THE UNIVERSITY
of EDINBURGH

Correlates of Mental Health among Pakistani Adolescents:

An exploration of the interrelationship between attachment, parental bonding, social support, emotion regulation and cultural orientation using Structural Equation Modelling

Amna Khalid

Doctor of Philosophy in Clinical Psychology
The University of Edinburgh
2014

Abstract

Background

Mental health of the adolescents is an important global public health concern as a leading cause of illness and disability not only for the adolescents, but also their family, and the community. In recent years the broader definition of mental health suggests an overall improved well-being as well as absence of illness.

Despite the global recognition of the significance of adolescents' mental health it remains a seriously neglected area in research and policy in Pakistan. This thesis attempts to understand the epidemiology of mental health among Pakistani adolescents by drawing from developmentally informed framework. This thesis proposes that perceptions of relationship with parents and attachment underlie the adolescents' successful ability to regulate emotions and perceive social support. It also attempts to understand the role of cultural orientation in the pathway of associations between the factors mentioned above.

Objectives

A quantitative cross sectional design was applied to investigate the state of mental health among Pakistani adolescents. The study also aimed at investigating the validity of constructs of attachment, parental bonding, emotion regulation, social support and cultural orientation in Pakistan and how these factors interrelate in relation to adolescents' mental health.

Methods

A sample of eleven hundred and twenty four was recruited from eight secondary schools from the district of Rawalpindi, Pakistan after formal approval from concerned authorities. A battery of self-report measures was administered in class-room setting. Confirmatory factor analysis (CFA) and Structural equation modelling (SEM) were used to analyse the data.

Results

Prevalence of depression and anxiety among this sample was 17.2% and 21.4% respectively. Results from the CFA of the Urdu versions of the instruments used in the current study replicated the original factor structures in case of well-being, depression, anxiety, parental bonding, emotion regulation, and social support with minor modifications. However, a two factor model of cultural orientation is

supported in the current study. In case of parental bonding, a second order factor was found for mother and father bonding showing that both form common factors of parental warmth, protectiveness and authoritarianism.

Present study found support for the hypothesized structural equation model examining pathway of association between attachment, parental bonding, social support, emotion regulation and cultural orientation in understanding depression, anxiety and well-being among Pakistani adolescents.

Discussion

Findings of this study suggest that parental bonding, attachment, emotion regulation, social support and cultural orientation play a crucial role to further our understanding of adolescents' depression, anxiety and well-being in Pakistani cultural context. Therefore, these are central constructs within a developmental framework and are important when considering long-term psychosocial functioning of individuals. Further implications are discussed regarding the recommendation of promoting and utilizing a developmentally informed approach when working with adolescent population. These findings may be used as base line information in making policy level decisions regarding evaluation, prevention and intervention and of mental health problems among Pakistani adolescents.

THE UNIVERSITY
of EDINBURGH

This thesis has been submitted in fulfilment of the requirements for a PhD degree at the University of Edinburgh. Please note the following terms and conditions of use:

- This work is protected by copyright and other intellectual property rights, which are retained by the thesis author, unless otherwise stated.
- A copy can be downloaded for personal non-commercial research or study, without prior permission or charge.
- This thesis cannot be reproduced or quoted extensively from without first obtaining permission in writing from the author.
- The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the author.
- When referring to this work, full bibliographic details including the author, title, awarding institution and date of the thesis must be given.

Declaration

I hereby declare that this thesis is my own work. It has not been submitted for any other degree or qualification at this or any other university. The information obtained from sources other than this study is acknowledged in the text and included in the references.

Amna Khalid

Acknowledgements

I would like to thank all the participants and institutions who took part in this study for their time and interest. My most sincere thanks go to Government of Pakistan for sponsoring my PhD study under Higher Education Commission of Pakistan-Human Resource Development scholarship for faculty development at Fatima Jinnah Women University, Pakistan.

I would like to thank my supervisor Matthias Schwannauer for his guidance and support during this thesis. I would also like to express my gratitude to Stella Chan. My sincere thanks go to all my colleagues and staff at University of Edinburgh and Fatima Jinnah Women University for their encouragement and help throughout this thesis.

Most of all I would like to thank Dr Farah Qadir for providing me with endless encouragement, love, motivation and unconditional support. Her enthusiasm has inspired me and guided me through my career. This thesis would not exist without her.

Last but not the least; I would like to thank my parents, friends and family for their love and support.

Dedicated to my father

Table of Contents

List of Tables

List of Figures

List of Appendices

List of Abbreviations

Abbreviation	Meaning
SEM	Structural equation modelling
WHO	World Health Organization
US	United States
DSM	Diagnostic Statistical Manual
UNICEF	United Nations International Children's Emergency Fund
IWM	Internal working models
RSQ	Relationship Scales Questionnaire
PBI	Parental Bonding Instrument
UK	United Kingdom
APA	American Psychiatric Association
RCTs	Randomized Control Trials
SIGN	Scottish Intercollegiate Guidelines Network
STROBE	Strengthening the Reporting of Observational studies in Epidemiology
ARSQ	Adolescent Relationship Scales Questionnaire
SES	Socio economic status
SOS	Significant Others Scale
REQ	Regulation of Emotions Questionnaire
HVICS	Horizontal and Vertical Individualism and Collectivism Scale
HADS	Hospital Anxiety and Depression Scale
FAS	Family Affluence Scale
CASE	Child and Adolescent Self Harm in Europe
SPSS	Statistical Packages for Social Sciences
SEM	Structural Equation Modelling
CFA	Confirmatory Factor Analysis
MCAR	Missing Completely at Random
MAR	Missing at Random
EM	Expectation maximization
VIF	variance inflation factors
CFI	Comparative Fit Index
RMSEA	Root Mean Square of Approximation
TLI	Tucker-Lewis Fit Index
SRMR	Standardized Root Mean Square Residual
MI	Modification Indices
SD	Standard deviation
C	Care
OP	Over-protection
W	Warmth
P	Protectiveness
A	Authoritarianism
INDIFF	Indifference
IF	Internal-function
ID	Internal-dysfunction
EF	External-function
ED	External dysfunction

PS	Practical support
ES	Emotional support
HC	Horizontal collectivism
VC	Vertical collectivism
HI	Horizontal individualism
VI	Vertical individualism
IND	Individualism
COL	Collectivism
DEP	Depression
ANX	Anxiety
PSY	Psychological well-being
PHY	Physical health and well-being
REL	Relationship well-being
PRO	Protectiveness
AUTH	Authoritarianism

Conference Presentation

Khalid. A & Schwannauer. M., (2013, July). *Validity of the BBC Well-Being Scale for Use with Adolescents.* Paper presented at the 8th International Conference on Child and Adolescent Psychopathology. University of Roehampton London.

Chapter 1:

Introduction and Literature Review

1.0 General introduction

Mental health problems are the leading cause of illness and disability. Recent evidence by World Health Organization (WHO) shows that about half of the world's population is affected by mental health problems (Storrie, Ahen, & Tuckett, 2010). These are often first manifested during adolescence (Costello et al., 2002) and have serious impact on young people's academic, social and physical functioning (Jaycox et al., 2009) and also pose a risk for the development of psychiatric disorders in adulthood (Fergusson & Woodward, 2002). Therefore, understanding factors determining mental health problems, such as risk and protective factors is imperative for the prevention of such complications.

Most investigators agree that disturbed or impoverished relationships are a hallmark of mental health problems (Segrin, 2001). Among theories which are traditionally related to relationships and understanding of mental health suggest attachment as a main organizational construct for the study of essential relationships.

As shown by the huge literature across disciplines, attachment theory has produced one of today's most prolific lines of research since the formative work of Bowlby (1969, 1973, 1980). Many therapeutic treatment models have been based on this theory. Although most of the work had been concentrated in Western contexts, adult attachment research has multiplied in the last 20 years (Ng, Trusty, & Crawford, 2005). There is relatively less work done with reference to adolescence in non-western samples. Existing findings in non-Western contexts and cross-cultural comparative studies indicate three important themes. One is that the culture plays an important role in the development of attachment (Schmitt, 2008). Second being the role of culture in the relationship between attachment and its correlates (Wang & Scalise, 2010). Most importantly attachment theory and its assumptions are rooted in Western cultural philosophies and application of perspectives based in individualized population to non-individualized populations is debatable and cautioned (Rothbaum, Weisz, Pott, Miyake, & Morelli, 2000; Wang & Scalise, 2010). Therefore, further research in non-individualistic cultures is important if a culturally responsive and relevant analysis of the theory and its applications are to be generated. This thesis aims to address all these questions with reference to Pakistani adolescents.

Attachment theory asserts that:

"Early experience often plays a crucial role in the development dynamic that yields pathology, but this role is dependent on a surrounding context of sustaining environmental supports (Sroufe, Carlson, Levy, & Egeland, 1999, p. 2)."

Attachment theory conceptualizes adolescence as a period in which the individual develops a coherent sense of self and others (Bowlby, 1973). They internalize the experiences of care they received from their early caregivers (usually parents) which forms the basis of their mental representations about *self and others* (Bartholomew & Horowitz, 1991). A healthy attachment system with positive *view of self and others* provides a foundation for building strong social relationships and offers chances for functional regulation of emotions (Belsky & Cassidy, 1994).

This thesis, therefore conceptualizes that perceptions of care provided by early caregivers (parental bonding) will be associated with adolescents *view of self and others* (attachment) in explaining their mental health. It is also proposed here that there is no single cause for poor mental health among adolescents, a number of mechanisms mediate and moderate the relationship between attachment and parent-child bond with respect to mental health. Knowledge about these underlying processes will help our understanding of the non-linear pathways that explain mental health in adolescence by examining how current attachment models and early experiences influence subsequent experiences (Sroufe, Egeland, Carlson, & Collins, 2005). Two of the significant mediators of association between attachment, parental bonding and mental health are emotion regulation and social support (Sroufe, Coffino, & Carlson, 2010) which will be examined in the current study. Lower levels of parental bonding, attachment, emotion regulation, and social support have been conceptualized as specific interpersonal risk factors for depression and anxiety among adolescents and are considered integral for understanding aetiology of both disorders (Epkins & Heckler, 2011).

Despite the high rates of mental disorders among children and adolescents only a few studies have looked at the cross-cultural differences in mental health problems (Ravens-Sieberer, Erhart, Gosch, & Wille, 2008). Taking an overview of community studies worldwide Patel, Flisher, Hetrick, and McGorry (2007) observed significant cross-cultural variations in the rates of mental disorders but found that

little information is available on the burden of these disorders in developing countries.

Comparing patterns of depression and anxiety across cultures is further complicated because of the different assessment procedures, samples, and reporting techniques used across studies. The small sample size of ethnic minority youth in most community studies of children and adolescents reduces the statistical power to test differences in prevalence of disorders between specific ethnic subgroups (Merikangas, Nakamura, & Kessler, 2009).

Recently there has been an increased awareness regarding significance of mental health among adolescents across cultures which has driven some global health initiatives (Prince et al., 2007; Patel et al., 2007). However, most of our understanding of adolescents' mental health comes from more individualistic cultures. To comprehend age specific norms, and deviances, researchers usually focus on individual and relational levels of analysis. Less attention is paid to the degree to which cultural beliefs and norms play a role in the interpretation of pathology (Rubin, 1998). As stated by Cicchetti and Rogosch (1996) developmental psychopathology stresses that:

> *"There are multiple contributors to adaptive or maladaptive outcomes in any individual, that these factors and their relative contributions vary among individuals, and that there are myriad pathways to any particular manifestation of adaptive or disordered behaviour"* (p. 597).

Developmental psychopathology exerts that both adaptive and maladaptive development is informative and focuses on the basic underlying mechanisms that cause developmental pathways to diverge toward adaptive and maladaptive outcomes. What is of prime importance is that development typical in one context can be atypical in other context and that there can be many variables influencing its course (Cicchetti, 1989). Analysis of developmental processes allows us to understand the interaction between multiple risk and protective factors with respect to the initiation of culturally informed developmental pathways. It is less understood how the above mentioned constructs apply across cultures which profoundly affects the understanding of individual's development. Therefore, reflections must be made upon whether these constructs translate differently in different cultural settings and

how one's cultural orientation (individualistic vs collectivistic views) explains these differences.

An interesting picture emerges regarding the underlying pathways of relationship among above mentioned variables in relation to mental health. Most significant here is examining the relationship in the context of a traditionally collectivistic culture like Pakistan, where individuation is not appreciated and thus not an encouraged practice in child rearing. The present study to my knowledge is the first study designed with the objective of exploring relationship of mental health (well-being, depression, and anxiety) with attachment, parental bonding, emotion regulation and social support in the Pakistani culture. It explores the applicability of Western constructs of mental health and its correlates by translating and validating Western instruments for use in Pakistan. Next, it uses a developmentally informed model for assessing the correlates of adolescent mental health established in the West by testing the underlying mechanisms by which these constructs interrelate in predicting Pakistani adolescents' mental health employing structural equation modelling.

The aims of this chapter, therefore, are to introduce the current study and to present a review of the literature to help formulate and conceptualize adolescents mental health particularly with reference to Pakistani cultural context. In the first section of this chapter, I delineate the term mental health and present the current situation of adolescents mental health globally and with reference to Pakistan (see part I). Due to the complex nature of mental health correlates Part II of this chapter will discourse the development of constructs considered integral to adolescents mental health and how they may translate in the context of Pakistan. I will also discuss the significance of attachment theory in relation to the mental health and will distillate on empirical evidence on the period of adolescence. Within this, I will differentiate between attachment and parental bonding and how these are related to each other both in theory and research. In addition, the constructs of emotion regulation and social support will be introduced and reviewed within the context of attachment theory and their potential roles as mediators in the relationship between attachment/parental bonding and mental health will be studied. While doing so, I will explain and debate the role of cultural orientation in explaining the relationships

between these constructs in predicting adolescents' mental health. Reflections are made throughout this chapter linking the constructs reviewed with relevance to culture of Pakistan.

The distinct lack of literature focussing on well-being in adolescence led to a decision to incorporate a critical review of the current evidence base on adolescents well-being. Part III of chapter one, will therefore address systematic review of literature on adolescents' well-being published between years 2006-2012. In the final section (Part IV), I summarize conclusions from the literature and identify gaps. I then formulate and hypothesize a model to assess the interrelationship between the above mentioned risk factors of mental health among adolescents in Pakistan.

1.1 Part 1-Adolescents' Mental Health

The word adolescence has been derived from Latin term "adolescere" which means "to grow into maturity". This is the period where an individual acquires skills required to move from childhood to adulthood. It involves constant transition and has been repeatedly defined as a period of "storm and stress" (Hall, 1904). Although many ways of referring to adolescence have been used in literature, it is difficult to find a precise and universally acceptable definition. World Health Organization's (WHO) defined adolescents as individuals between 10-19 years of age (WHO, 2005). However, varying ages have been referred as adolescents throughout the literature and there seems to be a lack of general definition.

Mental health in adolescents is characterized by healthy emotional and social development such that they have a good quality of life and can function well at both individual and societal level. WHO defines health as a state where an individual enjoys well-being in physical, mental and social realms and is also free of disease or illness (WHO, 1946). Despite this definition which came decades before; the trend of looking at mental health in terms of maximising well-being rather than only treating mental disorder has only become popular in recent times (Kindermann, Schwannauer, Potin, & Tai, 2011). Well-being is a state where one recognises his/her capabilities, handles the normal stresses of life and can function productively and contribute to his society (Beddington et al., 2008) whereas mental disorder is the presence of symptoms or behaviour which interferes with an individual's functioning (WHO, 1992).

Empirical research investigating the structure of mental health confirmed that mental disorder and well-being correlate but not necessarily form a single factor (Keyes & Lopez, 2002; Slade, 2010). Therefore it is important to take into account both mental disorder and well-being when assessing mental health. However, this conceptualization of mental health has not been tested for its generalizability across cultures. Keeping this in view mental health in this study is defined in terms of low levels of depression and anxiety and high levels of well-being.

Depression and anxiety are the most common mental disorders and often occur concurrently or sequentially (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Knopf, Park, & Mulye, 2008).

Depression which is characterised by low mood is common among adolescents (Costello et al., 2003; Knopf et al., 2008). It predicts educational underachievement (Fergusson & Woodward, 2002; Andrews & Wilding, 2004), suicidal behaviour (Kovacs et al., 1993; Fergusson & Woodward, 2002; Glied & Pine, 2002), and later life depression (Lewinsohn, Rohde, Seeley, Klein, & Gotlib, 2000; Fergusson & Woodward, 2002).

The reported median prevalence of major depression is 4% with a range from 0.2% to 17% in community samples in United States (US) (Costello et al., 2003). Prevalence estimates of sub threshold depressive disorders and syndromes are generally higher than those of major depression across all age groups (Angold et al., 2002; Costello et al., 2003; Lewinsohn, Shankman, Gau, & Klein, 2004). These rates are reported by studies primarily conducted on American and European samples. There is very little published evidence of prevalence of depression among Pakistani adolescents. Studies from neighbouring countries state a prevalence rate of 18.4% in India (Bansal, Goyal, & Srivastava, 2009), and from China, 22.9% in Hunan, 50% in Hong Kong, and 15.7% in Nanjing (Yang et al., 2010; Sun, Hui, & Watkins, 2006; Hong et al., 2009). These rates are reporting high prevalence in school samples. Similarly, the prevalence of depression among adolescents in Iran ranges between 14.77% (Janboozorgi, 2005) to 72% (Monirpour, 2005). The rates are much higher than those from Western countries which can be due to measurement as well as cultural differences and call for further exploration.

Anxiety, characterised by excessive worry and fear, is common among adolescents (Costello et al., 2003; Knopf et al., 2008). It is well-recognized that it is not only common but also most debilitating mental disorder in the younger population (Bodden, Dirksen, & Bogels, 2008). Adolescents suffering from anxiety disorder are at higher risk of future depression and anxiety, maladjustment at school, and substance abuse (Kim-Cohen et al., 2003).

The overall estimated prevalence of anxiety disorder among children and adolescents in community studies is said to be 10-20% (Bernstein, Borchardt, & Perwien, 1996). Beesdo, Knappe, and Pine (2009) reviewed studies which used instruments based on Diagnostic Statistical Manual IV (DSMIV) for assessing anxiety. These studies reported 6 month prevalence of 6.5% to 17.5%. However, there are variations in prevalence rates across published reports, which might be due to methodological or cultural differences. For example, in India the prevalence for all anxiety disorders using a self-report measure was 25.8% and 14.4% based on DSMIV criteria (Nair et al., 2013). This highlights significant differences in rates of anxiety disorders across assessment procedures and samples.

1.1.2 Culture and adolescents' mental health

Culture is a collective learned behaviour that is transferred through generations for human adjustment, adaptation, and growth (Marsella & Kameoka, 1989). It has also been defined as the collective programming of the mind which distinguishes the members of one group from another and has the capacity to change over time (Hofstede, 1980, p. 21). In some cultures adolescence is considered a problematic phase while others perceive it positively and in still others its universality is questioned (Chen & Farruggia, 2002). Schlegel and Barry (1991) studied 170 societies ethnographically and concluded that the concept of adolescence prevails in almost all societies with some societies celebrating the onset of this phase. Essential biological, cognitive and social development during adolescence is recognized differently across cultures (Eveleth & Tanner, 1990; Chen & Farruggia, 2002).

Adolescence has been established as a period of identity formation (Erikson, 1950) which refers to stable understandings about the self with reference to others (Wendt, 1992). Identity development involves individual and social

components and is closely related to the culture (Rothe, Pumariega, & Sabagh, 2011). Adolescents' identity formation tends to fall in two major domains, ideological domain which involves exploring and making commitment about things such as occupation, religion, and sexual-orientation (Marcia, 1966), and the interpersonal domain comprising family, romantic relationships, friendships, and sex roles (Balistreri, Busch-Rossnagel, & Geisinger, 1995). However, some cultures may allow little space for such exploration and commitment. Therefore, relative importance of self within these areas for an adolescent depends on what is accepted and valued in their own culture (Phinney & Baldelomar, 2011).

Significance of assessing the applicability of mental health conceptualizations across cultures arises from the fact that culture affects all aspects of human life including their understanding of disease and infirmity. It is said to influence expression of symptoms of various mental disorders, diagnosis, help seeking behaviour, care, and cure (Weiss, 1997).

Researchers have observed cross cultural differences in expression of distress (Goldberg & Bridges, 1988). The reason for these observed differences may be due to linguistic differences in understanding the distress related expressions on part of the researcher or clinician. For example, certain phrases in Urdu "mera dil dukhta hai" which means "my heart aches" can be interpreted as either somatic or psychological in different cultures. Indeed, understanding the psychological presentations of mental disorders across cultures has long been recognised as a challenge (Kleinman & Kleinman, 1985).

To validate a construct across culture one needs a valid measure of the construct which is applicable in the target cultural setting. Major concerns here are whether the meanings of the items of the instruments are understood and function in same manner and are there any equivalent conceptualization of the same construct across cultures (McHorney & Fleishman, 2006).

To overcome these difficulties researchers often develop indigenous scales and validate them against already validated (usually foreign) measures. However, developing a new scale requires time, research funding, and professional proficiency. In a developing country like Pakistan where most of the population is non-English speaking, there is a lack of resources, which leads to unavailability of suitable scales

for research. For a researcher working in these circumstances, translating and adapting an established English language measure is a pragmatic option.

Scales which are appropriately translated and adapted for use within specific cultures produce more psychometrically sound results (Cha, Kim, & Erlen, 2007). This study therefore employs one of the most recommended methods proposed by Brislin (1970) for translating instruments to measure mental health in terms of depression, anxiety and well-being and its correlates to test their applicability in Pakistani setting (for details on translation procedure used in this study see chapter 2).

Another important gap is while the mental health literature has given some consideration to cultural influences in adults, there is a deficit in cultural research on child and adolescent populations (Albano, Chorpita, & Barlow, 2003). The once common assumption that mental health problems are experienced and expressed in similar ways across cultural groups has been challenged. Theory of emotions emphasizes the significant role of culture in both expression and experience of mental health problems (Kirmayer, 1997). Although few studies report analogous rates of the presence of mental disorders across the world (Horwath & Weissman, 1997), differences have been observed in the experience, expression, and description of symptoms across cultural groups (Friedman, 2001). For example, Essau, Ishikawa, and Sasagawa (2011) compared the frequency and association of anxiety symptoms with parenting experiences among Japanese and English adolescents. Although no significant differences were observed in the effect of parent punishment and reinforcement on anxiety symptoms among adolescents from both groups, parent verbal transmission about the danger of anxiety symptoms was more common in Japan than in England. This highlights the significance of investigating risk factors which can have different impact on mental health across cultures. However, English adolescents reported significantly higher levels of anxiety symptoms than adolescents in Japan in this study. This finding is not supported by previous research which fits anxiety with cultural beliefs and practices in Japan. Similarly, the frequency of anxiety symptoms and their association with gender and age were compared in Japanese and German children. It was found that German children report significantly higher symptoms of separation anxiety, social phobia, obsessive

compulsive disorder, and generalized anxiety disorder than Japanese children. Gender disparity was found to be consistent in both groups with girls reporting more anxiety symptoms than boys. Symptoms of social phobia increased with age while separation anxiety and panic decreased with age in both groups. This study also underscores the impact of culture on anxiety symptoms (Essau, Sakano, Ishikawa, & Sasagawa, 2004). Another comparative study between adolescents from Germany and Hong Kong showed that adolescents in Hong Kong report significantly higher levels of anxiety symptoms than adolescents in Germany. Academic motivation was a stronger predictor of anxiety among adolescent from Hong Kong whereas among German adolescents anxiety symptoms correlated significantly with reinforcement received for anxiety-related problems (Essau, Leung, Conradt, Cheng, and Wong, 2008). These studies examining anxiety among Asian and European adolescents report inconsistent findings. The significant aspect of these studies is exploration of various risk factors which lead to different outcomes across cultures which means that prevention and intervention plan across cultures can focus on different aspects which are most relevant to mental health problems in these groups. Such studies encourage exploration of cultural differences in relation to mental health among adolescents.

A factor which should be incorporated in cross-cultural research on mental health is of social desirability. Social desirability bias is a systematic bias in which responses to questions are influenced by participants' perceptions of what is "correct" or socially acceptable (Maccoby & Maccoby, 1954). Studies have documented higher scores on scale measuring social desirability bias among East Asians, compared to U.S. born subjects (Middleton & Jones 2000; Keillor et al. 2001). Such response bias may preclude findings of a study and it becomes difficult to determine whether the observed cultural differences are true reflections of differences in constructs under exploration or are merely due to differences in response styles. Two consistently supported methods for controlling social desirability bias is by incorporating a measure for social desirability or by controlling it using advanced statistical techniques (Van de Mortel, 2008; Ganster, Hennessey & Luthans, 1983).

The overall research findings of the cultural influences on mental health problems are varied and conceal any cohesive theory. There is an undoubtedly need for more cross-cultural comparative research on the epidemiology and treatment approaches of mental health problems in adolescents. The endeavour of understanding the role of culture in adolescents' mental health is only in its infancy (Albano, Chorpita, & Barlow, 2003).

1.1.3 Pakistani adolescents mental health

Pakistan is the sixth most populous country in the world with a population of over 180 million (U.S Census Bureau, 2012). Half of its population is under 18 years of age (Rehman & Hussain, 2001). According to the United Nations International Children's Emergency Fund (UNICEF, 2011), adolescents alone form 23% of the total population of Pakistan which is the fifth largest (41 million) in the world, only preceded by the United States, Indonesia, China, and India (Anthony, 2011).

Health, particularly mental health, is a severely neglected area in Pakistan. Its proportion of the health budget to GDP is 2.5% (The World Bank, 2012) and only 0.4% of the total health budget is devoted to mental health (WHO, 2005). The South Asian neighbouring countries of Pakistan spend 3.9% (India), 9.6% (Afghanistan), 6% (Iran), and 5.2% (China) of its GPD on health (The World Bank, 2012). This large country has only three children and adolescent mental health services (Tareen, Mirza, Minhas, Minhas, & Rahman, 2009). There is also severe shortage of mental health care professionals with only six child psychiatrists (Tareen et al., 2009). Furthermore, research is a neglected area in Pakistan. Between 1993 and 2004 only 108 Pakistani publications appeared in indexed journals which were not alone in the field of mental health (Irfan, 2011). The mental health policy of Pakistan (last revised in 2003) was not based on population needs, in part due to a lack of data regarding the basic information on mental health status and needs of the population of Pakistan (Irfan, 2011). These statistics undeniably provide rationale to put more individual, national and international efforts to improve the state of mental health services in this region.

Pakistan is an Eastern collectivist society (Routamaa & Hautala, 2008) with Islam as a dominant religion. Individual and socio-political lives of the people of Pakistan are heavily directed by the traditional Islamic values. A patriarchal system

prevails in Pakistan where male dominates female in economic and social aspects at home and in society (Qadir, Stewart, Khan, & Prince, 2005; Isran & Isran, 2012). However, many individuals have liberal views and attitudes and there is a mix of native and acquired socio-cultural values due to the influx of western influence through media.

Pakistani society values communism and emphasis from childhood is placed on conforming to the rules and norms of the society to assist and respect the authority of the family (Fuligni, Tseng, & Lam, 1999). The extended family system is prominent in Pakistan; children are not only looked after by their parents but also by the extended family members (Mohiuddin, 2007). At the familial level, the birth of a baby boy is celebrated while a baby girl is grieved over. She is a cause of shame and despair in many families as they have to prepare for her dowry and marriage. A male child is given priority over a female child for better food, care, and education (Niaz, 2004).

Adolescence might be relatively more stressful in this culture. One significant example is that pubertal changes occurring in adolescence in Pakistani culture are often perceived negatively especially for girls (Qazi, 2003). Girls as well as boys do not get any education about bodily changes that take place during adolescence; this may cause further stress (Ali, Bhatti, & Ushijima, 2004). Furthermore, girls are expected to dress differently e.g. wear a scarf. They stop playing outside home and making male friends is prohibited so is socialization with peers after school. These factors severely restrict their freedom of mobility.

Socialization practices when examined across 100 societies revealed that boys are usually raised up to accomplish and to be self-sufficient and independent, while girls are usually raised to be nurturing, responsible, and submissive (Barry, Bacon, & Child, 1975). Furthermore, in traditional societies, females are given more domestic responsibilities and males are given non-domestic roles (Best & William, 1997). This is particularly true for Pakistani society where girls are expected to perform chores like cooking meals, cleaning house, and helping with care of other family members (Caplan, Choy, & Whitmore, 1991). Boys are expected to start helping their fathers in their work outside home. They are also expected to protect female members of their house and take outside responsibilities, for example,

shopping for food (Caplan et al., 1991). Parents place greater pressure on boys to perform better in studies (Chao, 1995) as they are going to be the bread earners of the family. They are usually treated better than girls and are considered ones who will take family name forward. It has also been indicated that many adolescents are forcefully married which can bring further pressure on them (Ali et al., 2004). Romantic relationships which emerge over the course of adolescence in the West are strictly prohibited in this culture.

Some socialization practices may vary in different economic classes with families from upper economic status treating boys and girls more equally. Children, especially boys, in these families are less subject to familial discipline (Nelsen & Rizvi, 1984).

Taken together, it is obvious that many aspects of adolescents' life in Pakistan differ from adolescence in West. However, much of our understanding of psychosocial development in adolescence and their mental health outcomes are based on Western theorization of these concepts. It is unclear whether the literature developed through theory and research in the Western cultures would be applicable for the Pakistani adolescent population.

Although large scale mental health surveys are not available in this sample, there are few small scale studies primarily focusing on prevalence of psychological distress in children which has been estimated to be around 9% (Javed, Kundi, & Khan, 1992). Prevalence of depression and anxiety among children visiting a psychiatric outpatient unit was found to be 9.5% and 11% respectively (Sarwat, Ali, & Ejaz, 2009). One cross-sectional study on 12-19 years old found 66% prevalence of depression among girls compared to 34% in boys (Qidwai, Ishaque, Shah, & Rahim, 2010). Despite these alarmingly high rates studies exploring mental health among Pakistani adolescents are scanty (Prasla, 2012). Furthermore, there are radical differences in the rates of mental disorders across studies, suggesting that it is crucial to explore further.

There is very little published research on Pakistani adolescents' mental health assessing depression, anxiety and well-being. A plausible reason for the scarcity of research in Pakistani population is the absence of valid measures. One of the aims for the present study is therefore to assess the state of mental health among Pakistani

adolescents by exploring the rates of depression, anxiety and well-being. It further aims at testing the applicability of western measures for assessing rates of depression, anxiety and well-being in Pakistani cultural context by engaging in comprehensive translation procedure and construct validation of these measures.

1.1.4 Mental health and its demographic correlates

Some of the demographic risk factors consistently associated with mental health are gender, age, socio-economic status (SES) and life events.

1.1.4.1 Gender and mental health. Gender has long been established as a significant factor in determining the differential vulnerability among women and men to mental health problems and treatment. Female gender is reported to have higher incidence, prevalence and risk for developing depression (Piccinelli & Wilkinson, 2000; Wang, Su, & Chou, 2010) and anxiety disorders (Beesdo et al., 2009). These differences have also been observed in adolescents (Lewinsohn, Joiner, & Rohde, 2001; Sapin, Simeoni, El-Khammar, Antoniotti, & Auquier, 2005). The explanations proposed for this vulnerability by psychosocial researchers are: greater psychosocial adversity, earlier reporting of symptoms, and differences in response to stress as compared to males (Bebbington, 1998).

Studies conducted particularly on adolescents samples confirm disparity in rates of major depression across gender where frequency of girls reporting MDD is twice than boys at some time in their lives (Anderson, Williams, McGee, & Silva, 1987; Cohen et al., 1993; Essau, Conradt, & Petermann, 2000). Furthermore, greater numbers of first onsets of depression have been reported in females than in males (Hankin et al., 1998; Kovacs, 2001). However, studies exploring differences in duration or recurrence of depression across gender have reported inconsistent findings. Girls with major depression have been reported to be more likely than boys to experience recurrence in adolescence (Lewinsohn, Pettit, Joiner Jr, & Seeley, 2003) whereas no gender difference in recurrence of depression was found in studies conducted by Hankin et al. (1998) and Kovacs (2001). In another study females reported higher incidence rates of MDD and had a more chronic course. Duration of the disorder was significantly associated with gender with females having longer episodes. It was also found that younger age of onset correlates significantly with more number of episodes in both genders; however, it predicted a worse course of

depression in females (Essau, Lewinsohn, Seeley, & Sasagawa, 2010). Review of the literature shows a general agreement among researchers on the difference in rates of depression across gender. However, there is little consensus on the possible reasons for this gender difference. Various explanations have been put forth in literature which can be categorized as biological and psychosocial. Psychosocial reasons include diverse socialization practices, gender roles, regulation of emotions, and pubertal changes (Petersen et al., 1991).

Compared to the amount of literature examining the gender disparity in rates of depression, less effort has been made to examine gender differences in anxiety disorders particularly among adolescent population. However, it is widely documented that throughout the lifespan women are significantly more likely than men to develop an anxiety disorder (Bruce et al., 2005). Lifetime prevalence rates for any anxiety disorder have been found to be 30.5% for women and 19.2% for men (Kessler et al., 1994).

With reference to the subtypes of anxiety disorders the rates are higher in women than men including panic disorder (5.0% vs. 2.0%), agoraphobia (7.0% vs. 3.5%), specific phobia (15.7% vs. 6.7%), social anxiety disorder (15.5% vs. 11.1%), generalized anxiety disorder (6.6% vs. 3.6%; Kessler et al., 1994), post-traumatic stress disorder (10.4% vs. 5.0%; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995) and for obsessive compulsive disorder (3.1% vs. 2.0%; Breslau, Chilcoat, Peterson, & Schultz, 2000).

A longitudinal study examined the associations between anxiety disorders during childhood and adolescence and psychosocial outcomes at age 30 to address the extent to which psychopathology after age 19 mediated these relations. It was found that adolescent anxiety predicted poor total adjustment along with poor adjustment in multiple domains including work, family, relationships, and coping. Adult psychopathology did not mediate the relationship between childhood anxiety disorders and psychosocial outcomes at age 30. The finding of this study supported that adolescent anxiety is adverse than childhood anxiety and leads to negative outcomes at age 30 (Essau, Lewinsohn, Olaya, & Seeley, (2014).

Taken together, the aforementioned studies provide essential information on the gender effects on rates of depression and anxiety disorders. Unfortunately, many

of these studies only examine limited number of factors which may contribute to this effect. It is most relevant here to reflect on the significant role of culture in the endorsement of psychopathology. Asian Americans have been consistently reported to endorse less psychological symptoms than individuals of other races, whereas European Americans report anxiety symptoms at the highest rate (Asnaani, Richey, Dimaite, Hinton, & Hofmann, 2010). Further, several studies have reported an interaction effects between gender and ethnicity in prevalence rates of psychological disorders (Bracken & Reintjes, 2009). Despite of these findings less attention has been paid in epidemiological research on examining the possible interplay between gender and race in the rates of psychopathology. A further complication is inconsistent diagnostic criteria and sampling procedures across studies which precludes generalizability of the study and make it difficult to integrate a coherent picture of the overall pattern of gender effects across mental disorders.

In Pakistan, the gender difference in depression and anxiety is fairly noticeable among adults (Mirza & Jenkins, 2004). However, there is very little research exploring gender differences in mental health in Pakistani adolescent populations. This association might be of particular importance to this culture where female gender is in a subordinated position. Where the male member makes decisions and women are forced to execute their familial and parental demands rather than their own will (Qadir et al., 2005). The process of socialization varies with the gender of the individual in such societies. The female mind is moulded from childhood to accept the commands and demands of the male guardian. Gender analysis facilitates understanding of the aetiology of mental health problems and their treatment. Therefore this study seeks to understand the effect of gender in relation to mental health among Pakistani adolescents.

1.1.4.2 Age and mental health. It has been observed that the load of depressive and anxiety disorders increases sharply in ages 1–10 years and peaks at adolescence and early to middle adulthood (ages 10–29 years) (Whiteford et al., 2013). These differences have also been observed across cultures. For example, Turkish adolescents aged 17 years had poor subjective well-being as compared to 15 year olds (Eryilmaz, 2010). The observed gender difference particularly in depression emerges in early adolescence (Angold et al., 2002). Pre-adolescent boys

are reported as more likely than girls to have depression but this likeliness shifts during adolescence toward girls and by age 15 girls become twice as likely as boys to experience depression (Cyranowski, Frank, Young, & Shear, 2000). A similar association has been reported between age and anxiety disorders in the Western literature (Beesdo et al., 2009).

The studies examining the difference in rates of depression across developmental stages have reported inconsistent findings. Essau, Conradt, and Petermann (2000) and Kashani, Orvaschel, Rosenberg, and Reid (1989) found significant relationship between rates of major depression and age but Lewinsohn, Hops, Roberts, Seeley, and Andrews (1993) did not. A study reported about tenfold increase in depression at age 14 as compared to age 10 (Rutter, 1986). Furthermore, rates of depression have been reported to be higher post puberty as compared to pre puberty and early and late onset of puberty in girls shows elevated rates of depression however in boys pubertal onset had no effect on rates of depression Garber, Lewinsohn, Seeley, and Brooks-Gunn's (1997) study.

Age of onset of major depression and depressive disorder among community samples have been reported to be 11 and 14 years (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). A large change has been observed in the prevalence of major depression after age of 11 in prospective epidemiologic studies (McGee, Feehan, Williams, & Anderson, 1992). This data reveals that onsets of depression increase from 1 % to 2% at age 13 and from 3% to 7% at age 15 (Lewinsohn, Moerk, & Klein, 2000).

A cross sectional study on 2522 children and adolescents aged 8 to 17 years (49% males), reported differences in age in all disorders, except physical fears. Seperation anxiety decreased with age and generalised anxiety increased with age (Orgilés, Méndez, Espada, Carballo, & Piqueras, 2012.)

Studies have also reported gender and age interaction in prevalence of anxiety. A longitudinal study was carried out by Hale Raaijmakers, Muris, Van Hoof, and Meeus (2008) to investigate the developmental pathways of generalized anxiety disorder, social phobia, separation anxiety disorder, panic disorder, and school anxiety. They observed a slight decrease in these disorders, with the exception of social phobia, which remained fairly stable over time. These symptoms increased

in girls, while they decreased in boys over time. Similar results were reported in a study exploring rates of depression and anxiety across ages among adolescents of 13-16 years of age. They found that mean on both depression and anxiety was higher among 16 years old girls whereas among boys 13 year old had higher mean on both disorders (Hoek, Van Lier, & Koot, 2012). These findings are also supported by Peleg (2012).

Due to inconsistent methodology including methods for assessment it is difficult to compare the patterns of mental health problems across studies and racial/ethnic groups and requires further exploration.

In the light of the above overview it is established that both gender and age are linked with adolescents' mental health. The cultural milieu of Pakistan suggests that both these factors need to be emphasized in research particularly for adolescence (See 1.1.3). Therefore, the present study aims at examining the association and interaction between age, gender and mental health among Pakistani adolescents.

1.1.4.3 Socio-economic status (SES) and mental health. In social science research, relationship between SES and mental health has been extensively studied (Hudson, 2005). Although studies on adult populations suggest that depression is associated with lower SES (Kessler et al., 2003), studies on children and adolescents show less consistent results. Some studies report a lack of association between depressive and anxiety disorders and SES (Costello et al., 2003); others report a significant association (Lemstra et al., 2008).

The association between SES and mental health among Pakistani adolescents is also of particular significance as it is a developing country where 22.3% of the people live under the poverty line (Central Intelligence Agency [CIA], 2013). Since limited previous studies examining socialization practices in Pakistani culture highlight differences across economic classes with reference to adolescence behaviour (Nelsen & Rizvi, 1984) but not necessarily their mental health. Perhaps, a better understanding would emerge if research focuses specifically on the association between SES and mental health of adolescents' and their interaction.

1.1.4.4 Life events and mental health. Stressful life events have long been associated with the onset, course, remission and relapse of depression (Paykel, 2003).

These results are consistent across longitudinal (Brown, Harris, & Hepworth, 1994, 1995; Pine, Cohen, Johnson, & Brook, 2002) as well as cross-sectional studies (Williamson, Birmaher, Anderson, Al-Shabbout, & Ryan, 1995; Goodyer, 1996). Similar associations have been reported between negative life events and anxiety disorders (Beesdo et al., 2009). This link is also supported by longitudinal research. For example, negative life events have been found to be one of the factors that were significantly associated with the stability of MDD after 15 months period (Essau, 2007). In addition, Essau in 2004 compared level clinical features of depression (e.g., severity and age of onset) among depressed adolescents with depressed parent(s) and with those whose parent(s) do not have any depression. She found that the adolescent depression was significantly associated with an elevated rate of having a depressed mother. These findings reflect family related stressful experiences as predictors of adolescents' depression.

McLaughlin & Hatzenbuehler (2009) in their longitudinal study proposed that sensitivity to anxiety among adolescents develops due to experience of negative life events. Studies show that experience of loss precedes depressive disorders whereas threatening life event precedes anxiety disorders (Finlay-Jones & Brown, 1981).

In Pakistan higher rates of depression (Husain, Creed, & Tomenson, 2000; Mumford, Nazir, Jilani, & Baig, 1996) and anxiety (Rab, Mamdou, & Nasir, 2008) are related to stressful events among adults. However, no empirical support is available regarding the association between depression/anxiety and life events in adolescent populations in this culture. On the other hand, the robust evidence from the West (Pine et al., 2002; Beesdo et al., 2009) and other parts of the world (Unger et al., 2001) provides strong support for the above and it is therefore, important to include this in this study.

1.1.4.5 School type and mental health. Advantages and disadvantages of single sex schooling and coeducation have recently become part of debate around mental health inequalities. Single sex schools have been previously reported to provide better academic environment for both girls and boys (Datnow & Hubbard, 2002). In comparison, coeducational institutions are cost effective and have been documented to provide better opportunities for personal and social growth of pupil (Robinson & Smithers, 1999). However, almost negligible amount of work has been

done on mental health problems and type of school. A study examining whether attending a single-sex or co-educational school made any difference in social outcomes among participants at age 50, found no significant effect of school type on mental health *(*Sullivan, Joshi, & Leonard, 2011). In Pakistani, pupil from Co-educational schools have reported higher mean on worry and depression as compared to their single-sex school counterparts (Malik, 2013).

Despite mental health among adolescents being such an important concern internationally, there is shockingly little attention paid to this aspect in Pakistan. The available meagre literature indicates that mental health is an area of serious concern (Rehman, & Hussain, 2001). Therefore, to fill the void of research on these established correlates, the second aim of this research is to explore the association between gender, age, life events, school type and SES in relation to adolescents' depression and anxiety as well as well-being among Pakistani adolescents.

1.2 Part II – Defining the Constructs

In this section, I will review the literature on the factors associated with adolescents' mental health. Comprehensive review of recent studies on common mental disorders (depression and anxiety) among adolescents in relation to a number of constructs (attachment, parental bonding, social support, emotion regulation and cultural orientation) will provide an insight into the mechanisms underlying susceptibility to depression and anxiety in adolescence. I will start by giving a brief overview of the Attachment theory on which I have conceptualized my model of mental health and its correlates. I will, at the same time, link these constructs with each other to theoretically formulate the underlying pathways of associations in explaining adolescents' mental health. Furthermore, I will delineate these constructs with reference to Pakistani adolescents.

1.2.1 Attachment

In the last 30 decades attachment theory has significantly contributed to the field of clinical psychology by explaining the aetiology and characteristics of various mental disorders (Priceputu, 2012). The scope and focus of attachment theory and its applications in clinical settings have expanded from infants to adults. Since its inception it has been developed, verified and applied to understand human functioning across the life span (Parkes, Stevenson-Hinde, & Marris, 1993).

Attachment theory is not only based on clinical observations but also nested within strong empirical evidence which gives it a primary place in contemporary developmental psychology (Cassidy, 2008).

Proposed by John Bowlby (1969, 1973, 1980), attachment theory is a developmental context for understanding psychopathology. While working in a home for maladjusted boys, Bowlby observed that disturbance in mother-child relationship leads to later psychopathology (Cassidy, 2008). He proposed that humans are predisposed to exhibit behaviours that insure their proximity with the caregiver resulting in their protection. This attachment behavioural system is flexible in a sense that different ways of achieving proximity can be used in different situations. Nevertheless, there is stability in the internal organization of the attachment behaviour system such that the basic goal remains seeking proximity. In the case of separation or distance from the primary care provider (mostly mother) the attachment system is activated and when proximity is attained it terminates (Cassidy, 2008).

Attachment theorists argue that individuals develop attachment security or insecurity as a result of their emotional experiences with their primary care providers (Bowlby, 1969). If caregiver is caring and responsive infants develops attachment security and if the caregiver is non responsive, infant develops attachment insecurity. Ainsworth, Blehar, Waters, and Wall (1978) through their Strange Situation technique documented individual differences among infants in response to separation from mother. Infants showed "secure", "avoidant" or "ambivalent/resistant" patterns which were a result of their experience with their mothers in the first year of their life. When testing this theory beyond infancy, most researchers have examined these organized patterns of interpersonal expectations, emotions, and behaviours that result from one's attachment history. These systematic patterns are called attachment styles (Hazan & Shaver, 1987).

Attachment theory proposes that these attachment styles are yielded by a combination of "internal working models" (IWMs, Bowlby, 1973). Based on Bowlby's concept of secure and insecure attachment and IWMs of the *self and other*, Bartholomew and Horowitz (1991) proposed that IWMs consist of two parts: self-esteem thoughts about self and sociability thoughts about others which are either positive or negative; corresponding to the four attachment styles (see Figure 1).

Four attachment styles which have been proposed among adults are: (1) Secure attachment style with securely attached individuals holding positive opinion about themselves and others. They can balance between intimacy and independence. These people have a history of warm and responsive attachment figures in the past; (2) Anxious-preoccupied attachment style in which individuals tend to be over dependent on individuals they attach to and seek constant responsiveness from them. These people usually have less positive view of themselves; (3) Dismissive-avoidant attachment style in which individual avoids attachment. They have less positive *view of others*. They seek less intimacy and deny those requiring close relationships; and (4) Individuals with Fearful-avoidant attachment style have less positive *view of self* and *others*. They seek emotional closeness but feel uncomfortable in close relationships. They have mixed feeling about close relationships.

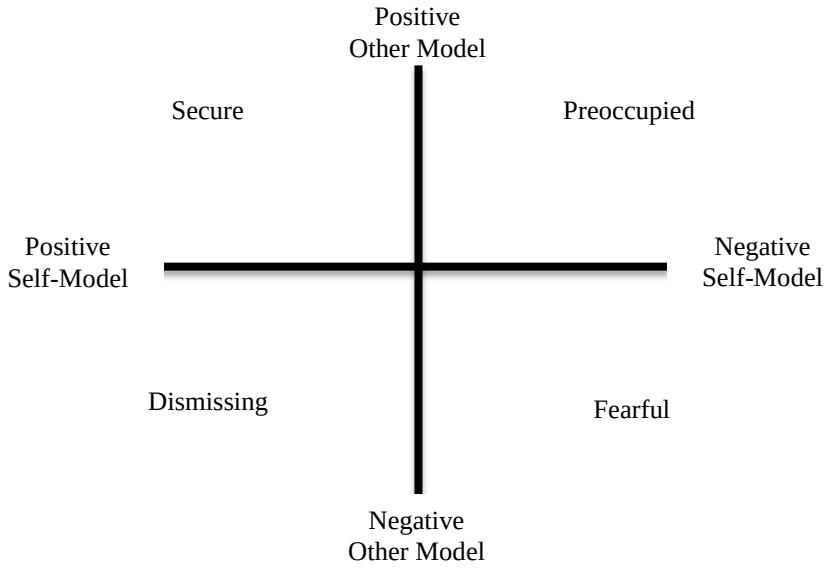

*Figure 1.*Model of attachment (Bartholomew and Horowitz, 1991, p. 431).

The IWMs and attachment styles can be measured by self-reporting questionnaires like the Relationship Scales Questionnaire (RSQ, Griffin & Bartholomew, 1994) or interview methods. Researchers state that there is convergence among interview and self-report measures of attachment (Bartholomew & Shaver, 1998). A factor analytic study of different attachment measures revealed a

two factor structure consisting of attachment anxiety and avoidance which are hypothesized to be behavioural expressions of the IWMs of *self and others* (Brennan, Clark & Shaver, 1998). Attachment research implies the significance of IWMs in relation to adolescents' depression and anxiety. Though, clear investigation into the content and structure of IWMs is fairly limited. However, there is a consensus that these are better way of assessing attachment patterns as they form the underlying mechanism for attachment behaviour (Bartholomew & Horowitz, 1991). Therefore these have been used in the current study to assess adolescents' attachment.

IWMs may change with social and developmental changes (Bretherton & Munholland, 1999). With time the attachment related information becomes integrated resulting into more complex exemplification of relationships which perhaps start becoming more obvious in adolescence (Crittenden, 1997).

Cognitive development during aadolescence results into more integrated reflection of *self and other* particularly with reference to parents. With this maturity a stronger working model of relationships develops which may change perceptions of self, parents and world around (Brown & Wright, 2001). Adolescents who have had fraught attachment relationships find it particularly more overwhelming to take responsibility to manage relationships. They will have more chronic problems to overcome, lesser guidelines to direct them and fewer possibilities of rehearsing strategies to form strong interpersonal relationships (Allen & Land, 1999). Such deficiencies in repertoires of attachment resources make adolescents more vulnerable to emotional problems.

Attachment models also form the basis for expectations about the availability and responsiveness of significant others during times of distress (Baldwin, Keelan, Fehr, Enns, & Koh-Rangarajoo, 1996). Attachment insecurity reduces resilience in coping with stressful life events; and predisposes an individual to psychologically break down in times of crisis. Attachment insecurity can therefore be viewed as a general susceptibility to mental disorders, with the specific symptomatology depending on genetic, developmental, and situational factors (Bowlby, 1988).

Insecure attachment has been viewed as a potential cognitive vulnerability factor for depression and anxiety and adds to the predictability of current models of cognitive vulnerability by adding the consideration of interpersonal context

(Williams & Riskind, 2004). Bowlby proposed that children's concern about availability of attachment figure constitutes basis for anxiety whereas depression results from prolonged loss or separation which can be either actual or perceived (Cassidy, 2008).

A comprehensive review of literature on adolescents' attachment reveals that a number of studies have concentrated on the role of attachment in infancy and adulthood. Despite the fact that adolescence is a period of change and turmoil there is not enough research examining the role of attachment during this life stage. Available literature supports the putative effects of insecure attachment in community samples. For example, in a recent study conducted in Sweden examining the relationship between dimensions of attachment and internalizing problems demonstrated that attachment accounted for about half of the variance in scores on sub-scales of depression and anxiety (Ronnlund & Karlsson, 2006). Similar results have been reported from Italy (Pace & Zappulla, 2011), Canada (Bosacki, Dane, Marini, & YLC-CURA, 2007; Puissant, Gauthier, & Van Oirbeek, 2011; Tremblay & Sullivan, 2010), Netherlands (Roelofs, Ruijten, & Rood, 2011), and United Kingdom (Irons & Gilbert, 2005). However, it must be noted here that there are limited number of cross-cultural studies in this area. Additionally there are differences in methodological qualities across studies particularly with reference to employment of appropriate sample sizes and assessment tools used which limit the generalizability of these studies.

Longitudinal studies have been most valuable, not only in understanding the development of psychopathology in relation to attachment patterns, but also in evidencing the predictive validity of attachment. For example, Lee and Hankin (2009) in a 4-wave prospective study conducted in US found that insecure attachment predicts prospective changes in depressive and anxious symptoms. This has been supported by other longitudinal studies (Chango, McElhaney, & Allen, 2009). These studies support the causal link between attachment and psychopathology contradicting the view that psychological problems can increase attachment insecurity.

Since the work of Ainsworth, a number of studies have explored attachment characteristics across cultures. Ainsworth Strange Situation technique was used with

46 German mother-infant pair. A different distribution of attachment classifications was found with a high number of avoidant infants (Grossmann et al., 1985). Similarly, Takahashi (1986) studied Japanese mother-infant and found no significant differences in proportions of securely attached and insecurely attached infants. Furthermore, high frequency of ambivalent attachment pattern was report in Israeli infants (Sagi et al., 1985). A number of cultural explanations can be put forth to explain these disparities but these will be persuasive only on the surface level as most of such investigations do not measure parental beliefs and culturally guided practices (Bretherton, 1992). Furthermore, within culture variations are ignored. Research on attachment needs culturally appropriate and valid measures and a deeper understanding of folk theories about parenting and relationships. The literature on attachment and adolescents' depression and anxiety is scarce in Eastern populations. Scanty evidence reveals comparable results; for example, a study conducted on a Turkish sample (Keskin & Cam, 2010) provides support to the applicability of attachment theory to Eastern samples. Similarly, Kayastha, Hirisave, Natarajan, and Goyal (2010) found that the normal group of Indian adolescents showed better security of attachment as compared to the clinical group. Comparable association between attachment and adolescents' depression and anxiety in Eastern and Western samples encourages the applicability of attachment theory across cultures. If applicable the developmental models of psychopathology can be adapted and indigenized across cultures.

It is evident from the review that relatively few studies have employed large sample sizes to satisfactorily study the differential link between attachment prototypes and adolescents depressive and anxious symptoms. One of the studies with a representative sample of Irish adolescents found significant differences between attachment groups in relation to depression. Specifically, lower levels of depression and anxiety were reported by securely attached adolescents as compared to the insecurely attached individuals. However, there were no significant differences between the ambivalent and avoidant groups (Nelis & Rae, 2009). Other studies show that attachment avoidance is a consistent predictor of internalizing problems among at risk samples (Goldberg, Gotowiec, & Simmons, 1995; Lyons-Ruth, Easterbrooks, & Cibelli, 1997). Such studies highlight the variation in association

between depression and anxiety in relation to different attachment prototypes. However, this should be interpreted with caution as there are few studies exploring these links. This calls for deeper exploration of how different attachment patterns predict adolescents' psychopathology. A plausible reason of this contradicting finding in case of Nelis and Rae (2009) study could be the use of a single item measure of attachment. Single item self-report measures of attachment have been widely used across studies which carry their own limitations. Adolescents' attachment styles have also been measured using adult measures and there seems to be a general lack of tools to measure attachment among this age group (Nelis & Rae, 2009; Gamble & Roberts, 2005). There is a need to develop psychometrically sound measure of attachment which can be used in clinical as well as in research setting. Adolescents Relationship scales questionnaire (ARSQ) is one such measure which is a brief self-report questionnaire of attachment which was specially designed for adolescents and has shown good psychometric properties (Scharfe, 1997) and has been used in this study to assess adolescents attachment.

Studies also have focused on gender differences in predicting relation between attachment and adolescents' mental health which has revealed inconsistent findings. Smith, Calam, and Bolton (2009) found no difference between sexes on parent-peer attachment in relation to depression. However, Puissant et al. (2011) explored the quality of attachment across sex among Canadian students and found support for the differential role of attachment in predicting depression across gender. These studies show inconsistent findings in explaining the role of gender in association between adolescents' psychopathology and attachment therefore requiring further exploration.

Some studies have explored the association between depression and anxiety and adolescents' attachment specific to different relationships whereas most measure attachment in general. Of those which measure relationship specific attachment, most of them focus on attachment with mother. Assessing attachment to both parents is an exception rather than a norm. Adolescents attachment to mother and father are however comparably associated with depression and anxiety. Wilkinson (2010) for instance investigated parent, best friend, and peer attachment in an Australian sample. He found that attachment with both parents was found to be related to

depressive symptomatology. However, maternal attachment was the strongest and most consistent predictor of adolescents' adjustment.

In summary, literature supports the link between insecurity of attachment and adolescents' depression and anxiety and there is increased interest in recent years to understand the clinical implications of attachment security particularly with reference to adolescence. There are, nevertheless, a number of challenges through this work that make understanding of results difficult. For example, a large number of studies have examined association between attachment, depression and anxiety among late adolescents' samples and relatively few in early and mid-adolescent samples.

Despite the limitations of the current research on normative samples, the strength of attachment security is supported by studies on at risk populations (Allen, Hauser, & Borman-Spurrell, 1996). However, studies of attachment in clinical populations have been limited and there is a clear gap in this area. Furthermore, preponderance of studies employing normative samples somewhat limits the relevance of attachment to more severe forms of psychopathology and further research should explore the applicability of attachment classification examined in normative samples with relevance to interventions.

Attachment theory can serve as a model to enhance security of attachment, including the therapist-adolescent relationship. However, attachment must not only be the sole principal underlying an intervention unless it is suspected to be the main issue and in most scenarios attachment based intervention must be used in combination with other intervention strategies (Dubois-Comtois, Cyr, Pascuzzo, Lessard, & Poulin, 2013).

This review concludes that there is clear need to produce more empirical evidence looking at attachment and mental health to determine associations and causality pathways among adolescents and investigating the interaction with other relevant constructs particularly across different cultural settings. Although there is a considerable amount of literature examining the linear association between attachment and mental health problems in isolation, most studies fail to examine the interaction with other factors.

According to attachment research the association between the attachment *model of self and other* and psychopathology is mediated by several pathways. Some

of the correlates affecting pathways of association between attachment and adolescents' depression and anxiety include high levels of stress, temperamental characteristics, economic risk and parenting quality. Among these, parenting quality has been a consistent factor (Brumariu & Kern, 2010). Parental bonding which is closely related to the concept of attachment is a potential protective factor that warrants further research attention.

1.2.2 Parental Bonding

Parent-child relationship is perhaps the most significant aspect of family relations. The impact of early parent-child relationship on mental health can be best understood under the realm of one of the most influential theories in developmental psychology: the attachment theory.

In the context of attachment theory, it is imperative to differentiate between attachment behaviour and parental bond. Although attachment and bonding overlap considerably, they are not same (Allen & Manning, 2007). Attachment behaviour is an infant's behaviour that promotes proximity to attachment figure whereas a parental bond is an individual's interpretation of the relationship with one's parents (Cassidy, 2008). Literature consistently reports that a strong bond is the foundation for later development of secure attachment (Fogel, 2009).

Bowlby, in relation to the mother's tie with infant, talked about "parenting behaviours". He viewed parenting behaviours as biological urge to care and protect infants. Indeed when infant's attachment system is deactivated, the mother's caring system is activated providing a secure base for infant to explore (Cassidy & Shaver, 2008). Attachment theorists propose that an infant develops a secure or insecure attachment as a result of sensitivity and responsiveness provided by the caregiver (parents in most cases) (Bowlby, 1988). Perception of consistent care and sensitivity by the caregiver leads a child to develop a positive *model of self and other* (IWMs). Secure attachment has been linked with perceived parental care and insecure attachment has been linked with perceived parental overprotection both empirically and theoretically (Ainsworth et al., 1978).

In general, there is a debate regarding the dimensionality of parenting perceptions. However, there is an overall agreement that there are two key dimensions of parenting relevant for adolescents' problem behaviour, namely care

and control (Maccoby & Martin, 1983). Parental care encompasses a variety of related phenomena including responsiveness, acceptance, support, and nurturance whereas parental control might be viewed as relative degree of autonomy that parents allow. Literature has used various terms interchangeable to refer to perceptions of parental bonding. In this thesis I use parenting, parenting behavior or patterns, perceptions of parenting interchangeably to refer to parental bonding.

Diana Baumrind (1966) proposed three prototypes of parenting patterns which were a combination of dimensions of warmth/care and control. These prototypes were permissive, authoritarian and authoritative parenting. Authoritative parents are warm towards the child but also exert assertive control. Authoritarian parents show less warmth to the child but exert punitive control and permissive parents show warmth and less control over child. Maccoby and Martin (1983) then extended these typologies and added one more style of parenting called neglectful parenting in which the parent shows less warmth and less control to the child. Parker, Tuping, and Brown (1979), by taking care and control dimensions of parenting, developed the Parental Bonding Instrument (PBI) and classified four types of perceived parenting attitudes: high care and low control i.e., optimal parenting; low care and low control i.e., neglectful parenting; high care and high control i.e., affectionate constraint and finally low care and high control i.e., affectionless control. PBI is most widely used instrument to assess these dimensions of parent-child relationship (Parker, 1989) and has been used in the current study to assess perceptions of parental bonding among Pakistani adolescents.

Research shows that parental care is critical in 'scaffolding' children to the next level of functioning during adolescence (Fogel, 2009). However, the parent-child bond at this age can become unstable as adolescents strive toward autonomy and parents find it difficult to find new ways of supporting them (Moretti & Peled, 2004). Parental bond therefore makes an adolescent more or less vulnerable to develop emotional problems.

The role of parents in adolescent mental health has been seriously questioned in recent years. Some scholars have debated that parents make little or no variance in adolescents' adjustment, directing instead to research showing that peer influence dominates this period (Harris, 1995). In opposition to this point, there is an

increasing indication that parents remain the most significant factor for adolescents healthy psychosocial functioning and this variance functions through the nature of parent-child bond (Doyle & Moretti, 2000; Doyle, Moretti, Brendgen, & Bukowski, 2002; Moretti & Holland, 2003).

The effect of parental bonding in adolescence has been extensively researched. Studies suggest that perceived parental bonding is associated with better mental health in adolescents (Adam, Keller, West, Larose, & Goszer, 1994; Canetti, Bachar, Galili-Weisstub, De-Nour, & Shalev, 1997; Rey, 1995). It is well established that parental warmth is associated with lower levels whereas parental control is associated with higher levels of adolescents' depressive and anxious symptoms (Reitz, Dekovic, & Meijer, 2006).

Throughout the literature cross-sectional designs are generally employed to establish the basic relationship between perceptions of parenting and adolescence depression and anxiety. These studies demonstrate that an association between perceptions of parenting and adolescence anxiety and depressive disorders exists, but the direction of this relationship cannot be elucidated with this design. Very few longitudinal examinations have been conducted that might shed light on the direction of effects linking parental bonding to depression and anxiety among adolescents. For example, Raudino, Fergusson, and Horwood (2013) longitudinally looked at the association between parental bonding, attachment, depression and anxiety. They found that the quality of parent child relationship measured in terms of parental care and over-protection as well as attachment modestly predicts adjustment in later life. This data indicates that the parent-adolescent bond may act as a protective or vulnerability factor in the development of psychiatric symptoms, mainly anxious and depressive symptoms. In order to explore the quality of parent-child bond and its association with mental health outcomes, further longitudinal studies with larger samples and adequate follow-up periods should be conducted.

An important empirical limitation of the current literature on parental bonding and adolescents' depression and anxiety is that the studies generally employed homogeneous samples throughout the literature. Most of the studies employed samples that were predominantly Western and few studies examined the relationship between perceptions of parenting and adolescent depression and anxiety

across different ethnic and cultural groups. Cultural differences in perceptions of parental bonding may hence reduce the applicability of these findings. For example, different emphasis on development of autonomous self in individualistic and collectivistic societies can be of significance while considering the parent-child bond. This can be supported by the fact that a favourable relationship between parent and child leads to the development of autonomous self (Fonagy, 1999). Keeping this in view two proposals can be put forth. First, development of autonomous self might not be an appreciated outcome in collectivistic culture that values interdependence and may not be viewed as a good parenting practice. Consistently with this statement, research supports that Pakistani parents are less autonomy granting and more controlling than British parents (Mujtaba & Furnham, 2001). Second, it can also be proposed that high parental control and low autonomy granting may not be related to negative mental health outcomes in Pakistani adolescents as such parenting behaviour is in line with the embedded cultural beliefs system. In contrast to this proposal parental warmth and autonomy granting was associated with positive functioning in Pakistani adolescents and parental psychological control was negatively associated with psychosocial functioning among Pakistani adolescents (Stewart et al., 1999; 2000; 2003).

One of the main cultural differences reported by researchers among Caucasian Americans and Asian American culture is the concept of independence versus interdependence. Caucasian American parents emphasize on their child's ability to build a "sense of self". Whereas, Asian Americans ensure that their children develop a sense of connectedness with their families (Wang & Leichtman, 2000). Asian American culture supports over-protection and strictness (Chung, 1997) and it might be possible that this strictness has positive function within the culture and it might be possible that authoritarian parenting may not have the same effects on Asian Americans. However, these hypotheses need to be validated rather than assumed.

Parental bonding has also been previously studied in Pakistani adult females. It was found that PBI care dimension significantly negatively correlated with depression and anxiety and the over-protection dimension associated positively. This study also indicates cultural sensitivity of PBI and applicability of the construct of

parental bonding in Pakistani cultural context (Qadir et al., 2005). Similar results have been reported for UK immigrants of Pakistani origin (Mujhtaba & Furham, 2001; Shams & Willaims, 1995; Furnham & Husain, 1999). This research puts forward an alarming conclusion that a Pakistani sample and a Pakistani immigrant sample have less optimal parental bonding as compared to a UK population suggesting that these cultures might have a higher incidence of psychopathology. However, rates of psychological distress are not compared between these three cultures and these reports were not focusing on adolescent population samples. Some focused only on female adults and none of them looked at the relationship between parental bonding with mother and father in relation to adolescent depression and anxiety. This inconsistency and gap in the literature needs to be further investigated.

