found a prevalence rate of 10%-84.5% in Macedonia and the USA respectively (see review Ibrahim et al., 2013). These prevalence rates of depression and anxiety signify that there are large variations occurring in different parts of the diaspora, as well as, higher rates in younger ages. This should be further investigated further.

With its genesis in adolescence, there is evidence to support that the long term effects of depression and anxiety can manifest itself in adulthood (Kim-Cohen et al., 2003; Copeland et al., 2009). Depression and anxiety are higher at younger ages with decreasing signs in early adulthood (Hankin et al., 1999). It can be that the bio-psychosocial changes characterized by adolescence plays a critical role in the peak age of onset for depression and anxiety (Patton et al., 2007).

Other than age element there is a distinction, yet overlap, in the onset of anxiety and depression. The literature suggest that depression onset is concentrated in the age group between 18-43years, whereas, anxiety is dispersed across the age range 6-20 years (Christie et al., 1988; Kessler et al., 2007). This suggests that the age onset for anxiety precedes and can yet occur simultaneous with the age of depression at the peak of the adolescence period (Mathew et al 2011). Thus the age overlap is indicative of heightened co-existing depression and anxiety. Etiological and prospective non-clinical studies, both cross-sectional and longitudinal, have established co-morbidity between depression and anxiety disorder, in adolescence (Mathew et al 2011; Starr & Davila 2012). Not discounting the low hazard ratio attributed to anxiety onset in major depressive cases there is evidence supporting anxiety direct causation of depression

(Wittchen et al, 2000; Lewinsohn et al, 1997; Mathews et al., 2011) and shared etiological base that appears to overlap.

There are differential views posited in the literature regarding the essential characteristics of depression, its simultaneous presence with other psychopathologies and the different levels of experiences. The three perspectives adapted in the classification and assessment of those views includes depressed mood, depressive syndromes and clinical depression. Depressive mood is characterized by depression and often accompanied by feelings of sadness, guilt, fear, or disgust, as well as anxiety. (Watson & Kendall, 1989). Depressive syndromes gives incite to the number of associated behaviours and emotions that co-occur in a predictive pattern yet unidentifiable and lacking a proposed structure. Achenbach (1991a, 1991b) identified a number of depressive syndromes co-occurring with anxiety including feelings loneliness, worthlessness, nervousness, guilt and withdrawal.

4.3 Cross-culture differences in mental health prevalence rate

Global epidemiological studies suggest some degree of non-consistency in prevalence of mental health problems in adolescents across the world (Andrade et al., 2003). Adolescents experiencing mental health problems show a common estimate of 12%-20% for children and adolescents (Belfer, 2008; Braddick et al., 2009). Similarly, statistics on Western societies revealed an estimate of 21% of adolescents experiencing mental health problems (Thabet & Vostams, 1998). In spite of the consistency within the global reporting, there still remain the significant differences in prevalence among the countries themselves (Rushton, 2002). A survey conducted amongst adolescent 12-18 years in European countries indicated that the prevalence estimate in Belgium for adolescents was 6% anxiety and 20% depression; Finland general anxiety 5.2% and depression 6.2%; Germany anxiety 13% and depression 7%; England with

anxiety level of 3.3% and depression 9%. Most interestingly, the World Health Organisation (2000) utilized data from the International Consortium in Psychiatric Epidemiology (ICPE) to determine the prevalence rate estimation on countries in North America (Canada and USA); Latin America (Brazil and Mexico); Europe (Germany, Netherlands and Turkey). The results were also varying with prevalence rates such as 48.6%, 20% and 12.2% for the USA, Mexico and Turkey, respectively.

It is suggested that a number of socio-demographic factors may be influential in these differences (Kieling et al., 2011; Rushton, 2002). These factors include education (Kieling et al., 2011), income level, social interaction, age, race, ethnicity, culture and religion (Rushton, 2002). However, considering the importance of interpersonal relationships to the adolescent phase, peer functioning may play critical role in how the culture differences relating to peer functioning impact on mental health.

4.4 The effects of depression and anxiety on peer functioning

Centuries ago, it was established that positive peer relationships can have a positive influence on mental health (Weiner, 1995). Peer involvement serves as a catalyst in rehabilitating people with mental illness and continues to show positive results (Davidson et al., 2010, 2012). For example, positive peer relationships serve as a protective factor alleviating mental health problems such as symptoms of depression and anxiety (La Greca & Moore-Harrison, 2005). Adolescent with a healthy peer functioning, good friendship and greater social inclusion are at lower risk for depression (Vernberg, 1990). Low level depression and anxiety can be antecedent to more chronic mental disorders such as major depression and anxiety disorder. On reaching adulthood these disorders, when present, most often had their genesis in the adolescence stage. For example, Stocker & Richmond (2007) found that certain

characteristics evident in adult fraternizing, particularly intimate relationships, are a reflection of early adolescent social interactions. It is suggested, therefore, that since peer functioning influences depression and anxiety, adolescent experiencing depression and anxiety symptoms will have challenges with social relations. Very few studies have investigated this directional impact of depression and anxiety (Platt et al., 2013; Simning et al., 2016).

4.5 The effects of depression and anxiety on school grades

There have long been concerns regarding the effects of depression and anxiety on the academic performance of adolescents (Gerber & Weersing et al.,2010; Van Amerigan et a., 2003), particularly their school grades (Kessler et., 1995). Research into this area has informed the increase in students with mental health problems whose grades have shown a decline (Hysenbegasi et al., 2005; Reifman & Dunkel-Schetter, 1990)**.** Considering that depression and anxiety ischaracterized by emotional distress, it is suggested that such distress can affect the stability, psychological well-being and focus that is required for learning (Cole et al., 1996). Studies have shown that depressed and anxious adolescents exhibit high levels of truancy and academic challenges which may eventually led to school drop-out (Lewinsohn et al., 1995). In spite of such findings very little research has been conducted on the effects of depression and anxiety symptoms on school grades.

Research on depression and anxiety has usually used DSM or ICD clinical diagnostic criteria. Very few studies determined depression and anxiety symptom levels through self-report (Cole et al., 1998) which seems to predict later clinical episodes of depression and anxiety. Studies have shown that previous levels of depressive or anxiety symptoms can lead to later depressive or anxiety disorders (Reinherz et al., 1993; Lewinsohn et al., 1995; Sanford et al., 1995). Also, one study demonstrated that earlier anxiety symptoms led to the positive diagnosis

for clinical depression one year later (Sanford et al 1995). Therefore, such findings illustrate the importance of determining the levels of severity of depressive and or anxiety symptoms in adolescents before the need for psychiatric care or when their symptoms are subthreshold.

Although depression and anxiety symptomology are two distinct features they often co-occur in children and adolescents. In addition, anxiety often predisposes depression (Kovacs et al., 1989)**.** It is well documented that anxiety symptoms precedes the onset of depressive symptom, especially in younger adolescents (Reinhertz et al., 1993). The co-occurrence of anxiety and depression may lead to greater magnitude of emotional and bio-psychosocial challenges (Karlsson et al., 2006; Newman et al., 1998) as well as, symptom severity (Masi et al., 2000; O'Neil et al 2010; Garber & Weersing, 2010). However, existing in the absence of each other, depression and anxiety symptom levels may be associated differently with functioning. For example, Gazelle & Ladd, 2003 found that adolescents experiencing anxiety alone tend to exhibit dysfunctional interpersonal skills with the propensity to show a decline in peer functioning. These maladjustments could further lead to depression (Biggs et la., 2010). Research has also shown that the thought processes and behavioural patterns associated with depression, when portrayed during peer interaction, can eventuate into peer rejection (Joiner et al., 1999). Subsequently, the perception of on toward hostility can assume a level of anxiety in the adolescent (Storch et al., 2005).

A recent longitudinal study done with adolescents' ages 12-13 years investigated the emergence of depression and anxiety symptoms in Caucasians and African-Americans. The findings showed that anxiety symptoms at baseline and one year later did not predict depressive symptoms at two years later. However, depressive symptoms at baseline predicted lower levels

of anxiety symptoms at one year later. These results suggest that when depression and anxiety co-exist, anxiety symptoms levels are likely to decrease over time.

In a longitudinal study conducted with children using both self and parents reports, Cole et al. (1998) illustrated that children with high levels of anxiety symptoms reported increases in depressive symptoms over time, even when previous depressive symptoms were controlled for. Conversely, anxiety symptoms were seen to decline over time when adolescents experienced high levels of depressive symptoms prior. It seems, therefore, that with the onset of anxiety, depressive symptoms increase pending a subsequent decrease in anxiety symptoms. Therefore, this present study investigates how anxiety will be associated with grades and peer functioning in the absence of depression.

There is conflicting evidence on the co-occurrence of depression and anxiety symptoms levels in early and late adolescence. In a recent study done by O'Neil et al (2010), with children and adolescents it is demonstrated that when anxiety precedes co-existing depression adolescents were faced with greater severity in both depression and anxiety, as well as, poor social functioning. Another recent study found that anxious adolescents with co-existing depression are more susceptible to higher levels of anxiety severity than those adolescents in whom depression is absent. On the other hand, severely depressed youths with co-occurring anxiety showed higher anxiety severity than those without comorbid depression (Guberman & Manassis, 2011). These findings suggest that adolescents with high levels of depression is inclined to experience high levels of anxiety (Ferdinand et al., 2005) but adolescents with high levels of anxiety is inclined to low levels of depression and high levels of anxiety (Brady & Kendall, 1992). These conflicting results warrants a better understanding of the severity of depression and

anxiety in their co-existence and when either one is absent as they impact on grades and peer functioning.

CHAPTER 5

Rationale, Aims and Hypotheses of the Studies

The aim of this study is to provide insight into a number of mental health problems associated with challenges in physical, psychological and social adaptation during adolescent growth and development. This review also provides information on how and to what extent the persistence and severity of these mental health problems influenced the need for care. Gene-environment (Cadoret et al., 1996; Reiss & Leve, 2007; Tienari et al., 2004) and neurobiological vulnerability (Casey et al., 2008; Steinberg et al., 2008; Roth et al., 2005) can play the role of risk factors for these mental problems. Even though not all adolescents are vulnerable to these mental problems, the alarming rates reported have encouraged the need to examine and explore their association. In this study, we examined mental health problems including SPEs, anxiety and depression in association with stress, and social factors, such as, family and peer functioning and grades.

SPEs have shown to peak in adolescence with the onset triggered, during this developmental stage, characterized by neurobiological (Keshavan et al., 2014; Mishara & Fusar-Poli, 2013), neurochemical (Grace et al., 2007; Floreso & Tse, 2007) and physical changes (Catone et al., 2016) occurring at this time. Jones and Murray (1991) suggest that during the early phase of adolescence, impairments in neurodevelopment and the environment can result in abnormality in the brain predicting psychosis susceptibility in the future. Furthermore, the dopaminergic functioning also peaks in adolescence and the malfunctioning of the mechanism involve can result in neurochemical release in the adolescent brain (Bloomfield et al., 2014).

This can lead to the non-receptive uploading of the dopamine neurotransmitters followed by acute positive psychotic experiences (Laruelle et al., 1996).

These three areas of bodily changes seem to exert sufficient stress on the adolescent thereby resulting in psychopathologies. In addition to these bi-psychological stressors, the adolescent also contends with psychosocial stressors. Stress has been identified as an almost inevitable emotional state in the development of poor mental health in young persons. Adolescents experiencing high levels of stress from daily hassles, coinciding with stress from their challenging developmental stage, can experience adverse mental and behavioural state (Arnett, 1999). The degree of stress experienced at any particular time can be debated as individual differences in responses (Arnett, 1999).

The varying conceptualization for adolescent stress, for example "*storm and stress*" (Hall 1904) and "*identity vs role confusion*" (Erik Erikson, 1959) have explained the challenges that adolescents endure during the maturational process. This suggests that, the daily life stressors that confront the adolescent can have a debilitating effect on already existing underlying vulnerability for mental health problems. For example, Bartels-Velthius (2012) found that a psychosocial stressor, like social adversity, exacerbates persistence, severity and the onset of hallucinations. This suggests, therefore, that stress has the capacity to be involved in the etiology of psychotic symptoms (McMahon et al., 2003). Although several longitudinal prospective studies have examined the association between stress and SPEs (Collip et al., 2013; Varese et al., 2012), the preceding chapter informs of a numbers of studies that focused primarily on trauma and stressful life events in childhood and its impact on SPEs in adolescence (Janssen et al., 2004; Lataster et al., 2012; Bendall et a., 2008). However, very few studies examine the impact of daily life stress on SPEs (Collip et al., 2013) which is considered normal during adolescence. Another

normal characteristic of adolescence is the heightened importance for family and peer relations (Dekovic et al., 2004). Even though studies have illustrated how both family and peer functioning have moderated the effects of SPEs (Lincoln et al., 2009). Pollock et al (2015) demonstrated that the presence of social support, especially family functioning plays a significant role in the reduction of stress. To our knowledge, no study has investigated how family and or peer functioning can moderate the impact of stress on SPEs. In addition, the dysfunctional family and peer relations can be deemed risk factors for psychosis (Jones et al., 1994). As such there is need for investigating social factors, such as stress, family and peer functioning may garner a better understanding of the etiology of psychosis. There is a gap in the literature that fails to account for underlying moderators, such as family and peer functioning that can interact with daily life stressors, overtime, to influence SPEs. Therefore, it is important to understand how family functioning affects stress, overtime, how it interacts with SPEs and whether the changes in family functioning affect the levels of SPEs. Furthermore, considering age-relatedness and gender in the operationalization of SPEs, it is also important to investigate the effects of age in the association between stress and SPEs.

This literature review focuses on studies that have a few methodological limitations involving the relationship between stress and SPEs (see review, Beards et al., 2013). Cross-sectional studies done on this association highlighted issues such as recall bias, the inability to infer causation or to examine the effects of stress on SPEs overtime. Additionally, the paucity of empirical data warrant more investigation that will offer a better understanding of the association between stress and SPEs.

This study also aims to examine externalizing behaviours, such as bullying, and how it impacts on SPEs. Bullying is recognized as universal and troubling to adolescents in the school

environment. Its presence has been identified as a serious contributing factor to negative mental health problems in adolescents including SPEs which can obstruct the social and school functioning for these young persons. Several studies have examined the association between bullying and SPEs (Kelleher et al., 2013; Schreier et al., 2009; De Loore et al., 2007). Some have found strong association and others have identified only an effect (Schreier et al., 2009). There is evidence that adolescents who are victims of bullying have an increased risk for SPEs those who were not involve in any type of bullying (Arsenault et al., 2010, 2011). Furthermore, bully-victims have reported significantly higher levels of and at greater risk for SPEs than both victims of bullying and bullies (see review, Van Dam et al., 2012; Kelleher et al., 2008**)**. The literature also proposes that adolescents become bully-victims following retaliation to victimization (Kelleher et al., 2008). However, not all victims of bullying and perpetrators of bullying develop SPEs, which raises the question as to whether some subtypes of SPEs are more associated with bullying than others.

This research aims to examine the prevalence of bullying, the subtypes of SPEs in this and which of particular subtypes are associated with bullying in this adolescent population. The studies that identified subtypes of SPEs in population community samples used different age groupings and found differences in the number and type of subtypes and frequency of subtypes (Yung et al., 2006, 2009; Armando et al., 2012). Therefore, with the inconsistencies in the findings, it is important to identify subtypes in this population sample of younger ages. Also, to my knowledge, only one longitudinal study was conducted to identify which particular SPEs subtype is associated with bullying (Shakoor et al., 2015). Although these studies were longitudinal they failed to investigate the frequency at which persistence of SPEs can be identified. Therefore, with the scarcity of data available these findings will add to the body of

literature on the effects of bullying as it relates to precipitation SPEs. It is important to add vital information to the literature the role which this study will undertake.

There is evidence supporting the proposition that prevalence of mental health in adolescence varies from country to country (Ferrari et al., 2013; Klasen & Crombag, 2013). Although there is a vast amount of research on mental health and bio-psychosocial factors there is very little research done on the impact of depression and anxiety, experiences on socio-cultural and demographic factors, such as school grades, peer functioning and general functioning among a young school population in Britain and Trinidad. There is evidence to suggest that depression and anxiety have the proclivity to induce negative effects on social relations (Rudolph, 2009) and educational achievement (Fruedenberg et al., 2007). The prevalence levels and impact of these psychopathologies on the socio-demographic factors will offer a clearer understanding of the severity of these disorders in both cultures and how they constitute a risk.

5.1 Aims of the study

There are three primary aims in the study:-

1. Longitudinally examine the role of family functioning and peer functioning in the association between stress and subclinical psychotic experiences including the effects of age and changes in family functioning and peer functioning.

2. Identify the subtype of SPEs in this population and whether particular subtypes of SPEs are associated with bullying.

3. Explore the differences in mental health status and its association with peer functioning and grades in adolescents from Britain and Trinidad.

5.2 Hypotheses

5.2.1 Hypotheses for Study 1

i. There will be a strong and positive relationship between stress and subclinical psychotic experiences.

ii. The interaction of family and peer functioning will moderate the relationship between stress and subclinical psychotic experiences.

iii. Family and peer functioning at T1 will predict SPEs at T2.

iv. Gender and age will affect the relationship between stress and SPEs

5.2.2 Hypotheses for Study 2

i. There will be subtypes of SPEs identified in this population such as bizarre experiences, perceptual abnormalities, persecutory ideation and magical thinking.

ii. Bullying will be significantly associated with SPEs.

iii. Being bullied, bully perpetration and bully-victim will be differently associated with particular subtypes of SPEs.

5.2.3 Hypotheses for Study 3

i. There will be similar prevalence rates of depression and anxiety in Trinidad and British population.

ii. Having high levels of anxiety and depressive symptoms will be associated reduced grades and poor peer functioning in both Trinidadian and British adolescent

iii. Having high levels anxiety symptoms, in the absence of significant depressive symptoms will not be associated with reduced grades and poor peer functioning in both British and Trinidadian adolescents.

CHAPTER 6

Methodology

6.0 Settings

Secondary schools are learning institutions, situated throughout Trinidad and Tobago, for the purpose of teaching academics and encouraging sporting accomplishments among students. In Trinidad, secondary schools accommodate students from the age of 11 years to 18-19 years depending on the academic progress of the student at the time of the Secondary Education Assessment Examination (SEA). Students are assessed at primary school level for the SEA and according to their academic readiness, will either be retained at their present level or placed in a higher level. This process informs the age at which the student will remain at the Secondary school level. In some cases students will be seen in the lower level class yet older than those in higher classes and even their classmates. Therefore, the data will show that in some classes there is a wide variation of the ages of students.

6.1 Design

These studies were designed as one within-participant longitudinal, one within-participant cross-sectional and one within mixed cross-sectional and longitudinal, quantitative studies. The longitudinal studies (Study 1 and Study 2) consist of two data waves: Baseline (2012-2013) and Phase 2 (2013-2014). The cross-sectional study consists of one data wave: Baseline (2012-2013).

For the longitudinal study, 427 students participated (199 females and 228 males) at baseline. The Phase 2 sample consisted of 93% of the original sample (n=399) participants (drop

out of 8 females and 18 males). Study 1 was conducted on phase 1 and 2 data examined cross-sectionally and longitudinally, Study 2 was conducted with phase 2 data collection and examined cross-sectionally, while study 3 was done with phase 1 data together with a Birmingham sample and examined cross-sectionally. Additionally, study 3 was examined longitudinally for on phase 2 data collection for Trinidad only.

To ensure representativeness of the sample, for all studies, a multi-stage cluster sample was employed. The County districts represented the clusters, totaling seven: Caroni, Nariva/Mayaro, St. Andrew/St. David, St. George East, St. George West, St. Patrick and Victoria. In each of these counties, blocks of schools were selected. These blocks were randomly sampled to select the seven schools needed. The sample size for each school was calculated on a proportional basis to the overall population of the schools in the different counties. This value was then used as the number of participants for the school in that county. Then, a random sampling was done with forms two, three and four in order to select the students ranging in ages 13-16 years. Schools for young people with special needs and single sex schools were excluded.

The percentage for the year group varied between schools depending on the proportion of a particular school towards that county population. The classroom sampling was a simple one in which each classroom sample was also calculated as a proportion of the total number allotted to that school. All participants in that classroom were then given an equal opportunity to be selected by picking one of the numbers that makes up the total amount for that classroom in order to ensure representativeness.

6.2 Sample

For the longitudinal study at baseline, 427 students participated (199 females and 229 males). The Phase 2 sample consisted of 93% of the original sample (n=399) participants (drop

out of 8 females and 18 males). This entire sample was obtained from 126 secondary schools with a total population of 102,252 students (Ministry of Education National Report Trinidad & Tobago, 2004). One school was selected from each of the six geographic counties (St. Patrick, Victoria, St. George, St Andrew/St David, Caroni, Nariva/Mayaro). Due to a large population, the St George County was divided into East and West where two schools were selected. Therefore, a total of seven secondary schools were approached to participate in the study and all consented (all government schools). These students are enrolled in Forms Two, Three and Four and were between the ages of 13-16 years. There were some classes that do have exchange students visiting from Spanish speaking countries for the purpose of learning English. Adolescents who do not speak English or possess intellectual disability were excluded. Participant assent and parental consent were obtained.

6.3 Ethical considerations

Ethical approval was sought through the Human Research Ethics Committees of the University of Birmingham and the University of the West Indies. Consent was sought from the Ministry of Education and the Ministry of Health, Trinidad & Tobago. The ethical guidelines of the University of Birmingham, the University of the West Indies (1998) and the American Psychological Association (2002) are the ethical principles under which this study was conducted. Such practice safeguards against harm to the participants, as well as the researcher as it encompasses the ethical standards of any Code of Conduct.

6.4 Procedure

To gain access into these secondary schools, permission must be granted in accordance with the Policy on the Provision of Supplemented Education Programmes and Conducting Research by External Providers. As such, institutional consent was sought from the Ministry of

Education and the Ministry of Health, Trinidad & Tobago for baseline and follow up assessments. Subsequently, the principals of the approved schools were informed of the study by way of an official letter accompanied by information on the study, a copy of the consent forms (both opt-out and opt-in) and the questionnaire. An information sheet detailing the nature and purpose of the study, the rights of the participants, the ethical protocol involve, as well as a consent forms, were sent in the mail to the parents prior to participants recruitment. Schools were given the option of active (opt-in) or passive (opt-out) consent from parents, but students needed to actively assent to participate. After discussions with the principals, a passive parental consent was selected by all schools.

A small scale pilot study was conducted before the main study. This was conducted under the same condition as the main study to assess face validity and the completion time of the questionnaire. The pilot sample consisted of 21 participants (aged 13-16 years), three from each of the identified schools. Completion of the questionnaire took approximately 30-45 minutes. This pilot study aimed at investigating the capability of the targeted participants to complete the questionnaires independently, any literacy problems, the time taken to complete the questionnaires and any cultural barriers to the wording of the questionnaires. Participants were asked to give feedback on the task of completing the questionnaire.

With the available literature I was informed of how sensitive this area of study can be and the need for a skeptical approach considering the taboo that is still attach to mental health in Trinidad, especially with the adolescent population. As the literature indicated, adolescence is encompassed by stress, socio-psychological challenges and mental health problems. As such, it was necessary that the study should not create any further discomfort for this young population.

Attempts were made to ensure minimization of researcher bias wherever possible while utilizing comprehensible measuring tools. According to Cohen & Manion (1994) it is important to minimize bias from the point of inception including attitude and opinions of the researcher and respondent, researcher wanting preferred responses, misconstrued responses by researcher and respondent misunderstanding of question or statement posed to him or her.

It was evident that all the participants were interested in participating in the pilot study. Participants were asked, face to face, by the researcher to give feedback on unanswered questions and whether there was any difficulty in answering the questions. Participants then took the extra time to address those unanswered questions and then returned the questionnaires.

Understanding of the information required by the participants was assessed qualitatively by observing how the participants framed their questioning when they needed further clarification on the questionnaires. A total of 19 participants indicated full understanding while the remaining two showed very little contact with the researcher except for intermittent eye contact when clarifications, based on other participants questioning, were given.

There were a unanimous response that the task was easy and that they understood what needs to be done. All 21 participants present completed their questionnaires which provided full responses. Participants highlighted some issues concerning cultural barrier language on the DASS scale The following words were substituted: question 22, “wind” was replaced with “settle”, question 30 “trivial” was substituted with “unimportant”, question 42, “initiative” was changed to “energy”. No other adjustments were necessary.

In relation to the full study, the classrooms of the secondary schools were equipped with desks and chairs for the students to complete their questionnaires comfortable and with a high level of confidentiality. In addition, some schools utilized their auditoriums to accommodate all

the participants from different classes so as to minimize the time spent on facilitating the Researcher. These auditoriums were equipped with appropriate seating arrangements conducive to a comfortable atmosphere.

On the day of the assessment, participating students were informed of the nature, anonymity, confidentiality and privacy of the study and was asked to complete a consent form. Questionnaires were completed by the students in the presence of the teachers and the researcher. Each questionnaire was coded with unique identification code, which was then matched to the participant. Only the researcher had knowledge of which code corresponded to a particular participant. After completion, questionnaires were handed back to the researcher in sealed envelopes separate from consent forms. Participants were informed of the timing and procedure of the follow-up assessment. The same measures were administered at Phase 2.

6.5 Measures

The assessment battery was self-reported and took approximately 30-45 to complete. All measures in the assessment battery were identical in the two phases of the study, with exception of the bully measure which was introduced only in the Phase 2 of data collection. These instruments measured age, ethnicity, community type, school grades, psychological well-being, subclinical psychotic experiences and bullying.

6.5.1 Demographics*:* A demographic questionnaire was constructed to elicit basic demographic profiles from the participants. These included age, gender, ethnicity, and type of community. Age was recorded in years and months. Participants were free to report on their age and gender and was given assistance in calculating their age, where needed. Gender was coded into binary variable of male or female. Community was also coded in binary variable of urban or rural and self-reporting with assistance given to participants in deciding which community they reside.

School grades were stated as multiple choice with five grading-schemes for self-reporting: (1) Mostlty As (2) About half As and half Bs (3) Mostly Bs (4) Half Bs and half Cs (5) Mostly Cs (6) About half Cs and half Ds (7) Mosly Ds (8) Mostly below Ds. Ethnicity was classified into five categories: (1) Afro-Trinidadian (2) Indo-Trinidadian (3) Chinese (4) Caucasian (5) Other. These are the most common ethnicities in Trinidad. Type of community referred to the geographical positioning of the area in which the participant resides which can be either urban or rural.

6.5.2 Subclinical Psychotic Experiences (SPEs): The CAPE-42 (Stefanis et al., 2002) was used to assess the frequency of SPEs, and to determine whether SPEs was associated with stress and bullying and how each CAPE subscale was differently associated with bullying behaviours. It is a widespread and appropriate self-report measure used to identify individuals who may be heightened risk in developing psychosis in both clinical general population samples (Mossaheb et al., 2012). The CAPE-42 is validated on both adults and adolescents **(**Hanssen et al., 2003; Stefanis et al., 2002**).** Its development from the Peters Delusional Inventory (Peters et al., 1999) has given credence to its use in the general population with adolescents. It has very high internal consistency and construct and discriminant validity (Konnings et al., 2006; Brenner et al., 2007).

Only the positive subscale was used in this study considering the need to identify the subtypes of SPEs in this general population and how these subtypes are differently associated with mental health problems and poor functioning (Yung et al., 2009; Wigman et al., 2011). There is evidence that the 20-item positive subscale is more reliably effective in younger population samples as against older samples **(**Therman & Ziermans, 2016). A number of studies using confirmatory and exploratory factor analyses on the CAPE-42 and a 3-5 factor structure

show good model fit **(**Stefanis et al., 2002; Yung et al., 2006; Brenner et al., 2007; Wigman et al., 2011, 2012; Armando et al., 2012**).**

The CAPE is a 42 item self-reported questionnaire of SPEs. The CAPE is based on the Peters et al. (1999) Delusions Inventory (PDI), modified to also include hallucinatory experiences. It has positive (20 items), negative (14 items) and depressive (8 items) subscales, with items rated on frequency (1=never to 4=nearly always) and distress (1=not distressed, 4=very distressed) in the past 12 months (Stefanis et al., 2002). The CAPE showed relatively good internal consistency on the three positive subscales (Cronbach's alpha: positive=0.81, negative=0.79 and depressive=0.72). Only the positive subscale was reported in this study.

6.5.3 Peer and Family functioning*:* The Multidimensional Adolescent Functioning Scale (MAFS: Wardenaar et al., 2012) was used to assess daily functioning in adolescents including peer-functioning and family-functioning. It is a relatively new scale where confirmatory factor analysis showed that the MAFS data fit well with a three factor structure. The MAFS was validated on an adolescent general population sample with a mean age of 15.0 years. It constitutes a four point Likert scale as follow: 1=not at all or rarely; 2=Sometimes; 3=Often; 4=Always or almost always.

This scale is a 23-item self-report questionnaire used for the assessment of different domains of adolescent functioning. This scale consists of three distinct subscales: general functioning, family-related functioning and peer-related functioning. The psychometric properties of the three subscales show an internal consistency ranging between 0.75 and 0.82 and the three factor model supports the construct validity (Wardenaar et al., 2012). In this sample, the general functioning and family functioning subscales showed good internal constituency

(Cronbach's alpha= 0.77 and 0.72 respectively) while the peer functioning was relatively weak (Cronbach's alpha=0.56).

6.5.4 Other psychopathology*:* The Depression, Anxiety and Stress Scale (DASS: Lovibond & Lovibond, 1995) was used to measure depression, anxiety and stress symptoms severity in this study. The severity of depressive symptoms was assessed using the Depression subscale while the severity of anxiety was assessed using the Anxiety subscale. The Stress subscale was employed to assess daily stress. The DASS was originally developed as a 42-item questionnaire applied to adult populations and subsequently scaled down to a 21-item questionnaire version, as well as, being validated for adolescent populations (Tulley et al., 2009; Szabo, 2010). There is evidence that both versions are very similar (Henry & Crawford, 2005). Both the DASS-42 and DASS-21 show clearly defined content (Norton, 2007), high internal consistency (Tulley et al., 2009; Willemsen et al., 2011), cross-culture similarity (Norton, 2007) and independent and distinct separation of depression and anxiety from stress in adolescent samples. Confirmatory factor analysis of the DASS was validated on a large sample adolescents 12-18 years and has shown that a three dimensions factor structure fit the data well (Tulley et al., 2009), giving support to invariant factor structure and the use of three factor continuous scores (Antony et al. 1998; Henry and Crawford 2005), which is consistent with tripartite factorial structure (Clark & Watson, 1991). The psychometric properties on the total sample were also reviewed on the population and found to be excellent: Depression-0.88; Anxiety-0.79; and stress-0.82.

Higher scores of depression, anxiety and stress denote higher depressed, anxiety and stress symptoms and cut-off values for categorical assessment have also been validated (Phillip et al., 2009). Notwithstanding the strengths of the DASS, there are a few limitations that should be noted. Researchers have found that there is high correlations between the three scales

suggesting that there is a considerable lack of differentiation between the constructs (Mellor et al. 2015) attributable to the common underlying Negative Affect Factor (Szabo, 2010). Investigating construct validity of the DASS-21 has shown similarity with adolescent 11-18 years and adult in the depression and anxiety constructs but caution should be paid the validity of the stress construct (Szabo, 2010).

The Depression and Anxiety Stress Scale *(*DASS: Lovibond & Lovibond, 1995) 42-item scale measures the negative emotional states of depression, anxiety and stress. Each of the three scales consists of 14 items each divided into subscales consisting of 2-5 items. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-depreciation, lack of interest, anhedonia and inertia. The anxiety scale assesses automatic arousal, skeletal muscle effects, situational anxiety and subjective expectation of anxious affect. The stress scale is sensitive to levels of chronic non-specific arousal. In another study the internal consistency of the DASS was demonstrated as 0.72, 0.77 and 0.70 for depression, anxiety and stress, respectively (Tran et al., 2013). In this study the DASS showed very good internal consistency for all three subscales (Cronbach's alpha depression=0.91, anxiety= 0.87 and stress=0.87).

6.5.5 Bullying. In this study we did not use a validated measure; however, a brief self-report questionnaire about bullying behaviours was developed for Phase 2. These questions were used in previous studies and based on measures that had been validated in WHO-HBSC (King et al., 1996), as well as being supported by many research (Kaltialo-Heino et al., 1999; Nansel et al., 2004; Wang et al., 2009; Rothon et al., 2011; Young et al., 2015). Bullying subtype variables were used in this study, however bullying behaviour variables were classified from respondents reporting as being bullied, bully others and bully-victims all in the last year and last in the last 30 days, at least once or twice per week.

First, an introduction was given to inform participants on the different behaviours that can be considered bullying:

> "Bullying is when someone willfully and repeatedly hurt or scares another person perceived as weaker than themselves without reason. This behaviour may be performed in the following ways: hitting, pushing and kicking; fearful or hurtful threats; damaging name calling; harassment or attacking repeatedly; excluding someone from a setting; bossing around".

Students were asked to indicate "yes" or "no" to whether they had been a (i) a perpetrator of bullying ('a bully") or (ii) a victim of bullying ("being bullied') in the past 30 days and the last year. Questionnaires relating frequency of bullying and being bullied was itemized as "once or twice", "sometimes", "about once a week" and "several times a week." To assess these frequencies the items were coded with a four-point scale ranging from (1) "once or twice" to (4) "several time a week." "About once a week" defined frequent bullying or being bullied (Nansel et al 2001).

6.5.6 Substance use: The severity of substance use will be assessed by an amended version of the Addiction Severity Index (ASI) (McLellan et al., 1985). This is a 36-item questionnaire measuring drug and alcohol use in the past 30 days. Other aspects of substance use will be measured on the Maudsley Addiction Profile (MAP) (Marsden et al., 1998). This is a 60-items questionnaire assessing problems associated with substance use in four domains (substance usage; health risk; physical and psychological health; personal/social functioning. The test-retest reliability of each domain is 0.81 and the overall reliability of the scale is 0.94 (McLellan et al., 1985).

7.6 Test for normality and identification of outliers.

All data was screened for normality of distribution and for outliers. Data was found to be normally distributed by using histograms. Box plots were used for the identification of outliers. One extreme outlier was identified and this item was not included in analyses.

6.7 Methods of dealing with missing data.

Approaches to missing data can result in data being discarded or data being retained. Approaches to dealing with missing data can be identified under three distinct types namely, deletion, substitution and imputation. Each has strengths and weaknesses. Deletion approach involves discarding data and encompasses both listwise and pairwise deletions of inputs. Listwise deletion allows for participants with missing scores to be omitted from the study and pairwise relies on those with specific subsets of data points to be excluded in pairs. Although these two traditional methods are typically simple to perform and all the observations with non-missing data can be used to conduct all basic statistics, they both have their weaknesses. With listwise deletion, there is a reduction in sample size which can lead to larger standard errors, reduction in power to detect significance level and affect the precision of estimates. Also a non-representative sample can arise due to differences in cases removed and those retained. Inconsistent subsets of sample size in pair wise deletion can result in problematic analyses, as well as challenges in computing the degrees of freedom (Widaman, 2006).

The mean substitution of missing data affords data retention yet can range from simple to complicated processes. The most common of these approaches incorporate mean substitution. Mean substitution is an easy way to impute data and leaves the sample mean of non-missing values unchanged. This best describes the location of the distribution. In the mean substitution method, each missing value is replaced with the sample mean of the observed values for that

variable/measure. This method also has its shortcomings, which include bias in parameter estimates and a reduction in the covariance and correlation estimates in the data (Acock, 2005)

Single and multiple imputations can be considered as modern day alternatives to missing values: however they can be tedious, complex and error prone. In single imputation missing values are imputed by developing initial estimates of all missing values that are largely consistent with the variability trend in the non-missing values. A specified regression model is fitted to the observed cases, repeated infinite times, and the result is condensed into one final estimate of a single data. This approach reflects more accuracy in variability as a result of multiple imputations and an increase in the power of the sample. However, each imputation data set may comprise of inaccurate values as a result of inexact random components. Also, the linearity among non-missing values will be gravely affected by the imputation process and representativeness can be compromised. Therefore, having a good understanding of the use of this approach is important to the accuracy of the outcome. Multiple imputations extend the process of the single imputation method except that in multiple imputations the imputed values that replaced the missing value will differ across the data sets. Also, the increase in the number of data sets can rectify the representativeness issue but linearity can continue to be problematic (Graham & Schafer, 1999; Collins et al., 2001; Acock, 2005).

The preferred use of an approach for missing values should be taken in view of the strengths and weaknesses of each approach. In light of the low incidence of 2% nonresponse rate on most of the scales, in this study, a mean substitution was utilized (Widaman, 2006). Although consideration was given to the use of the listwise deletion approach for this research, I selected substitution because of my use of correlation and regression analyses.

CHAPTER 7

The interaction between stress and subclinical psychotic experiences: the role of family and peer functioning.

7.0 Introduction

Psychosis development is assumed to have its clinical relevance emanating from the continuum of an extended phenotype psychosis characterized by subclinical psychotic experiences (SPEs) (van Os et al., 2000; Yung et al., 2003). The estimated median prevalence rate of SPEs is approximately 5% and median incidence rate approximately 3% (van Os et al., 2009). Such findings underscore the notion that the subclinical experiences phenomena are not an inevitable predictor of the onset of psychotic disorder. However, persons predisposed to the extended phenotype are at a higher risk of developing clinical psychosis. For most individuals, SPEs are likely to be transient and non-reflective of any abnormality, endorsing the assumption that subclinical psychotic experiences are common in the normal community-based population (van Os, 2009). Conversely, others may experience persistent psychotic expressions resulting in a full clinical diagnosis of psychotic disorder (Cougnard et al., 2007). The development of psychosis may be attributed to a number of other factors including socio-environmental influences; one of particular importance is daily life stress.

Stress can be considered as an environmental challenge defended by psychological and physiological responses subjective of the individual's personality, perception and threshold towards these challenges (Zuckerman, 1976). Studies have shown that responding to everyday life stress precedes persistence of psychotic experiences (Collip et al., 2013**)**. This suggests that daily life stress may be a contributor to the persistence of SPEs (Collip et al 2008; Yuii et al

2007) and negative outcomes in adolescents (Compass et al., 1993; Ruttle et al., 2015). Notwithstanding the debilitating effects of daily life stress, this risk factor has received little attention in the association between stress and SPEs in the general population (Woodall et al., press; Collip et al., 2013**)**. Epidemiological studies reporting on stress have focused mostly on stressful life events rather than daily life stressors (see review Beards et al., 2013; Zeidner & Hammer, 1990). Considering that negative life events have a three-fold likelihood of precipitating SPEs (Beards et al., 2013), daily life stress which can be considered accumulative stress, needs to be investigated further. More so, research has shown that daily minor stressors can be more significant as predictors of later psychotic symptoms than major life events (Malla & Norman, 1992; Tessner et al., 2011). Consistent with these findings and the paucity of information on the relationship between stress and SPEs in adolescents, the precise relationship remains unclear. Further to this relationship, it is important to understand why daily life stress leads to psychopathology in some and not in others.

The very few studies aiming to explain the interaction between daily stress and SPEs have focused on social factors that play an important role in individuals' ability to deal with daily life stress (Flink et al., 2012). Theoretical models of the family system (Pakenham & Cox, 2015) have been recognised as a possible pathway to understanding the dynamics underlying stress and psychopathologies. Studies have shown that social adversity is associated with lower family functioning (Viner et al., 2012; Denny et al., 2014), whereas a positive family functioning environment serves as a buffer against the negative effects of daily stressors (Cohen & McKay, 1984; Huang et al., 2009; Sheidow et al., 2014). Additionally, a few studies have illustrated that poor family functioning involving attachment and inconsistent communication styles (Berry et al., 2006; Mac Beth et al., 2008) was strongly associated with SPEs, and also predicted them

overtime (Collip et al., 2013). Therefore, family functioning may be important in the influence of daily life stress on SPEs. Additionally, earlier work has indicated that the persistence of SPEs may be as a result of daily life stress reaction over time (Collip et al, 2013). However, whether family functioning interacts with daily life stressors to influence SPEs has not been investigated. As such, this study investigates whether the changes in family functioning may have an effect on the interaction between stress and SPEs, overtime.