It has been further noted that studies examining parental bonding relied primarily upon self-report methodology. Majority of the studies reviewed here used self-report data as the sole measure of parenting, and the validity of this type of data has been questioned. However, consistent findings have been obtained from studies employing other methodologies for instance observational studies (Wood, McLeod, Sigman, Hwang, & Chu, 2003).

Studies have reported a gender difference in the perception of adolescents bonding with parents. Gamble and Roberts (2005) observed interesting gender differences where girls were more sensitive to perceptions of adverse parenting than boys. Similarly, Nishikawa, Sundbom, and Haggloff (2010) found that the strength of parenting in predicting mental health was stronger for Japanese girls as compared to boys. These results indicate that there might be a differential effect of parenting perception on adolescence depression and anxiety which needs further exploration.

From the review of literature on parental bonding and adolescents' depression and anxiety; few consistent patterns of association have emerged. The association between bonding with parents and depression/anxiety among adolescents tends to be of a medium to large magnitude, with clinically significant implications. The review shows that models of parental bonding and adolescents depression and anxiety provide a comprehensive theoretical context for theory development and empirical evidence on association between specific parenting behaviours and expressions of maladaptive behaviour among adolescents. However, this claim has some

limitations. Most of the studies have not explored the gender differences in perceptions of parental bonding and mental health outcomes. Also few studies have examined parenting separately for both parents. Cross-cultural research is scarce. Though the methodological quality of past studies restrict generalizability of conclusions but the advances in the past decade in the field of developmental psychopathology suggests that researches in this area are of critical significance for understanding adolescents' mental health. However, there are a number of other factors which can interplay to contribute to adolescents' psychopathology.

Empirical findings stemming from both attachment and bonding have produced consistent evidence that perceived availability of others and the retrospective perceptions of parental bonding contribute significantly to the perceived availability of social support which has been critically reviewed in the following section.

1.2.3 Social support

There is a wide body of literature that has studied the concept of social support. Social support is a comprehensive term covering diverse explicit characteristics of social world that might promote individual's well-being and/or increase resistance to health problems (Cohen, Gottlieb, & Underwood, 2000).

In endeavouring to delineate the construct of social support, this thesis is in agreement with the well validated proposal that social support is a multidimensional construct (Cohen & Wills, 1985; Smith & Anderson, 2000). It proposes that there are components integral to social support that need exploration; the structural and functional components of support, quantity and quality of support and perceived and received support (Power, Champion, & Aris, 1988).

Beginning with the structural and functional components of support, structural components refer to the organization of support providers in an individual's life. This includes demarcation of which relationships are significantly supportive. The functional component measures what kind of support each member of the organization provides (Cohen & Wills, 1985). It is important here to assess whether this support is over or underprovided, and whether it matches up to the individual's expectation of the support or need for support (Cohen & Wills, 1985).

Perceived social support assesses perception of the support recipient regarding availability and satisfaction from support (Sarason, Pierce, & Sarason, 1990). It is defined as "information leading the subject to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations" (Cobb, 1976, *p.* 300). Sarason et al. (1990) defined it as "Feelings that you are loved, valued, and unconditionally accepted" (p. 110).

Received social support is defined as an explicit supportive action (e.g., guidance) offered by providers (Gurung, 2006) or support received in more specified terms through the example of practical behaviour (Barrera, 1986). Studies which have looked into a range of aspects of social support, point out that perceived social support is the crux of all these aspects (Sarason, Shearin, Pierce, & Sarason, 1987).

There is a theoretical link between attachment and social support (Sarason et al., 1990) which is supported by the empirical evidence (Davis, Morris, & Kraus, 1998). Attachment theory brings theoretical explanation to the individual differences in seeking and gaining benefit from social support (Ditzen et al., 2008). For instance, those having security of attachment and high perceptions of social support are less likely to exhibit symptoms of depression and anxiety. In line with this research are findings that parental care is associated with high perceptions of social support among adolescents (Park, 2009). Secure attachment has been positively associated with adolescents perceived social support in literature (Kafetsios & Sideridis, 2006; Rodin et al., 2007; Menon, 2012) these results have been reproduced in Asian adolescents as well (Liu, 2006; 2008).

Social support is an important protective factor against mental illness (Kafetsios & Sideridis, 2006; Falci & McNeely, 2009; Sroufe, Duggal, Weinfield, & Carlson, 2000; Taylor, 2011) and stress (Grant et al., 2006) among adolescents. It buffers against the negative effect of mental disorders on adolescents' academic functioning (Rockhill, Vander Stoep, McCauley, & Katon, 2009). Researchers assert that adolescents can be particularly susceptible to psychiatric disorders if there are deficits in their psychosocial functioning (American Psychiatric Association [APA], 2000).

Despite the well-established significance of social support in relation to mental health, little research has focused on this link especially in case of adolescents

when comparing the amount of empirical evidence present in adult literature (Del Valle, Bravo, & Lopez, 2010). Therefore, research on depression and anxiety in adolescence has lagged behind compared to adults and we know relatively little about the potential role of adolescents' social relationships as correlates of depression and anxiety.

Social support literature investigates two theories regarding the influence of social support on mental health: "main effect" and "stress buffering effect" (Cohen & Wills, 1985). Main effect model which suggests that social support effects mental health regardless of stress experienced is supported by many studies examining social support among adolescents (Benhorin & McMahon, 2008). In contrast the stress buffering model suggests that social support buffers against the effect of stress on mental health and has shown inconsistent findings among adolescent samples (Burton, Stice, & Seeley, 2004; Auerbach, Bigda-Peyton, Eberhart, Webb, & Ho, 2011).

Mental health survey among British children and young people found that adolescents who ranked lowest on social support were one and a half times more likely to have an emotional disorder (Green, McGinnity, Meltzer, Ford, & Goodman, 2005). These results are supported by research in clinical samples as well (Kerr, Preuss, & King, 2006).

The quantitative literature in this body of research has largely relied on correlational designs to show the relationship between social support and various outcomes. However, there are a few longitudinal studies. A longitudinal study exploring the association between social support and adolescents' mental health found a reciprocal (Stice, Ragan, & Randall, 2004) as well as a temporal relationship (Zimmerman, Ramirez-Valles, Zapert, & Maton, 2000) between depression and social support. Research supports the notion that high levels of support protect against future depression but imply that this may only be true for parental support and not for peer support. It shows that depression leads to reduction in support from friends but not from parents (Stice, Ragan, & Randall, 2004). Therefore, programs for prevention of depression among adolescents must promote parental support and skills to decrease the reduction of peer support among adolescents.

Most of our understanding about anxiety and depression in adolescents has come from studies conducted in Western countries. However, few studies have tried to fill this gap by exploring depression and anxiety and its correlates among adolescents from eastern cultures and have furthered our understanding of cross-cultural differences. Overall, these studies show that depression and anxiety symptoms occur commonly in both Western and Eastern countries. However, the factors that are associated with these may differ across cultures.

Researches have examined cultural differences in social support among various ethnic groups. These studies have observed differences across groups in using social support for coping against stress where Asians and Asian American score lower on seeking support in stressful situation as compared to their European and Americans counterparts (Taylor et al., 2004). Moreover, the overall pattern of cultural differences in seeking support are shared among the different subgroups of Asian culture including Chinese, Japanese, Korean, Indian, Filipino and Vietnamese cultural backgrounds.

Cheng, Cheung, and Cheung (2008) found support for the direct effect of parental support and a buffering effect of friends support on Hong Kong adolescents' depression. Essau and colleagues (2011) conducted a cross-cultural study on Japanese and English adolescents. They observed that social support had little or no effect on anxiety symptoms in both countries. However, Pillai et al. (2008) found that social support was a significant protective factor against mental disorders in Indian adolescents. An inconsistent link between social support and adolescents' mental health among Asian samples warrants further exploration. In contrast to correlational studies, consistent results have been obtained in studies longitudinally examining the association between social support and depression (Yang et al., 2010; Chan, 2012) and social support with reference to anxiety (Demaray, Malecki, Davidson, Hodgson, & Rebus, 2005) among Asian adolescents.

The results of the review of the recent studies on social support and adolescents' depression and anxiety showed mixed effects. Current literature is still limited in its understanding about how support actually works and in what context. As proposed earlier, researches related to social support are more complex and multifocal than was thought previously (Shrout et al., 2010). Thus, more theoretically

sound and methodologically stronger research is necessary to advance our understanding of perception and receipt of support in relation to mental health among adolescents with special focus on different cultures and nations.

This review suggests that there are a number of researches examining perceived social support and adolescents' mental health whereas little is known about received support and its role. The need for theoretically and psychometrically sound assessment tools for assessing social support among youth has also been observed. Although social support is considered as a multidimensional construct, instruments which are most frequently used do not distinguish between various sources and dimensions of support. There is further need to validate the existing measures across different populations for comparison and generalizability of results. It has also been observed that the research on social support and mental health focuses generally on illness and disorder rather than positive aspects.

The current literature apart from its few limitations, evidences the role of social support in understanding depression and anxiety among adolescents. Despite the clear significance of social support and its effect on mental health, the mechanisms through which it influences adolescents' mental health are mainly unclear. The present state of art regarding adolescents' mental health and its relationship with social support shows that the researchers know more about the interpersonal mechanisms of psychopathology as compared to mechanisms that explain how these relationships influence psychopathology. Therefore, a systematic understanding is required. This thesis proposes that the often-neglected but acknowledged interpersonal aspect of emotion regulation represents such a mechanism.

1.2.4 Emotion regulation

In general, emotion regulation is thought of as individual's pattern of organizing emotions in reaction to situational demands (Cole, Michel, & Teti, 1994). The complex nature of this concept poses a difficulty in achieving a common definition (Izard, 2010; Cole, Martin, & Dennis, 2004). Nonetheless, it is considered as an important component of development. This is because of its role in maintaining relationships. It has been defined in literature as:

"Those behaviours, skills, and strategies, whether conscious or unconscious, automatic or effortful, that serve to modulate, inhibit, and enhance emotional experiences and expressions" (Calkins, 2010, *p*. 92).

The word regulation therefore, implies not only control of negative emotions but also the maintenance of the positive ones (Gross, 1998).

Research on emotion regulation has originated from psychoanalytic schools of thought and research on coping. It has been proposed as a sub-category of coping which may include non-emotional actions whereas emotion regulation focuses on actions to achieve only emotional goals (Gross, 1999). According to Thompson (1994), both intrinsic and extrinsic processes are involved in regulation of emotions using continuum approach which may include both positive and negative emotions and can be automatic or controlled (Gross, 1998). However, empirical evidence on emotion regulation has broken down the construct into its cognitive, affective and behavioural components rather than looking at it as a whole with focus on either negative or positive emotion regulation (Amone-P'Olak, Garnefski, & Kraaj, 2007).

Emotion regulation is strongly associated with mental health (Nyklicek, Vingerhoets, & Zeelenberg, 2011) as it directs interpersonal relationships (Shoita, Campos, Keltner, & Hertenstein, 2004). The development of emotion regulation strategies in relationship context, particularly attachment relationships with caregivers is of primary importance (Southam-Gerow & Kendall, 2002). Bowlby viewed emotions as a regulatory mechanism in attachment relationships (Cassidy & Shaver, 2008). Particularly during adolescence, regulation of emotions through social interactions is a central task (Allen & Manning, 2007). At this age regulation of emotions moves from external influences to a combination of external and internal regulatory mechanisms (Walden & Smith, 1997). For instance, a child relies on caregivers for his need for comfort and regulation of experiences and behaviour (Ainsworth, 1989; Bowlby, 1969). When the child reaches adolescence, these experiences combine with the development of formal operational thinking and allow an adolescent to gradually internalize the comforting and regulating function of the attachment figure (Allen & Land, 1999; Mikulincer, Shaver, & Pereg, 2003). Consequently, a securely attached adolescent develops cognitive schemas of emotional self-regulation (Mikulincer et al., 2003). Conversely, those who had no experience of caregiver's comfort develop no representations of emotion regulation

(Ainsworth, 1989; Bowlby, 1969). This interplay between attachment styles and emotion regulation (Fraley & Shaver, 2000; Shaver & Mikulincer, 2002) as well as emotion regulation and parental bonding (Morris, Silk, Steinberg, Myers, & Robinson, 2007; Feng et al., 2008) is well established in adolescents. Therefore, adolescence is an opportune period to study emotion regulation as it involves emotional, physical and social changes which provokes unique emotional arousals (Silk, Steinberg, & Morris, 2003).

Regulation of emotions is critical for the aetiology, expression and course of psychological disorders (Southam-Gerow & Kendall, 2002). Inability to effectively regulate emotions is a critical symptom of adolescent mood and anxiety disorders (APA, 2000). Specifically, poor emotion regulation in adolescence is associated with depression and anxiety (Allen & Hare, 2007; Garnefski, Kraaij, & Etten, 2005; Silk et al., 2003). However, the empirical research foundation for its association with anxiety is particularly narrow among adolescent samples (Carthy, Horesh, Apter & Gross, 2010).

Fewer studies have focused on the mediational role of emotion regulation in relation to attachment and psychopathology among adolescents. These studies show inconsistent findings across samples (Brenning, Soenens, Braet, & Bosmans, 2012; Merlo & Lakey, 2007). These findings warrant further exploration of mediational role of emotion regulation in association between interpersonal relationships and adolescents psychopathology.

Dysfunctional regulation of emotions is associated with lower social support and lower levels of closeness with others (Srivastava, Tamir, McGonigal, John, & Gross, 2009). However, this link has been mostly studied employing correlational designs, not clarifying whether emotion regulation influences or is influenced by interpersonal relations. Indeed, such bi-directionality is much more likely than not (Bell & Calkins, 2000).

Literature reports medium to large correlations between difficulties in emotion regulation and adolescents' depression and anxiety (Weinberg & Klonsky, 2009). Hughes, Gullone and Watson (2011) observed that compared to those reporting low depressive symptomatology poor emotional competencies and emotion regulation strategies were employed by those who had high depressive

symptomatology. These findings are comparable with studies on clinical samples. For example, Kullik and Petermann (2013) recruited a matched sample of depressed and anxious adolescents with a comparison control group. Depressed and anxious groups had more dysfunctional emotion regulation strategies then the other group. Similary, Suveg, and Zeman (2004) who examined emotional intensity and self-efficacy in emotion regulation among two groups with a DSMIV diagnosis of anxiety disorder and those with another psychopathology found that young adolescents with anxiety disorders struggle handling worried, sad, and anger experiences, possibly due to experiencing emotions with high intensity and having little self-assurance in their ability to regulate this arousal. Similarly, in experimental research on adolescents with anxiety disorder and non-anxious controls, Carthy and colleagues (2010) looked into differences in the display of negative emotional reactivity and deficits in emotion regulation. They found that compared to the controls, the anxious group had more display of negative emotional reactivity and deficits in emotional regulation.

A longitudinal study conducted by McLaughlin, Hatzenbuehler, Mennin, and Nolen-Hoeksema (2011) found prospective relation between emotion dysregulation and adolescents' psychopathology backing the notion that emotion dysregulation is not a consequence of psychopathology.

Some studies have examined which emotion regulation strategies are linked with depression or anxiety disorders. For example, Garnefski and colleagues (2005) in their cross-sectional school sample found no difference in use of emotion regulation strategies in adolescents having depression or anxiety symptoms. These results are comparable with studies on clinical samples reflecting the high comorbidity of the two disorders (Kullik & Petermann, 2013). However, these results need to be further investigated keeping in view that very few studies have attempted to understand the differences in use of emotion regulation strategies across depression and anxiety among adolescents.

Gender may be critical in understanding mixed outcomes in research on emotion regulation. For example, Weinberg and Klonsky (2009) observed that female participants scored higher on difficulty in pursuing goals and formulating strategies in the presence of powerful emotions and low emotional clarity. However,

there was no difference on overall difficulties in emotion regulation among boys and girls.

Betts, Gullone and Allen (2009) found that adolescents having high depressive symptoms have a higher mean score on parental overprotection and suppressive emotion regulation strategy. Those in the high depressive symptomatology group used the regulation strategy of suppression more frequently and the reappraisal strategy less frequently than the low depressive symptomatology group with small effect size. These findings propose that using response focused strategies like suppression might be a risk factor for depression among adolescents whereas antecedent strategies like reappraisal can protect against depression. However, longitudinal study design is required to confirm this proposal.

It has been proposed that cultural values of independence in West encourage open expression of emotions in most situations. Suppression in such cultures is constraint only for self-protection in situations where there is social threat (Oyserman, Coon, & Kemmelmeier, 2002). However, cultural values of interdependence in Asian cultures might encourage emotional suppression equally often for circumstances where there is a concern about hurting someone else and in an effort to preserve relationships, rather than for limiting it use for self-protective purposes only Wierzbicka (1994).

Studies examining emotion regulation in Pakistani samples are negligible. A thorough search of literature found one paper exploring relationship between maternal/paternal parenting style and adolescents' emotion regulation in Pakistan. It was found that authoritative parenting from both mother and father was positively associated with emotion regulation and permissive parenting was negatively linked. However, no association was found between authoritarian parenting style and emotion regulation. Such researches though provide preliminary evidence of mechanisms of regulating emotions in Pakistani sample but focus little on interpreting findings with reference to the culture under study and impact on mental health (Jabeen, Haque, & Riaz, 2013).

Though the results from this review propose that research on emotion regulation among adolescents is accelerating it pinpoints a number of areas that need

to be addressed in order to be most useful for the understanding, treatment, and prevention of mental health problems among adolescents.

One aspect that needs attention is the assessment of emotion regulation by keeping account of all its aspects rather than looking into one dimension of it which stems from lack of concise and agreeable definition of emotion regulation as a construct. Furthermore, more cross-cultural research in this area is required to establish the cross-cultural applicability and better our understanding of role of emotion regulation in adolescents' mental health across cultures (Weems & Pina, 2010).

1.2.5 Cultural orientation

To discourse the questions of human diversity in psychological processes, the concept of culture has come to the forefront of social science. People belonging to different cultural backgrounds may experience the same event in a different way, due to different beliefs, values, and social expectations (Hofstede, 1990). This argument initiated the research towards understanding the role of culture in psychological processes.

Under the realm of this research the most prominent theory of understanding culture and its link to psychological processes is the Individualism-Collectivism theory which was adapted by Triandis (1993) and is most relevant to cross-cultural research (Oyserman, Kemmelmeier, & Coon, 2002). Individualism and collectivism are the value systems of the culture. These value systems are deeply embedded in the culture that they actually mould individual behaviour and are ascertained by the degree to which individuals in certain culture are integrated into groups. These value systems are passed on through generations (Hofstede, 1990).

Individualistic culture may refer to cultures that stress the importance of personal views and achievement. In such societies, self is viewed as a body that is different, independent, and self-contained. In comparison, in collectivist societies, individuals act mainly as members of a group and the group's benefit is preferred over individual gains. In these societies, self is viewed as related to family, culture and society. Such societies reinforce dependence of an individual on other individuals, on forming and maintaining steady and successful groups (Greenfield, 1994). Some studies have questioned the validity of Individualism-Collectivism theory (Gudykunst

et al., 1996; Matsumoto, Weissman, Preston, Brown, & Kupperbusch, 1997; Stephan, Stephan, Saito, & Morrison Barnett, 1998). On the other hand, meta-analysis shows that this conceptualization is valuable in understanding self, values, thinking and relating to others (Oyserman et al., 2002). However, it should also be noted that despite the applicability of the Individualism-Collectivism constructs; individuals within a culture may have different values than the dominant values of his or her culture (Oyserman et al., 2002). Having said so, it is important to pinpoint that having cultural orientation which is consistent with the prevailing values in one's culture is ideal. This is because it promotes coherence and if inconsistent it produces tension and criticism. Furthermore, change in cultural values is very slow but may happen. These changes may be due to adaptation to epidemics, technological advances, increasing wealth, contact with other cultures, combats, and other external factors causing changes in cultural value (Hofstede, 2001; Schwartz, Bardi, & Bianchi, 2000).

One of the dominant theories explaining the transmission and development of cultural orientation state that these value systems are passed through parents and families (Dalhouse & Frideres, 1996). This happens through transmission of social status or position of parents to children and communication in family. Both these explanations are supported by the empirical evidence. For example, a longitudinal study examined the transmission of cultural orientation from parents to young people. It was found that adolescence is clearly the period for the establishment of cultural orientations. However, this susceptibility to parent's cultural orientation diminishes with age (Vollebergh, Iedema, & Raaijmakers, 2001).

Only a few studies have looked into the cross-cultural differences in the distribution and prevalence of mental health problems. With this aim in mind a cross-cultural study was conducted across 12 countries (Austria, Germany, Switzerland, Spain, France and the Netherlands, Greece, Hungary, Ireland, Poland and Sweden) to examine the differences in prevalence and risk factors of mental health problems among children and adolescents (8-18 years) in these countries. This study found considerable variances in the prevalence and pattern of mental health problems across countries with the highest prevalence rates reported in the UK. It was further reported that those with higher prevalence rates were more likely to have poorer support and lower SES. Such studies, despite their limitation, clearly call for efforts

toward understanding differences in aetiology of mental health problems in different regions (Ravens-Sieberer et al., 2008).

Psychological adaptation among individuals is context-dependent and is sensitive to attachment styles. Although the causal paths that effect attachment are most highly located within the family, it is suggested that certain characteristics of a culture are associated with differences in attachment; for example, dismissive attachment styles should manifest higher in cultures where families are under more stress and poverty, than in cultures with lesser stress and more resources (Belsky, 1997). Therefore, it has been proposed that some insecure attachment behaviours may be the result of a positive adaptation to specific cultural antecedents (True, Pisani, & Oumar, 2001). As stated by Gelfand, Chiu, and Hong, (2013), the biological tendency for attachment

"*can be seen passing through cultural lenses (i.e. values, practices, and institutions)-one lens emphasizing accommodation and one lens emphasizing individuation-leading to distinctive paths of development*" (p.163).

Cross-cultural researchers have examined the applicability of attachment theory (Rothbaum et al., 2000). These researches confirm that attachment security is a universal phenomenon. Ainsworth, for example, cited only specific differences in particular situations and stressed "similarities across cultures" (Ainsworth & Marvin, 1995, p. 8). Secure attachment is said to be the most prevalent form of attachment across cultures (Van Ijzendoorn & Sagi, 1999). However, differences in security rates have been observed cross-culturally (Mizuta, Zahn-Waxler, Cole, & Hiruma, 1996; Sagi et al., 1985; Sagi et al., 1995; Sagi, Van Ijzendoorn, & Koren-Karie, 1991). Some researchers also state that preoccupied attachment style is dominant in East Asian cultures and in cultures which emphasize collectivistic values (Schmitt et al., 2004). This is of particular significance to a Pakistani cultural context. As a collectivistic culture where relationships are valued, individuals may have an inclination to *view others* as positive and themselves as negative. However, this assumption has not been tested before.

Parenting dimensions have also been explored across cultures. It is well documented that parenting styles differ across cultures and such differences are more distinct between collectivist and individualist cultures (Papps, Walker, Trimboli, & Trimboli, 1995). Therefore, it can be argued that cultural values in collectivistic

cultures may mediate between parenting style and psychological well-being (Herz & Gullone, 1999). Researchers have found that as compared to western individualist cultures members of non-western collectivist cultures tend to have less optimal parental bonds (Dinh, Sarason, & Sarason, 1994). In some cultures for example, parental control would not predict depression whereas separateness from parents would (Aydin & Oztutuncu, 2001). In others, strong parental control and warmth coexists (Dekovic, Wissink, & Meijer, 2004) in still others both relatedness and autonomy is valued (Jose, Huntsinger, Huntsinger, & Liaw, 2000).

Similarly, care from parents has been consistently linked with attachment security across cultures (Ainsworth et al., 1978; Rohner & Britner, 2002). A cross-cultural contrast on a hypothesized link between parenting and attachment is made by Gungor and Bornsteing (2010) in a sample of Turk and Belgian adolescents. They found that culture plays a moderating role in the association between paternal psychological control and attachment avoidance. However, the link between attachment avoidance and anxiety with maternal warmth and control did not differ across the two cultures. Surprisingly, attachment avoidance was higher among Turks which is not in line with the previous studies linking avoidance with individualistic cultures. Though the study provides very interesting evidence, it should be kept in mind that Gungor and Bornsteing (2010) did not measure cultural values across the sample and assumed the cultural orientation of the study participants. It is said that the individual's cultural characteristics may differ from the country's cultural values (Oyserman et al., 2002) therefore it should be measured rather than assumed.

Recent research recommends studying complex developmental models on how social support interacts with different constructs and effects mental health. It also recommends focusing on understanding differential effects of social support from parents and peers on mental health among different cultural settings (Vieno, Santinello, Pastore, & Perkins, 2007).

Culture affects the reception, perception and interpretation of social support (Beehr & Glazer, 2001). Many cross cultural studies have proved that levels and perception of support varies across cultures (Kim, Sherman, Ko, & Taylor, 2006). Collectivistic values have been found to be a predictor of higher levels of perceived support by family across gender and lower rates of depression (Moscardino, Scrimin,

Capello, & Altoe, 2010). Therefore it can be concluded that social support can play an important role in mental health across cultures. However it is crucial to cultures where interdependence is promoted. It might also be possible that perceived social support may impact the relationship between perceived parental care/overprotection and mental health differently across cultures.

Cultural differences exist in the regulation of emotions (Matsumoto, Yoo, & Nakaqawa, 2008; Gross & John, 2003). Western conceptualizations of positive and negative emotion regulation might not be fully applicable in other cultures. People from Asian culture as compared to western counterparts engage in more self-effacement and self-criticism and less in individual self-enhancement (Lehman, Chiu, & Schaller, 2004). This might be due to their protective approach towards the larger group in order to avoid disrupting the societal harmony by blaming others and externalizing negative emotions. Furthermore, collectivistic cultures are more likely to engage in socially engaging emotion regulation strategies as compared to individualistic cultures who would engage in socially disengaging strategies (e.g anger). Similarly, higher prevalence of preoccupied attachment in Asian culture suggests that members of this culture are more likely to engage in hyper activating strategies for regulation of emotions which is manifested in terms of heightened dependency on others and expression of distress with close ones and not in public (Trommsdorff & Rothbaum, 2008).

1.2.6 Conclusions from the review

In summary the empirical evidence proposes that insecure attachment, non-optimal parenting, low social support and poor regulation of emotions increase individual's susceptibility to psychopathology. Although longitudinal studies are increasing most of these findings are based on correlational designs. There are also few studies showing prospective connection between these constructs and vulnerability to psychological disorders. Furthermore, very few studies were found employing clinical samples which fulfilled this review's selection criteria.

Another important limitation of the available literature is the investigation of association between these constructs together and specifically in relation to mental health among Pakistani adolescents. This highlights the dire need of such investigations.

In terms of methodological quality of the present literature there has been much advancement with new ways of statistical analysis like sophisticated structural equations models, multilevel modelling, and growth curve analyses. However, there is scarcity of research using qualitative methodology which can surely advance our knowledge of complex role of these constructs and underlying mechanism with which they interact. Another positive trend is the frequency of longitudinal studies which has facilitated to ascertain the temporal relationships. However, research using multiple informants is little. A significant limitation of the literature is participants' low response rates across studies which need to be improved by increasing awareness about the significance of research.

In relation to the stated recruitment procedures, very little information was provided about methods used to ascertain appropriate respondents, where they were recruited from and how they were recruited. Respondent's non-response rates were also seldom supplied. Such issues make it harder to replicate the studies and generalise the results. Small sample sizes were also common in this review with little discussion made throughout the literature for its reason and very few studies applied statistical procedures to increase the power. The majority of the studies have not provided information regarding missing values and how they were handled. Furthermore, studies have employed Baron and Kenney's (1986) method which is much criticized in literature for its low power (MacKinnnon, Lockwood, Hoffman, West & Sheets, 2002; Preacher & Hayes, 2004; Shrout & Bolger, 2002).

Though many challenges are apparent from the review attempting to investigate the role of attachment, parental bonding, emotion regulation, social support and cultural orientation in psychopathology within adolescent populations, there are ways to overcome these hurdles. For instance the development of robustly validated measures for adolescents would make these concepts easier to assess and generalise outcomes across studies. Increasing the sample size of the studies for more robust statistical analysis would also provide a much needed and better-quality evidence base. Multi levels of analysis and mixed method design could also help explain the constructs and their relationship with psychopathology. It will also help to move beyond correlations and associations to start investigating causal relationships and advance our understanding of what contribute majorly in increasing

an adolescents' vulnerability to developing mental health difficulties. Moreover, it would be interesting to examine the cross-cultural differences across and within cultures to enhance our understanding of how cultural values play role in relation to psychopathology.

Culture plays important role in impacting major factors like parenting, *view of self and other*, social support and emotion regulation which contribute to mental health. Such attributes are significant for development of individuals across cultures. To my knowledge these constructs have not been explored together previously in the context of cultural orientation. However, these are linked with each other in predicting adolescents' mental health. One of the aims of this research is therefore, to hypothesize and test the mechanism with which these constructs relate with each other in predicting depression and anxiety among adolescents. Previous studies showed that unique aspects of social relationships in different societies can overshadow the impact of parenting and change its outcome (Chen & French 2008). Parenting can be of particular value in Pakistani society as it is an important aspect of its cultural and religious beliefs. Islam instructs its followers to respect their parents who are 'second only to God'. Parents are responsible for guiding children and children are trained to obey. Both generations are expected to deal with each other gently and affectionately. There is evidence that parents respond differentially to emotional expressivity to male and female child (Cassano, Perry-Parrish, & Zeman, 2007; Garside & Klimes-Dougan, 2002). The patriarchal structure of Pakistan makes it even more interesting to address parental practices in this culture and may enhance our understanding of gender differences in relation to adolescents' depression and anxiety in this culture. It would be interesting to assess how parenting in this culture relates to attachment. Furthermore, the association between insecure attachment and presence of a psychiatric disorder has been related to underlying disturbances in emotional and interpersonal functioning (Sroufe et al., 2010). Support has been found for the protective effect of social support against emotional and behavioural disorders among adolescents in India (Pillai et al., 2008) and China (Yang et al., 2010; Chan, 2012; Demaray et al., 2005). However, this important association to my knowledge has not been studied in Pakistani adolescents. It is imperative to explore relationship constructs in relation to mental health and the pathways they follow in

order to understand aetiology and development of disorder during adolescence across cultures. Therefore, this study will explore the relationship between the above mentioned constructs in predicting adolescents' mental health in the context of Pakistani culture.

1.3 Part III - Systematic Review of the Literature on Adolescents Well-being

The purpose of this section is to provide a summary and critique of up-to-date research and knowledge on adolescents' well-being. In an attempt to further enhance the evidence base for the role of attachment, parenting, emotion regulation and social support in understanding adolescents' well-being, this work will offer a brief overview of the research examining adolescents well-being in relation to constructs of interest to the present study.

1.3.1 Objectives of the review

The objective of this systematic literature review is to examine the best available evidence in order to explore attachment, parenting, emotion regulation, and social support among adolescents and their association with well-being. Its secondary objective is to appraise literature studying the underlying pathways of association among these constructs affecting adolescents well-being.

Following inclusion and exclusion criteria were applied for the selection of the studies.

1.3.1.1 Inclusion criteria. Inclusion criteria were: studies with adolescent samples and where outcome variable was well-being and those which assessed attachment (attachment to mother, father, or both parents, friends or other relationships) or parental bonding (with mother, father or both separately or jointly) or emotion regulation (affect/self-regulation or dysregulation), and social support (emotional, practical, received or perceived). To fulfil the objectives of the review cross-sectional/comparative cohort/longitudinal and experimental studies were included. Both quantitative and qualitative studies were included if fulfilling other criteria.

1.3.1.2 Exclusion criteria. Exclusion criteria were: populations with samples of children (below 11 years of age), adults (above 18 years of age), population samples which included ages 11-18 and above or below but where no distinction was made for age group, theoretical papers without a sample, papers without an English

translation available and studies not published in peer reviewed journals. Studies that reported associations between parents' attachment to their parents and adolescent mental health were excluded, as this thesis is interested in examining the association between adolescents' attachment/parenting relationships and well-being and not in inter-generational transfer of attachment styles or their effect on well-being. Studies not looking at the direct effect of attachment, parenting, social support or emotion regulation on adolescents' well-being were not included in the review. Studies looking at the indirect effects of social support and emotion regulation in association between the variables of interest to the present study and well-being were not included. Studies with immigrant and gay lesbian population were excluded from the review due to their non-applicability to the current sample.

1.3.2 Methodology

A systematic search of four databases was conducted; Ovid MEDLINE, EMBASE, PsycARTICLES and PsychINFO. The keywords used within the search were 1) "adolescen*" OR "child*" OR "young" OR "teenage" OR "youth" OR "school" AND 2) "attachment" OR "insecure attachment" or "secure attachment" or "attachment style" OR "emotion regulation" OR "affect regulation" OR "self-regulation" OR "emotion dysregulation" OR "affect dysregulation" OR "regulation of emotions" OR "social support" OR "emotional support" OR "practical support" OR "perceived support" OR "received support" AND "parenting" OR "parental rearing" OR "paternal bonding" OR "parental care" OR "parental over-protection" OR "parental warmth" OR "parental protectiveness" OR "cultural orientation" OR "collectivism" OR "individualism" AND 3) "well-being" OR "wellbeing" OR "quality of life" OR "life satisfaction" OR "satisfaction from life" OR "wellness". These words were searched within the abstracts to ensure that maximum manuscripts are retrieved.

The above procedure yielded 7499 papers. The literature published between 2006 and 2012 was included. This cut-off point was adopted as an adequate number of studies would have been published subsequently to implicitly study adolescents' well-being and still be pertinent to updating adolescents' well-being initiatives in "contemporary society." Furthermore relevant reviews were also available for literature published before this period. Studies were also limited to human

populations and those in the English language. This yielded 3691 papers for all relevant variables. The duplicates were removed leaving 1818 papers. Figure 2 presents a flow chart for the selection of articles included in the review and papers excluded at each step.

Proportions of papers excluded from those which were fully reviewed on the basis of above criteria are as follow: about 36% papers did not asses well-being among adolescents as an outcome variable. 5% papers were Randomized Control Trials (RCTs)/treatment evaluation studies; about 23% had a sample outside the present study's age range. About 0.5% was on non-human population, and 20.5% were those which were not looking at the direct or indirect association between adolescents well-being and constructs of interest to the present study. Whereas about 15% were discussion papers, reviews, editorials, qualitative studies, unpublished thesis and conference abstracts etc.

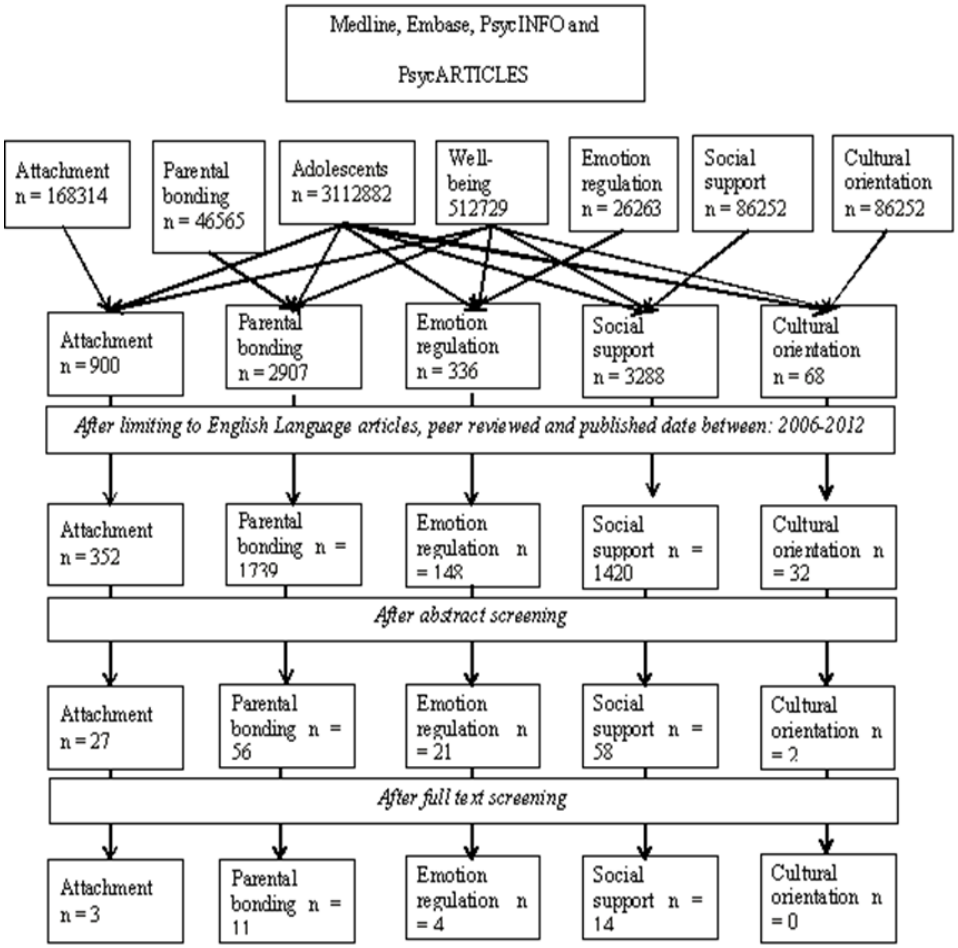

Figure 2. Flow diagram of study selection procedure.

1.3.3 Critical appraisal

Articles included in the review were read in full and were evaluated for quality by the author and by another PhD student. In case of differences among the raters, agreement was attained after discussion. If consensus was not reached, articles were reassessed by the author, who made a final decision.

The Scottish Intercollegiate Guidelines Network (SIGN, 2001) methodology checklist was used in present study to assess and critically appraise the quality of the included studies (see appendix 3). The SIGN methodology checklist is specific to case-control and cohort research but does not provide checklist for cross-sectional study designs.

Most guidelines do not provide detailed procedures to critically appraise cross-sectional study designs. There is no consensus on the reliability and validity of tools available to assess the methodological quality of the observational studies (Sanderson, Tatt, & Higgins, 2007). The Strengthening the Reporting of Observational studies in Epidemiology (STROBE; Von Elm et al., 2007) statements were used as guide. Their aim is to provide guidelines on how to report observational research and has clear checklist for cross-sectional designs (see appendix 3).

For more clear review of the literature, important findings and information on each study are presented in Appendix (3). Furthermore Table 1 provides assessment of methodological quality of the studies reviewed. Critical appraisal of the methodological quality of a study involves assessment of the internal validity of the study including whether the research questions are clearly stated and well addressed? How much the sample is representative of the population? How adequate the assessment procedures are? How well the results are described and discussed? (Von Elm et al., 2007).

Table 1

Evaluation of the papers reviewed

Studies	Title/abstract; Introduction: Background / rationale Objectives	Methods: Study design, Settings, Participants, Measurement,Bias, Sample size, Statistical methods	Results: Participants, Descriptive data, Outcome data, Main results, Other analyses	Discussion: Key results, Limitations, Interpretation, generalizability
Attachment				
Rothman & Steil, 2012	++	+	+	+
Ma & Huebner, 2008	++	+	++	++
Yang at el., 2008	++	+	+	++
Emotion regulation				
De Bruin et al., 2011	++	++	++	++
Gillham et al., 2011	++	+++	++	++
Niemiec et al., 2006	++	+	++	++

Studies	Title/abstract; Introduction: Background / rationale Objectives	Methods: Study design, Settings, Participants, Measurement, Bias, Sample size, Statistical methods	Results: Participants, Descriptive data, Outcome data, Main results, Other analyses	Discussion: Key results, Limitations, Interpretation, generalizability
Phillips & Power, 2007	++	++	++	++
Parenting				
Shek, 2006	+	++	+	+
Shek, 2007	+	++	+	+
Morton et al., 2011	++	+	++	++
Morgan et al., 2012	++	+	+	++
Coccia et al., 2012	+	+	++	++
Milevsky et al., 2007	++	+	+	+
Milevsky et al., 2008	++	+	++	++
Schwarz et al., 2012	++	++	++	++
Knafo & Assor, 2007	++	+	+	++
Bolghan-Abadi et al., 2011	++	+	+	+
Lekes et al., 2010	++	++	+++	++
Social support				
Robitail, 2006	++	++	++	++
Giannakopoulos et al., 2009	++	++	+	++
Jovic-Vranes et al., 2011	++	+	+	+
Vieno et al., 2007	++	++	+++	++
Danielsen, 2010	++	++	++	++
Danielsen et al., 2009	++	++	+++	++
Casas et al., 2007	++	++	++	++
Mohamadian et al., 2011	++	+++	++	++
McGrath et al., 2009	++	++	++	++
Cicognani et al., 2008	++	++	++	++
Lyon et al., 2012	++	++	++	++
Kelly et al., 2012	++	++	++	++
Raven-Sieberer et al., 2008	++	+++	++	++
Suldo & Shaffer (2008)	++	++	++	++

Note: + Weak; ++moderate; +++good

Studies scoring +++ in methodological quality are those which fulfilled majority of the methodological criteria. A study got ++ when some of the quality criteria were fulfilled but the ones which were not appropriately addressed where not likely to affect the study conclusions. Methodologically weak studies (+) where the ones which fulfilled a small number of quality criteria and the conclusion of such studies are considered likely to be affected by it (Von Elm et al., 2007).

1.3.4 Results

Papers reviewed can be divided into studies looking into adolescents' well-being in relation to attachment, parental bonding, social support, and emotion regulation.

1.3.4.1 Attachment and adolescents' wellbeing. Only three studies fulfilled the criteria for review in this section after full text screening. These studies examined attachment specific to particular relations e.g. mother, father, and peers in relation to well-being among adolescents. These studies show consistent results that attachment security is related to adolescents' well-being. Attachment characteristics which are linked with low well-being are attachment alienation and less trust (Rothman & Steil, 2012).

In terms of attachment specific to relationships, it has been reported that life satisfaction is associated with strong parental and peer attachment but parent attachment has a stronger association. Furthermore, stronger attachment has been reported with mother as compared to father in a US sample (Ma & Huebner, 2008). In Chinese adolescents also, secure attachment is associated with significantly higher well-being scores. Attachment negative model of mother and father was significantly negatively associated with well-being (Yang, Wang, Li, Teng, & Ren, 2008).

Studies have examined gender differences in relationship between attachment and well-being among adolescents. In US sample, no gender differences were noted on parental attachment whereas stronger peer attachment among females was observed. In case of female adolescents, some support was found for mediational role of peer attachment in association between parental attachment and satisfaction from life (Ma & Huebner, 2008).

1.3.4.2 Parental bonding and adolescents' wellbeing. Parent-child bond has been considered as an important determinant of adolescents' well-being.

Correlational research has highlighted the role of parental care and control in improving well-being among adolescents along with a number of other positive outcomes. For instance, Morton and colleagues (2011) found that parenting characterised by forming healthy relationship with children and encouraging them to achieve higher goals has a positive association with self-regulation for healthy lifestyle and satisfaction from life among adolescents. In a related study, Coccia, Darling, Rehm, Cui, and Sathe (2012) found that parenting characterized by over nurturance is associated with adolescents' life satisfaction and lower levels of stress. Studies of adolescents in China have revealed that the relationship between parental care and adolescent well-being is similar as found in the West (Shek, Lee, Lee, & Chow, 2006). Similarly, self-motivation to conform to parental values was found to be associated with Israeli adolescents' satisfaction from life (Knafo & Assor, 2007). However, some of these studies pinpoint that Asian adolescents view their parents as having high expectations of them but are not harsh towards them. These studies also report weak association between parental control and poor well-being (Shek, 2007). Similarly, Morgan, Rivera, Moreno, and Haglund (2012) found that familial autonomy and control, sense of belonging for family and school, and social support were positive predictors of adolescents' well-being in England and Spain. However, for Spanish adolescents social support was as stronger predictor compared to autonomy and control which was more important for their English counterparts.

Studies have explored whether the parenting characteristics are unique to health outcomes. For example, authoritative parenting has been associated with lower levels of depressive symptoms and greater satisfaction from life in adolescents' sample. Findings also suggested permissive mothering is detrimental to adolescents' outcomes (Milevsky, Schlechter, Netter, & Keehn, 2007). However, these results are not supported by studies in eastern samples. For instance, Bolghan-Abadi et al. (2011) found that depressive symptoms and lower quality of life among Iranian students were associated with more authoritative maternal parenting. On the other hand, students with more permissive parents had better quality of life.

In summary, these results show that parenting characterised by care are related to youth well-being across cultures. This is supported by a study which was conducted to examine the cross-cultural differences in importance of family values in

parent-child relationship quality, peer acceptance and life satisfaction. Schwarz and colleagues (2012) analysed data from 11 countries including China, Germany, Indonesia, France, Turkey, South Africa, India, Israel, Poland, Russia and the US. They found that across cultures, perceived admiration from parents and acceptance from peers were related to higher level of life satisfaction among adolescents. Higher culture-level family values, for example, in cultures like India and Africa were linked to a lower importance of peer acceptance for life satisfaction among adolescents. This shows that peers are more important for adolescents from cultures that emphasize greater independence for example in countries like Germany and the US. They did not findd differences in life satisfaction across cultures on admiration from parents. Intimacy with parents was more related to life satisfaction among cultures which encourage independence. Study also supported the notion that high traditional family values at a cultural level predict higher adolescent life satisfaction.

To further understand the differences in adolescents life satisfaction Lekes, Gingras, Philippe, Koestner, and Fang (2010) recruited sample from China, Canada and North-America. They found that overall higher well-being was reported by adolescents in Canada followed by the US and China. Well-being among both North-American and Chinese adolescents was significantly related to their parent's support for autonomy. They found that North-American had higher scores on intrinsic goals (related to relationships, work etc), satisfaction from life and parental support for autonomy as compared to their Chinese counterparts. However support was found for positive association between support provided by parents for autonomy and adolescents intrinsic goals which is associated with higher well-being in both samples.

These studies show interesting findings about the similarly and differences across cultures in association between parenting and well-being among adolescents and warrant further exploration in this area. These studies though provide useful information but lack severely in the area of examining underlying factors which may differ across cultures in manifesting these differences.

1.3.4.3 Social support and adolescents' wellbeing. Inadequate social support has been consistently associated with mental health problems and well-being (Casas et al., 2007; Robitail et al., 2006; Giannakopoulos et al., 2009). Though, these

are related but different. For example, Suldo and Shaffer (2008) identified four groups based on mental health and well-being scores. Group with complete mental health (flourishing), group which was vulnerable (low well-being but no mental disorder), those who were symptomatic but content (struggling), and those who were labelled troubled with high mental health problems and low well-being. Among the four groups, those with high well-being and low psychopathology (group with complete mental health) had good academic outcomes, social support, physical health as reported by themselves, and better social functioning as compared to those who had no psychopathology but less well-being score (vulnerable group). Those who had symptoms of psychopathology but had higher subjective well-being were enjoying healthier self-perceived physical health and better social functioning. Longitudinal studies also found that social support was a significant factor in determining membership to these group (Kelly, Hills, Huebner, & Mcquillin, 2012; Lyons, Huebner, Hills, & Shinkareva, 2012).

The perception of sufficient support from family and friends is a crucial factor in explaining adolescents' well-being as well as number of other related outcomes. For example, mental health problems are associated with lower well-being (Raven-Sieberer et al., 2008). It has been reported that social support from both parents and friends is associated with adolescents' sense of school connectedness and self-efficacy which then relates to their well-being (Vieno et al., 2007). Similarly, it was found that support predicts perceived life satisfaction and academic initiative (Danielsen, Samdal, Hetland, & Wold, 2009; Danielsen 2010). McGrath, Brennan, Dolan, and Barnett (2009) found that social support and satisfaction from school were strongest predictors of adolescents' well-being. Within the realm of social support, friend's emotional support and parental support were strongest predictors.

Studies have examined link between social support and well-being among adolescents cross-culturally. For example, Raven-Sieberer et al. (2008) found that financial difficulties, low perceptions of social support, mental health problems of parent and low parent child relationship quality were risk factors of well-being among adolescents across countries. Among these risk factors, most stable and most strong association was found with social support. These findings are supported by the findings from female Iranian sample where 71% of the variance in quality of life was

accounted by social support, self-efficacy, and and healthy life style (Mohamadian et al., 2011).

Studies have identified demographic differences in the association between social support and well-being. It has been reported that female gender and older age are protective against adolescents' low self-perceived health whereas male gender and younger age are positively associated with psychological well-being (Jovic-Vranes, Jankovic, Vasic, & Jankovic, 2011). In a similar study, low SES significantly affected adolescents' well-being. However, social support from friends and family was found to buffer the effects of low SES on well-being (Cicognani, Albanesi, & Zani, 2008). Furthermore, life events were significantly high among those adolescents who had high psychopathology, low well-being and low levels of social support (Kelly et al., 2012)

1.3.4.4 Emotion regulation and adolescents' wellbeing. Emotion regulation has a significant relationship with well-being. For instance, Gillham and colleagues (2011) found that self-regulation predicts lower levels of depression and higher levels of well-being. There are number of factors which can affect individual's ability to regulate emotions. For example, De Bruin, Zijlstra, Van de Weijer-Bergsma, and Bogels (2011) found that mindfulness in adolescence is associated with better self-regulation and good quality of life.

Emotion regulation has been examined as a factor affecting well-being in relation to other factors. For example, Niemiec and his colleagues (2006) found that self-regulation mediates the association between perceptions of need for support from parents and well-being.

There is little consensus on clear definition of emotion regulation which has resulted into lack of valid tools to measure the construct especially in adolescent population. With this in mind Phillips and Power in 2007 developed a new measure for assessing emotion regulation among adolescents (Regulation of Emotions Questionnaire). They found a four factor structure for the measure consisting of 'internal-functional', 'internal-dysfunctional', 'external-functional' and 'external-dysfunctional' emotion regulation. They found that frequency of dysfunctional emotion regulation strategies was associated with adolescents' emotional and behavioural problems as reported by their parents and their self-reported

psychosomatic health problems. Adolescents' functional emotion regulation strategies were associated with higher levels of quality of life.

1.3.5 Systematic review's conclusion

Before concluding the findings of this review some of the limitations of this systematic review on adolescents' well-being are discussed. Although I conducted a thorough search systematically but it might be possible that the search terms used in the present review have limited the scope of the literature reviewed. Furthermore, I only reviewed the variables I have analysed in this study, though they are very significant in understanding adolescent's well-being, but this review is limited in its scope on all the risk and protective factors of adolescents' well-being. I have only reviewed journal articles, therefore; grey literature is not included, limiting the generalizability of this review across literature.

Review of literature on adolescents' well-being reveals interesting findings. A common observation is varying and inconsistent definition of well-being as a construct. Different indicators of well-being have been used in studies. The present review pinpoints towards the fewer studies on well-being among adolescents and those which have looked into well-being have used a single item measure or domain specific assessment. Furthermore, it can be concluded that variables included in the review may have both direct and direct effects on adolescents' well-being which are not excessively explored in literature to formulate a reliable conclusion. It would also not be wrong to suggest that parental relations are most significant correlate of well-being. However, its impact is reinforced by underlying factors like attachment, emotion regulation and social support which affects or are affected by experiences of parental bonding in understanding adolescents' well-being. Another significant observation is higher number of cross-sectional studies and less focus on cause and effect.

In summary, the review of the current literature on adolescents' well-being encourages future researchers to assess well-being comprehensively by including maximum domains of well-being and by using well validated measures. This review also pinpoints the gap in literature across cultures and populations and future research should assess popular cultural variables for assessment and understanding of adolescents' well-being. Notwithstanding, this study recognizes the significance of

other variables in understanding adolescents' well-being but concluded that social support, emotion regulation, attachment and parenting are key factors linked to adolescent's well-being. This is in synch with the findings of the last review on adolescents' life satisfaction by Proctor, Linley, and Maltby (2009) that well-being is inherently related to emotional, behavioural, social, environmental, and psychological outcomes. However, reviewing and examining all these domains is beyond the scope of present research.

Though there is clear dearth of studies examining relationship between correlates of adolescents' well-being. This review provides support to the association between parental relationships, and social support, which promote positive youth well-being and are examined in this study in relation to their conceptual parallel concepts of attachment and emotion regulation.

1.4 Part IV –Rational for the present study

My research focuses on correlates of adolescents' (11-18 years) mental health in a Pakistani cultural context with a focus on pathways of association between developmental factors. It focuses on exploring the multifaceted relationships between attachment, parental bonding, social support, emotion regulation and cultural orientation and a select number of adolescent psychological outcomes (depression, anxiety and well-being). It will add to the literature by simultaneously testing multiple predictors of adolescent mental health, and is designed to promote the application of scientifically-based prevention and intervention techniques for adolescent psychopathology.

This is needed because there is severe lack of empirical data on epidemiology of mental health problems in Pakistani adolescents. According to Global Forum for Health Research (1999) only 10% of the world's health research is conducted to help improve the health of 90% of its population residing in developing countries. To correct this 10/90 gap effort must be made in countries like Pakistan which currently have the largest cohort of young people in its history and is predicted to have even larger cohorts of young people in future (Sathar, Lloyd, Diers, & Faizunnissa, 2003). Moreover, studying different cultures in relation to mental health can broaden our understanding of theories of normal and atypical development by providing information about possible alternative pathways to adaptive and maladaptive

outcomes (Coll, Akerman, & Cicciletti, 2000). Other important aspects like differential emphasis on independence-interdependence and development of self in collectivistic and individualistic cultures is of particular importance in adolescence where identity formation and development of self are perhaps the most important developmental aspects. These attributes are affected by the dynamics of family and approach to parenting consequently impacting normal and atypical development. Finally, knowledge of mental health in adolescents from different cultural backgrounds may enhance our understanding of adolescents' depression, anxiety, and well-being which could provide useful information for the development of culturally sensitive treatment protocol for these problems in adolescents.

Scholars have found that social support and emotion regulation are associated with attachment and perceptions of parental bonding in predicting adolescents' mental health. However, to my knowledge these factors have not been studied previously in Pakistani cultural context. My study should advance current knowledge by clarifying the extent of the risk for mental health problems in young Pakistani school pupil, by addressing specific etiological hypotheses, relevant to the developmental literature on adolescents' mental health. This study will also contribute to the repertoire of translated and validated assessment tools for use with adolescents population in Pakistan.

A major hindrance in devising an effective health policy in Pakistan is the lack of epidemiological research in this population (Baig, 2001).Keeping in view the state of research in Pakistan regarding adolescent mental health, it seems appropriate to fill this gap by conducting good quality basic exploratory research first and then move towards more advanced applied research. It is imperative to establish the prevalence rates and risk factors of common mental disorders among Pakistani adolescents in order to develop prevention and intervention programs tailored to the needs of this population. In this scenario a cross sectional survey would be a better choice because it is economical and time efficient and allows investigation of multiple risk factors.

1.4.1 Research questions and hypothesis

1. What is the state of mental health among Pakistani adolescents?

Hypothesis 1: This study hypothesised that adolescents in Pakistan will have higher rates of depression, anxiety and lower levels of well-being as compared to the rates reported in literature among adolescents from other countries.

2. How do socio-demographic factors explain the state of mental health among Pakistani adolescents?

Hypothesis 2: This study hypothesised that age, gender, SES and life events are associated with Mental Health. Specifically:

a) This study hypothesised that adolescent girls will have higher rates of depression, anxiety and low well-being than their male counterparts.
b) Older adolescents will have higher rates of depression anxiety and low well-being.
c) Adolescents from less affluent families will have poor mental health (high depression, anxiety and low well-being).
d) Adolescents experiencing more negative life events will have poor mental health (high depression, anxiety and low well-being).

3. Are the constructs of depression, anxiety, well-being, attachment, parental bonding, emotion regulation, social support and cultural orientation valid in a Pakistani cultural context?

Hypothesis 3: This study hypothesized that Attachment, parental bonding, social support, emotion regulation, cultural orientation and mental health are valid and applicable constructs in Pakistani cultural context.

4. What is the relationship between attachment, parental bonding and mental health among adolescents?

Hypothesis 4: This study hypothesised that Attachment and Parental Bonding are direct predictors for Mental Health. Specifically:

a) Adolescents with a negative *view of the self and other* will have lower well-being scores and higher levels of depression and anxiety.
b) Adolescents with lower scores on parental warmth, higher scores on parental protectiveness and authoritarianism will have lower well-being scores and higher levels of depression and anxiety.

5. How do adolescents' emotion regulation, social support and cultural orientation affect this relationship?

Hypothesis 5: This study hypothesised that attachment/parental bonding will indirectly predict mental health through social support and emotion regulation. This study also hypothesised that these variables will mediate the link between cultural orientation and mental health. Specifically:

a) This study hypothesised that perceived social support mediates the link between attachment and mental health.
b) This study hypothesised that perceived social support mediates the link between parental bonding and mental health.
c) This study hypothesised that emotion regulation mediates the link between attachment and mental health.
d) This study hypothesised that emotion regulation mediates the link between parental bonding and mental health.
e) This study hypothesised that parenting, attachment, social support and emotion regulation will mediate the link between cultural orientation and mental health.

Chapter 2:

Methodology

2.0 General introduction

The design and procedures of this study will be narrated below in Part I of this chapter. A wide range of age and culture appropriate questionnaires were used to assess mental health (depression, anxiety and wellbeing), attachment, parental bonding, emotion regulation, social support and cultural orientation of the participants. Description of these scales and their translation procedure will be explained in Part II of this chapter. Structural equation modelling was used to analyse how these variables interact in predicting mental health in the target population, which will be discussed in full in Part III.

2.1 Part 1 – Study design and procedures

This study employed a cross-sectional study design to recruit 1124 adolescents (aged 11-18) from 8 randomly selected secondary schools in Rawalpindi, Pakistan.

2.1.1 Ethical considerations

This study was approved by the ethics committee of the University of Edinburgh, UK and Fatima Jinnah Women University in Pakistan. Formal permissions were obtained from the Federal Directorate of Educational Institutions (Cantonment/ Garrison) in Pakistan for data collection. Written permissions were also obtained from the principals of each participating school. After looking through the aims and discussing the questionnaires for the present study, the principals of the schools decided to act in loco parentis. This was approved by the ethics committees as well.

The study attended to the rights of the participants by informing the participants about the aims of the study and participants were given the option of not answering any question. Information regarding data anonymity and secure storage of the collected data was provided to the participants. Information regarding external organisations providing mental health support to Pakistani Youth (Benazir Bhutto Hospital, Youth Helpline, and Sahil) was provided and participants were advised to consult a doctor if they were concerned about their health and well-being. No identifiable data were held by the researcher. Data collected for this study was stored in accordance with the University of Edinburgh's data protection policy. A written

consent was taken from each participant and they were informed about their right to refuse to take part or quite from the study at any point.

2.1.2 Study Setting

Data for the present study was collected from Rawalpindi district of Pakistan. Rawalpindi district is situated in Punjab Province and encompasses 4 towns/tehsils, namely, Rawalpindi, Attock, Chakwal and Jhelum. In the year 2011, the total population of Rawalpindi District is 4395000 with a gender ratio of about 51% males to 49% females. 44% of the population in this city is under the age of 15 (Bureau of Statistics, 2012). Literacy rates in Pakistan vary from region to region with an overall youth (15 to 24 year olds) literacy rate of 71% (UNICEF, 2011). In Rawalpindi district the total literacy rate is 80.5%, (male=89.1%, and female=72.0%) (Bureau of Statistics, 2012).

The data for the current study was collected from secondary schools. These are public or private educational institutions. The ratio of students at secondary and higher secondary level is high in public educational system. In terms of gender, disparity in favour of boys is seen at all levels of education, with the exception of the higher secondary level where the number of girls is almost equal to the numbers of boys (Lynd, 2007). As higher proportions of pupil get educated from government schools, the present study recruited data only from schools that are managed by Federal Government (FG) Educational Institutions (Cantt /Garrison).

2.1.3 Sampling

Schools were randomly selected from the list of schools given by Federal Directorate of Educational Institutions (Cantonment/ Garrison).

***2.1.3.1 Randomization*.** Randomization was conducted by an Active Data Software. A complete list of FG schools was taken from Federal Directorate of Pakistan. Thirty nine schools situated in cant area (total population is 892000) in Rawalpindi were identified from the list. Among these schools 17 were for boys, 18 for girls and 4 were co-education schools. From these schools, eight schools were randomly selected for the present study to gather sample size required for the present study. School's participation rate was 100%. Participants were recruited from eight schools in total; two being co-education schools and six being single sex schools (three for girls and three for boys).

According to the usual age of admission in Pakistani schools, classes were selected which would include adolescents of age of interest to the present study. As a result, classes 6-12 were selected to recruit adolescents of 11-18 years of age. If a class had more than one section, the same method of randomization was applied for the sections with in the classes as well. Only one section from each class within a school was selected. With this procedure 1160 adolescents were eligible for participation in the study. All these were invited to take part. Out of these, 1149 participants consented to take part in the study corresponding into 99% response rate.

2.1.4 Inclusion criteria. The inclusion criteria were as follows:

1. Schools which gave a written consent to participate in the study.
2. Participants who were present in the school at the time of data collection.
3. Participants who consented to participate in the study.

2.1.5 Exclusion criteria. The exclusion criteria were as follows:

1. Schools which were not selected in randomization.
2. Sections within classes which were not selected in randomization.

2.1.6 Study Procedure

On the day of data collection participants were approached by the main researcher in their class room time. They were introduced to the study and their right to participate or refuse to participate in the study. They were encouraged to ask questions and were answered. The study protocol along with the information sheet summarizing the purpose of the study and the consent forms (see appendix 1 and 2) were distributed to the participants. Participants were assured about their right to terminate participation at any time.

The protocol for the present study was comprised of 11 sections. Participants first completed the demographic performa containing the Family Affluence Scale (FAS II) and questions on significant life events followed by: mother and father form of Parental Bonding Instrument (PBI), Adolescent Relationship Scales Questionnaire (ARSQ), Significant Others Scale (SOS), Regulation of Emotions Questionnaire (REQ), Horizontal and Vertical Individualism and Collectivism Scale (HVICS), Hospital Anxiety and Depression Scale (HADS), and BBC Well Being Scale. The time of administration was 30 to 50 minutes.

Participants were required to complete the test in one sitting. To maintain standardization and reduce variation, instructions were kept similar across all groups of the study participants. Once the test was completed, participants were not permitted to complete the test again or make any changes to the already completed forms once returned to the researcher.

2.2 Part 2- Instruments and translation

The standard measures used in the present study were intended to be the indicators of the latent variables of interest. These indicator variables/standard measures were selected on the basis of strong theoretical knowledge and empirical research, and pragmatic considerations including the length of the questionnaires, availability of the measures and copyright issues.

2.2.1 Measures

Self-report measures used in this study are described below as: demographics; mental health measures which include measures for depression, anxiety and well-being; and psychological factors hypothesized to be linked with mental health in this study which are parental bonding, attachment, social support, emotion regulation and cultural orientation.

2.2.1.1 Demographics. Demographic information included: gender, age, grade, parents' occupation, participant's relationship status and living arrangement. It also contained within a small four item measure which is called FAS II (Currie et al, 2004) to assess family affluence of the study participants and questions assessing negative life events. These are described as follows:

2.2.1.1.1 Family affluence scale II (FAS II; Currie et al, 2004). It was used to assess the family wealth of the participants and was originally developed to measure socioeconomic inequalities and their relationship with adolescents' health. This measure is composed of four items. By summing up the response on these four items a composite score is generated ranging from 0 to 9. Participants can then be categorized into three family affluence groups by FAS II scores: high (7–9 points), medium (4–6) and low (0–3). The psychometric properties of FAS II are good supporting its use as a self-report measure of material wealth among adolescents (Ravens-Sieberer et al., 2009; Torshieum, Currie, Boyce, & Samdal, 2006; Currie et al, 2008). It has been used in numerous studies to examine health inequalities within

and across countries (Torsheim et al., 2004, 2006) and has shown a strong agreement with parent report of material wealth (Currie et al., 2008) and has good criterion validity against country's GDP across 25 countries (Boyce, Torsheim, Currie, & Zambon, 2006). FAS II was translated into Urdu in the present study for use with the Pakistani population.

2.2.1.1.2 Life events. Questions regarding significant life events were taken from Child and Adolescent Self Harm in Europe study (CASE; O'Connor, Rasmussen, Miles, & Hawton, 2009). This protocol was developed particularly to be used with adolescents. The question items include life events and problems (e.g. history of sexual abuse; coping with school work) and social influences (e.g. self-harm by friends). A total of 19 questions were asked and were scored as No = 0, Yes, more than a year ago = 1, and Yes, in past 12 months = 2. A composite life events score was generated with scores ranging from 0 – 38. The last item allows the participant to rate any other significant event which they think was important for them but has not been asked in the survey. CASE has previously been translated into Urdu and used among Pakistani adolescents (Mustaqeem, 2009).

2.2.1.2 Mental health. Mental health was measured by assessing depression and anxiety using Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983) and well-being which was measured by BBC well-being scale (Kinderman et al., 2011).