As adolescents need for family declines their need for identity and self-disclosure increases fostering closer relationships with their peers at school and in their communities (Goodenow, 1993; Hartup, 1996). Several studies have demonstrated that the feelings of belonging to a peer group with quality social relations are of paramount importance to the adolescent (Weiner, 1990; Osterman, 2000; Furrer & Skinner, 2003). Of particular concern is the lack of enjoyment of positive and supportive relationship with peers that can lead to both stress (Doom et al., 2016) and psychopathologies, including SPEs (Collip et al.., 2011**).** In relation to stress, and from a developmental perspective, hormonal changes in adolescence poses challenges to the hypothalamic-pituitaty-adrenal (HPA) axis which leads to peer functioning alterations (Murray-Close, 2013). Studies have shown that a functioning peer presence plays a vital role as a social stress buffer in the reduction of daily stress in the lives of adolescents (Hennessy et al., 2009; Doom et al., 2016). This indicates that the absence of peer relations can show a decline in ordinary life activities. Others have shown the reverse, where stress increased with the presence of high levels of peer support (Stroud et al., 2009). Moreover, when the presence of peer functioning becomes dysfunctional there can be a manifestation of SPEs (Sullivan et al., 2013). Therefore, the inconsistencies in the role of peer functioning on stress together with stress

serving as a risk factor for SPEs, it is important then to investigate the role of peer function in the association between stress and SPEs.

A number of studies lend support to the relevance of age and gender in the association between adolescent stress and psychological dysfunction (Schreier et al., 2009; Masten & Garmezy, 1985; Licitra-Kleckler & Waas, 1993; Cohen & Park, 1992). Age-related gender differences in this association have shown that females exhibit higher levels of daily hassles (Telzer & Fuligni 2013) than males, particularly, when the family and peer interaction is negative (Hankin et al., 2007). In contrast, another study illustrated that males were found to report higher stress levels (Carlson & Grant, 2008). Other research found no gender differences in the exposure to any type of stress (Apling, 2002). Interestingly, Spauwen and colleagues (2003) showed no gender differences in SPEs, although younger males were found to have higher levels of SPEs than older males. Considering these assumptions, if true, it will further argue that another theoretical model is necessary for further explanation for age and gender in the association between stress and SPEs moderated by family and peer functioning.

In sum, the phenomenon of SPEs and the environmental factors that contribute to their development and persistence are numerous but not fully understood. Specifically, stress is considered significant during adolescence and related to interpersonal attachments, but research is required to fully understand the processes that underlie the SPEs and stress association and the factors that can moderate their interaction. This current study meets this request and fills the gaps in the literature that will offer a full understanding of the factors that can ameliorate the association between stress and SPE. This research aims to answer the following three questions:

(i) Is there a relationship between stress and SPEs?

(ii) Does family and peer functioning performs a moderator role between stress and SPEs over time and do changes in family and peer functioning affect the association between stress and SPEs over time?

(iii) Are there age-related and gender differences between adolescents in the association between stress and SPEs?

We hypothesize that:

(i) There will be a strong and positive association between stress and SPEs.

(ii) The interaction of family and peer functioning will moderate the association between stress and SPEs and as family and peer functioning changes SPEs changes over time.

(iii) Gender and age will affect the association between stress and SPEs

(iv) Family and peer functioning at T1 will predict SPEs at T2

7.1 Data Analysis

All data was analysed using the Statistical Packages for Social Sciences (SPSS) Version 21 (IBM SPSS Statistic, 2013). For all analyses, statistically significant values were reported exactly and a p value level of <0.05 was considered statistically significant. Normality of the data was examined using a histogram and a superimposed normal curve. The distributions of the data are approximately normal as the curve contains low frequencies in the tails and a single high peak at the approximate middle of the distribution. It is therefore accepted that this assumption is not violated (Histogram). Missing items were substituted by calculating the average of all non-missing items for that individual (Widaman, 2006). If 25% or more of an item on a subscale were missing for an individual, missing data was not substituted and subtotal and total score were not calculated. Additionally, no substitution was computed for participants who did not complete follow-up and they were excluded from the analysis. Data were also checked for linearity and multi-collinearity.

Preliminary analyses were conducted to examine correlation among the predictor variables (stress, age, family functioning, and peer functioning) in the study. All correlations were weak to moderate ranging from r=-.084 to r=.524, demonstrating that multi-collinearity was unlikely. All predictor variables were significantly correlated with the dependent variable (CAPE positive scores). The demographic data are reported first. This is followed by a description of the characteristics of the sample using descriptive statistics for both follow-up and baseline assessments.

A series of multiple linear regressions were conducted to examine the cross-sectional and longitudinal association between stress and SPEs, the impact of family functioning and peer functioning on SPEs and to explore whether there was an interaction between family functioning and peer functioning with stress in predicting SPEs. Separate regressions were run for family and peer functioning. A hierarchical method was used whereby predicators were entered in blocks to predict CAPE positive scores. (i) DASS stress, gender and age (Model 1), (ii) MAFS family or peer functioning (Model 2) and (iii) DASS stress X MAFS family or MAFS peer functioning (Model 3). Cross-sectional regression analyses at T1 and T2 were conducted (predictors were at the same assessment point as dependent variable). The longitudinal influence of T1 predictors on CAPE positive score at T2 was also explored. To examine gender differences at baseline, follow-up, and longitudinally, the analyses were repeated stratified by male and female participants.

7.2 Results

7.2.1 Description of the baseline sample

The characteristics of the baseline sample are described in Table 7.1. Participants comprised of 228 males (53%) with a mean age of 15.03 years and 199 females (47%) with a mean age 15.01 years. The largest proportion of the respondents (n=199, 46.6%) were Afro-Trinidadian while the second largest category responded were Indo-Trinidadians (n=92, 21.5%). The majority of the cohort came from urban communities (n=250, 58.5%).

Table 7.1. Characteristics of the study at baseline.

Variables	Males				Females				Total scores				p-value
	M	SD	MIN	MAX	M	SD	MIN	MAX	M	SD	MIN	MAX	
Age	15.03	0.87	13.08	16.83	15.05	0.95	13.00	16.92	15.04	0.90	13.00	16.92	0.824
DASS stress	11.67	7.99	0.00	38.00	13.85	8.76	0.00	42.00	12.69	8.42	0.00	42.00	0.008
MAFS ff	19.64	3.84	0.00	28.00	20.10	4.69	1.00	28.00	19.86	4.84	0.00	28.00	0.336
MAFS pf	15.53	3.84	0.00	24.00	16.13	3.60	2.00	24.00	15.81	3.74	0.00	24.00	0.100
CAPE positive	34.92	7.77	21.00	67.00	38.24	7.79	23.00	68.00	36.47	7.95	21.00	68.00	0.000

Note: DASS stress= Depression and Anxiety Stress Scale; MAFS ff=Multi-dimensional Adolescent Functioning Scale-family functioning; MAFS pf=Multi-dimensional Adolescent Functioning-peer functioning; CAPE positive=Community Assessment of Psychic Experiences Scale.

Table 7.2 Descriptive sample at baseline

	M	SD	Range
CAPE-positive	36.47	7.95	47.00
CAPE-negative	24.25	5.86	30.00
CAPE-depressive	14.16	3.60	21.00
DASS-depression	10.49	9.14	42.00
DASS-anxiety	10.14	7.82	42.00
DASS-stress	12.69	8.24	42.00
MAFS-general	28.04	5.92	33.00
MAFS-peer	15.81	3.74	24.00
MAFS-family	19.86	4.84	28.00
Age	15.04	0.90	3.92
	N	%	
Male gender	228	53	
Ethnicity(Afro-Trinidadian)	185	43.3	
(Indo-Trinidadian)	92	21.5	
(Other)	140	32.8	
(Chinese)	4	0.9	
(Caucasian)	6	1.6	
Living in urban environment	250	58.5	

7.2.2 Follow-up Assessment

The follow-up study characteristics are seen in Table 7.3. At follow-up the attrition rate was 7% (n=28). The mean age of the participants at follow-up assessment is 16.61 years (SD 10.79) for males and 16.00 years for females (SD 11.05). The ages for males students range from 14 to 17 years and female students from 14 to 17.11 years. There was a significant difference between genders for family functioning [$\chi^2(22)=34.52$, $p=0.04$] at T2. There was no statistically significant difference between those who dropped out of the study and those who remained [$t(422)=0.84$, $p=0.40$].

Table 7.3. Characteristics of the study at follow-up

Variables	Males				Females				Total Scores				p-value
	M	SD	MIN	MAX	M	SD	MIN	MAX	M	SD	MIN	MAX	
Age	16.05	0.86	13.61	17.83	16.02	0.94	14.00	17.92	16.03	0.90	13.67	17.92	0.754
DASS stress	13.35	8.98	0.00	42.00	15.80	9.80	0.00	37.00	14.52	9.45	0.00	42.00	0.010
MAFS ff	20.48	4.72	2.00	43.00	20.61	4.66	0.00	28.00	20.54	4.68	2.00	43.00	0.782
MAFS pf	15.87	3.71	0.00	24.00	16.77	3.59	2.00	24.00	16.29	3.68	0.00	24.00	0.015
CAPE positive	35.09	8.84	20.00	61.00	39.52	8.99	21.00	60.00	37.18	8.90	20.00	61.00	0.000

Note: DASS stress= Depression and Anxiety Stress Scale; MAFS ff=Multi-dimensional Adolescent Functioning Scale- family functioning; MAFS pf=Multidimensional Adolescent Scale-peer functioning; CAPE positive=Community Assessment of Psychic Experiences Scale.

Table 7.4 Descriptive sample at follow-up

	M	SD	Range
CAPE-positive	37.18	8.90	41.00
CAPE-negative	23.10	5.08	28.00
CAPE-depressive	14.20	3.80	24.00
DASS-depression	12.58	5.28	42.00
DASS-anxiety	12.14	3.68	39.00
DASS-stress	14.52	4.68	42.00
MAFS-general	28.87	9.56	28.00
MAFS-peer	16.29	7.52	24.00
MAFS-family	20.54	9.45	41.00
Age	15.04	0.90	4.25
	N	%	
Male gender	211	53	
Ethnicity (Afro-Trinidadian)	179	41.9	
(Indo-Trinidadian)	89	20.8	
(Other)	127	29.7	
(Chinese)	2	0.5	
(Caucasian)	6	0.2	
Living in Urban environment	234	58.6	

7.2.3 Cross sectional analyses at T1

Statistics from linear regression analyses are presented in Table 7.5. At baseline, a model with age and DASS stress was significant: $F(2,114)=49.53$, $p<0.001$. Age was not a significant predictor of CAPE positive for males or females but DASS stress was moderately and significantly associated with CAPE positive ($p<0.001$). This model accounted for 19% of variance in CAPE positive. When MAFS family functioning was added to the model it remained significant [$F(3,413)=35.90$, $p=0.001$] and MAFS family functioning was also significant ($p=0.008$). This increased the variance explained in CAPE positive score to 21%. The model was significant when the interaction term DASS stress X MAFS family functioning was added: [$F(4,414)=26.90$, $p=0.001$], but the interaction term for DASS stress X MAFS family functioning was not significantly associated with CAPE positive.

In a second regression analysis, MAFS peer functioning was used in the model, but did not contribute significantly to CAPE positive scores. The interaction term for DASS stress and MAFS peer functioning was also not significant.

When these analyses were repeated stratified by gender, DASS stress was significantly associated with CAPE positive in males and females. A model with DASS stress and age accounted for 16% for males and 21% for females of variance in CAPE positive scores. MAFS family functioning was a significant predictor of CAPE positive only for males: [$F(3,217)=15.84$, $p=0.001$]. Adding MAFS family functioning to the model for males increased the variance explained to 18%. The interaction term for DASS stress and MAFS family functioning were not significant for either gender but the model was significant, [$F(4, 412)=26.90$, $p=0.001$].

7.2.4 Cross sectional analyses at T2

At follow-up, the model with age and DASS stress was again significant: [$F(2, 387)=79.12$, $p<0.001$]. Age was a significant predictor of CAPE positives only for females ($p<0.001$) and DASS stress was strongly and significantly associated with CAPE positive ($p<0.001$). This model accounted for 29% of the total variability in CAPE positive scores. The model remained significant with the addition of MAFS family functioning: [$F(3, 386)=54.48$, $p<0.001$] and MAFS family functioning was also a significant predictor ($p=0.046$). The variance explained was increased from 29% to 30%. When the interaction term for DASS stress X MAFS family functioning was added, the interaction was not statistically significant but the model remain significant: [$F(4, 385)=40.90$, $p<0.001$].

The second regression analysis indicated that when MAFS peer functioning was used in the model of DASS stress and age, MAFS peer functioning was not a significant predictor of CAPE

positive scores. The interaction term for DASS stress and MAFS peer functioning was also not significant, however, the model was significant [$F(4, 385)=39.61$, $p<0.001$].

When these analyses were repeated stratified by gender, DASS stress was associated with CAPE positive in both males and females. The model with DASS stress and age accounted for 24% of variance for males [$F(2, 200)=32.32$, $p=0.001$] and 34% of variance for females [$F(2, 184)=46.92$, $p<0.001$] for variances on CAPE positive scores. MAFS family functioning was a significant predictor of CAPE positive only for males ($p=0.007$) and the model remained significant: [$F(3,188)=24.68$, $p<0.001$]. Adding MAFS family functioning to the model of DASS stress and age increased the variance to 27%. The interaction term for DASS stress X MAFS family functioning was not significant. MAFS peer functioning and the interaction for DASS stress and MAFS peer functioning were not statistically significant for either gender (see Table 7.5).

7.2.5 Longitudinal Analyses at T1 to T2

Longitudinally, the model with age T1 and DASS stress at TI was significant with CAPE at T2 [$F(2, 387)=26.63$, $p<0.001$]. Age at T1was a significant predictor of CAPE positive at T2 only for females ($p<0.001$). DASS stress at T1 was a significant predictor of CAPE positive at T2 ($p<0.001$). This model accounted for 12% of the variance in CAPE positive scores which was a weaker association than cross-sectionally. When MAFS family functioning T1 was added, the model remained significant [$F(3, 386)=19.67$, $p<0.001$] and MAFS family functioning T1 was also significant ($p=0.023$). The variance explained by this model was 13%. When the interaction term for DASS stress T1 X MAFS family functioning T1was included, the model was statistically significant but DASS stress T1 X MAFS family functioning T1 was not a significant predictor of CAPE positive at T2.

The second regression analyses when MAFS peer functioning T1 was added to the model of DASS stress and age at T1, it was not a significant predictor of CAPE positive scores at T2. However, when the interaction term for DASS stress T1 X MAFS peer functioning T1 was added to the model it remained statistically significant [$F(4, 385)=15.37$, $p<0.001$]. The interaction term for DASS stress T1 X MAFS peer functioning T1 was a significant predictor of CAPE positive at T2 ($p=0.036$).

Repeated analyses stratified by gender indicated that DASS stress T1 was significantly associated with CAPE positive T2 in both males and females. The model with age and DASS stress accounted for 8% of variance for males [$F(2, 204)=8.56$, $p<0.001$] and 19% of variance for females [$F(2, 180)=21.08$, $p<0.001$] in CAPE positive scores at T2. MAFS family functioning T1 was a predictor of CAPE positive T2 for males only ($p<0.001$). When MAFS family functioning T1 was included in this model [$F(3,203)=8.84$, $p<0.001$] the variance explained was increased from 8% to 12%. Adding the interaction term for DASS stress T1x MAFS family functioning T1 resulted in a statistically significant model for males [$F(4,178)=12.16$, $p<0.001$] and females [$F(4, 202=5.14$, $p=0.001$]. The interaction term was a significant predictor of CAPE positive T2 ($p=0.032$).

MAFS peer functioning TI did not predict CAPE positive T2 for males or females. The interaction term DASS stress T1 X MAFS peer functioning T1 was a significant model [$F(4, 178=12.16)$, $p=0.001$] but a predictor of CAPE positive T2 for females only ($p=0.040$).

7.2.6 Cross-sectional analysis: T1 Family functioning and peer functioning combined effect.

A baseline model with age and DASS stress was significant [$F(2,414)=49.57$, $p<0.001$]. This model accounted for 19% of the variance in CAPE positive when MAFS family functioning

and MAFS peer and family functioning was added to the model it remained significant [F(4,412)=29.62, p<0.001] and MAFS family and peer functioning were also significantly associated with CAPE positive scores (p<0.001). This increased the variance in CAPE positive scores to 22%. The model was significant when the interaction DASS stress X MAFS family and peer functioning was added: [F(6,410=19.74, p<0.001], but the interaction term for DASS stress X MAFS family and peer functioning was not significantly associated with SPEs.

When these analyses were repeated by gender, DASS stress was significantly associated with CAPE positive for males and females but age was significant for females only (p=<0.001). A model with DASS stress and age accounted for 16% of variance in CAPE positive scores for males and 21% of variance for CAPE positive scores for females. When the combine MAFS family and peer functioning was added to the model they remain a significant predictor of CAPE positive only for males: [F(4, 217=13.88, p<0.001)]. Adding the combine MAFS family and peer functioning increased the variance explained to 20%. The interaction terms for DASS stress and MAFS family and peer functioning were not significant for either gender but the models were significant for both genders, males [F(6,214=9.76, p<0.001)] and females [(F6,189=9.85, p<0.001)].

7.2.7 Cross-sectional analysis: T2 family functioning and peer functioning combined effects

At follow-up, DASS stress was strongly and significantly associated with CAPE positive (p<0.001). The model with age and DASS stress was again significant: [F(2.387=79.12, p>0.001)]. This model accounted for 29% of the total variance in CAPE positive scores. The model remained significant with the combine addition of MAFS family and peer functioning: [F(4,386)=40.79, p<0.001] and MAFS family and peer functioning together were no longer a significant predictor of CAPE positive (p=0.12). There was no increase in the variance explained. When the interaction term for DASS stress X MAFS family and MAFS peer

functioning were added, the interaction was not statistically significant for either gender but the model remain significant: [F(6,383)=27.31, p<0.001)].

When these analyses were repeated stratified by gender, DASS stress was associated with CAPE positive scores in both males and females but age was only a significant predictor for females (p<0.001). The model with DASS stress and age remained at 24% for males [F(2,200)=32.32, p<0.001] and 34% for females [F(2,184)=48.17, p<0.001)] of variances on CAPE positive scores. MAFS family and peer functioning combination was a significant predicator of CAPE positive only for males (p=0.02), and the overall model was significant: [(F4,198)=18.73, p<0.001)]. Adding MAFS family and peer functioning to the model of DASS stress and age increased the variance to 28%. The interaction term for DASS stress X MAFS family and peer functioning was not significant for either gender but the model was significant for both males [F(6,196)=12.62, p<0.001)] and females [F(6,180)=17.27, p<0.001)].

7.2.8 Longitudinal Analyses at T1 to T2: family and peer functioning combined effects

Longitudinally, the model with age T1 and DASS stress at T1 was significant with CAPE at T2 [F(2,387=26.59, p<0.001)]. DASS stress at T1 was a significant predictor of CAPE positive at T2 (p<0.001). This model variance remained the same 12% on the CAPE positive scores which reflects a weaker association than cross-sectionally. The addition of MAFS family functioning and peer functioning at T1 produced a significant model [F(4, 385)=16.72, p<0.001)] and MAFS family functioning and peer functioning were a significant predictor (p=0.002). The variance explained by this model was just 3%. When the interaction term for DASS stress T1 X MAFS family and peer functioning T1 was included, the model was statistically significant [F(6,383)=12.03, p<0.001)] but the DASS stress T1 X MAFS family and peer functioning T1 combined was not a significant predictor at CAPE positive T2 (p=0.09).

Repeated analyses stratified by gender show that DASS stress T1 was significantly associated with CAPE positive T2 in both males and females, however, age was significant predictor only for females (p=0.006). The model with age and DASS stress accounted for 8% of variance for males [F(2, 204)=8.56, p<0.001] and 19% variance for females [F(2, 180)=21.00, p<0.001] in CAPE positive scores at T2. MAFS family and peer functioning at T1 combined was a predictor of CAPE positive scores at T2 for males only (p=0.001). When MAFS family and peer functioning T1 was included in this model [F(4, 202)=9.00, p<0.00] the variance explained was increase from 8% to 15%. Adding the interaction term for DASS stress T1 X MAFS family and peer functioning at T1 resulted in a statistically significant model for both males [F(6, 200)=5.97, <0.001] and females [F(6, 179)=8.34, p<0.001]. The interaction term was not a significant predictor of CAPE positive at T2 for males or females.

7.2.9 SPEs at T1 predicts SPEs at T2

Including CAPE positive at T1 in the regression analysis, in addition to all other potentially confounding variables, indicated that CAPE at T1 is a significant predictor of CAPE at T2 (p<0.001) and the model was also significant [F(4, 383)=52.10, p=<0.001]. The interaction term (DASS stress T1 X MAFS peer functioning T1) was also a significant predictor of CAPE at T2 (p=0.04) with a statistically significant model [F(8, 379)=27.74, p<0.001].

Table 7.5 Linear Regression Analyses

		T1				T2				Longitudinal			
		B	Beta	95% CI for B	p-value	B	Beta	95% CI for B	p-value	B	Beta	95% CI for B	p-value
Full sample	Age	-0.02	-0.03	0.08, 0.04	0.000	-0.09	-0.11	-0.15, -.02	0.008	-0.11	-0.13	-0.19, -0.03	0.005
	DASS stress	0.42	0.44	0.33, 0.50	0.000	0.50	0.53	0.42, 0.58	0.000	0.35	0.33	0.25, 0.45	0.000
	MAFS FF	-0.20	-0.12	-0.35, -.05	0.008	-0.18	-0.09	-0.36 -0.00	0.046	-0.21	-0.11	-0.39,-0.03	0.023
	Stress X FF	-0.01	-0.09	-0.02, 0.01	0.57	-0.01	-0.12	-0.02, 0.01	0.53	0.02	0.29	-0.00, 0.04	0.096
	DASS stress	0.42	0.44	0.33, 0.50	0.000	0.02	0.53	0.42, 0.58	0.000	0.35	0.33	0.25, 0.45	0.000
	MAFS PF	0.17	0.08	-0.02, 0.36	0.08	0.20	0.01	-0.20, 0.23	0.864	0.20	0.08	-0.03, 0.43	0.084
	Stress X PF	0.01	0.09	-0.02, 0.03	0.62	-0.01	-0.18	-0.03, 0.01	0.416	0.03	0.41	0.00, 0.05	0.036
Males	Age	-0.02	-0.02	0.09, 0.09	0.97	0.02	0.02	-0.08,0.11	0.75	0.15	0.02	-0.09, 0.12	0.780
	DASS stress	0.39	0.40	0.27, 0.51	0.000	0.46	0.50	0.35, 0.57	0.000	0.29	0.28	0.15, 0.43	0.000
	MAFS FF	-0.24	-0.15	-0.43, -0.04	0.017	-0.32	0.17	-0.55,-0.09	0.007	-0.34	-0.20	-0.57, -0.11	0.003
	Stress X FF	-0.02	-0.33	-0.04, 0.01	0.198	-0.02	-0.32	-0.04, 0.01	0.253	-0.00	-0.05	-0.03, 0.03	0.858
	Age	-0.04	-0.06	-0.13, 0.05	0.35	0.02	0.02	0.08, 0.11	0.75	0.15	0.20	-0.09, 0.12	0.780
	DASS stress	0.39	0.40	0.27, 0.51	0.000	0.46	0.49	0.35, 0.57	0.000	0.29	0.28	0.15, 0.43	0.000
	MAFS PF	0.18	0.09	-0.07, 0.43	0.153	0.03	0.01	-0.26, 0.33	0.823	0.22	0.10	-0.05,0.51	0.125
	Stress X PF	-0.02	-0.27	-0.05, 0.02	0.341	0.01	0.13	-0.02, 0.04	0.630	0.02	0.31	-0.02, 0.06	0.328
Females	Age	-0.04	-0.06	-0.13, 0.05	0.35	-0.17	-0.23	-0.26,-0.08	0.000	-0.23	-0.29	-0.33,-0.12	0.000
	DASS	0.40	0.45	0.29, 0.52	0.000	0.49	0.53	0.38, 0.60	0.000	0.35	0.34	0.21, 0.49	0.000

stress												
MAFS FF	-0.20	-0.12	-0.43, -0.02	0.076	-0.08	-0.04	-0.34, 0.17	0.529	-0.13	-0.07	-0.41, 0.14	0.333
Stress X FF	0.01	0.10	-0.02, 0.03	0.658	0.01	0.13	-0.02, 0.03	0.605	0.03	0.50	0.00, 0.05	0.032
DASS stress	0.40	0.45	0.29 , 0.52	0.000	0.49	0.53	0.38,0.60	0.000	0.35	0.34	0.21 ,0.49	0.000
MAFS PF	0.08	0.04	-0.20, 0.36	0.575	-0.24	-0.10	-0.55,-0.07	0.130	-0.00	-0.00	-0.37, 0.36	0.973
Stress X PF	0.02	0.42	-0.00, 0.05	0.096	-0.03	-0.61	-0.07, 0.00	0.060	0.53	0.53	0.00, 0.07	0.040

Table 7.6 Linear Regression Analyses for combined family and peer functioning.

		T1				T2				Longitudinal			
		B	Beta	95% CI for B	p-value	B	Beta	95% CI for B	p-value	B	Beta	95% CI for B	p-value
Full Sample	Age	-0.02	-0.03	-0.08, 0.04	0.53	-0.10	-0.12	0.17, -0.03	0.006	-0.12	-0.14	-0.19, -0.03	0.005
	DASS stress	0.42	0.44	0.33, 0.50	0.000	0.50	0.53	0.42, 0.58	0.000	0.35	0.33	0.25, 0.45	0.000
	MAFS FF	-0.28	0.08	-0.44, -0.13	0.000	-0.19	-.010	-0.37, -0.01	0.04	-0.29	-0.16	-0.48, -.10	0.003
	MAFS PF	0.30	0.10	0.10, 0.50	0.003	0.08	0.03	-0.14, 0.30	0.05	0.32	0.13	0.08, 0.57	0.01
	Stress X FF	-0.01	-0.11	-0.02, 0.01	0.53	-.002	-0.05	-0.02,-0.02	0.81	0.01	0.20	-0.01, 0.03	0.29
	Stress X PF	0.01	0.09	-0.02, 0.03	0.66	-0.01	-.020	-0.04, 0.01	0.36	0.02	0.28	-0.01, 0.05	0.19
Males	Age	-0.02	-0.02	-0.09, -0.12	0.78	-0.006	-0.008	-0.11, 0.09	0.97	0.02	0.02	-0.09, 0.12	0.78
	DASS stress	0.39	0.40	0.27, 0.51	0.000	0.46	0.49	0.35, 0.57	0.000	0.29	0.28	0.15, 0.43	0.000
	MAFS FF	-0.34	-0.22	-0.55, -0.14	0.001	-0.35	0.19	-0.59, -0.11	0.01	-0.47	-0.28	-0.71, -.23	0.000
	MAFS PF	0.35	0.17	0.08, 0.61	0.01	0.13	0.06	-0.17, 0.43	0.39	0.44	0.20	0.14, 0.74	0.004
	Stress X FF	-0.01	-0.15	-0.03, 0.02	0.57	-0.02	-0.31	-0.04, 0.01	0.30	0.003	0.05	-0.03, 0.03	0.84
	Stress X PF	-0.03	-0.41	-0.06, 0.01	0.17	0.01	0.10	-0.03, 0.04	0.72	0.01	0.09	-0.04, 0.05	0.78
Females	Age	-0.23	-0.02	-0.33, -0.12	0.000	-0.18	-0.23	-0.28, -0.09	0.000	-0.10	-0.12	-0.17, -03	0.006
	DASS stress	0.40	0.45	0.29, 0.52	0.000	0.49	0.53	0.38, 0.60	0.000	0.35	0.34	0.21, 0.49	0.000
	MAFS FF	-0.24	-0.15	-0.48, -0.01	0.04	-0.05	-0.03	-0.31, 0.20	0.68	-0.14	-0.07	-0.43, 0.14	0.32
	MAFS PF	0.18	0.08	-0.12, 0.47	0.24	-0.20	-0.08	-0.51, 0.11	0.21	0.04	0.02	-0.33, 0.42	0.83
	Stress X FF	-0.01	-0.11	-0.03, 0.02	0.65	0.02	0.31	-0.01, 0.04	0.26	0.02	0.36	-0.01, 0.05	0.17
	Stress X PF	0.03	0.48	-0.004, .06	0.08	0.04	-0.67	-0.07, .000	0.05	0.02	0.37	-0.01, 0.06	0.20

7.3 Discussion

The aim of this study was to examine the role of family and peer functioning in the association between stress and subclinical psychotic experiences (SPEs). It was hypothesized that: (1) there would be a strong and positive relationship between stress and SPEs; (2) family and peer functioning would moderate the relationship between stress and SPEs (3) there would be a gender and age effect where being a female will moderate the relationship between stress and SPEs and younger males will have a stronger association; and (4) family and peer functioning at T1 would predict CAPE at T2. As hypothesized the results of the study show that stress was always associated with SPEs. Family functioning was associated with SPEs but peer functioning was not. MAFS family functioning and peer functioning moderated the association between stress and SPEs only for females.

7.3.1 Association between stress and subclinical psychotic experiences.

As expected, stress was significantly and positively associated with SPEs at all time period of this study. This finding is consistent with previous research which indicates that psychotic experiences are associated with daily life stresses (Myin-Germey et al., 2005; Woodall et al in press) and that high SPEs may be associated with high stress (Collip et al., 2013). These results demonstrate that the rise in the levels of stress may be associated with an increase in SPEs now and one year later which is consistent with previous research (Tessner et al., 2011; De Loore et al., 2007). Alternatively, the SPEs at one time may predict the SPEs later, and the stress is just comorbid (Wigman et al., 2011).

In this study, the strength of association changed over time. The association between stress and SPEs was moderate at baseline, strongest at follow-up and weak longitudinally. This

highlights the developmental patterns of SPEs in general population samples when influenced by environmental and demographic factors such as stress and age, respectively. The moderate strength in the impact when the cohort was younger and became stronger when they were older can be as a result of increased stress in their lives. However, as they grow older this association weakened but there was still an effect. This pattern of strength is in line with previous research assuming that early adolescent phase is associated with a peak in SPEs followed by a decline with age (Verdoux et al, 1998; Wigman et al., 2011). Therefore, this study adds further support to the literature assuming stress is a positive risk factor in the development of SPEs in the present as well as the future.

Although the association was significant for both males and females, gender differences in the analysis showed that the impact was greater for females than for males. This can be as a result of higher levels of stress reported by females in this study as already explained in the literature (Rudolph & Hammen, 1999). In addition, we collected daily stress on DASS measurement rather than life events. There is an association between life events and SPEs (Bartels-Velthius et al., 2012) and life events and psychosis (see Review Beards et al., 2013) but our data confirm that non-specific daily stress may also impact psychopathology similarly (Collip et al.,2013; Myin-Germeys et al., 2001).

The CAPE positive scores found in this study were slightly higher than those found in previous investigations of community samples. Armando et al. (2010) conducted a study on high school students aged of 15-18 years in Italy and found a CAPE positive mean score of 33.4 (7.2), with females scoring higher than males. Scores on a younger Australian population similar to this study demonstrated even lower scores [M=31.41; SD=7.07), with females again showing higher scores than males (Yung et al., 2009). The mean CAPE score in this study was higher

than previous studies and may be as a result of a younger age group (13-16 years) and levels of stress in the present sample. Females also had higher scores in Trinidad. This finding is consistent with the assumption that the younger age is associated with higher rates of SPEs, and more so in females (Fonseca-Pedero et al., 2008; Cyhlarova & Claridge, 2005). Comparison with other investigations was impeded because of the age range this sample and the measuring tool employed (Fonseca-Pedero et al. 2011; De Loore et al., 2007).

7.3.2 SPEs changes as family and peer functioning changes

This study found that family functioning was negatively and significantly associated with the development of SPEs, indicating that as family functioning changes so does SPEs. The reduction in family functioning resulted in the increase in SPEs and this association holds at all time points in this study but only for males. This change can be further substantiated with evidence where the association between stress and SPEs were at its weakest when family functioning was at its highest. These findings are supported by other studies predicting positive family functioning is a protective mechanism against the development and persistence of SPEs in adolescents (Rossler et al., 2007; Berry et al., 2006). Additionally, the increase in the strength of association over time, as a result of a decline in family functioning, indicates that family importance decline in this adolescent cohort as they get older. Among males, poor family functioning was a significant predictor of SPEs, as oppose to females, who show no association of family or peer functioning in the development of SPEs, even though their stress levels were significantly higher than males. Therefore, family functioning is apparently less important in the development of SPEs for females. Previous research on cultural differences in family and peer functioning reported stronger relationships between peer relations and general functioning where individualism is emphasized (Schwartz et al., 2012). Conversely, cultures emphasizing high family connectedness show less

importance for peer relations and more for collectivism (Schwartz, 2012; Prioste et al., 2015). The Western culture, like Trinidad, which favours independence in adolescents have demonstrated an interdependency culture. Such finding is in line with other studies that illustrated both collectivism and individualism co-existing in the same society (Kagitcibasi, 1994; Triandis, 1994; Tamis-LeMonda et al., 2007) mainly as a result of social, cultural and economic changes over time.

As adolescents mature and strive for autonomy, peer relationships becomes a primary focus since they begin to occupy more time with their peers seeking acceptance (Rubin et al., 2006). When these relationships are poor, there is likelihood for the development of SPEs in adolescents. In this study peer functioning was not associated with SPEs for either males or females. This finding contradicts previous results that show poor peer functioning was associated with high levels of persecutory ideas (Yung et al., 2006). It may be that peer relationships were not priority in the lives of these adolescents and instead parental attachment were more important. Also, their low levels of peer functioning may not have impacted negatively on SPEs until later (Sullivan et al., 2013)

7.3.3 Family and peer functioning moderating the relationship between stress and SPEs

This study found that the association between stress and SPEs was moderated by both family and peer functioning only for females over time. This finding is in line with previous study that examined the association between stress and SPEs and the effects of this association by ways of BDNF-Val66Met polymorphism (Alemany et al., 2011). Notwithstanding the absence of a social moderator effect, Alemany and colleagues found that stress emanating from childhood abuse was strongly associated with SPEs and moderated, instead, by a genetic effect. In this study when the individual is stressed and experiencing SPEs, there is the likelihood that

peer and family functioning assumes the role of moderator, but only in females. This suggests that both family and peer relationships are simultaneously important in the protection against poor psychological well-being in adolescents, particularly in females (Brown & Bakken, 2011; Parke & Ladd, 2016).

Another study focused on gender differences in the impact of family relations on mental health and found that females were more likely to experience higher internalizing symptoms with negative family relationships (Telzer & Fuligni, 2013). Such findings can be as a result of females experiencing higher levels of stress and having lower levels of peer and family functioning. This indicates that as females grow older, family and peer functioning is significantly important to their daily living. Additionally, the positive association found over time is evident that females are more affected by the distress in others and to the quality of the peer relationships (Rose & Rodulph, 2006). This study adds new information to the literature since no one have investigated the moderating effects of family and peer functioning in the association between stress and SPEs.

7.3.4 Stress, family and peer functioning at baseline predicting SPEs 1 year later

The current study demonstrated that stress combined with family and peer functioning at baseline predicted SPEs over time. Therefore, these analyses may predict a causal relationship, in that poor family and peer functioning predicts and increase the level of SPEs over time. This is evident in the strength of the interaction which is weak at T1 but strong over time. With each standard deviation increase in stress, the model predicted that SPEs would increase by half the amount when peer and family functioning are held constant. Additionally, when stress interacted with family and peer functioning, at baseline, SPEs were found to be present only in females one year later. Considering that stress was at its weakest strength and family and peer functioning was

also at its lowest yet SPEs was still present suggests a considerable amount of SPEs in this population. No study has ever examined this association on a longitudinal basis and therefore no reference can be made in relation to these findings.

7.3.5 SPEs at T1 predicted SPEs at T2

This study found that SPEs at T1 predicted SPEs at T2 which is comparable to previous studies sufficiently evident in the literature (Poulton et al., 2000; Hanssen et al 2005; Cougnard et al., 2007; Dominguez et al., 2009). These findings indicate that in addition to stress, family and peer functioning at T1 predicting SPEs over time, SPEs at time T1 was also predictive of latter SPEs. In light of this, there seems to be an additive effect of T1 environmental risks factors contributing to the persistence of SPEs at T2 (Wigman et al., 2011), indicating that the persistency of SPEs is associated with more than one factor. Evidently, if environmental and interpersonal risks factors are minimized the probability of experiencing SPEs in adolescent general population may be lessened. More so, one can assume that environmental and interpersonal factors such as stress, family and peer functioning cause SPEs at baseline to persist to later SPEs and can further lead to a need for care (van Os et al., 2009).

7.3.6 Family and peer functioning combine effect.

In this study the combine effect of peer and family functioning show a worsening effect, indicating that for each unit of SPEs family and peer functioning decreases by 28 and 17 units, respectively. This finding is parallel to the additive effects of environmental factors on SPEs. Previous studies have shown that the effect of different environmental risk factors is additive and when combined creates a strong impact (Cougnard et al., 2007; van Os et al., 2009). When family and peer functioning operated separately the environmental effect was reduced reflecting

also a reduced variance explained (van Os et al., 2009). The combined effect may contribute to an abnormal persistence of SPEs risking psychotic disorder. This supports the assumption that risk factors precipitate the risk for psychotic disorders. Also, family and peer functioning were both predictors of SPEs only in males, more so, when family functioning was reduced. This indicates that, for younger male adolescents, the combined effect of poor family and peer functioning predicts SPEs. In younger females it seems that poor family functioning alone is associated with SPEs once peer functioning is accounted for.

7.3.7 Gender and age effect.

We hypothesized that both gender and age will explain some differences on the buffering effects of family and peer function in the link between stress and SPEs. There were indeed significant gender and age differences in these associations. Adolescents who emphasize the need of family functioning and peer functioning over time were more likely to experience SPEs when under stress. There was a distinct gender difference in that only females showed significant association with stress and SPEs over time. Adolescents who did not rely on family functioning and peer functioning their stress levels were lower and did not seem to influence SPEs. This sequence was predominant among females and not males. It is important to recognise that family and peer functioning was significant to the well-being of adolescents when under significant stress. Males showed greater attachment to family in both younger and older age groups. On the other hand, females demonstrated better family and peer functioning as older adolescence only when they were experiencing some form of stress in their lives.

7.3.8 Strengths and limitations of the study

One of the strengths of this study is that, to our knowledge, this is the first study that investigated the association between stress and SPEs while assessing the moderation effects of interpersonal relationships involving family and peer functioning in the general population, both cross-sectionally and longitudinally. This study was a prospective design and sampled a relatively large population of adolescents that allowed greater power to identify significant associations if they existed. This study has contributed to a better understanding of the relationship between stress and SPEs, as well as the protective factors that can minimize the rise in the levels of SPEs in adolescence. By examining the variations in the levels of SPEs at different time points we were able to determine how SPEs changes as a function of the different levels of stress while we control for confounding variables.

The self-reported nature of the data collected in this study can yield misinformation because some adolescents may choose to respond in a haphazard manner. Nevertheless, consistency of the findings with the literature and the support for self-report by previous research indicating both clinical interviews and self-report as dependable methods for assessing psychosis liability (Kelleher et al., 2009). Also, this study involves the possible pre-existence of other underlying psychopathologies in adolescents, prior to the completion of these research tools rather than symptoms at the onset, which could confound results. However, the small number of participants that were excluded as a result of missing values on their questionnaires indicates that the mental status of these adolescents were at acceptable levels.

7.3.9 Conclusion

Investigating the association between stress and SPEs, this study found that stress was moderately associated with SPEs at baseline, more strongly at follow-up and weakly predictive of SPEs over time. Family functioning was found to be negatively and significantly associated with SPEs at baseline, follow-up and over time, whereas peer functioning was only associated with SPEs overtime. Both family and peer functioning did play the role of moderators in the interaction between stress and SPEs, but only over time. Females accounted for a larger variance in SPEs than males, in the association between stress and SPEs at all time periods. Males were more likely to be at risk for SPEs when family functioning declines at baseline, follow-up and over time, while females are less at risk for SPEs when peer functioning increases over time. Nevertheless, family functioning did moderate the level of SPEs for females when they were stressed. In relation to age, the younger participants were more inclined to experience SPEs and they were more likely to be males.

CHAPTER 8

The association between bullying and subclinical psychotic experiences among adolescents

8.0 Introduction

Bullying is a serious behavioural problem affecting adolescents, both in the schools (Smith, 1999) and in the homes (Wolke et al., 2012). It is a phenomenon occurring worldwide, with evidence of having violent underpinnings later in life (Dupper & Meyer-Adams, 2002). The school prevalence rate for being bullied ranges from 6.8% to 25% for victims, 2% to 20% for perpetrators (Wolke et al., 2012; Redford et al, 2013). Prevalence has been shown to be as high as 61% in countries where economic status is low (Fleming & Jacobsen, 2009). Sibling bullying have a prevalence of 15% to 59% for victims and 10% to 40% for perpetrators (Wolke et al., 2012). The Global School-Based Student Health Survey (GSHS, 2007) conducted in Trinidad and Tobago found that 20.8% of students were bullied in the last 30 days**.** Research suggests that bullying can be associated with a number of emotional (Arseneault et al., 2010) and psychological (Horrevorts et al., 2014) disturbances. The harmful effects of bullying and its potential adverse consequences on both perpetrators and victims suggest we need a greater understanding of it to develop effective interventions.

Over the past decade, studies have shown that bullying is associated with the development of subclinical psychotic experiences (SPEs) (Campbell et al., 2007; Fisher et al., 2013; Horrevorts et al, 2014). Even when controlling for a number of confounding factors, such as age, gender, suicidal history and demography, the association with SPEs remains significant

(Fisher et al., 2013). However, not all adolescents who are bullied experience SPEs, similar to other risks factors associated with SPEs that do not necessary precipitate its development.

The existence of SPEs can go undetected in the general population since normal personality and the absence of dysfunctional behaviours often characterize this phenomenon. SPEs may not be associated with distress, help-seeking or need for care (Dominguez et al., 2009).The literature has shown that 75-90% of SPEs are transient (Dominguez et al., 2009), while the prevalence and incidence rate is approximately 5% and 3%, respectively (van Os et al., 2009). The differences in persons with normal and abnormal experiences are as a result of a number of risk factors that are linked to the abnormal experiences and the worsening of SPEs (van Os et al., 2009). This may imply that SPEs are not a single phenomenon, but rather may constitute different subtypes, influenced by different underlying risk factors in different ways (Yung et al., 2006).

Using the CAPE, research has identified subtypes of SPEs in a youth population of 15-18 year old high school students (Yung et al., 2006) and 19-26 year old university students (Armando et al, 2012). Armando et al. identified four subtypes of SPEs: bizarre experiences (BE), perceptual abnormalities (PA), persecutory ideation (PI) and magical thinking (MT). BE, PA and PI were associated with depression, while all subtypes were associated with distress. Another study identified three SPEs subtypes in a clinical sample of young help-seekers age 15-24 years of age, namely BE, PI and PA. Mood disorder was associated with BE and PI (Yung et al., 2006). These studies indicate that certain SPEs are apparently more pathological than others. PI and PA were more common in the older ages, probably because of the experiences of adolescents at school, and even at home, may be different. To our knowledge, only one study identified subtypes of SPEs in a population sample age 14-16 years (Wigman et al., 2011). They

found four subtypes including hallucinations, delusions, paranoia, grandiosity and paranormal beliefs. As such it is important to investigate whether the same exists in a sample with younger adolescents 13-16 years.

Evidence supporting the association between bullying and SPEs has done so with SPEs as a unitary construct rather than identifying the different subtypes of SPEs and how they are affected by different risk factors (Lataster et al., 2006; Kelleher et al., 2008; Valmaggia et al., 2015). It is therefore important to identify which specific subtypes of SPEs are associated with bullying behaviours. One longitudinal study of adolescents did examine which specific subtypes of SPEs were associated with previous bullying experiences in late childhood (Shakoor et al., 2015). They found that being bullied was most strongly associated with PI, and to a lesser extent, with PA and BE. Furthermore, being bullied in this association assumed the role of an environmental factor shared with a genetic risk factor in the development of SPEs, in contrast to an environmental trigger in the present study. To our knowledge, this is the first cross-sectional study to investigate the association between being bullied and subtypes of SPEs. This is also the first study to examine the association between being a perpetrator of bullying and subtypes of SPEs.

The issue of bullying is of grave concern among school officials when considering the short and long-term adverse effects it can have an individual, including his/her educational attainment (Batsche & Knoff, 1994). This is especially problematic because there is under-reporting on this issue (Petrosino et al., 2010). No study has yet been conducted in the Caribbean investigating the association between bullying and SPEs. As such, this novel study will add new evidence to the literature regarding SPEs subtypes and their influential role on bullying behaviours in adolescence. Here we investigate being a victim and being a perpetrator of

bullying. The findings of this study have the potential to enable programs and policies to be implemented that will facilitate early intervention in bullying and preventing further psychological deterioration towards a need for care.

The aims of this study were to:-

(i) Determine whether there are subtypes of SPEs in this population of Trinidad students.

(ii) Investigate the prevalence of bullying behaviours in an adolescent sample of Trinidad students.

(iii) Investigate whether there was an association between bullying behaviours and SPES.

(iv) Identify whether specific subtypes of SPES were more closely associated with bullying behaviours more than other subtypes.

We hypothesised that:

(i) There would be subtypes of SPEs identified in this population, namely bizarre experience, perceptual abnormalities-delusional ideas, persecutory ideation and magical thinking;

(ii) Based on previous findings on general population samples (Verdoux et al., 1998; van Os et al., 2001; Yung et al., 2009; Armando et al., 2012) there would be SPEs common in this Trinidad population.

(iii) Bullying would be significantly associated with SPEs; and

(iv) Being bullied and bully perpetration would be differently associated with particular subtypes of SPEs.

8.1 Data Analysis

Principal components analysis was used to determine the numbers of factors in the CAPE positive dimension. The use of factor analysis in this study was justified by examining the correlation matrix where, according to Hinkle et al (1998), numerous p-values are higher than 0.3 and less than 0.9 combine with a sample size of more than 300 participants (Tabachnick & Fidell, 2012; Comrey & Lee, 1002). Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (Kaiser, 1970) and the Bartlett's test of specificity were used. The KMO represents both the ratio of the squared correlation between variables to the squared partial correlation between variables. Values greater than or equal to .60 are considered acceptable for factor analysis (Hutcheson & Sofroniou, 1999). The Bartlett's test informs whether the coefficients in the correlation matrix correlate at all and are a good fit for factor analysis. The direct oblimin rotation was chosen because it is predicted that the factors on the CAPE are correlated. Eigenvalues and the scree plot method of extraction were conducted to determine the most appropriate number of factors for this data set. The eigenvalues had five factors with a value greater than one, as suggested by Tabachnick & Fidell (2012), and the scree plot displays that there was a flattened slope after four factors.

Correlational analysis was employed to determine how the factors correlate with each other and with CAPE total scores. Univariate ANCOVA was conducted to examine the association between bullying and the four CAPE subscales (factors) with the subscales as the dependent variable and bullying as the independent variable. Age, gender, DASS depression and DASS anxiety were entered as covariates. Being bullied and being a perpetrator of bullying were both examined. Two periods were investigated: bullying in the last year and in last 30 days.

To analyse bully-victims relationship to SPEs, bullying behaviours were recoded into: 0) Neither bully nor victim, 1) Victim only, 2) Bully only, and 3) Bully and victim. Univariate ANCOVA was then conducted to examine the association between SPEs subtypes in these groups. Age, gender, DASS depression and DASS anxiety were entered as covariates. Two time frames were investigated: bullying in the last year and bullying in the last 30 days.

Univariate analysis was used to investigate the association between the types of bullying and overall CAPE scores. Age, gender, depression and anxiety were entered as covariates.

8.2 Results

8.2.1 Sample characteristics

The total sample consisted of 399 students. Nine (2.3%) participants had >25% missing data and were excluded from analysis, leaving 390 participants in the sample, 205(52.6%) males and 185(47.4%) females. The mean age for males was 16.07 years (SD=10.95) and 15.98 years (SD=11.43) for females. There was no significant difference in bullying behaviours between males and females. There were higher prevalence rates of bullying in the last 30 days than in the last year: 58.4% and 41.6% respectively (see Table 8.2).

There was a weak (r=.03), yet significant, association between age and bullying. This association showed that younger participants were more likely to be bullied in the last 30 days [t(206)=2.92, p=0.01] and last year [t(203)=2.64, p=0.01]. Younger age was also significantly associated with being a perpetrator of bullying in the last year [t(201)=2.23, p=0.02]. These associations between bullying and age were significant for males only (see Table 8.2).

Table 8.1 Descriptive sample

	M	SD	Range
CAPE-positive	37.05	8.90	41.00
CAPE-negative	23.11	5.08	28.00
CAPE-depressive	14.20	3.80	24.00
CAPE BE	0.05	0.45	9.14
CAPE PA	1.60	0.78	12.71
CAPE PI	2.01	0.81	12.78
CAPE MT	2.27	0.88	13.00
Bullied in 30 days	1.66	0.48	1.00
Bullied in the last year	1.77	0.42	1.00
Bullying others in the last 30 days	1.74	0.44	1.00
Bullying others in the last year	1.90	0.40	1.00
Age	16.03	0.90	4.25
	N	%	
Male gender	211	52.9	
Living in urban environment	225	41.3	

Table 8.2 Bullying prevalence

	N	%	N	%	Chi sq	df	p	t(df)	p	t(df)	p
	Males		Females		Statistics			Age(males)		Age(females)	
Bullied in the last 30 days	70	33.7	65	34.9	0.07	1	0.79	-2.92(206)	0.01	0.08(184)	0.94
Bullied in the last year	45	22.0	44	23.8	0.19	1	0.67	-2.64(203)	0.01	-1.31(183)	0.22
Bullying others in the last 30 days	61	29.8	40	21.6	3.35	1	0.07	-1.89(203)	0.06	0.80(183)	0.43
Bullying others in the last year	48	3.6	31	16.8	2.74	1	0.10	-2.23(201)	0.02	-0.13(182)	0.90

8.2.2 Subtype of SPEs in the sample: number of factors, items allotment and tests application

Data in this study showed a 4-factor structure with eigenvalues over Kaiser's criterion of 1, accounting for 48.4% of the explained variance. There was significant loading of items on all of the four factors (r >.30). The factors identified are shown in Table 8.3. Factor 1 consisted of 5 items and was labeled bizarre experiences (BE). Factor 2 comprised of 7 items and was labeled perceptual abnormalities and delusional ideas (PA-DI). Factor 3 consisted of 5 items and was labeled persecutory ideation (PI). Factor 4 consisted of 3 items and was labeled magical thinking (MT). In the case where items loaded onto two factors, the higher or more conceptually sound one was utilized. Allotting items to the highest loadings, items 17 ("Do you ever feel as if electrical devices such as computers can influence the way you think?") loaded on both factor 2 (.316) and factor 4 (.487). Therefore, this item was loaded onto factor 4 as having the greater weight, in addition to theme similarity to the other items on this factor. Items 5 ("Do you ever feel as if things in magazines or on TV were written especially for you?") loaded on both factor 1 (.352) and factor 4 (.322); item 6 ("Do you ever feel as if some people are not what they seem to be?") loaded on factor 2 (.364) and factor 3 (-.436); item 15 ("Do you ever think that people can communicate telepathy?") loaded on both factor 1 (.302) and factor 4 (.417); and item 41 ("Do you ever feel as if a double has taken place in a family member, friend or acquaintance?") loaded on factor 1 (.432) and factor 3 (-.420).

There was a positive and significant correlation between factors (p<.001). A reliability analysis conducted indicated that internal consistency show good Cronbach's alpha (r>.70) for PA-DI and PI. BE and MT were lower, (r=.63) and (r=.58) respectively. According to Kline

(1999), the diversity of the themes in the psychological constructs, can reflect values lower than .7, which is realistically acceptable.

Before computing the mean and standard deviation of the CAPE subscales, they were standardized by dividing each subscale by the number of items in order to make them comparable. There was a significant difference in gender for the CAPE positive total score, PI, and MT ($p<.05$) with females having higher scores than males (see Table 8.4 below). Age was significantly, although weakly, negatively associated with SPEs for males and females. Younger participants had higher levels of SPEs. This association was found for CAPE positive and all subtypes in females, but only PI and MT for males. The internal consistency for CAPE positive total score was high ($r=.86$) (see Table 8.5).

Table 8.3. CAPE positive items and factor loadings

Item No.		Factor Loadings			
		Factor 1	Factor 2	Factor 3	Factor 4
	BIZARRE EXPERIENCES				
26	Do you ever feel as if the thoughts in your head are not your own	0.65			
28	Have your thoughts ever been so vivid that you were worried other people would hear them	0.64			
24	Do you ever feel as if the thoughts in your head are taken away from you	0.57			
17	Do you ever feel as if electric devices such as computers can influence the way you think	0.49			
15	Do you ever think that people can communicate telepathy	0.42			
	PERCEPTUAL ABNORMALITIES-DELUSIONAL IDEAS				
33	Do you ever hear voices when you are alone		0.74		
34	Do you ever hear voices talking to each other when you are alone		0.74		
42	Do you ever see objects, people or animals that other people cannot see		0.73		
31	Do you ever feel as if you are under the control of some other force other than yourself		0.53		
30	Do you ever hear your own thoughts being echoed back at you		0.47		
41	Do you ever feel as if a double has taken place in a family member, friend or acquaintance		0.43		
20	Do you believe in the power of witchcraft, voodoo, or occult		0.43		
	PERSECUTORY IDEATION				
7	Do you ever feel you have been persecuted in some way			-0.73	
10	Do you ever feel as if there is a conspiracy against you			-0.70	
2	Do you ever feel as if people seem to drop hints with a double meaning			-0.66	
22	Do you ever feel that people look at you oddly because of your appearance			-0.59	
6	Do you ever feel as if some people are not what they seem to be			-0.44	
	MAGICAL THINKING				
11	Do you ever feel that you are destined to be someone very important				0.77
13	Do you ever feel that you are a very special or unusual person				0.77
5	Do you ever feel as if things in magazines or on TV were written especially for you				0.35

Table 8.4. CAPE positive and subscales scores for the whole sample and by gender, and correlation with age

	Gender				Age					
	Total Sample	Male	Female		Male			Female		
	M(SD)	M(SD)	M(SD)	p-value	M(SD)	r	p-value	M(SD)	r	p-value
CAPE positive	37.05(9.18)	34.85(8.79)	39.52(8.99)	<.001	35.09(8.30)	.042	.549	35.52(8.99)	-.266	<.001
BE	0.05(0.45)	0.02(0.62)	0.08 (0.02)	.21	9.60(2.86)	.094	.176	10.97(3.18)	-.226	.002
PA-DI	1.60(0.78)	1.53(0.92)	1.68 (0.58)	.05	4.62(1.99)	.105	.129	4.74(2.08)	-.214	.003
PI	2.00(0.81)	1.84 (0.93)	2.20 (0.59)	<.001	12.51(3.57)	-.029	.676	14.58(3.71)	-.218	.003
MT	2.27(0.88)	2.13(1.01)	2.43(0.68)	<.001	8.22(2.48)	-.006	.932	9.21(2.47)	-.180	.013

CAPE=Community Assessment of Psychotic Experiences; BE=Bizarre Experiences PA-DI=Perceptual Abnormalities and Delusional Ideas; PI=Persecutory Ideation; MT=Magical Thinking

Table 8.5. Inter-correlation between factors and CAPE total.

	BE	PA-DI	PI	MT	CAPE positive
BE	1				
PA-DI	.358**	1			
PI	.409**	.543 **	1		
MT	.421**	.342**	.427**	1	
CAPE positive	.411**	.848**	.806**	.611**	1

** Correlation is significant at p<0.001
CAPE=Community Assessment of Psychotic Experiences; BE=Bizarre Experiences PA-DI=Perceptual Abnormalities and Delusional Ideas; PI=Persecutory Ideation; MT=Magical Thinking

8.2.3 Prevalence of SPEs

The prevalence of each of the CAPE items is shown in Table 8.6. Participants indicated if they have had that experience "never", "sometimes", "often" or "nearly always". Combining the "often" and "nearly always" responses, the items with the highest prevalence of "often/nearly always" were: "Do you ever feel as if some people are not what they seem to be" followed by "Do you ever feel that you are a very special or unusual person." These items fell under PI and BE respectively.

As the frequency of SPEs increase, the prevalence rates decreased. Those reporting "often" and "nearly always" experience SPEs rates that were very low.

Table 8.6. Prevalence and Frequency of CAPE positive items.

Item No.	Frequency %			
	Never	Some-times	Often	Nearly Always
BIZARRE EXPERIENCES				
26 Do you ever feel as if the thoughts in your head are not your own	54.4	31.6	12.3	1.5
28 Have your thoughts ever been so vivid that you were worried other people would hear them	52.9	32.3	11.8	2.8
24 Do you ever feel as if the thoughts in your head are taken away from you	49.6	38.3	8.3	3.5
17 Do you ever feel as if electric devices such as computers can influence the way you think	29.8	42.9	20.1	7.0
15 Do you ever think that people can communicate telepathy	44.6	40.1	9.3	5.8
PERCEPTUAL ABNORMALITIES AND DELUSIONAL IDEAS				
33 Do you ever hear voices when you are alone	50.4	32.1	11.3	6.0
34 Do you ever hear voices talking to each other when you are alone	68.2	22.6	6.3	2.8
42 Do you ever see objects, people or animals that other people cannot see	64.4	24.1	8.3	3.0
31 Do you ever feel as if you are under the control of some other force other than yourself	55.9	29.3	12.0	2.5
30 Do you ever hear your own thoughts being echoed back at you	49.4	34.3	12.0	4.0
41 Do you ever feel as if a double has taken place in a family member, friend or acquaintance	58.9	28.8	8.8	3.3
20 Do you believe in the power of witchcraft, voodoo, or occult	52.9	23.8	12.0	11.0
PERSECUTORY IDEATION				
7 Do you ever feel you have been persecuted in some way	44.6	40.1	10.8	4.5
10 Do you ever feel as if there is a conspiracy against you	37.3	41.1	14.5	7.0
2 Do you ever feel as if people seem to drop hints with a double meaning	28.1	47.4	17.0	7.5
22 Do you ever feel that people look at you oddly because of your appearance	34.6	45.6	14.0	5.5
6 Do you ever feel as if some people are not what they seem to be	11.3	38.6	31.1	19.0
MAGICAL THINKING				
11 Do you ever feel that you are destined to be someone very important	13.0	34.3	30.1	22.3
13 Do you ever feel that you are a very special or unusual person	14.3	40.9	23.6	21.1
5 Do you ever feel as if things in magazines or on TV were written especially for you	42.2	41.9	12.0	3.8

8.2.4 Associations between bullying and subtype of SPEs.

Associations between CAPE subscales and those being bullied are presented in Table 8.7. After controlling for potentially confounding variables (age, gender, DASS depression and DASS anxiety), being bullied in the last year was associated with significantly increased PI [F(5, 386)=6.94, p=0.002]. Being bullied in the past 30 days was associated with both MT [F(5, 386)=6.23, p=0.022] and PI [F(5, 394)=6.23, p=0.008]. There were no other significant associations between being bullied and CAPE subscales.

Table 8.7. Differences in CAPE subscales between participants who were bullied and those not bullied in the last year and last 30 days.

	Bullied		Not bullied		Statistics		
CAPE subscales	M	SD	M	SD	F	df	p-value
Bullied in the last year							
BE	9.01	2.52	8.65	2.61	1.02	5, 389	0.315
PA-DI	12.57	4.45	11.05	3.75	0.16	5, 393	0.688
PI	11.16	2.95	9.69	2.84	7.15	5, 393	0.002
MT	7.02	2.03	6.86	0.21	0.21	5, 389	0.645
Bullied in the last 30 days							
BE	8.97	2.41	8.59	2.60	0.05	5, 394	0.819
PA-DI	12.27	4.46	10.94	3.63	1.18	5, 393	0.278
PI	11.16	2.95	9.69	2.84	6.23	5, 394	0.008
MT	7.25	1.94	6.72	2.05	0.29	5, 393	0.022

CAPE=Community Assessment of Psychotic Experiences; BE=Bizarre Experiences PA-DI=Perceptual Abnormalities and Delusional Ideas; PI=Persecutory Ideation; MT=Magical Thinking

The association between being a perpetrator of bullying and CAPE subscales is presented in Table 8.8. Being a perpetrator of bullying in the last year was associated with significantly increased PA-DI [F(5,386)=6.58, p=0.030], after controlling for age, gender, DASS depression and DASS anxiety. There were no other significant associations between CAPE subscales and perpetration of bullying.

Table 8.8. Differences in CAPE subscales between perpetrators and non-perpetrators of bullying

	Bullying		Not-bullying		Statistics		
CAPE subscales	M	SD	M	SD	F	df	p
Perpetrator of bullying the last year							
BE	8.93	2.57	8.66	2.61	0.03	5, 386	0.910
PA-DI	12.47	4.35	11.10	3.85	6.58	5, 386	0.030
PI	10.44	2.87	10.14	2.95	0.002	5, 386	0.962
MT	6.93	1.97	8.90	2.05	0.03	5, 386	0.874
Perpetrator of bullying the 30 days							
BE	8.72	2.37	8.70	2.67	0.54	5, 389	0.464
PA-DI	12.16	3.90	11.08	3.90	2.89	5, 389	0.090
PI	10.27	2.82	10.17	3.02	0.35	5, 389	0.552
MT	6.94	1.82	6.93	2.12	0.25	5, 389	0.616

The association between bully-victims and CAPE subscales is presented in Table 8.9. Bully-victims in the last year and last month were not associated with any of the CAPE subscales after controlling for age, gender, DASS depression and DASS anxiety.

Table 8.9. Differences in CAPE subscales between participants who were bully-victims and non- bully-victims

	Bully-victims		Neither bully nor victims		Statistics		
	M	SD	M	SD	F	df	p-value
Bully-victims in the last year							
BE	8.90	3.13	8.76	2.58	0.87	7, 358	0.458
PA-DI	11.20	3.44	11.35	4.33	0.61	7, 359	0.607
PI	9.83	2.38	10.20	3.25	0.72	7, 359	0.538
MT	6.20	2.24	6.88	2.29	1.06	7, 359	0.364
Bully-victims in the last 30 days							
BE	8.50	0.56	1.99	0.61	0.75	7, 363	0.525
PA-DI	11.52	2.23	4.55	1.94	0.69	7, 364	0.559
PI	9.94	0.33	0.61	0.24	0.84	7, 364	0.474
MT	6.40	0.78	2.86	0.83	1.23	7, 364	0.297

CAPE=Community Assessment of Psychotic Experiences; BE=Bizarre Experiences PA-DI=Perceptual Abnormalities and Delusional Ideas; PI=Persecutory Ideation; MT=Magical Thinking

Analyses with only the DI items showed that Delusional Ideation (DI) was significantly associated with only perpetrators of bullying in the last year [F(5, 386=4.62, p=0.032], similarly to PA.

Table 8.10 Differences in CAPE DI subscale for victims of bullying, perpetrators of bullying and perpetrators and victims of bullying.

	M	SD	M	SD	F	df	p-value
Victims of bullying	Bullied		Non bullied				
Bullied in the last year	5.53	2.08	4.83	1.81	0.20	5, 386	0.657
Bullied in the last 30 days	5.32	2.12	4.83	1.77	0.07	5, 393	0.786
Perpetrators of bullying	Bullied others		Did not bully others				
Perpetrator in last year	5.46	2.05	4.86	1.85	4.62	5, 386	0.032
Perpetrator in last 30 days	5.25	1.88	4.88	1.88	1.56	5, 386	0.212
Perpetrators and victims	Perpetrator and victim		Not perpetrator and victim				
Perpetrator and victim in last year	4.80	1.58	5.02	1.95	0.48	7, 356	0.697
Perpetrator and victim in last 30 days	5.05	2.06	5.02	1.84	0.31	7, 363	0.831

Table 8.11 Differences in CAPE overall scale between participants who were bullied, not bullied, perpetrators, non-perpetrators, perpetrators-victims and non-perpetrator-victims

	Bullied		Not bullied		Statistics		
Types of bullying	M	SD	M	SD	F	df	p-value
Bullied- last 30 days	39.78	8.95	36.10	8.67	3.69	5, 381	0.056
Bullied- last year	40.43	9.36	36.50	8.57	1.09	5, 377	0.297
Bullying others- last 30 days	38.12	8.42	37.05	9.01	0.57	5, 377	0.452
Bullying others- last year	38.94	8.96	36.96	8.86	2.05	5, 374	0.153
Bully-victim- last 30 days	38.40	7.24	35.54	8.34	1.52	7, 375	0.208
Bull-victim- last year	37.19	7.81	35.71	8.22	2.72	7, 369	0.044

8.3 Discussion

This is the first study to investigate the prevalence of bullying and its association with particular subtypes of SPEs cross-sectionally among students who are bullied and those who bully others. The results of this study demonstrated that there was a high rate of bullying in this community sample and that there is a significant difference between those involved in bullying and those who are not involved in bullying. As hypothesized, there were four factors of SPEs identified in this community sample. These were bizarre experiences, perceptual abnormalities-delusional ideas, persecutory ideation and magical thinking. Being bullied was most strongly associated with persecutory ideation and to a lesser extent with magical thinking. Being a perpetrator of bullying was associated with perceptual abnormalities-delusional ideas.

In the current study we showed that 34.3% of adolescents had reported being bullied in the last 30 days and 29.4% had reported being bullied in the last year. The variation in bullying rates reported in large international studies has generally been reported on developed high-income countries and to a lesser extent in developing countries. Cross-national prevalence rates in studies in high income countries are as low as 5% and as high as 45% with much larger sample size (Craig et al., 2009). With respect to developing countries, in spite of the paucity of information, the reported rates on bullying range from 7% to 61% (Fleming & Jacobsen, 2009). The results of a previous study done by the International Development Bank (2014) found that Caribbean countries prevalence of bullying in the last 30 days ranged from 20% to 42%, with a prevalence of 22% in Trinidad and Tobago. The results of this study indicate that bullying is at the high end. Studies have shown that the wide variation in bullying prevalence between countries is, in part, influenced by the variation of wealth among these countries (Due et al, 2005).

There are a number of plausible reasons why bullying in the last year was lower than bullying in the last 30 days. This study has shown that bullying behaviours are more prevalent among boys than girls and decrease with age. These findings are consistent with previous studies that demonstrate an increase in a number of problematic behaviours in young males during adolescence and decreases as the adolescent prepares to exit the secondary school environment (Haynie et al., 2001; Sourander et al., 2000; Rigby, 2002). As adolescents develop they begin to socially adapt to an environment where the physical structure of others become alike thereby restraining bullying behaviours. This consequence can be compounded with schools taking up responsibility in addressing the issue of bullying (Smith & Shu, 2000). Notwithstanding the recurring memory effects of bullying, there could be recency effect on bullies and the bullied, suggesting that later bullying may be more easily remembered in the last 30 days as against bullying in the last year. Therefore, adolescents are more likely to report being bullied and bullying others in the last month than in the last year. It is also possible that participants misinterpreted the question and believed it to mean instances of bullying in the past 12 months, with the exception of the past month.

In this study there was no significant difference in bullying between males and females. There is inconsistency in the literature on gender and being a victim of bullying. Some found higher prevalence among males (Veenstra et al., 2005; Scheithauter et al., 2006), while others have shown that females are victims of bullying on a frequent basis (Due et al., 2005; Shakoor et al., 2015). Because results are mixed, caution should be recognised when associating gender with bullying (Espelage et al., 2004). The larger number of males participated in this study, coupled with the inherent physical aggression they naturally exhibit compared to females (Carlo et al., 1999), still did not contribute to our males having a higher prevalence. Being bullied and the perpetrator of bullying were persistent in the last 30 days and last year. This suggests that those who were bullied or were perpetrators of bullying

previously, continue to be bullied or perpetrate bullying. Another explanation is that participants were more easily able to report bullying on the most recent time frame.

Similar to previous studies (Yung et al., 2006; Yung et al., 2009; Armando et al., 2012; Wigman et al., 2011), we found that different subtypes of SPEs do exist in community samples. This study identified four subtypes which are in line with a majority of previous studies (Yung et al., 2009; Armando et al., 2012). With the subtypes in this study, not all the items were loaded in like manner as previous studies. However, all subtypes were loaded with construct having common themes except for perceptual abnormalities loading with some delusional ideas. In other studies these delusional ideas items were loaded with persecutory ideation and magical thinking (Yung et al., 2009). Unlike previous studies excluding two items, in this study all items were included because of participants' thorough understanding of the items and their knowledge of cultural concepts (Hornell, 1924).

Persecutory ideation, magical thinking and perceptual abnormalities-delusional ideas were found to be differently associated with the bullying phenomenon. In the present study, being bullied was associated with PI and MT, while being a perpetrator of bullying was associated with PA-DI. The PI and MT finding is in line with one previous longitudinal study which endorsed hallucination, paranoia and grandiosity as associated with being bullied. In that study being bullied was strongly and significantly associated with PI, and to a lesser extent, with PA-DI and MT (Shakoor et al., 2015). Our findings also suggested that bullying behaviour is associated with hallucinations, although this was specific to being a perpetrator of bullying. Bullying perpetration was significantly associated with perceptual abnormalities in previous studies (Kelleher et al., 2008; Lataster et al., 2006). Notwithstanding that the majority of research has indicated that being bullied is associated with SPEs, more pathological kind of SPEs, such as perceptual abnormalities, may be associated with perpetrators of bullying.

The three items for DI including "Do you ever see objects, people or animals that other people cannot see?", "Do you ever feel as if a double has taken place in a family member, friend or acquaintance?" and "Do you believe in the power of witch craft, voodoo, or occult?" were analysed separately from the PA-DI subtype.

In this study the DI group was associated with perpetrators of bullying and is consistent with previous studies which found that bullying is associated with delusional ideation (Lataster et al., 2006). The PA-DI group from this study has shown similarities and differences with other previous studies that analysed specifically the positive items of the CAPE in relation to the naming of the subtypes and the items that fall under these subtypes (Yung et al., 2009; Wigman et al., 2011; Armando et al., 2010, 2012; Barragan et al., 2011). For example, Barragan et al. (2011) identified a 4-factor structure very close to this study 4-factor structure. The differences were that their First-rank/Hallucinatory Experiences correspond to the items we labeled PA-DI and they had additional items, namely "telepathy", "thoughts taken away from you", and "thoughts not your own." Armando et al. (2012) identified 4 subtypes and did not have a PA-DI group. Yung et al. (2009) also reported a 4-factor structure (BE, PA, PI, MT) which had a very similar methodology to our study and their PA subtype is identical to those in the current study. However, the difference captured here is that the three DI items in this study corresponded with BE, PI and MT in their study having one item each from the DI items. In the case of Wigman and colleagues (2011), the 5 subtypes identified were hallucination, paranoia, grandiosity, delusions and paranormal beliefs. The delusional subscale in their study incorporated only two DI and one PA item from our study and the remainder of this subscale. The discrepancy between these two studies may be accounted for by the large sample size of the Wigman et al. study. The DI items were inconsistently loaded on BE, MT and PI in previous models and were seen as the poorest indicator of those factors, except for the Wigman et al. model. Some researchers replace the

term DI with BE (Armando et al., 2010; Capra et al., 2013), hence the reason for most of the items in PA-DI in this study can be identified under BE in other studies (Brandizi et al., 2014; Therman & Zierman, 2016).

PI had the highest prevalence on two of its items which can have heavy loadings for analysis. The level of frequency shown for "hearing own thoughts echoed back at you" was 34% which is much higher than in previous studies (e.g. Yung et al., 2009). "Hearing voices" had a frequency level of 32% which is also higher than previous studies (e.g. Armando et al., 2012). This indicates that hallucinatory experiences were very much present in perpetrators of bullying. It is possible that these perpetrators were being bullied previously and the level of physical aggression and manipulation perpetrated on them were enough to give them erroneous perceptions that they are weaker peers and targets. As such, being bullied can cause one to retaliate in the circumstances where they have reached their threshold of tolerance and subsequently become a bully. These bully-victims tend to be characterized with higher levels of maladjusted behaviours and dysfunctional psyche preceding their bully-victim status (Arseneault et al., 2006; Kelleher et al., 2008). The possibility of being bullied previously, as well as the retrospective element associated with reporting in the last year may have captured this information. In line with this finding, Reijntjes et al., (2013) found that bullying others lead to rejection by peers and fewer acceptances which mirror those of being a victim. Therefore, both bully and victims can show similar symptoms with regards to SPEs.

MT was found to be significantly associated with being bullied in the last 30 days. Although being a victim of bullying is associated with negativity and insecure perception of self, the short-term bullied period attached together with the positive cognitive content of MT can possibly minimize the effects of SPEs (Mezulis et al., 2006). The subjective beliefs that "one's thoughts can bring about effects" may suggest self-appraisal since the presence of

these thoughts can foster a sense of great importance. Such feelings can buffer potential risk in the need for care (Lovatt et al., 2010).

In this study, SPEs were more common in females than males with a significant difference on CAPE positive total, PI and MT. This finding is inconsistent with the literature in relation to SPEs and gender differences (Spauwen et al., 2003; Kelleher et al 2008; Preti et al., 2007), which shows that, in general, males are more likely to report psychotic experiences. There seems to be conflicting results with SPEs subtypes in relation to gender differences and gender influences. MT was endorsed more by males in previous studies (Mamah et al., 2013; Scott et al., 2006). In relation to age, we found that younger age was associated with SPEs, which confirms previous literature (Laurens et al., 2007). This was so for younger females on CAPE positive total and all subtypes, and younger males with PI and MT only. This suggests, overall, that younger age characterizes SPEs and that gender is associated with specific types of SPEs. Previous studies have shown that as children grew older they reported a significant decrease in hallucinatory experiences (Laurens et al., 2007)**.** These inconsistencies in gender and age findings are likely due to the different experiences in school environment faced by different students of same ages and gender.

The association between bullying and SPEs could be as the result of the adolescence period, which is consumed with social, psychological and physical challenges. This developmental period is underpinned with the importance of interpersonal relationships involving parents and peers (Lennarz et al., 2016; Ma & Huebner, 2008). When confronted with rejection from valued relationships, a number of emotional and mental ills can occur (Einsenberg et al., 2003). The negative beliefs that can emanate from negative interpersonal relationships, such as being bullying, can influence paranoia ideation (Bentall et al., 2001). Therefore, bullying can have a negative impact on the thoughts of adolescents with the perception that their peers are out to get them. These elevated thoughts normally invoke

feelings of insecurity (Eisenberg et al., 2003; Fanti & Henrich, 2015), loneliness (Owusu et al., 2011) and low self-esteem (Turcotte et al., 2015), all of which can be considered risk factors for the development of SPEs.

While the present and previous research has linked bullying to SPEs (Valmaggia et al., 2015) one may still wonder whether participants' responses were based on their perception that they were being persecuted rather than actually experiencing SPEs. PI might not truly reflect psychotic phenomena because the participants might actually feel like people are out to get them and such is a reality with bullying. Also, the high frequency at which a person is bullied may make sense that they experience persecution. Previous research on the association with bullying and SPEs, using a variety of measures, illustrated where SPEs were indexed on a number of psychopathological items. In their study, Shakoor et al (2015) employed the Specific Psychotic Experiences Questionnaire (SPEQ) with SPEs items such as "someone has it in for me", "people are being hostile to me" and "people might be conspiring against me." This study found that bullying associated with paranoia, hallucinations and cognitive disorganization. Similarly, Valmaggia et al (2015) used the State Social Paranoia Scale (Freeman et al., 2007) with 10 persecutory items including: "someone stared at me in order to upset me", "someone was trying to make me distressed" and someone was trying to isolate me." In this study, victims of bullying showed higher levels of paranoid ideation. With respect to the CAPE, Horrevorts et al (2014) found that victims and bully-victims reported the highest level of SPEs. All three aforementioned studies have found an association between bullying and SPEs. Yet it might just be that these associations are being driven by the fact that participants are actually being persecuted and not really experiencing psychotic phenomena. Therefore, previous studies need to conduct further investigation into the association between bullying and SPEs excluding items that may reflect actual bullying experiences to examine if the association between bullying and SPEs still holds. There need

to be more analysis of subscales to replicate the findings of this study in order to assume if there will still be a relationship.

Even though our study was the first to examine the relationship between different subtypes of SPEs and bullying cross-sectionally, there were other studies that investigated the association with bullying and SPEs, however, with SPEs as a homogeneous entity and subtypes. Such scarcity of information reflects the need for future studies on the heterogeneous make up of SPEs and whether bullying is associated with different subtype of SPEs in different ways.

8.3.1 Strengths and limitations

The strengths of this study lies in the representativeness of this school sample and the multiple domains of SPEs which facilitated investigation into bullying and how it relates to specific SPEs. The cross-section of secondary students in this school population comprised of mixed social and economic status. Therefore, the generalizability of the study to other Trinidadian adolescents is likely to be high.

Although this study generated data covering both the last 30 days and the last year, longitudinal associations could not be analysed. Therefore, the cross-sectional nature of the study could not infer causality between bullying and SPEs. No validated measure was used for data collection on bullying; however, the items used were similar to those in previous studies. The use of self-reported measurement tools may impact on reporting of bullying and SPEs because people are trying to answer in a socially desirable way. However, asking about bullying defined on a questionnaire and self-report has been found to yield reliable data (Solber & Olweus, 2003). A continuation of this study should be done with the different types of bullying behaviours. Different types of bullying behaviours were not included in the questionnaire and such information could have shed light on the severity of bullying**.** This

information may have identified mediated/moderated factors for bullying in subjects with specific SPEs.

8.3.2 Conclusions

This study found that being bullied in adolescence appears to be associated with persecutory ideation and magical thinking, while bullying others is associated with perceptual abnormalities and delusional ideas. In light of the findings, adolescents who are being bully victims seem to be vulnerable to paranoia experiences and perpetrators of bullying seem to be a trigger for more pathological expression of psychosis. We also demonstrated no gender differences in bullying behaviours and that the younger individuals were more likely to be involved in bullying.

CHAPTER 9

Mental health across culture and how it impacts on peer functioning and school grades: Evidence from British and Trinidadian adolescents.

9.0 Introduction

Both developing and developed countries have not placed sufficient emphasis on resources geared towards addressing adolescent mental health needs (WHO, 2003). In recent times, however, there have been a number of global collaborative efforts from institutions and individuals to increase awareness, treatment and prevention for mental health problems (Horton, 2007). There is evidence that 75% of mental health problems begin by age 15 for anxiety and 25 for depression (Kessler et al., 2005). Mental health in adolescence has its underpinnings in the physical, psychological and social changes that occur during this critical developmental period. As such, poor mental health impacts adversely on the development of young people including in the social sphere (Kieling et al., 2011). No nation, whether developed or developing, is spared of the reality of adolescent mental health issues (Bloom et al., 2011). The World Health Organisation (2010) has embarked on a number of initiatives to highlight youth susceptibility to mental illness and discriminatory treatment towards this group of young people. In addition, assistance has been given to less developed countries for the implementation of programs aimed at changing behaviours that negatively influence mental health (Chan, 2010).

The growing global concern has seen the upsurge of a number of cross-national research projects focusing on the prevalence and comparisons of mental disorders in adolescent populations. The most common of mental disorders found in the adolescence

period are depression and anxiety, with prevalence rates identified both in national and international jurisdictions. For example, Giel et al (1981) found a range of 12% to 29% in the prevalence of mental disorders in children 5 to 15 years olds in low income countries. Another study found that prevalence ranged from 28% to 38% in low income countries (Latin America and the Caribbean) and 31% to 40% in high-income countries (European) (Steel et al., 2014). A study done on Trinidad secondary school students found 25% prevalence rate of depression, with a ratio of 1:4 for those with and those without depression respectively (Maharajh et al., 2006; Maharaj et al., 2008). Similarly, the United Nation General Assembly Report (2010) demonstrated a global prevalence of 20% of young people experience mental health disorders each year (Chan et al., 2010). However, there was as much as 15% discrepancy in the rates of depression between countries, indicating the need to further understand cross-cultural differences. Such disparities in prevalence across nations are unlikely confined only to cultural (Caldwell-Harris & Aycicegi, 2006), social (Crone & Dahl, 2012) and methodological (Polanczyk et al., 2007) differences, but also the severity of the symptoms. Not discounting the relevance of diagnostic assessment in these aforementioned studies, the severity of self-reporting depression and anxiety symptoms below diagnostic threshold are of equal relevance to the well-being of adolescents. Since increasing severity of symptoms will occur before meeting a diagnostic threshold, it is important to examine anxiety and depressive symptoms, even before a diagnostic level is reached. These symptoms provide early warnings and can be applied in anticipation of the need for care.