2.2.1.2.1 Hospital anxiety and depression scale (HADS; Zigmond & Snaith, 1983). It is a widely used tool for screening depression and anxiety among adults. It has shown good test-retest reliability when used with adolescents (White, Leach, Sims, Atkinson, & Cottrell, 1999). Scale composes of 14 items which the participants have to respond based on their experience over the past week; seven pertain to depression and seven to anxiety. Each question has 4 possible responses. Responses are scored on a scale from 0 to 3. The maximum score is therefore 21 for depression and anxiety. The two subscales have been found to be independent measures of the respective states. The present study used the cut-off scores recommended by White and his colleagues (1999) for use with adolescent population. For depression, a score between 7 and 9 indicates possible depression and a score of 10 and above was used as an indicator of probable depression. For

anxiety sub-scale score of 9 through 11 indicated the probable presence of the anxiety and score of 12 and above was suggestive of the presence of the respective state. The 2 dimensional structure of HADS measuring depression and anxiety has been reported to be reliable (Bjelland, Dahl, Tangen, Haug, & Neckelmann, 2002). HADS has been translated and evaluated in Pakistan by Mumford, Tareen, Bajwa, Bhatti, and Karim (1991) and has been widely used (Dodani & Zuberi, 2000; Ali, Reza, Khan, & Jehan, 1998). The present study used the Urdu translated version of HADS by Mumford et al. (1991).

2.2.1.2.2 BBC well-being scale (Kinderman et al., 2011). It is a 24 item measure which assesses the psychological well-being, physical health and well-being and relationship well-being (Kinderman et al., 2011). The items are scored on a likert scale ranging from 0= not at all to 4= completely. Higher score reflects higher well-being. The scale has demonstrated good internal consistency (α = .935) and concurrent validity (Pontin, Schwannauer, Tai, & Kinderman, 2013). The mean on psychological, physical relationship well-being was previously reported to be 39.24, 28.75, and 11.37 respectively with overall mean score of 54.56 in an online sample (Kinderman et al., 2011). In the present study, an item pertaining to satisfaction from sexual life was excluded due to the cultural context and age of the study participants; after suggestion by ethics committee at Fatima Jinnah Women University. An Urdu version of BBC well-being scale was developed in the present study to assess adolescents' psychological well-being.

2.2.1.3 Psychological factors hypothesized to be linked with mental health. This study aimed to test a number of psychological factors in relation to mental health; including attachment, parental bonding, emotion regulation, social support and cultural orientation which were measured by the following scales.

2.2.1.3.1 Adolescent relationship scale questionnaire (ARSQ; Scharfe, 1997). It is a revision of the Relationship Scales Questionnaire (Griffin & Bartholomew, 1994) for use with adolescents. It is a 17 item questionnaire scored on 5 point likert scale ranging from '1 = not at all' to '5 = very much'. Participants are asked to rate the extent to which each statement best describes their characteristic style in close relationships. It yields the four-category model of attachment composing of secure, fearful, preoccupied and dismissing sub-scales. The scale can

also be used to calculate Bartholomew's *model of self and other* using these formulas: Self Model = (secure + dismissing) - (fearful + preoccupied)]. Other Model = (secure + preoccupied) - (fearful + dismissing). This method is the preferred method (Griffin & Bartholomew, 1994). This is supported by the fact that the low alpha reliabilities of four attachment prototypes reflect two underlying dimensions (Ognibene & Collins, 1998; Cetin, Tuzun, Pehlivanturk, Unal, & Gokler, 2010; Griffin & Bartholomew, 1994). In the present study this scale was used as an indicator of underlying *models of self and other* which are either positive or negative. Studies assessing attachment styles using ARSQ among adolescents have shown that those having secure attachment have higher well-being scores (Yang et al., 2008) and lower depressive and anxious symptoms (Keskin & Cam, 2010). ARSQ was translated in the present study to Urdu language.

2.2.1.3.2 Parental bonding instrument (PBI 16 item; Kendler, 1996). It was developed as a 25 item self-report measure of perceived parental attitude towards one's self (Parker et al, 1979). The present study used a reduced 16 item version validated by Kendler in 1996. This version has been reported to have three dimensions i.e. warmth, protectiveness and authoritarianism instead of two dimensions i.e. care and over-protection reported in the original version of scale. All items are rated on a four point likert scale ranging from 0 (very like) to 3 (very unlike). Higher the score, higher is the level of warmth, protectiveness and authoritarianism. Scores are computed separately for the three dimensions. Low scores on care and high score on over-protection have been associated with depression and anxiety (Parker, 1983). It can either be administered for both parents individually or separately. PBI reports have been found to be stable over 20 years' time (Wilhelm, Niven, Parker, & Hadzi-Pavlovic, 2005). It is considered as the most reliable measure to test for parenting styles in both clinical and non-clinical settings (Enns, Cox, & Clara, 2002). PBI has been tested in the past for two, three and four factor models (Parker et al., 1979; Kendler, 1996; Uji, Tanaka, Shono, & Kitamura, 2006). Kendler's model has consistently shown good fit in confirmatory factor analysis studies (Sato et al., 1999; Terra et al., 2009). The 25 item PBI has been productively translated and administered among adult Pakistani female sample (Qadir et al., 2005). The present study used Qadir et al's (2005) translated version.

2.2.1.3.3 Regulation of emotions questionnaire (REQ; Philips & power, 2007). It is a 21 item self-report measure which assesses internal-dysfunctional, internal-functional, external-dysfunctional and external-functional emotion regulation strategies. It was specifically designed to access emotion regulation among children and adolescents. The authors found significant association between internally dysfunctional strategies and psychosomatic health problems (r=0.58) and dysfunctional strategies to be significantly correlated to lower perceived quality of life and functional strategies to be associated with higher ratings of quality of life. It is scored on 5 point likert scale from *'1= Never' to '5 = Always'* **(**Philips & Power, 2007). The present study translated REQ into Urdu prior to its administration following standard translation procedures.

2.2.1.3.4 Significant others scale (SOS; Power et al., 1988). It is a measure of social support assessing the perceived emotional and practical support as well as the ideal amount of support that an individual would like to receive. It combines structural features (i.e. whether significant relationships do exist and who they are with) and functional characteristics (i.e. the type of social support). It thus allows calculation of the total social support score and the discrepancy scores (the actual support score minus the ideal support score). The scale has been reported to have good test- retest reliability of between 0.73 and 0.83. Its criterion validity was established comparing three independent groups of depressed people, one non-depressive group of psychiatric cases and a symptom-free group. The depressed group differed significantly on the SOS in comparison to the other groups in terms of ideal support, where they had higher ratings of what would be ideal, and a higher level of discrepancy between the support they perceived and the support they wanted (Power et al., 1988). The short version of the scale used in the present study allows participants to identify up to five close relationships. It has four questions each with perceived and ideal part which are asked for each of the identified relationship. However, participants are encouraged to ask for additional sheets if they have more than five significant others in their life. Responses were rated from 3 point likert scale 0 = not at all to 2 = always. This scale has been translated into Urdu (Haqqani, 2014) for use with Pakistani adolescents.

2.2.1.3.5 Horizontal and vertical individualism and collectivism scale 14-items (HVICS 14-items; Sivadas, Bruvold, & Nelson, 2008). It is a 14 item self-report measure of cultural orientation. Items are scored on a 5 point likert scale ranging from 1 = never to 5 = always. This measure conceptualises the two known dimensions of cultural orientation having horizontal and vertical dimensions. These dimensions depict the hierarchy or equality within individualistic and collectivistic cultures. Those who have horizontal collectivistic orientation value interdependence and equality, whereas those with vertical collectivistic orientation value interdependence but believe in competing with out-groups. Those who have horizontal individualistic orientation value independence and equality, whereas those with vertical individualistic orientation value independence and believe in hierarchy and status with in society. Therefore, the scale has four sub-scales: horizontal collectivism, vertical collectivism, horizontal individualism and vertical individualism. The scale does not give a total score. Score on each sub-scale can be calculated by taking mean of the items corresponding to that sub-scale. The original Horizontal and Vertical Individualism Collectivism Scale I was designed by Singelis, Triandis, Bhawuk, and Gelfand (1995) and it composed of 32 items. Triandis and Gelfand (1998) than revised the original version and reduced it to 27 items to improve the scale's robustness. However, the fit of the model was still found problematic. Therefore, to improve the psychometric stability and content validity of the scale Sivadas et al. (2008) revised the scale into more parsimonious and psychometrically stable reduced 14-item version and validated it on six samples from four countries which was translated in the present study for the purpose of use with Pakistani sample.

For the present study Emotion Regulation Questionnaire, Adolescent Attachment Relationship Scales Questionnaire, Horizontal and Vertical Individualism and Collectivism Scale, BBC Well-being Scale, and Family Affluence Scale were translated into Urdu. Translation procedure used in this study is as follows.

2.2.2 Translation of scales

Translation means understanding meaning from one language and consequently reproducing those meanings into another language. It is a stepwise

process, which aims to maintain the conceptual, operational and semantic equivalence. There are many popular procedures for translation of the scales. The simplest being the direct translation of the scale from the original to the target language. This procedure does not follow any method to check whether the translation is satisfactorily done or not. That is the reason why direct translation is often considered insufficient by the researchers (Brislin, 1970; Sechrest & Fay, 1972). Amongst other methods Brislin's (1970) back-translation method has been used extensively for translation of scales.

2.2.2.1 Back-translation method. Brislin's back-translation method (1970) is one of the most popular and most widely used methods for translation. The process involves independent translation and back-translation of the scale by a team of independent bilingual translators. A bilingual translator translates the scale into the target language then another bilingual translator back-translates the translated target language version of the scale into its original language without looking at the original scale. This process results into two new versions of the original scale, one in the target language and the other into original language called the back-translated version.

The next step is to check the original scale and the back-translated version for concept equivalence. This is done by committee of judges. If some error is found in the back-translated version an independent translator again translates those items and another translator then back-translates it until the agreement is made upon the similarity between the original version and the back-translated version (Cha et al., 2007). Back-translation is recommended by many researchers (Jones, Lee, Phillips, Zhang, & Jaceldo, 2001; McDermott & Palchanes, 1992; Gullimen, Bombardier, & Beaton, 1993).

2.2.2.1.1 Translators. The required number of translations and back-translations is always difficult to predict so is the number of translators required. It is crucial that translators understand both languages (original and target) (Bhui, Mohamud, Warfa, Craig, & Stansfeld, 2003). Edwards (1994) recommended a translator who has learnt the original version's language as a second language, as compared to one who uses the source language as his/her dominant language.

2.2.2.1.2 Judgment. After appropriate translation back-translation, the original and back-translated versions are compared for equivalence. For this purpose, Gullimen et al. (1993) proposed that a committee of judges should be constituted in order to produce a final version, which should be equivalent to the original version. Committee's roles also include reviewing the introduction, instruction and scale response format of the questionnaire. The committee may modify or exclude unrelated, inadequate and ambiguous items. It may substitute words, phrases or items that better fit the target culture as well as maintain the general concept of the original scale or it may recommend new translation and back-translation (Gullimen et al., 1993).

In this study, the main researcher translated all the scales requiring translation into Urdu. Techniques used during translation were: use of dictionary, giving synonyms, and chunking. Instructions and items were adapted to make them appropriate for school aged children. For the sake of similarity in the protocol all the scales were given in the table format to reduce the confusion and time required to answer and mark the appropriate options.

All the translated scales were than back-translated by an independent bilingual translator into English. The bilingual translator was Pakistani university staff with doctoral level qualification in English language. The back-translated version was than reviewed by a committee composed of the main researcher, a clinical psychologist who was a senior researcher and a Linguist. A secondary school teacher was also approached to give her feedback on the translation and the back translation. Difficulty level of the items was discussed. Problematic items were discussed with an assistant professor of English language. Scales were pilot tested in interview format with 3 adolescents. Consulting the linguist, teacher and adolescents helped assessing the face and content validity of the scales which gives valuable information regarding the degree to which the scales represent the concept under study (Bhui et al., 2003). The adolescents involved for this purpose were also asked to provide their feedback on the research protocol on a whole and specifically on the translated scales.

2.2.2.2 Domains of equivalence. The following domains of equivalence were taken into consideration at the time of translation (Gullimen et al., 1993).

2.2.2.2.1 Semantic equivalence. Semantic equivalence means that the words used in the original scale and the translated scale have the same meanings (Kleinman, 1987). It involves equivalence in meaning of words, which may present problems with vocabulary and grammar (Gullimen et al., 1993). For example, in Urdu many verbs have separate words for two genders. For example in item 1, "I talk to someone about how I feel" in REQ was translated as "main jo mehsoos karta/karti hon uss k baray main kisi se baat karta/karti hon". The words "I talk" and "I feel" have separate expressions for boys and girls. Therefore, both expressions were used in the scale translation side by side to avoid grammatical errors.

2.2.2.2.2 Conceptual equivalence. Conceptual equivalence requires that responses to the scale must relate to a theoretical construct within the culture (Kleinman, 1987). In other words, it refers to the validity of the concept being explored with respect to the population under study. In many cases the scale may be equivalent in term of semantics but not conceptually equivalent (Gullimen et al., 1993). For example, item number 3 "I seek physical contact from friends or family (e.g. a hug, hold hands)" in REQ talks about physical intimacy. This concept is very sensitive and is perceived differently in Pakistani culture. Therefore, during translation the items were translated in way that it was applicable to all relationships and does not carry a sexual connotation. Furthermore, BBC item 20 was dropped as it asked about satisfaction from sexual life which seemed inappropriate with reference to the Pakistani adolescents who are not allowed by religion as well as by the society to have sexual activities before marriage and this was also reinforced by the ethics committee in Pakistan.

2.2.2.2.3 Idiomatic equivalence. Since idioms are hardly ever translatable, equivalent expressions have to be found or items have to be replaced with other items. This is more likely to be necessary in scales assessing the emotional and social dimensions (Gullimen et al., 1993). According to Bhui et al. (2003) translation of idioms is a difficult task to be done on the translator's part as similar idioms cannot be possibly found in target language. Even if the translator is successful in finding similar idiom it might not be as frequently used in target population as in the source language so it would not be known to everyone in the target population. For example, the item "I find it hard to count on other people" in ARSQ was translated

into “Mujhe dosray logon per inhesaar karna (depend) karna mushkil lagta hai”. The idiom “count on” had no equivalent idiom in Urdu but equivalent words were used to convey the expression. Furthermore, the word which was found to be equivalent of “count on” in Urdu was a bit difficult for school pupil therefore an alternative English language word was also provided which made it easier to comprehend. Similarly phrases also require equivalent expression in target language. The item "I often do “my own thing” in HVICS was translated into “Main aksar apni marzi chalata/chalati hon”. The phrase “my own thing” has an equivalent expression in Urdu “marzi chalana” which was recommended by the linguist.

2.2.2.2.4 Experiential equivalence. The circumstances suggested or portrayed in the source version should be acceptable in the target cultural context. This may result in the variation of an item (Gullimen et al., 1993). For example, item 5 “The well-being of my co-workers is important to me” and item 10 “If a co-worker gets a prize I would feel proud” in HVICS has word “co-workers” which was not applicable to the student sample of the study. Therefore the word was replaced with class-fellows which fulfilled the meaning of the item and was applicable in the present study context.

2.3 Part III- Statistical Analysis

All the information collected from the participants was entered into the Statistical Packages for Social Sciences version 19 (SPSS). Descriptive data were generated for all variables. Where data was not normally distributed, non-parametric tests were used including Mann Whitney, Wilcoxon, Kruskal Wallis and Spearman’s rho correlation. Chi square analysis was employed for the categorical variables. Prior to the main analysis assumptions of CFA and SEM were examined on indicators of latent factors. All the study instruments were analysed for their psychometric properties using Cronbach’s alpha test, correlation coefficient test and confirmatory factor analysis.

2.3.1 Structural Equation Modelling (SEM) and Confirmatory Factor Analysis (CFA)

In order to test the study hypothesis, the main data analysis had two objectives:

- To determine an optimal measurement model for the study population that best fits the data for further use in SEM.
- To test the hypothesized SEM based on the literature reviewed and to determine an optimal fit for this sample.

The analytical methods chosen for this study were confirmatory factor analysis (CFA) and structural equation modelling (SEM). CFA is part of the broader methodology of SEM and was applied to examine the dimensional structures of the measures used in the present study. A series of CFA models were conducted for each of the components in the model and their associated hypothesised latent constructs. All the measures were then combined to produce a final, overall measurement model. This measurement model was then used to analyse the hypothesized structural model using SEM. Descriptive analysis and missing value analysis were completed in SPSS Version 19. CFA and SEM models were tested using Mplus Version 7 (Muthen, & Muthen, 1998-2012).

SEM is an advanced statistical technique which allows analysing relationships between more than one continuous or categorical independent and dependent variables. These variables can either be measured or latent variables. Each structural equation model is composed of a measurement model and structural model. SEM has many sub-types like path analysis and CFA. To report the results of SEM and CFA recommendations by Schreiber, Nora, Stage, Barlow, and King, (2006) are followed in this study.

Structural equation modelling involves four basic steps; model specification; model estimation; model evaluation; and model modification (Ullman, 2006). All steps of analysis were performed and are discussed below.

2.3.1.1 Model specification. It is the first stage of SEM or CFA in which model is specified in terms of stating the hypothesis both in equation and diagrammatic form and assumptions of SEM and CFA are assessed and the model is statistically identified.

2.3.1.1.1 Evaluation of the SEM and CFA assumptions.

2.3.1.1.1.1 Sample size. SEM or CFA requires a large sample (Ullman, 2006). Rule of thumb generally is 10 observations per variable in the model (Barclay, Higgins, & Thompson, 1995, Chin, 1998, Chin & Newsted, 1999). The current

sample size is 1124, which is considered as 'very large' (defined > 1000; Hox & Bechger, 1998). As good practice sample size was also calculated *a priori* using Westland's (2010) software which gives lower bounds for sample size required to detect a certain effect size in SEM. Cohen's (1988) benchmark small effect size (0.20) was used as minimum effect size detectable and the number of indicators were set at 100 with 20 latent variables. The software produced 521 as the lower bound sample size for the study with 0.80 power and 0.05 significance level. The sample collected was almost double to the required sample size in order to run between group comparisons (e.g. between genders) which lowers the sample size. The algorithm used in the software developed by Westland (2010) determines minimum sample size required based on indicators per latent variables and effect size, significance and power. Furthermore the developer argues that the results are also affected by other factors like distribution of the data and multicollinearity, therefore the sample size must exceed the lower bound calculated by the software.

2.3.1.1.1.2 Multivariate normality. Another assumption for conducting SEM is of normality of the data (Ullman, 2006). To examine the distribution of data all variables were analysed using Kolmogorov-Smirnov test of normality and Z scores of skewness and kurtosis as recommended by Field (2009). Data with a z score of greater than +/- 1.96 was deemed to be non-normally distribution. Scatter plots were examined to check for bivariate normality. Present study also made use of Mardia's Coefficient which assesses multivariate normality through multivariate kurtosis. These can be obtained by asking for *tech13* in the output command in Mplus. Outliers were detected by outlier labelling rule. Apart from other pros of using SEM, an additional advantage is that the non-normality of the data is not problematic in SEM as it gives option of selecting an estimator which is robust to non-normality of the data. Normality results for the variables are presented in appendix (4). Few variables were non-normally distributed, thus non-parametric analyses and robust maximum likelihood (MLM) estimator for SEM were used in the current study. Furthermore, Satorra-Bentler's Maximum Likelihood Mean Adjusted Chi Square (χ^2_{SB}, 1988) was calculated for each model.

Variables were also tested for linearity using correlation tests when the variables were continuous and independent sample tests when one of the variables

was categorical and chi stare test when both were categorical. Spearman's Rank correlation coefficient was calculated as it is a non-parametric test and is recommended when the data is non-normal (Field, 2005). Furthermore, scatterplots were also used to measure linearity among variables.

2.3.1.1.1.3 Missing values. Missing value analysis was performed in SPSS using the missing values analysis command. Data was screened for the amount of missing data and the type of missingness: Missing Completely at Random (MCAR) or Missing at Random (MAR) using the little MCAR test.

Data was collected from 1149 participants for the present study. Information collected from 25 participants was not included in the analysis as it was largely left incomplete during data collection. Data from rest of 1124 participants was examined for missing values. Schafer (1999) recommended 5% as the cut off for the missing values in a data set while others suggested a cut off of 20% (Peng, Harwell, Liou, & Ehman, 2006). Imputing these missing values is a preferred method than simply deleting the case or variables having missing data (Schlomer, Bauman, & Card, 2010). Expectation maximization EM is the preferred method for imputing missing data when the data is missing completely at random or missing at random (Schafer & Graham, 2002). EM is a repetitive maximum likelihood procedure which imputes missing values based on cycles of calculated means and covariances until a satisfactory value is generated. Results of the missing data analysis revealed less than 5% missing data on majority of the variables. These missing values were largely due to item non response. Of the variables that had greater than 5% missing data, age had 10.1% (n = 113), and relationship status had 7.3 % (n = 82) missing data. The father's and mother's occupation status variables had 7.2% (n = 81) and 17.6% (n = 198) missing data respectively. Two items from HVICS, Item 9 had 5.8% (n = 65) and item 11 had 5.2% (n = 59) missing data.

In order to analyse the pattern of missing data, the data was taken through missing values analysis in SPSS. Patterns of missingness were analysed as grouped for all cases, for individual cases and by missingness on variables by comparing means and t-test. There were no variables jointly missing. Little's MCAR test was used to verify missingness of the data. The null hypothesis for Little's MCAR test is that the data are missing completely at random (MCAR). Data are MCAR when the

pattern of missing values does not depend on the data values. Because the significance value was not less than 0.05 in this sample concluding that the data was missing completely at random. However, in order to retain the power of the study the missing values were replaced using Maximum Likelihood Methods using the Expectation-Maximization (EM) algorithm. In this method the distribution of the missing data is assumed on the basis of likelihood under the observed distribution. The traditional method (and default method in case of SPSS) to handle missing values; the list wise deletion results into reduction in sample size. The data in the present study was MCAR, EM was performed as it is preferred method when more than 5% of data is missing (Rubin, Witkiewitz, Andre, & Reilly, 2007) especially in large samples (Schafer & Graham, 2002). Data with missing values replaced after EM was used for all further analysis.

2.3.1.1.1.4 Multicollinearity. An absence of multicollinearity (perfect or nearly perfect correlation between two variables) within the data is another important assumption in SEM or CFA analysis. Data for the present study was checked for multicollinearity in SPSS prior to CFAs by examining *variance inflation factors* (VIF) and also by examining estimated means, covariances, and correlations for the latent variables in the model by requesting the *tech4* option for each model. In case of multicollinearity model was modified.

2.3.1.1.2 Model Hypotheses. During specification of model in SEM it is imperative to state the hypothesis behind the model which is usually done diagrammatically. Each CFA and SEM model was diagrammed prior to analysis using standard procedure for displaying SEM in a figure form as displayed in figure (3) taken from Byrne (2011). The model has measurement model (depicts relationship between latent variables and its indicators) and structural model (depicts relationship between latent variables). The oval shape represents latent variables (F) whereas rectangles represent measured variables (V). E is the measurement error. Double headed arrows depict correlations whereas single headed arrows show an impact of one variable on another variable. The variable with a single headed arrow pointed towards a variable shows that it is a dependent variable.

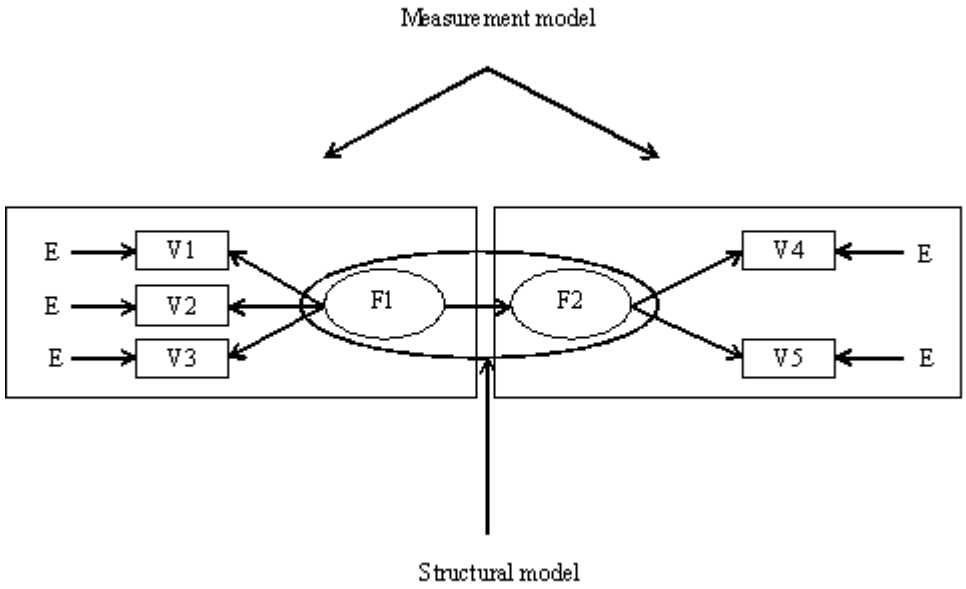

Figure 3. A general SEM model replicated from Byrne (2011, p.13).

2.3.1.1.3 Model Statistical Specification. The hypotheses diagrammed are also specified in equation format in the statistical package for analysis. Each statistical program used to run SEM has its own language and notations for specifying models. Mplus language for specifying the hypothesized model in an input file was used in the present study (Muthen & Muthen, 1998-2012).

2.3.1.2 Model identification. Model identification looks into whether the model is empirically testable. There are *just-identified* (with no degrees of freedom), *under- identified* (with negative degrees of freedom) and *over-identified* models (with positive degrees of freedom) (Byrne, 2011). In SEM research, aim is to specify an over-identified model where the estimable parameters are less than the data points. This can be calculated with p (p-1)/2 formula where p is the number of observed variables in the model. Degrees of freedom can be calculated by subtracting the number of unknown parameters in the model from the data points (Byrne, 2011). For the present study, each model was checked to determine that they were over-identified. This is done by the software at the time of analysis. If a model is over-identified the Mplus generates an error message at the end of the output file.

Another important aspect of model identification is to specify the scale of the latent variables in the model. This was done by following the standard procedure of fixing the regression coefficient of the first indicator of that latent variable to one or by fixing the variance of the latent variable to one (Ullman, 2006). It is also very important to have a sufficient numbers of indicators for each latent variable. There should be at least three indicators for one factor with no correlated error terms and no cross loadings (Ullman, 2006). All these aspects were taken into account before analysing each model in the study to ensure that it is identified.

2.3.1.3 Model estimation. Different estimation techniques may be used in SEM which must be selected after taking into account sample size and normality of the data. Maximum likelihood estimator (ML) is usually the default estimation technique in most SEM programs because it yields the most precise estimates when the data is normal (Ullman, 2006). MLM is a type of scaled maximum likelihood parameter which has a mean-adjusted chi-square test statistic and is robust to non-normality (Muthen & Muthen, 1998-2012). For MLM chi-square test statistic the Satorra-Bentler chi-square needs to be calculated to adjust for non-normality of the data (χ^2_{SB}; Satorra & Bentler, 1988). MLM is one of the recommended choices with medium (over 120) to large samples (over 1000) when there is potential dependency between factors, errors or non-normality (Ullman, 2006).

2.3.1.4 Model evaluation. After the model is specified, identified, and estimated, it is than evaluated to determine whether the hypothesized model should be accepted or rejected or in other words if the model fits the data.

2.3.1.4.1 Evaluation of model fit. The most commonly used fit statistic is the chi-square test statistic with a null hypothesis that the specifications of the model are valid therefore higher the probability associated with it higher is the model fit. However, the chi square test statistic is highly sensitive to the sample size making it difficult to assess the fit of the model where the sample is large. To address this issue various fit indices have been developed which are broadly categorized into *incremental* and *absolute* fit indices. Incremental fit indices assess the improvement in model fit compared to the other model whereas absolute fit indices assess how well the model fits the data (Byrne, 2011). Mplus reports two incremental fit indices the Comparative Fit Index (CFI; Bentler, 1990) and Tucker-Lewis Fit Index (TLI;

Tucker & Lewis, 1973) and two absolute fit indices Root Mean Square of Approximation (RMSEA; Steiger & Lind, 1980) and the Standardized Root Mean Square Residual (SRMR; Hu & Bentler**,** 1998; 1999).

CFI and TLI measure the improvement in model fit by comparing it to a less restricted or baseline model. The difference between CFI and TLI lies in CFI being a normed index with result ranging from 0 to 1 with values closer to one indicate a better fitting model whereas TLI is a non-normed index and its values can extend outside the range of 0-1 but is interpreted in a same way with values close to one interpreted as better fit. The other difference in the two lies in TLI being sensitive to the complex models and its value takes into account the parameters included in the model with minimum contribution to improvement in model fit. For the present study, CFI and TLI value of 0.90 or above was taken as an indicator of better fit as suggested by Bentler (1992).

RMSEA measures the extent to which the hypothesized model fits the data. It is sensitive to the number of parameters in the model. RMSEA value of less than 0.50 is considered as representative of a good fitting model. Values above 0.80 represent a poor fitted model (Browne & Cudeck, 1993). Mplus also computes the confidence intervals around RMSEA values. SRMR is an average value representing all standardized residuals or the average error with which the model explains the correlations. Its value can range from 0 – 1 with a value of less than 0.05 in a well fitted model (Byrne, 2011). For the present study, RMSEA value below 0.80 and SRMR value less than 0.05 was considered as indicator of good fit as per recommendations.

2.3.1.4.2 Assessment of Parameter Estimates. Along with examination of overall model fit, significance of parameters estimated is also evaluated. Both unstandardized and standardized parameter estimates can be obtained in Mplus. If the path coefficients are significantly greater than zero then the hypothesized relationship exists between the variables. This can be calculated by dividing the parameter estimated by their standard error (SE) and can be evaluated against the *z* score associated with $p = .05$, $z > \pm 1.96$ (Ullman, 2006). As per Jackson, Gillaspy Jr, and Purc-Stephenson (2009) recommendations path coefficients (standardised

regression coefficients), measurement and residual errors and R-squared were reported for each model.

In the model diagrams, arrows pointing from the factors to the indicators will show standardized regression coefficient. Measurement error is shown by arrows pointing towards the variables and residual error is shown by arrows pointing towards the latent variables. R squared is reported which shows portion of variance in an indicator accounted by a factor (Byrne, 2011). Estimated correlations between factors were examined. Very high correlation (greater than 0.95) indicates that the constructs overlap and therefore likely measuring a same thing (Zainodin, Noraini, & Yap, 2011).

2.3.1.5 Model Modification. If an unacceptable model fit is found for the *a priori* model, the second aim of analysis is to improve the overall fit through modification. Model modifications should be consistent and in line with the theoretical and conceptual assumptions and further determined by statistical indicators of the model Modification Indices (MI) which can be requested in Mplus. These indices show which parameters in the model are miss specified or which one if measured freely may improve the model fit. However, modifications to the model using MI should be theoretically grounded. In case of any changes made to improve the model fit, difference in reduction in chi square can be computed and compared. Also the incremental fit indices are rexamined (Byrne, 2011).

Chapter 3:

Results

3.0 General introduction

This chapter will present a representation of the sample and will be separated into three sections with each corresponding to the study hypotheses. Part I will focus on describing the participants and the state of mental health and well-being among Pakistani adolescents across gender, age, SES and negative life events. Part II of this section will focus on the construct validity of the study instruments. Part III will examine hypotheses regarding direct and indirect predictors of mental health.

3.1 Part I-State of mental health in Pakistan (Hypothesis 1 and 2)

In this thesis data from a total of 1124 participants recruited from eight schools was analysed. These schools were as follows: two co-education schools, three boys-only schools and three girl-only schools. In summary 444 (39.5 %) participants were recruited from boys-only schools, 449 (39.9 %) participants were recruited from girls-only schools whereas 227 (20.1 %) were recruited from co-education institutions.

3.1.1 Depression, anxiety and well-being

Mean and standard deviation (SD) score on depression sub-scale was 6.05 (3.31) and on anxiety sub-scale of HADs was 7.91 (4.0). Table 2 shows frequency and percentage of participants who were categorised as normal, likely to be depressed or anxious and those who were probably depressed or anxious based on their scores on HADS. The mean score on psychological, physical and relationship well-being was 34.66, 19.50 and 11.63, respectively, with an overall mean well-being score of 65.79.

Table 2

Rates of depression and anxiety (n = 1124)

	Depression f (%)	Anxiety f (%)
Non-cases	630 (56)	609 (54.2)
Borderline cases	301 (26.8)	275 (24.5)
Cases	193 (17.2)	240 (21.4)

Depression and anxiety correlated positively among the sample. Furthermore, Spearman's rho test indicated that increase in rates of depression and anxiety was significantly correlated with decrease in well-being among the sample (Table 3).

Table 3

Correlations between depression, anxiety and well-being (N = 1124)

	Depression	**Anxiety**	**Well-being**
Depression	1		
Anxiety	0.32**	1	
Well-being	-0.50**	-0.37**	1

Notes: **. Correlation is significant at the 0.01 level (2-tailed).

3.1.1.1 Gender and mental health. The sample was composed of 621 (55.25%) males and 503 (44.75%) females. Table 4 provides prevalence estimates of depression and anxiety among boys and girls in the current sample. The table shows that more boys than girls were cases of depression whereas more girls than boys were categorized as cases of anxiety as measured by HADS.

Chi square test was performed to analyse association between gender and indicators of mental health (depression, anxiety and well-being). Rates of anxiety but not for depression differed by gender χ^2 (1, N = 1124) = 19.41, $p < 0.001$ and χ^2 (1, N = 1124) = 5.58, p = 0.06 respectively, with more girls showing symptoms of anxiety. Association between well-being and gender was explored using Mann-Whitney U test. The test statistics showed that the mean rank for males (574.82) was higher for well-being as compared to females (547.29) but this association was not statistically significant $z = -1.41$, p = 0.15.

Table 4

Prevalence of depression and anxiety across gender of the study participants (N = 1124)

Mental health problem	Category	Boys f (%)	Girls f (%)
Depression			
	Non-cases	349 (56.2)	281 (55.9)
	Borderline cases	153 (24.6)	148 (29.4)
	Cases	119 (19.2)	74 (14.7)
Anxiety			
	Non-cases	373 (60.1)	236 (46.9)
	Borderline cases	131 (21.1)	144 (28.6)
	Cases	117 (18.8)	123 (24.5)

3.1.1.2 Age and mental health. The age range of the study sample was 11 – 18 years with median age of 14 years. Following histogram (Figure 4) shows distribution of age in the sample with almost equal representation of 13 (18.9%), 14(19.5%) and 15 (19.8%) year olds and least representation by 18 (2.1%) year olds. Girls are more represented in the lower age groups whereas boys are higher in number in upper age groups; there is about an equal representation of both sexes at age 13. This association was significant at p value of 0.000 as measured by Chi square test. Age was also significantly negatively correlated with depression but the correlation with anxiety was not significant (Table 5). Significantly higher levels of well-being were obtained for older participants.

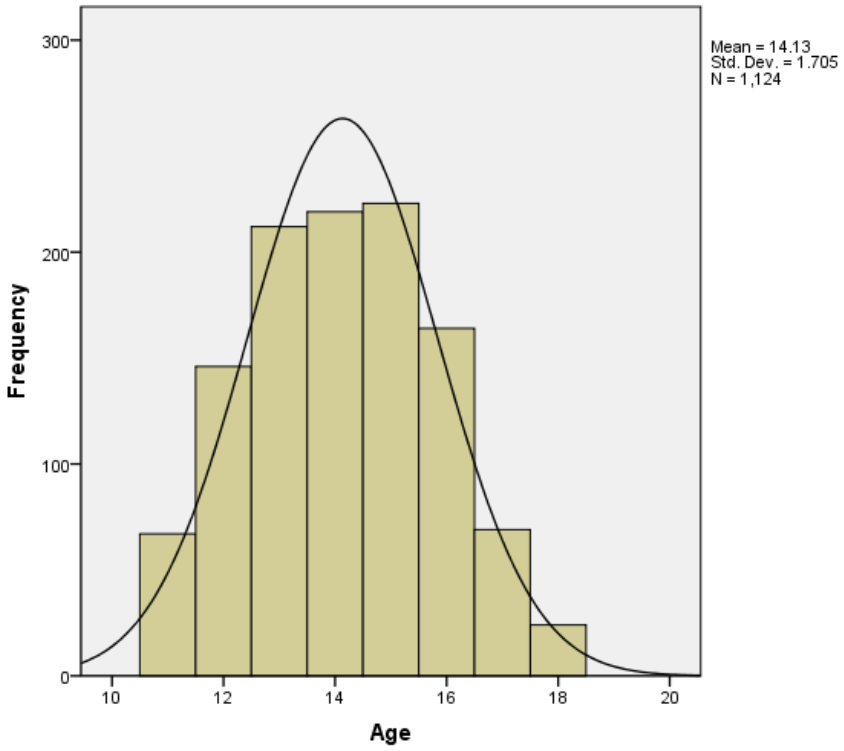

Figure 4. Age distribution of the study participants.

Table 5

Spearman rho's association between continuous demographic indicators and indicators of mental health (n=1124)

	Depression	Anxiety	Well-being
Age	-0.06*	-0.06	0.11**
level of education	-0.13**	-0.09**	0.18**
Family affluence	-0.13**	-0.09**	0.18**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

To examine age and gender interaction effect in predicting adolescents mental health regression analysis was conducted. The unstandardized regression slope was b = 0.27, t (1120) = 2.30, p < .05. The coefficient for the interaction term was statistically significant; this implies that the slope that predicts the change in depression scores as age increases differs significantly between the boys and girls. For each year increase in age, females score significantly higher on depression scale than males. This was not significant in case of anxiety b = 0.11, t (1120) = 0.78, p =0.43 and well-being b = -0.49, t (1120) = -1.07, p =0.28.

Table 6

Prevalence of depression and anxiety among early, middle and late adolescents

Mental health problem	Severity	Stages of adolescence		
		Early f (%)	Middle f (%)	Late f (%)
Depression				
	Non-cases	228 (36.2)	252 (40)	150 (23.8)
	Borderline cases	120 (39.9)	111 (36.9)	70 (23.3)
	Cases	77 (39.9)	79 (40.9)	37 (19.2)
Anxiety				
	Non-cases	211 (34.6)	247 (40.6)	151 (24.8)
	Borderline cases	117 (42.5)	105 (38.2)	53 (19.3)
	Cases	97 (40.4)	90 (37.5)	53 (22.1)

Sample was also analysed across developmental stages of adolescence (see Table 6). Chi square test was performed to analyse association between early, middle and late adolescence in relation to depression and anxiety. Rates of anxiety as well as depression did not differ by early, middle and late adolescence χ^2 (4, N = 1124) = 6.81, p < 0.14 and χ^2 (4, N = 1124) = 3.07, p = 0.54 respectively.

3.1.1.3 Socio Economic Status (SES) and mental health. The Family affluence scale FAS had a mean value of 3.58 and SD of 2.0. Over half of the sample was from low affluent families, 41% (n = 461) from medium, and 8.4 (n = 94) scored high on familial affluence. Significant association was observed between type of school and family affluence of the participants (p <0.001). Majority of the participants attending co-education schools were from medium to high family affluence. Boys-only schools had higher percentage of pupil from low family affluence (51.3%) than girls-only schools (40.2%). Table (4) shows the association between socio-economic status among the adolescents depression, anxiety and well-being scores. The Spearman's rho test confirms that those from low SES are more likely to have depression and anxiety and low well-being.

3.1.1.4 Life events and mental health. 19 different questions pertaining to life events were asked (M = 4.65, S.D = 3.92). Most commonly reported problems were: problems keeping up with school work, illness/accident in family and close friends, fights /arguments, death of close relatives and friends.

Correlations between the total score on all negative life events and mental health variables were also significant. Depression (r_s (1122) = 0.12, p < 0.01) and anxiety (r_s (1122) = 0.19, p < 0.01) were high among those experiencing more negative life events and well-being was low (r_s (1122) = -0.11, p < 0.01).

3.1.2 Other sample characteristics. 98.7% of the participants were Muslims, 1.3% Christians and one participant was of Hindu religion. Majority of the sample was born in Pakistan (99.1%). Of the sample, 97.5% were single with 2.5% reported to be engaged. Only 6.1% (n = 69) of the sample reported to be in a romantic relationship. The majority of the sample was living with both parents (83.3%), with about 9% of the participants living in single parent home, and 7.4% reported living in "other" arrangements included a major portion (4%) of those who

were residing in hostel accommodations. 87.3% (n = 981) of the respondents reported that their fathers were employed compared to 0.4 % (n = 5) whose fathers were unemployed and 3% (n= 34) whose fathers were retired. However, 2% (n = 23) reported that their fathers are deceased. Mothers of 75.2% (n = 845) participants were not employed outside their homes, compared to 6.5% (n =73) whose mothers were employed. 8 participants reported that their mothers had died. Participant's mental health was not significantly correlated with their relationship status, living arrangement, and parent's occupation.

Table 7

Prevalence of depression and anxiety across participant's school type

Mental health problem	Severity	Types of school		
		Coeducation f (%)	Girl's only f (%)	Boy's only f (%)
Depression				
	Non-cases	154 (24)	246 (38.3)	242 (37.7)
	Borderline cases	35 (11.8)	141 (47.6)	120 (40.5)
	Cases	39 (21.8)	60 (33.5)	80 (44.7)
Anxiety				
	Normal	150 (24.4)	208 (33.5)	262 (42.3)
	Borderline cases	36 (13.3)	134 (49.6)	100 (37)
	Cases	42 (18.5)	105 (46.3)	80 (35.2)

Table 7 provides prevalence of depression and anxiety across participant's school type. Cases of anxiety were higher in girl's only schools whereas cases of depression were higher in boy's only schools.

3.1.2.1 Level of education. Data was collected from seven grades/classes within each school namely classes 6^{th}, 7^{th}, 8^{th}, 9^{th}, 10^{th}, 11^{th} and 12^{th}. The following pie chart (Figure 5) shows that there was about equal representation of each class in the study sample except classes 11^{th} and 12^{th} who had a small representation in the study.

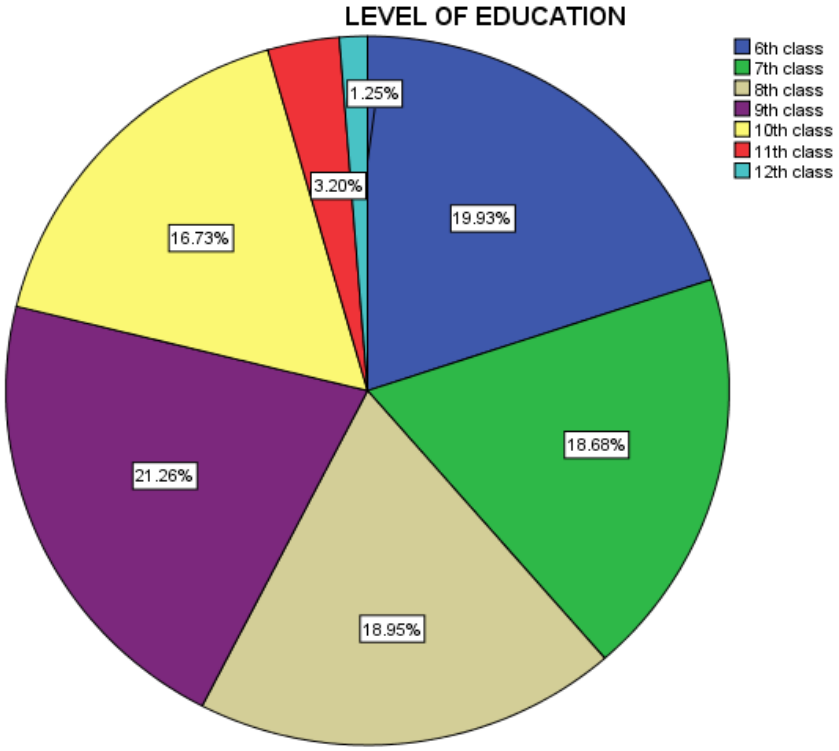

Figure 5. Pie chart for the percentages of the participants from different levels of education.

Higher levels of education had less representation of girls (n = 5 in class 11th and 12th) as compared to boys (n = 45 in class 11th and 12th). Similar association between gender and education level was noted in the rest of the data χ^2 (6, N = 1124) = 47.93, p < 0.001. Educational level was significantly negatively correlated with depression, anxiety and positively with well-being (Table 4).

3.1.2.2 Self-reported disability. On the question pertaining to self-reported disability majority of the sample 1068 (95%) reported having no disability. The major categories for the self-reported disabilities were as follows: pains/aches (12.9%), vision/sight (12.9%), motor disabilities (12.9%), and weakness/fatigue (9.7%). Some participants (9.7%) also felt that temperamental aspects e.g. anger, loneliness as form of disability. Two participants felt that their financial circumstances were disabling. No association was found between self-reported disability and depression, however, anxiety was significantly associated with self-reported disability (χ^2 (4, N = 1124) = 11.44, p = 0.02).

3.1.2.3 Physical or mental health condition. 89.4% participants reported that they never received diagnosis for any physical or mental health condition. Of 109 (9.7%) who reported having a physical or mental health condition, 30 did not specify what the condition was. Major categories of conditions reported by rest 79 were related to: respiratory tract 14 (17.7%), anaemia 13(16.5%), vision 5(6.3%), and kidney related problems 5(6.3%).

3.2 Part II- Applicability of the constructs (Hypothesis 3)

To analyse the relationship between observed variables and their latent factors Confirmatory Factor Analysis (CFA) was conducted which also makes up the measurement model of SEM.

3.2.1 Mental health

Mental health was measured by Hospital Anxiety and depression scale and BBC well-being scale.

3.2.1.1 Depression and Anxiety. Depression and anxiety among the participants was measured by Hospital Anxiety and Depression Scale.

3.2.1.1.1 Cronbach's alpha reliability estimates for HADS. The Cronbach's α reliability estimate was 0.54 for depression sub-scale, 0.67 for anxiety sub-scale and 0.68 for the overall scale in the present sample.

3.2.1.1.2 Confirmatory factor analysis for HADS. *A priori* two factor measurement model was hypothesised for HADS as proposed by the original authors of the scale. The model contained 14 measured variables (indicators). It was hypothesised that DEP (Depression) predicts HADS2, HADS4, HADS6, HADS8, HADS10, HADS12, and HADS14, whereas ANX (Anxiety) predicts HADS1, HADS3, HADS5, HADS7, HADS9, HADS11, and HADS13. As per the original factor structure DEP was modelled to correlate with ANX. Each indicator was fixed to load onto the factor it was hypothesized to measure. Residual terms for all indicators are not correlated by default in Mplus and were left that way. Descriptive statistics for indicators are presented in Appendix (5).

The model had 14 dependent variables (indicators), 2 continuous latent variables (factors) and 43 free parameters. Model produced MLM χ^2 of 510.830 (p<0.001) with 76 degrees of freedom and reported correction value of 1.10; CFI= 0.72; RMSEA (90% CI) = 0.071 (0.066 – 0.077); SRMR = 0.070 implying relatively

poor fit to the data. Examination of the parameter estimates revealed that each factor loading was statistically significant. Similarly, there was statistically significant correlation between the two latent variables (i.e. depression and anxiety; Z = 6.67). The variance components of the factors were also statistically significant; indicating that the amount of variance accounted for by each factor is significantly different from zero. Although the overall fit of the hypothesised model was not excellent as indicated by the lower values of fit indices than they should be, parameter estimates of different hypothesized paths were significant and had expected sign which was encouraging.

To determine an optimal measurement model that best fits the data, modifications to the hypothesised model were made. On the basis of the modification indices model fit was likely to improve by loading item HADS8 on anxiety instead of depression and HADS7 on depression instead of anxiety. The new model revealed a better fit to the data; CFI= 0.90; RMSEA (90% CI) = 0.043(0.037 - 0.049); SRMR = 0.042. A significant χ^2 value was obtained using Satorra-Bentler Scaled Chi-Square test comparing the previous model with the modified one. The χ^2_{SB} value of 220.157 with 1 degree of freedom and p value of 0.000 was obtained suggesting that the newly added parameters are substantively meaningful. Examination of the parameters estimates revealed that that each factor loading was statistically significant, standard errors and residual variances all were in order. The final model including significant standardised coefficients is provided in Figure 6. The proportion of variance of each measured variable accounted for by the factor (R^2) is shown in Appendix (6).

Figure 6 shows the regression coefficients which were all significant, $p < 0.001$, suggesting measured variables are valid measures of the latent factors. Indicators of anxiety were medium to strong indicators of the factor with regression coefficients ranging from 0.35 to 0.60. In addition, the R^2 values corresponding to the variables indicate that anxiety explains a respectable portion of the variance (12% - 36%). Indicators of depression were medium indicators of the factor. R^2 values corresponding to the variables indicate depression explains 13% to 24% of the variance (between 12% and 36%) with HADS10 was the weakest predictor of depression with regression coefficient of 0.23 and R^2 value of 5%.

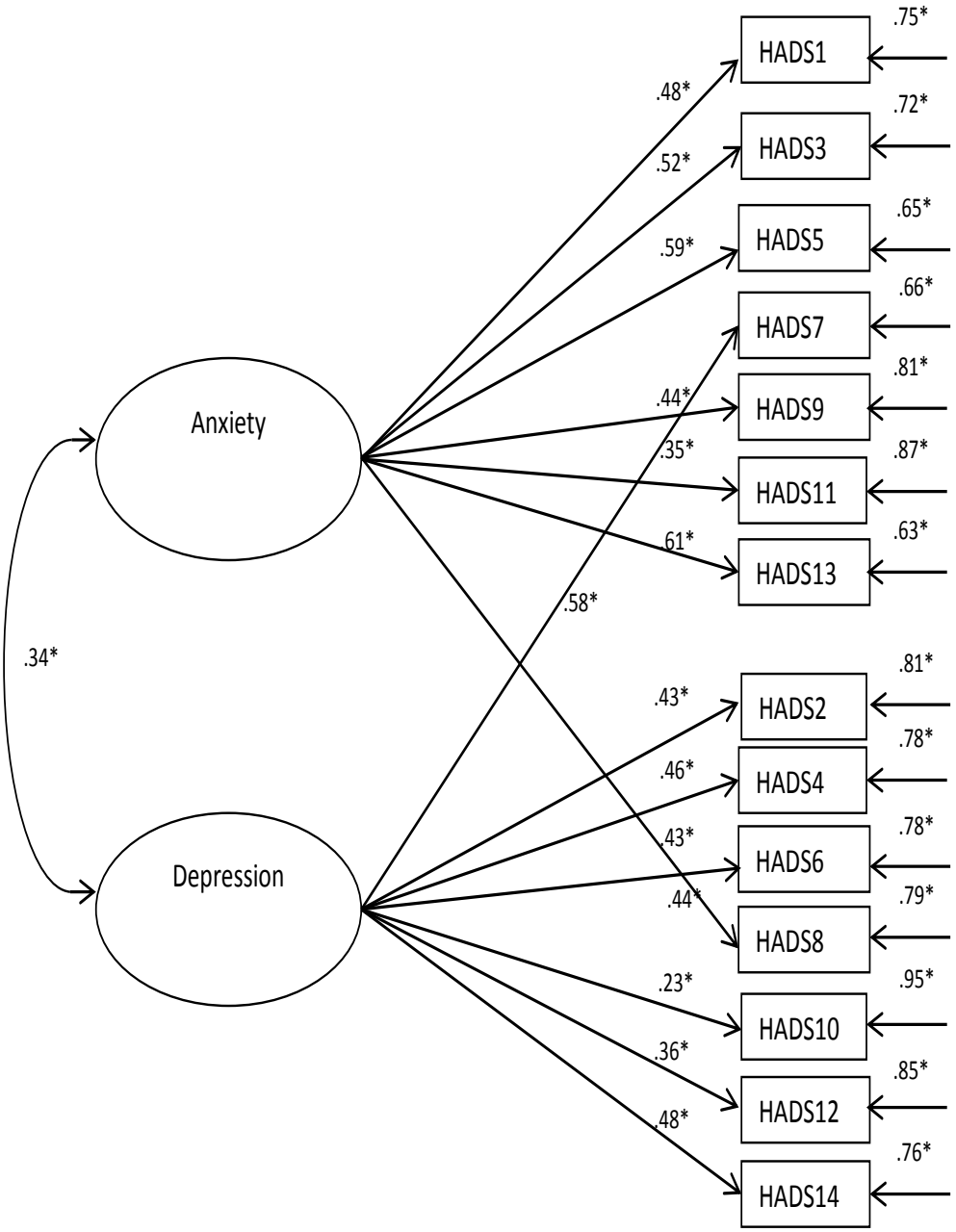

Figure 6. Confirmatory factor model modified for HADS with standardised robust maximum likelihood parameter estimates N = 1124. All coefficients are statistically significant, *$p < .001$

3.2.1.2 Well-being. Well-being among the participants was measured by BBC well-being Scale.

3.2.1.2.1 Cronbach's alpha reliability estimates for BBC well-being scale. Table 8 presents Cronbach's α reliability estimates for BBC well-being scale and its sub-scales for present study.

Table 8

Cronbach's alpha reliability estimates for BBC well-being scale and its sub-scales

Subscales	Present study (23 items)	Kinderman et al., 2011
Psychological well-being	0.83	0.92
Physical well-being	0.81	0.88
Relationship well-being	0.70 (4 items)	0.78 (5 items)
Total well-being	0.90	0.935

3.2.1.2.2 Confirmatory factor analysis for BBC well-being scale. An *a priori* three factor measurement model was hypothesised for BBC scale as proposed by the original authors of the scale. The model contained 23 measured variables (indicators). It was hypothesised that PSY (Psychological well-being) predicts BBC5, BBC6, BBC7, BBC8, BBC9, BBC10, BBC11, BBC12, BBC13, BBC14, BBC15, BBC16; PHY (Physical well-being) predicts BBC1, BBC2, BBC3, BBC4, BBC21, BBC22, and BBC23 and REL (relationships) predicts BBC17, BBC18, BBC19, and BBC20. As per the original factor structure all factors were modelled to correlate with each other. Each indicator was fixed to load onto the factor it was hypothesized to measure. Residual terms for all indicators are not correlated by default in Mplus and were left that way. Appendix (5) presents descriptive statistics for indicators.

The model had 23 dependent variables (indicators), 3 continuous latent variables (factors) and 72 free uncorrelated parameters. Model produced an excellent fit to the data (MLM χ^2 = 546.138 ($p<0.001$) with 227 degrees of freedom and reported correction value of 1.25; CFI= 0.953; RMSEA (90%CI) = 0.035 (0.032 – 0.039); SRMR = 0.032). Examination of the parameters estimates revealed that that each factor loading was statistically significant except for BBC5. The correlations between the hypothesized factors were also statistically significant. The variance components of the factors were also statistically significant; indicating that the amount of variance accounted for by each factor is significantly different from zero.

Therefore, BBC5 was dropped from the scale and remaining model was left as it was.

The modified model with 22 indicators had the same excellent fit with all parameter estimates significant (MLM χ^2 is 496.135 ($p<0.001$) with 206 degrees of freedom and reported correction value of 1.26; CFI= 0.957; RMSEA (90 %CI) = 0.035 (0.031 – 0.039); SRMR = 0.031). A significant χ^2 value was obtained using Satorra-Bentler Scaled Chi-Square test comparing the previous model with the modified one. The χ^2_{SB} value of 49.95 with 21 degree of freedom and p value of 0.000 was obtained suggesting that the newly added parameters are substantively meaningful. The final model including significant standardised coefficients is provided in Figure 7. The proportion of variance of each measured variable accounted for by the factor (R^2) is shown in Appendix (6).

Figure 7 shows regression coefficients which were all significant, $p < .001$, suggesting measured variables are valid measures of the latent factors. Indicators were medium to strong. BBC20 explained small portion of variance (15%).

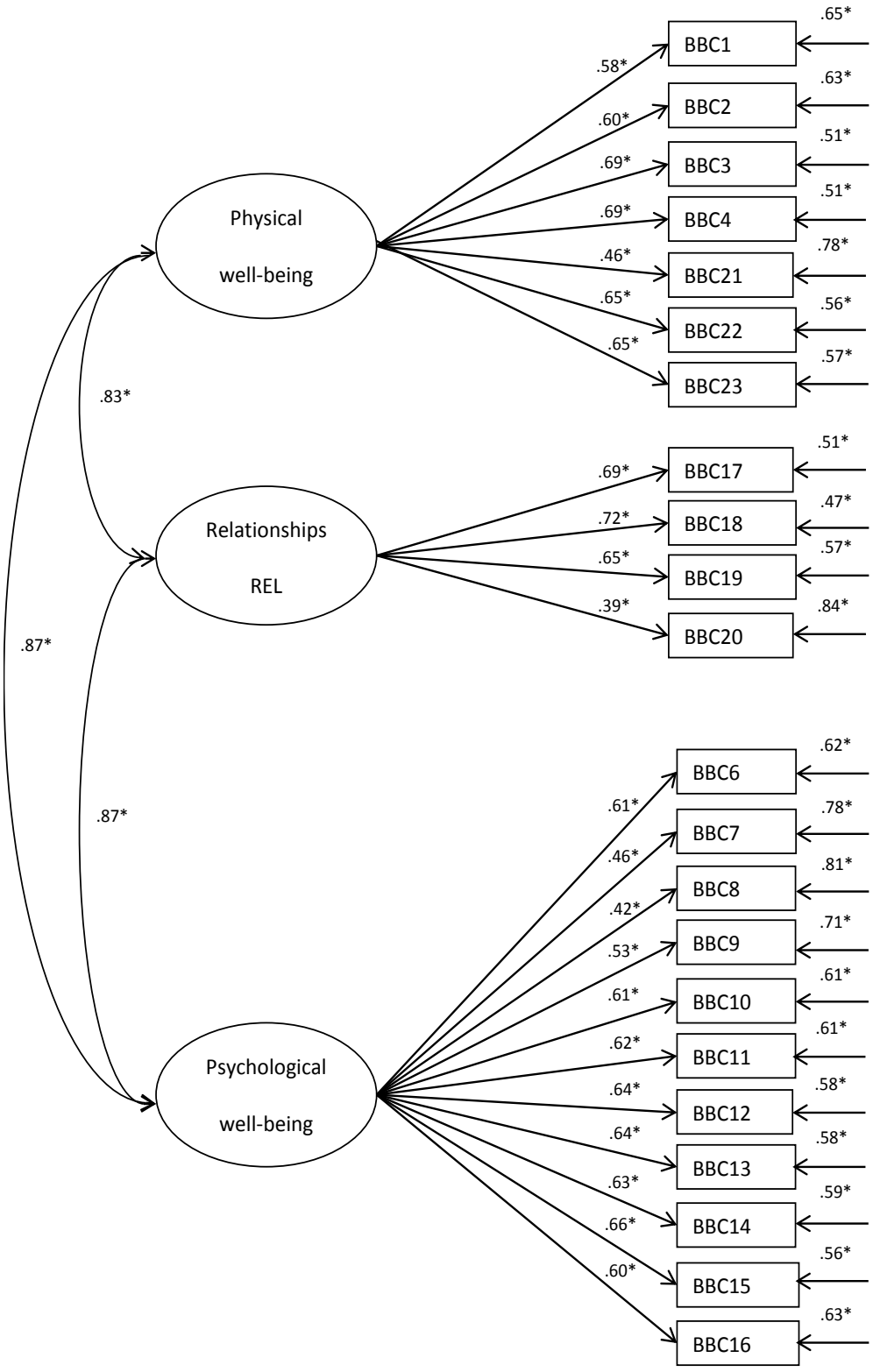

Figure 7. Confirmatory factor model modified for BBC well-being with standardized robust maximum likelihood parameter estimates N = 1124. All coefficients are statistically significant, *$p < .001$.

3.2.2 Correlates of mental health

Psychometric properties including CFA of each correlate are presented below. This section also includes results from the correlation tests showing that the correlates are associated with each other and with the outcome measures which is a prerequisite for SEM analysis.

3.2.2.1 Attachment style. Attachment *model of self and other* were used as a binary measured variables for final SEM. The descriptive statistics of attachment model of self and other are presented in Table 9.

Table 9

Frequency and percentage of participants on model of self and other

		f	%
Model of self	negative	531	47.2%
	positive	593	52.8%
Model of others	negative	522	46.4%
	positive	602	53.6%

Association between attachment *model of self* and depression was statistically significant χ^2 (2, N = 1124) = 8.8, p = 0.012 with high rates of depression among those who viewed themselves negatively. The association between anxiety and *view of self* was statistically significant (χ^2 (2, N = 1124) = 29.59, p < 0.001) where negative *view of self* was associated with higher scores on anxiety. In terms of attachment *model of others*, no significant association was found with either depression (χ^2 (2, N = 1124) = 1.41, p = 0.49) or anxiety (χ^2 (2, N = 1124) = 0.63, p = 0.72).

Association between attachment *model of self and others* was tested against well-being scores with Mann-Whitney U test. Participants with high well-being scores had lower mean rank on *negative view of self* (511.18) and a higher mean rank on *positive view of self* (608.45) (z = -5.01, p < 0.001) but association between well-being and *view of others* was not statistically significant (z= -1.28, p = 0.19).

Participants reporting *negative view of others* had individualistic cultural orientation. Those with *positive view of self,* scored high on horizontal collectivistic

orientation. Participants with *negative view of others and positive view of self*, had vertical collectivistic orientation (Table 10).

Table 10

Association between attachment model of self and other and cultural orientation (n=1124)

		Model of self		Model of others	
		Mean Rank	Z(*p*)	Mean Rank	Z(*p*)
Horizontal collectivism	negative	533.07	-2.89(0.00)	568.28	-.56(0.57)
	positive	588.86		557.49	
Vertical collectivism	negative	537.23	-2.48(0.01)	592.73	-2.92(0.00)
	positive	585.12		536.29	
Horizontal Individualism	negative	545.57	-1.66(0.09)	598.82	-3.51(0.00)
	positive	577.66		531.01	
Vertical Individualism	negative	546.77	-1.54(0.12)	592.95	-2.94(0.00)
	positive	576.59		536.10	

Mann-Whitney U test was conducted to explore the association between attachment *model of self and other* and participant's report of parental bonding (Table 11). In terms of parental care, participants having positive *view of self*, ranked significantly high on care from father. Participants having *positive view of other* scored high on protection from both parents. Participants rating their parents high on authoritarian parenting had *negative view of self and others*; however, this association was not significant between mother's authoritarianism and *negative view of self*.

Table 11

Association between attachment style and parental bonding (n=1124)

		Model of self		Model of others	
		Mean Rank	Z(*p*)	Mean Rank	Z(*p*)
Father's warmth	negative	538.32	-2.37(0.01)	551.22	-1.09(0.27)
	positive	584.15		572.28	
Mother's warmth	negative	550.16	-1.21(0.22)	582.29	-1.92(0.05)
	positive	573.55		545.34	
Father's protectiveness	negative	558.12	-.431(0.66)	521.53	-3.96(0.00)
	positive	566.42		598.02	
Mother's protectiveness	negative	574.19	-1.15 (0.25)	540.32	-2.14(0.03)
	positive	552.03		581.73	
Father's authoritarianism	negative	583.87	-2.09(0.03)	585.43	-2.21(0.02)
	positive	543.36		542.62	
Mother's authoritarianism	negative	578.49	-1.57(0.11)	583.49	-2.02(0.04)
	positive	548.18		544.30	

3.2.2.2 Reliability estimates for ARSQ. ARSQ has been used as a categorical measure in this study. However, very low alpha reliability estimates were found for ARSQ. Fearful sub-scale had alpha value of 0.47; secure sub-scale had alpha value of 0.11, preoccupied scale had an alpha of 0.24. Alpha value of 0.31 was computed for dismissing scale.

3.2.2.2 Parental Bonding. To investigate adolescents perceived parenting style Parental Bonding Instrument (Parker et al., 1979) was used which has three subscales namely: warmth (median= 18, range= 0-21 for mother and median= 16, range= 3-21 for father), protection (median=8, range= 0-15 for father and median= 8, range= 0-15) and authoritarianism (median=5, range= 0-12 for father and median= 4, range= 0-12).

Table 12 gives the inter-correlations between the mother and father sub-scales on PBI. Warmth was negatively associated with protectiveness and authoritarianism for both mother and father report.

Table 12

Correlations between PBI mother and father sub-scales and inter-correlations between sub-scales (n = 1124)

	FW	FP	FA	MW	MP	MA
FW	1					
FP	-0.08**	1				
FA	-0.27**	-0.09**	1			
MW	0.47**	-0.12**	-0.13**	1		
MP	-0.08**	0.64**	-0.14**	-0.14**	1	
MA	-0.17**	-0.08**	0.73**	-0.15**	-0.12**	1

**. Correlation is significant at 0.01 level (2-tailed)
FW: father's warmth; MW: Mother's warmth; FP: Father's protectiveness; MP: Mother's protectiveness; FA: Father's authoritarianism; MA: Mother's authoritarianism.