A relatively large number of studies have shown that social challenges of the adolescent period, including interpersonal relationships (Patterson & Capaldi, 1990; Kochel et al., 2012) and academic attainment (Andrew & Wilding, 2004; Quiroga et al., 2012) can contribute to mental illness. When faced with negative or poor peer relationships, the severity of mental health symptoms increases to the extent to which problems weigh heavy on the

individual psyche (Panak & Garber, 1992). This indicates that poor peer relationships are a risk factor for distress and feelings of loneliness which, in turn, are shown to lead to depression and anxiety in adolescents (Zimmer-Gembeck & Pronk, 2012). With peer relations taking priority, parental support gradually declines during the period of adolescence (Rubin, Bukowski & Parker, 2006; Furman & Buhrmester, 1992). The myriad of emerging relationships in adolescence enhances the identity phase, therefore, the need for peer acceptance is important for good quality functioning (Rubin et al., 2006). There is also evidence that adolescents experiencing emotional dysfunction lack the ability to maintain healthy relationships (La Greca & Lopez, 1996) and, therefore, a vicious cycle of mental illness can emerge (La Greca et al., 1998).

These challenges associated with maintaining friendship can be as a result of the worsening of the depression and anxiety symptoms (Rapaport et al., 2005), especially when these two psychopathologies co-occur (Becker et al., 2012). In spite of the negative consequences of both depression and anxiety, depression seems to have greater negative effect on functioning than anxiety (Rose et al., 2012). There is evidence supporting the seemingly "softening role" of anxiety in its co-occurrence with depression (Cunningham & Ollendick, 2010) and its protective mechanism in possibly curbing socio-emotional and impulsive/cognitive control systems during peer rejection (Jarreth & Ollendick, 2008). As such, it is important to examine the effects of depression and anxiety on peer functioning both when they co-occur and occur independently. Such investigation is important in understanding the quality of relationships that will exist and the impact of symptoms above and below the clinical cut-off.

Similarly, associations between academic attainment and depression and anxiety indicate that poor grades and the retention of poor grades are influenced by severe depression

and anxiety (Quiroga et al., 2012). In two schools in the UK, Owen et al. (2012) found that lower academic achievement was associated with higher levels of symptoms in depression and anxiety. Research on developmental psychology suggested that failure in academic performance can result from the inability to self-regulate in the school environment, which in turn leads to perceived incompetence, followed by depression and anxiety. In other words, this situation can begin in childhood at the elementary level and subsequently become rooted at secondary school when adolescent's grades are affected. However, few studies have investigated the extent to which depression and anxiety are associated with lower educational attainment (Kessler et al., 1995; Quiroga et al., 2012). One longitudinal study done on high school students in Australia found prior mental health did not predict school relatedness (Shochet et al., 2006). Instead, most studies have examined the effects of socio-environmental factors on the severity of depression and anxiety (Kaltiala et al., 1999; Marano, 2002; Hawker & Boulton, 2000; La Greca & Moore Harrison, 2005; Sowislo & Orth, 2013). However, over recent times research have examined the reverse role of depression in the association with peer functioning (Nolan et al., 2003). For example, Chin & Li (2000) found that depression was negatively associated with social relations and school achievement over time.

The impact of depression and anxiety on educational attainment, from elementary to tertiary level, has implications for failure in academic achievement among adolescents (Freudenberg & Ruglis, 2007). Research has shown that depression in the younger adolescents can predict school drop-out in later years (Rosa et al., 2003; Copeland et al., 2009). The symptoms of depression can precipitate negative affect to the individual self-perception of academic competence and the negative moods attached can hinder positive cognitive ability (Kovacs & Goldstone, 1991). Preconceived notions of academic incompetence can propel someone to believe that there is less likelihood of finishing school

at the required levels and therefore school engagement becomes problematic (Quiroga et al., 2013). Therefore, investigating grades in relation to anxiety and depression is important so as to identify young people at high risk of not completing their schooling.

The exacerbation of the fears of incapable academic achievement can continue to be problematic, and as such worsen fears associated with emotional states such as anxiety (Van Ameringen et al., 2003; Albano et al., 1998). Stein et al. (1996) reported an increase in anxiety, from 50% to 90%, as persons grow older. This increase suggests fear symptoms rise to higher level of severity as the individual develops from childhood to adolescence during school life and can disrupt academic performance. It seems likely that adolescents who experience severe anxiety symptomatology refuses to attend school (Berg, 1992; Berstein & Garfinkel, 1986). Similarly, Reinherz et al. (1991) found that self-reported high levels of depression symptoms were associated with impaired academic performance. It is plausible that the severity of symptoms can play a crucial role in impairing the ability to function academically (Frojd et al., 2008; Riley et al., 1998). However, in a later study, Reinherz et al. (1993) found no association between major depression and academic competence. Therefore, the inconsistencies in these associations seem to warrant further investigations.

To investigate the association between different levels of depression on school performance, Frojd et al. (2008) conducted a study on adolescents aged 13-17 years attending secondary school. They found that the severity levels of depression were more prevalent in participants whose grade point average (GPA) declined. Furthermore, girls reported 13% moderate and 5% severe depressive symptoms while boys reported 8% moderate and 3% severe depressive symptoms.

The effect of mental illness on functioning and school grades could be the result of biological changes or psychosocial ones. When depressed and/or anxious, the adolescent

brain experiences disruption in the information processing system (Eysenck et al., 2007). High levels of anxiety disrupts working memory (Calhoun & Mayers, 2006), coupled with the slow maturing cognitive control system (Steinberg, 2008). However, not all adolescents experiencing emotional problems show a decline in academic performance (Dumont & Provost, 1999). With regards to peer functioning, the adolescent experiences emotional dysregulation which has been found to be a characteristic of depression. Furthermore good interpersonal relationship plays a protective role in maintaining emotional regulation in adolescents with depressive symptoms (Kring & Sloan, 2010; see review Bylsma et al., 2008). The socio-emotional system of the adolescent becomes instantly activated when overburdened with dysfunctional social interactions (Steinberg, 2007). Considering the importance of peer relations and how they comprises of reward seeking and acceptance, adolescents with symptoms of depression and anxiety can experience decline in a number of self-evaluations, such as self-esteem and self-worth, leading to social withdrawal (Ferro & Boyle, 2015). However, not all adolescents experiencing emotional problems show a decline in academic performance (Dumont & Provost, 1999).

Concomitantly, there is evidence to suggest that depression and anxiety symptoms have the proclivity to induce negative effects on social relationships (Rudolph, 2009) and educational achievement (Freudenberg & Ruglis, 2007; Kovacs & Goldstone, 1991). There is also evidence that there is no support for the assumption that depression and anxiety predicted peer relations (Siegel et al., 2008) and grades (Shochet et al., 2006). These results indicate conflicting views on depression and anxiety predicting peer function and grades. Yet there is scarce research investigating the consequence of grades when negatively impacted by depression and anxiety in adolescence. Therefore, considering the wide ranging negative impact of depression and anxiety on life course, it is vital to understand these disorders among adolescents. Also, it is important to examine the extent to which the severity of

depression and anxiety symptoms affect grades and peer functioning. To my knowledge, few studies have examined the impact of depression and anxiety on students' academic performance and interpersonal relationships focusing on the severity of symptoms (Dyrbye et al., 2006; Kessler et al., 2012b; Quiroga et al., 2013). Furthermore, no study was done comparing developed and developing countries, especially for those countries such as Trinidad which inherited its education system from Britain (Lisle et al., 2010).

The past Crown Colony ruled for Trinidad and the present British system may reflect entrenched similarities between these countries. While a number of changes have been made in five decades since Trinidad independence, there may still be sectors of the Trinidad education system that mirrors that of the British, as well as, some different aspects. For example, the Common Entrance Examination (CEE) adapted by Trinidad from the United Kingdom in 1960 still holds with Trinidad and Tobago. Therefore, it is interesting to compare data on how mental health is associated the educational achievement and peer functioning in both Trinidad and British school students. Findings from this study will be important in a number of ways. First, will narrow the gap in the cross-national inconsistencies in mental health prevalence rate, as well as add knowledge to the literature on how mental health predicts peer functioning in the two school systems. Second, the data will improve on the scarcity of national statistics on mental health symptoms among adolescent and children in Trinidad, particularly symptoms relating to common disorders like depression and anxiety. Most importantly, findings in this study has implications in facilitating policy makers and other stakeholders in drafting intervention programs and policies for the prevention and intervention of young persons experiencing these symptoms.

The aims of the study are to:-

(i) Determine the prevalence of depression and anxiety symptoms in British and Trinidad adolescent population;

(ii) Investigate the association between the severity of depression and anxiety symptoms and peer functioning and grades in a British and Trinidad adolescent population;

(iii) Determine whether anxiety, in the absence of depression, impacts similarly on peer functioning and grades as when depression and anxiety co-occur.

9.1 Hypotheses and data analysis

All data was analysed using (SPSS) version 21(IBM SPSS statistics 2013).

Hypothesis 1: There will be similar prevalence rates of depression and anxiety in Trinidad and British adolescent population.

To evaluate and compare the prevalence of depression and anxiety, the symptoms of depression and anxiety rated on the DASS were evaluated as continuous and categorical one. DASS depression and DASS anxiety variables were recoded into 1) normal, 2) mild, 3) moderate, 4) severe and 5) extremely severe symptom levels, in accordance with the DASS severity-rating index (Lovibond & Lovibond, 1995). Subsequently, cross-tabulation was conducted. Correlational analyses were done to investigate the correlation between the predictor variables (depression and anxiety).

Hypothesis 2: Having high levels of anxiety and depressive symptoms will be associated with reduced grades and poor peer functioning in both Trinidadian and British adolescents; and

Hypothesis 3: Having high levels anxiety symptoms, in the absence of significant depressive symptoms, will not be associated with reduced grades and poor peer functioning in both British and Trinidadian adolescents

To investigate hypothesise 2 and 3, depression and anxiety was again recoded. Using the DASS severity rating index (Lovibond & Lovibond, 1995), normal and low categories were coded 0, and moderate, severe and extremely severe were grouped and coded 1. Four groups were then formed and coded as "low depression-low anxiety"; "low depression-high anxiety"; "high depression –low anxiety"; and "high depression-high anxiety". Grades were categorised into two groups "Mostly As-Bs=high grades" and "Cs-below Ds=low grades". Generalized Linear Models were used to evaluate the effects of depression and anxiety on peer functioning and grades. Both modeled were statistically controlling for gender and age.

Longitudinal data (one year follow-up) was available for the Trinidad sample only. To examine whether poor grades or low peer functioning at T1 predicted depression and anxiety at T2, generalized linear models were repeated with DASS-depression and DASS-anxiety at T2 as the outcome.

9.2 Results

9.2.1 Sample description

The sample in this study comprised of the Trinidad sample described previously and data from a study conducted in Birmingham in 2013-2014 (Lin et al., in preparation). The Birmingham sample comprised of adolescents assessed in their schools in Birmingham area. The Birmingham sample (N=302) comprised of 175 males and 127 females. The Trinidad sample (N=427) comprised of 228 males and 199 females. Of a total of 729 participants 2 had over 25% of their DASS data missing. They were excluded from further testing and

analysis was conducted on the remaining 727 participants in total. The characteristics of these samples are described in Table 9.1. There were significant differences in age [t(727)=-3.09, p=.002] but no difference in gender distribution [$\chi^2(1)=1.48$, p=0.22] between Birmingham and Trinidadian adolescent samples. There were significant differences in peer functioning [t(711)=10.61, p<0.001] but not grades [$\chi^2(1)=1.36$, p=0.24].

Table 9.1 Descriptive Sample of Trinidad and Birmingham

	Trinidad		Birmingham		Group comparison statistics		
	M	SD	M	SD	t	df	p-value
DASS-depression	10.49	9.14	10.20	9.84	0.40	7, 720	0.69
DASS-anxiety	10.14	7.82	8.15	7.66	3.35	7, 705	0.001
DASS-stress	12.69	8.42	12.20	9.57	0.70	7, 700	0.486
MAFS-general	28.04	5.92	30.41	4.99	-5.74	7, 705	0.000
MAFS-peer	15.81	3.74	18.61	3.25	-10.33	7, 711	0.000
MAFS-family	19.86	4.84	23.11	3.86	9.94	7, 712	0.000
Age	15.04	0.90	15.64	3.29	-3.09	7, 727	0.002
	N	%	N	%	Chi Sq	df	p-value
Gender (male)	228	53.4	175	57.9	1.48	1, 728	0.223
Grades: High	242	56.7	158	52.3	1.36	1, 728	0.244
Low	185	43.3	144	47.7			

9.2.2 Prevalence of depression and anxiety

The mean and SD for DASS depression and anxiety symptoms for each sample are presented in Table 9.1. The samples did not differ significantly in depressive symptoms. The Trinidadian sample showed significantly higher anxiety symptoms.

The proportion of participants in Birmingham and Trinidad in each severity range on the DASS is shown in Table 9.2. Most participants fell within the normal range on depression (n=488; 69.5%) and anxiety (n=416; 58.8%). However, 31.5% of the Trinidadian sample and 29.1% of the Birmingham sample showed moderate, severe and extremely severe symptoms of depression. 47.0% of the Trinidadian sample and 32.6% of the Birmingham sample showed moderate, severe and extremely severe symptoms of anxiety.

Table. 9.2 Levels of DASS depression and anxiety in Trinidad and Birmingham.

	Normal		Low		Moderate		Severe		Extremely severe	
	N	%	N	%	N	%	N	%	N	%
Depression										
Trinidad	231	55.5	57	13.6	70	16.7	37	8.8	25	6.0
Birmingham	165	58.5	35	12.4	36	12.8	24	8.5	22	7.6
Anxiety										
Trinidad	191	45.3	33	7.8	80	19.0	59	14.0	59	14.0
Birmingham	170	59.6	22	7.7	44	15.4	13	4.6	36	12.6

9.2.3 The co-occurrence of depression and anxiety and association with peer functioning and grades.

In both samples, a majority of the sample showed low depression and low anxiety (see Table 9.3). The next highest proportion was for high depression and high anxiety, with 27.4% of the Trinidadian sample and 21.9% of the Birmingham sample falling in this group. Low depression and high anxiety was the next most common and high depression and low anxiety was the least common presentation.

Table 9.3. The proportion of participants in Trinidad and Birmingham in each severity range on the DASS

	Low Dep / Low Anx	Low Dep / High Anx	High Dep / Low Anx	High Dep / High Anx
Trinidad				
N (%)	207 (49.3%)	81 (19.3%)	17 (4.0%)	115 (27.4%)
Peer functioning, M (SD)	16.41 (3.60)	16.07 (3.78)	13.47 (4.82)	15.02 (3.56)
High grades, N (%)	123 (51.5%)	48 (46.1%)	8 (3.3%)	60 (25.1%)
Low grades, N (%)	84 (46.4%)	33 (16.2%)	9 (5.0%)	55 (30.4%)
Birmingham				
N (%)	167 (60.1%)	29 (10.4%)	21 (7.6%)	61 (21.9%)
Peer functioning, M (SD)	19.10 (3.08)	19.41 (2.76)	17.81 (3.61)	17.43 (3.57)
High grades, N (%)	97 (65.1%)	17 (11.4%)	13 (8.7%)	22 (14.8%)
Low grades, N (%)	70 (54.3%)	12 (9.3%)	8 (6.2%)	39 (30.2%)

9.2.4 Associations of depression and anxiety with peer functioning and school grades

9.2.4.1 Trinidad: The group with high depression/low anxiety had significantly lower levels of peer functioning than the low anxiety/low depression (reference) group (see Table 9.3). They were on average 2.95 points lower on the MAFS peer functioning scale. The high depression/high anxiety group also had significantly lower levels of functioning than the reference group and was on average 1.39 points lower on the MAFS. The low depression/high anxiety did not differ significantly from the reference group in terms of peer functioning. None of the groups differed from the reference groups in terms of school grades (see Table 9.4).

9.2.4.2 Birmingham: The group with high depression/high anxiety had significantly lower levels of peer functioning than the low anxiety/low depression (reference) group (see Table 9.4). On average they scored 2.04 points lower on the MAFS peer functioning scale than the reference group. The low depression/high anxiety and the high depression/low anxiety groups did not differ significantly from the reference group in terms of peer functioning. In regard to school grades, the high depression/high anxiety group had significantly higher odds ratio for poor grades than the reference group (see Table 9.5). They had 2.44 times the odds for poor grades compared to low depression/low anxiety.

Table 9.4 Generalised linear model for depression/anxiety groups predicting peer functioning

	B	Wald's Chi square	95% CI for Wald	p-value
Trinidad				
Low Dep / Low Anx		Reference group		
Low Dep / High Anx	-0.30	0.40	-1.23, 0.63	0.53
High Dep / Low Anx	-2.95	10.36	-4.75, -1.15	0.001
High Dep / High Anx	-1.39	10.81	-2.22, -0.56	0.001
Birmingham				
Low Dep / Low Anx		Reference group		
Low Dep / High Anx	0.17	0.07	-1.05, 1.39	0.79
High Dep / Low Anx	-1.22	2.92	-2.62, 0.18	0.09
High Dep / High Anx	-2.04	18.38	-2.98, -1.11	<0.001

Note: All analyses corrected for age and gender

Table 9.5 Generalised linear model for depression/anxiety groups predicting grades

	B	Exp(B)	Wald's Chi Square	95% CI for Wald	p-value
Trinidad					
Low Dep / Low Anx			Reference group		
Low Dep / High Anx	0.01	0.97	0.01	-0.57, 1.67	0.22
High Dep / Low Anx	0.51	1.67	0.95	-0.60, 4.66	0.33
High Dep / High Anx	0.30	1.35	1.53	-0.89, 2.17	0.92
Birmingham					
Low Dep / Low Anx			Reference group		
Low Dep / High Anx	-0.01	0.95	7.71	-1.30, 4.57	0.89
High Dep / Low Anx	-0.11	0.90	0.05	0.35, 2.29	0.82
High Dep / High Anx	0.90	2.44	0.02	0.42, 2.15	0.005

Note: All analyses corrected for age and gender

9.2.5 Changes in grades over time in relation to levels of depression and anxiety

Participants with high depression-high anxiety and with high depression-low anxiety at T2 had significantly poorer functioning at T1 than the reference group (low depression-low anxiety). The low depression-high anxiety group did not differ in their peer functioning at T1 from the reference group (see Table 9.6)

In terms of grades at T1 predicting depression and anxiety at T2, participants with low depression-high anxiety at T2 were 3.82 times more likely to have good grades at T1 than the reference group (low depression-low anxiety). The grades at T1 for the participants with high depression-low anxiety or high depression-high anxiety did not differ from the reference group (see Table 9.7).

Table 9.6 Generalised linear model for peer functioning at T1 predicting depression/anxiety at T2 for the Trinidad sample

	B	Wald's Chi square	95% CI for Wald	p-value
Low Dep / Low Anx		Reference group		
Low Dep / High Anx	-0.24	0.22	-1.23, 0.75	0.64
High Dep / Low Anx	-2.27	3.84	-4.55, 0.00	0.050
High Dep / High Anx	-1.07	6.89	-1.87, -0.27	0.009

Table 9.7. Generalised linear model for grades at T1 predicting depression/anxiety at T2 for the Trinidad sample

	B	Exp(B)	Wald's Chi Square	95% CI for Wald	p-value
Low Dep / Low Anx			Reference group		
Low Dep / High Anx	-0.57	0.56	3.82	-1.15, 0.00	0.051
High Dep / Low Anx	1.65	5.23	2.40	-0.44, 3.75	0.12
High Dep / High Anx	0.06	1.06	0.07	-0.41, 0.53	0.80

9.3 Discussion

This aim of this study was to investigate the prevalence rate of depressive and anxiety symptoms in British and Trinidadian adolescents from community samples. This study also aimed to determine the association between symptoms of depression and anxiety and peer functioning and grades in adolescents from both Trinidad and Birmingham. As hypothesized, the results from this study illustrated a prevalence estimate of depressive symptoms similar for both Trinidadian and British adolescents but a difference between countries for anxiety symptoms. High depression and anxiety were associated with poor peer functioning and low grades. When depression was significantly low and anxiety was high, peer functioning and grades show no decline both in Trinidadian and Birmingham samples.

As hypothesized the prevalence rate of depressive symptoms was similar for Trinidad and Birmingham. The same was hypothesized for anxiety, but, in contrast, anxiety estimates were significantly higher in Trinidadian adolescents. The prevalence rates for depressive and anxiety symptoms reported in this study is somewhat higher than those in previous studies (see review, Peterson et al., 1991; Maharaj et al., 2008; Mikolajczyk et al., 2008). Evidently, prevalence derived from clinically diagnostic assessment is quite low, however, self-reporting on depressive and anxiety symptoms, in addition to much higher rates, show variation across culture. Such variation may have originated from cultural differences underlying different types of assessment tools that are utilized through-out the literature. To measure depression and anxiety in adolescents researchers use a number of different measurements yielding different prevalence estimates including, Beck's Depression Inventory (BDI-II)-depression 19% (Maharaj et al., 2008); Reynolds Adolescent Depression Scale (RADS)-depression 14% (Maharajh et al., 2006) Children's Depression Inventory (CDI)-depression10% (Ollendick & Yule, 1990); Revised Children's Manifest Anxiety Scale (RCMAS)-anxiety 17% and Liebowitz Social Anxiety Scale (LSAS)-anxiety 16% (Russell & Shaw, 2009). Furthermore,

Marahajh and his colleagues generated their sample population from only one geographic area in Trinidad, in addition to which the RADS was validated in a U.S. population with a score of 77 as a cut off point for severity. This suggests that there is need for standardized or culture normative instruments that will rectify these inconsistencies and offer a clearer understanding of depression and anxiety in different cultures. Previous studies conducted on students in the United Kingdom (Charman & Pervova, 1996) and Trinidad (Maharaj, 2005, 2007, 2008) population show much lower depression and anxiety prevalence rates. Interestingly, Bayram and Bilgel, (2007) conducted a study using the DASS and the depression and anxiety prevalence rates were in line with the findings of the present study- 27.1% and 47.1% depression and anxiety respectively.

The high levels of anxiety in this study is cause for concern considering its instigative role in the onset of depression and other shared vulnerable mental illnesses during adolescence (Essau et al., 2000; Letcher et al., 2012). Even though previous studies done on Trinidad population is almost two decades ago, during which time socio-demographics have changed insignificantly (U.S. Central Intelligence Agency, 2011), the high rate of anxiety among Trinidad adolescents informs of a significant change in anxiety during those years. It is possible that the early onset of anxiety normally found in adolescent can also play a significant role in its high prevalence difference between Trinidad and Birmingham adolescents; the Trinidad sample was significantly younger. The plethora of evidence showing that anxiety often precedes depression and is more common in younger individuals (Cartwright-Hatton et al., 2006; Cartwright-Hatton, 2013; Hersberg et al., 1982; Hankin, 1999; Sweeting, 2006; Fichter et al., 2010; Cummings et al., 2014) qualifies the argument that the higher anxiety rates are found in Trinidadian adolescents. Furthermore, with the co-occurrence of depression, therein lies the greater likelihood of anxiety rates being much higher than depression rates (Avenevoli et al., 2001).

The current study showed that high depression and anxiety symptom levels are associated with poor peer functioning and reduced grades in adolescents. The more severe the depression and anxiety symptoms, the poorer will be peer functioning and the lower the grades in Birmingham adolescents. This finding is in line with previous studies illustrating that the effects of depression and anxiety can challenge the individual ability to retain a particular grade and maintain good social relations (Quiroga et al., 2012, 2013; Kessler et al., 1995; Lewinsohn et al., 1995). Notwithstanding the use of DSM diagnosis in previous research, self-reporting anxiety and depressive symptoms from the general population show no difference in symptoms severity and its impact on functioning (Knappe et al., 2009; Goodman et al., 2008). In this study the comorbidity of high depression and high anxiety, in relation to peer functioning, demonstrated that the effect was larger for Birmingham adolescents. Similarly, in relation to grades when depression and and anxiety were both high the effect was greater for students from Birmingham than for Trinidad. Furthermore, the impact was greater for Birmingham adolescents than for Trinidadian adolescents. For Birmingham students, to every point increase/change of depression and anxiety peer functioning significantly declines by 2.04 points on the MAFS and for Trinidadian students there is a significant decline of 1.39 points. With respect to grades, to every point increase/change of depression and anxiety grades decline by 2.44 points on the MAFS for Birmingham youths. Interestingly, this study shows that peer functioning is higher in Birmingham population, depressive symptoms are similar in both populations and anxiety higher in Trinidad. Yet, there was still a greater decline in peer functioning when depression and anxiety increased for Birmingham adolescents. This highlights the greater importance for peer functioning in the Birmingham adolescents than the Trinidadian adolescents. This finding supports previous findings which demonstrated that peer relationships have greater significance in late adolescence (Rudolph, 2009): Birmingham adolescents were older.

The co-occurrence of anxiety and depression symptoms has been associated with a reduction in functioning that is greater than the sole existence of either state (Bernstein, 1991; O'Neil et al., 2010). Therefore, it will take a greater effort by Birmingham adolescents to acquire good peer relations especially when experiencing symptomatic anxiety and depression concurrently. However, the temporal onset characterizing anxiety and depression in comorbidity may shed some light on precipitation in the severity of both symptoms. Following the antecedent nature of anxiety co-existing with depression, it remains plausible that in the anxious Trinidadian adolescents their comorbid depression may increase the severity of their anxiety experience without much decline in functioning (Guberman & Manassis, 2011). Conversely, depression being associated with older adolescents in Birmingham population it is logic to suggest that their comorbidity with anxiety may not increase their severity of depression (Bernstein, 1991). However, being older and indicatively more depressed they tend to be more symptomatic hence having poorer peer functioning.

Additionally, Birmingham students show a greater tendency for having low grades when both depression and anxiety was high as compared to Trinidadian students who show no difference in grades. For Birmingham, every point increase/change in depression and anxiety grades decline significantly by 2.44 points. The unit decline for reduced grades may be as a result of the greater severity in comorbidity in Birmingham youths than Trinidadian adolescents, which further leads to greater overall symptom severity**.** Therefore, with the British adolescents there is a greater impact of depression and anxiety on the reduction of grades than that of Trinidadian adolescents. When grades continue to decline the motivation for learning also declines leaving the adolescent in a state of perplexity as to whether they are indeed capable of academic success. Facing the consequence of low grade retention where the adolescent is kept behind can trigger a further rise in emotional disturbance. The

adolescent now has to deal with the perceived mixed feelings of his peers and teachers which can manifest further academic decline. Such preconceived notions fuel the feeling of low self-esteem, decrease in school interest and subsequent school drop-out (Nolan-Hoeksema et al., 1992; Quiroga et al., 2012). 30% of adolescent drop out of school following inability to cope with grades retention. When this situation is compounded with symptomatic depression and anxiety, premature school leaving prevalence reaches to as high as 50 % (Wagner et al., 2005).

Interesting findings emerged with regard to high levels of anxiety, in the absence of significant depressive symptoms group in both the Trinidadian and Birmingham sample: this group did not show poorer grades or peer functioning than participants with low depression and anxiety. Although the association was similar in the Birmingham sample, it was only at trend level significance ($p=0.09$) and is inconsistent with previous findings which illustrate the increasing risk of anxiety in academic under-achievement and poor relations (Kessler et al., 1994, 1995). The results of this study emphasize the contrasting impact of low depression and high anxiety on peer functioning. In the British adolescents, the rise in anxiety seems to be a protective factor only when co-existing with low depression but becomes very risky, for adolescents to function adequately with peers, as depression becomes high. Conversely, in Trinidadian adolescents high anxiety is not a protective factor when co-existing with low depression but decreases peer functioning significantly when co-existing with high depression. A probable explanation for the difference in high anxiety levels between Britain and Trinidad adolescents leans towards the assumption that Birmingham students seem to be better able to copy with worrying by utilizing alternative means of dealing with anxious feelings (Esysenck & Calvo, 1992). The use of adaptive coping strategies have shown to be a protective factor for depression and anxiety in adolescents (Garnefski et al., 2002). High anxious states instill fear that has the likelihood of marked inhibition on social integration in

both the learning environment and within interactive settings. Likewise, high depression tends to increase the severity of symptoms preventing the adolescent from functioning in socially acceptable ways. The co-occurrence of both anxiety and depression are associated with negative outcomes such as poor peer functioning and low grades. These results suggest that the debilitating effects and negative consequences of depression and anxiety both independently and comorbidly will put adolescents at risk for dysfunction social integration (Kovacs et al., 1991). The two fundamental aspects of adolescents' lives, namely, identity formulation and academic attainment seem to be compromised by high depression and anxiety. Failure to address moderate to severe levels of depressive and anxious symptoms can potentially erode feelings of belongingness and academic success in the lives of adolescents and critically hampering future growth and development.

9.3.1 Implications

This study demonstrated that high depression and anxiety symptoms are associated with academic performance and peer functioning. The results of this present study may be used to inform intervention and prevention programs geared towards the integration of the study of mental health in schools that will enhance positive development and upgrade specifically designed programs (Becker & Luther, 2002; Aviles et al., 2006; Adelman & Taylor, 2010). Prevention and intervention programs focusing on enhancing adolescents emotional well-being would assist academic performance and by extension school retention. This would likely have an effect in both the short and long term. Interestingly, a number of schools-based interventions fail to address the reduction of pathological symptoms and instead focus on remedying low academic performance (Jimerson et al., 2006). A number of programs can be employed singly or can be combined so as to have a stronger effect on recovery (Chu et al., 2012). For example, Social Skills Training (SST; Spence, 1995) enhances social competence in children and adolescents involving a number of techniques including cognitive

restructuring, relaxation techniques and social skills exposure over a 12 week period. Another program previously tested is the Cognitive Behavioural Group Therapy for Adolescents (CGBT-A; Albano et al., 1995), involving 16 group sessions each lasting 90 minutes and involves cognitive restructuring, problem solving social skills and behavioural exposure. The most recent of these programs is the Skills for Academic and Social Success (SASS) program (Masia-Warner et al., 2005). These programs were found to significantly reduction in anxiety rates (as compared to control group; SST = 87.5% vs 7%; CGBT-A = 67% vs 5%; SASS = 67% vs 2%; Spence, 2000; Beidel et al., 2000; Masia-Warner et al. 2005). All these programs have promise in providing coping skills for adolescents while reducing psychopathology.

Peer support programs have been developed with young people where those who are able to manage their pathological challenges subsequently provide services that will improve the outcome of others (see review Rones & Hoagwood, 2000; Davidson et al., 2013). The inclusion of peers who are managing their mental illness can be employed at schools to facilitate a sense of hope to the recipient (Solomon, 2004) as well as a reduction in stigma that is aligned to people with mental health problems (Davidson et al., 1997, 1999).

In spite of these intervention programs, providing mental health awareness and treatment to adolescents remains a challenge. The most appropriate setting for recognizing and intervening in mental illness in adolescent is at school where young people spend a majority of their time. The school system needs to address the scarce availability of mental health services and the reluctance by young persons in seeking treatment (Weist, 1999), especially in a country such as Trinidad. The school system will also allow for effective communication among all stakeholders such as parents, teachers and mental health professionals. They can collaborate to formulate and implement appropriate programs geared towards the adolescent's needs. Adolescents demonstrating academic failure should be thoroughly screened for depressive and anxiety symptoms so that early intervention can be implemented.

Although there is a high prevalence rate of depression and anxiety among adolescents, not every adolescent experience psychopathology. This reinforces the important role of resilience and coping strategies (Nolem Hoeksema, 1998; Alim et al., 2008). Outcomes vary across culture and psychiatric conditions (Matheson & Anisman, 2003) because of the processes involved in coping strategies. Resilience and coping programs may be carried out separately, however, optimum results are gained when operationalized at the same time or in succession (Tennen et al., 2000). It seems, therefore, that investigating resilience and coping strategies in depression and anxiety experiences will provide better understanding of why some adolescent experience mental health problems under similar and different circumstances and some do not.

9.3.2 Strengths and weaknesses of the study

There are a number of strengths of this study. The age range included is the peak age for onset of depression and anxiety in adolescence (Pine et al., 1998). It is important to research these ages since this is a time of remarkable physical, behavioural and neurological changes associated with significant impairment. These changes tend to influence the imprecise workings of the socio-emotional and cognitive control systems, which incorporates cognitive functioning, interpersonal relations and reasoning (Paus et al., 2008). Mental health problems associated with these changes tend to persist as the developmental pathways coincide with psychosocial and environmental factors that may further lead to psychopathological consequences (Kessler et al., 2005). The DASS and MAFS were utilized for both Trinidadian and Birmingham adolescents for assessing depression, anxiety and peer functioning were utilized in this study. Therefore, the cutoff points for the DASS were similar in depression and anxiety for both Trinidad and Birmingham, maximizing equivalence and minimizing potential differences in prevalence estimates. It has therefore been difficult to gauge whether the relatively high levels of student distress observed in recent studies actually

represent an increase in disturbance from pre-college levels. Both positive and negative changes were apparent in anxiety and depressive conditions from before university entry to mid-course.

Several shortcomings of this study suggest areas that will need to be addressed. First, assessment for depression and anxiety was done through self-reporting. Teachers, parents and peers may also be valid source of information on depression and anxiety in these adolescents. Second, a clinical sample verified by clinical expertise should be incorporated in this study that will give the opportunity to compare prevalence in symptoms and clinically diagnosed adolescents. This will determine whether there is a difference between non-clinical and clinical anxiety and depression in these two cultures. Third, the analyses here were cross-sectional. Future longitudinal research is needed to determine causation and identify whether depression and anxiety cause decline in peer functioning and grades or vice versa. Also, to differentiate between concurrent comorbidity and sequential comorbidity so as to garner better understanding of the anxiety-depression age of onset. Such findings will enable assumptions on differences in the effects of depression and anxiety on peer functioning and grades when adolescents were experiencing depression and anxiety symptoms separately and co-occurring. Since there are continuous attempts to improve the school systems policy makers can lose sight of the emotional and psychological needs of adolescents. Rather, authorities focus on students' school achievements and misconduct and they fail to recognise that school-based intervention should be best-fitted with both academic success and positive emotional state.

9.3.3 Conclusion

In this population of adolescents, high depression and anxiety seems to significantly lower peer functioning. Such finding builds on a large body of knowledge that implicates peer

support systems as interventions strategies for individuals with severe mental health illnesses (Sherman & Porter, 1991; see review Davidson et al., 1999; Davidson et al., 2012). Peer providers offer a sense of hope to recipient that they prevail over the illness (Solomon, 2004; Solomon & Draine, 2001), be a role modeling for to others and develop mutual trust (Mead et al., 2001). There is also a need for mental illness screening when adolescents are obtaining poor grades at school. This will facilitate early recognition of a number of risk factors that are obstructive to learning and the ability to focus in the classroom. Often times, failing students are retained in their present grade and seldom given the opportunity to be assessed for mental illnesses (Mattison, 2000). Holding back the student may not always solve the problem. The instituting of effective Special Education Learning within the same school environment, for the failing student (Weist, 1999) can elevate academic attainment and enhance social reintegration (Strain et al., 1983).

CHAPTER 10

Discussion

10.0 Summary of thesis aims

The aim of this thesis was three fold. First, this thesis aimed to investigate the longitudinal impact of the association between stress and subclinical psychotic experiences (SPEs) and the potential moderating effects of peer and family functioning in this association in a sample of 427 adolescents (study 1). Second, in order to thoroughly identify SPEs in the population, this research aimed to explore the different subtypes of SPEs in a general population sample and how bullying differentially impacts on subtypes of SPEs (study 2). Third, with adolescence the hallmark of this thesis, we examined the prevalence of depression and anxiety, and their effect on peer functioning and grades in 729 adolescents in two different populations-Trinidad and Britain (study 3).

10.1 Study 1

There are several reasons that this is an important study. There is evidence that individual responses to daily life stress are associated with high levels of psychotic experiences, which can result in psychotic disorder (Myin-Germeys & van Os, 2007). However, many previous studies have failed to examine the strength of the association over time. In addition, research on adolescent samples has focused mostly on stressful life events and psychoses, while the impact of day-to-day stress on SPEs remains largely unexplored. Similarly, although stress is known to play a pivotal role in the development of SPEs, factors that can ameliorate the magnitude of this transition are not clearly established. It is well documented that poor peer and family functioning are essential risk factors associated with the increase of negative emotional states and development of psychopathologies. As such,

this study focused on investigating how family and peer functioning moderates the association between stress and SPEs with the intention to offer both theoretical models and a clearer understanding SPEs. We also examined how age and gender influenced this association.

This study showed a number of interesting findings: We confirmed that daily life stress is a significant predictor of SPEs both cross-sectionally and longitudinally, giving a clearer understanding of this association. The variation in the strength of association at T1, T2 and over time (moderate, strong and weak, respectively) indicates that stress was at its highest level at T2 with 29% variance explained in its association with SPEs when the adolescents were older. However, it is possible that as time passed they were able to employ coping mechanisms that may have reduced their stress levels (e.g. see Khrone, 2002), thereby ameliorating the strength of this association having an explained variance of 12% over time. It was also shown that family functioning played a significant role in the development of SPEs at all time points and over time, but only for males. This suggests that when family functioning declines, SPEs increase. On the other hand, peer functioning which did not predict SPEs at any time in the study. However, both peer and family functioning moderated the impact of stress on SPEs only over time and in females. This suggests that family and peer functioning was important to females only when they were stressed. Age and gender influence show significant differences in how peer and family functioning moderated the association between stress and SPEs. Although there was no significant difference in how stress impacted on SPEs with both males and female adolescents, younger and older male adolescents were more likely to appreciate family ties. The females enjoy closer ties with their peers and family when stress levels impacted on SPEs. These findings suggest that family cohesion is a protective factor at the time of heightened vulnerability to psychological and emotional dysfunction in adolescence (Greenberg et al., 1993).

The findings in this study were in line with limited previous studies illustrating daily life stress associated with SPEs (Lincoln et al., 2009). However, there is overwhelming evidence of stressful life events as a significant predictor in the development of psychosis (see review, Beards et al., 2013). Studies investigating the association between stress and SPEs linked daily life stress reactivity to the persistence of SPEs over time (Collip et al., 2013; Myin-Germeys & van Os, 2007). One study found that daily life stress at baseline predicted persistence SPEs overtime, while the other found that increased stress reactivity was present in individuals vulnerable to psychosis. The results of the current study suggests that family functioning is negatively associated with the development of SPEs in that as family functioning declines SPEs increases. This is consistent with previous empirical data that demonstrated family functioning is a powerful predictor of SPEs longitudinally (Collip et al., 2011). The investigation of family and peer functioning as moderators in the association between stress and SPEs is a novel in which the findings offer a new theoretical model for investigating SPEs in adolescence. The gender and age differences found in the moderating role of family and peer functioning in the association between stress and SPEs is in line with previous studies that demonstrate how male and female experience psychopathology differently (Barajas et al., 2015).

Our data add to the wider literature that stress is a relevant risk factor in the development of SPEs that can be moderated by family and peer functioning. Having knowledge of this moderation is useful in understanding the development of psychosis. The finding adds to our understanding of the plausible underlying mechanisms through which daily hassles play a role in the onset of psychosis. Although both family and peer functioning are important protective factors in the well-being of adolescents, it is important to acknowledge their role at different stages of adolescence and how they operate differently for males and females. Concomitant to the knowledge-based of this study it is worthwhile to

identify programs that focus on stress management (Norman et al., 2002). This should be done with valuable investigation as to whether daily stressors should be minimized, as much as possible, or whether efforts should be made to change in individuals the reactivity to stress. Additionally, importance should be given to the parental styles and different types of peer relationships so as to have a better understanding of their effects on the association between stress and SPEs.

10.1.1 Future directions

Future studies should replicate the association between stress and SPEs highlighting the importance of coping when family and peer functioning declines and stress impacts negatively on SPEs. This needs to be done for two reasons: (1) Inadequate coping with stress has the potential to increase the persistence of SPEs (Collip et al., 2013) leaving the individual expose to high stress sensitivity (Collip et al., 2011). Therefore, identifying a coping style best suited to release the pressures of daily hassles in adolescents could potentially reduce the level of SPEs. (2). Adequate coping strategies can facilitate changes in the developmental pathway to SPEs (Sarin et al., 2011). These findings suggest the possibility of early intervention to identify high levels of daily stress for adolescents so reduce undesirable psychological distress.

10.1.2 Implications

The approach for this study extends knowledge on the importance of the two main sources of social support in the lives of adolescents, and how they can potentially buffer the effects of daily stressors on SPEs. These two interpersonal factors will facilitate the early understanding of how poor family and peer functioning assume the role as risk factors in the development of both stress and SPEs. Following which early intervention and prevention programs can be instituted to bring awareness to families and peers on the importance of their

support in alleviating stress and SPEs. These findings suggest the possibility of early intervention to identify high levels of daily stress for adolescents so reduce undesirable psychological distress.

10.2 Study 2

In relation to the second aim of the thesis, the research investigated different subtypes of SPEs in a population of 399 adolescents and whether they were associated with bullying experiences. The findings of this study are important for the following reasons: (1) Because SPEs in the general population can go unrecognized, it is important to identify them in adolescence, a developmental period in which there is a high level of psychopathology; (2). To our knowledge only one study investigated which particular SPEs in a general population are associated with bullying (Shakoor et al., 2015); (3). There is a scarcity of research on the psychological impact of bullying in Trinidad, even though bullying prevalence in Trinidad is higher than aggregate Caribbean.

Previous studies have identified different types of SPEs in the general population and associated with different psychopathologies and externalizing behaviours (Yung et al., 2006; Yung et al., 2009; Armando et al., 2010; Armando et al., 2012). SPEs identified in these studies included: bizarre experiences (BE), persecutory ideation (PI), perceptual abnormalities (PA) and magical thinking (MT). BE, PI and PA were associated with being more symptomatic than MT. PI and BE were associated with depressive symptoms, distress and poor functioning while PA and MT show weaker association with these variables. In the current study, four types of SPEs were also identified and included bizarre experiences (BE), persecutory ideation, perceptual abnormalities-delusional ideas (PA-DI) and magical thinking (MT). Significant increase in PI was associated with being bullied in the last month and last year Only PA-DI was associated with perpetrators of bullying in the last year. PI had the

highest prevalence while BE had the lowest. The higher the frequency of SPEs the lower were their prevalence rate.

These results indicate that SPEs have different behavioural relations, values and frequencies in the general population. Some SPEs seem to be more pathological than others, and some are transient and void of quantitatively enough behavioural underpinnings (see Linscot & van Os, 2013). Adolescence is a phase in which heightened risk for being bullied, and to a lesser extent bullying others. We know that this increased the risk for SPEs, as well as their persistence (Mackie et al., 2011). There is evidence that there are different types of SPEs associated with different pathways to psychosis and possess different causal underpinnings (Nelson & Yung, 2009). This is the first cross-sectional study to demonstrate that different subtypes of SPEs are differently related to bullying.

This study informs the literature in respect to the assumption that the psychosis phenotype subtypes are differently associated with the different types of bullying behaviours. These data show that the association between bullying and SPEs remained statistically significant even after controlling for confounders such as depression, anxiety, age and gender (Scheithauer et al., 2006; Kaltiala-Heino et al., 2010; Stapinski et al., 2014; Sentse et al., 2015). The findings yield information that these confounders are underlying factors along the pathway between bullying and SPEs with their role as covariates.

Subsequently, there should be an understanding of the mechanisms responsible for the association between bullying and SPEs. One such mechanism is dissociative experiences, which influences bullying (Yamasaki et al., 2016) and is associated with SPEs (Sullivan et al., 2013). Since the analyses for this investigation is beyond the parameters of our study, future investigation is necessary in this sphere.

10.2.1 Future directions

Future longitudinal studies on subtypes of SPEs, which is lacking in the literature, are necessary to: (i) identify whether the frequency of victimization experiences which can negatively affect the individuals' cognition and in turn influence SPEs. Severity of SPEs that influences distress and social dysfunction will be detected through screening. (ii) Investigate gender and age difference so that informed data will provide evidence on confounding variables underpinning the pathways between bullying and SPEs.

10.2.2 Implications

These results imply that there is a need for detection of bullying in schools and strategies to prevent it Teachers and parents will become more aware of the ill effects of bullying on the mental health of the bullied, as well as the link between psychopathology and being a perpetrator of bullying. As such, school policy makers can institute preventive measures and strengthen school existing programs that will target reduction in bullying and prevention in the development of SPEs.

10.3 Study 3

The final aim of this research and primary aim of this study was to determine the rates of depression and anxiety symptoms in Trinidadian and British adolescents. We also aimed to investigate the co-occurrence of depression and anxiety symptoms on peer functioning and grades. It was hypothesised that high anxiety symptoms, with the absence of depressive symptoms, would be a protective factor against impaired peer functioning and poor grades. To examine these aims, a combined sample of adolescents from Trinidad and Birmingham (729) were recruited, assessed and their responses anlaysed.

The importance of this study is 3-fold: (1). Adolescence is at its peak in this sample of Birmingham and Trinidadian students. Anxiety and depression reflect the most common mental health problems adolescents experience at this phase (2). The high variations in prevalence rates establish in cross nationals research, as cultures clash, needs to be further investigated; (3). The social and academic challenges faced by adolescents as a result of the negative effects of depression and anxiety symptoms are not well documented in the literature; (4). Depression and anxiety symptoms below threshold can be considered precursors to the diagnostic levels and a better understanding of them is necessary.

Previous studies have demonstrated lower prevalence rates of anxiety and depression than those found in this study, indicating that there may be cultural differences in the items interpretation resulting in over-or under-estimation bias. Such argument may not pertain to this study since both population samples employed the identical measurement tool in assessing depression, anxiety and peer functioning. Previous studies have also found that depression and anxiety symptoms in one grade predicted subsequent anxiety and depressive symptoms in the following grade (Kochel et al., 2012). This assumption suggests that anxiety and depressive symptoms seem to have a long term effect on peer functioning and are stable over time, indicative of non-transience. As such, it is possible that, the long term effect of anxiety and depression can exert a level of severity in this association resulting in long lasting impaired functioning.

The results of this study demonstrated that there was a high prevalence rate of anxiety and depressive symptoms in these two populations. Depression symptoms were similar for both countries but anxiety symptoms were higher in Trinidad. High depressive symptoms and high anxiety symptoms co-occurring were associated with poor peer functioning in both Trinidadian adolescents, and decline in grades for Birmingham students only. Therefore, it is

reasonable to assume that the overt behaviours characterizing depressive symptoms including withdrawal, lack of interest, aggression, and passivity may invite aggression and generate dislike which can further lead to victimisation (Veenestra et al., 2007) for the depressed adolescent. However, when anxiety symptoms were high and depressive symptoms were low, both peer functioning and grades were not affected for both Trinidad and Birmingham adolescents. This suggests that the high anxiety symptoms served as a protective mechanism for peer functioning and grades (Cunningham & Ollendick, 2010).

This study builds on a large body of knowledge highlighting the association of depression and anxiety, and secondary school grades and peer functioning. Additionally, there is evidence that this information adds knowledge to the cross culture differences in research investigating developed and developing country mental health status. Therefore this study provides sufficient knowledge-base to channel action that will reduce significant morbidity in adolescence by paying attention to depression and anxiety symptomatology.

10.3.1 Future Directions

Longitudinal research is needed to capture the dynamic nature of depression and anxiety and how they impact on behaviours such as peer group affiliation over time. The cross sectional nature (one time) of anxiety, depression, peer functioning and grades might have prevented pertinent empirical data on thought processes occurring in emotional disturbances. Exploring bi-directionality of association is important to identify whether depression and anxiety preceded deterioration in social relations and academic achievement or vice versa.

10.3.2 Implications

The results of this study have important implications for intervention, prevention and treatment programs to reduce the deleterious effects of depression and anxiety on adolescent peer functioning and grades. Special emphasis should be placed in secondary schools. One such program could involve Cognitive Behavioural Therapy (CBT) which is geared towards restructuring and re-engineering thought processes in persons with depression and anxiety. Detection of specific thought processes associated with particular impairment can work for future programs that can serve as proactive interventions.

10.3.3 Overall Strengths and weaknesses of the study

This research sampled a population that is highly hyperactive, easily distracted and can exhibit low attention span especially in a classroom setting. The presence of the class teacher facilitated in ensuring that participants took part in the study once they met the criteria and their consent forms were returned to the school. We were able to capture a relatively large sample size of 427 at T1 and 399 at T2 and the attrition rate was minimal, as mentioned in study one- 7% (n=28). Also, proper ethical procedures were followed including institutional, parental and participant consent as well as freedom to cease participation at any time. Notwithstanding these strengths, the school population posed challenges in assessing students on any one particular day without having to do numerous return visits to the school. Absenteeism rates were high since the timing of the study coincided with secondary schools mid-term test for the younger students and final examinations for those leaving school. Also, students were not assessed for psychopathologies prior to reporting and, therefore, participants with pre-existing mental illness can confound the results. Another limitation of these studies relates to multiple testing in which a consideration in interpreting the results of these studies is that a p-value of 0.05 was considered statistically significant and we did not

correct for multiple comparisons. Therefore, findings in which the p-value is greater than 0.01 should be considered with this in mind.

10.3.4 Overall Conclusions

In conclusion, stress, SPEs, bullying, depression, anxiety, peer and family functioning are significant issues facing adolescents. These risks factors are all interrelated can be considered environmental factors that can adversely impact on psychopathologies. Therefore, it is important to understand how they interact within the sphere of the adolescent life. Such information will be vital in developing and implementing prevention programs that will alleviate the burden of mental illnesses. The ultimate aim will be to influence policies that will ensure that these programs will become mandatory in schools to increase the overall well-being of young people. It is widely known that mental health problems starts in adolescence and are likely to persist, so early interventions is key to a mentally healthy population in the future, which is better for a country socially and financially.

REFERENCES

Aber, J. L., Jones, S. M., Brown, J. L., Chaudry, N., & Samples, F. (1998). Resolving conflict creatively: Evaluating the developmental effects of a school-based violence prevention program in neighborhood and classroom context. *Development and psychopathology*, *10*(02), 187-213.

Achenbach, T. M. (1991a). *Manual for the Child Behavior Checklist/4-18 and 1991 profile* (p. 288). Burlington, VT: Department of Psychiatry, University of Vermont.

Achenbach, T. M. (1991b). *Child behavior checklist for ages 4-18*.

Acock, A. C. (2005). Working with missing values. *Journal of Marriage and family*, *67*(4), 1012-1028.

Addington, J., & Addington, D. (2005). Patterns of premorbid functioning in first episode psychosis: relationship to 2-year outcome. *Acta Psychiatrica Scandinavica, 112*, 40–46.

Adelman, H.S., & Taylor, L. (2010). Mental Health in Schools: Engaging Learners, Preventing Problems, and Improving Schools. Thousand Oaks, CA: Corwin.

Agnew, R. (1992). Foundation for a general strain theory of crime and delinquency. *Criminology*, *30*(1), 47-88.

Agnew, R. (2001). Building on the foundation of general strain theory: Specifying the types of strain most likely to lead to crime and delinquency. *Journal of research in crime and delinquency*, *38*(4), 319-361.

Agnew, R. (2007). Pressured into crime: An overview of general strain theory.

Albano, A. M., Marten, P. A., Holt, C. S., Heimberg, R. G., & Barlow, D. H. (1995). Cognitive-behavioural group treatment for social phobia in adolescence: A preliminary study. *Journal of Nervous and Mental Disease, 183*, 649–656.

Albano, A. M., Chorpita, B.F., & Barlow, D. H. (1998). Childhood anxiety disorder. In: E. J. Mash & R. A. Barkley (Eds.). Child Psychopathology (pp. 196-241). New York. Guilford Press.

Aldridge, J. (2008). Decline but no fall? New millennium trends in young people's use of illicit and illegal drugs in Britain. University of Manchester, Manchester, UK.

Alemany, S., Arias, B., Aguilera, M., Villa, H., Moya, J., Ibanez, M. I…..& Fananas, L. (2011). Childhood abuse, the BDNFVal66Met polymorphism and adult psychotic-like experiences. British Journal of Psychiatry, 199 (1), 38-42.

Alemany, S., Ayesa-Arriola, R., Arias, B.,Fatjo-Vilas, M., Ibanez, M.I., & Fananas, L. (2015). Childhood abuse in the etiological continuum underlying psychosis from First-Episode Psychosis to psychotic experiences. *European Psychiatry, 30*, 38-42.

Alexander-Bloch, A. F., Gogtay, N., Meunier, D., Birn, R., Clasen, L. et al., (2010). Disrupted modularity and local connectivity of brain functional networks in childhood- onset schizophrenia. *Frontiers in System Neuroscience, 4(147),* 1-16.

Ali, M. M., Dwyer, D. S., Vanner, A., Lopez, A. (2010). Adolescent propensity to engage in health risky behaviours: The role of individual resilience. *International Journal of Environmental Research and Public Health, 7,* 2161-2171.

Alim, T. N., Feder, A., Graves, R. E., Wang, Y., Weaver, J., Westphal, M., ... & Mellman, T. A. (2008). Trauma, resilience, and recovery in a high-risk African-American population. *American Journal of Psychiatry*, *165*(12), 1566-1575.

Allanson, P. B., Lester, R. R., & Notar, C. E. (2015). A History of Bullying. *International Journal of Education and Social Science, 2(12).*

Ames, C. S., Jolley, S., Laurens, K. R., Maddox, L., Corrigall, R., Browning, S., ... & Kuipers, E. (2014). Modelling psychosocial influences on the distress and impairment caused by psychotic-like experiences in children and adolescents. *European Child & Adolescent Psychiatry*, *23*(8), 715-722.

Andrade, L., Caraveo-anduaga, J. J., Berglund, P., Bijl, R. V., Graaf, R. D., Vollebergh, W.,

... & Kawakami, N. (2003). The epidemiology of major depressive episodes: results from the International Consortium of Psychiatric Epidemiology (ICPE) Surveys. *International journal of methods in psychiatric research*, *12*(1), 3-21.

Andrews, B., & Wilding, J. M. (2004). The relation of depression and anxiety to life-stress and achievement in students. *British Journal of Psychology*, *95*(4), 509-521.

Angold, A., Costello, E. J., & Erkanli, A. (1999). Comorbidity. *Journal of child psychology and psychiatry*, *40*(01), 57-87.

Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. Psychological Assessment, 10, 176–181.

Apling, G. C. (2002). Sex differences in the prevalence of adolescent stress and psychological symptoms, and stress as a mediator between sex and symptoms. *Unpublished master's thesis, DePaul University, Chicago, Illinois.*

Armando, M., Nelson, B., Yung, A. R., Ross, M., Birchwood, M., Girardi, P…..& (2010). Psychotic-like experiences and correlation with distress and depressive symptoms in a community sample of adolescents and young adults. *Schizophrenia Research, 119*(1-3), 258-265.

Armando, M., Nelson, B., Yung, A. R., Saba, R., Monducci, E., Dario, C., ... & Girardi, P. (2012). Psychotic experience subtypes, poor mental health status and help-seeking behaviour in a community sample of young adults. *Early intervention in psychiatry*, *6*(3), 300-308.

Arnett, J. J. (1999). Adolescent storm and stress, reconsidered. *American psychologist*, *54*(5), 317.

Arpa, S. (2011). European School Survey Project on Alcohol and other Drugs (ESPAD):

Students Survey in secondary schools, Malta. *Sedqa.*

Arsenault, K., Carroll, W. R., & Wagar, T. H. (2011). Examining bullying in Canadian workplaces:

preliminary findings from a content analysis study using arbitration case decisions.

Arseneault, L., Bowes, L., & Shakoor, S. (2010). Bullying victimization in youths and mental health problems:'Much ado about nothing'?.*Psychological medicine*, *40*(05), 717-729.

Arseneault, L., Walsh, E., Trzesniewski, K., Newcombe, R., Caspi, A., & Moffitt, T. E. (2006). Bullying victimization uniquely contributes to adjustment problems in young children: a nationally representative cohort study. *Pediatrics*, *118*(1), 130-138.

Asher, L., Zammit, S., Sullivan, S., Dorrington, S., Heron, J., & Lewis, G. (2013). The relationship between psychotic symptoms and social functioning in a non-clinical population of 12year olds. *Schizophrenia Research*, *150*(2), 404-409.

Asmussen, L., & Larson, L. (1991). The quality of family time among young adolescents in single- parent and married-parent families. *Journal of Marriage and Family, 53(4),* 1021-1030.

Auerbach, M.S., & Grambling S.E. (1998) Stress Management Psychological Foundations U.S.A, Prentice- Hall, Inc.

Azeez, A. E. (2015). Positive Mental Health through Life Skill Education: Empowering Adolescents having Psychosocial Problems. *Journal of Psychosocial Research*, *10*(1), 21.

Avenevoli, S., Stolar, M., Li, J., Dierker, L., & Merikangas, K. R. (2001). Comorbidity of depression in children and adolescents: Models and evidence from a prospective high-risk family study. *Biological Psychiatry*, *49*(12), 1071-1081.

Aviles, A. M., Anderson, T. R., & Davila, E. R. (2006). Child and Adolescent

Social-Emotional Development Within the Context of School. *Child and Adolescent Mental Health*, *11*(1), 32-39.

Bagwell, C. L., Bender, S. E., Andreassi, C. L., Kinoshita, T. L., Montarello, S. A., & Muller, J. G. (2005). Friendship quality and perceived relationship changes predict psychosocial adjustment in early adulthood. *Journal of Social and Personal Relationships*, *22*(2), 235- 254.

Bakker, M. P., Ormel, J., Verhulst, F. C., & Oldehinkel, A. J. (2012). Childhood family instability and mental health problems during late adolescence: A test of two mediation models-The TRAILS study. *Journal of Clinical Child & Adolescent Psychology*, *41*(2), 166-176.

Ballak, L. (1958). Schizophrenia: A review of the syndrome. In Ballak & Leopald (Ed.). American Psychological Association (pp. 3-63). Oxford, England.

Barragan, M., Laurens, K.R., Navarra, J.B., & Obiols, J.E. (2011). Psychotic like experiences and depressive symptoms in a community sample adolescents. *European Psychiatry, 26,* 396-401.

Barajas, A., Ochoa, S., Obiols, J. E., & Lalucat-Jo, L. (2015). Gender differences in individuals at high-risk of psychosis: a comprehensive literature review. *The Scientific World Journal*, doi:10.1155/2015/430735.

Barrantes-Vidal, N., Chun, C. A., Myin-Germeys, I., & Kwapil, T. R. (2013). Psychometric schizotypy predicts psychotic-like, paranoid, and negative symptoms in daily life. *Journal of abnormal psychology*, *122*(4), 1077-1087.

Baron, R. M, Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51(6),* 1173–1182.

Bartels-Velthuis, A. A., Van de Willige, G., Jenner, J. A., Wiersma, D., & Van Os, J. (2012).

Auditory hallucinations in childhood: associations with adversity and delusional ideation. *Psychological medicine*, *42*(03), 583-593.

Batsche, G. M., & Knoff, H. M. (1994). Bullies and their victims: Understanding a pervasive problem in the schools. *School psychology review*, *23*, 165-165.

Baum, S. K., Boxley, R. L. (1983). Age identification in the elderly. The Gerontologist, 23, 532-537.

Bayram, N., & Bilgel, N. (2008). The prevalence and socio-demographic correlations of depression, anxiety and stress among a group of university students. *Social psychiatry and psychiatric epidemiology*, *43*(8), 667-672.

Beards, S., Gayer-Anderson, C., Borges, S., Dewey, E.M., Fisher, H.L., & Morgan, C. (2013). Life events and psychosis: A review and meta-analysis. *Schizophrenia Bulletin, 39,* 740-747.

Beards, S., Gayer-Anderson, C., Borges, S., Dewey, M.E., Fish, H.L., & Morgan, C. (2013). Life events and psychosis: A review and meta-analysis. *Schizophrenia Bulletin, 39,* 740-747.

Bebbington, P., Wilkins, S., Jones P., Foerester, A., Murray, R., Toone, B…..& Lewis, S. (1993). Life events and psychosis. Initial results from the Camberwell Collaborative psychosis Study. *British Journal of Psychiatry, 162*, 72–79.

Becker, S. P., Luebbe, A. M., Stoppelbein, L., Greening, L., & Fite, P. J. (2012). Aggression among children with ADHD, anxiety, or co-occurring symptoms: Competing exacerbation and attenuation hypotheses. *Journal of abnormal child psychology*, *40*(4), 527-542.

Becker, B. E., & Luthar, S. S. (2002). Social-emotional factors affecting achievement outcomes among disadvantaged students: Closing the achievement gap. *Educational Psychologist, 37,* 197-21.

Beidel, D. C., Turner, S. M., & Morris, T. L. (2000). Behavioral treatment of childhood social phobia. *Journal of consulting and clinical psychology*, *68*(6), 1072-1080.

Belfer, M. L. (2008). Child and adolescent mental disorders: the magnitude of the problem across the globe. *Journal of Child Psychology and Psychiatry*, *49*(3), 226-236.

Bendall, S., Jackson, H. J., Hulbert, C. A., & McGorry, P. D. (2008). Childhood trauma and psychotic disorders: a systematic, critical review of the evidence. *Schizophrenia bulletin*, *34*(3), 568-579.

Bentall, R. P., Corcoran, R., Howard, R., Blackwood, N., & Kinderman, P. (2001). Persecutory delusions: a review and theoretical integration. *Clinical psychology review*, *21*(8), 1143-1192.

Bentall, R. P., & Fernyhough, C. (2008). Social predictors of psychotic experiences: specificity and psychological mechanisms. *Schizophrenia Bulletin*, *34*(6), 1012-1020.

Berg, I. (1992). Absence from school and mental health. *The British Journal of Psychiatry*, *161*(2), 154-166.

Berry, K., Wearden, A., Barrowclough, C., Liversidge, T. (2006). Attachment styles, international relationships and stress in a non-clinical student sample. *Personality and Individual Differences, 41(40),* 707-718.

Bernstein, G. A. (1991). Comorbidity and severity of anxiety and depressive disorders in a clinic sample. *Journal of the American Academy of Child & Adolescent Psychiatry*, *30*(1), 43-50.

Bernstein, G. A., & Garfinkel, B. D. (1986). School phobia: The overlap of affective and anxiety disorders. *Journal of the American Academy of Child Psychiatry*, *25*(2), 235-241.

Bhattachryya, S., Fusar-Poli, P., Borgwardt, S., Martin-Santos, R., et al (2009). Modulation

of Mediotemporal and ventrostriatal function in humans by Tetrahydrocannabinol (THC). A neural basis for the effects of cannabis sativa on learning and psychosis. *ArchivesGeneral Psychiatry, 66(4),* 442-451.

Biggs, B. K., Nelson, J. M., & Sampilo, M. L. (2010). Peer relations in the anxiety-depression link: test of a mediation model. Anxiety, Stress, and Coping, 23 ,431- 444.

Bleuler, E. (1911). Dementia Praecox oder Gruppe der Schizophrenien. In F. Deuticke, L. und Wien (Eds). Biography, Historical article. *The British Journal of Psychiatry, 14(5),* 661-662.

Bloom, D. E., Cafiero, E., Jané-Llopis, E., Abrahams-Gessel, S., Bloom, L. R., Fathima, S., ... & O'Farrell, D. (2012). *The global economic burden of noncommunicable diseases* (No. 8712). Program on the Global Demography of Aging.

Bloomfield, M. A., Morgan, C. J., Egerton, A., Kapur, S., Curran, H. V., & Howes, O. D. (2014). Dopaminergic function in cannabis users and its relationship to cannabis-induced psychotic symptoms. *Biological psychiatry*, *75*(6), 470-478.

Bylsma, L. M., Morris, B. H., & Rottenberg, J. (2008). A meta-analysis of emotional reactivity in major depressive disorder. *Clinical psychology review*, *28*(4), 676-691.

Boss, P. G. (2002). Family stress management: A contextual approach (2nd ed.). Thousand Oaks, CA: Sage.

Boyce, W.T. (2007). A biology of misfortune: Stress reactivity, social context, and the ontogeny of psychopathology in early life. In A. Masten (Ed.). Multilevel Dynamics in Developmental Psychopathology. *Pathways to the Future*. University of Minnesota, Minneapolis, 34, 45-82

Boyce, W. T., Chesney, M., Alkon, L.A., Tschann, J., Adams, S., Chesterman, B……..& Wara, D. (1995). Psychobiologic reactivity to stress and childhood respiratory illnesses: Results of two prospective studies. *Psychosomatic Medicine,* 57, 411–422.

Braddick, F., Carral, V., Jenkins, R., & Jané-Llopis, E. (2009). Child and adolescent mental

health in Europe: infrastructures, policy and programmes. *Luxembourg: European Communities*, 113-124.

Brady, E. U., & Kendall, P. C. (1992). Comorbidity of anxiety and depression in children and adolescents. *Psychological bulletin*, *111*(2), 244-255.

Brandizzi, M., Schultze-Lutter, F., Masillo, A., Lanna, A., Curto, M., Lindau, J. F., ... & Gebhardt, E. (2014). Self-reported attenuated psychotic-like experiences in help-seeking adolescents and their association with age, functioning and psychopathology. *Schizophrenia research*, *160*(1), 110-117.

Brenner, K., Schmitz, N., Pawliuk, N., Fathalli, F., Joober, R., Ciampi, A., King, S., 2007. Validation of the English and French versions of the Community Assessment of Psychic Experiences (CAPE) with a Montreal community sample. *Schizophrenia Research, 95*, 86–95.

Briggs-Gowan, M. J., Carter, A. S., Clark, R., Augustyn, M., McCarthy, K. J., & Ford, J. D. (2010). Exposure to potentially traumatic events in early childhood: differential links to emergent psychopathology. *Journal of Child Psychology and Psychiatry*, *51*(10), 1132-1140.

Brown, B. B., & Bakken, J. P. (2011). Parenting and peer relationships: Reinvigorating research on family–peer linkages in adolescence. *Journal of Research on Adolescence*, *21*(1), 153-165.

Burnett, P. C. & Fanshawe, J. P. (1997). Measuring school-related Stressor in adolescents. *Journal of Youthand Adolescence, 26,* 415-428,

Byrne, R., & Morrison, A. P. (2010). Young people at risk of psychosis: a user-led exploration of interpersonal relationships and communication of psychological difficulties. *Early Intervention in Psychiatry*, *4*(2), 162-168.

Byrne, C. P., Velamoor, V. R., Cernovsky, Z. Z., Córtese, L., & Losztyn, S. (1990). A

comparison of borderline and schizophrenic patients for childhood life events and parent-child relationships. *Canadian Journal of Psychiatry, 35,* 590-595.

Cadoret, R. J., Winokur, G., Langbehn, D., Troughton, E., Yates, W. R., Stewart, M., A. **(**1996**)** Depression spectrum disease, I: The role of gene-environment interaction. *American Journal of Psychiatry*, 153, 892 -899.

Caldwell-Harris, C. L., & Ayçiçegi, A. (2006). When personality and culture clash: The psychological distress of allocentrics in an individualist culture and idiocentrics in a collectivist culture. *Transcultural psychiatry*, *43*(3), 331-361.

Calhoun, S. L., & Mayes, S. D. (2006). Processing speed in children with clinical disorders. *Psychology in the Schools, 42,* 333-343.

Campbell, M. L., & Morrison, A. P. (2007). The relationship between bullying, psychotic-like experiences and appraisals in 14–16-year olds. *Behaviour Research and Therapy*, *45*(7), 1579-1591.

Campbell. J., & Ehlert, U. (2012). Acute psychosocial stress: Does emotional stress response Correspond with psychological responses? *Journal of International Society of Psychoneuroendocrinolgy, 37*(8), 1111-1134.

Capra, C., Kavanagh, D., Hides, L., Scott, J. (2013). Brief screening for psychosis-like experiences. *Schizophrenia Research, 149, 104-107.*

Cannon, W.B. (1932). The wisdom of the body. New York, Norton.

Cantor-Graae, E., & Selten, J-P. (2005). Schizophrenia migration: A meta-analysis and Review. *American Journal of Psychiatry, 162*, 12-24.

Carlo, G., Raffaelli, M., Laible, D. J., & Meyer, K. A. (1999). Why are girls less physically aggressive than boys? Personality and parenting mediators of physical aggression. *Sex Roles*, *40*(9-10), 711-729.

Carlson, G. A., & Grant, K. E. (2008). The roles of stress and coping in explaining gender

differences in risk for psychopathology among African American urban adolescents. *The Journal of Early Adolescence*, *28*(3), 375-404.

Carter, B., & McGoldrick, M. (1989). Overview: The changing family life cycle: A framework for family therapy. In B. Carter & M. McGoldrick (Eds.), *The changing family life cycle: A framework for family therapy,* pp. 3–28. Boston: Allyn & Bacon.

Cartwright-Hatton, S., McNicol, K., Doubleday, E. (2006). Anxiety in a neglected population: prevalence of anxiety disorders in pre-adolescent children. Clinical Psychology Review, 26, 818-833.

Cartwright-Hatton, S. (2013). Treating anxiety in early life. *The British Journal of Psychiatry*, *203*(6), 401-402.

Caspi, A., Lynam, D., Moffitt, T. E., & Silva, P. A. (1993). Unraveling girls' delinquency: Biological, dispositional, and contextual contributions to adolescent misbehavior. *Developmental Psychology, 29, 19 –30*.

Casey, B.J., Getz, S., & Galvan, (2008). The adolescent brain. *Developmental Review, 28,* 62-77.

Catone, G., Pisano, S., Broome, M., Lindau, J. F., Pascotto, A., & Gritti, A. (2016). Continuity between Stressful Experiences and Delusion Content in Adolescents with Psychotic Disorders–A Pilot Study. *Scandinavian Journal of Child and Adolescent Psychiatry and Psychology*, *4*(1), 14-22.

Chan, M. (2010). Mental health and development: targeting people with mental health conditions as a vulnerable group. *World Health Organization*.

Chapman, J. (1966). The early signs of schizophrenia. *The British Journal of Psychiatry, 112(484),* 225-251.

Chen, X., & Li, B. S. (2000). Depressed mood in Chinese children: Development significance

for social and `school adjustment. *International Journal of Behavioral Development*, *24*(4), 472-479.

Christie, K. A., Burke, J. D., Regier, D. A., Rae, D. S., Boyd, J. H., & Locke, B. Z. (1988). Epidemiologic evidence for early onset of mental disorders and higher risk of drug abuse in young adults. *Am J Psychiatry*, *145*(8), 971-975.

Chrousos, G.P., & Gold, P.W. (1998). A healthy body in a healthy mind-and-vice versa-The damaging power of "uncontrollable" stress. *The Journal of Clinical Endocrinology and Metabolism,* 83(6), 1842-1845.

Chu, B. C., Merson, R. A., Zandberg, L. J., & Areizaga, M. (2012). Calibrating for comorbidity: Clinical decision-making in youth depression and anxiety. *Cognitive and Behavioral Practice*, *19*(1), 5-16.

Cicchetti, D., & Rogosch, F.A. (2002). A developmental psychopathology perspective on adolescence. *Journal of Consulting and Clinical Psychology, 70(1),* 6-20.

Claridge, G. (Ed.). (1997). Final remarks and future. Schizotypy. Implications for Illness and Health, Oxford University Press, Oxford, pp. 301–317.

Clark, L. A., & Watson, D. (1991). Tripartite model of anxiety and depression: Psychometric evidence and taxonomic implications. Journal of Abnormal Psychology, 100, 316_336.

Coddington, R. D., & Troxell, J. R. (1980). The effect of emotional factors on football injury rates: A pilot .study. *Journal of Human Stress, 6,* 3-5.

Cohen, L., Manion, L., & Morrison, K. (1994). Educational research methodology. *Athens:Metaixmio*.

Cohen, P., Cohen, J., Kasen, S., Velez, C. N., Hartmark, C., Johnson, J., ... & Streuning, E. L. (1993). An epidemiological study of disorders in late childhood and adolescence—I. Age-and gender-specific prevalence. *Journal of Child Psychology and*

Psychiatry, *34*(6), 851-867.

Cohen, S., & McKay, G. (1984). Social support, stress and the buffering hypothesis: A theoretical analysis. *Handbook of psychology and health*, *4*, 253-267.

Cohen, L. H., & Park, C. (1992). Life stress in children and adolescents: An overview of conceptual and methodological issues. In A. M. La Greca, L. J. Siegel, J. L. Wallander, & C. E. Walker (Eds.), *Stress and coping in child health* , p. 25–43.

Cohen, S., Kessler, R. C., & Gordon, L. U. (1995). Measuring Stress. New York: Oxford University Press.

Cole, D. A., Martin, J. M., Powers, B., & Truglio, R. (1996). Modeling causal relations between academic and social competence and depression: A multitrait-multimethod longitudinal study of children. *Journal of Abnormal Psychology, 105*, 258-270.

Cole, D.A., Peeke, L.G., Martin, J.M., Truglio, M. & Seroczynski, A.D. (1998). A Longitudinal Look at the Relation Between Depression and Anxiety in Children and Adolescents.

Coleman, M.A. (2009). *A Dictionary of Psychology*. Oxford University Press, p., 735.

Coleman, Denis, and Seppo E. Iso-Ahola. "Leisure and health: The role of social support and self-determination." *Journal of leisure research* 25.2 (1993): 111.

Coleman, J.C., Hendry, L.B. (1999): *The Nature of Adolescence.* (3rd ed). London: Routledge.

Collins, L. M., Schafer, J. L., & Kam, C. M. (2001). A comparison of inclusive and restrictive strategies in modern missing data procedures. *Psychological methods*, *6*(4), 330.

Collip, D., Myin-Germeys, I., & Van Os, J. (2008). Does the concept of "sensitization" provide a plausible mechanism for the putative link between the environment and

schizophrenia?. *Schizophrenia Bulletin*, *34*(2), 220-225.

Collip, D., Wigman, J.T.W., Lin, A., Nelson, B., Oorschat, M., Vollebergh, W.A.M. & Ryan, J. (2011). Dynamic association between interpersonal functioning and positive symptoms Dimensions of psychosis over time; A longitudinal study of healthy adolescents. *Schizophrenia Bulletin, 42(3),* 1-7.

Collip, D., Wigman, J.T., Myin-Germeys, I., Jacob, N., Derom, C., Thiery, E., Marieke, W., & van Os, J. (2013). From epidemiology to daily life: Linking daily life stress to reactivity to persistence of psychotic experiences in a longitudinal general population study. *Plos One, 8(4)*, 1-6.

Collishaw, S., Maughan, B., Natarajan, L., & Pickles, A. (2010). Trends in adolescent emotional problems in England: a comparison of two national cohorts twenty years apart. *Journal of Child Psychology and Psychiatry*,*51*(8), 885-894.

Compas, B. (1987). Coping with stress during childhood and adolescence. *Psychological Bulletin, 101,* 393-403.

Compas, B. E., Orosan, P. G., & Grant, K. E. (1993). Adolescent stress and coping: Implications for psychopathology during adolescence. *Journal of adolescence*, *16*(3), 331.

Compas, B. E., Connor, J. K., Osowiecki, D., & Welch, A. (1997). Effortful and involuntary responses to stress: Implications for coping with chronic stress. In B. H. Gottlieb (Ed.), Coping with chronic stress (pp. 105-130). New York: Plenum.

Compas, B.E., Champion, J.E., & Reeslund, K. (2005). Coping with stress: Implications for preventive interventions with adolescents. *The Prevention Researcher, 12,* 17-20.

Comrey, A. L., & Lee, H. B. (1992). A first course in factor analysis. (2nd Ed.). *Hillsdale, NJ: Erlbaum*.

Cooper, C. R. & Ayers-Lopez, S. (1985). Family and peer systems in early adolescence: New

models of the role of relationships in development. *Journal of Early Adolescence, 5,* 9-21.

Copeland, W. E., Shanahan, L., Costello, E. J., & Angold, A. (2009). Childhood and adolescent psychiatric disorders as predictors of young adult disorders. *Archives of General Psychiatry*, *66*(7), 764-772.

Copeland, W. E., Shanahan, L., Erkanli, A., Costello, E. J., & Angold, A. (2013). Indirect comorbidity in childhood and adolescence. *Frontiers in Psychiatry*, *4*(NOV).

Cougnard, A., Marcelis, M., Myin-Germeys, I., De Graaf, R., Vollebergh, W., Krabbendam, L.... & Van Os, J. (2007). Does normal developmental expression of psychosis combine with environmental risk to cause persistence of psychosis? A psychosis proneness-persistence model. *Psychological Medicine*, *37*(4), 513-528.

Cox, D., & Cowling, P. (1989). *Are you normal?* Cox & Company Press Ltd.

Cox, T., & Griffiths, A. J. (1995). The nature and measurement of work stress: Theory and practice. In J. Wilson & N. Corlett (Eds.), The evaluation of human work: A practical ergonomics methodology. London: Taylor & Francis

Craig, W., Harel-Fisch, Y., Fogel-Grinvald, H., Dostaler, S., Hetland, J., Simons-Morton, B….& Pickett, W. (2009). A cross national profile for bullying and victimization among adolescents in 40 countries. *International Journal Public Health, 54(2),* 216-224.

Crick, N. R.**,** & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development, 66(3),* 710–722.

Crnic, K. A., Gaze, C., Hoffman, C. (2005). Cumulative parenting stress across preschool period: Relations to maternal parents and child behaviour at 5. *Infant and Child Development, 14*, 117.132.

Crone, E. A., & Dahl, R. E. (2012). Understanding adolescence as a period of social–

affective engagement and goal flexibility. *Nature Reviews Neuroscience*, *13*(9), 636-650.

Cullen, A. E., Fisher, H. L., Roberts, R. E., Pariante, C. M., & Laurens, K. R. (2014). Daily stressors and negative life events in children at elevated risk of developing schizophrenia. *The British Journal of Psychiatry*, *204*(5), 354-360.

Cummings, C. M., Caporino, N. E., & Kendall, P. C. (2014). Comorbidity of anxiety and depression in children and adolescents: 20 years after. *Psychological Bulletin*, *140*(3), 816.

Cunningham, N. R., & Ollendick, T. H. (2010). Comorbidity of anxiety and conduct problems in children: Implications for clinical research and practice. *Clinical Child and Family Psychology Review*, *13*(4), 333-347.

Cyhlarova, E., Claridge, G. (2005). Development of a version of the Schizotypy Traits Questionnaire (STA) for screening children. Schizophrenia Research, 80(2-3), 253-61.

Davidson, L., Chinman, M., Kloos, B., Lambert, S., Stayner, D. A., & Tebes, J. K. (1997). Mental illness as a psychiatric disability: Shifting the paradigm toward mutual support. The Community Psychologist, 30, 19 –21.

Davidson, L., Chinman, M., Kloos, B., Weingarten, R., Stayner, D., Kraemer, T. J. (1999). Peer support among individuals with severe mental illness: A review of the evidence. *Clinical Psychology Science and Practice*, 6, 165–87.

Davidson, L., Bellamy, C., Guy, K., & Miller, R. (2012). Peer support among persons with severe mental illnesses: a review of evidence and experience. *World Psychiatry*, *11*(2), 123-128.

Degenhardt, L., & Hall, W. (2001). The association between psychosis and problematic drug use among Australian adults: findings from the Nation Survey of mental health and well-being. *Psychological Medicine, 31(4),* 659-668.

Deković, M., Wissink, I. B., & Meijer, A. M. (2004). The role of family and peer relations in adolescent antisocial behaviour: comparison of four ethnic groups. *Journal of adolescence*, *27*(5), 497-514.

De Lisle, J., Seecharan, H., & Ayodike, A. T. (2010). Is Trinidad and Tobago education system structured to facilitate optimum human capital development? New findings on the relationship between education structures and outcomes from national and international assessments. In *10th SALISES Annual Conference*.

De loore, E., Drukker, M., Gunter, N., Ferom, F., Deboutte, D., Sabbe, B…….& Myin-Germeys, I. (2007). Childhood negative experiences and subclinical psychosis in adolescence. A longitudinal general population study. *Early Intervention in Psychiatry, 1,* 201-207.

Denny, B., Gavidia-Payne, S., Davis, K., Francis, A., & Jackson, M. (2014). Strengthening Australian families: Socioeconomic status, social connectedness, and family functioning. *Australian Social Work*, *67*(3), 438-450.