Adolescents who perceived more warmth from their parents were likely to have better well-being, less depression and anxiety and those who perceived their parents as more protective reported higher rates of depression, anxiety and poor well-being. In terms of authoritarian parenting positive association was observed for depression and anxiety and negative for well-being for both mother and father (see Table 13).

Table 13

Correlations between PBI mother and father sub-scales and indicators of mental health (n = 1124)

	Depression	Anxiety	Well-being
Father Care	-0.25**	-0.16**	0.27**
Father protection	0.01	0.10**	-0.07*
Authoritarian father	0.10**	0.11**	-0.17**
Mother care	-0.29**	-.023**	0.33**
Mother protection	0.021	0.15**	-0.09**
Authoritarian mother	0.08**	0.10**	-0.16**

** Correlation is significant at the 0.01 level.

Care from parents was related to high perception of emotional and practical support and low discrepancy scores (Table 14). Higher the protection from parents and lower was the perception of emotional and practical support and higher the discrepancy. Authoritarianism by parents was associated with low emotional and practical perception of support.

Table 14

Correlations between PBI mother and father sub-scales and social support variables (n = 1124)

	Emotional support (ES) received	Practical support (PS) received	Discrepancy score for ES	Discrepancy score for PS
Father Care	0.23**	0.22**	-0.09**	-0.06*
Father protection	-0.04	0.00	0.11**	0.07*
Authoritarian father	-0.08**	-0.11**	-0.00	0.00
Mother care	0.26**	0.23**	-0.13**	-0.08*
Mother protection	-0.08**	-0.05	0.12**	0.06*
Authoritarian mother	-0.07*	-0.07*	-0.01	-0.04

** Correlation is significant at 0.01(2-tailed)

* Correlation is significant at 0.05(2-tailed)

3.2.2.2.1 Reliability estimates of PBI. The Cronbach's alpha reliability of each sub-scale of PBI was measured separately for mother and father forms. The sub-scale warmth for father and mother's form has $\alpha = 0.57$ and 0.61 respectively. The sub-scale protectiveness for father and mother's form has $\alpha = 0.48$ and 0.50 respectively. The sub-scale authoritarianism for father and mother's form has $\alpha = 0.67$ and 0.75 respectively.

3.2.2.2.2 Confirmatory factor analysis for PBI. Parental Bonding instrument has shown varying factor structure in past years. Therefore the original two factor structure proposed by Parker et al. (1979) for 25 item PBI, a three factor structure proposed by Kendler (1996) for the reduced version of PBI used in this study and the four factor model proposed by Uji et al. (2006) were tested individually for participant's responses for both mother and father. Firstly, a two factor structure was analysed for PBI as proposed by the original Parker et al. (1979). This model was

tested on both mother and father variables separately. The model contained 16 measured variables (indicators). It was hypothesised that C (Care) predicts PBI1, PBI4, PBI5, PBI11, PBI12, PBI17, and PBI18, and OP (Over-protection) PBI7, PBI8, PBI9, PBI13, PBI15, PBI19, PBI21, PBI23, and PBI25. It was also hypothesized that C would correlate with OP negatively. Each indicator was fixed to load onto the factor it was hypothesized to measure. Residual terms for all indicators are not correlated by default in Mplus and were left that way. Appendix (5) presents descriptive statistics for PBI mother scale indicators.

The model had 16 dependent variables (indicators), 2 continuous latent variables and 49 free parameters. The first hypothesised two factor model fitted the data poorly. Examination of the parameters estimates revealed that some of the factor loadings were very weak and one was not statistically significant. Fit indices obtained from the analysis are presented in Table 15.

Next a three factor structure was analysed for PBI as proposed by the Kendler (1996) for the16 items version of PBI used in the present study. The model contained 16 measured variables (indicators). It was hypothesised that W (warmth) predicts PBI1, PBI4, PBI5, PBI11, PBI12, PBI17, and PBI18, while nine items originally designed to predict over-protection were split into two factors called protectiveness and authoritarianism. P (Protectiveness) was hypothesized to predict PBI8, PBI9, PBI13, PBI19, and PBI23 while A (Authoritarianism) was hypothesized to predict PBI7, PBI15, PBI21, and PBI25. It was also hypothesized that all three factors would be negatively correlated with each other. Each indicator was fixed to load onto the factor it was hypothesized to measure. Residual terms for all indicators are not correlated by default in Mplus and were left that way.

The model had 16 dependent variables (indicators), 3 continuous latent variables (factors) and 51 free parameters.

Table 15

Fit indices from CFA of PBI mother and father scale

	2 Factor model		3 Factor model		4 Factor model		Modified 3 factor model	
	Mother	Father	Mother	Father	Mother	Father	Mother	Father
χ^2	627.164	586.408	627.164	586.408	305.874	405.527	260.446	330.958
df	101	101	101	101	98	98	86	86
p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CFI	0.83	0.80	0.83	0.80	0.93	0.89	0.94	0.90
TLI	0.80	0.77	0.80	0.77	0.92	0.85	0.93	0.88
SRMR	0.083	0.073	0.083	0.073	0.052	0.049	0.049	0.050
RMSEA	0.068	0.065	0.068	0.065	0.043	0.053	0.042	0.050
90% CI	0.063-0.073	0.060-0.071	0.063–0.073	0.060-0.071	0.038- 0.049	0.048- 0.058	0.037-0.048	0.045-0.056

Next a four factor structure was analysed for PBI as proposed by Uji et al. (2006). The model contained 16 measured variables (indicators). It was hypothesised that C (Care) predicts PBI1, PBI5, PBI11, PBI12 and PBI17 while INDIFF (Indifference) predicts PBI4 and PBI18. OP (Over-protection) was hypothesized to predict PBI8, PBI9, PBI13, PBI19, and PBI23 while Auto (Autonomy) was hypothesized to predict PBI7, PBI15, PBI21, and PBI25. It was also hypothesized that all four factors would be correlated with each other. Each indicator was fixed to load onto the factor it was hypothesized to measure. Residual terms for all indicators are not correlated by default in Mplus and were left that way. The model had 16 dependent variables (indicators), 4 continuous latent variables (factors) and 51 free parameters.

For PBI, the second model with three factors fitted the data better than the first hypothesized two factor model. Examination of the parameters estimates revealed that that each factor loading was statistically significant. Correlation between W and P was not statistically significant (Z = 0.95). The variance components of the three factors were statistically significant; indicating that the amount of variance accounted for by each factor is significantly different from zero. However the R^2 values for item 4 and item 23 were insignificant for mother variables while item18 has very low R^2 for mother variables. For father variables only item4 had insignificant R^2 while item 18 and item 23 had low R^2 value. These observations were true for both mother and father variables. These models were not the best fitting models and based on the modification indices the models were modified to produce optimally fitting models. During model modification item 23 was loaded on warmth instead of protectiveness and item 18 was cross-loaded on both warmth and protectiveness whereas item 4 was dropped from the model due to consistent insignificant R^2 during modification. This model fitted the data better. All coefficients obtained were statistically significant except correlation between MC and MP. The final model including significant standardised coefficients is provided in Figure 8.

The proportion of variance of each measured variable accounted for by the factor (R^2) is shown in Appendix (6). The four factor model also yielded a good fit

however, it was likely to be problematic in the full structural model as the fourth factors on both mother and father forms have only two indicators each. However, it was also tested in the final model. The model fit were good but the modified model of PBI gave a better fit therefore it was retained in the model. A significant χ^2 value was obtained using Satorra-Bentler Scaled Chi-Square test comparing the four factor model with the modified three factor model for both mother's and father's form. The χ^2_{SB} value of 47.23 and 75.51 respectively with 12 degree of freedom and p value of 0.000 was obtained suggesting that the newly added parameters are substantively meaningful.

Figure 8 show regression coefficients which were all significant, $p < .001$, suggesting measured variables are valid measures of the latent factors. PBIM5 was the strongest indicator of MC (mother care). R^2 values corresponding to the variables indicate MP explains a small portion of the variance (between 8% and 33%). Indicators of MA had moderate to strong standardised loadings (range 0.39 to 0.81).

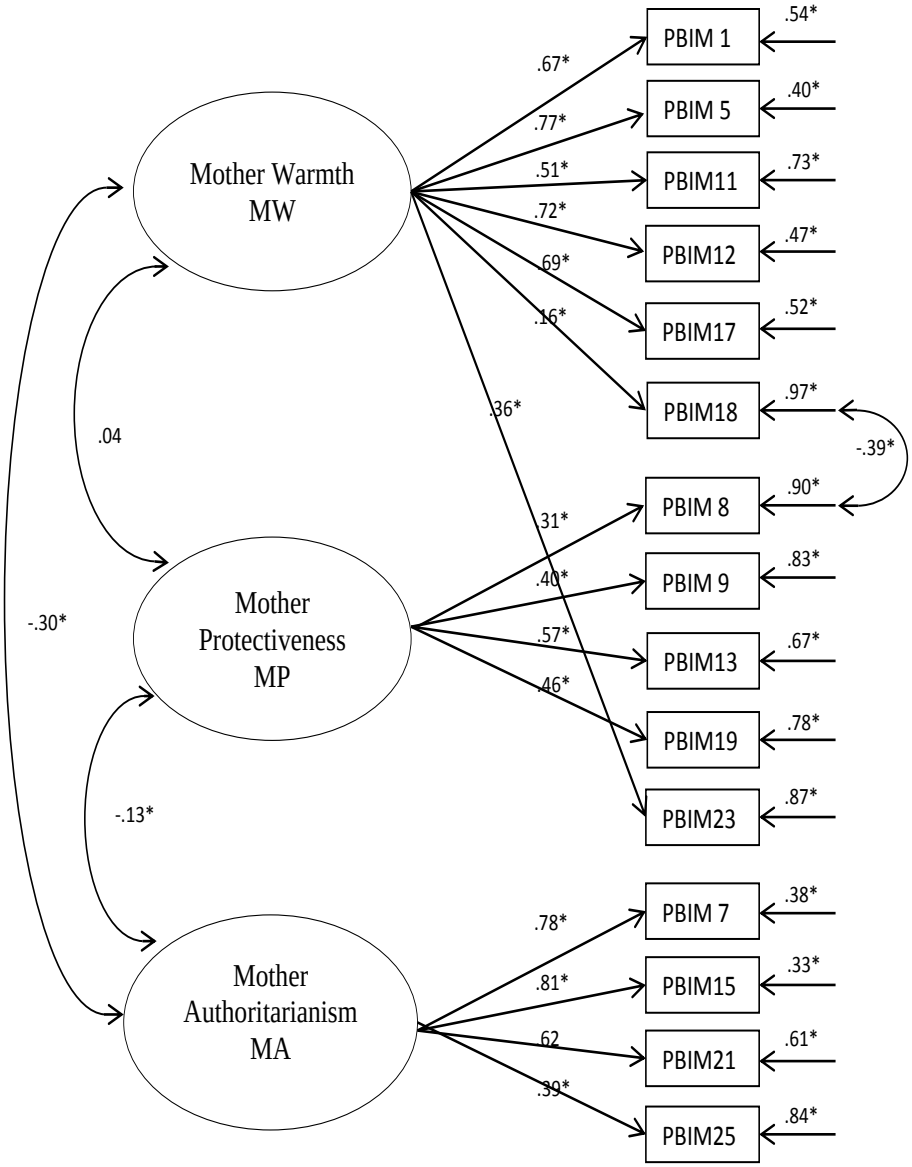

Figure 8. Confirmatory factor model modified for PBI (mother) with standardised robust maximum likelihood parameter estimates N = 1124. All coefficients are statistically significant, *$p < .001$.

For PBI father same process was repeated. Both two and three factor models did not fit the data very well therefore three factor model which was comparatively better fitting based on observation of parameter estimates was modified. During model modification item PBIF23 was loaded on care domain instead of protectiveness and items PBIF8 and PBI1F8 and PBIF15 and PBIF7 were correlated which resulted into a better fitting model. Furthermore PBIF4 was dropped because R^2 was not statistically significant. These modifications improved the model fit

(Table 15). Appendix (5) presents descriptive statistics for PBI father scale indicators. The final model including significant standardised coefficients is provided in Figure (9). The proportion of variance of each measured variable accounted for by the factor (R^2) is shown in Appendix (6).

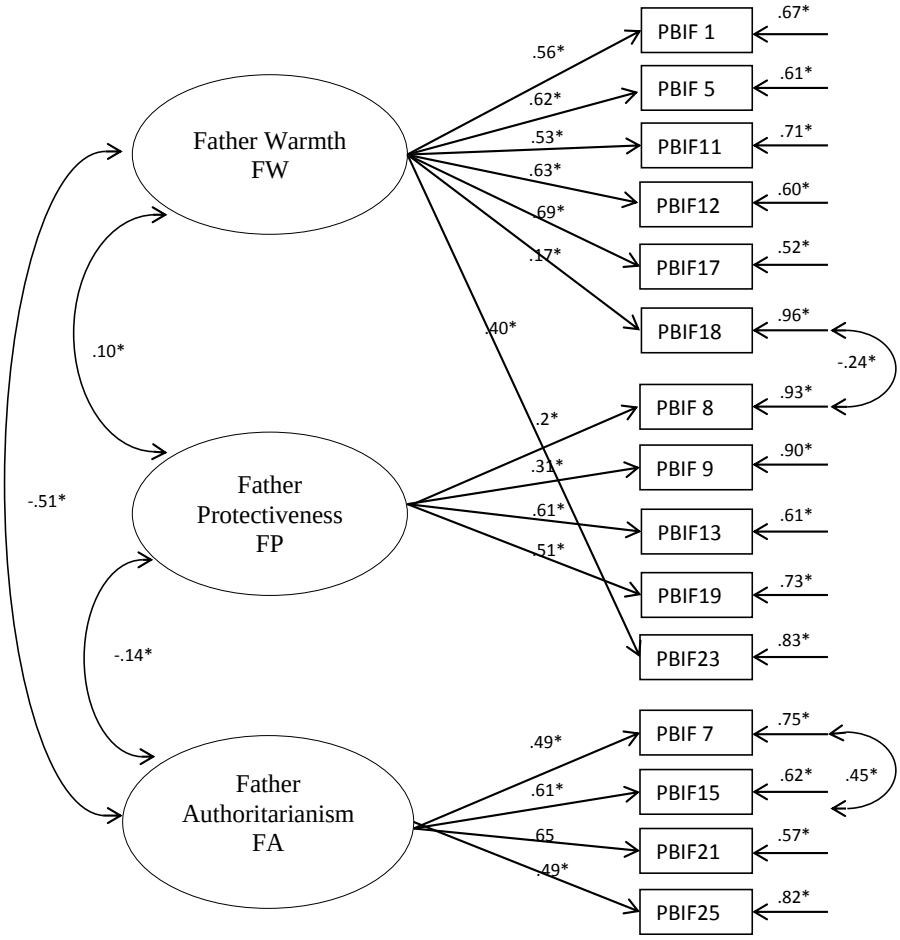

Figure 9. Confirmatory factor model modified for PBI (father) with standardised robust maximum likelihood parameter estimates N = 1124. *p < .001.

Figure 9 show regression coefficients which were all significant, $p < .001$, suggesting measured variables are valid measures of the latent factors. PBIF17 was the strongest indicator of FC (father care). R^2 values corresponding to the variables indicate FP explains a small portion of the variance (between 7% and 38%). Indicators of FA had moderate standardised loadings (range 0.49 to 0.65). In general

indicators of care and authoritarianism were stronger indicators of the constructs in comparison to protectiveness for both mother and father scale.

3.2.2.3 Social support. To investigate adolescents social support Significant Other's Scale (Power et al, 1988) was used which has six subscales namely actual emotional support (ES) (median= 14, range= 0-20), ideal emotional support (median= 14, range= 0-20), actual practical support (PS) (median=14, range= 0-20) ideal practical support (median= 14, range= 0-20), discrepancy in actual and ideal emotional support (median= 0, range= -3-4) and discrepancy in actual and ideal practical support(median= 0, range = -3-3).

It was observed that higher the levels of perceive support, higher was respondent's well-being and lower were the rates of depression and anxiety. Similarly higher the discrepancy scores higher were self-reported depression and anxiety and lower well-being (Table 16).

Perceptions of support were positively associated with all sub-scales of cultural orientation. Discrepancy in emotional support was associated with having a vertical collectivistic orientation only with those who rated themselves higher on vertical collectivism perceived less discrepancy in emotional support (ES) (Table 17).

Table 16

Correlations between social support variables and indicators of mental health (n = 1124)

	Depression	Anxiety	Well-being
ES received	-0.17**	-0.15**	0.28**
PS received	-0.15**	-0.13**	0.27**
Discrepancy in ES	0.10**	0.12**	-0.10**
Discrepancy in PS	0.06*	0.07*	-0.08*

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 17

Correlations between social support variables and cultural orientation (n = 1124)

	Horizontal collectivism	Vertical collectivism	Horizontal individualism	Vertical individualism
ES received	0.27**	0.22**	0.18**	0.16**
PS received	0.25**	0.18**	0.16**	0.14**
Discrepancy in ES	-0.05	-0.07*	0.01	0.01
Discrepancy in PS	-0.02	0.00	0.01	0.02

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

A Mann-Whitney U test was carried out between social support and attachment models of self and other (Table 18). The test showed that there was a statistically significant difference between negative and positive *view of self* and perceived discrepancy in practical support. Discrepancy in practical support was high for those who viewed themselves negative and others positive. Discrepancy in emotional support was significantly high for those who viewed themselves negative. No statistically significant associations were observed among the rest of the variables.

Table 18

Correlations between social support variables and attachment model of self and others (n = 1124)

		Model of self		Model of others	
		Mean Rank	Z(*p*)	Mean Rank	Z(*p*)
ES received	negative	550.92	-1.13(0.25)	554.04	-0.81(0.41)
	positive	572.87		569.83	
PS received	negative	549.78	-1.24(0.21)	549.34	-1.27(0.20)
	positive	573.89		573.91	
Discrepancy in ES	negative	593.50	-3.08(0.002)	547.07	-1.51(0.13)
	positive	534.75		575.88	
Discrepancy in PS	negative	586.11	-2.35(0.019)	535.91	-2.60(0.009)
	positive	541.36		585.56	

3.2.2.3.1 Reliability estimates for SOS. The Cronbach's α reliability estimate for SOS is 0.95.

3.2.2.3.2 Confirmatory factor analysis for SOS. For SOS scale items pertaining to emotional and physical support were analysed for factor structure. The discrepancy in received and ideal emotional and practical support where calculated from items pertaining to received and ideal emotional and practical support so they were violating the assumption for SEM. Furthermore, items measuring ideal support where not useful as they are only used for calculating the discrepancy scores. Therefore an *a priori* one factor structure was hypothesized for SOS. The model contained 4 measured variables (indicators). It was hypothesised that PSS (perceived social support) predicts perceived emotion support variables SS1, SS2 and perceived practical support variables SS3 and SS4. The indicators were fixed to load onto the hypothesized factor. Residual terms for all indicators are not correlated by default in Mplus and were left that way. Appendix (5) presents descriptive statistics for social support indicators. The model had 4 dependent variables (indicators), 1 continuous latent variable (factor) and 12 free parameters.

The hypothesised model fitted the data very well, MLM χ^2 is 7.152 (p=0.028) with 71 degrees of freedom and reported correction value of 1.73; CFI= 0.99; RMSEA = 0.048 (0.013 – 0.088); SRMR = 0.008. Examination of the parameters estimates revealed that that each factor loading was statistically significant. The variance components of the factor were also statistically significant; indicating that the amount of variance accounted for by factor is significantly different from zero. The model including significant standardised coefficients is provided in Figure 10. The proportion of variance of each measured variable accounted for by the factor (R^2) is shown in Appendix (6).

Figure 10 show regression coefficients which were all significant, $p < .001$, suggesting measured variables are valid measures of the latent factor. Variables SS1, SS2, SS3 and SS4 were strong indicators of PSS (perceived social support), with regression coefficients ranging 0.80 to 0.87. In addition, the R^2 values corresponding to the variables indicate that PSS explains a respectable portion of the variance (between 64% and 75%).

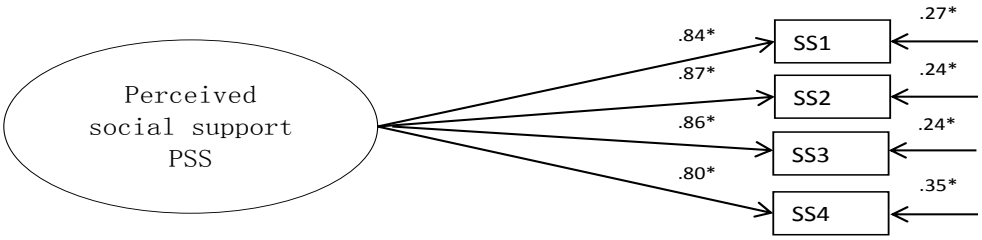

Figure 10. Confirmatory factor model modified for PSS with standardised robust maximum likelihood parameter estimates N = 1124. All coefficients are statistically significant, $*p < .001$.

3.2.2.4 Emotion regulation. To investigate the latent constructs related to emotion regulation strategies employed by the sample, the Regulation of Emotions Questionnaire (REQ; Phillips & Power, 2007) was used which has four subscales namely internal-function (IF: median = 16, range= 5-25), internal-dysfunction (ID: median=10, range=1-25), external-function (EF: median = 17, range 6-30) and external dysfunction (ED: median = 8, range 5-25).

The values of Spearman's rho with two tailed test (Table 19) show that adolescents using dysfunctional emotional regulation strategies score significantly high on depression and anxiety scales. Those who reported using more functional strategies scored significantly low on depression scale. However, the association between anxiety and internal function strategies was not significant whereas negative association was significant between anxiety and external functional strategies. More use of dysfunctional strategies and less was the well-being among participants where as more use of functional strategies and higher was the well-being.

Table 19

Association between emotion regulation subscales and indicators of mental health (n=1124)

	Depression	Anxiety	Well-being
Internal dysfunction	0.28**	0.39**	-0.21**
Internal function	-0.15**	0.04	0.27**
External dysfunction	0.20**	0.26**	-0.13**
External function	-0.20**	-0.09**	0.29**

** Correlation significant at 0.01

* Correlation significant at 0.05

Social support was significantly associated (Table 20) with the emotion regulation subscales as explored with two tailed Spearmen's test. Dysfunctional emotion regulation strategies increased with increase in discrepancy scores in practical (PS) and emotional support (ES). Functional emotion regulation strategies increased with increase in emotional and practical support.

Table 20

Association between emotion regulation strategies and social support variables (n=1124)

	ES received	PS received	Discrepancy in ES	Discrepancy in PS
ID	-0.03	-0.06*	0.07*	0.10**
IF	0.18**	0.16**	0.06	0.05
ED	-0.01	-0.02	0.07*	0.11**
EF	0.22**	0.21**	0.02	0.02

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Spearman's rho two-tailed tests (Table 21) showed that significant negative relationship between care from parents and use of dysfunctional strategies to regulated emotions where those who received less care were more likely to employs these strategies. This association was not significant for mother's care and internal dysfunctional strategies. Similarly a positive relationship was observed between high care from mother and father and use of external functional strategies. However, internal functional strategies were only significantly associated with care from father but not from mother.

Table 21

Association between emotion regulation strategies and parental bonding

	Warmth		Authoritarianism		Protectiveness	
	Father	Mother	Father	Mother	Father	Mother
ID	-0.11**	0.04	0.06*	-0.15**	0.00	0.09**
IF	0.07*	-0.02	-0.04	0.08**	-0.06	-0.02
ED	-0.09**	-0.07*	0.08**	-0.15**	-0.09**	0.15**
EF	0.18**	-0.17**	0.04	0.17**	-0.16**	0.04

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

In terms of protection from mother and father, Spearman's test supports positive association with dysfunctional strategies. However association between father's protection and use of internal dysfunctional strategies was not statistically significant. Authoritarian parenting significantly correlated with external dysfunctional and functional strategies but not with internal functional and dysfunctional strategies in case of father's authoritarianism.

The results of Mann-Whitney U test suggest that there is no statistically significant difference between the underlying distributions of the external dysfunction scores of participants with *view of self* ($z = -1.13$, $p = 0.25$). However, a statistically significant difference was observed between the underlying distributions of the internal dysfunction scores of participants with *view of self* ($z = -3.85$, $p < 0.001$) which shows that those with positive *view of self*, use less dysfunctional strategies to regulate emotions. In terms of functional strategies, both internal and external functional strategies were non-significantly related to *view of self* ($z = -.81$, $p = 0.42$; $z = -1.69$, $p = 0.09$).

There is a statistically significant difference between the underlying distributions of the functional emotion regulation strategies of participants with *view of other* ($z = -2.34$, $p = 0.05$; $= z = -2.00$, $p = 0.05$) with those having positive *view of others* ranked lower on using functional strategies. However, no statistically significant difference was observed between the underlying distributions of the dysfunctional emotion regulation scores of participants with *view of others* ($z = -1.10$, $p < 0.27$; $z = -1.01$, $p = 0.28$).

3.2.2.4.1 Reliability estimates of REQ. Table 22 shows the Cronbach's alpha reliability estimates for REQ sub-scales for present study in comparison to Phillips & Power's (2007) study.

Table 22

Cronbach's alpha reliability estimates for REQ

Scales	Present study	Phillips and Power, 2007
Internal dysfunction	0.62	0.72
Internal function	0.69	0.76
External dysfunction	0.67	0.76
External function	0.62	0.66

3.2.2.4.2 Confirmatory factor analysis for REQ. *A priori* four factor measurement model was hypothesised for REQ as proposed by the authors of the scale (Phillips & Power, 2007). The model contained 21 measured variables (indicators). It was hypothesised that ID (internal dysfunction) predicts REQ5, REQ7, REQ14, REQ15 and REQ19, IF (internal function) predicts REQ4, REQ9, REQ11, REQ12 and REQ16, and ED (external dysfunction) predicts REQ2, REQ10, REQ13, REQ17 and REQ18 and EF (external function) predicts REQ1, REQ3, REQ6, REQ8, REQ20 and REQ21. As per the original factor structure ID was modelled to correlate with ED and IF was correlated with EF. Each indicator was fixed to load onto the factor it was hypothesized to measure. Residual terms for all indicators are not correlated by default in Mplus and were left that way. Appendix (5) presents descriptive statistics for indicators. The model had 21 dependent variables (indicators), 4 continuous latent variables (factors) and 69 free parameters.

The hypothesised model fitted the data marginally, MLM χ^2 is 749.803 (p<0.001) with 183 degrees of freedom and reported correction value of 1.22; CFI= 0.82; RMSEA (90% CI) = 0.052 (0.049 – 0.056); SRMR = 0.054. Examination of the parameters estimates revealed that that each factor loading was statistically significant, as well as the correlation between the ID and If (Z = 7.471) and EF and IF latent factors (Z = 8.231). The variance components of the four factors were also statistically significant; indicating that the amount of variance accounted for by each factor is significantly different from zero.

To determine an optimal measurement model that best fits the data modifications to the hypothesised model were made. On the basis of the modification indices model fit was likely to improve by correlating residual terms of some indicators and by correlating all the latent variables with each other. By correlating the errors terms of REQ20 WITH REQ21; REQ18 WITH REQ19; and REQ12 WITH REQ111 a substantial improvement in the fit of the model was expected.

After introducing these error covariances and latent variable correlations in the previous model, the new model revealed a better fit of the data MLM χ^2 is 618.983 (p<0.001) with 180 degrees of freedom and reported correction value of 1.21; CFI= 0.87; RMSEA = 0.041 (0.043 - 0.057); SRMR = 0.045. A significant χ^2

value was obtained using Satorra-Bentler Scaled Chi-Square test comparing the previous model with the modified one. The χ^2_{SB} value of 91.09 with 3 degree of freedom and p value of 0.000 was obtained suggesting that the newly added parameters are substantively meaningful.

Examination of the parameters estimates revealed that that each factor loading was statistically significant, standard errors and residual variances all were in order. The final model including significant standardised coefficients is provided in Figure 11. The proportion of variance of each measured variable accounted for by the factor (R^2) is shown in Appendix (6). The model was likely to improve by allowing more residual variances to correlate with each other but these were less theoretically supported.

Figure 11 shows regression coefficients which were all significant, $p < .001$, suggesting measured variables are valid measures of the latent factors. Variables REQ5, REQ7, REQ14, REQ15 and REQ19 were medium to strong indicators of ID (Internal dysfunction), with regression coefficients ranging 0.39 to 0.54. In addition, the R^2 values corresponding to the variables indicate ID explains a respectable portion of the variance (between 15% and 31%). Indicators of IF (Internal function), had moderate to strong standardised loadings ranging from 0.42 to 0.68. R^2 values corresponding to the variables indicate IF explains a respectable portion of the variance (between 17% and 46%). The best indicator of ED (External dysfunction) was REQ18, *standardised* β = 0.63. EF (External function) explained 15 to 23% variance of its indicators.

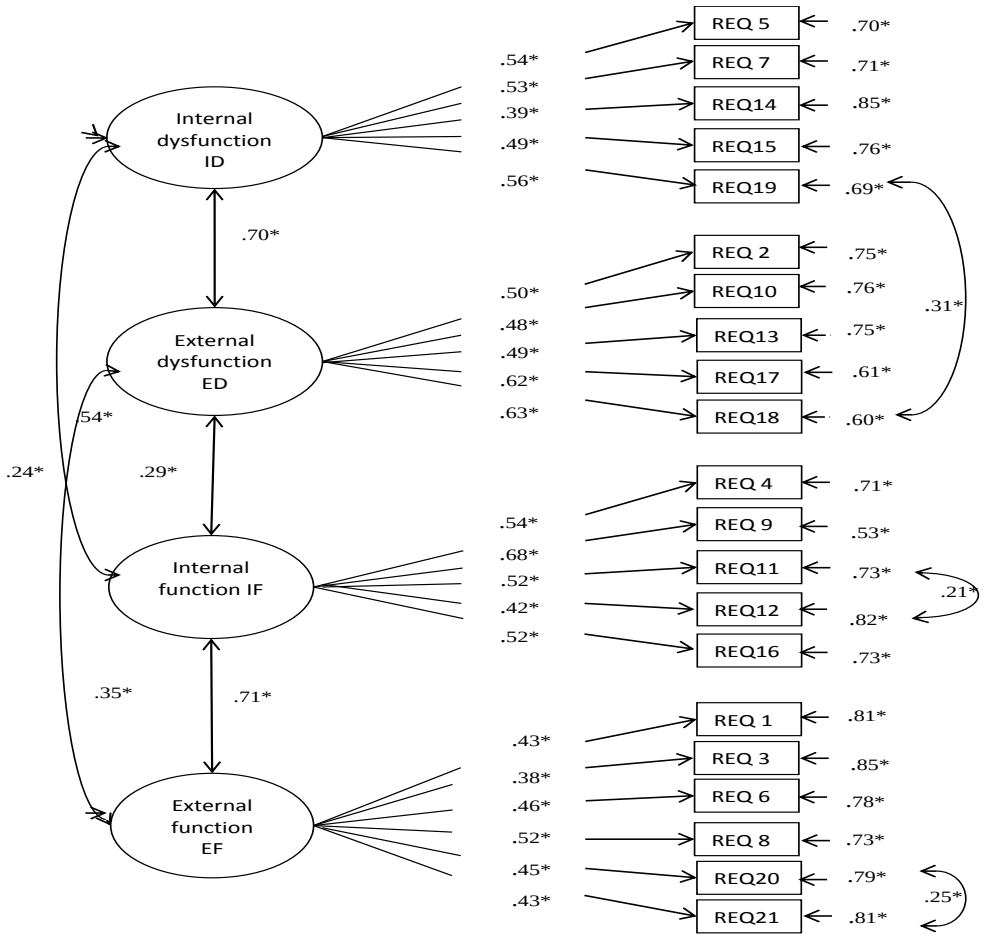

Figure 11. Confirmatory factor model modified for REQ with standardised robust maximum likelihood parameter estimates N = 1124. All coefficients are statistically significant, *$p < .001$.

3.2.2.5 Cultural Orientation. To investigate the cultural orientation of the sample short form of Horizontal and Vertical Individualism and Collectivism Scale (HVICS) (Sivadas et al., 2008) was used which has four subscales namely horizontal collectivism (median= 15.50, range= 4-20), vertical collectivism (median=14, range= 4-20), horizontal individualism (median = 9, range= 3-15) and vertical individualism (median = 10, range 3-15).

Participants who scored high on collectivism dimensions had lower depression and anxiety scores and higher well-being scores. Participants who scored high on individualism had lower score on depression and higher scores on well-being and no association with anxiety was observed (Table 23).

Table 23

Spearman's rho association between cultural orientation and indicators of mental health (n=1124)

	Depression	Anxiety	Well-being
Horizontal collectivism	-0.29**	-0.17**	0.45**
Vertical collectivism	-0.27**	-0.13**	0.39**
Horizontal Individualism	-0.15**	0.05	0.26**
Vertical Individualism	-0.18**	-0.02	0.26**

** Correlation is significant at 0.01(2-tailed)

Table 24

Correlation between emotion regulation and cultural orientation (n=1124)

	Internal dysfunctional	Internal functional	External dysfunctional	External functional
Horizontal collectivism	0.02	0.32**	-0.07*	0.32**
Vertical collectivism	0.08**	0.31**	-0.07*	0.19**
Horizontal individualism	0.17**	0.29**	0.28**	0.21**
Vertical individualism	0.15**	0.29**	0.17**	0.22**

**. Correlation significant at 0.01 level
*. Correlation significant at 0.05 level

An interesting negative association was found between external dysfunctional strategies and having collectivistic cultural orientation (Table 24). Both functional and dysfunctional strategies showed significant positive associations with having an individualistic orientation. Horizontal and vertical collectivistic orientation associated positively with functional strategies. The association between internal dysfunction and vertical collectivism was significantly positive; however it was not significant with horizontal collectivism.

3.2.2.5.1 Reliability estimates of HVICS. The Cronbach's alpha reliability of each sub-scale of HVICS was measured. The sub-scale Horizontal collectivism has $\alpha = 0.66$; Vertical collectivism has $\alpha = 0.46$; Horizontal individualism with $\alpha = 0.47$ and Vertical individualism with α value of 0.58.

3.2.2.5.2 Confirmatory factor analysis for HVICS. A four factor structure was hypothesised for horizontal and vertical individualism and collectivism scale as proposed by the authors of the scale. The model contained 14 measured variables (indicators). It was hypothesised that HC (Horizontal collectivism) predicts HVICS1,

HVICS5, HVICS10, and HVICS14, VC (Vertical collectivism) predicts HVICS2, HVICS3, HVICS7, and HVICS12, and HI (Horizontal individualism) predicts HVICS6, HVICS8, and HVICS11 and VI (Vertical individualism) predicts HVICS4, HVICS9, and HVICS13. It was also hypothesized that HC would correlate with VC and HI would correlate with VI. Each indicator was fixed to load onto the factor it was hypothesized to measure. Residual terms for all indicators are not correlated by default in Mplus and were left that way. Appendix (5) presents descriptive statistics for indicators. The model had 14 dependent variables (indicators), 4 continuous latent variables (factors) and 48 free parameters.

The hypothesised model fitted the data very well, MLM χ^2 is 239.764 (p<0.001) with 71 degrees of freedom and reported correction value of 1.15; CFI= 0.92; TLI = 0.90; RMSEA (90% CI) = 0.046 (0.040 – 0.052); SRMR = 0.041. Examination of the parameters estimates revealed that that each factor loading was statistically significant, as well as the correlation between the HC and VC (Z = 9.09) and HI and VI latent factors (Z = 11.02). The variance components of the four factors were also statistically significant; indicating that the amount of variance accounted for by each factor is significantly different from zero. The model including significant standardised coefficients is provided in Figure (12). The proportion of variance of each measured variable accounted for by the factor (R^2) is shown in Appendix (6). However, it should be noted that the correlation between the hypothesized factors is very high above 0.80 in case of latent variables pertaining to individualism and nearly 1 in case of collectivism which is indicative of multicollinearity. This was also supported by the Mplus warning of: "the latent variable covariance matrix (psi) is not positive definite. This could indicate a negative variance/residual variance for a latent variable, a correlation greater or equal to one between two latent variables, or a linear dependency among more than two latent variables".

Figure 12 shows regression coefficients which were all significant, p < .001, suggesting measured variables are valid measures of the latent factors. Variables HVICS1, HVICS5, HVICS 10, and HVICS14 were strong indicators of HC (Horizontal collectivism), with regression coefficients ranging 0.54 to 0.63. In addition, the R^2 values corresponding to the variables indicate HC explains a

respectable portion of the variance (between 29% and 40%). Indicators of VC (Vertical collectivism) had moderate standardised loadings ranging from 0.36 to 0.49. R^2 values corresponding to the variables indicate HI (Horizontal individualism) explains a respectable portion of the variance (between 17% and 27%). The best indicator of VI (Vertical individualism) was HVICS4, *standardised* β = 0.64. VI explained a good 20% to 41% variance of its indicators.

In order to take into account very high correlations between individualism and collectivism sub-scales two alternative models were tested. First was a second order factor model. In this model two second order latent variables were hypothesized. The first order latent variable of HC and VC were hypothesized to load on a common second order latent variable of collectivism and the first order latent variable of HI and VI were hypothesized to load on a common second order latent variable of individualism. Additionally the variances of the higher order factors were fixed to one.

The second hypothesised model also fitted the data very well, MLM χ^2 is 239.963 (p<0.001) with 72 degrees of freedom and reported correction value of 1.15; CFI= 0.92; TLI = 0.90; RMSEA (90% CI) = 0.046 (0.039 – 0.052); SRMR = 0.041. A non-significant χ^2 value was obtained using Satorra-Bentler Scaled Chi-Square test comparing the previous model as comparison model keeping in view that it had lesser degrees of freedom with the modified one. The χ^2_{SB} value of 0.199 with 1 degree of freedom and p value of 0.65 was obtained suggesting that the newly added parameters are substantively meaningful and the previous model is not better compared to the newer one.

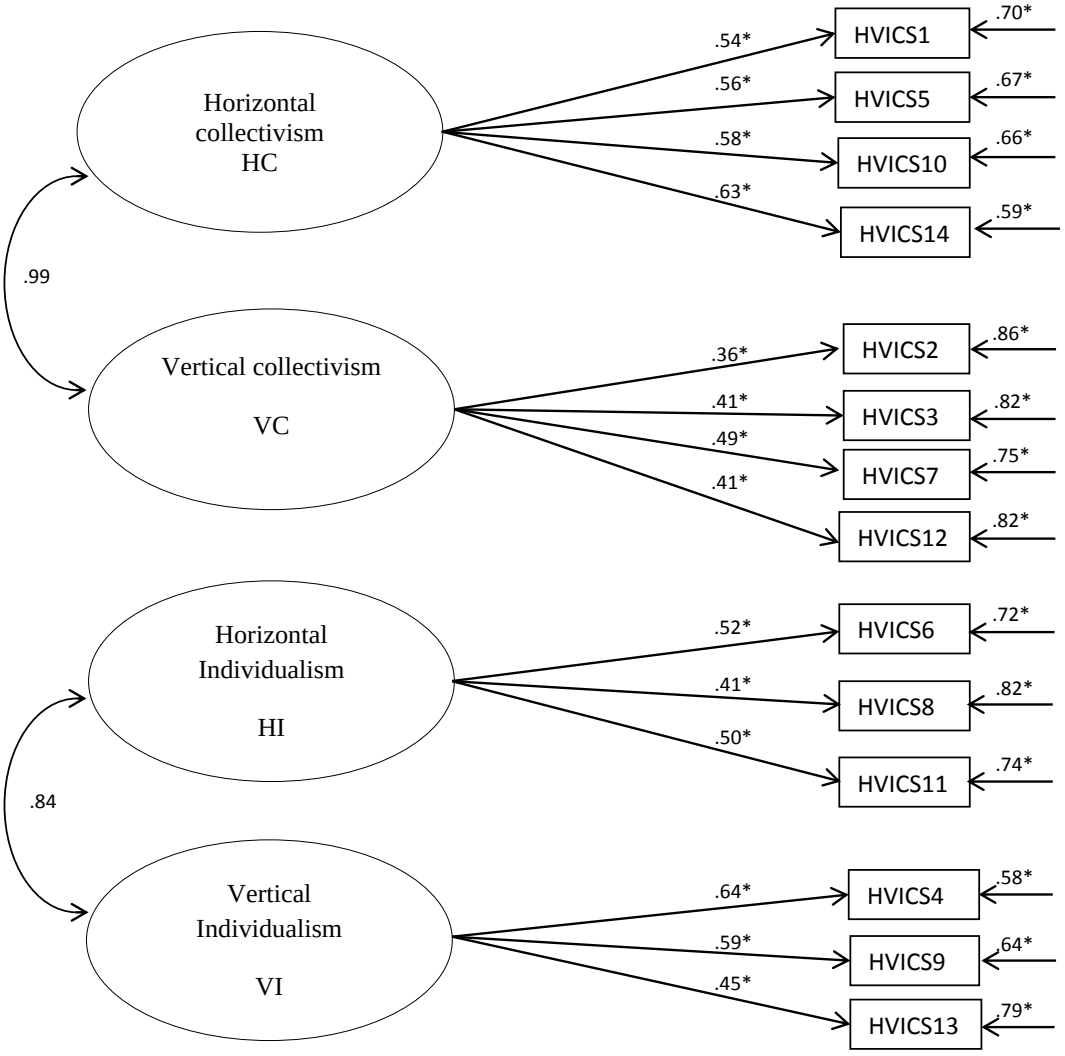

Figure 12. Confirmatory factor model modified for HVICS with standardised robust maximum likelihood parameter estimates N = 1124. All coefficients are statistically significant, *$p < .001$.

Examination of the parameters estimates revealed that that each factor loading was statistically significant. However, the residual variances of HC, VC and VI were negative and the previous warning message was again given by Mplus. Examination of covariances of the variables in the model revealed a correlation of equal to or higher than one between the hypothesized second order factors and there indicators (first order factors). This suggests that latent variables measure same construct. Therefore, a third two factor model was tested in which the indicators of both HC and VC were loaded on latent variable of collectivism (COL) and indicators

of HI and VI were loaded on latent factors of individualism (IND). The second hypothesised model also fitted the data very well, MLM χ^2_{SB} is 286.039 (p<0.001) with 76 degrees of freedom and reported correction value of 1.15; CFI= 0.90; TLI = 0.88; RMSEA (90% CI) = 0.050 (0.044 – 0.056); SRMR = 0.045.

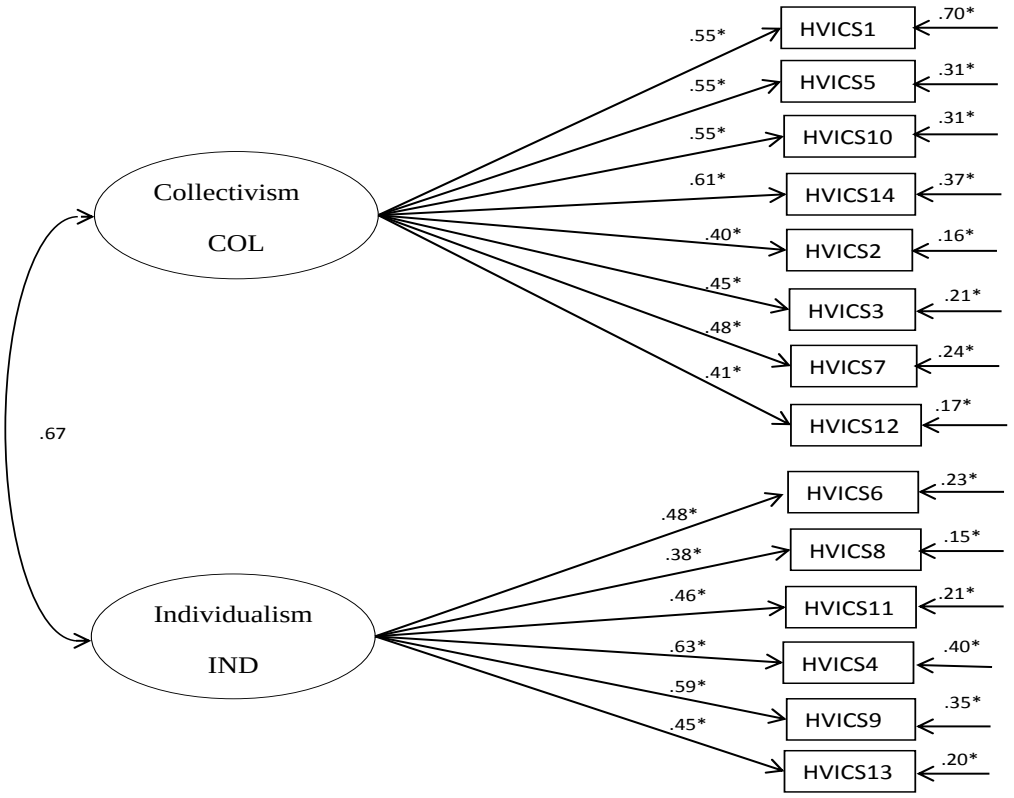

Figure 13. Two factor confirmatory factor model modified for HVICS with standardised robust maximum likelihood parameter estimates N = 1124. All coefficients are statistically significant, *p < .001.

Examination of the parameters estimate revealed that each factor loading was statistically significant. There were no negative residual variances and no warning message was given by Mplus. Though, fit indices of the model were good but were still slightly weaker than the previous model. Therefore both these models were used one by one in the main structural model as negative residual variances observed in previous model may disappear in the structural model. The second order factor model had negative residual variance in final model therefore the third model with two latent variables was tested.

The two factor model including significant standardised coefficients is provided in Figure 13. The proportion of variance of each measured variable accounted for by the factor (R^2) is shown in Appendix (6). HVICS14 and HVICS4 were strongest predictors of their respective constructs whereas HVICS12 and HVICS8 were weakest ones as measured by standardized beta coefficients and R^2 values.

3.3 Part III- Direct and indirect predictors of mental health

Pathways tested were based on the theoretical assumptions discussed earlier in the literature. This study hypothesised that attachment and parental bonding are direct predictors for Mental Health. This study hypothesised that social support and emotion regulation mediate the relation between attachment/parental bonding and mental health. This study hypothesised that cultural orientation will moderate the association between the above mentioned variables in predicting mental health or these variables will mediate the link between cultural orientation and mental health. To test this hypothesis *a priori* structural equation models were constructed and tested for model fit of the data and the direct and indirect pathways.

3.3.1 Direct predictors of mental health (hypothesis 4)

Model 1 (Figure 14) tested the direct effect of attachment on mental health. Model 1 had 5 latent variables, 2 categorical independent variables and 36 dependent variables. Two categorical independent variables were *model of self and other* which were added in structural model as observed variables. Residual terms for all indicators were uncorrelated and some factor covariances were free to be estimated as specified in CFA models.

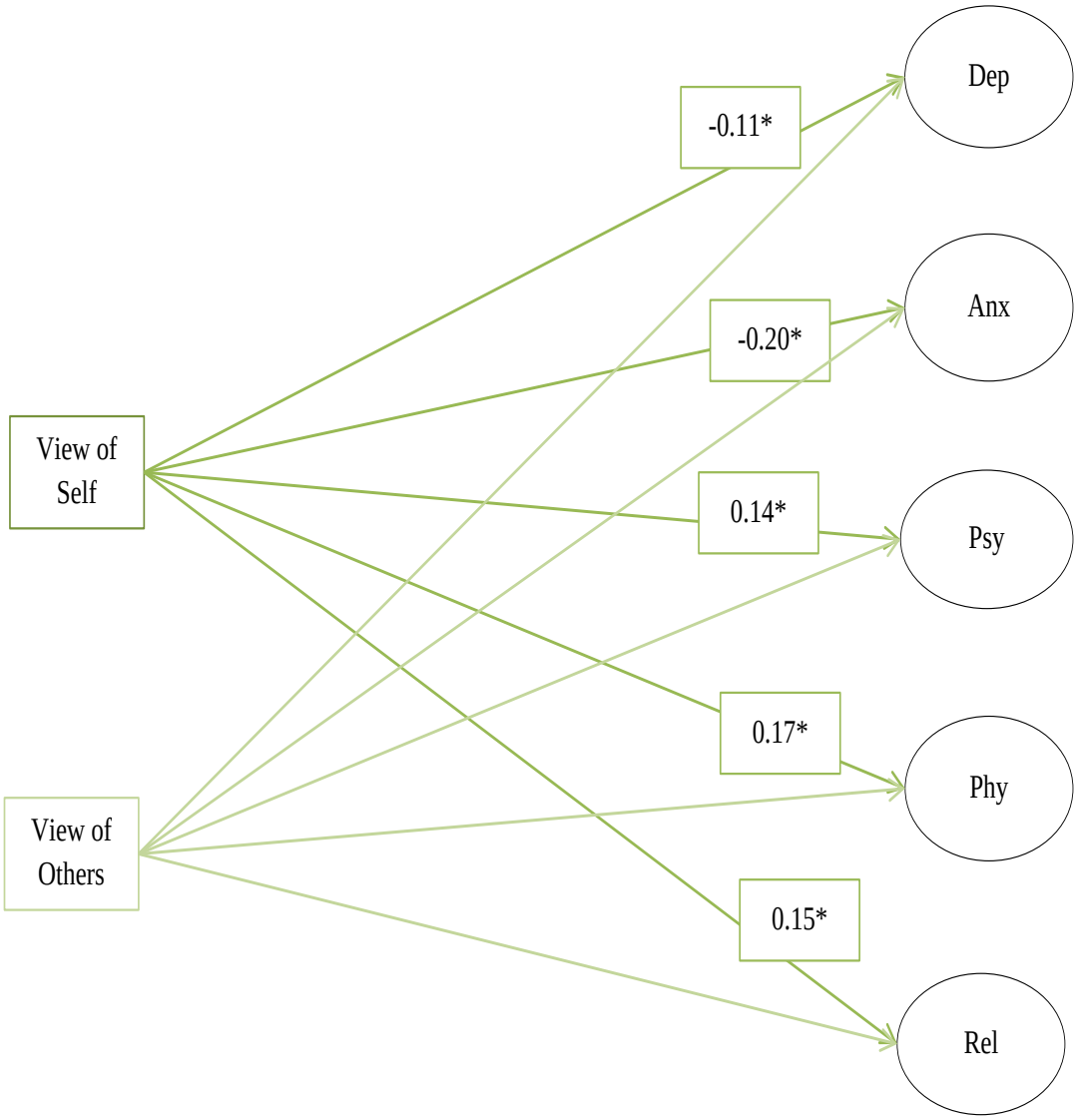

Figure 14. SEM for testing direct effect of model of self on mental health variables with standardised robust maximum likelihood parameter estimates N = 1124. Only coefficients which were statistically significant are shown *$p < .05$.

Model 1 had 129 free parameters. The hypothesised model yielded a good fit of the data, MLM χ^2 (645, N= 1124) = 1383.52*, $p < .001$; CFI = 0.92; RMSEA (90% CI) = 0.032 (0.030 – 0.034), SRMR= 0.038. Parameter estimates of the measurement model were all significant; $p < .001$, suggesting measured variables hypothesised as indicators are significantly associated with their respective factors, and they are valid measures of the latent factors.

Standardised beta coefficients show that negative *view of self*, predicted high depression, anxiety and low well-being (Figure 14). *View of others* had no significant effect on mental health.

Model 2 (Figure 15) tested direct effects of PBI on mental health. Model 2 has 14 latent variables and 66 dependent variables. Residual terms for all indicators were uncorrelated apart from those specified in individual measurement models, some factor covariances were free to be estimated. As PBI was used to assess parenting perceptions for both mother and father it was hypothesized that residual will correlate across the indicators of mother and father parental bonding. Furthermore, it was hypothesized that paternal and maternal warmth would predict a second order latent variable of parental warmth. Both paternal and maternal protectiveness and authoritarianism were loaded on second order latent variables of parental protectiveness and parental authoritarianism. These second order latent variables were correlated with each other.

Model 2 had 256 free parameters. The hypothesised model yielded a good fit of the data, MLM $\chi 2$ (2021, N= 1124) = 3576.18*, $p < .001$; CFI = 0.92; RMSEA (90% CI) = 0.026 (0.025 – 0.028), SRMR= 0.043. Parameter estimates of the measurement model were all significant; $p < .001$, suggesting measured variables hypothesised as indicators are significantly associated with their respective factors, and they are valid measures of the latent factors.

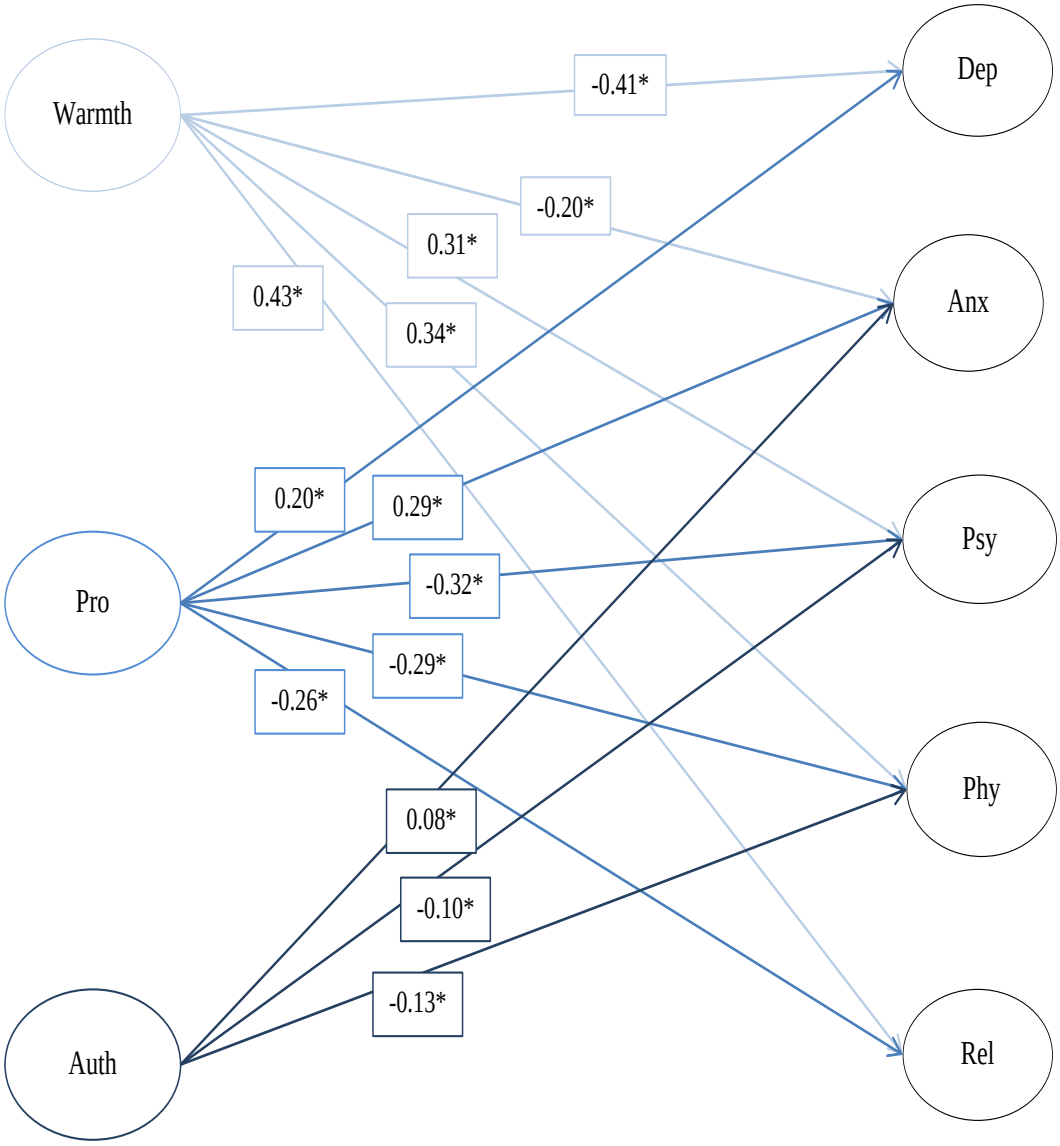

Figure 15. SEM for testing direct effect of parental bonding on mental health variables with standardised robust maximum likelihood parameter estimates N = 1124. Only coefficients which were statistically significant are shown *$p < .05$.

Standardised beta coefficients show that parental warmth predicted lower depression score and protectiveness predicted high depression score whereas no effect was observed for parental authoritarianism on depression. In case of anxiety parental warmth predicted lower scores and protectiveness and authoritarianism predicted high scores. Higher parental warmth, low protectiveness and

authoritarianism predicted both psychological and physical well-being whereas relationship well-being was only significantly predicted by high warmth and low protectiveness but not authoritarianism (Figure 15).

3.3.2 Indirect predictors of mental health (hypothesis 5, 6)

Model 3 (Figure 16) tested the indirect effect of attachment on mental health through perceived social support. Model 3 had 6 continuous latent variables, 2 categorical independent variables and 40 dependent variables. Model had 148 free parameters. The hypothesised model yielded a good fit of the data, MLM χ^2 (792, N= 1124) = 1615.96*, $p < .001$; CFI = 0.93; RMSEA (90% CI) = 0.030 (0.028 – 0.033), SRMR= 0.037. Parameter estimates of the measurement model were all significant; $p < .001$, suggesting measured variables hypothesised as indicators are significantly associated with their respective factors, and they are valid measures of the latent factors.

Standardised beta coefficients show that perceived social support independently predicts mental health and does not mediate the link between attachment *model of self and other* on mental health (Figure 16).

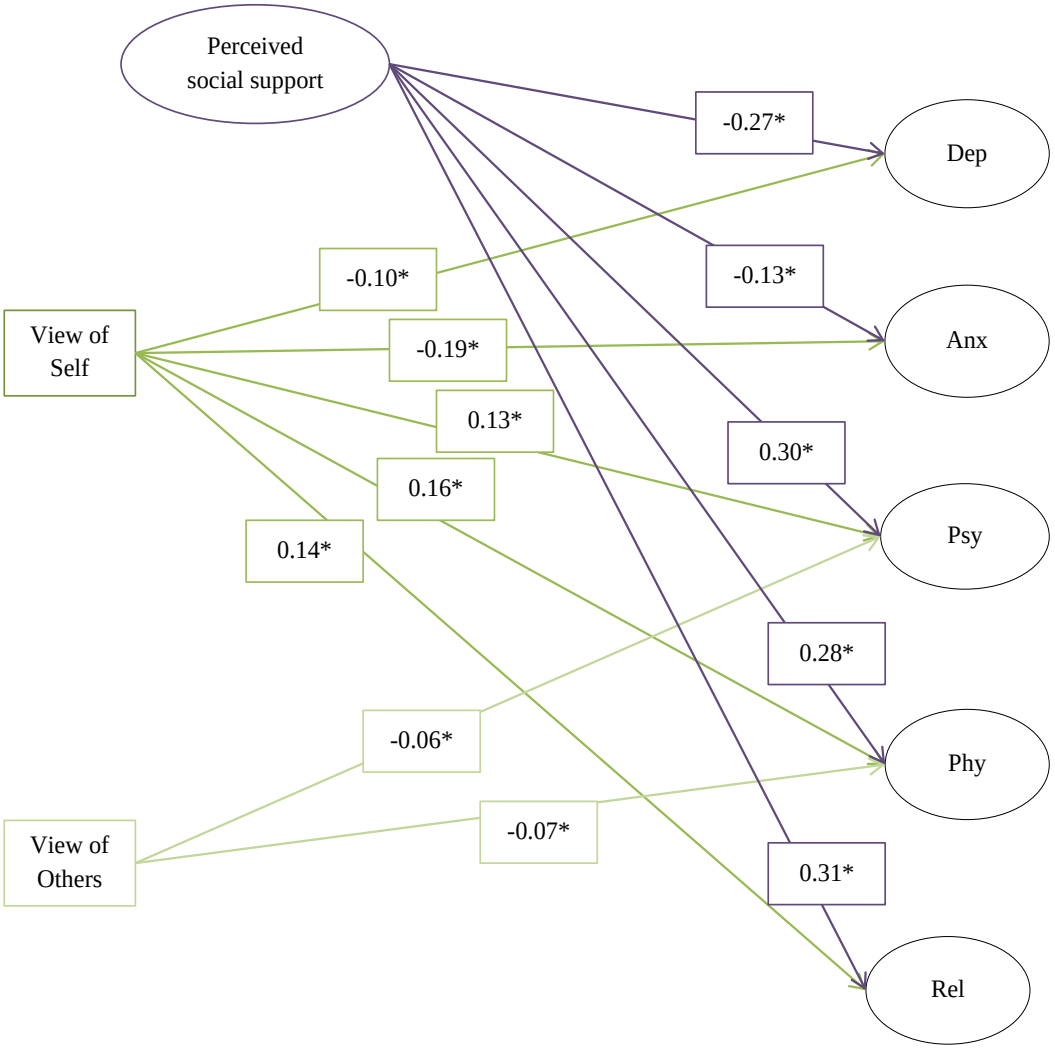

Figure 16. SEM for testing mediating role of perceived social support in relationship between attachment *model of self and others* on mental health variables with standardised robust maximum likelihood parameter estimates N = 1124. Only coefficients which were statistically significant are shown *$p < .05$.

Model 4 (Figure 17) tested indirect effects of PBI on mental health through perceived social support. Model 4 had 15 latent variables and 70 dependent variables. Residual terms for all indicators were uncorrelated other than those specified in CFA models and covariances between some factors were free to be estimated as specified in CFA models. As PBI was used to assess parenting perceptions for both mother and father it was hypothesized that residual will correlate across the indicators of mother and father parental bonding. Furthermore, it

was hypothesized that paternal and maternal warmth would predict a second order latent variable of parental warmth. Both paternal and maternal protectiveness and authoritarianism were loaded on second order latent variables of parental protectiveness and parental authoritarianism. These second order latent variables were correlated with each other.

Model 4 had 276 free parameters. The hypothesised model yielded a good fit of the data, MLM χ^2 (2279, N= 1124) = 3980.25*, $p < .001$; CFI = 0.92; RMSEA = 0.026 (0.024 – 0.027), SRMR= 0.042. Parameter estimates of the measurement model were all significant; $p < 0.001$, suggesting measured variables hypothesised as indicators are significantly associated with their respective factors, and they are valid measures of the latent factors.

Standardised beta coefficients showed partial support for the hypothesis such that perceived social support mediated the association between warmth, depression and well-being but not anxiety. It was significant mediator of association between protectiveness, depression and well-being but not anxiety. However, it was not found mediating the association between authoritarianism and mental health (Figure 17).

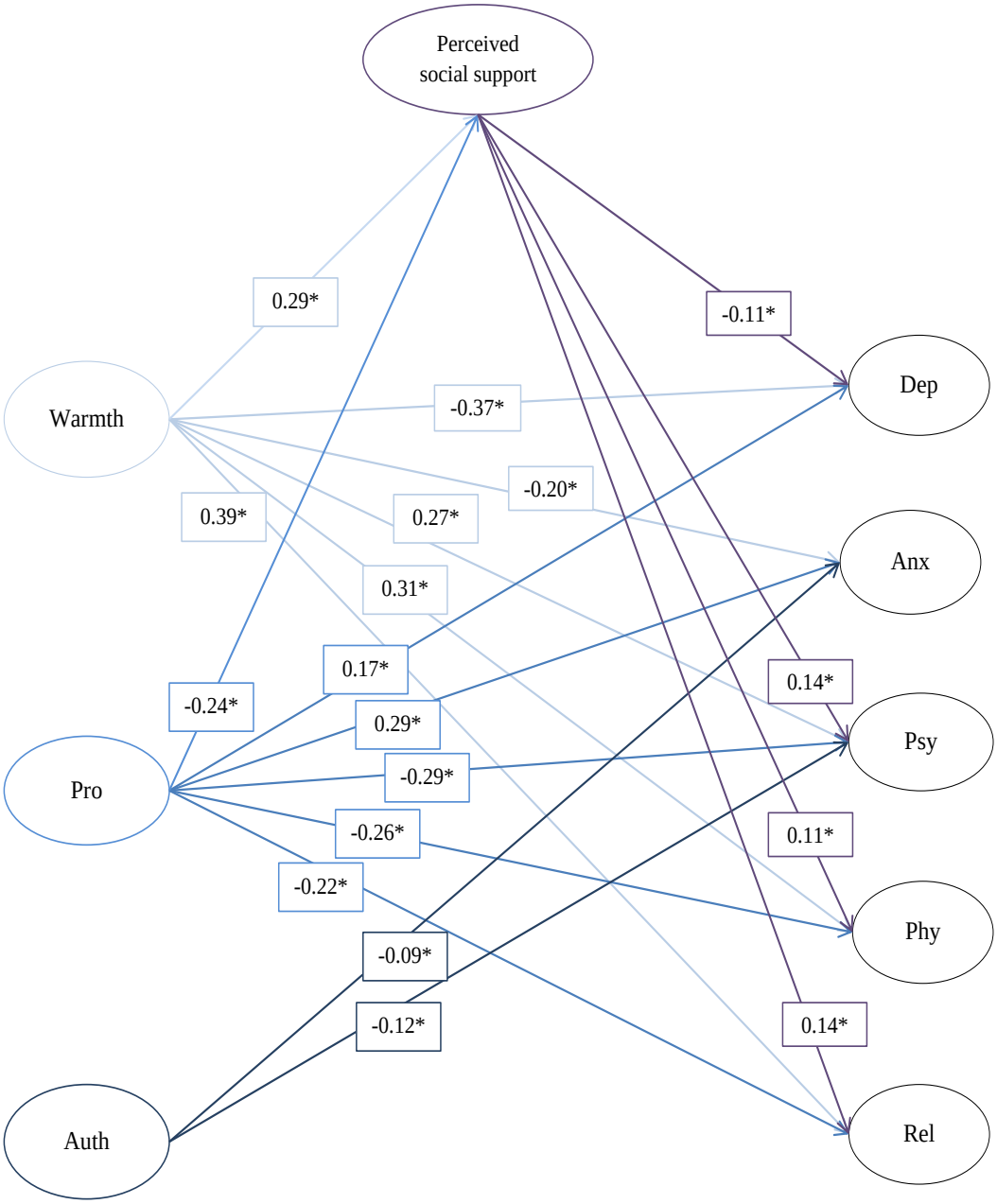

Figure 17. SEM for testing mediating role of perceived social support in relationship between parental bonding on mental health variables with standardised robust maximum likelihood parameter estimates N = 1124. Only coefficients which were statistically significant are shown *$p < .05$.