Deosaran, R. (2004). Benchmarking violence and delinquency in the secondary school. Towards a culture of peace and civility. Ministry of Education, Government of the Republic of Trinidad and Tobago.

DERDIKMAN-EIRON, R. U. T. H., Indredavik, M. S., Bratberg, G. H., Taraldsen, G., Bakken, I. J., & Colton, M. (2011). Gender differences in subjective well-being, self-esteem and psychosocial functioning in adolescents with symptoms of anxiety and depression: Findings from the Nord-Trøndelag Health Study. *Scandinavian Journal of Psychology*, *52*(3), 261-267.

Deutsch, L. & Erickson, M. (1989), Early life events as discriminatory of socialized and undersocialized delinquents, *Joumal of Abnormal Child Psychology, 17,* 541-551.

Dhossche, D., Ferdinand, R., Van der Ende, J., et al., 2002. Diagnostic outcome of self-reported hallucinations in a community sample of adolescents. *Psychological Medicine, 32,* 619– 627.

Dobson, K. S. (1985). The relationship between anxiety and depression. *Clinical Psychology Review, 5,* 307-324.

Dominguez, M.G., Wichers, M., Lieb, R., Wittchen, H.U., & van Os, J. (2011). Evidence that onset of clinical psychosis is an outcome of progressively more persistent subclinical psychotic experiences: an 8-year cohort study. *Schizophrenia Bulletin, 37,* 84-93.

Dominguez, M., Viechtbauer, W., Simons, C. J., van Os, J., & Krabbendam, L. (2009). Are psychotic psychopathology and neurocognition orthogonal? A systematic review of their associations. *Psychological Bulletin*, *135*(1), 157.

Doom, J. R., Doyle, C. M., & Gunnar, M. R. (2016). Social stress buffering by friends in childhood and adolescence: Effects on HPA and oxytocin activity. *Social neuroscience*, 1-14.

Doremus-Fitzwater, T.L., Varlinskaya, E. I., & Spear, L. P. (2010). Motivational systems in adolescence: Possible implications for age differences in substance abuse and other risk-taking behaviors. *Brain Cognition, 72(1),* 114–23.

Douvan, E. A., & Adelson, J. (1966). *The adolescent experience.* New York: Wiley.

Du Bois, D.L., Felner, R.D., Brand, S., Adan, A.M., & Evans, E.G. (1992). A prospective study of life, stress, social support and adaptation in early adolescence. *Child Development, 63(3),* 542-557.

Due, P., Holstein, B. E., Lynch, J., Diderichsen, F., Gabhain, S. N., Scheidt, P., & Currie, C.

(2005). Bullying and symptoms among school-aged children: international comparative cross sectional study in 28 countries. *The European Journal of Public Health*, *15*(2), 128-132.

Due, P., & Holstein, B. E. (2008). Bullying victimization among 13 to 15 year old school children: Results from two comparative studies in 66 countries and regions. *International journal of adolescent medicine and health*, *20*(2), 209-222.

Duggal, S., Malkoff-Schwartz, S., Birmaher, B., Anderson, B. P., Matty, M. K.……& Houck, P. R. (2000). Assessment of life stress in adolescents: Self-report versus interview methods, *Joumal of the American Academy of Child & Adolescent Psychiatry. 39, 445-452.*

Dumont, M., & Provost, M. A. (1999). Resilience in adolescents: Protective role of social support, coping strategies, self-esteem, and social activities on experience of stress and depression. *Journal of youth and adolescence*, *28*(3), 343-363.

Dupper, D. R. & Meyer-Adams, N. (2002). Low-level violence: A neglected aspect of school culture. *Urban Education, 37*, 350-364.

Dworkin, J. B., Larson, R., & Hansen, D. (2003). Adolescents' accounts of growth experiences in youth activities. *Journal of Youth and Adolescence*, *32*(1), 17-26.

Dyrbye, L. N., Thomas, M. R., Huntington, J. L., Lawson, K. L., Novotny, P. J., Sloan, J. A., & Shanafelt, T. D. (2006). Personal life events and medical student burnout: a multicenter study. *Academic Medicine*, *81*(4), 374-384.

Eaton,W.W., Romanoski, A., Anthony, J.C. (1991) Screening for psychosis in the general population with a self-report interview. *Journal of Nervous and Mental Disease, 179*, 689-693.

Eccles, J.S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flaganan, C., & Mac

Iver, D. (1993). Development during adolescence. The impact of Stage-Environment Fit on young adolescents' in schools and in families. *The American Psychologist Association,48(2),* 90-101.

Eisenberg, M. E., Neumark-Sztainer, D., & Perry, C. L. (2003). Peer harassment, school connectedness, and academic achievement. *Journal of School Health*, *73*(8), 311-316.

Erikson, E. H. (1959). Identity and the life cycle: Selected papers. *Psychological issues*.

Ernst, M., Spears, L. P. (2009). Reward systems. In M. de Haan & M. R. Gunnan (Eds.). *Handbook of Developmental Social Neuroscience* (pp. 324-341). Guilford Press, New York.

Espelage, D. L., Bosworth, K., & Simon, T. R. (2000). Examining the social context of bullying behaviors in early adolescence. *Journal of Counseling & Development*, *78*(3), 326-333.

Espelage, D. L., Gutgsell, E. W., & Swearer, S. M. (Eds.). (2004). *Bullying in American schools: A social-ecological perspective on prevention and intervention*, routledge.

Essau, C. A., Conradt, J., & Petermann, F. (2000). Frequency, comorbidity, and psychosocial impairment of anxiety disorders in German adolescents. *Journal of anxiety disorders*, *14*(3), 263-279.

Essau, C. A. (2003). Comorbidity of anxiety disorders in adolescents. *Depression and Anxiety*, *18*(1), 1-6.

Eysenck, M. W., & Calvo, M. G. (1992). Anxiety and performance: The processing efficiency theory. *Cognition & Emotion*, *6*(6), 409-434.

Eysenck, M. W., Derakshan, N., Santos, R., & Calvo, M. G. (2007). Anxiety and cognitive performance: Attentional control theory. *Emotion, 7,* 336-353.

Fanti, K. A., & Henrich, C. C. (2015). Effects of self-esteem and narcissism on bullying and

victimization during early adolescence. *The Journal of Early Adolescence*, 35(1), 5-29.

Farrington, D. P. (1993). Understanding and preventing bullying. *Crime and justice*, 381-458.

Ferdinand, R. F., de Nijs, P. F. A., van Lier, P., Verhulst, F. C. (2005). Latent class analysis of anxiety and depressive symptoms in referred adolescents. *Journal of Affective Disorders, 88*, 299–306.

Fergusson, D. M., Horwood, L. J., & Swain-Campbell, N. R. (2003) Cannabis dependence and psychotic symptoms in young people. *Psychological Medicine 33,* 15–21.

Ferrari, A. J., Somerville, A. J., Baxter, A. J., Norman, R., Patten, S. B., Vos, T., & Whiteford, H. A. (2013). Global variation in the prevalence and incidence of major depressive disorder: a systematic review of the epidemiological literature. *Psychological Medicine*, *43*(03), 471-481.

Ferro, M. A., & Boyle, M. H. (2015). The impact of chronic physical illness, maternal depressive symptoms, family functioning, and self-esteem on symptoms of anxiety and depression in children. *Journal of abnormal child psychology*, *43*(1), 177-187.

Fichter, M. M., Quadflieg, N., Fischer, U. C., & Kohlboeck, G. (2010). Twenty-five-year course and outcome in anxiety and depression in the Upper Bavarian Longitudinal Community Study. *Acta Psychiatrica Scandinavica*, *122*(1), 75-85.

Fisher, H. L., Schreier, A., Zammit, S., Maughan, B., Munafò, M. R., Lewis, G., & Wolke, D. (2013). Pathways between childhood victimization and psychosis-like symptoms in the ALSPAC birth cohort. *Schizophrenia Bulletin*, sbs088.

Fleming, L. C., & Jacobsen, K. H. (2009). Bullying among middle-school students in low and middle income countries. *Health Promotion International*, 25(1), 73-84.

Flink, I. J., Jansen, P. W., Beirens, T. M., Tiemeier, H., van IJzendoorn, M. H., Jaddoe, V.

W., ... & Raat, H. (2012). Differences in problem behaviour among ethnic minority and majority preschoolers in the Netherlands and the role of family functioning and parenting factors as mediators: the Generation R Study. *BMC Public Health*, *12*(1), 1.

Floreso, S.B., & Tse, M.T. (2007). Dopaminergic regulation of inhibitory and excitatory transmission in the basolateral amygdale-prefrontal cortical pathway. *Journal of Neuroscience, 27(8),* 2045-2057.

Fonseca-Pedrero, E., Lemos-Giráldez, S., Muniz, J., García-Cueto, E., & Campillo-Alvarez, A. (2008). Schizotypy in adolescence: The role of gender and age. *The Journal of Nervous and Mental Disease*, *196*(2), 161-165.

Fonseca-Pedrero, E., Paino, M., Lemos-Giráldez, S., Sierra-Baigrie, S., & Muñiz, J. (2011). Measurement invariance of the Schizotypal Personality Questionnaire-Brief across gender and age. *Psychiatry research*, *190*(2), 309-315.

Fowles, D. C. (1992). Schizophrenia: Diathesis-stress revisited. *Annual review of psychology*, *43*(1), 303-336.

Frankenhaeuser, M. (1994). A biopsychosocial approach to stress in women and men. In V. J. Adesso, D. M. Reddy, & R. Fleming (Eds.), *Psychological perspectives on women's health,* 39– 56, Philadelphia, Taylor and Francis.

Freeman, D., Pugh, K., Green C., Valmaggia, L., Dunn, G., Garety, P. (2007).A measure of state persecutory ideation for experimental studies. *J Nerv Ment Dis*, 195, 781-784.

Freud, A. (1958). Adolescence. *Psychoanalytic Study of the Child,* 15, 255-278.

Freud, A. (1968). Adolescence. In A. E. Winder & D. Angus (Eds). *Adolescence: Contemporary Studies (pp.13-24)* New York: American Book.

Freudenberg, N., & Ruglis, J. (2007). Reframing school dropout as a public health issue.

Fröjd, S. A., Nissinen, E. S., Pelkonen, M. U., Marttunen, M. J., Koivisto, A. M., & Kaltiala-

Heino, R. (2008). Depression and school performance in middle adolescent boys and girls. *Journal of adolescence*, *31*(4), 485-498.

Furman, W., & Buhrmester, D. (1992). Age and sex differences in perceptions of networks of personal relationships. *Child development*, *63*(1), 103-115.

Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of educational psychology*, *95*(1), 148-162.

Garber, J.A. (2013). Pubertal timing and the development of psychopathology in adolescence and beyond. *Hormones and Behaviour, 64*(2), 262-269.

Garber, J., & Weersing, V. R (2010). Comorbidity of anxiety and depression in youth: Implications for treatment and prevention. Clinical Psychology, 17, 293–306.

Gardner, M., & Steinberg, L. (2005). Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: An experimental study. *Developmental Psychology, 41,* 625–35.

Garnefski, N., Legerstee, J., Kraaij, V., van den Kommer, T., & Teerds, J. A. N. (2002). Cognitive coping strategies and symptoms of depression and anxiety: A comparison between adolescents and adults. *Journal of adolescence*, *25*(6), 603-611.

Gauze, C., & Buckowski, W. (1996). Interaction between family environment and friendship and association with self-perceived well-being during adolescence. *Child development, 7(5),* 2201-2216.

Gazelle, H., & Ladd, G. W. (2003). Anxious solitude and peer exclusion: a diathesis-stress model of internalizing trajectories in childhood. *Child Development, 74(1),* 257–278.

Giel, R., De Arango, M. V., Climent, C. E., Harding, T. W., Ibrahim, H. H. A., Ladrido-Ignacio, L., ... & Younis, V. O. A. (1981). Childhood mental disorders in primary health care: results of observations in four developing countries. *Pediatrics*, *68*(5), 677-683.

Gillies, H. (1958). The clinical diagnosis of early schizophrenia. In T.F. Rodger, K.M. Mowbray & J.R. Roy (Eds.). *Topics in psychiatry* (pp. 47-56). Cassell, London.

Goodenow, C. (1993). Classroom belonging among early adolescent students relationships to motivation and achievement. *The Journal of Early dolescence*, *13*(1), 21-43.

Gooding, D. C., Tallent, K. A., & Matts, C. W. (2005). Clinical status of at-risk individuals 5 years later: further validation of the psychometric high-risk strategy. *Journal of abnormal psychology*, *114*(1), 170-175.

Goodman, S. H., & Tully, E. (2008). Children of depressed mothers: Implications for the eitiology, treatment and prevention of depression in children and adolescents.

Gotlib, I. H., & Hammen, C. L. (1992). *Psychological aspects of depression: toward a cognitive-interpersonal integration*. John Wiley & Sons.

Gore, S., Aseltine Jr, R. H., & Colten, M. E. (1993). Gender, social-relationship involvement, and depression. *Journal of Research on Adolescence*, *3*(2), 101-125.

Gotlib, I. H., & Hammen, C. L. (1992). *Psychological aspects of depression: toward a cognitive-interpersonal integration*. John Wiley & Sons.

Grace, A., Floreso, S., Goto, Y., & Lodge, D. (2007). Regulation of firing of dopaminergic neurons and control of goal-oriented behaviours. *Trends Neuroscience, 30(5),* 220-227.

Graham, J. W., & Schafer, J. L. (1999). On the performance of multiple imputation for multivariate data with small sample size. *Statistical strategies for small sample research*, *50*, 1-27.

Granö, N., Karjalainen, M., Itkonen, A., Anto, J., Edlund, V., Heinimaa, M., & Roine, M. (2011). Differential results between self-report and interview-based ratings of risk symptoms of psychosis. *Early intervention in psychiatry*, *5*(4), 309-314.

Grant, K. E**.,** Compas, B. E., Stuhlmacher, A., Thurm, A. E., McMahon, ….& Westerholm, R. I. (2003). Stressors and child/adolescent psychopathology: Moving from markers to mechanism of risk. *Psychological Bulletin, 129*, 447-466.

Grant, K.E., O'Koon, J. H., Davis, T. H., Roache, N.A., Poindexter, L. M., Amstrong, M. L…..& McIntosh, J. M. (2004). Protective factor affecting low income urban African American Youths exposed to stress. *The Journal of Early Adolescence, 26(4),* 388-417.

Grant, K. E**.,** Compas, B. E., Thurm, A. E., McMahon, S. D., Gipson, S. D., Campbell, A. J….& Westerholm, R. I. (2006). Stressors and child and adolescent psychopathology: Evidence of moderating and mediating effects. *Clinical Psychology Review, 26,* 257-283.

Gregory, A. M., Caspi, A., Moffitt, T. E., Koenen, K., Eley, T. C., & Poulton, R. (2007). Juvenile mental health histories of adults with anxiety disorders.*American Journal of Psychiatry*, *164*(2), 301-308.

Greenberg, M. T., Siegel, J. M., & Leitch, C. J. (1983). The nature and importance of attachment relationships to parents and peers during adolescence. *Journal of youth and adolescence*, *12*(5), 373-386.

Greenberger, E., Chen, C., Tally, S. R.,&Dong, Q. (2000). Family, peer, and individual correlates of depressive symptomology among U.S. and Chinese adolescents. *Journal of Counseling and ClinicalPsychology, 68,* 209–219.

Gromann, P.M., Gooseens, F.A., Olthof, T., Pronk, J., & Krabbendam, L. (2013). Self-perception but not reputation of bullying victimisation is associated non-clinical psychotic experiences in adolescents. *Psychological Medicine, 43,* 781-787.

Guberman, C. G., Manassis, K. (2011). Symptomatology and family functioning in children

and adolescents with comorbid anxiety and depression. *Journal of the Canadian Academy of Child and Adolescent Psychiatry,* 20, 186–195.

Hafner, H., Loffler, W., Maurer, K., Hambrecht, M., & der Heiden, W (1999). Depression, negative symptoms, social stagnation and social decline in the early Course of schizophrenia. *Acta Psychiatrica Scandinavica, 100*, 105–118.

Hafner, H., Maurer, K., & Riecher-R, A. (1993). The influence of age and sex on the onset and early course of schizophrenia. *The British Journal of Psychiatry*,*162*(1), 80-86.

Hall, G. S. (1904). *Adolescence: Its psychology and its relations to physiology, anthropology, sociology, sex, crime, religion, and education* (Vols. I & II). New York: Appleton & Co.

Hammen, C. (1991). Generation of stress in the course of unipolar depression. *Journal of abnormal psychology*, *100*(4), 555.

Hammen, C., Brennan, P. A., Keenan-Miller, D., & Herr, N. R. (2008). Early onset recurrent subtype of adolescent depression: Clinical and psychosocial correlates. *The Journal of Child Psychology and Psychiatry, 49(4),* 433-440.

Hankin, B. L., Abramson , L. Y. (1999). Development of gender differences in depression: description and possible explanations. *American Medicine,* 31, 372- 379.

Hankin, B. L., Mermelstein, R., & Roesch, L. (2007). Sex differences in adolescent depression: Stress exposure and reactivity models. *Child Development*, *78*(1), 279-295.

Hanna, E. Z., Yi, H., Dufour, M. C., & Whitmore, C. C. (2001). The relationship of early-onset regular smoking to alcohol use, depression, illicit drug use, and other risky behaviours during adolescence: results from the youth supplement to the third National Health and Nutrition Examination Survey. *Journal of Substance Abuse, 13,* 265-282.

Hanssen, M. S. S., Bijl, R. V., Vollebergh, W., & Van Os, J. (2003). Self-reported psychotic

experiences in the general population: a valid screening tool for DSM-III-R psychotic disorders?. *Acta Psychiatrica Scandinavica*, *107*(5), 369-377.

Hanssen, M., Bak, M., Bijl, R., Vollebergh, W., & van Os, J. (2005). The incidence of subclinical psychotic experiences in th general population. *British Journal of Clinical Psychology. 44,* 181-191.

Hartup, W. W. (1992). Peer relations in early and middle childhood. In *Handbook of social development* (pp. 257-281). Springer US.

Hartup, W. W. (1996). "The Company They Keep: Friendships and Their Developmental Significance." *Child Development* 67(1), 1–13.

Hartup, W.W., & Stevens, N. (1999). Friendship and adaptation across the life span. *Institute of Child Development, University of Minnesota, Minneapolis, 8(3),* 76-79.

Hastings, T. L., & Keiley, M. L., (1997). Development and validation of the Screen for Adolescent Violence Exposure (SAVE), *Journalof Abnormal Child Psychology. 25,* 511-520.

Hawker, D. S., & Boulton, M. J. (2000). Twenty years' research on peer victimization and psychosocial maladjustment: a meta-analytic review of cross-sectional studies. *Journal of child psychology and psychiatry*, *41*(4), 441-455.

Hawton, K., Fagg, J., & Simkin, S. (1996). Deliberate self-poisoning and self-injury in children and adolescents under 16 years of age in Oxford, 1976-1993. *The British Journal of Psychiatry*, *169*(2), 202-208.

Haynie, D. L., Nansel, T., Eitel, P., Crump, A. D., Saylor, K., Yu, K., & Simons-Morton, B. (2001). Bullies, victims, and bully/victims: Distinct groups of at-risk youth. *The Journal of Early Adolescence*, *21*(1), 29-49.

Heim, C., & Nemeroff, C.B. (2000). The impact of early adverse experiences on brain

systems involved in anxiety and affective disorders. *Biological Psychiatry, 46,* 1509–1522.

Hennessy, M. B., Kaiser, S., & Sachser, N. (2009). Social buffering of the stress response: diversity, mechanisms, and functions. *Frontiers in neuroendocrinology*, *30*(4), 470-482.

Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. British Journal of Clinical Psychology, 44, 227–239.

Hershberg, S. G., Carlson, G. A., Cantwell, D. P., & Strober, M. (1982). Anxiety and depressive disorders in psychiatrically disturbed children. *Journal of Clinical Psychiatry*.

Hides, l., Lubman, D.I., Buckby, J., Pan Yeen, H., Cosqrave, K., Baker, K., & Yung, A.R. (2009).The association between early cannabis use and psychotic like experiences in a community adolescent sample. *Schizophrenia Research, 112(1),* 130-135.

Hinkle, D. E., Wiersma, W., & Jurs, S. G. (1998). Correlation: a measure of relationship. *Applied statistics for the behavioral sciences*, *4*, 105-131.

Hodges, E. V., Boivin, M., Vitaro, F., & Bukowski, W. M. (1999). The power of friendship: protection against an escalating cycle of peer victimization. *Developmental Psychology*, *35*(1), 94.

Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology*, *65*(4), 599.

Horan, W. P., Subotnik, K. L., Reise, S. P., Ventura, J., & Nuechterlein, K. H. (2005). Stability and clinical correlates of personality characteristics in recent-onset schizophrenia. *Psychological medicine*, *35*(07), 995-1005.

Hornell, J. (1924). The Evil Eye and Related Beliefs in Trinidad. *Folklore*, *35*(3), 270-275.

Horrevorts, E.M.B., Monshouwer, K., Wigman J.T.W., & Vollebergh, W.A.M. (2014). The relation between bullying and subclinical psychotic experiences and the influence of the bullying climate of school classes. *European Child Adolescent Psychiatry, 23,* 765-772.

Horton, R. (2007). Launching a new movement for mental health. *Lancet*, *370*(9590), 806-806.

Howard, M.S., & Medway, F.J. (2004). Adolescent attachment and coping with stress. *Psychology in the School, 41(3),* 391-402.

Horwood, J., Salvi, G., Thomas, K., Duffy, L., Gunnell, D., Hollis, C., ... & Zammit, S. (2008). IQ and non-clinical psychotic symptoms in 12-year-olds: results from the ALSPAC birth cohort. *The British Journal of Psychiatry*, *193*(3), 185-191.

Hunt, D. E. (1975). Person-environment interaction: A challenge found wanting before it was tried. *Review of educational research*, *45*(2), 209-230.

Hutcheson, G., Sofroniou, N. (1999). The multivariate social scientist. London: Sage.

Hysenbegasi, A., Hass, S. L., & Rowland, C. R. (2005). The impact of depression on the academic productivity of university students. *Journal of Mental Health Policy and Economics*, *8*(3), 145.

Ibrahim, A. K., Kelly, S. J., Adams, C. E., & Glazebrook, C. (2013). A systematic review of studies of depression prevalence in university students. *Journal of psychiatric research*, *47*(3), 391-400.

Ivarsson, T., Broberg, A. G., Arvidsson, T., & Gillberg, C. (2005). Bullying in adolescence: Psychiatric problems in victims and bullies as measured by the Youth Self Report (YSR) and the Depression Self-Rating Scale (DSRS). *Nord J Psychiatry, 59*, 365-373.

Jaffee, S.R., Caspi, A., Moffitt, T.E., Polo-Tomas, M., & Taylor, A. (2007). Individual, family and neighbourhood factors distinguish resilient from non-resilient maltreated children. A cumulative stressors model. *Child Abuse Neglect, 31(3),* 231-253.

Janssen, I., Krabbendam, L., Bak, M., de Graff, R., & van Os, J. (2004). Childhood abuse as a risk factor for psychotic experiences. *Acta Psychiatrica Scandinavica, 109*, 38–45.

Jarrett, M. A., & Ollendick, T. H. (2012). Treatment of comorbid attention-deficit/hyperactivity disorder and anxiety in children: A multiple baseline design analysis. *Journal of Consulting and Clinical Psychology*, *80*(2), 239.

Jimerson, S. R., Pletcher, S. M., Graydon, K., Schnurr, B. L., Nickerson, A. B., & Kundert, D. K. (2006). Beyond grade retention and social promotion: Promoting the social and academic competence of students. *Psychology in the Schools*, *43*(1), 85-97.

Johns, L.C. & van Os, J. (2001). The continuity of psychotic experiences in the general Population. *Clinical Psychology Review, 21(8),* 1125-1141.

Johnston, L.D., O'Malley, P.M., Bachman, J.G., & Schulenberg, J.E. (2011). *Monitoring the Future. National results of adolescents drug use.* Institute of Social Research. University of Michigan.

Joiner, T. E., Metalsky, G. I., Katz, J., & Beach, S. R. (1999). Depression and excessive reassurance-seeking. *Psychological Inquiry*, *10*(3), 269-278.

Jones, P., & Murray, R. M. (1991). The genetics of schizophrenia is the genetics of neurodevelopment. *British Journal of Psychiatry*, *158*, 615-623.

Jones, P., Murray, R., Rodgers, B., & Marmot, M. (1994). Child developmental risk factors for adult schizophrenia in the British 1946 birth cohort. *The Lancet*, *344*(8934), 1398-1402.

Juvonen, J., Nishina, A., & Graham, S. (2006). Ethnic diversity and perceptions of safety in urban middle schools. *Psychological Science*, *17*(5), 393-400.

Kagitcibasi, C. (1994). A critical appraisal of individualism and collectivism: Toward a new formulation. In U. Kim, H. C. Triandis, C. Kagitcibasi, S.-C. Choi & G. Yoon (Eds.), *Individualism and collectivism. Theory, methods, and applications,* (pp. 52-65).

Kaiser, H. F. (1970). A second generation little jiffy. *Psychometrika, 35,* 401-415.

Kaltiala-Heino, R., Rimpelä, M., Marttunen, M., Rimpelä, A., & Rantanen, P. (1999). Bullying, depression, and suicidal ideation in Finnish adolescents: school survey. *British Medical Journal*, *319*(7206), 348-351.

Kaltiala-Heino, R., Rimpela, M. Rantanen, P., & Rimpela, A. (2000). Bullying at school-an indicator of adolescent at risk for mental disorders. *Journal of Adolescence, 23(6),* 661-674.

Kaltiala-Heino, R., Fröjd, S., & Marttunen, M. (2010). Involvement in bullying and depression in a 2-year follow-up in middle adolescence. *European Child & Adolescent Psychiatry*, *19*(1), 45-55.

Kanner, A., Coyne, J., Schaefer, C., & Lazarus, R. (1981).' Comparison of Two Modes of Stress Measurement: Daily Hassles and Uplifts Versus Major Life Events', *Journal of Behavioural Medicine,* Vol: 4, No: 1 Pgs: 1-39.

Karlsson, L., Pelkonen, M., Ruuttu, T., Kiviruusu, O., Heilä, H., Holi, M., Marttunen, J. M. (2006). Current comorbidity among consecutive adolescent psychiatric outpatients with DSM-IV mood disorders. *European Child & Adolescent Psychiatry, 15,* 220–231.

Karoly, P. (1993). Mechanism of self-regulation: A systems view. *Annual Review of Psychology, 44,* 23-52.

Katz, C. M., & Fox, A. M. (2010). Risk and protective factors associated with gang-involved youth in Trinidad and Tobago. *Revista Panamericana de Salud Pública*, *27*(3), 187-202.

Keating, D.P. (2004). Cognitive and brain development. In *Handbook of Adolescent Psychology*, R.J. Lerner & L.D.Steinberg, L.D. (pp. 45–84).

Kelleher, I., Harley, M., Lynch, F., Arseneault, L., Fitzpatrick, C., & Cannon, M. (2008). Associations between childhood trauma, bullying and psychotic symptoms among a school-based adolescent sample. *The British Journal of Psychiatry*, *193*(5), 378-382.

Kelleher, I., Jenner, J. A., & Cannon, M. (2010). Psychotic symptoms in the general population–an evolutionary perspective. *The British Journal of Psychiatry*, *197*(3), 167-169.

Kelleher, I., Harley, M., Murtagh, A., & Cannon, M. (2011). Are screening instruments valid for psychotic-like experiences? A validation study of screening questions for psychotic-like experiences using in-depth clinical interview. *Schizophrenia bulletin*, *37*(2), 362-369.

Kelleher, I., Connor, D., Clarke, M.C., Delvin, N., Harley, M., & Cannon, M. (2012). Prevalence of psychotic symptoms in childhood and adolescence: A systematic review and meta-analysis of population-based studies. *Psychological Medicine, 9*, 1-7.

Kelleher, I., Keeley, H., Corcoran, P., Ramsay, H., Wasserman, C., Carli, V., ... & Cannon, M. (2013). Childhood trauma and psychosis in a prospective cohort study: cause, effect, and directionality. *American journal of psychiatry*, *170*(7), 734-741.

Keshavan, M. S., Vinogradov, S., Rumsey, J., Sherrill, J., & Wagner, A. (2014). Cognitive training in mental disorders: update and future directions. *American Journal of Psychiatry*.

Kessler R. C., McGonagle K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S.,

Wittchen, H. U., Kendler, K. S. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: results from the National Comorbidity Survey. *Archive Geneneral Psychiatry, 51,* 8-19.

Kessler, R.C., Foster, C.L., Saunders, W.B., & Stang, P.E. (1995). Social consequences of psychiatric disorders, I: educational attainment. *American Journal of psychiatry*, 152, 1026–1032.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, K. R., ... & Wang, P. S. (2003). The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). *Jama*, *289*(23), 3095-3105.

Kessler, R.C., Birnbaum, H., Demler, O., Falloon, I.R., Gagnon, E., Guyer, E…..& Howes, M.J. (2005).The prevalence and correlates of non-affective psychosis in the National Comorbidity Survey Replication (NCS-R). *Biological Psychiatry, 58(8*), 668–76.

Kessler, R. C., Angermeyer, M., Anthony, J. C., De Graaf, R., Demyttenaere, K., Gasquet, I., ... & Kawakami, N. (2007). Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey Initiative. *World Psychiatry*, *6*(3), 168.

Kessler, R. C., Petukhova, M., Sampson, N. A., Zaslavsky, A. M., & Wittchen, H. U. (2012). Twelve-month and lifetime prevalence and lifetime morbid risk of anxiety and mood disorders in the United States. *International Journal of Methods in Psychiatric Research*, *21*(3), 169-184.

Kieling, C., Baker-Henningham, H., Belfer, M., Conti, G., Ertem, I., Omigbodun, O., ... & Rahman, A. (2011). Child and adolescent mental health worldwide: evidence for action. *The Lancet*, *378*(9801), 1515-1525.

Kiesner, J., Poulin, F., & Nicotra, E. (2003). Peer relations across context: Individual-

network homophily and network inclusion in and after school. *Child Development, 74(5),* 1328-1343.

Kim, Y. S., Koh, Y., & Leventhal, B. (2005). School bullying and suicidal risk in Korean middle school students. [Letter to the editor]. *Pediatrics*, *115*, 357-363.

Kim, Y.S., & Leventhal, B. (2008). Bullying and suicide. A review. *International Journal of Adolescent Medical Health, 20(2),* 133-154.

Kim-Cohen, J., Caspi, A., Moffitt, T. E., Harrington, H., Milne, B. J., & Poulton, R. (2003). Prior juvenile diagnoses in adults with mental disorder: developmental follow-back of a prospective-longitudinal cohort. *Archives of General Psychiatry*, *60*(7), 709-717.

King, A.**,** Wold, B., Tudor-Smith, C., Harel, Y. (1994). *The Health of Youth: A Cross-National Survey*. Canada: WHO Library Cataloguing. WHO Regional Publications, European Series No. 69.

King, A. (1996). *The Health of Youth: A Cross-National Survey. WHO Regional Publications, European Series No. 69*. Office of Publications, WHO Regional Office for Europe, Scherfigsvej 8, DK-2100, Copenhagen 0, Denmark.

Klasen, H., & Crombag, A. C. (2013). What works where? A systematic review of child and adolescent mental health interventions for low and middle income countries. *Social psychiatry and psychiatric epidemiology*, *48*(4), 595-611.

Knappe, S., Beesdo, K., Fehm, L., Lieb, R., & Wittchen, H. U. (2009). Associations of familial risk factors with social fears and social phobia: evidence for the continuum hypothesis in social anxiety disorder?. *Journal of Neural Transmission*, *116*(6), 639-648.

Kochel, K. P., Ladd, G. W., & Rudolph, K. D. (2012). Longitudinal associations among youth depressive symptoms, peer victimization, and low peer acceptance: An interpersonal process perspective. *Child Development*, *83*(2), 637-650.

Konings, M., Bak,M., Hanssen, M., van Os, J., Krabbendam, L., 2006. Validity and reliability of the CAPE: a self-report instrument for the measurement of psychotic experiences in the general population. *Acta Psychiatrica Scandinivica. 114,* 55–61.

Kovacs, M., Gatsonis, C., Paulauskas, S. L., & Richards, C. (1989). Depressive disorders in childhood: IV. A longitudinal study of comorbidity with and risk for anxiety disorders. *Archives of General Psychiatry*, *46*(9), 776.

Kovacs, M., & Goldstone, D. (1991). Cognitive and social cognitive development of depressed children and adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, *30*(3), 388-392.

Kowalski, R.M., & Limber, S.P. (2007). Electronic bullying among middle school students. *Journal of Adolescent Health, 42,* S22-S30.

Kring, A.M., & Sloan, D. M. (2010). Emotion regulation in psychopathology: A transdiagnostic approach to etiology and treatment. New York, NY: Guilford.

La Greca, A. M., & Lopez, N. (1998). Social anxiety among adolescents: Linkages with peer relations and friendships. *Journal of Abnormal Child Psychology*, *26*(2), 83-94.

La Greca, A. M., & Harrison, H. M (2005). Adolescent Peer Relations, Friendships, and Romantic Relationships: Do They Predict Social Anxiety and Depression? *Journal of Clinical Child and Adolescent Psychology, 34(1), 49–61.*

Langhaug, L.F., Pascoe, S.J., Mavhu, W., Woelk, G., Sherr, L., Hayes, R.J…..& Cowan, F.M. (2010). High prevalence of affective disorders among adolescents living in rural Zimbabwe. *Journal of Community Health, 35,* 355-364.

Larson, R., & Ham, M. (1993). Stress and" storm and stress" in early adolescence: The relationship of negative events with dysphoric affect. *Developmental psychology*, *29*(1), 130-140.

Laruelle, M., Abi-Dargham, A., Gil, R., Kegeles, L., Innis, R. (1999). Increased dopamine

transmission in schizophrenia: relationship to illness phases. Biol. Psychiatry 46, 56–72.

Lataster, T.**,** van Os, J., Drukker, M., Henquet, C., Feron, F.,Gunther, N., Myin-Germeys, I. (2006). Childhood victimisation and developmental expression of non-clinical delusional ideation and hallucinatory experiences. *Social Psychiatry and Psychiatric Epidemiology 41*, 423–428.

Lataster, T., Wicher, M., Jacobs, N., Mengeler, R., Derom, C., Thiery, E……& Myin-Germeys, I. (2009). Does the reactivity to stress cosegregate with subclinical psychosis? A general Population twin study. *Acta Psychiatrica Scandinavica, 119(1),* 45-53.

Lataster, T., Myins-Germeys, I., Lieb, R., Wittchen, H-U, & van Os, J. (2012). Adversity and psychosis. A 10 year prospective study investigating synergism between early and recent adversity in psychosis. *Acta Psychiatrica Scandinavica, 125,* 388-399.

Laurens, K. R., Hodgins, S., Maughan, B., Murray, R. M., Rutter, M. L., & Taylor, E. A. (2007). Community screening for psychotic-like experiences and other putative antecedents of Schizophrenia in children 9-12 years. *Schizophrenia Research, 90,* 130-146.

Laursen, B. (1993). The perceived impact of conflict on adolescent relationships. Journal of Developmental Psychology, 39 (4), 535-550

Laursen, B., & Collins, W. A. (2009). Parent-child relationships during adolescence. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of Adolescent Psychology. Vol. 2: Contextual influences on adolescent development* (3rd ed., pp. 3–42). New York, NY, Wiley.

Laursen, B., Hartup, W. W., & Koplas, A. L. (1996). Towards understanding peer conflict. *Merrill-Palmer Quaterly, 42(1),* 76-102.

Lazarus, R. S. 1966. Psychological Stress and the Coping Process. New York: McGraw Hill

Lazarus, R.S. (1993). From psychological stress to the emotion: A history of changing outlooks. *Annual Review, 44,* 1-21.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping.* New York, Springer.

Leaderbeater, B. J., Blatt, S. J., & Quinlan, D. M. (1995). Gender-linked vulnerabilities, depressive symptoms, stress and problem behaviours in adolescents. *Journal of Research in Adolescence, 5(1*), 1-29.

Lennarz, H. K., van Roekel, E., Kuntsche, E., Lichtwarck-Aschoff, A., Hollenstein, T., Engels, R. C., & Granic, I. (2016). Associations Between Interpersonal Relationships and Negative Affect in Adolescents. *Swiss Journal of Psychology* 75, 71-79.

Lerner, R.M., & Steinberg, L. (2009). The scientific study of adolescent development. Historical and contemporary perspectives. In R.M. Lerner & L. Seinbert (Eds.). *Handbook of Adolescent Psychology,* 331-362.

Letcher, P., Sanson, A., Smart, D., & Toumbourou, J. W. (2012). Precursors and correlates of anxiety trajectories from late childhood to late adolescence. *Journal of Clinical Child & Adolescent Psychology*, *41*(4), 417-432.

Levine, S., Ursin, H., 1991. What is stress? In M.R. Brown, G.F. Koob, & C. Rivier (Eds.), Stress. *Neurobiology and Neuroendocrinology*. Marcel Dekker, Inc., New York, 3–21.

Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1995). Adolescent psychopathology: III. The clinical consequences of comorbidity. *Journal of the American Academy of Child & Adolescent Psychiatry*, *34*(4), 510-519.

Lewinsohn, P. M., Zinbarg, R., Seeley, J. R., Lewinsohn, M., & Sack, W. H. (1997). Lifetime comorbidity among anxiety disorders and between anxiety disorders and other mental disorders in adolescents. *Journal of Anxiety Disorders*, *11*(4), 377-394.

Lewis, D. A., & González-Burgos, G. "Neuroplasticity of neocortical circuits in

schizophrenia." *Neuropsychopharmacology* 33.1 (2008): 141-165.

Lewis, D. A., Hashimoto, T., & Volk, D. W. (2005). Cortical inhibitory neurons and schizophrenia. *Nature Reviews Neuroscience, 6,* 312–324.

Lichtenstein, P., Yip, B.H., Bjork, C., Parwitian, Y., Cannon, T.D., Sullivan, P.F…….& Hultman, C.M. (2009).Common genetic influence for schizophrenia and bipolar disorder: A population based study of two nuclear families. *The Lancet*, 373.

Licitra-Kleckler, D., & Waas, G. A. (1993). Perceived social support among high- stress adolescents: The role of peers and family. Journal of Adolescent Research, 8(4), 381-402.

Lin, A., Wigman, J. T. W., Nelson, B., Vollebergh, W. A. M., Van Os, J., Baksheev, G., ... & Yung, A. R. (2011). The relationship between coping and subclinical psychotic experiences in adolescents from the general population–a longitudinal study. *Psychological medicine*, *41*(12), 2535-2546.

Lincoln, T. M., Peter, N., Schäfer, M., & Moritz, S. (2009). Impact of stress on paranoia: an experimental investigation of moderators and mediators. *Psychological medicine*, *39*(07), 1129-1139.

Linscott, R.J., & van Os, J. (2013). An updated and conservative systematic review and meta-Analysis of epidemiological evidence on psychotic experiences in children and adults: On the pathway from proneness to persistence to dimensional expression across mental disorders. *Psychological Medicine, 43(6),* 1133-1149.

Lopez, C., & DuBois, D. L. (2005). Peer victimization and rejection: Investigation of an integrative model of effects on emotional, behavioral, and academic adjustment in early adolescence. *Journal of Clinical Child and Adolescent Psychology*, *34*(1), 25-36.

Lovatt, A., Mason, O., Brett, C., & Peters, E. (2010). Psychotic-like experiences, appraisals,

and trauma. *The Journal of nervous and mental disease*, *198*(11), 813-819.

Lovibond, S., H., Lovibond, P., F. (1995a) Manual for the depression anxiety stress scales. Psychology Foundation, Sydney.

Lumsden, D. P. (1981). *Is the concept of "stress" of any use, anymore?* In Contributions to Primary Prevention in Mental Health. (D. Randall Ed.). Working papers, Toronto.

Ma, C. Q., & Huebner, E. S. (2008). Attachment relationships and adolescents' life satisfaction: Some relationships matter more to girls than boys. *Psychology in the Schools*, *45*(2), 177-190.