Model 5 (Figure 18) tested the indirect effect of attachment on mental health through emotion regulation strategies. Model 5 had 9 continuous latent variables, 2

categorical independent variables and 57 dependent variables. Model had 229 free parameters. The hypothesised model yielded a good fit of the data, MLM $\chi 2$ (1595, N= 1124) = 3370.70*, $p < .001$; CFI = 0.90; RMSEA (90% CI) = 0.031 (0.030 – 0.033), SRMR= 0.045. Parameter estimates of the measurement model were all significant; $p < .001$, suggesting measured variables hypothesised as indicators are significantly associated with their respective factors, and they are valid measures of the latent factors.

Standardised beta coefficients show that only internal dysfunctional strategies mediate the effect of attachment *model of self* on mental health. Whereas *model of others* had no significant specific indirect effect on mental health through emotion regulation strategies but the overall indirect effects were significant on psychological and physical well-being only through internal functional emotion regulation strategies. Furthermore, *model of self*, predicted depression and relationship well-being through its effect on external functional emotion regulation strategies (Figure 18).

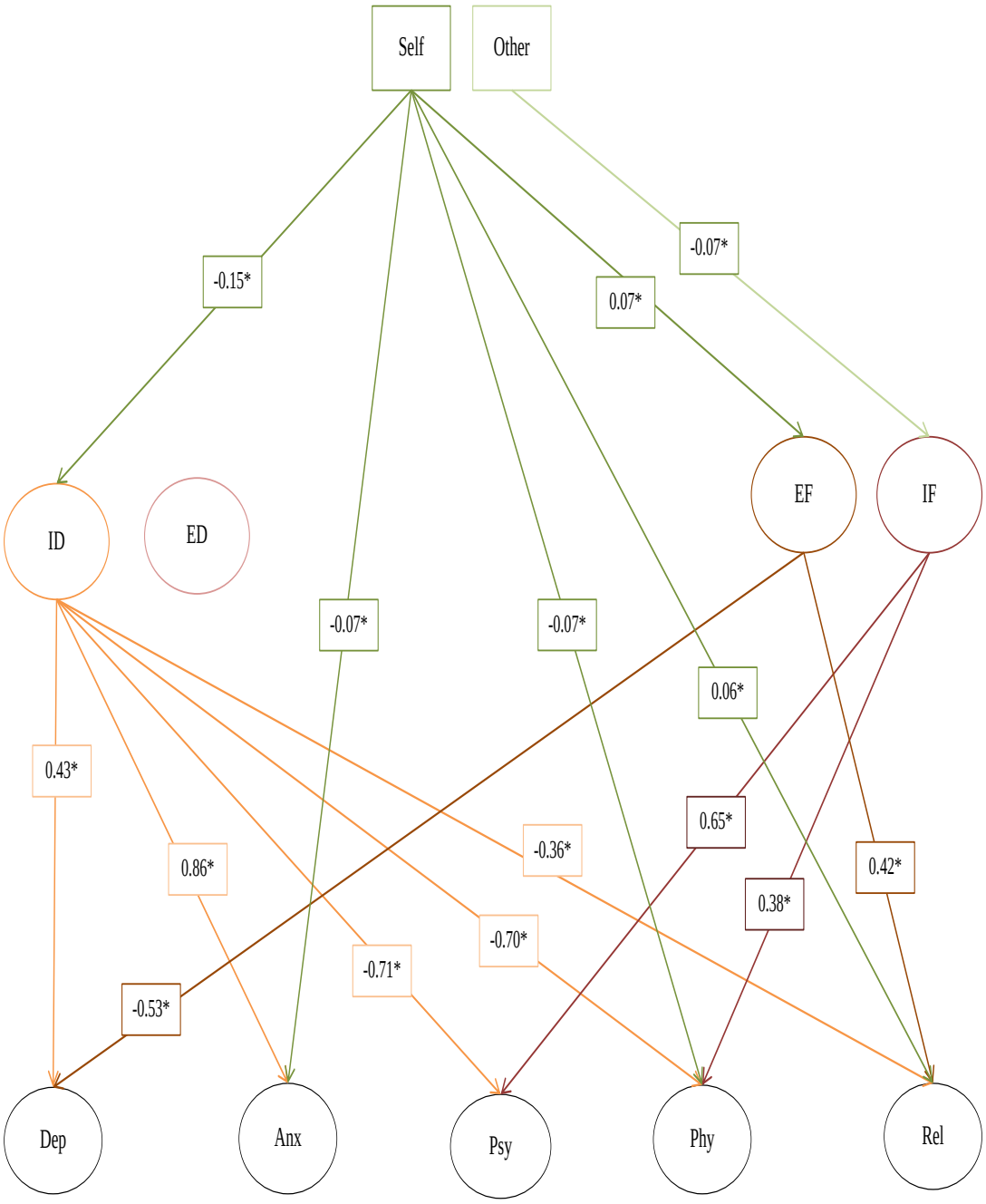

Figure 18. SEM for testing mediating role of emotion regulation strategies in relationship between attachment model of self and others on mental health variables with standardised robust maximum likelihood parameter estimates N = 1124. Only coefficients which were statistically significant are shown *$p < .05$.

Model 6 (Figure 19) tested indirect effects of PBI on mental health through perceived social support. Model 6 had 18 latent variables and 87 dependent variables. Residual terms for all indicators were uncorrelated other than those specified in CFA models and covariances between some factors were free to be

estimated as specified in CFA models. As PBI was used to assess parenting perceptions for both mother and father it was hypothesized that residual will correlate across the indicators of mother and father parental bonding. Furthermore, it was hypothesized that paternal and maternal warmth would predict a second order latent variable of parental warmth. Both paternal and maternal protectiveness and authoritarianism were loaded on second order latent variables of parental protectiveness and parental authoritarianism. These second order latent variables were correlated with each other.

Model 6 had 360 free parameters. The hypothesised model yielded a good fit of the data, MLM χ^2_{SB} (3555, N= 1124) = 6385.595*, $p < .001$; CFI = 0.90; RMSEA (90% CI) = 0.027 (0.026 – 0.028), SRMR= 0.044. Parameter estimates of the measurement model were all significant; $p < 0.001$, suggesting measured variables hypothesised as indicators are significantly associated with their respective factors, and they are valid measures of the latent factors.

Internal dysfunctional emotion regulation strategies mediate the effect of warmth on depression, anxiety, psychological and physical well-being. Internal functional emotion regulation strategies mediate the association between protectiveness, psychological and physical well-being. External functional emotion regulation strategies significantly mediated the effect of parental bonding (warmth, protectiveness and authoritarianism) on depression and relationship well-being. However, external dysfunctional emotion regulation strategies did not show significant mediating effect (Figure 19).

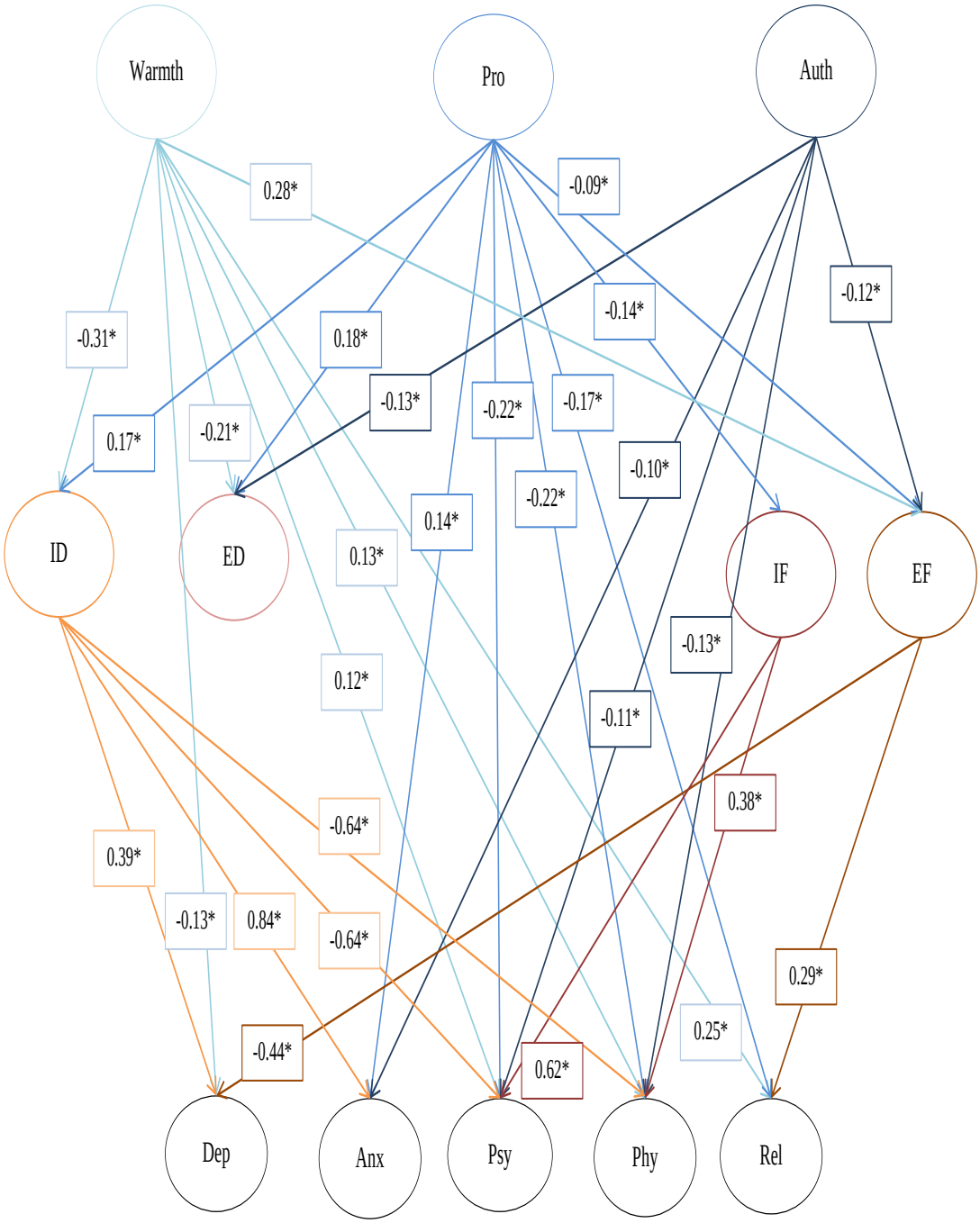

Figure 19. SEM for testing mediating role of emotion regulation strategies in relationship between parental bonding on mental health variables with standardised robust maximum likelihood parameter estimates N = 1124. Only coefficients which were statistically significant are shown *$p < .05$.

3.3.2.1 Full structural equation Model 7. Model 7 (Figure 20) tested hypothesis 4-6 in one model. The model has 19 latent variables, 2 categorical

independent variables and 91 dependent variables. Two categorical independent variables were *model of self and other* which were added in structural model as observed variables. Residual terms for all indicators were uncorrelated apart from those specified in individual measurement models, some factor covariances were free to be estimated. As PBI was used to assess parenting perceptions for both mother and father it was hypothesized that residual will correlate across the indicators of mother and father parental bonding. Furthermore, it was hypothesized that paternal and maternal warmth would predict a second order latent variable of parental warmth. Both paternal and maternal protectiveness and authoritarianism were loaded on second order latent variables of parental protectiveness and parental authoritarianism. These second order latent variables were correlated with each other.

Model 7 had 415 free parameters. The hypothesised model yielded a good fit of the data, MLM $\chi 2$ (4049, N= 1124) = 7195.363*, $p < .001$, scaling correlation factor = 1.090; CFI = 0.90; RMSEA = 0.026 (0.025 – 0.027), SRMR= 0.043. Parameter estimates of the measurement model were all significant; $p < .001$, suggesting measured variables hypothesised as indicators are significantly associated with their respective factors, and they are valid measures of the latent factors.

A significant χ^2 value was obtained using Satorra-Bentler Scaled Chi-Square test comparing model 7 with the same model controlling for age, gender, SES and life events and described below. The χ^2_{SB} value of 1507.05 with 378 degree of freedom and p value of 0.000 was obtained suggesting that this model is better. Standardised beta coefficients show that parental warmth both directly and indirectly (through internal dysfunction and external functional emotion regulation strategies) predict depression. It directly and indirectly (through internal dysfunction) predicts anxiety, psychological and physical wellbeing among adolescents. Parental warmth has a direct and indirect significant effect on relationship well-being but the specific indirect effect through emotion regulation strategies and social support are insignificant.

Parental protectiveness has significant indirect overall effect on depression but the specific indirect effects are insignificant. It directly and indirectly (through internal dysfunction) predicts anxiety, psychological and physical wellbeing among adolescents. Parental protectiveness has a direct and indirect significant effect on

relationship well-being but the specific indirect effect through emotion regulation strategies and social support are insignificant. Parental authoritarianism has an indirect effect on depression thorough external functional emotion regulation strategies but the direct effect was insignificant. It directly affects anxiety, psychological and physical well-being among Pakistani adolescents but indirect effects on anxiety are insignificant. It has no direct and indirect effects on relationship well-being in this sample.

Attachment negative *view of self* among Pakistani adolescents predicts internal dysfunctional emotional regulation strategies which then effects the depressive, anxious symptoms and psychological well-being. *Model of self* in this sample directly and indirectly (through internal dysfunctional emotion regulation strategies) predicts physical well-being. *Model of self* has significant direct and overall indirect effects on relationship well-being however, specific indirect effects is significant.

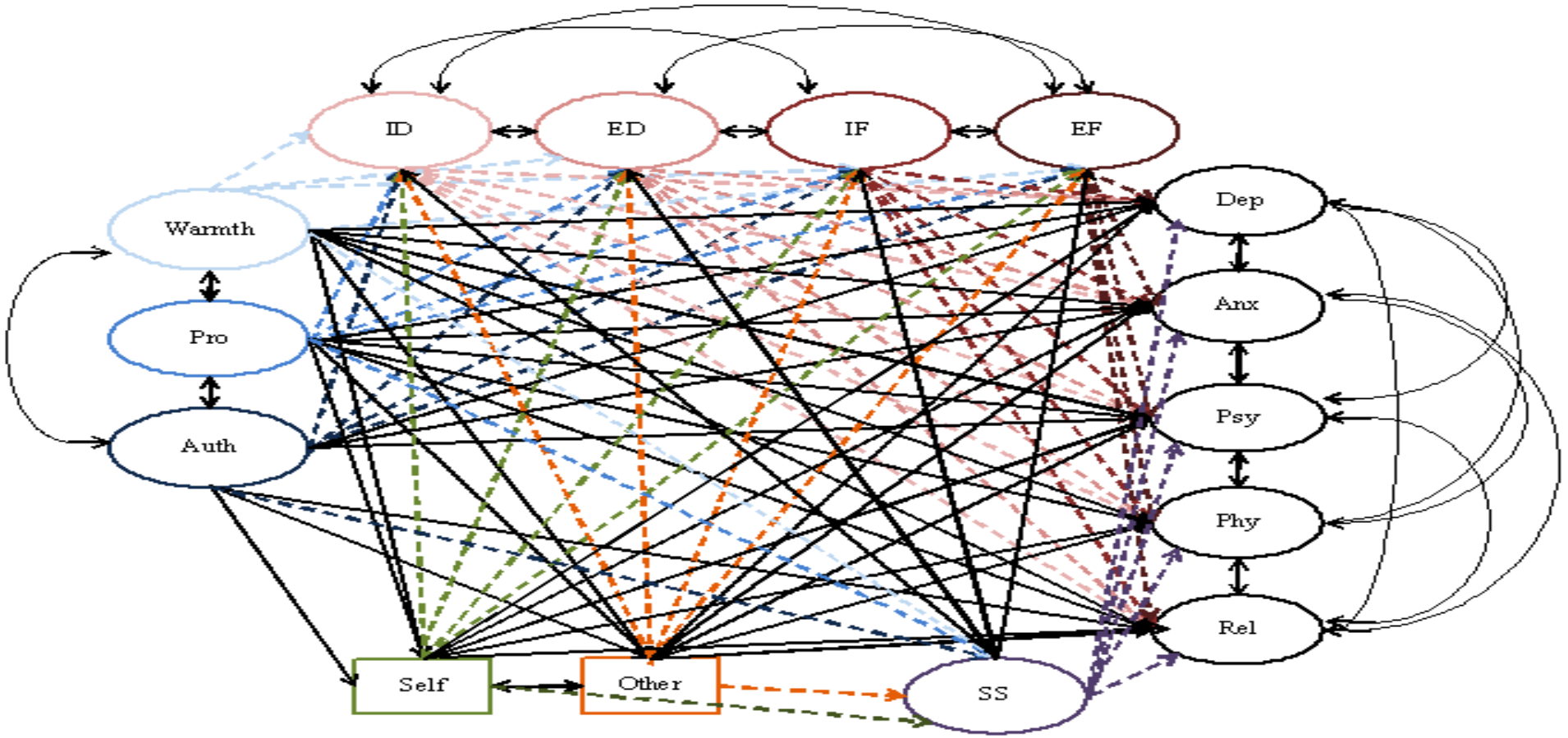

Figure 20. The hypothesized *Structural equation mediational model 7.*

No direct and indirect effects on depression, anxiety were observed for negative *model of others*. Negative *view of others* has no significant direct and specific indirect effects on psychological well-being however, overall indirect effects is significant. *Model of others* has no direct and indirect significant effects on physical and relationship well-being.

Model 7 showing completely standardised robust maximum likelihood parameter estimates fitted to the sample is provided in Table (25). Confidence intervals and model indirect results were calculated for paths (see appendix 7).

Table 25

Standardized coefficients (StdYX) of structural part of Model 7 (correlations modeled are not included here)

Path	Standardized coefficients	Path	Standardized coefficients
Depression on		***Anxiety on***	
Warmth	**-0.12***	Warmth	0.05
Protectiveness	0.06	Protectiveness	**0.15***
Authoritarianism	0.03	Authoritarianism	**0.09***
Model of self	-0.01	Model of self	-0.06
Model of others	0.02	Model of others	-0.03
Social support	-0.04	Social support	0.02
Internal dysfunction	**0.38***	Internal dysfunction	**0.84***
External dysfunction	0.14	External dysfunction	-0.19
Internal function	-0.03	Internal function	-0.17
External function	**-0.44***	External function	**-0.14***
Psychological well-being on		***Physical well-being on***	
Warmth	**0.12***	Warmth	**0.13***
Protectiveness	**-0.16***	Protectiveness	**-0.15***
Authoritarianism	-0.11	Authoritarianism	**-0.13***
Model of self	0.04	Model of self	**0.06***
Model of others	0.03	Model of others	-0.01
Social support	0.05	Social support	0.05

Internal dysfunction	**-0.64***	Internal dysfunction	**0.06***
External dysfunction	0.24	External dysfunction	0.21
Internal function	**0.64***	Internal function	**0.38***
External function	-0.04	External function	0.07
Relationship well-being on		***Social support on***	
Warmth	**0.24***	Warmth	**0.28***
Protectiveness	**-0.15***	Protectiveness	**-0.25***
Authoritarianism	-0.04	Authoritarianism	-0.03
Model of self	**0.04***	***Internal dysfunction on***	
Model of others	0.02	Warmth	**-0.31***
Social support	0.06	Protectiveness	**0.14***
Internal dysfunction	-0.26	Authoritarianism	**-0.01***
External dysfunction	-0.02	***External dysfunction on***	
Internal function	0.14	Warmth	**-0.31***
External function	**0.26***	Protectiveness	**0.17***
Social support on		Authoritarianism	**-0.13***
Model of self	-0.00	***Internal function on***	
Model of others	**0.05***	Warmth	0.06
Internal dysfunction on		Protectiveness	**-0.13***
Model of self	**-0.13***	Authoritarianism	-0.02
Model of others	0.05	***External function on***	
External dysfunction on		Warmth	**0.27***
Model of self	-0.02	Protectiveness	**0.02***
Model of others	0.04	Authoritarianism	**-0.12***
Internal function on		***External function on***	
Model of self	-0.04	Model of self	0.05
Model of others	**-0.06***	Model of others	0.06

*. Coefficient is significant at <0.05 level

Model 7 was also analysed including age, gender, SES and LE as potential confounders on mental health. Models had 435 free parameters. The hypothesised model yielded a weak fit to the data, MLM $\chi 2$ (4427, N= 1124) = 8644.586*, $p <$

.001, scaling correlation factor = 1.083; CFI = 0.86; RMSEA (90% CI) = 0.029 (0.028 – 0.030), SRMR= 0.047.

3.3.2.2 Full structural equation Model 8. *A priori* structural equation model was constructed and tested for model fit of the data and both direct and indirect pathways. Pathways were based on the theoretical assumptions discussed earlier in the literature. Early experiences of parenting and attachment will have both a direct effect on depression, anxiety, psychological, physical and relationship well-being but also an indirect effect where this relationship is partially mediated by the constructs of emotion regulation, social support and cultural orientation. Furthermore indirect effects of cultural orientation were also tested on relationship between parenting, attachment, social support and emotion regulation variables and outcome variables.

The model 8 has 21 latent variables and 107 dependent variables. Residual terms for all indicators were uncorrelated apart from those specified in individual measurement models, some factor covariances were free to be estimated. As PBI was used to assess parenting perceptions for both mother and father it was hypothesized that residual will correlate across the indicators of mother and father parental bonding. Furthermore, it was hypothesized that paternal and maternal warmth would predict a second order latent variable of parental warmth. Both paternal and maternal protectiveness and authoritarianism were loaded on second order latent variables of parental protectiveness and parental authoritarianism. These second order latent variables were correlated with each other.

Model 8 had 487 free parameters. The hypothesised model yielded a good fit of the data, MLM $\chi 2$ (5398, N= 1124) = 9574.156*, $p < .001$, scaling correlation factor = 1.083; CFI = 0.90; RMSEA = 0.026 (0.025 – 0.027), SRMR= 0.043. A significant χ^2 value was obtained using Satorra-Bentler Scaled Chi-Square test comparing model 8 with a less restricting model by freeing the path between attachment and parental bonding. The χ^2_{SB} value of 18.63 with 8 degree of freedom and p value of 0.01 was obtained suggesting that the newly added parameters are substantively meaningful. Parameter estimates of measurement model were all significant; $p < .001$, suggesting measured variables hypothesised as indicators are significantly associated with their respective factors, and they are valid measures of the latent factors.

Model results reveal that collectivistic orientation has negative direct and indirect effect on depression. Individualism positively indirectly predicted anxiety. Collectivism predicted warmth and protectiveness which predicted internal dysfunctional emotion regulation which predicted anxiety. It also showed direct negative effect on anxiety scores. The total effects of individualism on anxiety were positive. Both collectivism and individualism positively predicted participant's psychological wellbeing. Collectivism but not individualism positively predicted physical and relationship well-being.

Chapter 4:

Discussion and Conclusion

4.0 General introduction

This thesis presents an exploration of the characteristics of an adolescent sample recruited from secondary schools in Rawalpindi, Pakistan. This section will discuss the results in the light of previous research and theory. This chapter will also present recommendations and implications based on the empirical findings from the current work.

4.1 Overview of Study Aims

The present study aimed at understanding the state of mental health among secondary school adolescents in Pakistan by estimating the rates of depression, anxiety and well-being. It further aimed at assessing the applicability of western constructs in Pakistani cultural context. Finally, it aimed to examine the role of attachment, parental bonding, emotion regulation, social support and cultural orientation in relation to mental health among adolescents and to explore how these variables interact with each other.

The results of the study are discussed below in sequence of the hypotheses presented in chapter 1 (part V) in relation to each of the measurement and structural models that were intended to represent the components of underlying paths of association between variables of interest in this study.

4.2 State of mental health (hypothesis 1 and 2)

Caseness of depression and anxiety in the current study was 17.2% and 21.4% respectively with 26.8% and 24.5% borderline cases of depression and anxiety respectively. The rates found in the current study were slightly higher than the ones reported in Western literature among adolescents (Beesdo et al., 2009; White et al., 1999) and clinical adolescent population (Sarwat et al., 2009) in Pakistan. However, these rates are lower than the rates of psychological distress reported among Pakistani adults (Mirza & Jenkins, 2004). Similar rates of depression were reported among Indian school going population as assessed by a screening instrument (Bansal et al., 2009). The reasons for this difference in prevalence of anxiety and depression across different studies could be attributed to measurement differences and cultural factors.

In the present study, the overall well-being scores were higher than the ones reported in Kinderman et al. (2011). However, scores on psychological and physical

well-being sub-scales were slightly lower. The fact that depression, anxiety and well-being, all are higher in this sample is interesting. Keyes and Lopez (2002) described people having higher rates of mental distress but reporting high well-being as "struggling". According to the argument the struggling group self-manage their mental illness (Slade, 2010). A factor that needs to be explored further is to better understand why Pakistani adolescents despite having high prevalence of depression and anxiety report better well-being. Perhaps there are elements within the cultural, parental or individual domains that permit them to perceive satisfaction in life regardless of their distress. It is also plausible that the adolescents feel coerced to social desirability particularly in reporting well-being. There might be dimensions within this construct that merge with the religious and cultural ethos of Pakistan where things are to be considered "alright" despite the anguish or pain. In Pakistani cultural context this requires further exploration and might be helpful in designing interventions.

Our results support the evidence from previous studies investigating the structure of mental health, which confirms that mental illness and well-being correlate but do not necessarily form the same factor (Keyes & Lopez, 2002; Slade, 2010). Therefore it is better to take into account both mental illness and well-being when studying mental health. Few studies have focused on measuring mental health both in term of well-being and pathology which can encourage researchers, policymakers and practitioners to focus intervention on both positive and negative aspects of mental health and work towards not only reducing deficiencies but also enhancing strengths among young people.

The present study found support for the higher rates of anxiety among girls which has been supported in other literature (Beesdo et al., 2009; White et al., 1999). Although, depression has been consistently associated with female gender (Piccinelli & Wilkinson, 2000; Kessler, 2003; Wang et al., 2010; Anderson, Williams, McGee, & Silva 1987; Cohen et al., 1993; Essau, Conradt, & Petermann, 2000) this association was not significant in the present study. Similarly association between well-being and gender was not significant in the present sample. A plausible explanation could be the cultural differences. Though female gender has been consistently reported as vulnerable to depression the size of this effect varies

considerably. It might be possible that the underlying processes contributing to female's vulnerability to depression vary across cultures. This area needs further exploration as it will further our understanding of high rates of depression in females and the causes of depression in general (Nolen-Hoeksema, 2001). Another plausible explanation is that gender difference in depression has been reported to become conspicuous after age 15 (Galambos, Leadbeater, & Barker, 2004). This could be of relevance to present sample which had a relatively smaller representation of older adolescents compared to younger ones. Research supports a positive association between age and poor mental health (Whiteford et al., 2013). However, in this study, late adolescents scored significantly lower on depression and anxiety suggesting that early adolescents are at higher risk. This is in line with the previous research examining prevalence rates of depression and anxiety across developmental stages of adolescence (Hoek, Van Lier, Koot, 2012; Peleg, 2012). However, there was no association between participant's anxiety scores and their age. Similar findings have been reported by White et al. (1999) in their study validating HADS among an adolescent sample. The fact that and association between gender and depression is insignificant but age and gender is significant in the current sample may imply that both age and gender are interacting. This was true for the present sample where an increase in age among female made them more vulnerable to depression. These results are in line with past research (Cyranowski, Frank, Young, & Shear, 2000) and are significant in understanding the gender differences in depression. It is therefore, suggested that future research should examine the factors which make Pakistani middle to late adolescents girls more vulnerable to depressive symptoms and whether these factors are consistent with the aspects reported in western literature to inform interventions for Pakistani youth.

There is consistent evidence supporting the association between low SES and the susceptibility for depression, anxiety and low well-being (Lemstra et al., 2008), as the results of this study are in agreement with these findings. Pakistan is a developing country where 22.3% of the people live under the poverty line (CIA, 2013). The discrepancy in the distribution of wealth in Pakistan has further complicated the association between SES and mental health. Although, the divide between the wealthy and the poor has become more conspicuous the variations that

are relatively less obvious cannot be ignored as they are also compounding the relationship and forcing us to look into this matter further. The focus of this study was to establish baseline norms for adolescents from a low to middle income group therefore it was beyond the scope of this study to compare mental health among different strata of SES.

Negative life event has been an established correlate for anxiety, depression and poor well-being among adolescents both in cross-sectional studies (Williamson et al., 1995; Goodyer, 1996; Beesdo et al., 2009) and longitudinal studies (Pine et al., 2002; McLaughlin & Hatzenbuehler (2009). Our study corroborates previous findings. In Pakistan it is perhaps a phenomenon that needs to be further explored to better understand the nature of life events that affect adolescents in this age of terrorism and unrest. Particularly, given the socio-cultural stress that most children and adolescents have to inevitably endure be it through personal experience or vicariously, it is perhaps undeniable that these collective or individual life events make this population exceptionally vulnerable and at risk. The present study supports the association between life events and mental health which should naturally lead to the next phase/phases of research where depression, anxiety and wellbeing are explored with an explicit focus on the experience of negative life events among adolescents.

Interesting results were obtained in this study regarding association between mental health variables and participant's school type. It was observed that both depression and anxiety were lower in participants enrolled in coeducational schools. This is not in line with past research on Pakistani schools students (Malik, 2013). A plausible explanation of this could be that present study explored specific symptoms of depression and anxiety whereas Malik (2013) examined personality characteristics prone to worry.

4.3 Applicability of the constructs (hypothesis 3)

This section discusses the psychometric properties of the study instruments. The CFA models tested in this study also form the measurement part of the main SEM model and which can affect the structural part. Before discussing results of each CFA model, it is imperative to discuss the issues of translating Western scales and their generalizability to the indigenous samples.

Using well validated measures in cross-cultural research is crucial to achieve true comparisons on the rates and risks of diseases. In absence of indigenous measure, using a well-validated existing measure does not necessarily mean that the measure is valid in a different culture as well. There is no consensus on how to culturally adapt a measure. However, researchers agree that simple translation is not acceptable (Gjersing, Caplehorn, & Clausen, 2010). One of the objectives of this study was to test the applicability of the western construct of mental health and its correlates in Pakistani context. Selecting Western scale assumes the construct to be universal which is a requirement to be able to compare across cultures and helps establish reliability and validity. This view is embedded in the positivistic paradigm. On the other hand an indigenously developed scale allows us to understand any epistemological relevance of the same construct, but it compromises the comparative nature of the data with pre-existing information in the field. The present study has made a choice of selecting the first option and recognizing the limitations it imposes.

Despite the widely adopted and improved practice of translation, two theoretical gaps need to be addressed. First, the translated tests are based on imported Western measures. The constructs are imposed-etic concepts applied to the local culture under the assumption that they are cross-culturally relevant. However, whether the imposed etic constructs are universally applicable is an empirical question that needs to be investigated rather than assumed (Cheung & Leung, 1998); this is the approach which has been taken in this study. Second, indigenous and culturally relevant constructs, i.e. the emic concepts, may be missing from these imported measures. These two gaps highlight the limitations of using only translated instruments. Some international researchers have endorsed the indigenous approach, which takes into account the "sociocultural realities" of the local culture (Berry, 2002, p.460) which would be a luxury hard to afford by a researcher from a resource poor setting.

Western measures were selected for translation instead of developing new measures as it is not only a cost effective way, it also allows cross-cultural comparison. Secondly, in the absence of a readily available indigenous theoretical paradigm it was improbable to develop an indigenous scale and if it was attempted; it would have been based on the western concept then it would still not be able to give

the indigenous epistemological nuances. The present study recognizes that this perhaps is not the most anthropologically sophisticated way of analysing a construct but perhaps it is a viable option in current scenario. Another option is to add additional items if the researcher identifies elements of construct which are indigenous to the target culture. However, this often results into a new scale (Van Widenfelt, Treffers, De Beurs, Siebelink, & Koudijs, 2005). For example, Gjersing, Caplehorn, and Clausen (2010) generated two new items while adapting an attitudinal measure for Norwegian sample. They found a new factor structure for the scale however; they concluded that the new measure was a better representation of the construct in the culture. This is possible only if there is relevant literature around the construct in the target culture which was unfortunately not available in case of the current research (Herdman, Fox-Rushby, & Badia, 1998). However, this study provides future researchers with some base line information on various constructs pertinent to mental health and well-being among Pakistani adolescents. Future studies may explore the possibility of generating new items following recommended procedure to better understand the cultural applicability of the constructs under exploration. A viable option in this regard would be to use focus groups to understand the construct indigenously.

It is just a step forward in understanding the differences and the overlaps which can further lead to development of an indigenous measure. Theories supplant each other and cross-cultural research has potential of supplanting Western conceptualization on indigenous people.

4.3.1 Regulation of Emotions Questionnaire (REQ; Philips & Power, 2007). Acceptable reliability coefficients were obtained for all sub-scales of REQ. Though, these coefficients were slightly lower than the ones reported by the author of the scale but were in the acceptable range. Alpha reliability of external functional emotion regulation strategies was lowest in the present study which has been attributed to the relatively weak fit of items pertaining to this scale (Philips & Power, 2007). Further revision of this scale is proposed.

The original four factor structure for REQ was supported in the present study with some modifications. All four sub-scales of REQ were correlated with each other compared to the original factor structure where only two sub-scales pertaining to

dysfunctional strategies were correlated with each other and two of the functional ones were correlated (Philips & Power, 2007). The reason for correlating all four subscales was that they were all measuring emotion regulation strategies. It was also supported by the results of CFA where these correlations were statistically significant. However, it should be noted that these correlations were not very high which means that these variables are associated with each other but are not identical. Furthermore, slightly stronger correlations between dysfunctional sub-scales and between functional strategies sub-scale show that these are conceptually more related. This is further supported by the fact that all four sub-scales related differently to other variables in the study which highlights the uniqueness of each sub-scale. Similar observations were made by Phillips and Power (2007).

In model modification three measurement error correlations were modelled for two items pertaining to external functional strategies (REQ20 WITH REQ21); between an item from internal dysfunction and external dysfunctional strategies (REQ18 WITH REQ19); and two items from internal functional strategies (REQ12 WITH REQ11) which improved the model. These error terms were modelled with precaution by only modelling errors within the same factor or corresponding factors. Closer look at these items show that the wordings and situations evoked in these items are very similar which can be the reason for the correlating error terms in the CFA models (Byrne, 2011). These items are discussed in detail as follow.

Item 20 (I telephone friends or family) and 21 (I go out and do something nice (e.g. cinema, shopping, go for a meal, meet people)) might be perceived as being alike in terms of what they inquire. Respondents in the present study primarily belonged to low SES and it is possible that they comprehended these questions to address external functional strategies which involve unrealistic and unaffordable social interactions and activities.

Item 18 (I take my feelings out on objects around me (e.g. deliberately causing damage to my house, school or outdoor things)) and 19 (Things feel unreal (e.g. I feel strange, things around me feel strange, I daydream)) both refer to the dysfunctional emotion regulation strategies and might be more susceptible to social desirability. These items enquire about destructive inclination and diminished cognitive focus which could lead to subjective bias. It might also be possible that

these items did not appear to be culturally relevant, both in terms of the Pakistani cultural milieu as well as the respondent's individual culture.

Items 11 (I put the situation into perspective) and 12 (I concentrate on a pleasant activity) refer to internal functional emotion regulation strategies. It was noted during data collection that some of the respondents raised questions on these two items from REQ as they found them a bit difficult to understand. Perhaps the items in their wording seemed ambivalent to participants which could have biased the data. It is therefore suggested that further validation of REQ in Urdu language among adolescents may be carried out to examine the feasibility of these question items for use among Pakistani adolescents. It has been recommended that translated versions of scales should be understood by a 10-12 year old ensuring that the items are comprehended by the target population whose first language is not the language of the original version of the scale (Gullimen et al., 1993). Although this strategy was employed on a very small number in the translation process for this study and perhaps it needs to be carried out in greater detail.

4.3.2 Significant Others Scale (SOS; Power et al., 1988). The hypothesized single factor structure for social support fitted the data excellently. This is in line with the previous theories claiming practical and emotional support being aspects of perceived social support (Barrera & Ainlay, 1983). The present study did not find a study reporting a factor analysis of the short form of SOS scale used in this study therefore the results cannot be compared. However, a principal component analysis of the full 10 items scale was carried out by Power et al. (1988) who reported a three factor solution consisting of emotional support, practical support and social fun. However, the authors found high correlations between these factors and produced a shorter version subsequently. The other reason for loading all items pertaining to emotional and practical social support on perceived social support in the present study is that the reduced form has only two items pertaining to each type of support and it is recommended to have at least three items per factor (Morata-Ramirez & Holgado-Tello, 2013). Furthermore practical and emotional social support items showed high correlations which might refer that these items are measuring same construct. This aspect needs to be explored further.

4.3.3 Parental Bonding Instrument-16 item (PBI; Kendler, 1996). Reliability estimates of PBI of both mother and father reports were in acceptable ranges. However these were lower than the ones reported in the previous literature (Martin, Bergen, Roeger, & Allison, 2004) which can be explained by the variation in loadings of item 4, 18 and 23. This is supported by the fact that the reliability of both forms improved after taking into account the items which were found to be redundant as a result of CFA analysis.

The original three factor structure for PBI-16 item was supported in the present study with some modifications as compared to the two (Parker et al., 1979) or four factor structure (Uji et al., 2006). The modifications made to the original three factor model were: item 23 was loaded on warmth instead of protectiveness and item 18 was cross-loaded on both warmth and protectiveness whereas item 4 was dropped from the model due to insignificant standardized regression coefficient and R^2 value. This was true for both mother and father reports.

Item 23 (Is overprotective of me) pertaining to warmth dimension was translated as "Mera zaroorat se ziada khayal rakhtay hain" by Qadir et al. (2005) which can be back translated as "takes care of me more than it is required". Other items of the instrument indirectly assess the level of perceived over-protection provided by the parents. However item 23 is a very direct question investigating the perceived over-protection which can provoke a culture specific response and might be comprehended in terms of positive rather than negative protection as identified before by Qadir et al. (2005) and Chao (1994). However, in Qadir et al's. (2005) study item 23 loaded on over-protection dimension unlike the present study which can be explained by the fact that their sample was of adult females whereas present sample was taken from schools. Adolescents might not have been able to comprehend the hidden nuance of over-protection and might easily have confused it with high care which is perceived as good or perhaps differentiating between positive and negative protection for the age group of the present sample was difficult. Furthermore, it is generally believed in Pakistani culture that there is no end to parents love and it is second only to the love God has for his people. Therefore questioning parental love might pose ambiguity in the young mind. This study therefore calls for further exploration of relevance of item 23 to warmth or protection

domain in Pakistani adolescents and the feasibility of its current translation for school children.

Item 18 (Does not talk with me very much) refers to warmth sub-scale. In a previous study Uji et al. (2006) conceptualized this item as measuring indifference rather than care and proposed a four factor model for PBI. In the present study this item loaded both on warmth and protectiveness. An explanation for this could be that in Pakistani cultural context the parents hold an authoritative place in a family and their position demands great reverence and admiration. This relationship of respect usually entails a prudent style of communication, which may lead to a reticent style of conversation which would not leave room for children and parents to freely talk things over. The parents may be perceived as loving and caring and yet not be communicative. This is also consistent with insignificant loading of another item (item 4) which was also referring to similar parenting characteristic.

Item 4 (Seemed emotionally cold to me) translated as "Mujhe jazbati tor pe sard mezaj lagtay hain" by Qadir et al. (2005) pertains to warmth dimension of PBI. The R^2 value for this item was insignificant in the CFA models of PBI both for father and mother due to which it was dropped from the scale in the present study. The Urdu translation of PBI by Qadir et al. (2005) used in this study was validated in adult female participants. It is possible that adolescents found the translation difficult to comprehend. This is reiterated by the fact that during the data collection it was observed that some of the young participants wanted this item to be further explained. Future studies should re-translate or adapt this instrument for younger participants and check for the validity of problematic items in assessing parental bonding among Pakistani adolescents.

4.3.4 Horizontal and vertical individualism collectivism scale (HVICS; Sivadas et al., 2008). Reliability estimates for this scale were in acceptable range. However, it was weak for horizontal individualism scale. This can be attributed to the lower number of items in this scale. Similar results have been found in samples from China and Denmark samples (Sivadas et al., 2008).

The present study tested the original four factor structure for HVICS reported in Sivadas et al. (2008). However, correlations between sub-scales pertaining to collectivism and individualism were very high suggesting multicollinearity. This

study therefore found two dimensions for cultural orientation. These dimensions were individualism and collectivism supporting the original dichotomous phenomenon of cultural orientation by Hofstede (1980) which has been an effective predictor of behavioural patterns (Triandis & Gelfand, 1998; Wheeler, Reis & Bond, 1989) and is considered central to the understanding of cultural values (Triandis, 2004; Triandis, Bontempo, Villareal, Asai, & Lucca, 1988). The idea of four dimensions came from market research to design more effective advertising strategies (Sivadas et al., 2008). The implications of these four dimensions for understanding of mental health require further exploration. Other plausible reasons can be that in Pakistani cultural context hierarchies in relationships may vary with context. However, these findings suggest further exploration of the scale in different cultures.

4.3.5 BBC well-being Scale (Kinderman et al., 2011). High Cronbach's alpha reliability estimates were found for BBC well-being scale in the present study which was comparable to the original study results (Kinderman et al., 2001).

BBC demonstrated a correlated three factor structure in this study which is supported by the authors of the scale (Kinderman et al., 2011). In the present study, item 5 (do you feel depressed or anxious) did not show a significant factor loading and therefore was dropped from the scale. It should be noted that item 5 is the only negatively worded item in this scale. It might be the case that negatively worded items effect the responses in Pakistani sample. It was observed that the items that were negatively worded were the ones that required modification in this sample. It has been previously reported that negative worded items may contain errors within them and might contribute to confuse the respondent's responses (Colosi, 2005). This might be a contributing factor in making these items particularly perplexing for this sample of younger age. It has been further suggested that items that are worded in the reverse pose a challenge in their cross-cultural applicability particularly for Asian respondents therefore changing negative statements to questions might be a feasible alternative (Wong, Rindfleisch, & Burroughs, 2003). It is therefore appropriate to take this into consideration in future research.

4.3.6 Hospital anxiety and depression scale (HADS; Zigmond & Snaith, 1983). Reliability estimates for HADS were in the acceptable range but were slightly

lower than what has been reported in previous research. For the depression sub-scale the alpha was 0.54 and for anxiety sub-scale it was 0.67. According to a review, in the past its alpha reliability has varied from 0.68 to 0.93 (mean=0.83) for the anxiety sub-scale and from 0.67 to 0.90 (mean=0.82) for the depression sub-scale (Bjelland et al., 2002).

HADS had shown varying factor structures in the past. In the present study, the two factor structure fitted the data with some modifications. Item 7 pertaining to anxiety sub-scale loaded on depression. This is consistent with a literature review stating that HADS item 7 (I can sit at ease and feel relaxed) was found to anomalously load in 20 studies, indicating that it is a particularly poor item (Cosco, Doyle, Ward, & McGee, 2012). Furthermore, item 8 (I feel as if I am slowed down) pertaining to depression sub-scale loaded on anxiety which is also consistent with previous findings where this item showed inconsistent loading (McCue, Martin, Buchanan, Rodgers, & Scholey, 2003). Furthermore, these two items have shown anomalous loadings together in many past researches (Friedman, Samuelian, Lancrenon, Even, & Chiarelli, 2001; Barth & Martin, 2005; Marinus, Leentjens, Visser, Stiggelbout, & Van Hilten, 2002). Despite certain shortcomings of this scale a recent systematic review and meta-analysis of the case finding ability of the HADS attests to the practical value of this scale (Brennan, Worrall-Davies, McMillan, Gilbody, & House, 2010; Cosco et al., 2012). This suggests that the HADS is an effective tool in the identification of "emotional distress". Therefore, future research should concentrate on more robust statistical methods, i.e. Item Response Theory methods to empirically assess psychometric properties of HADS in diverse samples. The reason for lower alpha as well as inconsistent loadings of item may be attributed to the fact that depression and anxiety are two common comorbid disorders and their symptoms overlap (Costello et al., 2003; Knopf, Park, & Mulye, 2008).

4.4 Final Model

The hypothesized structural equation model showed good fit to the data implying that attachment, parental bonding, social support, emotion regulation and cultural orientation are critical in understanding depression, anxiety and well-being

among adolescents. This finding is in agreement with the literature reviewed in this study (Epkins & Heckler, 2011).

The results of each study hypothesis regarding the direct and indirect effect of predictors on mental health are discussed below.

Hypothesis 4a. Attachment: Adolescents with a negative *view of self* and *other* will have lower well-being scores and higher levels of depression and anxiety.

Higher frequency was found for positive view of self and other which is consistent with past research stating higher prevalence on secure attachment style (Ainsworth, Blehar, Waters, & Wall, 1978) and provides some support to the cross cultural similarities in attachment. Support was also found for the direct effect of attachment *model of self* on adolescents' depression, anxiety and well-being scores whereas *view of other* had no direct effect on mental health variables. However, in the full SEM model only a direct effect from *self* on physical and relationship well-being remained significant. This is not consistent with the previous literature examining attachment in relation to depression both cross-sectionally (Puissant et al., 2011; Kamkar, Doyle & Markiewicz, 2012), and longitudinally (Chango et al., 2009; Lee & Hankin, 2009) or with the literature assessing attachment with anxiety both cross-sectionally (Peng et al., 2011; Pace & Zappulla, 2011) and longitudinally (Van Eijck, Branje, Hale III, & Meeus, 2012; Lee & Hankin, 2009). However, *self-model* has been found to be more consistent across relationships rather than the attachment *view of other* (Klohnen, Weller, Luo, & Choe, 2005). Similarly, an association between attachment and well-being among adolescents has been supported in the literature (Rothman & Steil, 2012; Ma & Huebner, 2008; Yang et al., 2008) for which partial support was found with relation to physical and relationship well-being which was significantly associated with attachment *model of self*. The potential reason for the absence of associations might be explained by the fact that the present study enquired about the general attachment style among participants rather than their attachment with specific relationships such as with parents or peers. Previous studies have supported both general and relationship specific assessment of attachment and found significant associations with mental health (Klohnen et al., 2005). However, it has been reported that relationship specific attachment

demonstrates a particularly significant association with mental health especially for parents in Asian societies (Liu, 2008).

Furthermore, the suggestion by researchers in this area (Ognibene & Collins, 1998; Cetin et al., 2010; Griffin & Bartholomew, 1994) that ARSQ perhaps assesses *model of self and other* relatively better compared to the four attachment styles may have been applicable in this study which made the premise justifiable to use the *self and other* model to elicit attachment patterns among adolescents. This however, might have compromised the reliability of the scale for this population. It is also speculated that the *model of self and other* needs to be grounded in the indigenous cultural understanding of the constructs in future studies to better understand this phenomenon. It is therefore recommended that the results of this scale may be interpreted in the light of the above mentioned arguments. Further exploration of attachment and its measurement is recommended with reference to Pakistani culture context.

Hypothesis 4b. Parental Bonding: Adolescents with lower scores on parental warmth, higher scores on parental protectiveness and authoritarianism will have lower well-being scores and higher levels of depression and anxiety.

The results of the present study support the previous work in this area which has repeatedly supported a stronger association between warmth rather than control in relation to depression (Greenberger & Chen, 1996; Rapee, 1997; Rohner & Britner, 2000). Furthermore, a robust association has been established in Western (Cunha, Soares & Pinto-Gouveia, 2008; Raudino, Fergusson, & Horwood, 2013) as well as in Asian (Peng, Lam, & Jin, 2011) samples between adolescents' high perception of protectiveness, authoritarianism and lower perceptions of parental warmth predicting their anxiety scores. The direct model in the present study is consistent in supporting the existing knowledge and emphasizing the role of parenting in relation to anxiety among adolescents. However, in the full SEM model parental warmth showed no direct significant effect on anxiety whereas protectiveness and authoritarianism remained direct predictors of anxiety. This is consistent with a recent meta-analysis by McLeod, Wood, and Weisz (2007) who found that parental autonomy granting has a stronger association with anxiety as compared to parental warmth. Furthermore, Wood et al. (2003) in their meta-analysis

also found inconsistent support for parenting characterised by warmth and adolescents' anxiety. Therefore, it is reasonable to support the previous argument through the findings of the present study where parental care is considered a key factor in designing prevention and intervention programs for adolescents' depression and the control dimension is proposed to be more relevant to anxiety disorders.

The hypothesis regarding a direct effect of parental bonding on well-being was supported. Perceived parental warmth, protectiveness and authoritarianism predicted adolescents' well-being where high warmth was associated with better well-being in all three domains and high protectiveness and authoritarianism was associated with low well-being among Pakistani adolescents. This has been consistently reported in literature on Eastern (Yang et al., 2008; Shek et al., 2006; Bolghan-Abadi et al., 2011) as well as in western samples (Coccia et al., 2012; Milevsky et al., 2007; Milevsky, Schlechter, Klem, & Kehl, 2008). However, in the full model which controlled for other variables the effect of parental authoritarianism became insignificant on relationship well-being. This suggests that some other factor/s could be protective against the negative effect of authoritarianism on relationship well-being. The perceptions of authoritarianism by Pakistani adolescents could be influenced by the religious and the cultural ethos which dictates reverence and piety to be desirable traits for a happy existence. On the other hand, it might also be plausible that the same dictates do not allow the adolescent to perceive authoritarianism as affecting their relationship well-being which instigates further research in this domain for the given population.

Hypothesis 5a. This study hypothesised that perceived social support mediates the link between attachment and mental health.

In a separate model where the mediating role of social support in relation to attachment and mental health was tested, it was found that social support independently predicts mental health. These findings emphasize the independent role of social support in predicting mental health in collectivistic cultures. However, in the full model *positive view of others* was associated with higher perceived support among the participants. But neither attachment *model of self* or *other* directly or indirectly predicted depression, anxiety and well-being through social support in this model. Some researchers also state that attachment style characterized by negative

view of self and positive *view of others* is dominant in East Asian cultures and in cultures which emphasize collectivistic values (Schmitt et al., 2004). This is of particular significance to the present study. As a collectivistic culture where relationships are valued, individuals may have an inclination to view others as positive which predicts higher perceived support.

It is also plausible that patterns of attachment on specific relationships effect perceptions of support from specific significant others. For example, Liu (2008) in his study in Taiwan found that maternal attachment was a better predictor of family support whereas father attachment was better predictor of social expectations and friend's support. Future studies in Pakistani adolescents might look into this aspect of attachment and social support link.

Hypothesis 5b. This study hypothesised that perceived social support mediates the link between parental bonding and mental health.

Perceived social support mediated the association between warmth and protectiveness in relation to depression and well-being but not anxiety. Conversely, it did not mediate the association between authoritarianism and mental health. These findings are supported in the literature where warmth is associated with better mental health as well as higher perceived support more consistently (Park, 2009).

In the present study social support perceptions were measured for five significant relationships in the participant's life. Mean score was than computed for each item of the scale by summing up scores from all five relationships into one. It is possible that analysing support perceptions from each significant relationship would have yielded a more meaningful result. The format of this questionnaire requires the participants to list five most significant relationships in their lives. Though this might seem relatively easy to comprehend in a Western setup where the scale was originally designed, it could be perplexing for adolescents from a culture where a joint family system prevails. This was evident by the fact that many participants responded to SOS by stating multiple relations in space provided for one relationship. Some participants combined responses for parents, friends and extended family rather than stating them separately. To avoid bias students who attempted to make a query were asked to read the instructions again. It is therefore, recommended to further validate this scale. It is also proposed that in collectivistic cultures

perceptions of social support may not be associated with authoritarian parenting perceptions as there is a collective trend to form strong bonds which might engraved in young people's minds through not only parents but also through other adults in the family and by environment and society in general. Therefore in the present study it was meaningful to calculate the aggregate score which allowed us to deal with this potential issue. This is evident in the good reliability and factor structure in the findings of the present study.

Hypothesis 5c. This study hypothesised that emotion regulation mediates the link between attachment and mental health.

The support for the mediating effect of emotion regulation on association between attachment and mental health was corroborated by previous research (Park, 2009). However, all aspects of emotion regulation do not necessarily mediate the said association as some emotion regulation strategies like dysfunctional ones have been more consistently linked with insecure attachment (Brenning et al., 2012; Merlo & Lakey, 2007). This is also in line with the emotion regulation model of attachment (Cassidy & Shaver, 2008). In the past, fewer studies focused on the mediational role of emotion regulation in relation to attachment and psychopathology among adolescents. These studies show inconsistent findings across samples which is in line with the results of the present study (Brenning et al., 2012; Merlo & Lakey, 2007). These findings warrant further exploration of mediational role of emotion regulation in association between interpersonal relationships and adolescents psychopathology. Furthermore, as mentioned earlier the ARSQ showed weak reliability estimates which might affect some of the associations. Moreover, a separate analysis was not conducted for girls and boys as gender was not associated with all the outcome variables which has been found to effect the model results (Liu, 2008). In the current study the full SEM model controlled for age, gender, life events and SES had poor fit indices as these variables were not correlated with all the outcome measures. Nevertheless, these findings help to explain how attachment and mental health are related and illuminate a mechanism whereby interventions for mental health problems would be effective for adolescent population in Pakistan.

Hypothesis 5d. This study hypothesised that emotion regulation mediates the link between parental bonding and mental health.

Internal dysfunctional emotion regulation strategies were the most consistent significant mediator of parenting and mental health variables. This is supported by the initial research validating REQ which found strongest correlations between internal dysfunctional emotion regulation strategies and emotional symptoms (Phillips & Power, 2007) and with research in Pakistani sample which found that authoritative parenting to be positively associated with emotion regulation (Jabeen, Haque, & Riaz, 2013). With reference to the cultural context of Pakistan, internalizing negative emotions could be due to the reason that participants choose to regulate in ways that safeguard collective values, for example, by withholding negative emotions, internalizing them rather than disturbing the equilibrium of the larger group. This protective approach might be self-damaging resulting in mental distress because they value not to disturb group harmony which can be damaging for their mental health. Previously, inexpressiveness of emotions has been associated with poor mental health in Asian cultures (Chu, 2012). This interplay between emotion regulation and parental bonding (Morris et al., 2007; Feng et al., 2008) is well established in adolescents.

Hypothesis 5e. This study hypothesised that parenting, attachment, social support and emotion regulation will mediate the link between cultural orientation and mental health.

Collectivistic orientation was both directly and indirectly negatively associated with participant's depression scores whereas individualistic orientation was indirectly positively associated with depression. The findings of the present study indicate that adolescents who score higher on individualistic orientation are more likely to exhibit depressive and anxiety symptoms. This is in accordance with the Pakistani cultural milieu where adolescents are encouraged and raised to exist in a collective setup. It further supports the notion that individuals whose values approximate the widely shared cultural values experience less psychological distress (Dressler, Balieiro, Ribeiro, & Dos Santos, 2007). Furthermore, there is evidence supporting cultural orientation to be transmitted into adolescents either through parenting or through other communal sources (Dalhouse & Frideres, 1996). It is interesting to note that the results demonstrate a positive association between well-being, individualism and collectivism. The similar arguments have been reported

while examining these constructs in different social setup. The argument that psychological wellbeing is separate from depression and anxiety seems to gets further support from this argument. To understand the role of cultural orientation in the pathway of associations between, parenting, attachment, social support and emotion regulation; both moderation and mediational models were tested. No support was found for the moderation models. Overall these results were in line with the previous research suggesting the role of cultural orientation in relation to effect of attachment (Gelfand et al., 2013), parenting (Herz & Gullone, 1999), social support (Moscardino et al., 2010) and emotion regulation (Trommsdorff & Rothbaum, 2008) on mental health. The present study emphasizes the significance of taking cultural context into account when examining the interrelationships between psychological constructs. Furthermore, the implications of these findings extend beyond theoretical understandings to a more practical focus on sensitivity to cultural context which carries meaning for adolescents' well-being when applying western concepts as well as dealing with indigenous and immigrant populations.

4.6 General Methodological Considerations

4.6.2 Study design. This study employed a cross sectional survey design, to examine risk factors for mental health among adolescents. A cross-sectional survey design is a type of observational study often described as taking a "snapshot" in which both exposure and outcome are measured at the same time for each subject. These types of studies are considered most suitable for screening hypotheses because they require a comparatively shorter time and fewer resources to conduct (Carlson & Morrison, 2009). Baig (2001) pointed out that a chief hindrance in articulating effective health policy in Pakistan is the lack of robust epidemiological research in this population. Cross sectional surveys are not only both economical and time efficient to conduct, they also allow investigation of multiple exposures. This is of significance to the present study, as it included several measures to assess exposures of interest. However, the main constraint of cross sectional study designs is that it does not allow assessment of direction of causality, as both exposure and outcome are determined simultaneously which makes it difficult to determine the sequence of events. Therefore, using this design, it was not possible to establish a causal

etiological association between independent variables and mental health among Pakistani adolescents.

It might be debated that a resource effective alternate method could be the case control study design which compares two groups differing in outcome on the basis of some supposed underlying factors. One of the main benefits of using this design is its efficiency in recruiting cases for less prevalent conditions. However, given the evidence from previous findings as well as the present study, the prevalence of depression and anxiety among adolescents is high. Therefore, any advantage would have been lost, and the risk of selection bias would have been greater than for a cross-sectional survey (Coggon, Barker, & Rose, 2009). Moreover, if a case control study would have been conducted, the participants would still be reporting their responses retrospectively e.g. their perception of parenting, leaving the issue of temporal sequence between exposure and disease unresolved.

A better option would have been a prospective-cohort study to examine the life course phenomenon, particularly because if predictors were measured before outcome the direction of causality could have been ascertained. Determination of direction of causality is the most significant feature of such study design (Coggon et al., 2009). The primary issue in using this design to this study is that for instance while assessing the effect of parenting on infant's mental health would require decades of follow up. Henceforth, justifies for testing such hypotheses with cheaper and quicker type of study design such as a cross sectional survey.

To review, this study is perhaps limited in the inferences that can be made regarding the significant associations between the independent predictors and mental health variables observed in this cross sectional survey, since both are measured simultaneously and several factors including knowledge of the outcome might have influenced the report of the exposure. However, under the circumstances the most feasible approach was the one taken.

4.6.3 Bias. Bias refers to information collected in such a way that it deviates from the true information which can affect the internal validity of the study (Delgado-Rodriguez & Llorca, 2004). It can be defined as "an estimate arising from measurement error" (Porta, 2008, *p*. 128). There are three main types of bias namely selection bias, response bias, and information bias (Kleinbaum, Kupper, &

Morganstern, 1982). As this study collected retrospective reports there are reasons to be concerned about bias in such data (Gerlsma, Emmelkamp, & Arrindell, 1990). Each type of bias therefore is discussed with reference to the current study in detail.

4.6.3.1 Selection Bias. Selection bias is a type of research bias which occurs as a result of using different criteria to recruit and enrol patients into separate study cohorts and is more common in case-control and retrospective cohort studies (Pannucci & Wilkins, 2010). Therefore, the aim is to recruit a representative sample of the population under study. In a cross sectional survey design, such as this, where all pupils studying in respective classes eligible for participation in the schools are considered representative of the Pakistani government school population and selection is not contingent upon exposure to risk of mental health problems, selection seems less likely to introduce bias.

4.6.3.2 Response Bias. High response rate was demonstrated in this study which reduces the non-response bias. The high response rate could be attributed to the sensitive and professional approach adopted which involved taking permissions from higher authorities following appropriate procedures through recognised institution in Pakistan (Fatima Jinnah Women University). Furthermore, principal of each school was approached well before data collection with written official approval from the higher authorities along with the information sheets explaining the aims of the study. Another reason for a good response rate can be that the main researcher is a female and a lecturer at Fatima Jinnah Women University. It might be the case that female gender is considered less precarious entering the school premises and the fact that teaching profession is highly respectable in Pakistani culture. Furthermore, excellent response rates in the present study may also be the result of getting consent from the school authorities which than encouraged these students to participate in the study.

A type of response bias which is relevant to this study is response bias which has been previously reported to be higher among Asian respondents (Middleton and Jones 2000; Keillor et al. 2001). One way for controlling for such bias is by using scales measuring social desirability (Van de Mortel, 2008). However, such attempts have been unsuccessful in many researches (Campbell, Converse, and Rodgers 1976; Gove et al. 1976; Gove and Geerken 1977; Kozma and Stones 1987; Welte and

Russell 1993). In some researches controlling for the effect of social desirability has even affected the validity coefficients of the studies (McCrae 1986). A reliable methods is using statistical control techniques include partialing out the effect of social desirability by using advanced statistical techniques such as multiple regression to avoid spurious correlations (Ganster, Hennessey and Luthans, 1983). Although, this study did not use a measure of social desirability due to practical consideration keeping in view the length of the survey, it employed advanced statistical procedures to analyse data controlling for measurement error and restricting false associations between variables. However, subsequent researches should directly control for such bias in data.

4.6.3.3 Information Bias. Information bias may occur if the information gathered from the study participants is systematically incorrect about the exposure and outcome under study. Two types of information bias are explained in detail below.

4.6.3.3.1 Observer Bias. Bias from the observer at data collection was reduced in the present study as participants were self-reporting the required information however, at time of data entry there are chances of random error in coding the collected information. To account for this bias visual checking was conducted at the time of data entry which is a common technique used to correct for data entry errors. In this technique the person enters the data once, often in analysis software. After coding the data, the same person visually matches the data entered against the original paper measures. If inconsistencies are observed, the person amends the errors. Furthermore, deterrent efforts were made at the time of data entry to reduce such errors e.g. data was entered by the main researcher, graphs and diagnostic statistics were used to identify outliers which are frequently used methods to reduce error (Barchard & Pace, 2011). However, it cannot be claimed that there is an absolute eradication of such tendency towards bias in this study. However, some measures were taken to reduce this possible contamination of results.

4.6.3.3.2 Recall Bias. Recollecting events retrospectively is innately susceptible to bias. Recall bias is particularly very common in case-control studies, in which participants are aware of their illness (Neugebauer & Ng, 1990). However, in this study data was collected from a community population but the information

collected required recollections of situation retrospectively e.g. adolescents were asked to rate their perceptions of parenting they have received since they were child. Considering the cultural milieu of Pakistan it might be debated that the participants would present a general predisposition to rate their parents as more caring, due to the communal inclination to revere the parent as opposed to presenting them in a negative manner as well as the religious obligation of respecting parents. Such report would mean that the reported association between low care and mental health among the participants could have been underestimated however it does not necessarily mean bias as bias would occur if this predisposition to overrate the level of care from parents was present to a different degree between cases and non-cases implying that an error is systematic. However, it is possible that those scoring high on depression and anxiety may associate their symptoms with the items measuring correlates which might have affected their responses. To take account of such bias information can be gathered from multiple informants which requires extra resources. Such methods have been used in the past where for example siblings were asked to rate parenting perception for their brother/sister and their own perceptions of parenting. It was observed that siblings found it difficult to differentiate between their own perceptions and their sibling's perceptions (Duggan, Sham, Minne, Lee, & Murray, 1998). Furthermore, there is now evidence on robustness of PBI which is sensitive to sample characteristics, time and variations in mood but this sensitivity does not appear to significantly bias the long term stability of this parenting reports measured by PBI (Murphy, Wickramaratne, & Weissman, 2010). Having said all, not involving multiple informants might be considered a limitation of this study; it would have been challenging to contact these relatives and to have guaranteed the confidentiality.

Present study made use of instruments with strong psychometric properties as well as orienting participants to the study in such a way that they had implicit knowledge about the study but balancing out providing excess information which can affect their responses. This was done by informing the participants that the survey has questions regarding their general health and overall well-being. Nevertheless, possibility of recall bias can still not be excluded. Present study found most of the associations were significant between perceptions of parenting, emotion regulation,

social support and model of self and other. Although this does not provide us with conclusive evidence against recall bias, it does indicate concurrent validity.

4.6.3.4 Confounding. Confounder can be defined as "A variable, other than the one studied, that can cause or prevent the outcome of interest" (Attia, 2005, p. 259). It is independently associated with both the exposure and the outcome under study. A variable cannot produce confounding if it is prohibited from varying or is controlled or it should be equally distributed in the two groups to give balanced groups (Attia, 2005). Techniques used in the study design to limit confounding are randomization and restriction which function by eliminating variation in confounding factors between the two groups.

For the present study numbers of confounders were considered based on the available literature in the area. These were SES, age gender and negative life events. Socio-economic status was controlled at the time of data collection by recruiting all the participants from similar schools which can be a proxy for socio-economic status. Furthermore data was collected from restricted age band and approximately equal numbers of boys and girls participants were recruited by collecting data from equal number of boys and girl only schools and coeducation schools. Confounders were further addressed in the statistical analysis. This was done by rerunning each model after controlling for the confounders. Final model with controlling for confounders yielded poor fit indices whereas the association found in first model remained significant. This perhaps can be explained by the fact that including a variable which is not a confounder can also lead to biased estimates of the structural coefficients (Spirtes, Richardson, Meek, Scheines, & Glymour, 1998).

4.6.3.5 Direction of Causality. According to Hume (1974) a cause is an object which is followed by another object and where the later would not occur without the former.

In the present study, it was argued that low care, high protectiveness and authoritarianism by parents elicit an increased risk of mental health problems and low well-being among adolescents. Furthermore it was argued that adolescents *view of self* and *other* will be associated with their mental health and well-being. These associations will be mediated by their perceptions of social support and emotion regulation. The cross sectional study design employed in this study does not assist in

establishing a temporal sequence between exposure and disease and is theoretically susceptible to the possibility that the exposure is the result rather than the cause of the disease. Therefore, it might be argued that an inherent limitation of this study design is that it cannot for instance claim that parenting earlier in life caused mental health problems in adolescents.

The theoretical model followed in this study aimed to understand mental health in terms of a life course phenomenon, and it addressed each epoch within the life cycle through different proxy measures. Parenting, the main risk factor, as assessed by the PBI aimed to examine early parenting by the parents up to participant's age at the time of data collection that is from childhood to adolescence. Attachment model of self and other was measured in terms of how participants feel about each relationship in their life. Attachment styles are said be developed during the first two years of life and are observed to be stable from infancy to adolescence and early adulthood (Waters, Hamilton, & Weinfield, 2000). Whereas depression, anxiety symptoms of the respondents were based on their present mental health that is in the last week, which obviously addresses the adolescent period in their lives and well-being was measured in terms of participant's perceptions of how they feel about their life, health and other things which might be important for them currently. The available evidence pertaining to the PBI validity of measuring actual parenting, and the validity of HADS measuring current mental health, then it may be argued, that despite the limitations of the cross sectional survey design, it is temporally not plausible that the present mental health might have caused perceptions of parenting. Parenting as assessed in the present study must precede symptoms of depression and anxiety in time sequence, and it does not seem plausible that psychological morbidity in adolescence could cause low perceived parental care in an earlier life phase. Though, recall bias might have been an issue, it seems unlikely that in reverse time sequence low care followed mental health problems.

Several studies employing varied study designs have attempted to substantiate a more explicit support for the direction of causality, indicating parenting perceptions to be predictive of adolescent depression (Raudino, Fergusson, & Horwood, 2013; Kendler, Neale, Kessler, Heath, & Eaves, 1993; Gotlib, Mount, Cordy, & Whiffen, 1988) and anxiety (Raudino, Fergusson, & Horwood, 2013). The

literature also supports temporal relationship between attachment styles and adolescents' depression (Chango et al., 2009; Lee & Hankin, 2009) and anxiety symptoms (Van Eijck et al., 2012; Lee & Hankin, 2009).

4.7 Implications and recommendations

This work is one of the very few initial researches in the field of mental health in Pakistan and carries many important implications in the context of mental health of Pakistani adolescents. It not only provides the preliminary prevalence estimates of most common mental health problems it also provides test of theoretically grounded predictors of mental health.

The association of mental health with cultural orientation in the hypothesized direction in this study stresses the importance of culture in understanding mental health and intervention therefore must be designed and adapted to the needs of culture.

Though the study was conducted on community population but has some generalizability to the clinical population as well. Since, it is recognized that in Pakistan support for health is sort only in dire circumstances at tertiary care level. Therefore, community prevalence, school prevalence is crucial to establish the clinical relevance and significance of these problems. Furthermore, the results can be interpreted with reference to the mental health problems experienced by school pupils and with reference to their treatment by the school counsellor. The significant role of parenting, attachment, social support and emotion regulation calls for assessment of psychological therapies in a multipronged approach taking into account all of these factors for adolescents' mental health in the cultural context of Pakistan. The current mental health system of Pakistan is very weak and there is no evidence available on the forms of therapies used in Pakistan. It is said that skilled psychologists adapt therapy for the individual requirements of patients in Pakistan (Naeem, Gobbi, Ayub, & Kingdon, 2010). Results of this study though are preliminary but give some evidence on the role of studied factors and Pakistani adolescents mental health for such practitioners.

The most significant finding of this work is the role of parenting perceptions and adolescents' mental health. This calls for exploration of family therapy, interpersonal therapy and attachment based therapies which include parent-child

dimensions and might be applicable for Pakistani adolescents keeping in view the direct and indirect effects of parenting perception and adolescents' mental health and well-being in the current sample. Psychologists working in Pakistan use religious practices as part of the therapy (Murray, 2002). Perhaps it would be significant to psycho-educate parents through their religious obligation of good parenting which is considered "Sadqa-e-jariya" meaning a good deed that will keep on multiplying. Good parenting practices particularly those based on enhancing attachment security have been used as intervention strategies successfully in other parts of the world (Bakermans-Kranenburg, Van Ijzendoorn, & Juffer, 2003) and in Pakistan these could be successfully implemented particularly if they were nested in the concept of religious practices which are culturally prevalent and acceptable.

The association between emotion regulation and mental health in this sample provides a compelling voice to the argument for emotion regulation structures to be in place for therapeutic interventions with adolescents experiencing mental health difficulties or for the ones at risk of such difficulties. Emotion Regulation Therapy (ERT) is a contemporary form of therapy which incorporates aspects of Cognitive Behavioural Therapy, mindfulness, and emotion-focused interventions. It has been found to be effective for anxiety disorders like generalized anxiety disorders (Mennin, 2004) as well as depression (Kovacs et al., 2006). Furthermore, emotion regulation has not only been found as an integral part of major therapy forms but has also been found to mediate the effect of other forms of therapies (Slee, Spinhoven, Garnefski, & Arensman, 2008).

An important consideration to make is the manifestation of distress within school going adolescent populations. The complex intertwining of the experience of parenting, attachment , emotion regulation and social support associated with mental health and well-being in this study makes it imperative that a multi-pronged strategy be deployed to systematically address school going adolescents' mental health problems in Pakistan. This suggests that both prevention and intervention should be interdisciplinary in nature. In addressing issues concerning mental health among Pakistani children and adolescents who form large proportion of her population; government should endorse functional and visible policy of mainstreaming mental health into all policies and programs highlighting that mental health problems as

experienced by adolescents contributes to the global burden. The government needs to warrant that all pertinent agencies are mindful of the significance of mental health, and of the impact that their actions can have on mental health, and then to ensure that appropriate harmonization between concerned agencies takes place (Jenkins, 2003). The findings of the present study cannot probably change the prevailing cultural norms; however, it can initiate a process of distinguishing the risk of mental health problems experienced by adolescents.

High rates of mental health problems like depression and anxiety in the current sample calls for regular mental health and well-being screening for school going populations in Pakistan. Awareness raising strategies could be adopted both at the government and the non-government level. For example, seminars, conferences, and workshops at national level could highlight the negative consequences of poor parenting, such as risk of mental health problems, and the long term effect of repetitive cycle of poor parenting continuing through into next generations. The comparison between child who are raised in a caring environment and those who are relatively neglected could be efficiently highlighted by electronic and print media. Potential for inter-sectorial approaches should be explored; for example, the Ministry of Social Welfare could work together with the Ministry of Education in developing recreational and educational activities for parents and adolescents to enhance the channels of communication and to bridge the generational gap between them.

Currently, the rates of detection, treatment and appropriate referral of psychological disorders in primary health care settings are negligible. Clinicians need to be sensitive and prepared to evaluate and address age specific, structurally determined risk factors and to become skillful in providing much needed support for patients in alliance with other sectors of the health and social welfare system. Hospitals could include a screening instrument in the intake interview. This could help identify high-risk population of adolescents. The earliest possible identification and protection of children and adolescents, who have experienced adversity and if possible the elimination of those adversities, is necessary to have healthy mental health outcomes. A priority for mental health promotion and intervention programs is to incorporate a mental health focus in all program related to children and

adolescents health. This should include providing counseling and psychological assessment services in educational institution to the students.

4.8 Limitations

Although the fit indices all indicate that the hypothesized models provide a very good fit to the data, there are several limitations to the study that should be addressed in future investigations. First, the standardized path coefficients in the model are modest, thus suggesting that other factors also play a role in determining adolescent mental health. Second, the sample was comprised of predominantly urban adolescents from a large city in Pakistan. Therefore, the generalizability of these results to a rural sample is not known. Third, the generalizability of the model to a clinical sample of adolescents also remains untested and should be investigated in adolescents who are clinically depressed or anxious.

Finally, the cross-sectional design of this study cannot address causality. Longitudinal studies that include multiple informants and multiple methodologies are needed to better address causality. Although the structural equation modelling approach utilized suggests that the hypothesized model provides a very good fit to the data, it is possible that other models also fit this data.

In addition to addressing these limitations, future research should examine the separate effects on boys and girls sample and attachment specific to relationships must be assessed. This study was unable to address this issue. It is possible that participants identity with same-sex caregiver. This is important because as Salzman (1996) found that the securely attached young women showed significantly higher positive maternal identification than either of the insecurely attached groups.

Another imperative area for future research stresses the specificity of many dimensions of non-optimal parenting on specific dimensions of attachment insecurity, and the specificity of several dimensions of attachment insecurity on particular dimensions of poor mental health susceptibility. For example, it may be that dismissing and preoccupied attachment styles arise from somewhat different family dynamics and parenting behaviours (Blatt & Homann, 1992).

4.9 Conclusion

In conclusion, the present study contributes to our growing understanding of the connections between parent-child relationships, attachment insecurity, social support, emotional regulation and cultural orientation to mental health in the unique cultural context of Pakistan. This data is consistent with the idea that adverse parenting and insecure attachment puts adolescents at risk for the development of mental health problems largely through their effects on dysfunctional regulation of emotions and poor social support. Future research should explore how specific aspects of mothers' and fathers' parenting may contribute to particular characteristics of attachment insecurity, and how specific aspects of attachment insecurity may contribute to different aspects of emotion regulation and social support.

References

Adam, K. S., Keller, A., West, M., Larose, S., & Goszer, L. B. (1994). Parental representation in suicidal adolescents: A controlled study. *Australian and New Zealand Journal of Psychiatry*, *28*, 418–425.

Ainsworth, M. D. S. (1989). Attachments beyond infancy. *American Psychologist, 44*, 709-716.

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation.* Hillsdale, NJ: Erlbaum.

Ainsworth, M. D., & Marvin, R. S. (1995). On the shaping of attachment theory and research: An interview with Mary DS Ainsworth (Fall 1994). *Monographs of the Society for Research in Child Development*, *60*(2-3), 3-21.

Albano, A. M., Chorpita, B. F., & Barlow, D. H. (2003). Childhood anxiety disorders. In E. J. Mash & R. A. Barkley (Eds.), Child psychopathology (2nd ed., pp. 279-329). New York: Guildford Press.

Allen, J. P., & Hare, A. (2007, March). *The Lasting Lessons of Early Adolescent Friendships: The Benefits of Autonomy and the Mixed Blessings of Early Intensity.* Paper presented at the Biennial Meetings of the Society for Research in Child Development, Boston, MA.

Allen, J. P., Hauser, S. T., & Borman-Spurrell, E. (1996). Attachment insecurity and related sequelae of severe adolescent psychopathology: An eleven-year follow-up study. *Journal of Consulting and Clinical Psychology*, *64*, 254-263.

Allen, J. P., & Land, D. (1999). Attachment in adolescence. In J. Cassidy & P.R. Shaver (Eds.) *Handbook of attachment; Theory, research, and clinical applications* (pp. 319-335). New York, NY: The Guilford Press.

Allen, J. P., & Manning, N. (2007). From Safety to Affect Regulation: Attachment from the Vantage Point of Adolescence. *New Directions for Child and Adolescent Development*, *117*, 23-39.

Ali, M., Bhatti, M. A., & Ushijima, H. (2004). Reproductive health needs of adolescent males in rural Pakistan: an exploratory study. *Tohoku Journal of Experimental Medicine*, *204*(1), 17-26.

Ali, B. S., Reza, H., Khan, M. M, & Jehan, I. (1998). Development of an indigenous screening instrument in Pakistan: the Aga Khan University Anxiety and Depression Scale. *J Pak Med Assoc, 48*(9), 261-265.

American Psychiatric Association (Ed.). (2000). *Diagnostic and statistical manual of mental disorders: DSM-IV-TR*. American Psychiatric Pub.

Amone-P'Olak, K., Garnefski, N., & Kraaij, V. (2007). Adolescents caught between fires: Cognitive emotion regulation in response to war experiences in Northern Uganda. *Journal of Adolescence*, *30*(4), 655-669.

Anderson, J. C., Williams, S., McGee, R., & Silva, P. A. (1987). DSM-III disorders in preadolescent children: Prevalence in a large sample from the general population. *Archives of general psychiatry*, *44*(1), 69-76.

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

Angold, A., Erkanli, A., Farmer, E. M., Fairbank, J.A., Burns, B. J., Keeler, G., & Costello, E. J. (2002). Psychiatric disorder, impairment, and service use in rural

African American and white youth. *Archives of General Psychiatry. 59*(10), 893-901.

Anthony, D. (2011). *The state of the world's children 2011-adolescence: an age of opportunity*. New York, NY: UNICEF.

Asnaani, A., Richey, J. A., Dimaite, R., Hinton, D. E., & Hofmann, S. G. (2010). A cross-ethnic comparison of lifetime prevalence rates of anxiety disorders. *The Journal of nervous and mental disease*, *198*(8), 551.

Attia, A. M. (2005). Bias in RCTs: confounders, selection bias and allocation concealment. *Middle East Fertility Society Journal*, *10*(3), 258-261.

Auerbach, R. P., Bigda-Peyton, J. S., Eberhart, N. K., Webb, C. A., & Ho, M. H. R. (2011). Conceptualizing the prospective relationship between social support, stress, and depressive symptoms among adolescents. *Journal of Abnormal Child Psychology*, *39*(4), 475-487.

Aydin, B., & Oztutuncu, F. (2001). Examination of adolescents' negative thoughts, depressive mood, and family environment. *Adolescence*, *36*(141), 77-83.

Baig, L. (2001). Why Epidemiological Research in Pakistan?. *Journal-Pakistan Medical Association*, *51*(6), 206-206.

Bakermans-Kranenburg, M. J., Van Ijzendoorn, M. H., & Juffer, F. (2003). Less is more: meta-analyses of sensitivity and attachment interventions in early childhood. *Psychological bulletin*, *129*(2), 195.

Baldwin, M. W., Keelan, J. P. R., Fehr, B., Enns, V., & Koh-Rangarajoo, E. (1996). Social-cognitive conceptualization of attachment working models: Availability and accessibility effects. *Journal of Personality and Social Psychology*, *71*, 94-109.

Balistreri, E., Busch-Rossnagel, N. A., & Geisinger, K. F. (1995). Development and preliminary validation of the ego identity process questionnaire. *Journal of Adolescence, 18*, 179-192.

Bansal, V., Goyal, S., & Srivastava, K. (2009). Study of prevalence of depression in adolescent students of a public school. *Industrial Psychiatry Journal*, *18*(1), 43.

Barchard, K. A., & Pace, L. A. (2011). Preventing human error: The impact of data entry methods on data accuracy and statistical results. *Computers in Human Behavior, 27*(5), 1834-1839.

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.

Barry, H., Bacon, M., & Child, I. L. (1975). A cross-cultural survey on some sex differences in socialization. *Journal of Abnormal and Social Psychology, 55,* 327–332.

Barrera, M. (1986). Distinctions between social support concepts, measures, and models. *American Journal of Community Psychology, 14,* 413–445.

Barrera, M., & Ainlay, S. L. (1983). The structure of social support: A conceptual and empirical analysis. *Journal of Community Psychology*, *11*(2), 133-143.

Barclay, D., Higgins, C., & Thompson, R. (1995). The partial least squares (PLS) approach to causal modeling: personal computer adoption and use as an illustration. *Technology Studies*, *2*(2), 285-309.

Barth, J., & Martin, C. R. (2005). Factor structure of the Hospital Anxiety and Depression Scale (HADS) in German coronary heart disease patients. *Health and Quality of Life Outcomes, 3*(1).

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: a test of a four-category model. *Journal of Personality Psychology, 61*, 226-244.

Bartholomew, K., & Shaver, P. R. (1998). Methods of assessing adult attachment: Do they converge? In J. A. Simpson & W. S. Rholes (Eds.), *Attachment Theory and Close Relationships* (pp. 25-45). New York: Guilford.

Baumrind, D. (1966). Effects of authoritative parental control on child behaviour. *Child Development, 37*(4), 887-907.

Bebbington, P.E. (1998). Sex and depression. *Psychological Medicine*, *28*, 1-8.

Beddington, J., Cooper, C. L., Field, J., Goswami, U., Huppert, F. A., Jenkins, R., ... & Thomas, S. M. (2008). The mental wealth of nations. *Nature, 455*(7216), 1057-1060.

Beehr, T. A., & Glazer, S. (2001). A cultural perspective of social support in relation to occupational stress. In P. Perrewe, D. C. Ganster, & J. Moran (Eds.), *Research in Occupational Stress and Well-Being* (pp. 97-102). Greenwich, CO: JAI Press.

Beesdo, K., Knappe, S., & Pine, D. S. (2009). Anxiety and anxiety disorders in children and adolescents: developmental issues and implications for DSM-V. *The Psychiatric Clinics of North America, 32*(3), 483-524.

Bell, K. L., & Calkins, S. D. (2000). Relationships as inputs and outputs of emotion regulation. *Psychological Inquiry, 11,* 160–209.

Belsky, J. (1997). Attachment, mating, and parenting. *Human Nature, 8*(4), 361-381.

Belsky, J., & Cassidy, J. (1994). Attachment: Theory and evidence. In M. Rutter, D. Hay & S. Baron-Cohen (Eds.), *Developmental principals and issues in psychology and psychiatry* (pp. 373-402). London : Blackwell.

Benhorin, S., & McMahon, S. D. (2008). Exposure to violence and aggression: Protective roles of social support among urban African American youth. *Journal of Community Psychology*, *36*(6), 723-743.

Bentler, P. M. (1990). Comparative Fit Indexes in Structural Models. *Psychological Bulletin, 107* (2), 238-246.

Bentler, P. M. (1992). On the fit of models to covariances and methodology to the Bulletin. *Psychological Bulletin, 112*, 400-404. doi:10.1037/0033-2909.112.3.400

Bernstein, G. A., Borchardt, C. M., & Perwien, A. R. (1996). Anxiety disorders in children and adolescents: A review of the past 10 years. *Journal of the American Academy of Child & Adolescent Psychiatry*, *35*(9), 1110-1119.

Berry, J. W. (Ed.). (2002). *Cross-cultural psychology: Research and applications*. Cambridge University Press.

Best, D., & William J. S. (1997). Gender and culture in Handbook of Cross-cultural Psychology, vol. 3, Social Behavior and Applications.

Betts, J., Gullone, E., & Allen, J. S. (2009). An examination of emotion regulation, temperament, and parenting style as potential predictors of adolescent depression risk status: A correlational study. *British Journal of Developmental Psychology, 27,* 73-485.

Bhui, K., Mohamud, S., Warfa, N., Craig, T. J., & Stansfeld, S. A. (2003). Cultural adaptation of mental health measures: improving the quality of clinical practice and research. *The British Journal of Psychiatry*, *183*(3), 184-186.

Bjelland, I., Dahl, A. A., Haug, T. T., & Neckelmann, D. (2002). The validity of the Hospital Anxiety and Depression Scale: an updated literature review. *Journal of Psychosomatic Research, 52*(2), 69-77.

Blatt, S. J., & Homann, E. (1992). Parent-child interaction in the etiology of dependent and self-critical depression. *Clinical Psychology Review*, *12*(1), 47-91.

Bodden, D., Dirksen, C., & Bogels, M. (2008). Societal burden of clinically anxious youth referred for treatment: a cost-of-illness study. *Journal of Abnormal Child Psychology*, 36, 487–497.

Bolghan-Abadi, M., Kimiaee, S. A., & Amir, F. (2011). The relationship between parents' child rearing styles and their children's quality of life and mental health. *Psychology*, *2*(3), 230-234.

Bosacki, S., Dane, A., Marini, Z., & YLC-CURA. (2007). Peer relationships and internalizing problems in adolescents: mediating role of self-esteem. *Emotional and Behavioural Difficulties*, *12*(4), 261-282.

Bowlby, J. (1969). *Attachment and loss, Vol. 1: Attachment*. New York: Basic Books.

Bowlby, J. (1973). *Attachment and loss, Vol. 2: Separation: Anxiety and anger*. New York: Basic Books.

Bowlby, J. (I980). *Attachment and loss, Vol. 3: Loss, sadness and depression.* New York: Basic Books.

Bowlby, J. (1988). *A Secure base: Parent-child attachment and healthy human development.* New York: Basic Books.

Boyce, W., Torsheim, T., Currie, C., & Zambon, A. (2006). The family affluence scale as a measure of national wealth: validation of an adolescent self-report measure. *Social Indicators Research, 78*(3), 473-487.

Bracken, B. A., & Reintjes, C. (2009). Age, race, and gender differences in depressive symptoms: a lifespan developmental investigation. *Journal of Psychoeducational Assessment*.

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult romantic attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46-76). New York: Guilford Press.

Brenning, K. M., Soenens, B., Braet, C., & Bosmans, G. (2012). Attachment and depressive symptoms in middle childhood and early adolescence: Testing the validity of the emotion regulation model of attachment. *Personal Relationships, 19*(3), 445-464.

Brennan, C., Worrall-Davies, A., McMillan, D., Gilbody, S., & House, A. (2010). The Hospital Anxiety and Depression Scale: a diagnostic meta-analysis of case-finding ability. *Journal of Psychosomatic Research, 69*(4), 371-378.

Breslau. N., Chilcoat, H. D., Peterson, E. L., Schultz, L. R. (2000). Gender differences in major depression: The role of anxiety. In E. Frank (Ed.), Gender and its effects on psychopathology (pp. 131–150). Arlington, VA: American Psychiatric Publishing Inc.

Bretherton, I. (1992). The origins of attachment theory: John Bowlby and Mary Ainsworth. Developmental Psychology, 28, 759-775.

Bretherton, I., & Munholland, K. A. (1999). Internal Working Models in Attachment Relationships: A Construct Revisited. In J. Cassidy & P.R. Shaver (Eds.). *Handbook of Attachment: Theory, Research, and Clinical Applications* (pp. 419-435). New York: Guilford Press.

Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross Cultural Psychology, 1*(3), 185-216.

Brown, G. W., Harris, T. O., & Hepworth, C., (1994). Life events and endogenous depression. A puzzle re-examined. *Arch. Gen. Psychiatry, 51*, 525–534.

Brown, L. S., & Wright, J. (2001). Attachment theory in adolescence and its relevance to developmental psychopathology. *Clinical Psychology & Psychotherapy, 8*(1), 15-32.

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. *Sage Focus Editions*, *154*, 136-136.

Bruce, S. E., Yonkers, K. A., Otto, M. W., Eisen, J. L., Weisberg, R. B., Pagano, M., ... & Keller, M. B. (2005). Influence of psychiatric comorbidity on recovery and recurrence in generalized anxiety disorder, social phobia, and panic disorder: a 12-year prospective study. *American Journal of Psychiatry, 162*(6), 1179-1187.

Brumariu, L. E., & Kerns, K. A. (2010). Parent–child attachment and internalizing symptoms in childhood and adolescence: A review of empirical findings and future directions. *Development and psychopathology*, *22*(1), 177-203.

Bureau of Statistics. (2012). Punjab Development Statistics. Government of The Punjab. Retrieved on 14 May, 2013, from http://bos.gop.pk/?q=system/files/Development-Statistics-2012.pdf

Burton, E., Stice, E., & Seeley, J. R. (2004). A prospective test of the stress-buffering model of depression in adolescent girls: no support once again. *Journal of Consulting and Clinical Psychology*, *72*(4), 689-697.

Byrne, B. M. (2011). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. New York: Routledge Academic.

Calkins, S. D. (2010). Commentary: Conceptual and Methodological Challenges to the Study of Emotion Regulation and Psychopathology. *Journal of Psychopathology and Behavioural Assessment, 32*, 92–95.

Campbell, A., Converse, P. E., & Rodgers, W. L. (1976) The Quality of American Life: Perceptions, Evaluations, and Satisfactions. New York: Russell Sage Foundation.

Canetti, L., Bachar, E., Galili-Weisstub, E., De-Nour, A. K., & Shalev, A. Y. (1997). Parental bonding and mental health in adolescence. *Adolescence, 32*, 381–394.

Caplan, N. S., Choy, M. H., & Whitmore, J. K. (1991). *Children of the boat people: A study of educational success*. USA: University of Michigan Press.

Carlson, M. D., & Morrison, R. S. (2009). Study design, precision, and validity in observational studies. *Journal of Palliative Medicine, 12*(1), 77-82.

Carthy, T., Horesh, N., Apter, A., & Gross, J. J. (2010). Patterns of emotional reactivity and regulation in children with anxiety disorders. *Journal of Psychopathology and Behavioural Assessment, 32*(1), 23-36.

Casas, F., Figuer, C., Gonzalez, M., Malo, S., Alsinet, C., & Subarroca, S. (2007). The well-being of 12-to 16-year-old adolescents and their parents: results from 1999 to 2003 Spanish samples. *Social Indicators Research, 83*(1), 87-115.

Cassano, M., Perry-Parrish, C., & Zeman, J. (2007). Influence of gender on parental socialization of children's sadness regulation. *Social Development, 16*(2), 210-231.

Cassidy, J. (2008). The nature of the child's ties. In J. Cassidy & P.R. Shaver (Eds.). *Handbook of Attachment: Theory, Research, and Clinical Applications* (pp. 3-22). New York: Guilford Press.

Cassidy, J., & Shaver, P. R. (Eds.). (2008). Handbook of Attachment: Theory, Research, and Clinical Applications. New York: Guilford Press.

Central Intelligence Agency. (2013). The World Factbook. Retrieved on Oct 12, 2012, from https://www.cia.gov/library/publications/the-world-factbook/geos/pk.html

Cetin, F. C., Tuzun, Z., Pehlivanturk, B., Unal, F., & Gokler, B. (2010). Attachment Styles and Self-Image in Turkish Adolescents. *Journal of Research on Adolescence, 20*(4), 840-848.

Cha, E. S., Kim, K. H., & Erlen, J. A. (2007). Translation of scales in cross-cultural research: Issues and techniques. *Journal of Advance Nursing, 58*(4), 386-395.

Chan, S. M. (2012). Depressive mood in Chinese early adolescents: Relations with shyness, self-esteem and perceived social support. *Asia-Pacific Psychiatry, 4*(4), 233-240.

Chango, J. M., McElhaney, K. B., & Allen, J. P. (2009). Attachment organization and patterns of conflict resolution in friendships predicting adolescents' depressive symptoms over time. *Attachment & human development, 11*(4), 331-346.

Chao, R. K. (1994). Beyond parental control and authoritarian parenting style: Understanding Chinese parenting through the cultural notion of training. *Child Development, 65*(4), 1111-1119.

Chao, R. K. (1995). Chinese and European American cultural models of the self-reflected in mothers' childrearing beliefs. *Ethos, 23*(3), 328-354.

Chen, C. S., & Farruggia, S. (2002). Culture and adolescent development.*Online Readings in Psychology and Culture, 6*(1), 6.

Chen, X., & French, D. C. (2008). Children's social competence in cultural context. *Annual Review of Psychology, 59*, 591-616.

Cheng, S. T., Cheung, K. C., & Cheung, C. K. (2008). Peer victimization and depression among Hong Kong adolescents. *Journal of Clinical Psychology, 64*(6), 766-776.

Cheung, F. M., & Leung, K. (1998). Indigenous Personality Measures Chinese Examples. *Journal of Cross-Cultural Psychology*, *29*(1), 233-248.

Chin, W. W. (1998). Commentary: Issues and opinion on structural equation modeling. *Management Information Systems Quarterly*. *22*(1), vii-xvi.

Chin, W. W., & Newsted, P. R. (1999). Structural equation modelling analysis with small samples using partial least squares. In R. H. Hoyle (Ed.), *Statistical strategies for small sample research* (pp. 307–341). Thousand Oaks: Sage.

Chu, L. C. (2012). The Influence of the Internalization of Emotional Regulation on Mental Health Among the Taiwanese People: The Moderating Effect of

Cultural Fit. *Asia-Pacific Journal of Public Health,* 1-14. doi: 10.1177/1010539512455045

Chung, W. (1997). Asian American children. In E. Lee (Ed.), Working with Asian Americans: A guide for clinicians (pp. 165-174). New York: Guilford.

Cicchetti, D. (1989). Developmental psychopathology: Some thoughts on its evolution. *Development and Psychopathology, 1*(01), 1-4.

Cicchetti, D., & Rogosch, F. A. (1996). Equifinality and multifinality in developmental psychopathology. *Development and Psychopathology, 8*, 597-600.

Cicognani, E., Albanesi, C., & Zani, B. (2008). The impact of residential context on adolescents' subjective well-being. *Journal of Community & Applied Social Psychology, 18*(6), 558-575.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38*(5), 300-314.

Coccia, C., Darling, C. A., Rehm, M., Cui, M., & Sathe, S. K. (2012). Adolescent health, stress and life satisfaction: The paradox of indulgent parenting. *Stress and Health, 28*(3), 211-221.

Coggon, D., Barker, D., & Rose, G. (2009). *Epidemiology for the Uninitiated*. John Wiley & Sons.

Cohen, J. (1988). *Statistical power analysis for the behavioural sciences*. (2nd ed.), New Jersey: Lawrence Erlbaum Associates.

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., Underwood, L., & Gottlieb, B. H. (Eds.). (2000). *Social support measurement and intervention: A guide for health and social scientists*. New York: Oxford University Press.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310-357.

Cole, P., Martin, S., & Dennis, T. (2004). Emotion regulation as a scientific construct: Methodological challenges and directions for child development research. *Child Development, 75*, 317-333.

Cole, P. M., Michel, M. K., & Teti, L. (1994). The development of emotion regulation and dysregulation: A clinical perspective. *Monographs of the Society for Research in Child Development*, 59, 73-100.

Coll, C. G., Akerman, A., & Cicchetti, D. (2000). Cultural influences on developmental processes and outcomes: Implications for the study of development and psychopathology. *Development and Psychopathology, 12*(3), 333-356.

Colosi, R. (2005, August). Negatively worded questions cause respondent confusion. *Paper presented at the Proceedings of the American Statistical Association section on Survey Research Methods,* Minneapolis, Minnesota.

Cosco, T. D., Doyle, F., Ward, M., & McGee, H. (2012). Latent structure of the Hospital Anxiety and Depression Scale: A 10-year systematic review. *Journal of Psychosomatic Research, 72*(3), 180-184.

Costello, E. J., Mustillo, S., Erkanli, A., Keeler, G., & Angold, A. (2003). Prevalence and development of psychiatric disorders in childhood and adolescence. *Archives of General Psychiatry, 60*(8), 837-844.

Costello, E. J., Pine, D. S., Hammen, C., March, J. S., Plotsky, P. M., Weissman, M. M., ... & Leckman, J. F. (2002). Development and natural history of mood disorders. *Biological Psychiatry, 52*(6), 529-542.

Crittenden, P. M. (1997). Truth, Error, Omission, Distortion, and Deception: The Application of Attachment. In M. C. S. Dollinger & F. L. DiLalla (Eds.), *Assessment and intervention issues across the life span* (pp. 35-76). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.

Cunha, M., Soares, I., & Pinto-Gouveia, J. (2008). The role of individual temperament, family and peers in social anxiety disorder: A controlled study. *International Journal of Clinical Health & Psychology*, *8*(3), 631-655.

Currie, C., Molcho, M., Boyce, W., Holstein, B., Torsheim, T., & Richter, M. (2008). Researching health inequalities in adolescents: the development of the Health Behaviour in School-Aged Children (HBSC) family affluence scale. *Social Science & Medicine*, *66*(6), 1429-1436.

Cyranowski, J. M., Frank, E., Young, E., & Shear, K. (2000). Adolescent onset of the gender difference in lifetime rates of major depression. *Archives of General Psychiatry*, *57*(1), 21–27.

Dalhouse, M., & Frideres, J. S. (1996). Intergenerational congruence: The role of the family in political attitudes of youth. *Journal of Family Issues, 17*(2), 227-248.

Danielsen, A. G. (2010). Supportive and motivating environments in school: Main factors to make well-being and learning a reality. *Norsk Epidemiologi*, *20*(1), 33-39.

Danielsen, A. G., Samdal, O., Hetland, J., & Wold, B. (2009). School-related social support and students' perceived life satisfaction. *The Journal of Educational Research*, *102*(4), 303-320.

Datnow, A., & Hubbard, L. (Eds.). (2002). *Gender in policy and practice: Perspectives on single-sex and coeducational schooling*. Psychology Press.

Davis, M. H., Morris, M. M., & Kraus, L. A. (1998). Relationship-specific and global perceptions of social support: Associations with well-being and attachment. *Journal of Personality and Social Psychology, 74*(2), 468-481.

De Bruin, E. I., Zijlstra, B. J., Van de Weijer-Bergsma, E., & Bogels, S. M. (2011). The mindful attention awareness scale for adolescents (maas-a): psychometric properties in a dutch sample. *Mindfulness*, *2*(3), 201-211.

Dekovic, M., Wissink, I., & 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.

Delgado-Rodriguez, M., & Llorca, J. (2004). Bias. *Journal of Epidemiology and Community Health, 58*(8), 635-641.

Del Valle, J. F., Bravo, A., & Lopez, M. (2010). Parents and peers as providers of support in adolescent's social network: A developmental perspective. *Journal of Community Psychology, 38*(1), 16-27.

Demaray, M. K., Malecki, C. K., Davidson, L. M., Hodgson, K. K., & Rebus, P. J. (2005). The relationship between social support and student adjustment: A longitudinal analysis. *Psychology in the Schools*, *42*(7), 691-706.

Dinh, K. T., Sarason, B. R., & Sarason, I. G. (1994). Parent-child relationships in Vietnamese immigrant families. *Journal of Family Psychology, 8*(4), 471-488.

Ditzen, B., Schmidt, S., Strauss, B., Nater, U.M., Ehlert, U., Heinrichs, M. (2008). Adult attachment and social support interact to reduce psychological but not cortisol responses to stress. *Journal of Psychosomatic Research, 64*(5), 479 – 486.

Doyle, A. B., Moretti, M. M., & Canada. Health Promotion and Programs Branch. Childhood and Youth Division. (2000). *Attachment to parents and adjustment in adolescence: Literature review and policy implications*. Childhood and Youth Division, Health Canada.

Doyle, A. B., Moretti, M. M., Brendgen, M., & Bukowski, W. (2002). Parent child relationships and adjustment in adolescence: Findings from the HSBC and NLSCY Cycle 2 Studies. CAT number 032ss. H5219-00CYHS. Ottawa: Health Canada. *Child and Family Division*.

Dodani, S., & Zuberi, R. W. (2000). Center-based prevalence of anxiety and depression in women of the northern areas of Pakistan. *Journal of Pakistan Medical Association, 50*(5), 138-140.

Dressler, W. W., Balieiro, M. C., Ribeiro, R. P., & Dos Santos, J. E. (2007). Cultural consonance and psychological distress: examining the associations in multiple cultural domains. *Culture, Medicine and Psychiatry, 31*(2), 195-224.

Dubois-Comtois, K., Cyr, C., Pascuzzo, K., Lessard, M., & Poulin, C. (2013). *Journal of Child and Adolescent Behaviour, 1(3).*

Duggan, C., Sham, P., Minne, C., Lee, A., & Murray, R. (1998). Quality of parenting and vulnerability to depression: results from a family study. *Psychological Medicine, 28*(1), 185-191.

Edwards, N. C. (1994). Translating written material for community health research and service delivery: guidelines to enhance the process. *Canadian Journal of Public Health, 85*(1), 67-70.

Enns, M. W., Cox, B. J., & Clara, I. (2002). Parental bonding and adult psychopathology: results from the US National Comorbidity Survey. *Psychological Medicine*, *32*(6), 997-1008.

Epkins, C. C., & Heckler, D. R. (2011). Integrating etiological models of social anxiety and depression in youth: Evidence for a cumulative interpersonal risk model. *Clinical Child and Family Psychology Review, 14*(4), 329-376.

Erikson, E. H. (1950). *Childhood and Society*. New York: Norton.

Eryilmaz, A. (2010). Turkish Adolescents' Subjective Well-Being with Respect to Age, Gender and SES of Parents. *International Journal of Human and Social Sciences*, 5(8), 523-526.

Eryilmaz, A. (2012). How do adolescents increase their subjective well-being by means of establishing relationships with their parents?. *The Journal of Psychiatry and Neurological Sciences, 25*(3), 252-257.

Essau, C. A. (2004). The association between family factors and depressive disorders in adolescents. *Journal of Youth and Adolescence, 33*(5), 365-372.

Essau, C. A. (2007). Course and outcome of major depressive disorder in non-referred adolescents. *Journal of affective disorders*, *99*(1), 191-201.

Essau, C. A., Conradt, J., Petermann, F. (2000). Frequency, comorbidity, and psychosocial impairment of depressive disorders in adolescents. *Journal of Adolescent Research, 15*, 470–481.

Essau, C. A., Ishikawa, S. I., & Sasagawa, S. (2011). Early learning experience and adolescent anxiety: a cross-cultural comparison between Japan and England. *Journal of Child and Family Studies*, *20*(2), 196-204.

Essau, C. A., Ishikawa, S. I., Sasagawa, S., Sato, H., Okajima, I., Otsui, K., ... & Michie, F. (2011). Anxiety symptoms among adolescents in Japan and England: their relationship with self-construal and social support. *Depression and Anxiety*, *28*(6), 509-518.

Essau, C. A., Leung, P. W., Conradt, J., Cheng, H., & Wong, T. (2008). Anxiety symptoms in Chinese and German adolescents: their relationship with early learning experiences, perfectionism, and learning motivation. *Depression and Anxiety*, *25*(9), 801-810.

Essau, C. A., Lewinsohn, P. M., Olaya, B., & Seeley, J. R. (2014). Anxiety disorders in adolescents and psychosocial outcomes at age 30. *Journal of affective disorders*, *163*, 125-132

Essau, C. A., Lewinsohn, P. M., Seeley, J. R., & Sasagawa, S. (2010). Gender differences in the developmental course of depression. *Journal of affective disorders*, *127*(1), 185-190.).

Essau, C. A., Sakano, Y., Ishikawa, S., & Sasagawa, S. (2004). Anxiety symptoms in Japanese and in German children. *Behaviour Research and Therapy*, *42*(5), 601-612.

Eveleth, P. B., & Tanner, J. M. (1990). *Worldwide Variation in Human Growth* (2nd ed.). Cambridge: Cambridge University Press.

Falci, C., & McNeely, C. (2009). Too many friends: social integration, network cohesion and adolescent depressive symptoms. *Social Forces, 87*(4), 2031-2061.

Feng, X., Shaw, D. S., Kovacs, M., Lane, T., O'Rourke, F. E., & Alarcon, J. H. (2008). Emotion regulation in pre-schoolers: The roles of behavioural inhibition, maternal affective behaviour, and maternal depression. *Journal of Child Psychology and Psychiatry, 49*(2), 132–141.

Fergusson, D. M., & Woodward, L. J. (2002). Mental health, educational and social role outcomes of adolescents with depression. *Archives of General Psychiatry, 59*(3), 225-231.

Field, A. (2009). *Discovering statistics using SPSS*. Sage publications.

Finlay-Jones, R., & Brown, G. W. (1981). Types of stressful life event and the onset of anxiety and depressive disorders. *Psychological Medicine, 11*(4), 803-815.

Fogel, A. (2009). *Infancy: Infant, family and society*. New York: Sloan Publishing.

Fonagy, P. (1999) Psychoanalytic theory from the viewpoint of attachment theory and research. In J. Cassidy & P. Shaver (Eds.) *Handbook of Attachment: Theory, Research and Clinical Applications* (pp. 595-624). New York: Guilford.

Fraley, R. C., & Shaver, P. R. (2000). Adult romantic attachment: Theoretical developments, emerging controversies, and unanswered questions. *Review of General Psychology, 4*(2), 132-154.

Friedman, S. (2001). Cultural issues in the assessment of anxiety disorders. In M. Antony, S. Orsillo, & L. Roemer (Eds.), Practitioner's guide to empirically based measures of anxiety (pp. 37-41). Dordrecht, Netherlands: Kluwer Academic Publishers.

Friedman, S., Samuelian, J. C., Lancrenon, S., Even, C., & Chiarelli, P. (2001). Three-dimensional structure of the Hospital Anxiety and Depression Scale in a large French primary care population suffering from major depression. *Psychiatry Research, 104*(3), 247-257.

Fuligni, A. J., Tseng, V., & Lam, M. (1999). Attitudes toward family obligations among American adolescents with Asian, Latin American, and European backgrounds. *Child Development, 70*(4), 1030-1044.

Furnham, A., & Husain, K. (1999). The role of conflict with parents in disordered eating among British Asian females. *Social Psychiatry and psychiatric Epidemiology, 34*(9), 498-505.

Giannakopoulos, G., Dimitrakaki, C., Pedeli, X., Kolaitis, G., Rotsika, V., Ravens-Sieberer, U., & Tountas, Y. (2009). Adolescents' wellbeing and functioning: relationships with parents' subjective general physical and mental health. *Health Qual Life Outcomes, 7*(100).

Galambos, N., Leadbeater, B., & Barker, E. (2004). Gender differences in and risk factors for depression in adolescence: A 4-year longitudinal study. *International Journal of Behavioural Development, 28*(1), 16-25.

Gamble, S. A., & Roberts, J. E. (2005). Adolescents' Perceptions of Primary Caregivers and Cognitive Style: The Roles of Attachment Security and Gender. *Cognitive Therapy and Research, 29*(2), 123-141.

Ganster, D. C., Hennessey, H., & Luthans, F. (1983). Social desirability response effects: Three alternative models. *Academy of Management Journal, 26*, 321-331.

Garnefski, N., Kraaij, V., & Van Etten, M. (2005). Specificity of relations between adolescents' cognitive emotion regulation strategies and internalizing and externalizing psychopathology. *Journal of Adolescence, 28*(5), 619-631.

Garside, R. B., & Klimes-Dougan, B. (2002). Socialization of discrete negative emotions: Gender differences and links with psychological distress. *Sex Roles, 47*(3-4), 115-128.

Gelfand, M. J., Chiu, C. Y., & Hong, Y. Y. (Eds.), 2013. *Advances in Culture and Psychology* (Volumes 1-3). New York: Oxford University Press.

Gerlsma, C., Emmelkamp, P. M., & Arrindell, W. A. (1990). Anxiety, depression, and perception of early parenting: A meta-analysis. *Clinical Psychology Review, 10*(3), 251-277.

Gillham, J., Adams-Deutsch, Z., Werner, J., Reivich, K., Coulter-Heindl, V., Linkins, M., ... & Seligman, M. E. (2011). Character strengths predict subjective well-being during adolescence. *The Journal of Positive Psychology, 6*(1), 31-44.

Gjersing, L., Caplehorn, J. R., & Clausen, T. (2010). Cross-cultural adaptation of research instruments: language, setting, time and statistical considerations.*BMC medical research methodology*, *10*(1), 13.

Global Forum of Health Research. (1999). The [Ten-ninety] 10/90 report on health research. Geneva: Global Forum for Health Research. Retrieved on 13 December, 2012, from http://apps.who.int/iris/handle/10665/42213

Goldberg, S. (2000). *Attachment and development.* London: Arnold.

Goldberg, D. P. & Bridges, K. (1988). Somatic presentations of Psychiatric illness in primary care setting. *Journal of Psychosomatic Research, 32*(2), 137-144.

Goldberg, S., Gotowiec, A., & Simmons, R. J. (1995). Infant-mother attachment and behavior problems in healthy and chronically ill preschoolers. *Development and Psychopathology, 7*(2), 267-282.

Goodyer, I. M. (1996). Recent undesirable life events: their influence on subsequent psychopathology. *Psychological Medicine, 29*, 1101–1109.

Gotlib, I. H., Mount, J. H., Cordy, N. I., & Whiffen, V. E. (1988). Depression and perceptions of early parenting: a longitudinal investigation. *The British Journal of Psychiatry, 152*(1), 24-27.

Gove, W. R., & Geerken, M. R. (1977) Response bias in surveys of mental health: An empirical investigation. *American Journal of Sociology, 82,*1289-1317.

Gove, W. R., McCorkel, J., Fain, T., & Hughes, M. D. (1976) Response bias in community surveys of mental health: Systematic bias or random noise? *Social Science & Medicine, 10,*497-502.

Graber, J. A., Lewinsohn, P. M., Seeley, J. R., & Brooks-Gunn, J. (1997). Is psychopathology associated with the timing of pubertal development?. *Journal of the American Academy of Child & Adolescent Psychiatry, 36*(12), 1768-1776.

Grant, K. E., Compas, B. E., Thurm, A. E., McMahon, S. D., Gipson, P. Y., Campbell, A. J., ... & Westerholm, R. I. (2006). Stressors and child and adolescent psychopathology: Evidence of moderating and mediating effects. *Clinical Psychology Review, 26*(3), 257–283.

Green, H., McGinnity, A., Meltzer, H., Ford, T., & Goodman, R. (2005). *Mental health of children and young people in Great Britain, 2004.* Hampshire, UK: Palgrave MacMillan.

Greenberger, E., & Chen, C. (1996). Perceived family relationships and depressed mood in early and late adolescence: A comparison of European and Asian Americans. *Developmental Psychology, 32*(4), 707-716.

Greenfield, P. M. (1994). Independence and interdependence as developmental scripts: Implications for theory, research, and practice. In P. M. Greenfield & R. R. Cocking (Eds.), *Cross-cultural Roots of Minority Child Development,* (pp. 1-37). Hillsdale, N.J: Erlbaum.

Griffin, D. W., & Bartholomew, K. (1994). Models of the self and other: Fundamental dimensions underlying measures of adult attachment. *Journal of personality and social psychology, 67*(3), 430-445.

Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*(3), 271-299.

Gross, J. J. (1999). Emotion regulation: Past, present, future. *Cognition & Emotion, 13*(5), 551-573.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85*(2), 348-362.

Grossmann, K., Grossmann, K. E., Spangler, G., Suess, G., & Unzner, L. (1985). Maternal sensitivity and newborns' orientation responses as related to quality of attachment in northern Germany. *Monographs of the Society for Research in Child Development*, 233-256.

Gudykunst, W. B., Matsumoto, Y., Ting-Toomey, S. Nishida, T., Kim, K., & Heyman, S. (1996). The influence of cultural individualism-collectivism, self

construals, and individual values on communication styles across cultures. *Human Communication Research, 22*(4), 510-543.

Guillemin, F., Bombardier, C., & Beaton, D. (1993). Cross-cultural adaptation of health-related quality of life measures: literature review and proposed guidelines. *Journal of Clinical Epidemiology*, *46*(12), 1417-1432.

Gungor, D., Bornstein, M. (2010). Culture-general and -specific associations of attachment avoidance and anxiety with perceived parental warmth and psychological control among Turk and Belgian adolescents. *Journal of Adolescence, 33* (5), 593-602.

Gurung, R. A. R. (2006). "Coping and Social Support". Health Psychology: A Cultural Approach (pp. 131–171). Belmont, CA: Thomson Wadsworth.

Hale III, W. W., Raaijmakers, Q., Muris, P., Van Hoof, A., & Meeus, W. (2008). Developmental trajectories of adolescent anxiety disorder symptoms: A 5-year prospective community study. *Journal of the American Academy of Child & Adolescent Psychiatry*, *47*(5), 556-564.

Hall, G. S. (1904). *Adolescence, Its Psychology and Its Relation to Physiology, Anthropology, Sociology, Sex, Crime, Religion, and Education.* New York, Appleton.

Haqqani, S. (2014). Wellbeing and health risk behaviours among school going adolescents in Pakistan. Unpublished Doctoral dissertation, University of Edinburgh, United Kingdom.

Hankin, B. L., Abramson, L. Y., Moffitt, T. E., Silva, P. A., McGee, R., Angell, K. E. (1998). Development of depression from preadolescence to young adulthood: emerging gender differences in a 10-year longitudinal study. *J. Abnorm. Psychology, 107* (1), 128–140.

Harris, J. R. (1995). Where is the child's environment? A group socialization theory of development. *Psychological Review, 102*(3), 458-489.

Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, *52*(3), 511-524.

Herdman, M., Fox-Rushby, J., & Badia, X. (1998). A model of equivalence in the cultural adaptation of HRQoL instruments: the universalist approach. *Quality of life Research*, *7*(4), 323-335.

Herz, L., & Gullone, E. (1999). The Relationship between Self-Esteem and Parenting Style a Cross-Cultural Comparison of Australian and Vietnamese Australian Adolescents. *Journal of Cross-Cultural Psychology, 30*(6), 742-761.

Hoek, W., Van Lier, P.A.C., Koot, H.M. (2012). Combined trajectories of depressive and anxiety symptoms from early to middle adolescence: descriptions, correlates and gender differences. In Subclinical Depression and Anxiety in Adolescence: Developmental Trajectories and Online Intervention, Dissertation (ed. W. Hoek). Amsterdam, Netherlands: Faculty of Psychology and Education, Free University.

Hofstede, G. H. (1980). *Culture Consequences: International Differences in Work-related Values*. Sage Publications, London.

Hofstede, G. H. (1990). Cultures and organizations: Software of the mind. New York: McGraw-Hill.

Hofstede, G. H. (2001). *Culture's Consequences: Comparing Values, Behaviours, Institutions and Organizations across Nations.* Thousand Oaks, CA: Sage.

Hong, X., Li, J., Xu, F., Lap, A. T., Liang, Y., Wang, Z., ... & Griffiths, S. (2009). Physical activity inversely associated with the presence of depression among urban adolescents in regional China. *BMC public health*, *9*(1), 148.

Horwath, E., & Weissman, M. M. (1997). Epidemiology of anxiety disorders across cultural groups. In S. Friedman (Ed.), Cultural issues in the treatment of anxiety (pp. 21-39). New York: Guilford Press.

Hox, J. J., & Bechger, T. M. (1998). An Introduction to Structural Equation Modeling. *Family Science Review, 11*, 354-373.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55.

Hudson, C. G. (2005). Socioeconomic status and mental illness: tests of the social causation and selection hypotheses. *American Journal of Orthopsychiatry, 75*(1), 3-18.

Hughes, E. K., Gullone, E., & Watson, S.D. (2011). Emotional Functioning in Children and Adolescents with Elevated Depressive Symptoms. *Journal of Psychopathology and Behavioural Assessment*, doi: 10.1007/s10862-011-9220-2.

Hume, D. (1974). *An enquiry concerning human understanding*. Oxford: Oxford University Press.

Husain, N., Creed, F., Tomenson, B. (2000). Depression and social stress in Pakistan. *Psychological Medicine, 30*(2), 395–402.

Irfan, M. (2011). The Concept of Mental Health Policy and its Journey from Development to Implementation in Pakistan. *Khyber Medical University Journal, 2*(2), 64-68.

Irons, C., & Gilbert, P. (2005). Evolved mechanisms in adolescent anxiety and depression symptoms: The role of the attachment and social rank systems. *Journal of Adolescence, 28*(3), 325-341.

Isran, S., & Isran, M. A. (2012). Patriachry and women in Pakistan: A critical analysis. *Interdisciplinary Journal of Contemporary Research In Business, 4* (6), 835-859.

Izard, C. E. (2010). The many meanings/aspects of emotion: Definitions, functions, activation, and regulation. *Emotion Review, 2*, 363-370.

Jabeen, F., Haque, A., Riaz, M. N. (2013). Parenting styles as predictors of emotion regulation among adolescents. *Pakistan Journal of Psychological Research, 28*(1), 85-108.

Jackson, D. L., Gillaspy Jr, J. A., & Purc-Stephenson, R. (2009). Reporting practices in confirmatory factor analysis: an overview and some recommendations. *Psychological Methods*, *14*(1), 6-23.

Janboozorgi, M. (2005). Prevalence of depression among students of Tehran. *Pajohandeh, 6*(48), 379-383.

Javed, M. A., Kundi, M. Z., Khan, P. A. (1992). Emotional and behavioural problems among school children in Pakistan. *Journal of the Pakistan Medical Association, 42*(8),181–183.

Jaycox, L. H., Stein, B. D., Paddock, S., Miles, J. N., Chandra, A., Meredith, L. S., ... & Burnam, M. A. (2009). Impact of teen depression on academic, social, and physical functioning. *Pediatrics*, *124*(4), 596-605.

Jenkins, R. (2003). Supporting governments to adopt mental health policies. *World Psychiatry, 2*(1), 14-19.

Jones, P. S., Lee, J. W., Phillips, L. R., Zhang, X. E., & Jaceldo, K. B. (2001). An adaptation of Brislin's translation models for cross-cultural research. *Nursing Research, 50*(5), 300–304.

Jose, P. E., Huntsinger, C. S., Huntsinger, P. R., & Liaw, F. R. (2000). Parental values and practices relevant to young children's social development in Taiwan and the United States. *Journal of Cross-Cultural Psychology, 31*(6), 677-702.

Jovic-Vranes, A., Jankovic, J., Vasic, V., & Jankovic, S. (2011). Self-perceived health and psychological well-being among Serbian schoolchildren and adolescents: data from National Health Survey. *Central European Journal of Medicine, 6*(4), 400-406.

Kafetsios, K. & Sideridis, D.G. (2006). Attachment, Social Support and Well-being in Young and Older Adults. *Journal of Health Psychology, 11*(6), 863-876.

Kamkar, K., Doyle, A. B., & Markiewicz, D. (2012). Insecure Attachment to Parents and Depressive Symptoms in Early Adolescence: Mediating Roles of Attributions and Self-esteem. *International Journal of Psychological Studies, 4*(2), 3-18.

Kashani, J. H., Orvaschel, H., Rosenberg, T. K. & Reid, J. C. (1989). Psychopathology in a community sample of children and adolescents: a developmental perspective. *Journal of the American Academy of Child and Adolescent Psychiatry*, 28, 701-706.

Kayastha, P., Hirisave, U., Natarajan, G., & Goyal, G. (2010). Security of attachment in children and adolescents—An Indian experience. *Asian Journal of Psychiatry, 3*(4), 173-176.

Keillor, B., Owens, D., & Pettijohn, C. (2001) A cross-cultural/cross-national study of influencing factors and socially desirable response biases. *International Journal of Market Research,* 43, 63-84.

Kelly, R. M., Hills, K. J., Huebner, E. S., & McQuillin, S. D. (2012). The Longitudinal Stability and Dynamics of Group Membership in the Dual-Factor Model of Mental Health Psychosocial Predictors of Mental Health. *Canadian Journal of School Psychology, 27*(4), 337-355.

Kendler, K. S. (1996). Parenting: A genetic-epidemiologic perspective. American *Journal of Psychiatry, 153*(1), 11-20.

Kendler, K. S., Neale, M. C., Kessler, R. C., Heath, A. C., & Eaves, L. J. (1993). Major depression and phobias: the genetic and environmental sources of comorbidity. *Psychological Medicine-London, 23*(2), 361-361.

Kerr, D. C., Preuss, L. J., & King, C. A. (2006). Suicidal adolescents' social support from family and peers: Gender-specific associations with psychopathology. *Journal of Abnormal Child Psychology, 34*(1), 99-110.

Keskin, G., & Cam, O. (2010). Adolescents' strengths and difficulties: approach to attachment styles. *Journal of Psychiatric and Mental Health Nursing, 17*(5), 433-441.

Kessler, R. C. (2003). Epidemiology of women and depression. *Journal of Affective Disorders, 74*(1), 5-13.

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). *The Journal of American Medical Association, 289*(23), 3095-3105.

Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., ... & 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. *Archives of general psychiatry*, *51*(1), 8-9.

Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of general psychiatry*, *52*(12), 1048-1060.

Keyes, C. L. M. & Lopez, S. (2002). Toward a science of mental health: positive directions in diagnosis and interventions. In C. R. Snyder & S. Lopez (Eds.), *The handbook of positive psychology* (pp. 45–59). New York: Oxford University Press.

Kim, H. S., Sherman, D. K., Ko, D., & Taylor, S. E. (2006). Pursuit of happiness and pursuit of harmony: Culture, relationships, and social support seeking. *Personality and Social Psychology Bulletin, 32,* 1595–1607.

Kim-Cohen, J., Caspi, A., Moffit, T., Harrington, H., Milne, B., & Poulton, R. (2003). Prior juvenile diagnoses in adults with mental disorder. *Archives of General Psychiatry, 60(7),* 709–717.

Kinderman, P., Schwannauer, M., Pontin, E., & Tai, S. (2011). The development and validation of a general measure of well-being: the BBC well-being scale. *Quality of Life Research, 20*(7), 1035-1042.

Kirmayer, L. J. (1997). Culture and anxiety: A clinical and research agenda. In S. Friedman, (Ed.), Cultural issues in the treatment of anxiety. (pp. 225-251). New York, Guilford.

Kleinbaum, D., Kupper, L., & Morganstern, H. (1982). Epidemiologic research, principles and quantitative methods. Wadsworth. Belmont, CA.

Kleinman, A. (1987). Anthropology and psychiatry. The role of culture in cross-cultural research on illness. *The British Journal of Psychiatry*, *151*(4), 447-454.

Kleinman, A., & Kleinman, J. (1985). Somatization: The interconnections in Chinese society among culture, depressive experiences, and the meanings of pain. In A. Klienman & B. Good (Eds.), *Culture and depression: Studies in the Anthropology and Cross-Cultural Psychiatry of Affect and Disorder* (pp. 429-490). Berkley: University of California Press.

Klohnen, E. C., Weller, J. A., Luo, S., & Choe, M. (2005). Organization and predictive power of general and relationship-specific attachment models: One for all, and all for one?. *Personality and Social Psychology Bulletin*, *31*(12), 1665-1682.

Knafo, A., & Assor, A. (2007). Motivation for agreement with parental values: Desirable when autonomous, problematic when controlled. *Motivation and Emotion, 31*(3), 232-245.

Knopf, D., Park, M. J., & Mulye, T. P. (2008). *The mental health of adolescents: A national profile, 2008.* San Francisco, CA: National Adolescent Health Information Center.

Kolarcik, P., Geckova, A. M., Reijneveld, S. A., & van Dijk, J. P. (2012). Social support, hopelessness and life satisfaction among Roma and non-Roma adolescents in Slovakia. *International Journal of Public Health*, *57*(6), 905-913.

Kovacs, M. (2001). Gender and the course of major depressive disorder through adolescence in clinically referred youngsters. *J. Am. Acad. Child Adolesc. Psych, 40* (9), 1079– 1085.

Kovacs, M., Sherrill, J., George, C. J., Pollock, M., Tumuluru, R. V., & Ho, V. (2006). Contextual emotion-regulation therapy for childhood depression: Description and pilot testing of a new intervention. *Journal of the American Academy of Child & Adolescent Psychiatry, 45*(8), 892-903.

Kozma, A., & Stones, M. J.(1987) Social desirability in measures of subjective well-being: A systematic evaluation. *Journal of Gerontology, 42*, 56-59.

Kullik, A., & Petermann, F. (2013). Dysfunctional emotion regulation as a basic factor of anxiety and depressive disorders in adolescents. *Fortschritte der Neurologie-Psychiatrie, 81*(1), 35-39.

Lee, A., & Hankin, B. L. (2009). Insecure attachment, dysfunctional attitudes, and low self-esteem predicting prospective symptoms of depression and anxiety during adolescence. *Journal of Clinical Child & Adolescent Psychology, 38*(2), 219-231.

Lehman, D. R., Chiu, C. Y., & Schaller, M. (2004). Psychology and culture. *Annual Review of Psychology, 55*, 689-714.

Lekes, N., Gingras, I., Philippe, F. L., Koestner, R., & Fang, J. (2010). Parental autonomy-support, intrinsic life goals, and well-being among adolescents in China and North America. *Journal of Youth and Adolescence*, 39(8), 858-869.

Lemstra, M., Neudorf, C., D'arcy, C., Kunst, A., Warren, L. M., & Bennett, N. R. (2008). A systematic review of depressed mood and anxiety by SES in youth aged 10-15 years. *Canadian Journal of Public Health, 99*(2), 125-129.

Lewinsohn, P. M., Hops, H., Roberts, R. E., Seeley, J. R. & Andrews, J. A. (1993). Adolescent psychopathology: I. Prevalence and incidence of depression and other DSM-III-R disorders in high school students. *Journal of Abnormal Psychology*, 102, 133-144.

Lewinsohn, P. M., Joiner, T. E., Jr., Rohde, P. (2001). Evaluation of cognitive diathesis-stress models in predicting major depressive disorder in adolescents. *Journal of Abnormal Psychology, 110(2),* 203-215.

Lewinsohn, P. M., Moerk, K. C., Klein, D. N. (2000). Epidemiology of adolescent depression. *Econom Neurosci*, *2*, 52–68.

Lewinsohn, P. M., Rohde, P., Seeley, J. R., Klein, D. N., & Gotlib, I. H. (2000). Natural course of adolescent major depressive disorder in a community sample: Predictors of recurrence in young adults. *American Journal of Psychiatry, 157(10),* 1584–1591.

Lewinsohn, P. M., Pettit, J. W., Joiner Jr., T. E., Seeley, J. R. (2003). The symptomatic expression of major depressive disorder in adolescents and young adults. *J. Abnorm. Psychology, 112*(2), 244 – 252.

Lewinsohn, P. M., Shankman, S. A., Gau, J. M., Klein, D. N. (2004). The prevalence and co-morbidity of subthreshold psychiatric conditions. *Psychological Medicine, 34*(4):613-22.

Liu, Y. (2006). Paternal/maternal attachment, peer support, social expectations of peer interaction, and depressive symptoms. *Adolescence-San Diego-*, *41*(164), 705-721.

Liu, Y. L. (2008). An examination of three models of the relationships between parental attachments and adolescents' social functioning and depressive symptoms. *Journal of Youth and Adolescence, 37*(8), 941-952.

Lynd, D. (2007). *The education system in Pakistan: Assessment of the national education census.* Islamabad: *UNESCO,* 25-6.

Lyons, M. D., Huebner, E. S., Hills, K. J., & Shinkareva, S. V. (2012). The Dual-Factor Model of Mental Health Further Study of the Determinants of Group Differences. *Canadian Journal of School Psychology, 27*(2), 183-196.

Lyons-Ruth, K., Easterbrooks, M., & Cibelli, C. D. (1997). Infant attachment strategies, infant mental lag, and maternal depressive symptoms: predictors of internalizing and externalizing problems at age 7. *Developmental Psychology, 33*(4), 681-692.

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.

Maccoby, E. E., & Maccoby, N. (1954). The interview: A tool of social science. In G. Lindzey (Ed.), *Handbook of social psychology: Vol. 1. Theory and method* (pp. 449-487). Reading, MA: Addison-Wesley.

Maccoby, E. E., & Martin, J. A. (1983). Socialization in the context of the family: Parent–child interaction. In P. H. Mussen & E. M. Hetherington, *Handbook of child psychology: Vol. 4. Socialization, personality, and social development (4th ed.)*. New York: Wiley.

Malik, R. (2013). Differential Effects of Single Sex versus Coed Education on the Personality Development of Primary School Students. *Pakistan Journal of Social Sciences, 33*(1), 149-162.

Matsumoto, D., Weissman, M. D., Preston, K., Brown, B. R., & Kupperbusch, C. (1997). Context-specific measurement of individualism-collectivism on the individual level the individualism-collectivism interpersonal assessment inventory. *Journal of Cross-Cultural Psychology*, *28*(6), 743-767.