Mackie, C. J., Castellanos-Ryan, N., & Conrod, P. J. (2011). Developmental trajectories of psychotic-like experiences across adolescence: impact of victimization and substance use. *Psychological Medicine*, *41*(01), 47-58.

MacBeth, A., & Schwannauer, Gumley, A. (2008). The association between attachment style, social mentalities and paranoid ideation: Analogue study. *Psychological and Psychotherapy: Theory, Research and Practice, 81,* 79-93.

Maharaj, R. G., Reid, S. D., Misir, A., & Simeon, D. T. (2005). Depression and its associated factors among patients attending chronic disease clinics in southwest Trinidad. *West Indian Medical Journal*, *54*(6), 369-374.

Maharaj, R. G. (2007). Depression and the nature of Trinidadian family practice: a cross-sectional study. *BioMed Central family practice*, *8*(1), 1.

Maharaj, R.G., Ali, F., Cumberbatch, K. (2008). Depression among adolescents, age 13-19 years, attending secondary schools in Trinidad. Prevalence and associated factors. *West India Medical*, *57*, 352-359.

Maharajh, H. D., Ali, A., & Konings, M. (2006). Adolescent depression in Trinidad and Tobago. *European Child & Adolescent Psychiatry*, *15*(1), 30-37.

Malla, A. K., & Norman, R. M. (1992). Relationship of major life events and daily stressors

to symptomatology in schizophrenia. *Journal of Nervous and Mental Disease*, 180(10), 664-667.

Mamah, D., Owoso, A., Mbwayo, A. W., Mutiso, V. N., Muriungi, S. K., Khasakhala, L. I., ... & Ndetei, D.M. (2013). Classes of psychotic experiences in Kenyan children and adolescents. *Child Psychiatry & Human Development*, *44*(3), 452-459.

Marsden, J., Gossop, M., Stewart, D., Best, D., Farrell, M., Lehmann, P., ... & Strang, J. (1998). The Maudsley Addiction Profile (MAP): a brief instrument for assessing treatment outcome. *Addiction*, *93*(12), 1857-1867.

Martin, C. A., Kelly, T. H., Rayens, M. K., Brogli, B. R., Brenzel, A., Smith, W. J., & Omar, H. (2002). Sensation seeking, puberty, and nicotine, alcohol, and marijuana use in adolescence. *Journal of the American Academy of Child & Adolescent Psychiatry, 41, 1495–1502.*

Maser, J. D., Cloninger, C. R. (1990). Comorbidity of mood and anxiety disorders. American Psychiatric Press: Washington, DC.

Masi G, Favilla L, Mucci M, Millepiedi S. Depressive comorbidity in children and adolescents with generalized anxiety disorder. *Child Psychiatry and Human Development, 30*, 205-215.

Masia-Warner, C., Klein, R. G., Dent, H. C., Fisher, P. H., Alvir, J., Albano, A. M., & Guardino, M. (2005). School-based intervention for adolescents with social anxiety disorder: Results of a controlled study. *Journal of abnormal child psychology*, *33*(6), 707-722.

Mason, J. W. (1975). A historical view of the stress field. Journal of Human Stress, 1, 6 – 27.

Masten, A. S., & Garmezy, N. (1985). Risk, vulnerability, and protective factors in developmental psychopathology. In B. B. Lahey & A. E. Kazdin (Eds.), *Advances in clinical child psychology.*8, 1–52.

Matheson, K., & Anisman, H. (2003). Systems of coping associated with dysphoria, anxiety and depressive illness: a multivariate profile perspective. *Stress*, *6*(3), 223-234.

Mathew, A. R., Pettit, J. W., Lewinsohn, P. M., Seeley, J. R., & Roberts, R. E. (2011). Co-morbidity between major depressive disorder and anxiety disorders: shared etiology or direct causation?. *Psychological Medicine*, *41*(10), 2023-2034.

Mattison, R. E. (2000). School consultation: A review of research on issues unique to the school environment. *Journal of the American Academy of Child & Adolescent Psychiatry*, *39*(4), 402-413.

May, J. C., Delgado, M. R., Dahl, R .E., Stenger, V.A., Ryan, N.D., Fiez, J.A., et al. (2004). Event- related functional magnetic resonance imaging of reward-related brain circuitry in children and adolescents. *Biological Psychiatry, 55(4),* 359-366.

Mc Cubbin, H.I., Sussman, M.A., Patterson, J.M. (2014). Social stress and the family: Advances and development in family sress: Theory and Research. In H.T. Mc Cunnin, H.I. Sussman & M.B. Patterson (Eds.). *Marriage and Family Review, 6,* 1-2.

McCubbin, H. I., & Figley, C. R. (2014). *Stress and the family: Coping with normative transitions* (Vol.1). Routledge.

McGrath, J.E. (1970). A conceptual formulation for research on stress. In J.E. McGrah (Ed.). *Social and psychological factors in stress,* 10-21, New York. Holt, Rinehart & Winston.

McQuaid, J. R., Monroe, S. M., Roberts, J. E., Kupfer, D. J., Frank, E. (2000). A comparison of two life stress assessment approaches: prospective prediction of treatment outcome in recurrent depression. *Journal of Abnormal Psychology, 109,787–91*.

McLellan, A. T., Cacciola, J. C., Alterman, A. I., Rikoon, S. H., & Carise, D. (2006). The Addiction Severity Index at 25: origins, contributions and transitions. *American Journal on Addictions*, *15*(2), 113-124.

McMahon, S. D., Grant, K. E., Compas, B. E., Thurm, A. E., & Ey, S. (2003). Stress and Psych8opathology in children and adolescents: is there evidence of specificity?. *Journal of Child Psychology and Psychiatry*, *44*(1), 107-133.

McNamara, S. (2000). Stress in young people: What's new and what can we do? New York: Continuum.

Mead, S., Hilton, D., & Curtis, L. (2001). Peer support: a theoretical perspective. *Psychiatric rehabilitation journal*, *25*(2), 134-141.

Meins, E., Jones, S. R., Fernyhough, C., Hurndall, S., & Koronis, P. (2008). Attachment dimensions and schizotypy in a non-clinical sample. *Personality and Individual Differences*, *44*(4), 1000-1011.

Mellor, D., Vinet, E. V., Xu, X., Mamat, N. H. B., Richardson, B., & Román, F. (2015). Factorial invariance of the DASS-21 among adolescents in four countries. *European Journal of Psychological Assessment*, 31(2), 138-142.

Menesini, E., Sánchez, V., Fonzi, A., Ortega, R., Costabile, A., & Lo Feudo, G. (2003). Moral emotions and bullying: A cross-national comparison of differences between bullies, victims and outsiders. *Aggressive Behavior*, *29*(6), 515-530.

Merikangas, K. R., Mehta, R. L., Molnar, B. E., Walters, E. E., Swendsen, J. D., Aguilar-Gaziola, S., ... & Kolody, B. (1998). Comorbidity of substance use disorders with mood and anxiety disorders: results of the International Consortium in Psychiatric Epidemiology. *Addictive behaviors*, *23*(6), 893-907.

Merikangas, K.R., He, J., Burstein, M., Swanson, S.A., Avenevoli, S., Cui, L……..& Swendsen, J. (2010). Lifetime prevalence of mental disorders in US adolescents: Results from the National Comorbidity Study-Adolescent Supplement (NCS-A). *Journal of American Academy Child Psychiatry, 49(10),* 980-989.

Mezulis, A. H., Hyde, J. S., & Abramson, L. Y. (2006). The developmental origins of

cognitive vulnerability to depression: temperament, parenting, and negative life events in childhood as contributors to negative cognitive style. *Developmental psychology*, *42*(6), 1012.

Michaud, P. A., Suris, J. C., & Deppen, A. (2006). Gender-related psychological and behavioural correlates of pubertal timing in a national sample Swiss adolescents. *Molecule and Cellular Endrocrinology, 254-255*, 172-178.

Michel, G., Bisegger, C., Fuhr, D. C., & Abel, T. (2009). Age and gender differences in health-related quality of life of children and adolescents in Europe: a multilevel analysis. *Quality of life research*, *18*(9), 1147-1157.

Mikolajczyk, R. T., Maxwell, A. E., El Ansari, W., Naydenova, V., Stock, C., Ilieva, S., ... & Nagyova, I. (2008). Prevalence of depressive symptoms in university students from Germany, Denmark, Poland and Bulgaria. *Social psychiatry and psychiatric epidemiology*, *43*(2), 105-112.

Miller, D. B., Webster, S. E., & Macintosh, R. (2002). What's there and what's not: Measuring daily hassles in urban African American adolescents. *Research on Social Work Practice,* 12, 375-388.

Mineka, S., Watson, D., & Clark, L. A. (1998). Comorbidity of anxiety and unipolar mood disorders. *Annual Review of Psychology*, *49*(1), 377-412.

Mishara, A. L., & Fusar-Poli, P. (2013). The phenomenology and neurobiology of delusion formation during psychosis onset: Jaspers, Truman symptoms, and aberrant salience. *Schizophrenia bulletin*, *39*(2), 278-286.

Monroe, S. M. (1983). Major and minor life events as predictors of psychological distress: Further issues and findings. *Journal of Behavioral Medicine, 6*, 189-205.

Mossaheb, N., Becker, J., Schaefer, M., Klier, C., Schloegelhofer, M., Papageorgiou, K., Amminger, P., 2012. The Community Assessment of Psychic Experience (CAPE)

questionnaire as a screening-instrument in the detection of individuals at ultra-high risk for psychosis. *Schizophrenia Research, 141*, 210–214.

Mueser, K. T., Rosenberg, S. D., Goodman, L. A., & Trumbetta, S. L. (2002). Trauma, PTSD, the course of severe mental illness: an interactive model. *Schizophrenia Research, 53,* 123-143.

Murray-Close, D. (2013). Psychophysiology of adolescent peer relations II: Recent advances and future directions. *Journal of Research on Adolescence, 23(2),* 260-273.

Myin-Germeys, I., van Os, J., Schwartz, J. E., Stone, A. A., & Delespaul, P. A. (2001). Emotional reactivity to daily life stress in psychosis. *Archives of general psychiatry*, *58*(12), 1137-1144.

Myin-Germeys, I., Delespaul, P. H., & Van Os, J. (2005). Behavioural sensitization to daily life stress in psychosis. *Psychological medicine*, *35*(05), 733-741.

Myin-Germeys, I., & van Os, J. (2007). Stress-reactivity in psychosis: evidence for an affective pathway to psychosis. *Clinical psychology review*, *27*(4), 409-424.

Nansel T. R., Overpeck, M., Pilla, R.S., Ruan, W. J., Simons-Morton, B., Scheidt, P. (2001) Bullying behaviors among US youth: prevalence and association with psychosocial adjustment. *The Journal of American Medical Association, 285(16),* 2094–2100.

Nansel, T. R., Craig, W., Overpeck, M. D., Saluja, G., & Ruan, W. J. (2004). Cross-national consistency in the relationship between bullying behaviors and psychosocial adjustment. *Archives of pediatrics & adolescent medicine*, *158*(8), 730-736.

Nash, S. G., McQueen, A., & Bray, J. H. (2005). Pathways to adolescent alcohol use: Family environment, peer influence, and parental expectations. *Journal of Adolescent Health*, *37*(1), 19-28.

Nelson, B., & Yung, A. (2009). Psychotic-like experiences as over-determined phenomena: when do they increase the risk for psychotic disorder? *Schizophrenia Research, 108*, 303-304.

Newcomb, M. D., Huba, G. A., & Bentler, P. A. (1981). A multidimensional assessment of stressful life events among adolescents: Derivation and correlates. *Journal of Health and Social Behavior, 22,* 400-415.

Newman, D. L., Moffitt, T.E., Caspi, A., Silva, P. A. (1998). Comorbid mental disorders: Implications for treatment and sample selection. *Journal of Abnormal Psychology, 107*, 305–311.

Nishida, A., Sasaki, T., Nishimura,Y., Hara, N., Inoue, K., Yamada, T…….& Takami, T. (2010). Psychotic-like experiences are associated with suicidal feeling and deliberate self-harm behaviours in adolescents aged 12-15 years. *Acta Psychiatrica Scandinavica, 121*, 301-307.

Nolan, S. A., Flynn, C., & Garber, J. (2003). Prospective relations between rejection and depression in young adolescents. *Journal of personality and social psychology*, *85*(4), 745.

Nolan-Hoeksema, S., Girgus, J., & Seligman, M. (1992). Predictors and consequences of childhood depressive symptoms: a five year longitudinal study. *Journal of Abnormal Psychology, 101,* 405-422.

Nolen-Hoeksema, S., & Girgus, J. S. (1994). The emergence of gender differences in depression in adolescence. *Psychological Bulletin, 115*, 424–443.

Nolen-Hoeksema, S. (1998). Ruminative coping with depression, In: Heckhausen, J. and Dweck, C.S., eds, Motivation and Self-Regulation Across the Life Span (Cambridge University Press, Cambridge, UK), pp 237–256.

Nolen–Hoeksema, S. (1987). Sex differences in unipolar depression: Evidence and theory.

Psychological Bulletin, 2, 259 –282

Norman, R. M., Malla, A. K., McLean, T. S., McIntosh, E. M., Neufeld, R. W. J., Voruganti, L. P., & Cortese, L. (2002). An evaluation of a stress management program for individuals with schizophrenia. *Schizophrenia research*, *58*(2), 293-303.

Norton, P. J. (2007). Depression Anxiety and Stress Scales (DASS-21): Psychometric analysis across four racial groups. *Anxiety, stress, and coping*, *20*(3), 253-265.

Nyborg, V. M., & Curry, J. F. (2003). The impact of perceived racism: Psychological symptoms among African American boys. *Journal of Clinical Child and Adolescent Psychology, 32,*258-266.

Offer, D. (1969). *The psychological world of the teenager: A study of normal adolescent boys.* New York: Basic Books.

Ollendick, T. H., & Yule, W. (1990). Depression in British and American children and its relation to anxiety and fear. *Journal of Consulting and Clinical Psychology*, *58*(1), 126.

Olsson, E. (2009). The Role of Relations Do Disadvantaged Adolescents Benefit More from High-Quality Social Relations?. *Acta Sociologica*, *52*(3), 263-286.

Olweus, D. (1993). *Bullying at School: What We Know and What We Can Do*. Oxford, England, Blackwell.

Olweus D. 1999a. Norway. In: P. K. Smith, Y. Morita, J. Junger-Tas, D. Olweus, R. Catalano, & P.Slee (Eds.).*The nature of school bullying: a cross-national perspective* (pp.10-11). London/New York, Routledge.

O'Neil, K. A., Podell, J. L., Benjamin, C. L., Kendall, P. C. (2010). Comorbid depressive disorders in anxiety-disordered youth: Demographic, clinical, and family characteristics. *Child Psychiatry and Human Developmt, 41,* 330–341.

Orvaschel, H., Lewinsohn, P. M., & Seeley, J. R. (1995). Continuity of psychopathology in a

community sample of adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, *34*(11), 1525-1535.

Osterman, K. F. (2000). Students' need for belonging in the school community. *Review of educational research*, *70*(3), 323-367.

Owens, M., Stevenson, J., Hadwin, J. A., & Norgate, R. (2012). Anxiety and depression in academic performance: An exploration of the mediating factors of worry and working memory. *School Psychology International*, *33*(4), 433-449.

Owusu, A., Hart, P., Oliver, B., & Kang, M. (2011). The association between bullying and psychological health among senior high school students in Ghana, West Africa. *Journal of School Health*, *81*(5), 231-238.

Paikoff, R., & Brooks-Gunn, J. (1991). Do parent-child relationships change during puberty? *Psychological Bulletin, 110(1),* 47–66.

Pakenham, K. I., & Cox, S. (2015). The effects of parental illness and other ill family members on youth caregiving experiences. *Psychology & Health*, *30*(7), 857-878.

Panak, W. F., Garber, J. (1992). Role of aggression, rejection, and attributions in the prediction of depression in children. Development and Symptomatology, 4, 145–165.

Parke, R. D., & Ladd, G. W. (Eds.). (2016). *Family-peer relationships: Modes of linkage*. Routledge. Patel, V., Araya, R., & Chatterjee, S. (2007). Treatment and prevention of mental disorders in low-income and middle-income countries. *Lancet. 370*, 991–1005.

Patterson, J. M., & McCubbin, H. I. (1983). The impact of family life events and changes on the health of a chronically ill child. *Family Relations: Journal of Applied and Family Studies, 32,*255-264.

Patterson, G. R., Capaldi, D. M. (1990). A mediational model for boys' depressed mood. In: Rolf, J.E., Masten, A., Ciccheti, D., Neuchterlein, K., Weintraub, S. (Eds). Risk and protective factors in the development of psychopathology. Boston: Cambridge University Press, p. 141-163.

Patterson, C. J., Vaden, N. A., & Kupersmidt, J. B. (1991). Family background, recent life events and peer rejection during childhood. *Journal of Social and Personal Relationships*, *8*(3), 347-361.

Patton, G. C., & Viner, R. (2007). Pubertal transition in health. Adolescent Health 1. *Lancet, 369,* 1130-39.

Peer, S. (2006). Peer relationships, child development, and adjustment: A developmental psychopathology perspective. *Developmental Psychopathology, Theory and Method*, *1*, 419.

Peters, E. R., Joseph, S. A., & Garety, P. A. (1999). Measurement of delusional ideation in the normal population: introducing the PDI (Peters et al. Delusions Inventory). *Schizophrenia bulletin*, *25*(3), 553-576.

Peters, E., Joseph, S., Day, S., & Garety, P. (2004). Measuring delusional ideation: the 21-item Peters et al. Delusions Inventory (PDI). *Schizophrenia bulletin*, *30*(4), 1005.

Petersen, A. C., Compas, B. E., Brooks-Gunn, J., Stemmler, M., & Ey, S. (1993). Depression in adolescence. *American Psychology,* 48, 155- 168.

Petrosino, A., Guckenburg, S., DeVoe, J., & Hanson, T. (2010). *What Characteristics of Bullying, Bullying Victims, and Schools Are Associated with Increased Reporting of Bullying to School Officials?* Issues & Answers. REL 2010-No. 092. Regional Educational Laboratory Northeast & Islands.

Phillips, J., Charles, M., Sharpe, L., & Matthey, S. (2009). Validation of the subscales of the Edinburgh Postnatal Depression Scale in a sample of women with unsettled infants. *Journal of affective disorders*, *118*(1), 101-112.

Pietrzak, R. H., Johnson, D. C., Goldstein, M. B., Malley, J. C., Rivers, A. J., Morgan, C. A., & Southwick, S. M. (2010). Psychosocial buffers of traumatic stress, depressive symptoms, and psychosocial difficulties in veterans of Operations Enduring Freedom

and Iraqi Freedom: the role of resilience, unit support, and post-deployment social support. *Journal of affective disorders*, *120*(1), 188-192.

Platt, B., Kadosh, K. C., Lau, T. Y. F. (2013). The role of rejection in adolescent depression. *The Official Journal of Anxiety and Depression Association of America, 30(9),* 809-821.

Pollock. E. D., Kazman. & J. B., Deuster, P. (2015). Family functioning and stress in African American families: A strength-based approach. *Journal of Black Psychology. 41(2),* 144-169.

Posey, T. B., Losch, M. E. (1983). Auditory hallucinations of hearing voices in 375 normal subjects. *Imagination, Cognition and Personality, 3(2),* 99-113.

Poulton, R., Caspi, A., Moffitt, T. E., Cannon, M., Murry, R., Harrington, H. (2000). Children's self-report psychotic symptoms and adult schizophreniform disorder. A 15-year longitudinal study. *Archives of General Psychiatry, 57(11),* 1053-1058.

Preti, A., Bonventre, E., Ledda, V., Petretto, D. R., & Masala, C. (2007). Hallucinatory experiences, delusional thought proneness, and psychological distress in a nonclinical population. *The Journal of nervous and mental disease*, *195*(6), 484-491.

Prioste, A., Narciso, I., Gonçalves, M. M., & Pereira, C. R. (2015). Family relationships and parenting practices: A pathway to adolescents' collectivist and individualist values?. *Journal of Child and Family Studies*, *24*(11), 3258-3267.

Procope-Beckles, M. (2007). *Global school-based student health survey*. Trinidad and Tobago Report. World Health Organisation.

Quiroga, C. V., Janosz, M., Lyons, J. S., & Morin, A. J. (2012). Grade retention and seventh-grade depression symptoms in the course of school dropout among high-risk adolescents. *Psychology*, *3*(09), 749.

Quiroga, C. V., Janosz, M., Bisset, S., & Morin, A. J. (2013). Early adolescent depression

symptoms and school dropout: Mediating processes involving self-reported academic competence and achievement. *Journal of Educational Psychology*, *105*(2), 552.

Radford, L., Corral, S., Bradley, C., Collishaw, S., & Fisher, H. L. (2013). The prevalence and impact of child maltreatment and victimisation in the UK: findings from a population survey of children and young people aged 0 to 17 years. *Child Abuse Negl*, *37*, 801-13.

Raja, N. R., McGee, R., & Stanton,W.R. (1992). Perceived attachment to parents and peers and psychological well-being in adolescence. *Journal of Youth and Adolescence, 21(4),* 471-485.

Rapaport, M. H., Clary, C., Fayyad, R., & Endicott, J. (2005). Quality-of-life impairment in depressive and anxiety disorders. *American Journal of Psychiatry*, *162*(6), 1171-1178.

Read, J. (1997). Child abuse and psychosis: A literature review and implications for professional practice. *Professional Psychology: Research and Practice*, *28*(5), 448-456.

Read, J., van Os, J., Morrison, A.P., Ross, C.A. (2005). Childhood trauma, psychosis and Schizophrenia: A literature review with theoretical and clinical implications. *Acta Psychiatrica Scandinivica, 112,* 330-350.

Reifman, A. & Dunkel-Schetter, C. (1990). Stress, structural social support, and well-being in university students. *Journal of American College Health, 38*, 271-277.

Reinherz, H. Z., Frost, A. K., & Pakiz, B. (1991). Changing faces: Correlates of depressive symptoms in late adolescence. *Family & Community Health: The Journal of Health Promotion & Maintenance*, 14(3), 52-63.

Reinherz, H. Z., Giaconia, R. M., Pakiz, B., Silverman, A. B., Frost, A. K., & Lefkowitz, E.

S. (1993). Psychosocial risks for major depression in late adolescence: A longitudinal community study. *Journal of the American Academy of Child & Adolescent Psychiatry*, *32*(6), 1155-1163.

Reijntjes, A., Vermande, M., Olthof, T., Goossens, F. A., Van De Schoot, R., Aleva, L., & Van Der Meulen, M. (2013). Costs and benefits of bullying in the context of the peer group: A three wave longitudinal analysis. *Journal of abnormal child psychology*, *41*(8), 1217-1229.

Reinherz, H. Z., Giaconia, R. M., Pakiz, B., Silverman, A. B., Frost, A. K., & Lef kowitz, E. S. (1993). Psychosocial risks for major depression in late adolescence: A longitudinal community study. *Journal of the American Academy of Child and Adolescent Psychiatry, 32,* 1155-1163.

Reiss, D., & Leve, L. D. (2007). Genetic expression outside the skin: clues to mechanisms of genotype x environment interaction. *Development and psychopathology*, *19*(4), 1005.

Reitz, A. K., Motti-Stefanidi, F., & Asendorpf, J. B. (2014). Mastering developmental transition in immigrants adolescents: The longitudinal interplay of family functioning, developmental and acculturative tasks. *Developmental Psychology, 50(3),* 754-765.

Remley, A. (1988). The great parental value shift: From obedience to independence. *Psychology Today, 56-59.*

Rescorla, L., Achenbach, T., Ivanova, M. Y., Dumenci, L., Almqvist, F., Bilenberg, N., ... & Erol, N. (2007). Behavioral and emotional problems reported by parents of children ages 6 to 16 in 31 societies. *Journal of Emotional and behavioral Disorders*, *15*(3), 130-142.

Richters, J. E., & Martinez, P. (1993). The NIMH community violence project: I. Children as victims of and witnesses to violence. *Psychiatry, 56,* 7-21.

Rigby K (2002). New Perspectives on Bullying. Jessica Kingsley Publishers : London.

Riley, A. W., Ensminger, M. E., Green, B., & Kang, M. (1998). Social role functioning by adolescents with psychiatric disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, *37*(6), 620-628.

Ringdal, G. I., Ringdal, K., Jordhoy, M. S. & Kaasa, S. (2007). Does social support from family work as a buffer against reactions to stressful life events such as terminal cancer? *Palliative and Supportive Care, 5(1),* 61-69.

Rones, M., & Hoagwood, K. (2000). School-based mental health services: A research review. *Clinical child and family psychology review*, *3*(4), 223-241.

Roosa, M. W., Beals, J., Sandier, I. N., & Pillow, D. R. (1990). The role of risk and protective factors in predicting symptomatology in adolescent self-identified children of alcoholic parents. *American Journal of Community Psychology, 18,* 725-741.

Roosa, M. W., Sandier, I. N., Gehring, M., Beals, J., & Gappo, L. (1988). The Children of Alcoholics Life-Events Schedule: A stress scale for children of alcohol abusing parents. *Journal of Studies on Alcohol, 49,* 422-429.

Rossler, W., Riecher-Rossler, A., Angst, J., Murray, R., Gama, K., Eich, D…….. & Gross, V.A. (2007). Psychotic experiences in the general population: A twenty year prospective community study. *Schizophrenia Research, 92,* 1-14.

Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: potential trade-offs for the emotional and behavioral development of girls and boys. *Psychological Bulletin*, *132*(1), 98.

Rose, A. J., Schwartz-Mette, R. A., Smith, R. L., Asher, S. R., Swenson, L. P., Carlson, W., & Waller, E. M. (2012). How girls and boys expect disclosure about problems will make them feel: Implications for friendships. *Child Development*, *83*(3), 844-863.

Roth, M., Schumacher, J., & Brahler, E. (2005). Sensation seeking in the community: Sex, age, and socio-demographic comparisons on a representative German population

sample. *Personality and Individual Differences, 39,* 1261-1271.

Rothon, C., Head, J., Klineberg, E., & Stansfeld, S. (2011). Can social support protect bullied adolescents from adverse outcomes? A prospective study on the effects of bullying on the educational achievement and mental health of adolescents at secondary schools in east London. *Journal of Adolescence, 34,* 579-588.

Roza, S. J., Hofstra, M. B., van der Ende, J., & Verhulst, F. C. (2003). Stable prediction of mood and anxiety disorders based on behavioral and emotional problems in childhood: a 14-year follow-up during childhood, adolescence, and young adulthood. *American Journal of Psychiatry*, *160*(12), 2116-2121.

Rubin, K. H., Bukowski, W. M., & Parker, J. G. (1998). Peer interactions, relationships, and groups. *Handbook of child psychology*.

Rubin, K. H., Chen, X., Coplan, R., & Buskirk, A. A. (2005). Peer relationship in childhood. In M. Bornstein & M. Lamb (Eds.). *Development Science*. (pp.469-512). Mahvah, New Jersey, Erlbaum.

Rubin, K. H., Bukowski, W. M., & Parker, J. G. (2006). Peer interactions, relationships, and groups. In N. Eisenberg, W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology*. Hoboken, NJ: Wiley.

Rudolph, K. D. (2009). The interpersonal context of adolescent depression. *Handbook of depression in adolescents*, 377-418.

Rudolph, K. D. (2002). Gender differences in emotional responses to interpersonal stress during adolescence. *Journal of Adolescent Health*, *30*(4), 3-13.

Rudolph, K. D., & Hammen, C. (1999). Age and gender as determinants of stress exposure, generation, and reactions in youngsters: A transactional perspective. *Child Development*, *70*(3), 660-677.

Ruprah, I. J., & Sierra, R. (2014). Mothers Are Right: Eat Your Vegetables And Keep Away

From The Girls (Boys): Bullying Victimization Profile in the Caribbean.

Rushton, J. L., Forcier, M., & Schectman, R. M. (2002). Epidemiology of depressive symptoms in the National Longitudinal Study of Adolescent Health. *Journal of the American Academy of Child & Adolescent Psychiatry*, *41*(2), 199-205.

Russell, G., & Shaw, S. (2009). A study to investigate the prevalence of social anxiety in a sample of higher education students in the United Kingdom. *Journal of Mental Health*, *18*(3), 198-206.

Ruttle, P. L., Shirtcliff, E. A., Armstrong, J. M., Klein, M. H., & Essex, M. J. (2015). Neuroendocrine coupling across adolescence and the longitudinal influence of early life stress. *Developmental Psychobiology, 57*(6), 688-704.

Salmivalli, C., & Nieminen, E. (2002). Proactive and reactive aggression among school bullies, victims, and bully-victims. *Aggressive Behavior*, *28*(1), 30-44.

Sandier, I., Wolchik, S., Braver, S., & Fogas, B. (1986). Significant events of children of divorce: Toward the assessment of risky situations. In S. M. Auerbach & A. Stolberg (Eds.), *Crisis intervention with children and families* (pp. 65-83). New York: Hemisphere.

Sanford, M., Szatmari, P., Spinner, M., Munroe-Blum, H., lamieson, E., Walsh, C., & Jones, D. (1995). Predicting the one-year course of adolescent major depression. *Journal of the American Academy of Child and Adolescent Psychiatry, 34,* 1618-1628

Sarafino, E. P. (1997). Behavioral treatments for asthma: Biofeedback, respondent, and relaxation based approaches. Wales, UK. The Edwin Mellen Press.

Sarin, F., Wallin, L., & Widerlöv, B. (2011). Cognitive behavior therapy for schizophrenia: a meta-analytical review of randomized controlled trials. *Nordic journal of psychiatry*, *65*(3), 162-174.

Scheithauer, H., Hayer, T., Petermann, F., & Jugert, G. (2006). Physical, verbal, and

relational forms of bullying among German students: Age trends, gender differences, and correlates. *Aggressive behavior*, *32*(3), 261-275.

Schiffman, J., LaBrie, J., Carter, J., Canon, T. Schulsinger, F., Parnas, J. & Mednick, S. (2002). Perception of parent-child relationships in high-risk families, and adult schizophrenia outcome of offspring. *Journal of Psychiatric Research, 36*, 41–47.

Schleider, J. L., Abel, M. R., & Weisz, J. R. (2015). Implicit theories and youth mental health problems: A random-effects meta-analysis. *Clinical psychology review*, *35*, 1-9.

Schlotz, W. Kumsta, R., Layes, I., Entringer, S., & Jones, A. (2008). Covariance between Psychological and endocrine responses to pharmacological challenge and psychosocial Stress: A question of timing. *Psychosomatic Medicine, 70,* 787-796.

Schmeelk-Cone, K.H. & Zimmerman, M.A. (2003). A longitudinal analysis of stress in African American youths: Predictors and outcomes of stress trajectories. *Journal of Youth and Adolescence, 32(6)*, 419-430.

Schreier, A., Wolke, D., Thomas, K., Horwood, J., Hollis, C., Gunnell, D., ... & Salvi, G. (2009). Prospective study of peer victimization in childhood and psychotic symptoms in a non-clinical population at age 12 years. *Archives of General Psychiatry*, *66*(5), 527-536.

Schubart, C. D., Van Gastel, W. A., Breetvelt, E. J., Beetz, S. L., Ophoff, R. A., Sommer, I. E. C., ... & Boks, M. P. M. (2011). Cannabis use at a young age is associated with psychotic experiences. *Psychological Medicine*, *41*(06), 1301-1310.

Schultz, W., Tremblay, L., & Hollerman, J.K. (2000). Rewarding processing in primate orbit to frontal cortex basal ganglia. *Journal of Neuropathology Experimental Neurology, 10(3),* 272-283.

Schwartz, S. H., Cieciuch, J., Vecchione, M., Davidov, E., Fischer, R., Beieilein, C., et al.

(2012). Redefining the theory of basic J Child Fam Stud 123 Author's personal copy individual values. *Journal of Personality and Social Psychology, 103*, 663–688.

Scott, J., Chant, D., Andrews, G., & McGrath, J. (2006). Psychotic-like experiences in the general community: the correlates of CIDI psychosis screen items in an Australian sample. *Psychological Medicine, 36*, 231-238.

Scott, J., Martin, G., Bor, W., Sawyer, M., Clark, J., & McGrath, J. (2009). The prevalence and correlates of hallucinations in Australian adolescents: results from a national survey. *Schizophrenia research*, *107*(2), 179-185.

Scott, J., Martin, G., Bor, W., Sawyer, M., Clark, J., & McGrath, J. (2009). The prevalence and correlates of hallucinations in Australian adolescents: results from a national survey. *Schizophrenia Research, 107*(2-3), 179-185.

Seiffge-Krenke, I. (2000). Causal links between stressful events, coping styles and adolescent Symptomatology. *Journal of Adolescence, 23(6),* 675-681.

Seiffge-Krenke, I. (2013). *Stress, coping, and relationships in adolescence*. Psychology Press.

Siegel, R. S., La Greca, A. M., & Harrison, H. M. (2009). Peer victimization and social anxiety in adolescents: Prospective and reciprocal relationships. *Journal of Youth and Adolescence*, *38*(8), 1096-1109.

Selye, H. (1976*). The stress of life*. New York, McGraw-Hill.

Sentse, M., Kretschmer, T., & Salmivalli, C. (2015). The Longitudinal Interplay between Bullying, Victimization, and Social Status: Age-related and Gender differences. *Social Development*, *24*(3), 659-677.

Shakoor, S., McGuire, P., Cardno, A.C., Freeman, D., Plomin, R., & Ronald, A. (2015). A shared genetic propensity underlies experiences of bullying victimization in late childhood and self-rated paranoid thinking in adolescence. *Schizophrenia Bulletin,*

41(3), 754-763.

Sheidow, A. J., Henry, D. B., Tolan, P. H., & Strachan, M. K. (2014). The role of stress exposure and family functioning in internalizing outcomes of urban families. *Journal of Child and Family Studies*, *23*(8), 1351-1365.

Sherman, P. S., & Porter, R. (1991). Mental health consumers as case management aides. *Psychiatric Services*, *42*(5), 494-498.

Shochet, I. M., Dadds, M. R., Ham, D., & Montague, R. (2006). School connectedness is an underemphasized parameter in adolescent mental health: Results of a community prediction study. *Journal of Clinical Child and Adolescent Psychology*, *35*(2), 170-179.

Siegel, R. S., La Greca, A. M., & Harrison, H. M. (2009). Peer victimization and social anxiety in adolescents: Prospective and reciprocal relationships. *Journal of Youth and Adolescence*, *38*(8), 1096-1109.

Simmons, R.G., & Blyth, D., A. (1987). *Moving into Adolescence: The impact of pubertal change and school context.* Aldine De Gruyter. Hawthorne New York, 1053.

Simning, A., Seplaki, C. L., & Conwell, Y. (2016). The association of an inability to form and maintain close relationships due to a medical condition with anxiety and depressive disorders. *Journal of Affective Disorders*, *193*, 130-136.

Simons, A. D., Angell, K. L., Monroe, S. M., Thase, M. E. (1993). Cognition and life stress in depression: cognitive factors and the definition, rating, and generation of negative life events. *Journal of Abnormal Psychology, 102,584–91.*

Singleton, R. A., & Straits, B. C. (1999). *Approaches to social research* (3rd ed.). New York: Oxford University Press.

Sitko, K., Bentall, R.P., Shelvin, M., O'Sullivan, N., & Sellwood, W. (2014). Association between specific psychotic symptoms and specific child adversities are mediated by

attachment styles: An analysis of the National Comorbidity Survey. *Psychiatry Research, 217,* 202-209.

Smeets, F., Lataster, T., Dominguez, M.G., Hommes, T., Lieb, R., Wittchen, H-U., & van Os, J. (2012). Evidence that onset of psychosis in the population reflects early hallucinations experiences that through environmental risks and affective dysregulation become complicated by delusion. *Schizophrenia Bulletin, 38(3),* 531-542.

Smith, P. K. (1999). *The nature of school bullying: A cross-national perspective*. Psychology Press.

Smith, P. K. & Shu S (2000). What good schools can do about bullying: findings from a survey in English schools after a decade of research and action. *Childhood 7,* 193–212

Sochet, I. M., Mark, K. R., Dadds, H., & Roslyn, M. (2006). School Connectedness Is an Underemphasized Parameter in Adolescent Mental Health: Results of a Community Prediction Study. *Journal of Clinical Child and Adolescent Psychology, 35(2),* 170–179**.**

Solberg, M. E., & Olweus, D. (2003). Prevalence estimation of school bullying with the Olweus bully/victim questionnaire. Aggressive Behaviour, 29, 239-268.

Solomon, P., & Draine, J. (2001). The state of knowledge of the effectiveness of consumer provided services. *Psychiatric Rehabilitation Journal*, *25*(1), 20-27.

Solomon, P. (2004). Peer support/peer provided services underlying processes, benefits, and critical ingredients. *Psychiatric rehabilitation journal*, *27*(4), 392.

Sourander A, Helstela L, Helenius H, Piha J (2000). Persistence of bullying from childhood to adolescence : a longitudinal 8-year follow-up study. *Child Abuse and Neglect 24,* 873–881.

Sowislo, J. F., & Orth, U. (2013). Does low self-esteem predict depression and anxiety? A

meta-analysis of longitudinal studies. *Psychological Bulletin*, *139*(1), 213.

Spauwen, J., Krabbendam, L., Lieb, R., Wittchen, H. U., van Os, J. (2003). Sex differences in psychosis : normal or pathological ? *Schizophrenia Research 62,* 45–49.

Spauwen, J., Krabbendam, L., Lieb, R., Wittchen, H. U., & Van Os, J. (2006b). Impact of psychological trauma on the development of psychotic symptoms: relationship with psychosis proneness. *The British Journal of Psychiatry*, *188*(6), 527-533.

Spear, L.P. (2000). The adolescent brain and age-related behavioural manifestations. *Neuroscience and Biobehavioural Reviews, 24,* 417-463.

Spence, S. H. (1995). *Social skills training: Enhancing social competence with children and adolescents*. Nfer-Nelson.

Spence, S. H., Donovan, C., & Brechman-Toussaint, M. (2000). The treatment of childhood social phobia: The effectiveness of a social skills training-based, cognitive-behavioural intervention, with and without parental involvement. *Journal of Child Psychology and Psychiatry*, *41*(6), 713-726.

39(1), 213.

Sroufe, L. A., Duggal, S., Weinfield, N., & Carlson, E. (2000). Relationships, development, and psychopathology. In *Handbook of developmental psychopathology* (pp. 75-91). Springer US.

Stapinski, L. A., Araya, R., Heron, J., Montgomery, A. A., & Stallard, P. (2015). Peer victimization during adolescence: concurrent and prospective impact on symptoms of depression and anxiety. *Anxiety, Stress, & Coping*, *28*(1), 105-120.

Starr, L. R., Davila, J., 2012b. Responding to anxiety with rumination and hopelessness: mechanism of anxiety-depression symptom co-occurrence? *Cognitive Therapy Research, 36*, 321–337.

Starr, L. R., Stroud, C. B., & Li, Y. I. (2016). Predicting the transition from anxiety to

depressive symptoms in early adolescence: Negative anxiety response style as a moderator of sequential comorbidity. *Journal of Affective Disorders*, *190*, 757-763.

Steel, Z., Marnane, C., Iranpour, C., Chey, T., Jackson, J. W., Patel, V., & Silove, D. (2014). The global prevalence of common mental disorders: a systematic review and meta-analysis 1980–2013. *International journal of epidemiology*, dyu038.

Stefanis, N. C., Hanssen, M., Smirnis, N. K., Avramopoulos, D. A., Evdokimidis, I. K., Stefanis, C. N., Verdoux, H. & Van Os, J. (2002) Evidence that three dimensions of psychosis have a distribution in the general population. *Psychological Medicine, 32,* 347–358.

Stein, M. B., Walker, J. R., & Forde, D. R. (1996). Public-speaking fears in a community sample: Prevalence, impact on functioning, and diagnostic classification. *Archives of General Psychiatry*, *53*(2), 169-174.

Steinberg, L., & Levine, A. (1997). *You and Your adolescent: A parent guide for ages 10-20.* (Rev. Ed.). New York, Harper Perennial.

Steinberg, L. & Morris, J.S. (2001). Adolescent development. *Journal of Cognitive Education and Psychology, 2(1),* 55-87.