Matsumoto, D., Yoo, S. H., & Nakagawa, S. (2008). Culture, emotion regulation, and adjustment. *Journal of Personality and Social Psychology*, *94*(6), 925-937.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7(1),* 83–104.

Martin, G., Bergen, H. A., Roeger, L., & Allison, S. (2004). Depression in young adolescents: Investigations using 2 and 3 factor versions of the Parental Bonding Instrument. *The Journal of Nervous and Mental disease, 192*(10), 650-657.

Marinus, J., Leentjens, A. F., Visser, M., Stiggelbout, A. M., & van Hilten, J. J. (2002). Evaluation of the hospital anxiety and depression scale in patients with Parkinson's disease. *Clinical Neuropharmacology, 25*(6), 318-324.

Merikangas, K. R., Nakamura, E. F., & Kessler, R. C. (2009). Epidemiology of mental disorders in children and adolescents. *Dialogues in Clinical Neuroscience, 11*(1), 7.

Marcia, J. E. (1996). Development and validation of ego-identity status. *Journal of Personality and Social Psychology, 3*(5), 551-558.

Marsella, A. J., & Kameoka, V. A. (1989). Ethnocultural issues in the assessment of psychopathology. In S. Wetzler (Ed.) *Measuring mental illness in psychometric*

assessment for clinicians (pp. 231-256). Washington DC: American Psychiatric Press.

McCrae, R. R. (1986) Well-being scales do not measure social desirability. *Journal of Gerontology, 41*, 390-392.

McCue, P., Martin, C. R., Buchanan, T., Rodgers, J., & Scholey, A. B. (2003). An investigation into the psychometric properties of the Hospital Anxiety and Depression Scale in individuals with Chronic Fatigue Syndrome. *Psychology, Health & Medicine, 8*(4), 425-439.

McDermott, M. A., & Palchanes, K. (1994). A literature review of critical elements in translation theory. *Journal of Nursing Scholarship, 26*(2), 113–117.

McGee, R., Feehan, M., Williams, S., & Anderson, J. (1992). DSM-III Disorders from Age 11 to Age 15 Years. *Journal of the American Academy of Child & Adolescent Psychiatry, 31*(1), 50-59.

McGrath, B., Brennan, M. A., Dolan, P., & Barnett, R. (2009). Adolescent well-being and supporting contexts: A comparison of adolescents in Ireland and Florida. *Journal of Community & Applied Social Psychology, 19*(4), 299-320.

McHorney, C. A., & Fleishman, J. A. (2006). Assessing and understanding measurement equivalence in health outcome measures: issues for further quantitative and qualitative inquiry. *Medical Care*, *44*(11), 205-210.

McLaughlin, K. A., & Hatzenbuehler, M. L. (2009). Stressful life events, anxiety sensitivity, and internalizing symptoms in adolescents. *Journal of Abnormal Psychology*, *118*(3), 659.

McLaughlin, K. A., Hatzenbuehler, M. L., Mennin, D. S., & Nolen-Hoeksema, S. (2011). Emotion dysregulation and adolescent psychopathology: A prospective study. *Behaviour Research and Therapy*, *49*(9), 544-554.

McLeod, B. D., Wood, J. J., & Weisz, J. R. (2007). Examining the association between parenting and childhood anxiety: A meta-analysis. *Clinical Psychology Review*, *27*(2), 155-172.

Mennin, D. S. (2004). Emotion regulation therapy for generalized anxiety disorder. *Clinical Psychology & Psychotherapy, 11*(1), 17-29.

Menon, M. (2012). Do Relationship Styles Moderate Influences of Perceived Maternal Support on Early Adolescents' Well-Being?. *Psychological Studies*, *57*(4), 348-356.

Merlo, L. J., & Lakey, B. (2007). Trait and social influences in the links among adolescent attachment, depressive symptoms, and coping. *Journal of Clinical Child and Adolescent Psychology*, *36*(2), 195-206.

Middleton, K. L., & Jones, J. L. (2000) Socially desirable response sets: The impact of country culture. *Psychology & Marketing*, 17, 149-163.

Milevsky, A., Schlechter, M., Klem, L., & Kehl, R. (2008). Constellations of maternal and paternal parenting styles in adolescence: Congruity and well-being. *Marriage & Family Review, 44*(1), 81-98.

Milevsky, A., Schlechter, M., Netter, S., & Keehn, D. (2007). Maternal and paternal parenting styles in adolescents: Associations with self-esteem, depression and life-satisfaction. *Journal of Child and Family Studies, 16*(1), 39-47.

Mikulincer, M., Shaver, P.R., & Pereg, D. (2003). Attachment theory and affect regulation: The dynamics, development, and cognitive consequences of attachment-related strategies. *Motivation and Emotion, 27*(2), 77-102.

Mirza, I., & Jenkins, R. (2004). Risk factors, prevalence, and treatment of anxiety and depressive disorders in Pakistan: systematic review. *British Medical Journal, 328.*

Mizuta, I., Zahn-Waxler, C., Cole, P. M., & Hiruma, N. (1996). A cross-cultural study of preschoolers' attachment: Security and sensitivity in Japanese and US dyads. *International Journal of Behavioural Development, 19*(1), 141-159.

Mohamadian, H., Eftekhar, H., Rahimi, A., Mohamad, H. T., Shojaiezade, D., & Montazeri, A. (2011). Predicting health-related quality of life by using a health promotion model among Iranian adolescent girls: A structural equation modeling approach. *Nursing & Health Sciences, 13*(2), 141-148.

Mohiuddin, Y. N. (2007). *Pakistan: a global studies handbook*. ABC-CLIO.

Monirpour, N. (2005). Demographic characteristics associated with depression among students. *Social Welfare Quarterly, 4*(14), 178-183.

Morata-Ramirez, M, D. L. A., & Holgado-Tello, F. P. (2013). Construct Validity of Likert Scales through Confirmatory Factor Analysis: A Simulation Study Comparing Different Methods of Estimation Based on Pearson and Polychoric Correlations. *International Journal of Social Science Studies, 1*(1), 54-61.

Moretti, M. M., & Holland, R. (2003). Navigating the journey of adolescence: Parental attachment and the self from a systemic perspective. *Clinical Applications of Attachment Theory* (pp. 41-56). New York*: Guildford*

Moretti, M. M., & Peled, M. (2004). Adolescent-parent attachment: Bonds that support healthy development. *Paediatrics & Child Health, 9*(8), 551-555.

Morgan, A. R., Rivera, F., Moreno, C., & Haglund, B. J. (2012). Does social capital travel? Influences on the life satisfaction of young people living in England and Spain. *BMC public health, 12*(138).

Morris, A. S., Silk, J. S., Steinberg, L., Myers, S. S., & Robinson, L. R. (2007). The role of the family context in the development of emotion regulation. *Social Development, 16*(2), 361-388.

Morton, K. L., Barling, J., Rhodes, R. E., Masse, L. C., Zumbo, B. D., & Beauchamp, M. R. (2011). The application of transformational leadership theory to parenting: questionnaire development and implications for adolescent self-regulatory efficacy and life satisfaction. *Journal of Sport & Exercise Psychology, 33*(5), 688-709.

Moscardino, U., Scrimin, S., Capello, F., & Altoe, G. (2010). Social support, sense of community, cultural values, and depressive symptoms in adolescent survivors of the 2004 Beslan terrorist attack. *Social Science & Medicine, 70*(1), 27-34.

Mujtaba., T., & Furnham, A. (2001). A cross-cultural study of parental conflict and eating disorders in a non-clinical sample. *International Journal of Social Psychiatry*, *47*(1), 24-35.

Mumford, D. B., Nazir, M., Jilani, F. U., & Baig, I. Y. (1996). Stress and psychiatric disorder in the Hindu Kush: a community survey of mountain villages in Chitral, Pakistan. *British Journal of Psychiatry, 168*(3), 299-307.

Mumford, D. B., Tareen, I. A. K., Bajwa, M. A. Z., Bhatti, M. R., & Karim, R. (1991). The translation and evaluation of an Urdu version of the Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, *83*(2), 81-85.

Murphy, E., Wickramaratne, P., & Weissman, M. (2010). The stability of parental bonding reports: A 20-year follow-up. *Journal of Affective Disorders, 125*(1), 307-315.

Murray, B. (2002). Psychology takes a tenuous hold in Pakistan. *Monitor on Psychology, 33*(1), 33-34.

Mustaqeem, N. (2009). Translation and validation of children and adolescents self-harm in Europe (case questionnaire). Maters dissertation. Fatima Jinnah Women University. Pakistan.

Muthen, L. K., & Muthen, B. O. (1998-2012). *Mplus User's Guide*. Seventh Edition. Los Angeles, CA: Muthen & Muthen.

Naeem, F., Gobbi, M., Ayub, M., & Kingdon, D. (2010). Psychologists experience of cognitive behaviour therapy in a developing country: a qualitative study from Pakistan. *International Journal of Mental Health Systems, 4*(2).

Nair, M. K. C., Russell, P. S. S., Mammen, P., Chandran, R. A., Krishnan, R., Nazeema, S., ... & Peter, D. (2013). ADad 3: The epidemiology of anxiety disorders among adolescents in a rural community population in India. *The Indian Journal of Pediatrics, 80*(2), 144-148.

Nelis, S. M., & Rae, G. (2009). Brief report: Peer attachment in adolescents. *Journal of Adolescence, 32*(2), 443-447.

Nelsen, H. M., & Rizvi, A. (1984). Gender and Religious Socialization: Comparisons from Pakistan and the United States. *Journal of Comparative Family Studies, 15*(2), 281-290.

Neugebauer, R., & Ng, S. (1990). Differential recall as a source of bias in epidemiologic research. *Journal of Clinical Epidemiology, 43(*12), 1337-1341.

Ng, K. M., Trusty, J., & Crawford, R. (2005). A cross-cultural validation of the Attachment Style Questionnaire: A Malaysian pilot study. *The Family Journal: Counselling and Therapy for Couples and Families, 13(4),* 416-426.

Nishikawa, S., Sundbom. E. Y., & Hagglof, B. (2010). Influence of perceived parental rearing on adolescent self-concept and internalizing and externalizing problems in Japan. *Journal of Child and Family Studies, 19(1),* 57-66.

Niemiec, C. P., Lynch, M. F., Vansteenkiste, M., Bernstein, J., Deci, E. L., & Ryan, R. M. (2006). The antecedents and consequences of autonomous self-regulation for college: A self-determination theory perspective on socialization. *Journal of Adolescence, 29*(5), 761-775.

Niaz, U. (2004). Women's mental health in Pakistan. *World Psychiatry, 3*(1), 60.

Nolen-Hoeksema, S. (2001). Gender differences in depression. *Current Directions in Psychological Science, 10*(5), 173-176.

Nyklicek, I., Vingerhoets, A. J. J. M., & Zeelenberg, M. (Eds.). (2011). Emotion regulation and well-being. New York, NY: Springer. doi:10.1007/978-1-4419-6953-8

O'Connor, R. C., Rasmussen, S., Miles, J., & Hawton, K. (2009). Self-harm in adolescents: self-report survey in schools in Scotland. *British Journal of Psychiatry, 194,* 68-72.

Ognibene, T. C., & Collins, N. L. (1998). Adult attachment styles, perceived social support and coping strategies. *Journal of Social and Personal Relationships, 15*(3), 323-345.

Orgilés, M., Méndez, X., Espada, J. P., Carballo, J. L., & Piqueras, J. A. (2012). Anxiety disorder symptoms in children and adolescents: Differences by age

and gender in a community sample. *Revista de Psiquiatría y Salud Mental (English Edition), 5*(2), 115-120.
Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: evaluation of theoretical assumptions and meta-analyses. *Psychological bulletin, 128*(1), 3-72.
Pace, U., & Zappulla, C. (2011). Problem behaviours in adolescence: the opposite role played by insecure attachment and commitment strength. *Journal of Child and Family Studies, 20*(6), 854-862.
Pannucci, C. J., & Wilkins, E. G. (2010). Identifying and avoiding bias in research. *Plastic and Reconstructive Surgery, 126*(2), 619-625.
Papps, F., Walker, M., Trimboli, A., & Trimboli, C. (1995). Parental discipline in Anglo, Greek, Lebanese, and Vietnamese cultures. *Journal of Cross-Cultural Psychology, 26*(1), 49-64.
Park, W. (2009). Parental Attachment Among Korean–American Adolescents. *Child and Adolescent Social Work Journal, 26*(4), 307-319.
Parker, G., Tupling, H., & Brown, L. B. (1979). A parental bonding instrument. *British Journal of Medical Psychology, 52*(1), 1-10.
Parker, G. (1983). *Parental overprotection: A risk factor in psychosocial development*. New York: Grune & Stratton.
Parker, G. (1993). Parental rearing style: Examining for links with personality vulnerability factors for depression. *Social Psychiatry and Psychiatric Epidemiology, 28*(3), 97-100.
Parkes, C. M., Stevenson-Hinde, J., & Marris, P. (Eds.) (1993). Attachment across the life cycle. London: Routledge.
Patel, V., Flisher, A. J., Hetrick, S., & McGorry, P. (2007). Mental health of young people: a global public-health challenge. *The Lancet, 369*(9569), 1302-1313.
Paykel, E. S. (2003). Life events and affective disorders. *Acta Psychiatrica Scandinavica, Supplementum, 418,* 61–66.
Peleg, O. (2012). Social anxiety and social adaptation among adolescents at three age levels. *Social Psychology of Education, 15*(2), 207-218.
Peng, Z. W., Lam, L. T., & Jin, J. (2011). Factors associated with social interaction anxiety among Chinese adolescents. *East Asian archives of psychiatry: Official Journal of the Hong Kong College of Psychiatrists, 21*(4), 135.
Peng, C. Y. J., Harwell, M., Liou, S. M., & Ehman, L. H. (2006). Advances in missing data methods and implications for educational research. *Real Data Analysis*, 31-78.
Petersen, A. C., Sarigiani, P. A., & Kennedy, R. E. (1991). Adolescent depression: Why more girls? *Journal of Youth and Adolescence, 20,* 247–271.
Phillips, K. F. V., & Power, M. J. (2007). A new self-report measure of emotion regulation in adolescents: The Regulation of Emotions Questionnaire. *Clinical Psychology & Psychotherapy, 14*(2), 145-156.
Phinney, J. S., & Baldelomar, O. A. (2011). Identity development in multiple 90 cultural contexts. In L. A. Jensen's (Ed.), *Bridging cultural and developmental approaches to psychology: New syntheses in theory, research, and policy* (pp. 161-186). New York: Oxford University Press.
Piccinelli, M., & Wilkinson, G. (2000). Gender differences in depression. *British Journal of Psychiatry, 177,* 486-492.

Pillai, A., Patel, V., Cardozo, P., Goodman, R., Weiss, H. A., & Andrew, G. (2008). Non-traditional lifestyles and prevalence of mental disorders in adolescents in Goa, India. *The British Journal of Psychiatry, 192*(1), 45-51.

Pine, D. S., Cohen, P., Johnson, J. G., & Brook, J. S. (2002). Adolescent life events as predictors of adult depression. *Journal of Affective Disorders, 68*(1), 49-57.

Pontin, E., Schwannauer, M., Tai, S., & Kinderman, P. (2013). A UK validation of a general measure of subjective well-being: the modified BBC subjective well-being scale (BBC-SWB). *Health and Quality of Life Outcomes, 11*(1), 150.

Porta, M. (Ed.). (2008). A dictionary of epidemiology. Oxford University Press.

Power, M. J., Champion, L. A., & Aris, S. J. (1988). The development of a measure of social support: the Significant Others (SOS) Scale. *British Journal of Clinical Psychology, 27*(Pt 4), 349-358.

Prasla, M. (2012). Adolescence Depression in Pakistan: A New Horizon for Research. *Adolescence, 2*(4), 160-161.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behaviour Research Methods, Instruments, & Computers, 36*, 717–731.

Prince, M., Patel, V., Saxena, S., Maj, M., Maselko, J., Phillips, M. R., & Rahman, A. (2007). No health without mental health. *The Lancet, 370*(9590), 859-877.

Priceputu, M. (2012). Attachment style-from theory to the integrative intervention in anxious and depressive symptomatology. *Procedia-Social and Behavioural Sciences, 33,* 934-938.

Proctor, C. L., Linley, P. A., & Maltby, J. (2009). Youth life satisfaction: A review of the literature. *Journal of Happiness Studies, 10*(5), 583-630.

Puissant, S. P., Gauthier, J. M., & Van Oirbeek, R. (2011). The contribution of social rank and attachment theory to depression in a non-clinical sample of adolescents. *The Spanish Journal of Psychology, 14*(02), 832-842.

Qadir, F., Stewart, R., Khan, M., & Prince, M. (2005). The validity of the Parental Bonding Instrument as a measure of maternal bonding among young Pakistani women. *Social Psychiatry and Psychiatric Epidemiology, 40,* 276-282.

Qazi, Y. S. (2003). Adolescent reproductive health in Pakistan. *Towards adulthood: exploring the sexual and reproductive health of adolescents in South Asia.* Geneva: World Health Organization, 78-80.

Qidwai, W., Ishaque, S., Shah, S., & Rahim, M. (2010). Adolescent lifestyle and behaviour: A survey from a developing country. *PloS one, 5*(9), 12914.

Rapee, R. M. (1997). Potential role of childrearing practices in the development of anxiety and depression. *Clinical Psychology Review, 17*(1), 47-67.

Raudino, A., Fergusson, D. M., & Horwood, L. J. (2013). The quality of parent/child relationships in adolescence is associated with poor adult psychosocial adjustment. *Journal of Adolescence. 36,* 331–340.

Rab, F., Mamdou, R., & Nasir, S. (2008). Rates of depression and anxiety among female medical students in Pakistan. *Eastern Mediterranean Health Journal, 14*(1).

Ravens-Sieberer, U., Torsheim, T., Hetland, J., Vollebergh, W., Cavallo, F., Jericek, H., ... & Erhart, M. (2009). Subjective health, symptom load and quality of life of children and adolescents in Europe. *International Journal of Public Health, 54*(2), 151-159.

Ravens-Sieberer, U., Erhart, M., Gosch, A., & Wille, N. (2008). Mental health of children and adolescents in 12 European countries—results from the European KIDSCREEN study. *Clinical Psychology & Psychotherapy, 15*(3), 154-163.

Rehman, A., & Hussain, N. (2001). Is there a Role for Child Mental Health services in countries like Pakistan. *Journal-Pakistan Medical Association, 51*(7), 258-261.

Reitz, E., Dekovic, M., & Meijer, A. M. (2006). Relations between parenting and externalizing and internalizing problem behaviour in early adolescence: Child behaviour as moderator and predictor. *Journal of Adolescence, 29*(3), 419-436.

Rey, J. M. (1995). Perceptions of poor maternal-care are associated with adolescent depression. *Journal of Affective Disorders, 34*, 95–100.

Robinson, P. and Smithers, A. (1999). Should the sexes be separated for secondary education – comparisons of single-sex and co-educational schools? Research Papers in Education, 14, 23-49.

Robitail, S., Simeoni, M. C., Erhart, M., Ravens-Sieberer, U., Bruil, J., & Auquier, P. (2006). Validation of the European proxy KIDSCREEN-52 pilot test health-related quality of life questionnaire: first results. *Journal of Adolescent Health, 39*(4), 596-110.

Rockhill, C. M., Vander Stoep, A., McCauley, E., & Katon, W. J. (2009). Social competence and social support as mediators between comorbid depressive and conduct problems and functional outcomes in middle school children. *Journal of Adolescence, 32*(3), 535-553.

Rodin, G., Walsh, A., Zimmermann, C., Gagliese, L., Jones, J., Shepherd, F. A., … & Mikulincer, M. (2007). The contributions of attachment security and social support to depressive symptoms in patients with metastic cancer. *Psycho-Oncology, 16*, 1080-1091

Roelofs, J., Lee, C., Ruijten, T., & Lobbestael, J. (2011). The mediating role of early maladaptive schemas in the relation between quality of attachment relationships and symptoms of depression in adolescents. *Behavioural and Cognitive Psychotherapy, 39*(4), 471-479.

Rohner, R. P., & Britner, P. A. (2002). Worldwide mental health correlates of parental acceptance-rejection: Review of cross-cultural and intracultural evidence. *Cross-Cultural Research, 36*, 16-47.

Ronnlund, M., & Karlsson, E. (2006). The relation between dimensions of attachment and internalizing or externalizing problems during adolescence. *The Journal of Genetic Psychology, 167*, 47-63.

Rothbaum, F., Weisz, J., Pott, M., Miyake, K., & Morelli, G. (2000). Attachment and culture: Security in the United States and Japan. *American Psychologist, 55*(10), 1093.

Rothe, E. M., Pumariega, A. J., & Sabagh, D. (2011). Identity and acculturation in immigrant and second generation adolescents. *Adolescent Psychiatry, 1*(1), 72-81.

Rothman, A. M., & Steil, J. M. (2012). Adolescent Attachment and Entitlement in a World of Wealth. *Journal of Infant, Child, and Adolescent Psychotherapy, 11*(1), 53-65.

Routamaa, V., & Hautala, T. M. (2008). Understanding Cultural Differences-The Values in a Cross-Cultural Context. *International Review of Business Research Papers, 4*(5), 129-137.

Rubin, K. H. (1998). Social and emotional development from a cultural perspective. *Developmental Psychology*, *34*(4), 611.

Rubin, L. H., Witkiewitz, K., Andre, J. S., & Reilly, S. (2007). Methods for handling missing data in the behavioural neurosciences: Don't throw the baby rat out with the bath water. *Journal of Undergraduate Neuroscience Education, 5* (2), 71-77.

Rutter, M. (1986). The developmental psychopathology of depression: Issues and perspectives. In M. Rutter, C. E. Izard, & P. B. Read (Eds.), Depression in young people. New York: Guilford Press.

Sagi, A., IJzendoorn, M. H., Aviezer, O., Donnell, F., Koren-Karie, N., Joels, T., & Harl, Y. (1995). Attachments in a multiple-caregiver and multiple-infant environment: the case of the Israeli kibbutzim. *Monographs of the Society for Research in Child Development, 60*(2-3), 71-91.

Sagi, A., Lamb, M. E., Lewkowicz, K. S., Shoham, R., Dvir, R., & Estes, D. (1985). Security of infant-mother,-father, and-metapelet attachments among kibbutz-reared Israeli children. *Monographs of the Society for Research in Child Development, 50*(1), 257-275.

Sagi, A., Van IJzendoorn, M. H., & Koren-Karie, N. (1991). Primary appraisal of the strange situation: A cross-cultural analysis of preseparation episodes. *Developmental Psychology, 27*(4), 587-596.

Salzman, J. P. (1996). Primary attachment in female adolescents: association with depression, self-esteem, and maternal identification. *Psychiatry, 59*(1), 20-33.

Sanderson, S., Tatt, I. D., & Higgins, J. P. (2007). Tools for assessing quality and susceptibility to bias in observational studies in epidemiology: a systematic review and annotated bibliography. *International Journal of Epidemiology, 36*(3), 666-676.

Sarason, I. G., Pierce, G. R., & Sarason, B. R. (1990). Social support: Sense of acceptance and the role of relationships. In B. R. Sarason, I. G. Sarason, & G. R. Pierce (Eds.), *Social support: An interactional view* (pp. 97–128). New York: Wiley.

Sarason, B. R., Shearin, E. N., Pierce, G. R., & Sarason, I. G. (1987). Interrelations of social support measures: Theoretical and practical implications. *Journal of Personality and Social Psychology, 52*(4), 813-832.

Sarwat, A., Ali, S. M. I., & Ejaz, M. S. (2009). Mental health morbidity in children: A hospital based study in child psychiatry clinic. *Pakistan Journal of Medical Science, 25*(6), 982-985.

Sathar, Z. A., Lloyd, C. B., Diers, J. A., & Faizunnissa, A. (2003). Adolescents and youth in Pakistan 2001-2002: a nationally representative survey. The Pakistan *Development Review, 43*(4), 441-467.

Sato, T., Narita, T., Hirano, S., Kusunoki, K., Sakado, K., & Uehara, T. (1999). Confirmatory factor analysis of the Parental Bonding Instrument in a Japanese population. *Psychological Medicine, 29*(1), 127-133.

Satorra, A., & Bentler, P. M. (1988). Scaling corrections for chi-square statistics in covariance structure analysis. *Proceedings of the Business and Economic Statistics, Section (308-313).* Alexandria, VA: American Statistical Association.

Sapin, C., Simeoni, M. C., El-Khammar, M., Antoniotti, S., & Auquier, P. (2005). Reliability and validity of the VSP-A, a health-related quality of life instrument for ill and healthy adolescents. *Journal of Adolescents Health, 36*, 327–336.

Scharfe, E. (1997). A test of Bartholomew's four category model of attachment in a clinical sample of adolescents. Dissertation Abstracts International, Section B: *The Science and Engineering*, *58*, 2138.

Schafer, J. L. (1999). Multiple imputation: A primer. *Statistical Methods in Medical Research, 8*, 3–15.

Schafer, J. L., & Graham, J. W. (2002). Missing data: our view of the state of the art. *Psychological Methods*, *7*(2), 147.

Schlomer, G. L., Bauman, S., & Card, N. A. (2010). Best practices for missing data management in counselling psychology. *Journal of Counselling Psychology*, *57*(1), 1-10.

Schmitt, D. P. (2008). Evolutionary perspective on romantic attachment and culture: How ecological stressors influence dismissing orientations across genders and geographies. *Cross-Cultural Research, 42*, 220-247. doi:10.1177/1069397108317485

Schmitt, D. P., Alcalay, L., Allensworth, M., Allik, J., Ault, L., Austers, I., ... & Kardum, I. (2004). Patterns and Universals of Adult Romantic Attachment Across 62 Cultural Regions Are Models of Self and of Other Pancultural Constructs?. *Journal of Cross-Cultural Psychology*, *35*(4), 367-402.

Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of Educational Research*, *99*(6), 323-338.

Schwartz, S. H., Bardi, A., & Bianchi, G. (2000). Value adaptation to the imposition and collapse of communist regimes in East-Central Europe. *Political psychology: Cultural and Cross-Cultural Foundations*, 217-237.

Schwarz, B., Mayer, B., Trommsdorff, G., Ben-Arieh, A., Friedlmeier, M., Lubiewska, K., ... & Peltzer, K. (2012). Does the Importance of Parent and Peer Relationships for Adolescents' Life Satisfaction Vary Across Cultures?. *The Journal of Early Adolescence*, *32*(1), 55-80.

Scottish Intercollegiate Guidelines Network. (2001). *SIGN 50: A guideline developers' handbook*. Scottish Intercollegiate Guidelines Network. Methodology checklist 3: Cohort studies. Edinburgh. retrieved on 13 December, 2012, from http://www.sign.ac.uk/methodology/checklists.html

Sechrest, L., Fay, T. L., & Zaidi, S. H. (1972). Problems of translation in cross-cultural research. *Journal of Cross-Cultural Psychology*, *3*(1), 41-56.

Segrin, C. (2001). *Interpersonal Processes in Psychological Problems*. Guilford Press.

Shams, M., & Williams, R. (1995). Differences in perceived parental care and protection and related psychological distress between British Asian and non-Asian adolescents. *Journal of Adolescents, 18*, 329-348.

Shaver, P. R., & Mikulincer, M. (2002). Attachment-related psychodynamics. *Attachment and Human Development, 4*, 133–161.

Shek, D. T. (2007). A longitudinal study of perceived parental psychological control and psychological well-being in Chinese adolescents in Hong Kong. *Journal of Clinical Psychology*, *63*(1), 1-22.

Shek, D. T., Lee, T. Y., Lee, B. M., & Chow, J. (2006). Perceived parental control and psychological well-being in Chinese adolescents in Hong Kong. *International Journal of Adolescent Medicine and Health, 18*(3), 535-546.

Shiota, M. N., Campos, B., Keltner, D., & Hertensetein, M. (2004). Positive emotion and the regulation of interpersonal relationships. In P. Philippot & R. S. Feldman (Eds.), *The regulation of emotion. Mahwah* (pp. 127-155). NJ: Lawrence Erlbaum.

Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods, 7*, 422–445.

Shrout, P. E., Bolger, N., Iida, M., Burke, D., Gleason, M. E. J., & Lane, S. P. (2010). The effects of daily support transactions during acute stress: Results from a diary study of bar exam preparation. In K.T. Sullivan & J. Davila (Eds.), *Support Processes in Intimate Relationships* (pp. 175-199). New York: Oxford University Press.

Silk, J. S., Steinberg, L., & Morris, A. S. (2003). Adolescents' emotion regulation in daily life: Links to depressive symptoms and problem behaviour. *Child Development, 74*(6), 1869-1880.

Singelis, T. M., Triandis, H. C., Bhawuk, D. P., & Gelfand, M. J. (1995). Horizontal and vertical dimensions of individualism and collectivism: A theoretical and measurement refinement. *Cross-cultural Research*, *29*(3), 240-275.

Sivadas, E., Bruvold, N. T., & Nelson, M. R. (2008). A reduced version of the horizontal and vertical individualism and collectivism scale: a four-country assessment. *Journal of Business Research, 61*(3), 201-210.

Slade, M. (2010). Mental illness and well-being: the central importance of positive psychology and recovery approaches. *BioMed Central Health Services Research, 10*(1), 26.

Slee, N., Spinhoven, P., Garnefski, N., & Arensman, E. (2008). Emotion regulation as mediator of treatment outcome in therapy for deliberate self-harm. *Clinical Psychology & Psychotherapy, 15*(4), 205-216.).

Smith, D., & Anderson, R. (2000). Social support, risk-level and safety actions following acute assessment of suicidal youth. *Journal of Youth and Adolescence, 29*(4), 451-465.

Smith, M., Calam, R., & Bolton, C. (2009). Psychological factors linked to self-reported depression symptoms in late adolescence. *Behavioural and Cognitive Psychotherapy, 37,* 73-85.

Southam-Gerow, M. A., & Kendall, P. C. (2002). Emotion regulation and understanding: Implications for child psychopathology and therapy. *Clinical Psychology Review*, *22*(2), 189-222.

Spirtes, P., Richardson, T., Meek, C., Scheines, R., & Glymour, C. (1998). Using path diagrams as a structural equation modeling tool. *Sociological Methods & Research*, *27*(2), 182-225.

Srivastava, S., Tamir, M., McGonigal, K. M., John, O. P., & Gross, J. J. (2009). The social costs of emotional suppression: A prospective study of the transition to college. *Journal of Personality and Social Psychology, 96*, 883–897.

Sroufe, L. A., Carlson, E. A., Levy, A. K., & Egeland, B. (1999). Implications of attachment theory for developmental psychopathology. *Development & Psychopathology, 11*(1), 1-13.

Sroufe, L. A., Coffino, B., & Carlson, E. A. (2010). Conceptualizing the role of early experience: Lessons from the Minnesota Longitudinal Study. *Developmental Review*, *30*(1), 36-51.

Sroufe, L. A., Duggal, S., Weinfield, N. S., & Carlson, E. (2000). Relationships, development, and psychopathology. In M. L. A. Sameroff (Ed.), *Handbook of developmental psychopathology* (pp. 75-92). New York: Kluwer Academic/Plenum Press.

Sroufe, L. A., Egeland, B., Carlson, E. & Collins, W.A. (2005). *The development of the person: The Minnesota study of risk and adaptation from birth to adulthood.* New York: Guildford.

Steiger, J. H., & Lind, J. M. (1980, May). Statistically based tests for the number of common factors. *Paper presented at the meeting of the Psychometric Society*, Iowa City.

Stephan, C. W., Stephan, W. G., Saito, I., & Barnett, S. M. (1998). Emotional Expression in Japan and the United States The Nonmonolithic Nature of Individualism and Collectivism. *Journal of Cross-Cultural Psychology*, *29*(6), 728-748.

Stewart, S. M., Bond, M. H., Chan, W., Zaman, R. M., Dar, R., & Anwar, M. (2003). Autonomy from Parents and Psychological Adjustment in an Interdependent Culture. *Psychology Developing Societies*, *15*, 31-49.

Stewart, S. M., Bond, M. H., Ho, L. M., Zaman, R. M., Dar, R., & Anwar, M. (2000). Perceptions of parents and adolescent outcomes in Pakistan. *British Journal of Developmental Psychology*, *18*, 335-352.

Stewart, S. M., Bond, M. H., Zaman, R. M., Mcbride-Chang, C., Rao, N., & Fielding, R. (1999). Functional parenting in Pakistan. *Inter Journal of Behavioural Development*, *23*, 747-70.

Stice, E., Ragan, J., & Randall, P. (2004). Prospective relations between social support and depression: Differential direction of effects for parent and peer support?. *Journal of Abnormal Psychology*, *113*(1), 155-159.

Storrie, K., Ahern, K., & Tuckett, A. (2010). A systematic review: students with mental health problems—a growing problem. *International Journal of Nursing Practice*, *16*(1), 1-6.

Suldo, S. M., & Shaffer, E. J. (2008). Looking beyond psychopathology: The dual-factor model of mental health in youth. *School Psychology Review*, *37*(1).

Sullivan, A., Joshi, H., & Leonard, D. (2011). Single-sex and co-educational secondary schooling: what are the social and family outcomes, in the short and longer term?. *Longitudinal and Life Course Studies*, *3*(1), 137-157.

Sun, R. C. F., Hui, E. K. P., & Watkins, D. (2006). Towards a model of suicidal ideation for Hong Kong Chinese adolescents. *Journal of Adolescence*, *29*(2), 209–224.

Suveg, C., & Zeman, J. (2004). Emotion regulation in children with anxiety disorders. *Journal of Clinical Child and Adolescent Psychology*, *33*(4), 750-759.

Takahashi, K. (1986). Examining the strange-situation procedure with Japanese mothers and 12-month-old infants. *Developmental Psychology*, *22*(2), 265.

Tareen, A., Mirza, I., Minhas, A., Minhas, F., & Rahman, A. (2009). Developing a child and adolescent mental health service in a low-income country: a global partnership model. *Psychiatric Bulletin*, *33*(5), 181-183.

Taylor, S. E. (2011). Social support: A review. In M. S. Friedman (Ed.), *The Handbook of Health Psychology* (pp. 189-214). New York, NY: Oxford University Press.

Taylor, S. E., Sherman, D. K., Kim, H. S., Jarcho, J., Takagi, K., & Dunagan, M. S. (2004). Culture and social support: Who seeks it and why? Journal of Personality and Social Psychology, 87, 354 –362.

Terra, L., Hauck, S., Fillipon, A. P., Sanchez, P., Hirakata, V., Schestatsky, S., & Ceitlin, L. H. (2009). Confirmatory factor analysis of the Parental Bonding Instrument in a Brazilian female population. *Australasian Psychiatry, 43*(4), 348-354.

The World Bank. (2012). Pakistan: Country at a glance. Retrieved on Oct 12, 2012, from http://www.worldbank.org/en/country/pakistan

Thompson, R. A. (1994). Emotion regulation: A theme in search of definition. *Monographs of the society for research in child development, 59*(2-3), 25-52.

Torsheim, T., Currie, C., Boyce, W., Kalnins, I., Overpeck, M., & Haugland, S. (2004). Material deprivation and self-rated health: a multilevel study of adolescents from 22 European and North American countries. *Social Science & Medicine, 59*(1), 1-12.

Torsheim, T., Currie, C., Boyce, W., & Samdal, O. (2006). Country material distribution and adolescents' perceived health: multilevel study of adolescents in 27 countries. *Journal of Epidemiology and Community Health, 60*(2), 156-161.

Tremblay, I., & Sullivan, M. J. L. (2010). Attachment and pain outcomes in adolescents: The mediation role of pain catastrophizing and anxiety. *Journal of Pain, 11*, 160 - 171.

Triandis, H. C. (1993). The contingency model in cross-cultural perspective. In M. M. Chemers & R. Ayman (Eds.), *Leadership theory and research: Perspectives and direction*s (pp. 167–188). San Diego, CA: Academic Press.

Triandis, H. C. (2004). The many dimensions of culture. *The Academy of Management Executive, 18*(1), 88-93.

Triandis, H. C., Bontempo, R., Villareal, M. J., Asai, M., & Lucca, N. (1988). Individualism and collectivism: Cross-cultural perspectives on self-ingroup relationships. *Journal of Personality and Social Psychology, 54*(2), 323-338.

Triandis, H. C., & Gelfand, M. J. (1998). Converging measurement of horizontal and vertical individualism and collectivism. *Journal of Personality and Social Psychology, 74*(1), 118-128.

Trommsdorff, G. & Rothbaum, F. (2009) Development of Emotion Regulation in Cultural Context, in (M. Vandekerckhove, C. von Scheve, S. Ismer, S. Jung & S. Kronast (Eds.), *Regulating Emotions: Culture, Social Necessity, and Biological Inheritance* (pp. 83-120). Blackwell Publishing Ltd., Oxford, UK. doi: 10.1002/9781444301786.ch4

True, M. M., Pisani, L., & Oumar, F. (2001). Infant-mother attachment among the Dogon of Mali. *Child Development, 72*(5), 1451-1466.

Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika, 38*, 1–10.

Uji, M., Tanaka, N., Shono, M., & Kitamura, T. (2006). Factorial structure of the parental bonding instrument (PBI) in Japan: A study of cultural,

developmental, and gender influences. *Child Psychiatry and Human Development, 37*(2), 115-132.

Ullman, J. B. (2006). Structural equation modeling: Reviewing the basics and moving forward. *Journal of Personality Assessment, 87*(1), 35-50.

Unger, J. B., Li, Y., Johnson, C. A., Gong, J., Chen, X., Li, C., ... & Lo, A. T. (2001). Stressful life events among adolescents in Wuhan, China: Associations with smoking, alcohol use, and depressive symptoms. *International Journal of Behavioural Medicine, 8*(1), 1-18.

United Nations International Children's Emergency Fund. (2011). Pakistan: Statistics. Retrieved on April 20, 2013, from http://www.unicef.org/infobycountry/pakistan_pakistan_statistics.html.

United State Census Bureau. (2010). US and world population clock. Retrieved on Oct 12, 2012, from http://www.census.gov/popclock/

Van de Mortel, T. F. (2008). Faking it: social desirability response bias in self-report research. *Australian Journal of Advanced Nursing, 25*(4), 40.

Van Eijck, F. E., Branje, S. J., Hale III, W. W., & Meeus, W. H. (2012). Longitudinal associations between perceived parent-adolescent attachment relationship quality and generalized anxiety disorder symptoms in adolescence. *Journal of Abnormal Child Psychology, 40*(6), 871-883.

Van Ijzendoorn, M. H., & Sagi, A. (1999). Cross-Cultural Patterns of Attachment: Universal and Contextual Dimensions. In J. Cassidy & P. Shaver (Eds.), Handbook of attachment theory and research (pp. 713-734). New York: Guilford Press.

Van Widenfelt, B. M., Treffers, P. D., De Beurs, E., Siebelink, B. M., & Koudijs, E. (2005). Translation and cross-cultural adaptation of assessment instruments used in psychological research with children and families. *Clinical child and family psychology review, 8*(2), 135-147.

Vieno, A., Santinello, M., Pastore, M., & Perkins, D. D. (2007). Social support, sense of community in school, and self-efficacy as resources during early adolescence: An integrative model. *American Journal of Community Psychology, 39*(1-2), 177-190.

Vollebergh, W. A., Iedema, J., & Raaijmakers, Q. A. (2001). Intergenerational transmission and the formation of cultural orientations in adolescence and young adulthood. *Journal of Marriage and Family, 63*(4), 1185-1198.

Von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gotzsche, P. C., & Vandenbroucke, J. P. (2007). The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *Preventive medicine, 45*(4), 247-251.

Walden, T. A., & Smith, M. C. (1997). Emotion regulation. *Motivation and Emotion, 21*, 7-25.

Wang, Q., & Leichtman, M.D. (2000). Same beginnings, different stories: A comparison of American and Chinese children's narratives. Child Development, *71*(5), 1329–1346.

Wang, C. C. D. C., & Scalise, D. A. (2010). Adult attachment, culturally adjusted attachment, and interpersonal difficulties of Taiwanese adults. *The Counseling Psychologist, 38*, 6-31. doi: 10.1177/0011000009338950

Wang, J. K., Su, T. P., & Chou, P. (2010). Sex Differences in Prevalence and Risk Indicators of Geriatric Depression: The Shih-Pai Community-based Survey. *Journal of the Formosan Medical Association, 109*(5), 345-353.

Waters, E., Hamilton, C. E., & Weinfield, N. S. (2000). The stability of attachment security from infancy to adolescence and early adulthood: General introduction. *Child Development, 71*(3), 678-683.

Weems, C. F. & Pina, A. A. (2010). The assessment of emotion regulation: Improving construct validity in research on psychopathology in youth. *Journal of Psychopathology and Behavioural Assessment, 32*, 1-7.

Weinberg, A., & Klonsky, E. D. (2009). Measurement of emotion dysregulation in adolescents. *Psychological Assessment, 21*(4), 616-621.

Weiss, M. (1997). Explanatory Model Interview Catalogue (EMIC): framework for comparative study of illness. *Transcultural Psychiatry*, *34*(2), 235-263.

Welte, J. W., & Russell, M. (1993) Influence of socially desirable responding in a study of stress and substance abuse. *Alcoholism: Clinical and Experimental Research, 17*,758-761.

Wendt, A. (1992). Anarchy is what states make of it: the social construction of power politics. *International Organization*, *46*(2), 391-425.

Westland, C. J. (2010). Lower bounds on sample size in structural equation modeling. *Electronic Commerce Research and Applications*, *9*(6), 476-487.

Wheeler, L., Reis, H. T., & Bond, M. H. (1989). Collectivism-individualism in everyday social life: The middle kingdom and the melting pot. *Journal of Personality and Social Psychology*, *57*(1), 79-86.

White, D., Leach, C., Sims, R., Atkinson, M., & Cottrell, D. (1999). Validation of the Hospital Anxiety and Depression Scale for use with adolescents. *The British Journal of Psychiatry*, *175*(5), 452-454.

Whiteford, H. A., Degenhardt, L., Rehm, J., Baxter, A. J., Ferrari, A. J., Erskine, H. E., ... & Vos, T. (2013). Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. *The Lancet*, *382*(9904), 1575-1586.

Wierzbicka, A. (1994). Emotion, language, and cultural scripts. In S. Kitayama & H. R. Markus (Eds.), Emotion and culture. (pp. 133-196). Washington, D.C.: American Psychological Association.

Wilhelm, K., Niven, H., Parker, G., & Hadzi-Pavlovic, D. (2005). The stability of the Parental Bonding Instrument over a 20-year period. *Psychological medicine*, *35*(3), 387-393.

Wilkinson, R. B. (2010). Best friend attachment versus peer attachment in the prediction of adolescent psychological adjustment. *Journal of Adolescence*, *33*(5), 709-717.

Williams, N. L., & Riskind, J. H. (2004). Adult romantic attachment and cognitive vulnerabilities to anxiety and depression: Examining the interpersonal basis of vulnerability models. *Journal of Cognitive Psychotherapy*, *18*(1), 7-24.

Williamson, D. E., Birmaher, B., Anderson, B. P., al-Shabbout, M., & Ryan, N. D., (1995). Stressful life events in depressed adolescents: the role of dependent events during the depressive during the depressive episode. *Journal of American Academy of Child Adolescent Psychiatry, 34,* 591–598.

Wong, N., Rindfleisch, A., & Burroughs, J. E. (2003). Do reverse-worded items confound measures in cross-cultural consumer research? The case of the Material Values Scale. *Journal of Consumer Research, 30*(1), 72-91.

Wood, J. J., McLeod, B. D., Sigman, M., Hwang, W. C., & Chu, B. C. (2003). Parenting and childhood anxiety: Theory, empirical findings, and future directions. *Journal of Child Psychology and Psychiatry, 44*(1), 134-151.

World Health Organization. (1946). *The International Health Conference,* New York, 19-22 June, 1946; signed on 22 July 1946

World Health Organization. (1992). *The ICD-10 Classification of Mental and Behavioural Disorders*; Clinical Descriptions and Diagnostic Guidelines, World Health Organization.

World Health Organization. (2005). *Child and adolescent mental health policies and plans.* Geneva: World Health Organization.

Yang, A., Wang, D., Li, T., Teng, F., & Ren, Z. (2008). The impact of adult attachment and parental rearing on subjective well-being in Chinese late adolescents. *Social Behavior and Personality: An International Journal, 36*(10), 1365-1378.

Yang, J., Yao, S., Zhu, X., Zhang, C., Ling, Y., Abela, J. R., ... & McWhinnie, C. (2010). The impact of stress on depressive symptoms is moderated by social support in Chinese adolescents with subthreshold depression: A multi-wave longitudinal study. *Journal of Affective Disorders, 127*(1), 113-121.

Zainodin, H. J., Noraini, A., & Yap, S. J. (2011). An Alternative Multicollinearity Approach in Solving Multiple Regression Problem. *Trends in Applied Sciences Research, 6*(11), 1241-.

Zigmond, A. S., & Snaith, R. P. (1983). The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica*, *67*(6), 361-370.

Zimmerman, M. A., Ramirez-Valles, J., Zapert, K. M., & Maton, K. I. (2000). A longitudinal study of stress-buffering effects for urban African-American male adolescent problem behaviors and mental health. *Journal of Community Psychology, 28*(1), 17-33.

Appendices

Appendix-1 Ethics

Letter confirming ethical approval from The University of Edinburgh

School of Health in Social Science
Medical School, Teviot Place
Edinburgh
EH8 9AG

Telephone: 0131 650
Fax: 0131 650 3891

Email: Ethel.Quayle@ed.ac.uk

18th December 2012

Dear Amna,

Re: Correlates of Mental Health among Pakistani Adolescents

Please can I confirm the change in the title of your research, which was originally approved by the School of Health and Social Science Research Ethics Committee on the 8th November 2011.

With best wishes,

Yours sincerely,

Dr. Ethel Quayle

Chair of the Research Ethics Committee

Letter confirming ethical approval from The Fatima Jinnah Women University

Fatima Jinnah Women University
THE MALL, RAWALPINDI
Tel: 051-9271167 Fax: 92-51-9271168, E-mail: registrar@fjwu.edu.pk

Ref: FJWU/Reg/2014/877 Dated: February 11, 2014

Ms. Amna Khalid
FJWU HRD Scholar/Lecturer, Department of Behavioral Sciences
Fatima Jinnah Women University

Ethics Reference No: *Please quote this ref on all correspondence*	FJWU/Ethics/2014/01
Project Title:	Correlates of Mental Health among Pakistani Adolescents
Researcher's Name(s):	Ms. Amna Khalid

Thank you for submitting your application which was considered by the FJWU Ethics Committee. The FJWU Ethics Committee approves this study from an ethical point of view. This approval is subject to the condition that any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration must be reported immediately to the FJWU Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

You must inform FJWU Ethics Committee when the research has been completed. Please note that approval is only given for the data collection in Pakistan.

Yours Sincerely,

Javaria Iftikhar
Secretary FJWU Ethics Committee

Fatima Jinnah Women University
THE MALL, RAWALPINDI
Tel: 051-9271167 Fax: 92-51-9271168. E-mail: registrar@fjwu.edu.pk

Ref: FJWU/Reg/2012/ 8638

Dated: January 11, 2012

Ms. Amna Khalid
FJWU HRD Scholar/Lecturer, Behavioral Sciences Department

Ethics Reference No: *Please quote this ref on all correspondence*	FJWU/Ethics/2012/01
Project Title:	Depression and its Associated Factors among British, British Pakistani and Pakistani adolescents: A cross-cultural comparative study
Researcher's Name(s):	Ms. Amna Khalid

Thank you for submitting your application which was considered at the FJWU Ethics Committee meeting on December 2, 2012. The following documents were reviewed:

1. Ethical Application Form
2. Participant Information Sheet
3. Consent Form
4. Letters to Parents/Children/Principals etc…
5. Questionnaires

The FJWU Ethics Committee approves this study from an ethical point of view. This approval is subject to the condition that any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration must be reported immediately to the FJWU Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

You must inform FJWU Ethics Committee when the research has been completed. Please note that approval is only given for the data collection in Pakistan. Independent ethical approval from University of Edinburgh will be required for data collection in UK.

Yours Sincerely,

11/1/12

Javaria Iftikhar
Secretary FJWU Ethics Committee

Letter confirming approval from The Federal Directorate of Educational Institutions (Cantonment/ Garrison) in Pakistan

RESTD

FGEI (C/G) Regional Office,
Westridge- I, Rawalpindi
Tel (Mil): 561 – 34046
F.No.6-37/ 78-ROR (Coord) 215
15 Dec 2011

To: All Concerned

Info: Dr Farah Qadir, Incharge Behavioral Science
Fatima Jinnah Women University, The Mall, Rwp

Subj: **Institutional Support to Fatima Jinnah Women University**

Permission is hereby accorded to the research team of Fatima Jinnah Women University, Rwp, to visit your school for the purpose of data collection to measure anxiety, school stress and socialization practices.

Maj
GSO-2
(Naveed Altaf Niazi)

RESTD

English translation of the participant's Information sheet

'Mental health among Pakistani adolescents'

Dear Student:

My name is Amna Khalid. I am lecturer at Fatima Jinnah Women University, Rawalpindi. I am conducting a research on mental health and its associated factors among Pakistani adolescents for my PhD. I would like to invite you to take part in this study. This research has been approved by the University of Edinburgh ethics committee and Fatima Jinnah Women University Pakistan ethics committee. Permission has also been taken from your school authorities.

WHY HAVE I BEEN ASKED TO TAKE PART?
All teenagers studying at various schools in Rawalpindi are being asked to take part. It is totally up to you whether or not you want to fill in the questionnaires.

WHAT WILL HAPPEN IF YOU DECIDE TO PARTICIPATE?
If you decide to take part in this study, you will be asked to fill in a set of questionnaires asking questions regarding your emotional health and wellbeing.

WHAT IS THE COST OF PATICIPATION?
There is no cost of participation in the study beyond the time and effort to fill in the questionnaire. The survey typically takes about 30 minutes. This will be done in your classroom time. If you have any questions I will try to answer them to the best of my knowledge.

WHAT ARE MY RIGHTS?
If you decide that you should not take part in this study this will not affect your academic grades. You may decide to stop being a part of this research study at any time without explanation. You also have the right to ask that any data you have supplied to that point be destroyed. You will have the right to omit or refuse to answer any question that you are not comfortable with. You have the right to ask questions about the study (unless answering these questions would interfere with the study's outcome). If you have any questions about this research after completing the survey, you should send your queries on the address provided at the end of this information sheet.

WHAT ARE THE RISKS?
There are no risks to taking part. You will not be asked to undergo any medical treatment or do anything else that you have not agreed for. If you feel any discomfort during the study, you may choose to discontinue at any time.

WHAT ARE THE BENEFITS?

There are no direct benefits of the study to you. However this research would help to better understand the causes of mental health problems. A summary of research project results can also be shared with you (if your school authorities would allow). You will find this information interesting and it will keep you informed about the reasons for doing mental health research and ways in which it can benefit.

WHAT ABOUT CONFIDENTIALITY AND ANONYMITY?

All information collected during the study will be anonymised and only the main researcher will have access to it. The results of the study will be used in presentations, conferences, publication but will not include any identification of the respondents in anyway.

WHAT DO I DO NEXT?

If you agree to take part in this research, kindly sign in the consent form. If you do not intent to take part in the study please do not sign in the consent form.

FOR FURTHER INFORMATION

You may ask any queries you have. Matthias Schwannauer, my supervisor, will be glad to answer your questions about this study at any time. You may contact him at:
Email: m.schwannauer@ed.ac.uk

USEFUL CONTACTS:

If you feel that you or anyone you know requires a mental health support or have any questions you can consult a doctor. You can also contact the following organizations for free help/advice.

Youth Help Line (toll free: 0800 22 4444) for advice, counselling and referral.
This service is a toll free telephone counselling service, operating 7 days a week from 10am to 8pm. Accessible from all over the Pakistan also from mobile (with regular landline charges).
Address: Youth Help Line, P.O. Box #1298, Islamabad, Pakistan.
E-mail address is:
awaz@rozan.org
yhl@rozan.org

RAWALPINDI GENERAL HOSPITAL
Murree road
Rawalpindi
9290111, 9290301-10

To get any further information about this research you can contact me on:
Khalid.amna@hotmail.com
Postal address:
Amna Khalid
Lecturer Fatima Jinnah Women University
The Mall, Rawalpindi
Pakistan

English translation of the participant's consent form

Kindly read the following statements and sign this form.

1- I agree that I have read and understood the information sheet provided. I have been given the chance to ask any questions about the study. Any questions asked have been answered satisfactorily.
2- I understand that it is my decision to take part in this study and I can decide at any time to stop, without giving any reason.
3- I understand that all of the information I provide on the questionnaires will be kept confidential.
4- I am willing to take part in the second stage of the study if requested.
5- I understand that if I present significant risk during this research than my family, concerned medical authorities or school authorities can be informed. In such case researcher is only responsible for communicating the risk.
6- I agree to take part in the above study

Date ---------- Signature ----------

Appendix-2 Measures

Demographic performa

1. Name _____

2. How old are you? _____

3. Are you male or female a. male b. female

4. In which class do you study? _____

5. Are you?
a. Single
b. Engaged
c. Married
d. In a relationship

6. What is your guardian's occupation/ employment
a. Father _____
b. Mother_____
(if your guardian is not your parent than fill in the following space)
c. Guardian1_____
d. Guardian 2_____

7. Does your family own a car, van or truck (this includes double cabin cars etc)?

No Yes (one) Yes (two or more)

8. Do you have your own bedroom for yourself?
No Yes

9. During the past 12 months, how many times did you travel away on holiday with your family?
Not at all Once Twice More than twice

10. How many computers does your family own?
None One Two More than two

11. Who do you live with most days of the week?
a. Both my mother and my father
b. One parent
c. One parent and a step-parent / partner
d. Other (Please specify) _____

12. What is your religion? _____

13. What is your country of birth? _____

14. Do you feel that you have some impairment/disability?
a. Yes
b. No

If yes please specify_____

15. Have you ever been diagnosed with any physical or mental condition?
   a. Yes
   b. No

If yes, specify
_____

16. Are you currently suffering from any diagnosed physical or mental health condition?
   a. Yes
   b. No

If yes please specify

Next, could you answer the following questions about things that may have happened to you. If they have, please indicate if this was in the last 12 months and / or more than a year ago.

1. Have you had problems keeping up with Schoolwork?
   a. Yes in the past 12 months b. Yes more than a year ago c. No

2. Have you had difficulty in making or keeping friends?
   a. Yes in the past 12 months b. Yes more than a year ago c. No

3. Have you had any serious arguments or fights with friends?

   a. Yes in the past 12 months b. Yes more than a year ago c. No

4. Have you had any serious problems with a boyfriend or girlfriend?
   a. Yes in the past 12 months b. Yes more than a year ago c. No
   d.Not applicable

5. Have you been bullied at school?
   a. Yes in the past 12 months b. Yes more than a year ago c. No

6. Have your parents separated or divorced?
   a. Yes in the past 12 months b. Yes more than a year ago c. No

7. Have you had any serious arguments or fights with either or both of your parents?
   a. Yes in the past 12 months b. Yes more than a year ago c. No

8. Have your parents had any serious arguments or fights?
   a. Yes in the past 12 months b. Yes more than a year ago c. No

9. Have you or any of your family had a serious illness or accident?
a. Yes in the past 12 months b. Yes more than a year ago c. No

10. Have any close friends had a serious illness or accident?
a. Yes in the past 12 months b. Yes more than a year ago c. No

11. Have you been seriously physically abused?
a. Yes in the past 12 months b. Yes more than a year ago c. No

12. Have you been in any trouble with the police?
a. Yes in the past 12 months b. Yes more than a year ago c. No

13. Has anyone among your immediate family (mother, father, brother or sister) died?
a. Yes in the past 12 months b. Yes more than a year ago c. No

14. Has anyone else close to you died?
a. Yes in the past 12 months b. Yes more than a year ago c. No

15. Has anyone among your family or close friends committed suicide?
a. Yes in the past 12 months b. Yes more than a year ago c. No

16. Has anyone among your family attempted suicide or deliberately harmed themselves?
a. Yes in the past 12 months b. Yes more than a year ago c. No

17. Has anyone among your close friends attempted suicide or deliberately harmed themselves?
a. Yes in the past 12 months b. Yes more than a year ago c. No

18. Has anyone forced you (ie. physically or verbally) to engage in sexual activities against your will?
a. Yes in the past 12 months b. Yes more than a year ago c. No

19. Has any other distressing event occurred involving you, your family or close friends?
a. Yes in the past 12 months b. Yes more than a year ago c. No

If 'yes' please describe ----------

Parental Bonding Instrument

This questionnaire lists various attitudes and behaviours of parents. As you remember your FATHER in your life would you place a tick in the most appropriate box next to each question?

Speaks to me in a warm and friendly voice	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Seems emotionally cold to me	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Appear understand my problems and worries	Very Like	Moderately like	Moderately Unlike	Very unlike
Enjoys talking things over with me	Very Like	Moderately Like	Moderately unlike	Very Unlike
Frequently smiles at me	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Can make me feel better when I am upset	Very Like	Moderately Like	Moderately Unlike	Very unlike
Does not talk with me very much	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Does not want me to grow up	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Tries to control everything I do	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Tends to baby me	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Tries to make me feel dependent on him	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Is overprotective of me	Very Like	Moderately like	Moderately Unlike	Very Unlike
Likes me to make my own decisions	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Let me decide things for myself	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Give me as much freedom as I want	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Let me dress in any way I please	Very Like	Moderately Like	Moderately Unlike	Very Unlike

This questionnaire lists various attitudes and behaviours of parents. As you remember your MOTHER in your life would you place a tick in the most appropriate box next to each question?

Speaks to me in a warm and friendly voice	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Seems emotionally cold to me	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Appear understand my problems and worries	Very Like	Moderately like	Moderately Unlike	Very unlike
Enjoys talking things over with me	Very Like	Moderately Like	Moderately unlike	Very Unlike
Frequently smiles at me	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Can make me feel better when I am upset	Very like	Moderately Like	Moderately Unlike	Very unlike
Does not talk with me very much	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Does not want me to grow up	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Tries to control everything I do	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Tends to baby me	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Tries to make me feel dependent on her	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Is overprotective of me	Very Like	Moderately like	Moderately Unlike	Very Unlike
Likes me to make my own decisions	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Let me decide things for myself	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Give me as much freedom as I want	Very Like	Moderately Like	Moderately Unlike	Very Unlike
Let me dress in any way I please	Very Like	Moderately Like	Moderately Unlike	Very Unlike

Adolescents Relationship Scales Questionnaire

Think about all the people in your life. Now read each of the following statements and select the right option in the box that how well it describes your feelings

1) I find it hard to count on other people.	Not at all	Very little	moderately	Sometimes	Very much
2) It is very important to me to feel independent	Not at all	Very little	moderately	Sometimes	Very much
3) I find it easy to get emotionally close to others	Not at all	Very little	moderately	Sometimes	Very much
4) I worry that I will be hurt if I become too close to others	Not at all	Very little	moderately	Sometimes	Very much
5) I am comfortable without close emotional relationships	Not at all	Very little	moderately	Sometimes	Very much
6) I want to be completely emotionally close with others	Not at all	Very little	moderately	Sometimes	Very much
7) I worry about being alone.	Not at all	Very little	moderately	Sometimes	Very much
8) I am comfortable depending on other people	Not at all	Very little	moderately	Sometimes	Very much
9) I find it difficult to trust others completely	Not at all	Very little	moderately	Sometimes	Very much
10) I am comfortable having other people depend on me	Not at all	Very little	moderately	Sometimes	Very much
11) I worry that others don't value me as much as I value them.	Not at all	Very little	moderately	Sometimes	Very much
12) It is very important for me to do things on my own	Not at all	Very little	moderately	Sometimes	Very much
13) I'd rather not have other people depend on me	Not at all	Very little	moderately	Sometimes	Very much
14) I am kind of uncomfortable being emotionally close to people	Not at all	Very little	moderately	Sometimes	Very much
15) I find that people don't want to get as close as I would like	Not at all	Very little	moderately	Sometimes	Very much
16) I prefer not to depend on people	Not at all	Very little	moderately	Sometimes	Very much
17) I worry about having people not accept me	Not at all	Very little	moderately	Sometimes	Very much

Significant Others Scale

Please rate the list on next page people who are important in your life. Possible relationships include friends, partner, mother, father, children, brothers, sisters, other relatives, work colleagues, and so on. For each person you list, circle a number from 1 to 7 to show how well they provide the type of help listed. The second part of each question asks you to rate how you would like things to be if they were exactly as you would most hope for. Again circle a number from 1 to 7 to show what rating this would involve. Ask for further *Significant Others Scale* sheets from the administrator if appropriate.

Relationship----------

1 (a) Can you trust, talk to frankly and share feelings with this person?	Never	Sometimes	Always
1 (b) What rating would your ideal be?	Never	Sometimes	Always
2 (a) Can you lean on and turn to this person in times of difficulty?	Never	Sometimes	Always
2 (b) What rating would your ideal be?	Never	Sometimes	Always
3 (a) Do they give you practical help?	Never	Sometimes	Always
3 (b) What rating would your ideal be?	Never	Sometimes	Always
4 (a) Can you spend time with them socially	Never	Sometimes	Always
4 (b) What rating would your ideal be?	Never	Sometimes	Always

Relationship----------

1 (a) Can you trust, talk to frankly and share feelings with this person?	Never	Sometimes	Always
1 (b) What rating would your ideal be?	Never	Sometimes	Always
2 (a) Can you lean on and turn to this person in times of difficulty?	Never	Sometimes	Always
2 (b) What rating would your ideal be?	Never	Sometimes	Always
3 (a) Do they give you practical help?	Never	Sometimes	Always
3 (b) What rating would your ideal be?	Never	Sometimes	Always
4 (a) Can you spend time with them socially	Never	Sometimes	Always
4 (b) What rating would your ideal be?	Never	Sometimes	Always

Relationship---

1 (a) Can you trust, talk to frankly and share feelings with this person?	Never	Sometimes	Always
1 (b) What rating would your ideal be?	Never	Sometimes	Always
2 (a) Can you lean on and turn to this person in times of difficulty?	Never	Sometimes	Always
2 (b) What rating would your ideal be?	Never	Sometimes	Always
3 (a) Do they give you practical help?	Never	Sometimes	Always
3 (b) What rating would your ideal be?	Never	Sometimes	Always
4 (a) Can you spend time with them socially	Never	Sometimes	Always
4 (b) What rating would your ideal be?	Never	Sometimes	Always

Relationship---

1 (a) Can you trust, talk to frankly and share feelings with this person?	Never	Sometimes	Always
1 (b) What rating would your ideal be?	Never	Sometimes	Always
2 (a) Can you lean on and turn to this person in times of difficulty?	Never	Sometimes	Always
2 (b) What rating would your ideal be?	Never	Sometimes	Always
3 (a) Do they give you practical help?	Never	Sometimes	Always
3 (b) What rating would your ideal be?	Never	Sometimes	Always
4 (a) Can you spend time with them socially	Never	Sometimes	Always
4 (b) What rating would your ideal be?	Never	Sometimes	Always

Relationship---

1 (a) Can you trust, talk to frankly and share feelings with this person?	Never	Sometimes	Always
1 (b) What rating would your ideal be?	Never	Sometimes	Always
2 (a) Can you lean on and turn to this person in times of difficulty?	Never	Sometimes	Always
2 (b) What rating would your ideal be?	Never	Sometimes	Always
3 (a) Do they give you practical help?	Never	Sometimes	Always
3 (b) What rating would your ideal be?	Never	Sometimes	Always
4 (a) Can you spend time with them socially	Never	Sometimes	Always
4 (b) What rating would your ideal be?	Never	Sometimes	Always

Regulation of Emotions Questionnaire

The following questions ask you to think about how often you do certain things in response to your emotions. Kindly mark an option for each question

In general How do you respond to your emotions	Never	Seldom	Often	Very Often	Always
1) I talk to someone about how I feel	Never	Seldom	Often	Very Often	Always
2) I take my feelings out on others verbally (e.g. shouting, arguing)	Never	Seldom	Often	Very Often	Always
3) I seek physical contact from friends or family (e.g. a hug, hold hands)	Never	Seldom	Often	Very Often	Always
4) I review (rethink) my thoughts or beliefs	Never	Seldom	Often	Very Often	Always
5) I harm or punish myself in some way	Never	Seldom	Often	Very Often	Always
6) I do something energetic (e.g. play sport, go for a walk)	Never	Seldom	Often	Very Often	Always
7) I dwell on my thoughts and feelings (e.g. It goes round and round in my head and I can't stop it)	Never	Seldom	Often	Very Often	Always
8) I ask others for advice	Never	Seldom	Often	Very Often	Always
9) I review (rethink) my goals or plans	Never	Seldom	Often	Very Often	Always
10) I take my feelings out on others physically (e.g. fighting, lashing out)	Never	Seldom	Often	Very Often	Always
11) I put the situation into perspective	Never	Seldom	Often	Very Often	Always
12) I concentrate on a pleasant activity	Never	Seldom	Often	Very Often	Always

13) I try to make others feel bad (e.g. being rude, ignoring them)	Never	Seldom	Often	Very Often	Always
14) I think about people better off and make myself feel worse	Never	Seldom	Often	Very Often	Always
15) I keep the feeling locked up inside	Never	Seldom	Often	Very Often	Always
16) I plan what I could do better next time	Never	Seldom	Often	Very Often	Always
17) I bully other people (e.g. saying nasty things to them, hitting them)	Never	Seldom	Often	Very Often	Always
18) I take my feelings out on objects around me (e.g. deliberately causing damage to my house, school or outdoor things)	Never	Seldom	Often	Very Often	Always
19) Things feel unreal (e.g. I feel strange, things around me feel strange, I daydream)	Never	Seldom	Often	Very Often	Always
20) I telephone friends or family	Never	Seldom	Often	Very Often	Always
21) I go out and do something nice (e.g. cinema, shopping, go for a meal, meet people)	Never	Seldom	Often	Very Often	Always

Horizontal and Vertical Individualism and Collectivism Scale

Below are the 14 statements designed to assess your attitudes and beliefs about yourself? For each statement indicate the degree to which you either strongly agree or strongly disagree

My happiness depends very much on the happiness of those around me.	Never	Very little	moderately	Very much	completely
I would do what would please my family, even if I detested the activity.	Never	Very little	moderately	Very much	completely
I usually sacrifice my self-interest for the benefit of my group.	Never	Very little	moderately	Very much	completely
I enjoy working in situations involving competition with others.	Never	Very little	moderately	Very much	completely
The well-being of my co-workers is important to me.	Never	Very little	moderately	Very much	completely
I enjoy being unique and different from others in many ways.	Never	Very little	moderately	Very much	completely
Children should feel honored if their parents receive a distinguished award.	Never	Very little	moderately	Very much	completely
I often do "my own thing."	Never	Very little	moderately	Very much	completely
Competition is the law of nature.	Never	Very little	moderately	Very much	completely
If a co-worker gets a prize I would feel proud.	Never	Very little	moderately	Very much	completely
I am a unique individual.	Never	Very little	moderately	Very much	completely
I would sacrifice an activity that I enjoy very much if my family did not approve of it	Never	Very little	moderately	Very much	completely
Without competition it is not possible to have a good society.	Never	Very little	moderately	Very much	completely
I feel good when I cooperate with others.	Never	Very little	moderately	Very much	completely

Hospital Anxiety and Depression Scale

Below are the 14 statements designed to assess your attitudes and beliefs about yourself? For each statement indicate the degree to which you either strongly agree or strongly disagree

1)I feel tense and 'wound up'	Most of the time	A lot of the time	Time to time-occasionally	Not at all
2) I still enjoy the things I used to enjoy as much	Definitely	Not quite so much	Only a little	Hardly at all
3) I get a sort of frightened feeling as if something awful is about to happen	Very definitely and quite badly	Yes, but not too badly	A little, but it doesn't worry me	Not at all
4) Worrying thoughts go through my mind	A great deal of the time	A lot of the time	From time to time, but not often	Only occasionally
5) I can laugh and see the funny side of things	Definitely, as much as I ever did	Rather less than I used to	Definitely, less than I used to	Hardly at all
6) I feel cheerful	Not at all	Not often	Sometimes	Most of the time
7) I can sit at ease and feel relaxed	Definitely	Usually	Not often	Not at all
8) I feel as if I am slowed down	Nearly all the time	Very often	Sometimes	Not at all
9) I get a sort of frightened feeling like 'butterflies' in the stomach	Not at all	Occasiona lly	Quite often	Very often
10)I have lost interest in my appearance	Definitely	I don't take so much care as I should	I may not take quite as much care	I take just as much care as ever
11)I feel restless as if I have to be on the move	Very much indeed	Quite a lot	Not very much	Not at all
12) I look forward with enjoyment to things	As much as I ever did	Rather less than I used to	Definitely less than I used to	Hardly at all
13) I get sudden feelings of panic	Very often indeed	Quite often	Not very often	Not at all
14) I can enjoy a good book or radio or TV programme	Often	Sometime s	Not often	Very seldom

BBC well-being Scale

The following questions ask how you feel about the general quality of your life, health, or other areas which might be important to you. Please choose the answer that appears most appropriate.