Steinberg, L., Dahl, R., Keating, D., Kupfer, D., Masten, A., & Pine, D. (2006). Psychopathology in adolescence: Integrating affective neuroscience with the study of context. In: D. Cicchetti, & D. Cohen. Developmental psychopathology, *Developmental Neuroscience, 2*, 710-741.

Steinberg, L. (2007). Risk taking in adolescence. *Current Directions in Psychological Science,16(2),* 55-59.

Steinberg, L., Albert, D., Cauffman, E., Banich, M., & Graham, S. (2008). Age differences in sensation seeking and impulsivity as indexed by behaviour and self-report: Evidence for a dual systems model. *Developmental Psychology, 44(6),* 1764-1778.

Steriade, M. (1996). Arousal: revisiting the reticular activating system. Science, 272, 225–226.

Stocker, C. M., & Richmond, M. K. (2007). Longitudinal associations between hostility in adolescents' family relationships and friendships and hostility in their romantic relationships. *Journal of Family Psychology*, *21*(3), 490.

Storch, E. A., Masia-Warner, C., Crisp, H., & Klein, R. G. (2005). Peer victimization and social anxiety in adolescence: A prospective study. *Aggressive behavior*, *31*(5), 437-452.

Strain, P. S., Lambert, D. L., Kerr, M. M., Stagg, V., & Lenker, D. A. (1983). Naturalistic assessment of children's compliance to teachers' requests and consequences for compliance. Journal of Applied Behaviour Analysis, 16, 243-249.

Strauss, J. S. (1969). Hallucinations and delusions as points on continua function: Rating scale evidence. *Archives of General Psychiatry*, *21*(5), 581-586.

Stroud, L.R., Foster, E., Papandonatos, G.D., Handwerger, K., Granger, D.A., Kivlighan, K.T…..& Niaura, R. (2009). Stress response and the adolescent: Transition performance versus peer rejection stressors. *Developmental Psychopathology, 2(1),* 47-68.

Stueve, A., Dohrenwend, B., & Skodol, A. (1998). Selected results from a New York risk factor study. In B. Dohrenwend (Ed.). Adversity, Stress, and Psychopathology. *New York, Oxford University Press,* 341–370.

Sullivan, S., Lewis, G., Wiles, N., Thompson, A., & Evans, J. (2013). Psychotic experiences and social functioning: a longitudinal study. *Social Psychiatry and Psychiatric Epidemiology*, *48*(7), 1053-1065.

Suldo, S.M., Shaunessy, E., & Hardesty, R. (2008). Relationships among stress, coping and mental health in high-achieving high school students. *Psychology in the Schools*, *45,*

273-290.

Sweeting, H., Young, R., West, P., & Der, G. (2006). Peer Victimization and depression in early-mid adolescence: A Longitudinal study. *The British Journal of Educational Psychology, 76,* 577-594.

Szabó, M. (2010). The short version of the Depression Anxiety Stress Scales (DASS-21): Factor structure in a young adolescent sample. *Journal of adolescence*, *33*(1), 1-8.

Tabachnick, B. G., & Fidell, L. S. (2012). Using multivariate statistics (6th Ed.). Boston: Pearson Education.

Tamis-LeMonda, C. S., Way, N., Hughes, D., Yoshikawa, H., Kalman, R. K., & Niwa, E. Y. (2008). Parents' goals for children: The dynamic coexistence of individualism and collectivism in cultures and individuals. *Social Development*, *17*(1), 183-209.

Tanner, J. M. (1962). Growth at adolescence.

Telzer, E. H., & Fuligni, A. J. (2013). Positive daily family interactions eliminate gender differences in internalizing symptoms among adolescents. *Journal of youth and adolescence*, *42*(10), 1498-1511.

Tennen, H., Affleck, G., Armeli, S. and Carney, M.A. (2000) A daily process approach to coping: linking theory, research, and practice. *American. Psychology, 55,* 626–636.

Tessner, K.D., Mittal, V., & Walker, E.F. (2011). Longitudinal study of stressful life events and daily stressors among adolescents at high risk for psychotic disorders. *Schizophrenia Bulletin, 37(2),* 432-441.

Thabet, A. A. M., & Vostanis, P. (1998). Social adversities and anxiety disorders in the Gaza Strip. *Archives of Disease in Childhood*, *78*(5), 439-442.

Therman, S., & Ziermans, T. B. (2016). Confirmatory factor analysis of psychotic-like experiences in a general population sample. *Psychiatry research*, *235*, 197-199.

Tienari, P., Wynne, L. C., Sorri, A., Lahti, I., Läksy, K., Moring, J., ... & Wahlberg, K. E.

(2004). Genotype-environment interaction in schizophrenia-spectrum disorder. *The British Journal of Psychiatry*, *184*(3), 216-222.

Torsheim, T., Ravens-Sieberer, U., Hetland, J., Välimaa, R., Danielson, M., & Overpeck, M. (2006). Cross-national variation of gender differences in adolescent subjective health in Europe and North America. *Social science & medicine*, *62*(4), 815-827.

Trezza, V., Campolongo, P., Manduca, A., Moreno, M., Palmery, M., Vanderschuren, L.J., & Cuomo, V. (2012). Altering endocannabinoid neurotransmission at critical developmental ages: Impact on rodent emotionality and cognitive performance. *Behavioural Neuroscience, 6,* 1-12.

Triandis, H. C. (1994). Theoretical and methodological approaches to the study of collectivism and individualism. In U. Kim, H. C. Triandis, C. Kagitcibasi, S.-C. Choi, & G. Yoon (Eds.), Individualism and collectivism. Theory, methods, and applications, (pp. 41-51).

Trinidad and Tobago Newsday Newspaper. (2014).

Tully, P. J., Zajac, I. T., & Venning, A. J. (2009). The structure of anxiety and depression in a normative sample of younger and older Australian adolescents. *Journal of abnormal child psychology*, *37*(5), 717-726.

Turcotte, B. F., Vivier, P., & Gjelsvik, A. (2015). Mental health and bullying in the United States among children aged 6 to 17 years. *Journal of Interpersonal Violence, 30(5),* 782-795.

U.S. Central Intelligence Agency. (2011). Trinidad and Tobago. *The World Factbook*.[on-line available] https://www.cia.gov/library/publications/theworld-factbook/geos/td.html.

Valmaggia, L. R., Day, F. L., Kroll, J., Laing, J., Byrne, M., Fusar-Poli, P., & McGuire, P. (2015). Bullying victimisation and paranoid ideation in people at ultra high risk for psychosis. *Schizophrenia Research*, *168*(1), 68-73.

Van Ameringen, M., Mancini, C., & Farvolden, P. (2003). The impact of anxiety disorders on educational achievement. *Journal of anxiety disorders*, *17*(5), 561-571.

Van Dam, D. S., Van Der Ven, E., Velthorst, E., Selten, J. P., Morgan, C., & De Haan, L. (2012). Childhood bullying and the association with psychosis in non-clinical and clinical samples: A review and meta-analysis. *Psychological Medicine*, *42*(12), 2463-2474.

Van Gastel, W.A., Wigman, J.T.W, Manshouwer, K., Khan, R.S., van Os, J., Boks, M.P.M., & Vollebergh, W.A. M. (2012). Cannabis use and subclinical psychotic experiences in early adolescence: Findings from a Dutch Survey, *Addiction, 107,* 381-387.

van Os, J., Hanssen, M., Biji, R.V., & Ravelli, A. (2000).Strauss (1969) revisited: A psychosis phenotype in the general population? *Schizophrenia Research, 45(1-2),* 11-20.

van Os, J., Hanssen, M., Bijl, R.V., Vollebergh, W. (2001). Prevalence of psychotic disorders and community level of psychotic symptoms: An urban-rural comparison. *Archives of General Psychiatry, 58,* 663-668.

van Os, J., Linscott, R. J., Myin-Germeys, I., Delespaul, P., & Krabbendam, L. (2009). A systematic review and meta-analysis of the psychosis continuum: evidence for a psychosis proneness-persistence-impairment model of psychotic disorder. *Psychological Medicine, 39*(02), 179-195.

van Praag, H. M., de Koet, E. R., & van Os, J. (2004). Stress, the Brain and Depression. *Cambridge University Press*. Cambridge, England.

van Roekel, E., Ha, T., Verhagen, M., Kuntsche, E., Scholte, R. H., & Engels, R. C. (2015). Social stress in early adolescents' daily lives: Associations with affect and loneliness. *Journal of adolescence*, *45*, 274-283.

van Winkle, R., Stefanis, N.C., & Myin-Germeys, I. (2008). Psychosocial stress and

psychosis: A Review of neurobiological mechanisms and the evidence for gene-stress interaction. *Schizophrenia Bulletin, 34(6),* 1095-1105.

Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W….. & Bentall, R. P. (2012). Childhood adversities increase the risk of psychosis: a meta-analysis of patient-control, prospective-and cross-sectional cohort studies. *Schizophrenia Bulletin*, *38*(4), 661-671.

Varghese, D., Scott, J., Welham, J., Bor, W., Najman, J., O'Callaghan, M….. & McGrath, J. (2009). Psychotic-like experiences in major depression and anxiety disorder: A Population based survey in young adults. *Schizophrenia Bulletin, 37*, 389-393.

Varghese D, Saha S, Scott JD, Chan RC, McGrath JJ (2011) The association between family history of mental disorder and delusional-like experiences: A general population study. *American Journal of Medical Genetics B Neuropsychiatric Genetics*. 156B, 478–483.

Veenstra, R., Lindenberg, S., Oldehinkel, A. J., De Winter, A. F., Verhulst, F. C., & Ormel, J. (2005). Bullying and victimization in elementary schools: a comparison of bullies, victims, bully/victims, and uninvolved preadolescents. *Developmental psychology*, *41*(4), 672.

Veenstra, R., Lindenberg, S., Zijlstra, B. J., De Winter, A. F., Verhulst, F. C., & Ormel, J. (2007). The dyadic nature of bullying and victimization: Testing a dual-perspective theory. *Child development*, *78*(6), 1843-1854.

Verdoux, H., Van Os, J., Maurice-Tison, S., Gay, B., Salamon, R., & Bourgeois, M. (1998). Is early adulthood a critical developmental stage for psychosis proneness? A survey of delusional ideation in normal subjects. *Schizophrenia Research, 29*(3), 247-254.

Verdoux, H., & van Os, J. (2002). Psychotic symptoms in non-clinical population and the

continuum of psychosis. *Schizophrenia Research, 54(1-2),* 59-65.

Verhulst, F. C., Achenbach, T. M., van der Ende, J., Erol, N., Lambert, M. C., Leung, P. W., et al. (2003). Comparisons of problems reported by youths from seven countries. *The American journal of psychiatry, 160(8),* 1479–1485.

Vernberg, E. M. (1990). Psychological adjustment and experiences with peers during early adolescence: Reciprocal, incidental, or unidirectional relationships?. *Journal of Abnormal Child Psychology*, *18*(2), 187-198.

Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *The Lancet*, *379*(9826), 1641-1652.

Von Dawans, B., Fischbacher, U., Kirchbaum, C., Fehr, E., & Heinrichs, M. (2012). The social Dimensions of stress reactivity: Stress increases psychosocial behaviour in humans. *Psychological Medicine, 23(6),* 651-660.

Von Werne Baes, C., deCarvalho, S.M., Tofoli, C.M.S., & Martins, M.F.J. (2012). Assessment Of the hypothamalic pituitary adrenal axis activity: Glucocorticoid receptor and mineral alocorticoid receptor function in depression and early life stress - A systemic review. *Acta Neuropsychiatrica, 24*, 4-15.

Wagner, B. M., & . Compas, B. E. (1990). Gender, instrumentality, and expressivity: Moderators of the relation between stress and psychological symptoms during adolescence. *American Journal of Community Psychology, 18(3),* 383-406.

Wagner, B.M., Cohen, P., Brook, J.S. (1996). Parents-adolescents relationship moderators of the effects of stressful life events. *Journal of Adolescent Research, 11(3),* 347-374.

Wagner, M., Kutash, K., Duchnowski, A. J., Epstein, M. H., & Sumi, W. C. (2005). The

children and youth we serve a national picture of the characteristics of students with emotional disturbances receiving special education. *Journal of Emotional and behavioral Disorders*, *13*(2), 79-96.

Wang, J., Lannotti, R.J., & Nansel, T.R. (2009). School bullying among U.S. adolescents: Physical, verbal, relational and cyber. *Journal of Adolescent Health, 45(4),* 368-375.

Wardenaar, K. J., Wigman, J. T., Lin, A., Killackey, E., Collip, D., Wood, S. J., ... & Yung, A. R. (2013). Development and validation of a new measure of everyday adolescent functioning: the multidimensional adolescent functioning scale. *Journal of adolescent health*, *52*(2), 195-200.

Watson, D., & Kendall, P. C. (1989). Understanding anxiety and depression: Their relation to negative and positive affective states.

Weiner, B. (1990). History of motivation research in education. Journal of Educational Psychology, 82, 616–622.

Weiner, B. (1995). Attribution theory in organizational behavior: A relationship of mutual benefit. *Attribution theory: An Organizational Perspective*, 3-6.

Weiser, M., van Os, J., Davidson, M. (2005). Time for a shift in focus in schizophrenia: From narrow phenotypes to broad endophenotypes. *The British Journal of Psychiatry, 187(3),* 203-205.

Weist, M. D., Myers, C. P., Hastings, E., Ghuman, H., & Han, Y. L. (1999). Psychosocial functioning of youth receiving mental health services in the schools versus community mental health centers. *Community mental health journal*, *35*(1), 69-81.

Wentzel, K. R. (1998). Social relationships and motivation in middle school: The role of parents, teachers, and peers. *Journal of educational psychology*, *90*(2), 202-209.

Wentzel, K. R. (2005). Peer relationships, motivation, and academic performance at

school. *Handbook of Competence and Motivation*, 279-296.

Wentzel, K. R., Battle, A., Russell, S. L., & Looney, L. B. (2010). Social supports from teachers and peers as predictors of academic and social motivation. *Contemporary Educational Psychology*, *35*(3), 193-202.

Wentzel, K. R., & Muenks, K. (2016). Peer influence on students' motivation, academic achievement and social behaviour. *Handbook of Social Influences in School Contexts: Social-Emotional, Motivation, and Cognitive Outcomes*, 13.

WHO. Organization of Services for Mental Health. Geneva, Switzerland: World Health Organization, 2003.

Widaman, K. F. (2006). III. Missing data: What to do with or without them. *Monographs of the Society for Research in Child Development*, *71*(3), 42-64.

Wigman, J.T.W., Vollebergh, W.A.M., Raaijmakers, Q.A.W., Iedema, J., van Dorsselaer, S., Ormel, J., Verhulst, F.C., van Os, J. (2009). The structure of the extended psychosis phenotype in early adolescence – a cross-sample replication. Schizophrenia Bulletin, 37(4), 850-860.

Wigman, J. T. W., van Winkel, R., Raaijmakers, Q. A. W., Ormel, J., Verhulst, F. C., Reijneveld, S. A……..& Vollebergh, W.A.M. (2011). Evidence for a persistent deteriorating subtype of subclinical psychotic experiences: A six-year longitudinal general population study. *Psychological Medicine, 41,* 2317-2329.

Wigman, J.T.W., van Winkel, R., Ormel, J., van Os, J., & Vollebergh, W.A.M. (2012). Early trauma and familial risk in the development of the extended psychosis phenotype in adolescenc. *Acta Psychiatrica Scandinavica, 126*, 266-273.

Wiles, N., Zammit, S., Bebbington, P., Singleton,N., Meltzer, H., & Lewis, G. (2006). Self-

reported psychotic symptoms in the general population; Results from the longitudinal study of the British National Psychiatric Morbidity survey. *British Journal of Psychiatry, 188,* 519-526.

Williams, J. M., & Dunlop, L. C. (1999). Pubertal timing and self-reported delinquency among male adolescents. *Journal of Adolescence,* 22, 157– 171.

Willemsen, J., Markey, S., Declercq, F., & Vanheule, S. (2011). Negative emotionality in a large community sample of adolescents: the factor structure and measurement invariance of the short version of the depression anxiety stress scales (DASS-21). *Stress and Health*, *27*(3), 120-128.

Wittchen, H. U., Kessler, R. C., Pfister, H., Höfler, M., & Lieb, R. (2000). Why do people with anxiety disorders become depressed? A prospective-longitudinal community study. *Acta Psychiatrica Scandinavica*, *102*(s406), 14-23.

Wolke, D., Schreier, A., Zanarini, M.C., & Winsper. (2012). Bullied by peers in childhood and borderline personality symptoms at 11 years: A prospective study. *Journal of Child Psychiatry and Allied Disciplines, 53*, 846-855.

Wolke, D. J., Lereya, S.T., Fisher, H.L., Lewis, G. & Zammit, C. (2014). Bullying in elementary school and psychotic experiences at 18 years: a longitudinal, population-based cohort study. *Psychological Medicine,* 44, 2199-2211.

World Health Organisation (WHO) (2001). *The world health report. Mental health: New understanding, new hope*.

World Health Organisation (WHO) (2002). *The world health report. Reducing risks, promoting healthy life.*

Yamasaki, S., Ando, S., Koike, S., Usami, S., Endo, K., French, P., ... & Nishida, A. (2016). Dissociation mediates the relationship between peer victimization and hallucinatory experiences among early adolescents. *Schizophrenia Research: Cognition*, *4*, 18-23.

Young, J. F., Berenson, K., Cohen, P., & Garcia, J. (2005). The role of parent and peer support in predicting adolescent depression: A longitudinal community study. *Journal of Research on Adolescence, 15(4),* 407-423.

Young, K. C., Kashdan, T. B., McKnight, P. E., Blalock, D. V., Yuen, M., & Richberg, J. B. (2015). Happy and unhappy adolescent bullies: Evidence for theoretically meaningful subgroups. *Personality and Individual Differences*, *75*, 224-228.

Youniss, J. & Smollar, J. (1985). *Adolescent Relations with Mothers, Fathers and Friends*. London: University of Chicago Press.

Yuii, K., Suzuki, M., & Kurachi, M. (2007). Stress sensitization in schizophrenia. *Annals of the New York Academy of Sciences*, *1113*(1), 276-290.

Yung, A. R., Phillips, L. J., & Yuen, H. P. (2003). Psychosis prediction: 12-month follow-up of a high-risk (‘‘prodromal’’) group. *Schizophrenia Research, 60,* 21–32.

Yung, A. R., Buckby, J. A., Cotton, S. M., Killackey, E., Cosgrave, E., Stanford, C……. & Godfrey, K. (2006). Psychotic-like experiences in non-psychotic help-seekers: Associations with distress, depression and disability. *Schizophrenia Bulletin, 32*, 359.

Yung, A. R., Yuen, H. P., Berger, G., Francey, S., Hung, T. C., Nelson, B., ... & McGorry, P. (2007). Declining transition rate in ultra high risk (prodromal) services: dilution or reduction of risk?. *Schizophrenia bulletin*, *33*(3), 673-681.

Yung, A. R., Nelson, B., Baker, K., Buckby, J. A., Baksheev, G., & Cosgrave, E. M. (2009). Psychotic-like experiences in a community sample of adolescents: implications for the continuum model of psychosis and prediction of schizophrenia. *Australian and New Zealand Journal of Psychiatry, 43,* 118-128.

Zedeck, S. (1971). Problems with the use of" moderator" variables. *Psychological Bulletin*, *76*(4), 295.

Zeidner, M., & Hammer, A. L. (1990). Life events and coping resources as predictors of

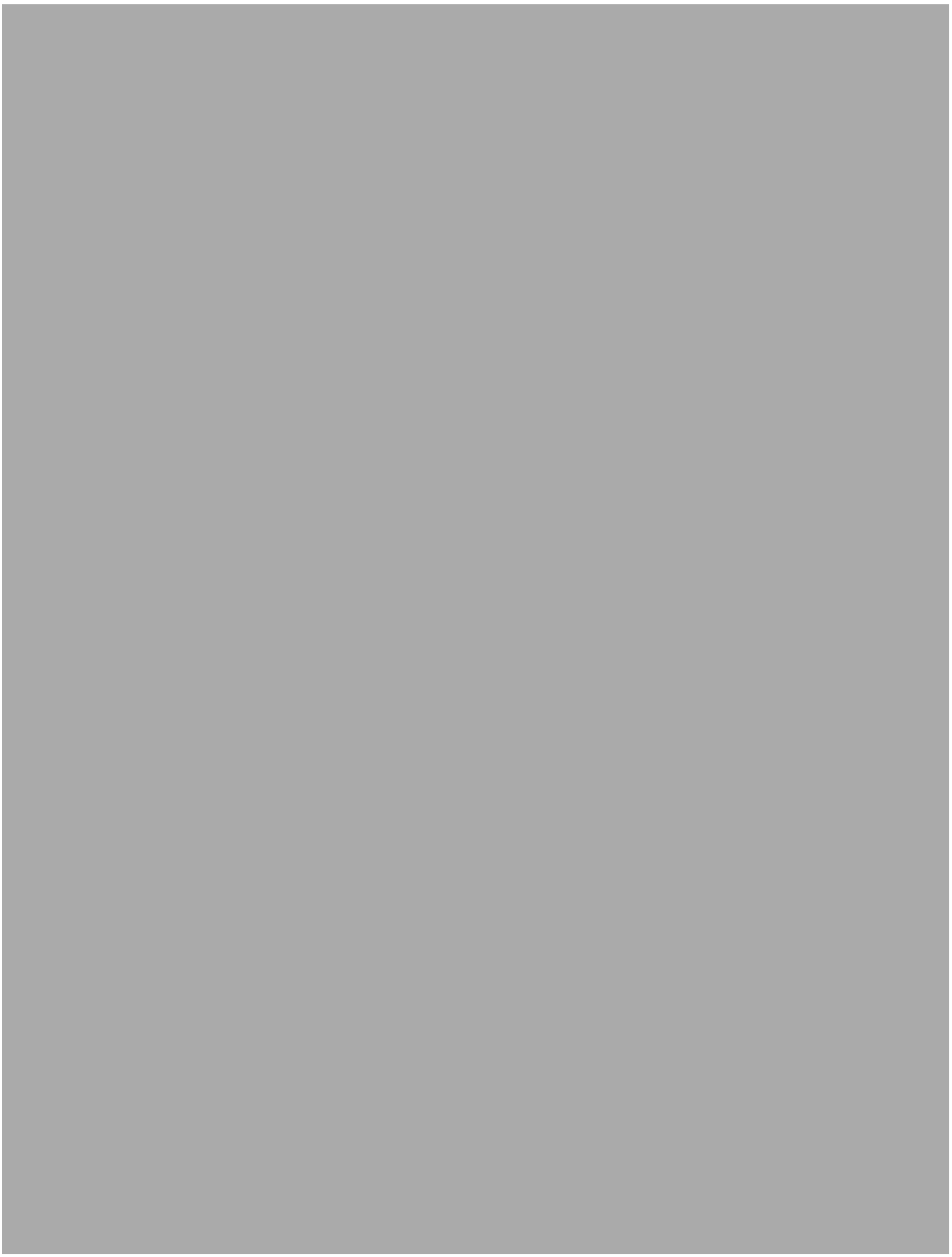
stress symptoms in adolescents. *Personality and Individual Differences*, *11*(7), 693-703.

Zimmer-Gembeck, M. J., & Pronk, R. E. (2012). Relation of Depression and Anxiety to Self-and Peer-Reported Relational Aggression. *Aggressive behavior*, *38*(1), 16-30.

Zuckerman, M., Tushup, R., & Finner, S. (1976). Sexual attitudes and experience: Attitude and personality correlates and changes produced by a course in sexuality. *Journal of Consulting and Clinical Psychology*, *44*(1), 7-19.

Zukerman, M. (1979). *Sensation seeking: Beyond the optimal level of arousal*. Hillside, NJ: Lawrence Erlbaum Associates.

APPENDICES



THE UNIVERSITY
OF BIRMINGHAM

PARTICIPANT INFORMATION

Research on substance use in young people.

We are inviting you to join in a research project to gather information about how substance use affects young people. Before you decide on if you wish to join in, it is important for you to understand why the research is being done and what it will involve. Therefore, read this information carefully and talk to others about it. Anything that is not clear nor enough for you, please ask us.

What is the study about?
We want to find out about how substance use affects young people.

Why have I been invited to take part?
The study is for young people in secondary schools, aged 13 to 16 years. A total of 540 students will be asked to take part from schools all across Trinidad.

Do I have to take part?
No – involvement in this study is voluntary. If you decide to take part, you are still free to withdraw at any time without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect your education or any health care you receive now or in the future.

What will happen to me if I take part?
We will first ask for consent and second, ask you to sign a form to say you are happy to take part. You will also get a copy of this information sheet together with your signed consent form to keep. If you feel to stop taking part at anytime, you can do so without giving a reason. All the information you provide will be confidential.

What will I be asked to do if I take part in the study?
You will be asked to fill out some questionnaires in your classroom which will take only 45 minutes to do. Your class teacher will be in the classroom while you fill out the questionnaires but will not be able to look at any of the information you provided. One year later you will be asked to fill out the same questionnaires again.

What are the risks involve?
There is little risk in taking part. However, some students may get worried about the information they provide in the questionnaires. If you are worried or concerned, you can contact your school guidance officer. You do not have to answer any questions that you do not want to answer.
.

What if I do not wish to continue at any stage?
Feel free to stop taking part at any stage in the study. Inform the researcher of your desire to stop at anytime you wish to stop. You can refuse to do anything that you are asked to do.

What am I to benefit from this study?

There will be no direct benefit to you for taking part. However, the study will help us to understand how about substance use affects the minds of young people.

Will I be compensated for taking part in this study?
Yes. Every student taking part will receive a lolly-pop and there will be a draw prize of one snack box.

What will happen to the results of the study?
All information collected from the study will be kept fully confidential. Each questionnaire will be given a code but will not include your name or any information that could identify you. Your parents, teachers or friends will not be able to see any or know about any of the answers you give. Even though the researcher can see the answers you give she cannot identify you. Also, it will be impossible to identify you in any reports on the study. This study is part of the researcher Doctoral Degree. The results of this study will be published in research documents such as academic journals or books and presented at conferences.

Who has reviewed the study?
The Ethics Committee of the University of Birmingham checked this research project. This **must** be done to make sure that no one is treated unfairly in the research.

Who can I ask for more information about the study?
You are free to contact the researcher (see details below) for more information. In addition, a summary of results will be given to schools

Thank you for reading this information sheet.

Germaine Bovell-Pitt (Doctoral Researcher)
School of Psychology
University of Birmingham
Edgbaston
Birmingham
B15 2TT
[redacted]

Dr. Ashleigh Lin
Research Fellow
Department of Psychology
University of Birmingham
Edgbaston
Birmingham B15 2TT
[redacted]

THE UNIVERSITY
OF BIRMINGHAM

PARTICIPANT CONSENT FORM

Study Title: The association betweeen substance use, psychological well-being and subclinical psychotic experiences in a Trinidad school population.

Name of Researcher: Germaine Bovell-Pitt

	Yes	No
1. I confirm that I have read and understand the information sheet dated 25 June, 2012 (version 1.0) for the above study and have had enough time to ask questions about the study.	☐	☐
2. I understand that taking part is voluntary and that I am free to stop at any time without giving a reason.	☐	☐
3. I understand that data collected during the study may be looked at by individuals from the University of Birmingham and from regulatory authorities where it is relevant to my taking part in this research. I give consent for these individuals to have access to my data.	☐	☐
4. I agree to be asked to fill out the same questionnaires one year later.	☐	☐
5. I agree to take part in the study.	☐	☐

_____	_____	_____
Name of Participant	Date	Signature
_____	_____	_____
Name of Researcher	Date	Signature

THE UNIVERSITY OF BIRMINGHAM

Parent/Guardian Information Sheet for Research on Substance Use in Adolescents

We would like to invite your child to take part in a research study. Before you decide whether or not he/she should take part, you need to understand why the research is being done and what it would involve for your child. Please take time to read the following information carefully.

What is the purpose of the study and why is my child being asked to participate?
The aim of the study is to better understand the effects of substance use on the mental well-being of young people. It also investigates how substance use, mental well-being and environmental factors impacts on the mental health.

We are inviting all students aged of 13-16 years in your child's school. Overall, we hope to have over 500 young people from secondary schools around Trinidad taking part.

What will taking part involve?
Your child will be asked to complete a questionnaire during class time. This will take about 40 minutes. The questions asked are about substance use, and different symptoms and feelings (e.g. depression, anxiety, stress, psychotic-like experiences) that may or may not relate to your child. We would like your child to complete the same questionnaire one year later.

Does my child have to take part?
No - your child's participation in this research study is completely voluntary. You can decide not to let your child take part, or they can decide they don't want to take part. If you do not want them to be involved, simply fill in the attached form and return it to the school. Your child will be given another task to do while the study is being conducted. If you do not return the form, we will assume that you have given consent for your child to be involved.

You are free to have your child withdrawn at any time, without giving a reason. Whether or not you give consent for your child's participation in this research study will have no effect on your current or future relationship with the school.

What are the risks and benefits of my child's participation?

There will be no direct benefit to your child, but this study is important to expand the knowledge base regarding substance use and its effect on the minds of young people. It can also assist in formulating policies and implementing preventative strategies in the fight for substance use eradication.

Some students might find it difficult talking about feelings and symptoms. Your child does not have to answer anything that he/she does not feel comfortable with, and he/she can stop at any time. The children will be told that if they feel upset, they should talk to their teacher, researcher, parent or the school guidance officer.

Would my child be compensated for taking part?

Compensation to take part in this study is non-financial. Your child will receive a lolly-pop and entered into a class prize draw to win a snack box.

Will my child's information be kept confidential?

All the data collected in this study will be used for the purpose of this study. Your child will have a unique code that only they know, so all information is anonymous. They will not put their name on their questionnaire. No information will be revealed to parents, teachers, principals or anyone else.

What happens to the information?

Your child's data will be put into a database and analysed together with data from other participants who took part in the study. The results will be published in research articles and presented at conferences. Your child will never be identified. The school will be provided with a summary of the findings at the end of the study. If you would like a copy of these, you can ask the school or contact the researcher directly.

What if there is a problem?

If you are worried or concerned about any aspect of the study, you should talk to the researcher. If they are unable to address your concerns or wish to make a complaint about the study, you can contact Brenda Jeffers, qualified Clinical Psychologist, at 1-868-682-5949.

Who do I contact for further information about the study?

For further information about the study you can contact the researcher, **Mrs Germaine Bovell-Pitt** (Doctoral Researcher) at [redacted] or on [redacted]

Thank you for taking the time to read this.

Please keep this information sheet for later reference.

THE UNIVERSITY OF BIRMINGHAM

PARENT/GUARDIAN CONSENT FORM

Name of Researcher: Germaine Bovell-Pitt

By signing this form, you are stating that you do NOT want your child to take part in the research project title **"The association between substance use, psychological well-being, and subclinical psychotic experiences."**

Child's name: _____

Parent/Guardian name: _____

Signature:
_____

Date: _____

IF YOU DO NOT RETURN THIS CONSENT FORM, WE WILL ASSUME THAT YOU ARE GIVING PERMISSION FOR YOUR CHILD TO TAKE PART IN THE RESEARCH PROJECT STATED ABOVE.

Please return this to your child's class teacher by Thursday 9th May, 2013.

Questionnaire Serial Number

Participant Identification Code

DATE_____

INSTRUCTIONS: Please select the most appropriate answer by putting a cross your choice. Please do not place your name on this questionnaire.

Age: Years _____ Months _____

Gender: Male Female

Ethnic Group:

Afro-Trinidadian ☐ Indo-Trinidadian ☐ Chinese ☐

Caucasian ☐ Other ☐

Type of community: Urban ☐ Rural ☐

Which of the following best describes your current grades at school? (Please tick one box).

☐ Mostly A*s*

☐ About half A*s* and half C*s*

☐ Mostly B*s*

☐ About half B*s* and half C*s*

☐ Mostly C*s*

☐ About half C*s* and half D*s*

☐ Mostly D*s*

☐ Mostly below D

	INSTRUCTIONS Please select the most appropriate answer by putting a cross in the box					If you ticked NEVER, go to the next question. If you ticked SOMETIMES, OFTEN or NEARLY ALWAYS, indicate how distressed you are by this experience:			
Questions	**Never**	**Sometimes**	**Often**	**Nearly always**		**Not distressed**	**A bit distressed**	**Quite distressed**	**Very distressed**
1. Do you ever feel sad?									
2. Do you ever feel as if people seem to drop hints about you or say things with a double meaning?									
3. Do you ever feel that you are not a very animated person?									
4. Do you ever feel that you are not much of a talker when you are conversing with other people?									
5. Do you ever feel as if things in magazines or on TV were written especially for you?									
6. Do you ever feel as if some people are not what they seem to be?									
7. Do you ever feel as if you are being persecuted in some way?									
8. Do you ever feel that you experience few or no emotions at important events?									
9. Do you ever feel pessimistic about everything?									
10. Do you ever feel as if there is a conspiracy against you?									

	Never	Sometimes	Often	Nearly always		Not distressed	A bit distressed	Quite distressed	Very distressed
11. Do you ever feel as if you are destined to be someone very important?									
12. Do you ever feel as if there is no future for you?									
13. Do you ever feel that you are a very special or unusual person?									
14. Do you ever feel as if you do not want to live anymore?									
15. Do you ever think that people can communicate telepathically?									
16. Do you ever feel that you have no interest to be with other people?									
17. Do you ever feel as if electrical devices such as computers can influence the way you think?									
18. Do you ever feel that you are lacking in motivation to do things?									
19. Do you ever cry about nothing?									
20. Do you believe in the power of witchcraft, voodoo or the occult?									
21. Do you ever feel that you are lacking in energy?									
22. Do you ever feel that people look at you oddly because of your appearance?									
23. Do you ever feel that your mind is empty?									

	Never	Sometimes	Often	Nearly always		Not distressed	A bit distressed	Quite distressed	Very distressed
24. Do you ever feel as if the thoughts in your head are being taken away from you?									
25. Do you ever feel that you are spending all your days doing nothing?									
26. Do you ever feel as if the thoughts in your head are not your own?									
27. Do you ever feel that your feelings are lacking in intensity?									
28. Have your thoughts ever been so vivid that you were worried other people would hear them?									
29. Do you ever feel that you are lacking in spontaneity?									
30. Do you ever hear your own thoughts being echoed back to you?									
31. Do you ever feel as if you are under the control of some force or power other than yourself?									
32. Do you ever feel that your emotions are blunted?									
33. Do you ever hear voices when you are alone?									
34. Do you ever hear voices talking to each other when you are alone?									
35. Do you ever feel that you are neglecting your appearance or personal hygiene?									
36. Do you ever feel that you can never get things done?									

	Never	Sometimes	Often	Nearly always		Not distressed	A bit distressed	Quite distressed	Very distressed
37. Do you ever feel that you have only few hobbies or interests?									
38. Do you ever feel guilty?									
39. Do you ever feel like a failure?									
40. Do you ever feel tense?									
41. Do you ever feel as if a double has taken the place of a family member, friend or acquaintance?									
42. Do you ever see objects, people or animals that other people cannot see?									

What alcohol and drugs have you used **in the past or in the past 30 days?**

Alcohol/Drugs	**Tick if you used it in the past 30 days**	Number of days used in past 30 days	How much do you use on a typical day?	How old were you when you first used it?	**Tick if you used it in the past**
1. Alcohol (drink, liquor)					
2. Cigarette					
3. Marijuana (e.g. joint, weed, ganja)					
4. Heroin					
5. Ecstasy (e's)					
6. Amphetamines (e.g. speed, Ice)					
7. Inhalants (e.g. glue)					
8. Hallucinogens (e.g. LSD, Acid, Trips)					
9. Cocaine Powder (e.g. white powder)					
10. Crack/Rock					

Below are a number of statements about people's lives. For each statement, please rate how much it describes your situation.					
	Not at all or rarely 1	**Sometimes** 2	**Often** 3	**Always or almost always** 4	**Not applicable**
1. My parents' rules are reasonable.					
2. I feel like I'm working towards a goal (related to work or study).					
3. My friends are encouraging.					
4. I get on well with my parents.					
5. I am pleased with how my life is going.					
6. I look after my health.					
7. I have plenty to do most of the time.					
8. I often feel bored.					
9. My parents disapprove of my friends, lifestyle or appearance.					
10. I feel close to my friends.					
11. My living arrangements are stable.					
12. I spend quite a lot of time with my friends.					
13. Members of my family are disappointed in me.					
14. I am pleased with what I've achieved in my life so far.					
15. My friends are often disappointed in me.					
16. My friends are supportive of me when I need it.					
17. My family are supportive of me when I need it.					
18. My friends disapprove of me in some way (e.g. lifestyle, appearance, etc).					
19. I am in good physical health.					
20. My parents are encouraging.					
21. I attend school/college/university or work regularly.					

22. I get along well with my teachers or supervisor/boss.					
23. I think that going to school/college/ university or work is important for my future.					

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

1	I found myself getting upset by quite petty things	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I just couldn't seem to get going	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I had a feeling of shakiness (eg, legs going to give way)	0	1	2	3
8	I found it difficult to relax	0	1	2	3
9	I found myself in situations that made me so anxious I was most relieved when they ended	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting upset rather easily	0	1	2	3
12	I felt that I was using a lot of nervous energy	0	1	2	3
13	I felt sad and depressed	0	1	2	3
14	I found myself getting impatient when I was delayed in any way (eg, lifts, traffic lights, being kept waiting)	0	1	2	3
15	I had a feeling of faintness	0	1	2	3
16	I felt that I had lost interest in just about everything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3

19	I perspired noticeably (eg, hands sweaty) in the absence of high temperatures or physical exertion	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life wasn't worthwhile	0	1	2	3

22	I found it hard to settle down	0	1	2	3
23	I had difficulty in swallowing	0	1	2	3
24	I couldn't seem to get any enjoyment out of the things I did	0	1	2	3
25	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
26	I felt down-hearted and blue	0	1	2	3
27	I found that I was very irritable	0	1	2	3
28	I felt I was close to panic	0	1	2	3
29	I found it hard to calm down after something upset me	0	1	2	3
30	I feared that I would be "thrown" by some unimportant but unfamiliar task	0	1	2	3
31	I was unable to become greatly interested,. about anything	0	1	2	3
32	I found it difficult to tolerate interruptions to what I was doing	0	1	2	3
33	I was in a state of nervous tension	0	1	2	3
34	I felt I was pretty worthless	0	1	2	3
35	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
36	I felt terrified	0	1	2	3
37	I could see nothing in the future to be hopeful about	0	1	2	3
38	I felt that life was meaningless	0	1	2	3
39	I found myself getting agitated	0	1	2	3
40	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
41	I experienced trembling (eg, in the hands)	0	1	2	3

42	I found it difficult to work up the energy to begin to do things	0	1	2	3

Bullying is when someone willfully and repeatedly hurt or scares another person perceived as weaker than themselves without any reason. This behaviour may be performed in the following different ways:-

- Hitting, pushing and kicking
- Fearful or Hurtful threats
- Damaging Name calling
- Harassment or attacking repeatedly
- Excluding someone from
- Bossing around

Please complete all questions below by placing a **tick** on the answer that truly relates to you and happened in the last **30 days.**

1. Have you **ever** been bullied? Yes☐ No☐

2. If **"Yes"** please say how often you have been bullied
   - ☐ Once or twice
   - ☐ Sometimes
   - ☐ About once a week
   - ☐ Several times a week

3. Who were you bullied by? (you can choose more than one)
   - ☐ Other students
   - ☐ School staff
   - ☐ Family members
   - ☐ Neighbours
   - ☐ Other (specify)……

4. Have you **ever** taken part in bullying someone? Yes ☐ No ☐

5. If "**Yes"** please say how often you took part in bully someone
   - ☐ Once or twice
   - ☐ Sometimes
   - ☐ About once a week
   - ☐ Several times a week

6. Have you been bullied in the **last year?** Yes ☐ No ☐

7. If **"Yes"** please tick who were you bullied by in the **last year** (can choose more than one)
   - ☐ Other students
   - ☐ School staff
   - ☐ Family members
   - ☐ Neighbours
   - ☐ Others (specify)……

8. Have you taken part in bullying another person in the **last year**? Yes ☐ No ☐

9. If **"Yes**" please say how often you took part in bullying someone in the **last year.**
   - ☐ Only a few times this year
   - ☐ Every month
   - ☐ Every week
   - ☐ Many times a week

THE END!

Thank you for completing the questionnaire