1) Are you satisfied with your physical health?	Not at all	A little	Very much	Completely
2) Are you satisfied with the quality of your sleep?	Not at all	A little	Very much	Completely
3) Are you satisfied with your ability to perform your daily living activities?	Not at all	A little	Very much	Completely
4) Are you satisfied with your ability to work?	Not at all	A little	Very much	Completely
5) Do you feel depressed or anxious?	Not at all	A little	Very much	Completely
6) Do you feel that you are able to enjoy life?	Not at all	A little	Very much	Completely
7) Do you feel you have a purpose in life?	Not at all	A little	Very much	Completely
8) Do you feel in control over your life?	Not at all	A little	Very much	Completely
9) Do you feel optimistic about the future?	Not at all	A little	Very much	Completely
10) Do you feel satisfied with yourself as a person?	Not at all	A little	Very much	Completely
11) Are you satisfied about your looks and appearance?	Not at all	A little	Very much	Completely
12) Do you feel able to live your life the way you want?	Not at all	A little	Very much	Completely
13) Are you confident in your own opinions and beliefs?	Not at all	A little	Very much	Completely
14) Do you feel able to do the things you choose to do?	Not at all	A little	Very much	Completely
15) Do you feel able to grow and develop as a person?	Not at all	A little	Very much	Completely
16) Are you satisfied with yourself and your achievements?	Not at all	A little	Very much	Completely
17) Are you satisfied with your personal and family life?	Not at all	A little	Very much	Completely
18) Are you satisfied with your friendships and personal relationships?	Not at all	A little	Very much	Completely
19) Are you comfortable about the way in which you relate to and connect with others?	Not at all	A little	Very much	Completely

20) Do you feel able to ask someone for help with a problem if you needed to?	Not at all	A little	Very much	Completely
21) Are you satisfied that you have enough money to meet your needs?	Not at all	A little	Very much	Completely
22) Are you satisfied with your opportunity for exercise and leisure activities?	Not at all	A little	Very much	Completely
23) Are you satisfied with your access to health services?	Not at all	A little	Very much	Completely

Appendix-3 Systematic review

Methodological quality assessment checklists

These are sample checklists. Different checklists were used for other study designs accessible form http://www.sign.ac.uk/methodology/checklists.html

Methodology Checklist 3: Cohort studies

SIGN

Study identification (*Include author, title, year of publication, journal title, pages*)

Guideline topic: Key Question No: Reviewer:

Before completing this checklist, consider:

1. Is the paper really a cohort study? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist.
2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist..

Reason for rejection: 1. Paper not relevant to key question ? 2. Other reason ? (please specify):

Please note that a retrospective study (ie a database or chart study) cannot be rated higher than +.

SECTION 1: INTERNAL VALIDITY		
In a well conducted cohort study:		***Does this study do it?***
1.1	The study addresses an appropriate and clearly focused question.[I]	Yes ? No ? Can't say ?
SELECTION OF SUBJECTS		
1.2	The two groups being studied are selected from source populations that are comparable in all respects other than the factor under investigation.[II]	Yes ? No ? Can't say ? Does not apply ?
1.3	The study indicates how many of the people asked to take part did so, in each of the groups being studied.[III]	Yes ? No ? Does not apply ?
1.4	The likelihood that some eligible subjects might have the outcome at the time of enrolment is assessed and taken into account in the analysis.[IV]	Yes ? No ? Can't say ? Does not apply ?
1.5	What percentage of individuals or clusters recruited into each arm of the study dropped out before the study was completed.[V]	
1.6	Comparison is made between full participants and those lost to follow up, by exposure status.[VI]	Yes ? No ? Can't say ? Does not apply ?

ASSESSMENT		
1.7	The outcomes are clearly defined.[I]	Yes ? No ? Can't say ?
1.8	The assessment of outcome is made blind to exposure status. If the study is retrospective this may not be applicable.[II]	Yes ? No ? Can't say ? Does not apply ?
1.9	Where blinding was not possible, there is some recognition that knowledge of exposure status could have influenced the assessment of outcome.[III]	Yes ? No ? Can't say ? ?
1.10	The method of assessment of exposure is reliable.[IV]	Yes ? No ? Can't say ?
1.11	Evidence from other sources is used to demonstrate that the method of outcome assessment is valid and reliable.[V]	Yes ? No ? Can't say ? Does not apply?
1.12	Exposure level or prognostic factor is assessed more than once.[VI]	Yes ? No ? Can't say ? Does not apply ?
CONFOUNDING		
1.13	The main potential confounders are identified and taken into account in the design and analysis.[VII]	Yes ? No ? Can't say ?
STATISTICAL ANALYSIS		
1.14	Have confidence intervals been provided?[VIII]	Yes ? No ?
SECTION 2: OVERALL ASSESSMENT OF THE STUDY		
2.1	How well was the study done to minimise the risk of bias or confounding?[IX]	High quality (++) ? Acceptable (+) ? Unacceptable – reject 0
2.2	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, do you think there is clear evidence of an association between exposure and outcome?	Yes ☐ No ☐ Can't say ☐
2.3	Are the results of this study directly applicable to the patient group targeted in this guideline?	Yes ? No ?
2.4	**Notes.** Summarise the authors conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above.	

STROBE Statement—Checklist of items that should be included in reports of *cross-sectional studies*

	Item No	Recommendation
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported
Objectives	3	State specific objectives, including any prespecified hypotheses
Methods		
Study design	4	Present key elements of study design early in the paper
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias	9	Describe any efforts to address potential sources of bias
Study size	10	Explain how the study size was arrived at
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding
		(*b*) Describe any methods used to examine subgroups and interactions
		(*c*) Explain how missing data were addressed
		(*d*) If applicable, describe analytical methods taking account of sampling strategy
		(*e*) Describe any sensitivity analyses
Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed
		(b) Give reasons for non-participation at each stage
		(c) Consider use of a flow diagram
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders
		(b) Indicate number of participants with missing data for each variable of interest
Outcome data	15*	Report numbers of outcome events or summary measures
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included
		(*b*) Report category boundaries when continuous variables were categorized
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses

Discussion		
Key results	18	Summarise key results with reference to study objectives
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence
Generalisability	21	Discuss the generalisability (external validity) of the study results
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

Description of studies reviewed during systematic review of literature on adolescents' well-being

Study	Design/ population	Sample characteristics	Measures	Results
Parental bonding				
Shek et al., 2006	Cross-sectional Community: Secondary school population	3,017; 1,331 males and 1,670 females; Age *M*= 12.65 years	Chinese Paternal Psychological Control Scale (CPPCS) and Chinese Maternal Psychological Control Scale (CMPCS; Shek, 2006); Satisfaction with Life Scale (SWLS, Diener, Emmons, Larsen, and Grifin, 1985)	CPPCS= -0.24*** CMPCS= -0.32***
Shek 2007	Same as Shek et al., 2006	Same as Shek et al., 2006	Same as Shek et al., 2006	with life satisfaction: CPPCS = 0.09**; CMPCS = 0.09**
Morton et al. (2011)	Cross-sectional Community: school population	857; M age = 14.70 years; 426 males, 426 females and 4 not answered	Transformational Parenting Questionnaire (TPQ; 2011); Self-Regulatory Efficacy for Healthy Eating Strachan and Brawley (2008); Self-Regulatory Efficacy for Physical Activity Shields and Brawley (2006, 2007); Satisfaction with Life scale for children (SWLS-C; Gadermann, Schonert-Reichl, & Zumbo, 2010).	$\chi 2$ (147) = 526.5, $p < .001$, CFI = .943, TLI = .993, RMSEA = .055, total variance = 28.8%
Morgan et al. (2012)	Cross-sectional random samples	N=3,591 (1884= Spain; 1707=England), Gender Boy Spain 47% England 46% 11, 13 and 15 year olds	Life satisfaction was measured by one item (Cantril, 1965);;social capital framework (Morrow, 1999) Family Affluence Scale FAS (Currie et al., 2008)	Family autonomy and control Spain F = 47,641***; England F = 72,545 ***; Family social support Spain F = 76,706*** England F = 68,595***
Coccia et	Cross-sectional	N=198; 52.6% boys	Parental indulgence (Bredehoft & Walcheski,	Direct effect $\beta = 0.214$*

al. (2012)	Community: High school population	15 to 16 years old; Grade 10 (61.6%) Grade 11 (38.4%)	2008; Clarke et al.,2004); Perceived Stress Scale (Cohen, Kamarck & Mermelstein, 1983); Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985).	indirect effect β = 0.219* Total effect β = 0.433* Give too much = 0.41** Soft structure = 0.37** Over nurture = 0.37**
Milevsky et al. (2007)	Cross-sectional Community: High school population	272; 145 males and 127 females; grades 9 and 11	Authoritative Parenting Measure (Steinberg et al., 1994), Rosenberg Self-esteem Scale (1965). Epidemiologic Studies Short Depression Scale (Andresen, Malmgren, Carter, & Patrick, 1994; Radloff, 1977); How satisfied they are with their life as a whole these days (Campbell, Converse, & Rodgers, 1976)	maternal parenting style $F(3,262)=14.97$, $p < .01$ paternal parenting style $F(3,253)=12.18$, $p < .01$
Milevsky et al. (2008)	Cross-sectional Community: High school population	Same as Milevsky, Schlechter, Netter and Keehn, 2007	Same as Milevsky, Schlechter, Netter and Keehn, 2007	F(3,265)¼10.96, p<.01
Schwarz and colleagues (2012)	Cross-sectional Different sampling procedures across countries	1,034, 58% female 10 and 14 years of age 13.62 years (*SD* = 0.60 years)	Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985), The perceived Peer Acceptance (Epstein, 1983); "All things considered, how satisfied are you with life these days?"(Diener, Gohm, Suh, & Oishi, 2000); domain-specific satisfaction (friendship, family, school, and health; Henrich & Herschbach, 1995); Family Values Scales (Georgas, 1991)	Admiration from parents (γ_{20}= 0.20, $p < .001$; Peer acceptance $\gamma_{30} = 0.21$, $p < .01$), Gender $\gamma_{40} = -0.07$, $p < .05$ Intimacy with parents .25*** Admiration from parents.34*** Peer acceptance.26***
Knafo, & Assor, 2007	Cross-sectional Community: High school	131, Age 15 to 19 (M = 16.8; SD = 0.76), (47%) = female	Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen & Griffin, 1985); 10 feelings, drawn, in part, from the work by	Autonomy-supportive Parenting .27** Autonomous motivation for

	population		Assor et al. (2004); Perceived autonomy-supportive parenting (Knafo, & Assor, 2007), Autonomous and controlled motivations for agreement with parental values (Knafo, & Assor, 2007); Perceived congruence with parental values (Knafo, A., Daniel, E., & Khoury-Kassabri, M. 2008)	agreement .20** Controlled motivation for agreement –.15 Perceived congruence with parents' values.19*
Bolghan-Abadi, Kimiaee, & Amir (2011)	Cross-sectional Community: Senior high school population	137 (78 females and 59 males); 15 to 18 years old. (M= 16.21, S.D = 1.27) mothers was also between 33 to 58 years old. (M = 38.2, S.D = 2.41).	Parents' child rearing styles questionnaire Esfandyari (1984 Mental Health questionnaire: Tagavi (2001 The Word Health Organization Quality of Life Questionnaire (WHOQOL-BREF):, Nejat *et al. 2006*	F (df = 3,146) = 26.110, p = < 0.001, Adjusted R2 = 0.336; Permissive parenting = 0.49**; Authoritarian parenting = -0.40**; Authoritative parenting = 0.14
Lekes et al. (2010)	Cross-sectional Community: High school population	North American = 567, China= 515, Chinese = 56%, female; North American = 52% male. North American mean age= 14.17, Chinese mean age =15.50.	Perception of Autonomy Support Scale (Robbins, 1994), The Life Aspiration Index (Kasser and Ryan 1996), Positive and Negative Affect Scale (Emmons 1992 Anderman's, 2002); Self-concept scale (Anderman, 2002)	North American, χ^2_{sb} (df = 51, n = 567) = 128.87*** ; CFI = .98,; RMSEA = .052 [.041; .063]; Chinese sample, $\chi 2_{sb}$ (df = 51, n = 515) = 155.29***; CFI = .94, RMSEA = .063 [.052; .075]; China .36***; North America .43***
Social support				
Robitail et al. (2006)	Cross-sectional Community: Middle school population	N=349 students 44 teachers age 10 -16 years 60%= female 55% = Caucasian, 14% = African American,	Children with Special Health Care Needs Screener (CSHCN; Bethell et al. 2002); KIDSCREEN-52 HRQoL (Ravens-Sieberer et al 2005)	Social functioning F(12, 876) = 17.18, $p <$ .001. Pearson correlation ranged from .12 to .66***

		12% =Hispanic or Latino, 10% =multiracial, 8%= other ethnicities. 26% = low SES		
Raven-Sieberer et al. (2008)	Cross-sectional survey Multiple sampling procedures across 12 countries	N=15945 12-18 years old	Strength and Difficulties questionnaire (Goodman, 1997); Family Affluence Scale (Currie, Elton, Todd & Platt, 1997); Oslo Social Support Scale (Brevik, 1996); Social Adjustment Scale (McDowell & Newell, 1996); Short Form 12 Health Survey (Ware, Kosinski and Keller, 1996); KIDSCREEN-52 HRQoL (Ravens-Sieberer et al 2005)	Poor social support with SDQ (β = 3.85, CI = 3.35-4.42)
Giannakopoulos et al. (2009)	Cross-sectional Community school based Multi-staged random sampling	N=1,194 (40.07% boys) 11 and 18 years old,	KIDSCREEN-52 HRQoL (Ravens-Sieberer et al 2005) Children with Special Health Care Needs Screener CSHCN; Bethell et al 2002 Short Form Health survey SF-12 for parents; Ware, Kosinski, and Keller, 1996, Family Affluence Scale (Currie, Elton, Todd & Platt, 1997); Oslo Social Support Scale Brevik, 1996	OR The total KIDSCREEN-52 score for the physical well-being increases by 2.49 points with one point increase on the OSLO social support scale
Jovic-Vranes et al. (2011)	Cross-sectional Community survey, Stratified two-stage sampling	N=2720 Male =50.4% 7-11 =34.5 12-19 =66.5%	interviews, anthropometric and blood pressure measurements. Demographic and Health Survey Wealth Index (The DHS Wealth Index (Rutstein SO, Johnson K. 2004)	Social support B 0.101 (S.E= 0.018) F= 30.110*** R^2 = 0.130
Vieno et al. (2007)	Cross sectional Community schools	N=7,097 age 11.69 years (N = 2,249); 13.74 years	4 items from Parental Bonding Inventory, Parker, Tupling, & Brown, 1979); Ease of communication with friends; Number of	$\chi 2$ (38) = 204.44 ($p < .001$), GFI = .98, AGFI = .96, CFI = .96, NNFI = .95,

		(N = 2,246); and 15.85 years (N = 2,602). 3,650 boys (51.4%)	friends ; Time spent with friends (Settretobulte & Warren, 2001), Sense of community in school (Samdal, Wold, & Torsheim, 1998); Life satisfaction was measured by one item (Cantril, 1965); Psychological complaints with Five-item scale (part of the HBSC Symptom Checklist; Haugland & Wold, 2001)	RMSEA = .05. Perceived parents support =.60**; perceived friends support = .26**
Danielsen (2010)	Cross sectional Community sample; Stratified systematic sampling; nationally representative sample	Norwegian 13-yearold students (*N* = 1,736; 49% were girls) and 15-year-old students (*N* = 1,622; 51% were girls).	Huebner's (1991) Students' Life Satisfaction Scale (SLSS), Schwarzer's General Perceived Self-Efficacy Scale (Luszczynska, Gutiérrez-Doña, et al., 2005). Multidimensional Students' Life Satisfaction Scale (MSLSS; Huebner & Gilman, 2002); Harter's Scholastic Competence Scale (Wickstrøm, 1995); School related social support (Danielsen, 2010)	$\chi 2$=7658.639 df=760 CFI=.980 RMSEA=.052
Danielsen et al. (2009)	Same as Danielsen (2010)	Same as Danielsen (2010)	Huebner's (1991) Students' Life Satisfaction Scale (SLSS). Academic achievement Hansen et al. (2003) School related social support Danielsen, 2010	Teacher support .31* classmate support .32* parental support .32
Casas et al., 2007	Cross-sectional study cluster sampling and school group administration	N=1,634 12-16 year-old adolescents and 666 of their parents and the second sample by 1,618 adolescents, 723 parents	Overall life satisfaction single item and Life domains satisfaction (Casas et al., 2007); Rosenberg's Self-Esteem Scale (1965) The Personal Mastery Scale of Pearlin and Schooler (1978); The family and friends sub-scales of Vaux et al. (1986) Social Support Appraisals (SSA	Family social support = r 1999 = 0.40** r 2003= 0.31** Friends social support = r 1999 = 0.21** r 2003= 0.17**
Mohamadian et al.	Cross-sectional study Community	All girls Age in years 14 (85)	The Multi-dimensional Scale of Perceived Social Support MSPSS (Canty-Mitchell & Zimet, 2000; Perceived Health Competence	Support β=0.07** Social support and health related quality of life r =

(2011)	sample multistage random sampling method	15 (140) 16 (165) 17 (93) 18 (12)	Scale (PHCS) Smith *et al*., 1995). Health Promoting Lifestyle Profile-II (HPLP-II; Pender *et al*., 2010; The Short Form-12 Health Survey Version 2 (SF-12) Montazeri *et al*., 2009).	0.41*
McGrath , et al. (2009)	Cross-sectional study Community sample	N=607 322 = Irish 285= Florida Male = 244 Median age = 13	Adolescents well-being scale (AWS; Birleson, 1980); Social provisions scale (Cutrona & Russell, 1987); School satisfaction (World Health Organization, 2004); community participation and attachment (Brennan, 2007); Neighbourhood quality of life index (World Health Organization, 2004).	Social support Ireland adjusted R^2= 0.081; Florida adjusted R^2= 0.109
Cicogna ni, Albanesi, & Zani (2008)	Cross-sectional study Community sample 177 (59.6%) were from Town A (Marradi) and 120 (40.4%) from Town B (Brisighella).	N=297 203 adolescents (14–19 years old) and 94 young adults (20–27 years old). 48.5% were male	Perceived Residential Environment Quality Scale (PREQ; Bonaiuto, Aiello, Perugini, Bonnes, & Ercolani, 1999); The Sense of Community Scale for Adolescents (Cicognani, Albanesi, & Zani, 2006); The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlen, Zimet, & Farley, 1988); Generalized Perceived Self-Efficacy scale (Sibilia, Schwarzer, & Jerusalem, 1995). Subjective Well being Instrument (Keyes, 2005) Stressful Life (Cicognani, Albanesi, & Zani, 2008)	Psychological well-being Family Support (b=0.26) Emotional well-being Friend Support: b=0.16) R^2=0.25
Lyon et al. (2012)	Cross-sectional study Community sample	N=990 Grades 6 - 12 Mean age=14.62 years 336%= males Caucasian (35%),	Students' Life Satisfaction Scale (SLSS: Huebner, 1991) The Youth Self-Report of the Child Behavior Checklist (YSR; Achenbach, 1991)	Positive mental health versus troubled Parental social support OR= 0.56

	3 middle schools and 2 high schools within a Southeastern U.S.	African American (58%), and "Other" (7%). 60% = low SES	Abbreviated Junior Eysenck Personality Questionnaire (JEPQR-A; Francis, 1996) Child and Adolescent Social Support Scale (CASSS; Malecki & Demaray, 2002 Stressful Life Events Scale (Johnson & McCutcheon, 1980)	Close friend social support OR= 0.87 Teacher social support OR= 0.99 Friends social support OR= 0.85
Kelly et al. (2012)	Longitudinal study (two-wave) Community sample	N=730 ages 11 to 15, 51% female; 27% = African American, 4%= Asian, 60% =White, 2%=Hispanic and 7% = "other." 21% = low SES	Students' Life Satisfaction Scale (SLSS; Huebner, 1991); Positive Affect and Negative Affect Scale for Children (PANAS-C; Laurent et al., 1999); Self-Report Coping Scale and (SRCS; Causey & Dubow, 1992 Student Engagement Instrument (SEI; Appleton, Christenson, Kim, & Reschly, 2006	Troubled Family support for Learning 2.87 0.93; Peer support for Learning 2.80 0.83; Teacher–student Relationships 2.30 0.67; Seeking social support 2.61, 0.85
Kolarcik et al. (2012)	Cross sectional study Community school sample	330 Roma Boys =(48.5 %) ages range =12 to 17 years (mean = 14.50; SD = 1.03). non-Roma=722 boys =53.2 % Ages 14 to 17 years (mean =14.86; SD = 0.63)	Spouse/partner perceived social support' subscale (Turner and Marino 1994) and the 'Significant others' subscale items of the Multidimensional Scale of Perceived Social Support (Zimet et al. 1988 Hopelessness was measured by the brief Hopelessness Scale for Children (Bolland 2003), Satisfaction with Life scale developed by Diener et al. (1985); Social Desirability Response Set (SDRS-5) (Hays et al. 1989)	Roma Perceived social support Mother = 0.38* Father= 0.28* Significant Others= 0.05 Non-Roma Perceived social support Mother = 0.18* Father= 0.11* Significant Others= 0.05
Suldo and Shaffer (2008)		N=341 Male (40%) 10-16 years of age American Indian (1.47%)	Students' Life Satisfaction Scale (SLSS; Huebner, 1991). Positive and Negative Affect Scale for Children (PANAS-C; Laurent et al., 1999). The Youth Self-Report Form of the	$F(12, 876) = 17.18$, $p <$ .001.

		Asian (5.28%) African American (14.08%) Hispanic or Latino (12.61%) White (55.43%) Multiracial (9.68%) Unknown (1.47%) Low SES =24.63%	Child Behavior Checklist (YSR; Achenbach & Rescorla, 2001) Teacher Report Form of the Child Behavior Checklist (TRF; Achenbach & Rescorla, 2001). Social Problems subscale of the YSR. Child and Adolescent Social Sup' port Scale (CASSS; Malecki & Demaray,2002). School Attitude Assessment Survey— Revised (SAAS'R; McCoach & Siegle, 2003).Child Health Questionnaire—Child Form 87 (CHQ-CF87; Landgraf, Ahetz, &Ware, 1999).	
Emotion regulation				
De Bruin et al. (2011)	Cross-sectional Community: High school population	717 (age, M=14.6; SD=1.5; range, 11.4–17.9; 51.3% male	The Stress Questionnaire for Youth (Stress Vragenlijst Voor Kinderen; SVK) (Hartong et al. 2003) The Subjective Happiness Scale (SHS) (Lyubomirsky and Lepper 1999) Pediatric Quality of Life Inventory Scale (PedsQL) (Varni et al. 1999) Healthy Self-Regulation Subscale (HSR) (West 2008); The Cognitive Emotion Regulation Questionnaire (CERQ) (Garnefski et al. 2001)	Quality of life (PedsQL) Physical functioning .30*** Psychosocial health .52*** Total scale score .50***
Gillham et al. (2011)	Longitudinal study Community sample form school	N=149 72 boys Age 13 -15. Of 134=European American, 4=Asian, 2=African American, 1=Latino,	Revised Values in Action Inventory of Strengths for Youth (VIAYouth; Park & Peterson, 2006), Reynolds Adolescent Depression Scale-2nd Edition (RADS-2: Reynolds, 2002) Fordyce Emotions Questionnaire (FEQ: Fordyce, 1988).	t(138)=2.49, p50.05,

		and 5= other.	Students' Life Satisfaction Scale (SLSS: Huebner, 1991). Perceived Social Support Scale (PSS: Procidano & Heller, 1983	
Niemiec et al. (2006)	Cross-sectional Community sample	N=231 99=male 17 years old (51.1%), 16 (29.4%), 18 (18.2%), and 19(1.3%) years old. Caucasian'' (87%), while the rest were ''Asian'' (3%), ''African American'' (2.6%), ''Hispanic'' (2.2%), ''Native American'' (0.4%), unidentified = (4.8%).	Perceptions of Parents Scale (POPS; Robbins, 1994) Positive Affect Negative Affect Scale (PANAS; Watson, 1988) Satisfaction with Life Scale (Pavot, Diener, & Suh, 1998)	Autonomy support, mothers=.39** ; Autonomy support, fathers=.35**; Relational support, mothers= .45** ; Relational support, fathers=.38** both mothers (b =0.47**) and fathers (b =0.30**). Adolescents' ill-being was also related to need support from both mothers b = -0.33** and fathers b =-0.21**
Phillips & Power (2007)	Cross-sectional Community sample	N=225 Aged=12-19 119 were female (53.1%),	Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997; Psychosomatic Health Problems Scale (Health Behaviour in School-Age Children [HBSC]; Currie, Samdal, Boyce, & Smith, 2001 KIDSCREEN (KIDSCREEN-52; Ravens- Sieberer et al., 2001, 2005; Regulation of emotions questionnaire (Phillips and Power, 2007)	Internal dysfunctional ER=0.47** Internal functional ER= 0.31** External dysfunctional ER =0.27** External functional ER =0.46**
Attachment				
Rothman & Steil	Cross-sectional Community	N=23 Age=15-17 years	Parent and Peer Attachment (IPPA) (Armsden &	High parental and peer alienation was associated

(2012)	High school sample	(69.6%) Caucasian, African Americans (13.0%). female (56.5%	Greenberg, 1987 Entitlement Attitudes Scale (EAS) (Nadkarni et al., 2008); Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999); Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985); Brief Symptom Inventory (BSI) (Derogatis &Melisaratos, 1983	with lower levels of satisfaction with life ($r(23) = -.78$, $p < .001$; $r(23)=-.53$, $p < .01$, respectively), lower subjective happiness ($r(23)=-.55$, $p < .001$; $r(23) = -.68$, $p < .001$, respectively)
Ma & Huebner (2008)	Cross-sectional Community Middle school sample	*N* = 1,201 Age=10 -16 (M = 12.56; SD = 1.50). Grades 6-8 60% female. African American (45%), Caucasian (43%), 51% = low SES	The Students' Life Satisfaction Scale (SLSS; Huebner, 1991a) The Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987	Parent attachment β=0.49* Peer attachment β = 0.19* Parent attachment r= 0.53*** Peer attachment r= 0.34***
Yang et al. (2008)	Cross-sectional Community: High school population	N=448 209 males mean age = 17.9; 174 females mean age=17.4	The Adult Attachment Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991), The Experiences in Close Relationships Scale (ECR; Brennan, Clark, & Shaver, 1998); The EMBU Egna Minnen av Barndoms Uppfostran; Perris et al., 1980; The Index of Well-Being (IWB; Campbell, Converse, & Rogers, 1976); Faces Scale (FSWB; Andrews and Withey, 1976).	Mother avoidance -0.25** Father care and emotional warmth 0.30** Mother care and emotional warmth 0.27**

Note: ***$p<0.001$, **$p<0.01$, *$p<0.05$

Measures used for assessing Well-being in the studies reviewed

Study	Country	Measures	Approach
Shek, 2006	Hong Kong	Satisfaction with Life Scale (SWLS; Diener et al., 1985)	Continuous
Shek 2007	Hong Kong	Satisfaction with Life Scale (SWLS; Diener et al., 1985)	Continuous
Morton et al. (2011)	Canada	Satisfaction with Life scale for children (SWLS-C; Gadermann et al., 2010).	Continuous
Morgan et al. (2012)	England & Spain	Life satisfaction was measured by one item (Cantril, 1965);	Continuous
Coccia et al. (2012)	United States	Satisfaction with Life Scale (SWLS; Diener et al., 1985).	Continuous
Milevsky et al. (2007)	United States.	How satisfied they are with their life as a whole these days (Campbell et al., 1976)	Continuous
Milevsky et al. (2008)	United States.	How satisfied they are with their life as a whole these days (Campbell et al., 1976)	Continuous
Schwarz et al. (2012)	China, France, Germany, India, Indonesia, Israel, Poland, Russia, South Africa, Turkey, USA	"All things considered, how satisfied are you with life these days?"(Diener et al., 2000); Domain-specific satisfaction (Henrich & Herschbach, 1995)	Continuous
Knafo, & Assor, (2007)	Israel	Satisfaction with Life Scale (SWLS; Diener et al., 1985); 10 feelings, drawn, in part, from the work by Assor et al. (2004)	Continuous
Bolghan-Abadi et al. (2011)	Iran	The Word Health Organization Quality of Life Questionnaire (WHOQOL-BREF; Nejat et al. 2006)	Continuous
Lekes et al. (2010)	China and North America	Self-concept scale (Anderman, 2002); Index of affect by using Positive and Negative Affect Scale (Emmons, 1992)	Continuous
Robitail et al. (2006)	Austria, France, Germany, Spain, Switzerland,	KIDSCREEN-52 HRQoL (Ravens-Sieberer et al 2005)	Continuous

	Netherlands, United Kingdom		
	Greece	KIDSCREEN-52 HRQoL (Ravens-Sieberer et al 2005)	Continuous
	Serbia	Psychological wellbeing (Jovic-Vranes et al., 2011)	Continuous
	Italy	Life satisfaction was measured by one item (Cantril, 1965)	Continuous
	Norway	Students' Life Satisfaction Scale (SLSS; Huebner, 1991)	Continuous
	Norway	Students' Life Satisfaction Scale (SLSS; Huebner, 1991); Multidimensional Students' Life Satisfaction Scale (MSLSS; Huebner & Gilman, 2002)	Continuous
	Spain	Overall life satisfaction single item and Life domains satisfaction (Casas et al., 2007)	Continuous
	Iran	The Short Form-12 Health Survey Version 2 (SF-12; Montazeri *et al*., 2009).	Continuous
	Ireland and Florida	Adolescents well-being scale (AWS; Birleson, 1980)	Continuous
	Italy	Subjective Wellbeing instrument (adolescent version) (Keyes; 2005)	Continuous
	United States	Students' Life Satisfaction Scale (SLSS: Huebner, 1991)	Continuous
	United States	Students' Life Satisfaction Scale (SLSS; Huebner, 1991); Positive Affect and Negative Affect Scale for Children (PANAS-C; Laurent et al., 1999).	Continuous
	United States	Students' Life Satisfaction Scale (SLSS; Huebner, 1991); Positive and Negative Affect Scale for Children (PANAS-C; Laurent et al., 1999).	Categorical
	Austria, Switzerland, Czech Republic, Germany, Spain, France, Greece, Hungary, Ireland, Netherlands,	KIDSCREEN-52 HRQoL (Ravens-Sieberer et al., 2005)	Continuous

	Poland, Sweden, UK		
Gillham et al. (2011)	United States	Students' Life Satisfaction Scale (SLSS: Huebner, 1991).	Continuous
Niemiec et al (2006)	American and Belgian	Satisfaction with Life Scale (Pavot, Diener, & Suh, 1998)	Continuous
Phillips & Power (2007)	United Kingdom	KIDSCREEN (KIDSCREEN-52; Ravens- Sieberer et al., 2005)	Continuous
Rothman & Steil (2012)	New York City	Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999); Satisfaction With Life Scale (SWLS; Diener et al., 1985)	Continuous
Ma & Huebner (2008)	United States	The Students' Life Satisfaction Scale (SLSS; Huebner, 1991)	Continuous
Yang et al. (2008)	China	The Index of Well-Being (IWB; Campbell et al., 1976); Faces Scale (FSWB; Andrews and Withey, 1976).	Continuous

Measures used for assessing Depression in the studies reviewed

Milevsky et al. (2007)	United States.	Epidemiologic Studies Short Depression Scale (Radloff, 1977);	Continuous
Milevsky et al. (2008)	United States.	Epidemiologic Studies Short Depression Scale (Radloff, 1977);	Continuous
Gillham et al. (2011)	United States	Reynolds Adolescent Depression Scale-2nd Edition (RADS-2: Reynolds, 2002),	Continuous
Niemiec et al (2006)	American and Belgian	Epidemiologic Studies Short Depression Scale (Radloff, 1977)	Continuous

asures used for assessing psychological distress (both depression and anxiety) in the studies reviewed

Bolghan-Abadi et al. (2011)	Iran	Mental Health questionnaire (Tagavi, 2001)	Continuous
Vieno et al. (2007)	Northeast Italy	Psychological complaints with Five-item scale (part of the HBSC Symptom Checklist; Haugland & Wold, 2001)	Continuous
Phillips & Power (2007)	United Kingdom	Psychosomatic Health Problems Scale (Health Behaviour in School-Age Children [HBSC]; Currie, Samdal, Boyce, & Smith, 2001); Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997)	Continuous
Lyon et al. (2012)	United States	The Youth Self-Report of the Child Behaviour Checklist (YSR; Achenbach, 1991)	Continuous
Kelly et al. (2012)	United States	Self-Report Coping Scale (SRCS; Causey & Dubow, 1992)	Continuous
Suldo & Shaffer (2008)	United States	The Youth and teacher Self-Report Form of the Child Behavior Checklist (YSR; Achenbach & Rescorla, 2001)	Categorical
Niemiec et al (2006)	American and Belgian	Positive Affect Negative Affect Scale (PANAS; Watson, 1988)	Continuous
Rothman & Steil (2012)	New York City	Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983	Continuous
Raven-Sieberer et al. (2008)	Austria, Switzerland, Czech Republic, Germany, Spain, France, Greece, Hungary, Ireland, Netherlands, Poland, Sweden, UK	Strength and Difficulties questionnaire (Goodman, 1997); Short Form 12 Health Survey (Ware et al., 1996)	Categorical

Appendix-4 Normality results for the key variables

Variable	Skewness	SE	Kurtosis	SE	Z_{skew}	$Z_{kurtosis}$	Kolmogorov-Smirnov test of normality (df = 1124)
FW	-.960	.073	1.07	.146	-13.1	7.36	0.12
FPRO	.128	.073	-0.39	.146	1.75	-2.74	0.10
FAUTH	.238	.073	-0.78	.146	3.26	-5.33	0.09
MW	-1.303	.073	2.29	.146	-17.8	15.68	0.16
MPRO	.074	.073	-0.34	.146	1.01	-2.32	0.08
MAUTH	.354	.073	-0.85	.146	4.86	-5.87	0.11
INTDYS	.815	.073	0.43	.146	11.1	2.98	0.12
INTFUN	-.051	.073	-0.47	.146	-0.69	-3.22	0.05
EXDYS	1.347	.073	2.05	.146	18.4	14.05	0.15
EXFUN	.236	.073	-0.18	.146	3.24	-1.25	0.07
HCOL	-.658	.073	0.246	.146	-9.02	1.69	0.11
VCOL	-.269	.073	-0.26	.146	-3.68	-1.77	0.07
HIND	.046	.073	-0.40	.146	0.63	-2.77	0.08
VIND	-.192	.073	-0.58	.146	-2.62	-4.02	0.08
DEP	.382	.073	-0.16	.146	5.23	-1.13	0.08
ANX	.229	.073	-0.52	.146	3.14	-3.58	0.07
BBCT	-.058	.073	-0.53	.146	-0.78	-3.67	0.04
PSY	-.112	.073	-0.58	.146	-1.52	-3.96	0.05
PHY	-.007	.073	-0.63	.146	-0.09	-4.34	0.06
REL	-.158	.073	-0.50	.146	-2.17	-3.44	0.08
Parental bonding (Father)							
Warmth							
Item 1	-1.805	.073	2.54	.146	-24.7	17.4	.402
Item 4	.248	.073	-1.37	.146	3.39	-9.44	.221
Item 5	-1.810	.073	2.25	.146	-24.8	15.4	.404
Item 11	-1.123	.073	-0.21	.146	-15.4	-1.44	.350
Item 12	-2.555	.073	6.15	.146	-35.0	42.2	.462
Item 17	-1.714	.073	1.85	.146	-23.5	12.7	.405
Item 18	-.673	.073	-1.10	.146	-9.23	-7.60	.329
Protectiveness							
Item 8	1.213	.073	-0.27	.146	16.6	-1.87	.416
Item 9	.198	.073	-1.60	.146	2.71	-11.0	.253
Item 13	-.113	.073	-1.64	.146	-1.55	-11.2	.219
Item 19	-.580	.073	-1.29	.146	-7.94	-8.86	.285
Item 23	-1.928	.073	2.62	.146	-26.4	17.9	.431
Authoritarianism							
Item 7	-.056	.073	-1.54	.146	-0.77	-10.5	.213
Item 15	.237	.073	-1.45	.146	3.25	-9.92	.205
Item 21	.218	.073	-1.45	.146	2.98	-9.98	.204

Item 25	.875	.073	-0.79	.146	11.9	-5.44	.327
Parental bonding (Mother)							
Warmth							
Item 1	-2.634	.073	6.37	.146	-36.1	43.7	.470
Item 4	.391	.073	-1.37	.146	5.35	-9.38	.221
Item 5	-2.521	.073	5.71	.146	-34.5	39.1	.467
Item 11	-1.464	.073	0.88	.146	-20.0	6.06	.388
Item 12	-2.761	.073	7.12	.146	-37.8	48.8	.480
Item 17	-2.195	.073	4.02	.146	-30.0	27.5	.447
Item 18	-1.136	.073	-0.19	.146	-15.5	-1.32	.374
Protectiveness							
Item 8	1.259	.073	-0.12	.146	17.2	-0.83	.417
Item 9	.215	.073	-1.55	.146	2.94	-10.6	.255
Item 13	.021	.073	-1.60	.146	0.28	-11.0	.224
Item 19	-.469	.073	-1.40	.146	-6.42	-9.63	.260
Item 23	-2.005	.073	2.93	.146	-27.4	20.1	.440
Authoritarianism							
Item 7	.232	.073	-1.44	.146	3.18	-9.88	.199
Item 15	.310	.073	-1.37	.146	4.24	-9.42	.210
Item 21	.372	.073	-1.38	.146	5.09	-9.50	.231
Item 25	.921	.073	-0.70	.146	12.6	-4.81	.338
Adolescents Relationship Scales Questionnaire							
Item 1	.097	.073	-1.31	.146	1.32	-9.00	0.18
Item 2	-.312	.073	-1.21	.146	-4.27	-8.27	0.16
Item 3	.025	.073	-1.43	.146	0.34	-9.84	0.19
Item 4	.425	.073	-1.33	.146	5.82	-9.15	0.26
Item 5	.327	.073	-1.31	.146	4.48	-9.01	0.24
Item 6	.093	.073	-1.43	.146	1.27	-9.86	0.20
Item 7	.304	.073	-1.61	.146	4.16	-11.1	0.24
Item 8	.430	.073	-1.19	.146	5.89	-8.16	0.25
Item 9	-.216	.073	-1.30	.146	-2.96	-8.96	0.18
Item 10	.171	.073	-1.30	.146	2.34	-8.94	0.21
Item 11	-.124	.073	-1.49	.146	-1.69	-10.2	0.19
Item 12	-1.086	.073	-0.21	.146	-14.8	-1.45	0.33
Item 13	.404	.073	-1.20	.146	5.54	-8.25	0.24
Item 14	.096	.073	-1.33	.146	1.31	-9.14	0.18
Item 15	.309	.073	-1.37	.146	4.23	-9.40	0.23
Item 16	.388	.073	-1.25	.146	5.31	-8.63	0.24
Item 17	-.802	.073	-0.89	.146	-10.9	-6.10	0.32
Regulation of Emotions Questionnaire							
Item 1	.493	.073	-0.63	.146	6.75	-4.36	0.19
Item 2	1.111	.073	0.38	.146	15.2	2.65	0.26
Item 3	-.005	.073	-1.35	.146	-0.06	-9.26	0.17
Item 4	.017	.073	-1.14	.146	0.23	-7.83	0.16
Item 5	1.855	.073	2.64	.146	25.4	18.1	0.39
Item 6	-.017	.073	-1.20	.146	-0.23	-8.28	0.16
Item 7	.535	.073	-0.88	.146	7.32	-6.04	0.21

Item 8	.553	.073	-0.56	.146	7.58	-3.81	0.22
Item 9	.085	.073	-1.12	.146	1.15	-7.69	0.17
Item 10	.917	.073	-0.21	.146	12.5	-1.45	0.23
Item 11	.019	.073	-1.12	.146	0.26	-7.70	0.16
Item 12	-.237	.073	-1.01	.146	-3.25	-6.96	0.16
Item 13	1.764	.073	2.24	.146	24.1	15.3	0.38
Item 14	.897	.073	-0.30	.146	12.3	-2.08	0.24
Item 15	.452	.073	-1.026	.146	6.19	-7.03	0.19
Item 16	-.162	.073	-1.12	.146	-2.22	-7.70	0.15
Item 17	2.079	.073	3.89	.146	28.5	26.7	0.39
Item 18	2.263	.073	4.65	.146	31.0	31.9	0.42
Item 19	1.482	.073	1.35	.146	20.3	9.23	0.32
Item 20	.331	.073	-1.07	.146	4.54	-7.35	0.21
Item 21	.499	.073	-0.84	.146	6.83	-5.79	0.22
Horizontal and Vertical Individualism Collectivism Scale							
Item 1	-.300	.073	-0.78	.146	-4.10	-5.39	0.16
Item 2	-.431	.073	-1.19	.146	-5.90	-8.16	0.20
Item 3	-.322	.073	-0.87	.146	-4.40	-5.98	0.18
Item 4	-.478	.073	-1.07	.146	-6.54	-7.37	0.22
Item 5	-.931	.073	0.25	.146	-12.7	1.71	0.24
Item 6	.122	.073	-1.20	.146	1.67	-8.24	0.15
Item 7	-1.212	.073	0.47	.146	-16.6	3.26	0.26
Item 8	.350	.073	-0.94	.146	4.79	-6.48	0.19
Item 9	-.245	.073	-1.09	.146	-3.35	-7.47	0.17
Item 10	-.915	.073	0.12	.146	-12.5	0.83	0.25
Item 11	-.366	.073	-0.99	.146	-5.01	-6.83	0.17
Item 12	-.210	.073	-1.43	.146	-2.87	-9.83	0.19
Item 13	.005	.073	-1.32	.146	0.071	-9.07	0.15
Item 14	-1.376	.073	1.49	.146	-18.8	10.27	0.26
Hospital Anxiety and Depression Scale							
Item 1	.643	.073	-0.86	.146	8.81	-5.89	0.27
Item 2	.496	.073	-0.89	.146	6.79	-6.08	0.24
Item 3	.057	.073	-1.43	.146	0.78	-9.83	0.20
Item 4	1.393	.073	1.04	.146	19.1	7.17	0.35
Item 5	.380	.073	-1.11	.146	5.21	-7.62	0.23
Item 6	1.129	.073	0.63	.146	15.4	4.35	0.28
Item 7	1.056	.073	0.55	.146	14.4	3.80	0.28
Item 8	.386	.073	-0.36	.146	5.29	-2.48	0.26
Item 9	.902	.073	-0.06	.146	12.3	-0.43	0.28
Item 10	.120	.073	-1.56	.146	1.65	-10.7	0.23
Item 11	-.027	.073	-1.14	.146	-0.37	-7.87	0.21
Item 12	1.127	.073	0.26	.146	15.4	1.79	0.30
Item 13	.312	.073	-1.23	.146	4.27	-8.48	0.24
Item 14	1.512	.073	1.78	.146	20.7	12.2	0.34
BBC Well-being Scale							
Item 1	-.436	.073	-0.92	.146	-5.97	-6.33	0.22

Item 2	-.315	.073	-1.10	.146	-4.31	-7.60	0.20
Item 3	-.189	.073	-1.13	.146	-2.59	-7.73	0.21
Item 4	-.389	.073	-0.95	.146	-5.33	-6.57	0.21
Item 5	.718	.073	-0.12	.146	9.83	-0.86	0.28
Item 6	-.310	.073	-0.89	.146	-4.24	-6.12	0.21
Item 7	-.761	.073	-0.49	.146	-10.4	-3.38	0.25
Item 8	.045	.073	-1.25	.146	0.62	-8.63	0.19
Item 9	-.440	.073	-0.89	.146	-6.02	-6.16	0.21
Item 10	-.250	.073	-1.04	.146	-3.42	-7.18	0.19
Item 11	-.274	.073	-1.15	.146	-3.75	-7.88	0.21
Item 12	-.217	.073	-1.00	.146	-2.97	-6.87	0.19
Item 13	-.363	.073	-0.85	.146	-4.97	-5.87	0.20
Item 14	-.233	.073	-1.01	.146	-3.19	-6.95	0.19
Item 15	-.639	.073	-0.51	.146	-8.75	-3.53	0.22
Item 16	-.623	.073	-0.40	.146	-8.54	-2.74	0.22
Item 17	-.734	.073	-0.41	.146	-10.0	-2.86	0.25
Item 18	-.520	.073	-0.76	.146	-7.12	-5.26	0.23
Item 19	-.051	.073	-1.00	.146	-0.69	-6.89	0.22
Item 20	-.149	.073	-1.06	.146	-2.04	-7.32	0.20
Item 21	.172	.073	-1.12	.146	2.36	-7.71	0.24
Item 22	-.050	.073	-1.08	.146	-0.67	-7.42	0.22
Item 23	-.276	.073	-1.09	.146	-3.78	-7.49	0.21
Perceived Social Support							
Item 1	-.520	.073	-0.65	.146	-7.12	-4.51	0.13
Item 2	-.529	.073	-0.68	.146	-7.24	-4.71	0.14
Item 3	-.591	.073	-0.62	.146	-8.09	-4.31	0.14
Item 4	-.513	.073	-0.730	.146	-7.02	-5.00	0.14

FW = father warmth; FPRO = father protectiveness; FAUTH = father authoritarianism; MW = mother warmth; MPRO = mother protectiveness; MAUTH = mother authoritarianism; INTDYS = internal dysfunction; INTFUN = internal function; EXDYS = external dysfunction; EXFUN = external function; HCOL = horizontal collectivism; VCOL = vertical collectivism; HIND = horizontal individualism; VIND = vertical individualism; DEP = depression; ANX = anxiety; BBCT = total well-being; PSY = psychological well=being; PHY = physical well-being; REL = relationship wellbeing

Appendix-5 Descriptive characteristics of the indicator variables

Descriptive statistics for emotion regulation variables.

	M	SD
Internal dysfunction		
REQ 5. I harm or punish myself in someway	1.60	1.057
REQ 7. I dwell on my thoughts and feelings (e.g. it goes round and round in my head and I can't stop it)	2.52	1.349
REQ 14. I think about people better off and make myself feel worse	2.20	1.291
REQ 15. I keep the feeling locked up inside	2.60	1.390
REQ 19. Things feel unreal (e.g. I feel strange, things around me feel strange, I daydream)	1.79	1.131
Internal function		
REQ 4. I review (rethink) my thoughts or believes	3.11	1.31
REQ 9. I review (rethink) my goals or plans	3.07	1.30
REQ 11. I put the situation into perspective	3.14	1.31
REQ 12. I concentrate on a pleasant activity	3.43	1.24
REQ 16. I plan what I could do better next time	3.27	1.33
External dysfunction		
REQ 2. I take my feelings out on others verbally (e.g. shouting, arguing)	1.99	1.17
REQ 10. I talk my feelings out on others physically (e.g. fighting, lashing out)	2.14	1.26
REQ 13. I try to make others feel bad (e.g. being rude, ignoring them)	1.65	1.09
REQ 17. I bully other people (e.g. saying nasty things to them, hitting them)	1.54	0.98
REQ 18. I take my feelings out on objects around me (e.g. deliberately causing damage to my house, school or outdoor things)	1.48	0.95
External function		
REQ1. I talk to someone about how I feel	2.69	1.25
REQ 3. I seek physical contact from friends or family (e.g. a hug, hold hands)	3.11	1.44
REQ 6. I do something energetic (e.g. play sport, go for a walk)	3.19	1.33
REQ 8. I ask others for advice	2.64	1.22
REQ 20. I telephone friends or family	2.85	1.33
REQ 21. I go out and do something nice (e.g. cinema, shopping, go for a meal, meet people)	2.65	1.31

Note. All items are scored on 5-point likert scale ranging from; 1 (never) to 5 (always)

Descriptive statistics for cultural orientation variables.

	M	SD
Horizontal collectivism		
HVICS 1. My happiness depends very much on the happiness of those around me.	3.30	1.24
HVICS 5. The well-being of my class-fellows is important to me.	3.82	1.13
HVICS 10. If a class-fellow gets a prize I would feel proud.	3.84	1.14
HVICS 14. I feel good when I cooperate with others.	4.16	1.03
Vertical collectivism		
HVICS 2. I would do what would please my family, even if I detested the activity.	3.44	1.45
HVICS 3. I usually sacrifice my self-interest for the benefit of my group.	3.41	1.23
HVICS 7. Children should feel honoured if their parents receive a distinguished award.	4.02	1.23
HVICS 12. I would sacrifice an activity that I enjoy very much if my family did not approve of it	3.22	1.53
Horizontal individualism		
HVICS 6. I enjoy being unique and different from others in many ways.	2.85	1.38
HVICS 8. I often do "my own thing."	2.68	1.29
HVICS 11. I am a unique individual.	3.34	1.35
Vertical individualism		
HVICS 4. I enjoy working in situations involving competition with others.	3.42	1.40
HVICS 9. Competition is the law of nature.	3.19	1.35
HVICS 13. Without competition it is not possible to have a good society.	2.96	1.45

Note. All items are scored on 5-point likert scale ranging from; 1 (never) to 5 (always)

Descriptive statistics for PBI (mother) variables.

	M	**SD**
PBIM1. Speaks to me in a warm and friendly voice	2.70	.720
PBIM 4. Seems emotionally cold to me	1.26	1.18
PBIM 5. Appears to understand my problems and worries	2.68	.733
PBIM 11. Enjoys talking things over with me	2.40	.959
PBIM 12. Frequently smiles at me	2.72	.693
PBIM 17. Can make me feel better when I am upset	2.62	.782
PBIM 18. Do not talk with me very much	2.27	1.06
PBIM 8. Do not want me to grow up	0.69	1.13
PBIM 9. Try to control everything I do	1.30	1.21
PBIM 13. Tends to baby me	1.46	1.23
PBIM 19. Tries to make me feel dependent on her	1.82	1.23
PBIM 23. Is overprotective of me	2.57	.853

PBIM 7. Likes me to make my own decisions	1.35	1.17
PBIM 15. Let me decide things for myself	1.28	1.16
PBIM 21. Gives me as much freedom as I want	1.24	1.18
PBIM 25. Let me dress in any way I please	0.86	1.13

Note. All items are scored on 4-point likert scale ranging from; 0 (very unlike) to 3 (very like) except item PBIM4, PBIM18, PBIM 7, PBIM 15, PBIM 21, and PBIM25 which are reverse scored

Descriptive statistics for PBI (father) variables.

	M	**SD**
PBIF1. Speaks to me in a warm and friendly voice	2.53	.811
PBIF 4. Seems emotionally cold to me	1.37	1.15
PBIF 5. Appears to understand my problems and worries	2.50	.885
PBIF 11. Enjoys talking things over with me	2.23	1.08
PBIF 12. Frequently smiled at me	2.69	.706
PBIF 17. Can make me feel better when I am upset	2.49	.893
PBIF 18. Does not talk with me very much	2.05	1.13
PBIF 8. Does not want me to grow up	0.72	1.16
PBIF 9. Tries to control everything I do	1.33	1.25
PBIF 13. Tends to baby me	1.56	1.26
PBIF 19. Tries to make me feel dependent on him	1.90	1.22
PBIF 23. Is overprotective of me	2.55	.866
PBIF 7. Likes me to make my own decisions	1.57	1.20
PBIF 15. Let me decide things for myself	1.36	1.18
PBIF 21. Gives me as much freedom as I want	1.35	1.18
PBIF 25. Let me dress in any way I please	0.90	1.14

Note. All items are scored on 4-point likert scale ranging from; 0 (very unlike) to 3 (very like) except item PBIF4, PBIF18, PBIF 7, PBIF15, PBIF21, and PBIF25 which are reverse scored

Descriptive statistics for social support variables.

	M	**SD**
SS1. Can you trust, talk to frankly and share feelings with this person?	6.47	2.80
SS2. Can you lean on and turn to this person in times of difficulty?	6.65	2.79
SS3. Do they give you practical help?	6.87	2.72
SS4. Can you spend time with them socially?	6.76	2.72

All items are scored on 3 point likert scale 0 =not at all and 2 = always.

Descriptive statistics for depression and anxiety variables.

		M	SD
Depression			
HADS 2.	I still enjoy the things I used to enjoy as much	0.99	.953
HADS 4.	I can laugh and see the funny side of things	0.61	.879
HADS 6.	I feel cheerful	0.72	.855
HADS 8.	I feel as if I am slowed down	1.16	.833
HADS 10.	I have lost interest in my appearance	1.37	1.21
HADS 12.	I look forward with enjoyment to things	0.75	.944
HADS 14.	I can enjoy a good book or radio or TV programme	0.57	.819
Anxiety			
HADS 1.	I feel tense and 'wound up'	1.13	1.08
HADS 3.	I get a sort of frightened feeling as if something awful is about to happen	1.40	1.14
HADS 5.	Worrying thoughts go through my mind	1.26	1.07
HADS 7.	I can sit at ease and feel relaxed	0.72	.825
HADS 9.	I get a sort of frightened feeling like 'butterflies' in the stomach	0.78	.880
HADS 11.	I feel restless as if I have to be on the move	1.61	1.02
HADS 13.	I get sudden feelings of panic	1.12	1.04

All items are scored on 4 point likert scale from 0-3.

Descriptive statistics for well-being variables, N = 1124.

	M	SD
Psychological well-being		
BBC 5. Do you feel depressed or anxious?	2.96	.899
BBC 6. Do you feel that you are able to enjoy life?	2.83	.950
BBC 7. Do you feel you have a purpose in life?	3.07	.977
BBC 8. Do you feel in control over your life?	2.49	1.07
BBC 9. Do you feel optimistic about the future?	2.93	.973
BBC 10. Do you feel satisfied with yourself as a person?	2.83	.974
BBC 11. Are you satisfied about your looks and appearance?	2.82	1.02
BBC 12. Do you feel able to live your life the way you want?	2.80	.959
BBC 13. Are you confident in your own opinions and beliefs?	2.95	.909
BBC 14. Do you feel able to do the things you choose to do?	2.84	.947
BBC 15. Do you feel able to grow and develop as a person?	3.05	.919
BBC 16. Are you satisfied with yourself and your achievements?	3.09	.861
Physical well-being		
BBC 1. Are you satisfied with your physical health?	2.93	.976
BBC 2. Are you satisfied with the quality of your sleep?	2.83	1.02
BBC 3. Are you satisfied with your ability to perform your daily living activities?	2.83	.971
BBC 4. Are you satisfied with your ability to work?	2.91	.974

BBC 21. Are you satisfied that you have enough money to meet your needs?	2.47	1.02
BBC 22. Are you satisfied with your opportunity for exercise and leisure activities?	2.68	.979
Relationships		
BBC 17. Are you satisfied with your personal and family life?	3.11	.918
BBC 18. Are you satisfied with your friendships and personal relationships?	3.02	.927
BBC 19. Are you comfortable about the way in which you relate to and connect with others?	2.73	.930
BBC 20. Do you feel able to ask someone for help with a problem if you needed to?	2.76	.974

All items are scored on 4 point likert scale from 1 (not at all) 4(Completely). BBC5 is reverse scored.

Appendix-6 Squared multiple correlation coefficients (R^2) for each CFA model

Squared multiple correlation coefficients (R^2) for each measured variable in the REQ CFA model.

	R^2
Internal dysfunction	
REQ 5. I harm or punish myself in someway	.29
REQ 7. I dwell on my thoughts and feelings (e.g. it goes round and round in my head and I can't stop it)	.28
REQ 14. I think about people better off and make myself feel worse	.15
REQ 15. I keep the feeling locked up inside	.24
REQ 19. Things feel unreal (e.g. I feel strange, things around me feel strange, I daydream)	.31
Internal function	
REQ 4. I review (rethink) my thoughts or believes	.29
REQ 9. I review (rethink) my goals or plans	.46
REQ 11. I put the situation into perspective	.27
REQ 12. I concentrate on a pleasant activity	.17
REQ 16. I plan what I could do better next time	.26
External dysfunction	
REQ 2. I take my feelings out on others verbally (e.g. shouting, arguing)	.25
REQ 10. I talk my feelings out on others physically (e.g. fighting, lashing out)	.23
REQ 13. I try to make others feel bad (e.g. being rude, ignoring them)	.24
REQ 17. I bully other people (e.g. saying nasty things to them, hitting them)	.29
REQ 18. I take my feelings out on objects around me (e.g. deliberately causing damage to my house, school or outdoor things)	.31
External function	
REQ1. I talk to someone about how I feel	.19
REQ 3. I seek physical contact from friends or family (e.g. a hug, hold hands)	.15
REQ 6. I do something energetic (e.g. play sport, go for a walk)	.21
REQ 8. I ask others for advice	.23
REQ 20. I telephone friends or family	.21
REQ 21. I go out and do something nice (e.g. cinema, shopping, go for a meal, meet people)	.18

All coefficients were significant at $p < .001$

Squared multiple correlation coefficients (R^2) for each measured variable in the HVICS CFA model.

	R^2
Horizontal collectivism	
HVICS 1. My happiness depends very much on the happiness of those around me.	.29
HVICS 5. The well-being of my class-fellows is important to me.	.32
HVICS 10. If a class-fellow gets a prize I would feel proud.	.33
HVICS 14. I feel good when I cooperate with others.	.40
Vertical collectivism	
HVICS 2. I would do what would please my family, even if I detested the activity.	.13
HVICS 3. I usually sacrifice my self-interest for the benefit of my group.	.17
HVICS 7. Children should feel honoured if their parents receive a distinguished award.	.24
HVICS 12. I would sacrifice an activity that I enjoy very much if my family did not approve of it	.17
Horizontal individualism	
HVICS 6. I enjoy being unique and different from others in many ways.	.27
HVICS 8. I often do "my own thing."	.17
HVICS 11. I am a unique individual.	.25
Vertical individualism	
HVICS 4. I enjoy working in situations involving competition with others.	.41
HVICS 9. Competition is the law of nature.	.35
HVICS 13. Without competition it is not possible to have a good society.	.20

All coefficients were significant at $p < .001$

Squared multiple correlation coefficients (R^2) for each measured variable in the PBI (mother) CFA model.

	R^2
PBIM 1. Speaks to me in a warm and friendly voice	.45
PBIM 5. Appears to understand my problems and worries	.59
PBIM 11. Enjoys talking things over with me	.26
PBIM 12. Frequently smiles at me	.52
PBIM 17. Can make me feel better when I am upset	.47
PBIM 18. Does not talk with me very much	.02
PBIM 8. Does not want me to grow up	.09
PBIM 9. Tries to control everything I do	.16
PBIM 13. Tends to baby me	.33
PBIM 19. Tries to make me feel dependent on her	.21
PBIM 23. Is overprotective of me	.12
PBIM 7. Likes me to make my own decisions	.61

PBIM 15. Let me decide things for myself	.66
PBIM 21. Gives me as much freedom as I want	.38
PBIM 25. Let me dress in any am I please	.15

All coefficients were significant at $p < .001$

Squared multiple correlation coefficients (R^2) for each measured variable in the PBI (father) CFA model.

	$\mathbf{R^2}$
PBIF1. Speaks to me in a warm and friendly voice	.32
PBIF 5. Appears to understand my problems and worries	.38
PBIF 11. Enjoys talking things over with me	.28
PBIF 12. Frequently smiles at me	.40
PBIF 17. Can make me feel better when I am upset	.47
PBIF 18. Does not talk with me very much	.03
PBIF 8. Does not want me to grow up	.07
PBIF 9. Tries to control everything I do	.09
PBIF 13. Tends to baby me	.38
PBIF 19. Tries to make me feel dependent on him	.26
PBIF 23. Is overprotective of me	.16
PBIF 7. Likes me to make my own decisions	.24
PBIF 15. Let me decide things for myself	.37
PBIF 21. Gives me as much freedom as I want	.42
PBIF 25. Let me dress in any way I please	.17

All coefficients were significant at $p < .001$

Squared multiple correlation coefficients (R^2) for each measured variable in the PSS CFA model.

	$\mathbf{R^2}$
SS1. Can you trust, talk to frankly and share feelings with this person?	0.72
SS2. Can you lean on and turn to this person in times of difficulty?	0.75
SS3. Do they give you practical help?	0.75
SS4. Can you spend time with them socially?	0.64

All coefficients were significant at $p < .001$

Squared multiple correlation coefficients (R^2) for each measured variable in the HADS CFA model.

		R^2
Depression		
HADS 2.	I still enjoy the things I used to enjoy as much	0.18
HADS 4.	I can laugh and see the funny side of things	0.20
HADS 6.	I feel cheerful	0.19
HADS 8.	I feel as if I am slowed down	0.20
HADS 10.	I have lost interest in my appearance	0.05
HADS 12.	I look forward with enjoyment to things	0.13
HADS 14.	I can enjoy a good book or radio or TV programme	0.24
Anxiety		
HADS 1.	I feel tense and 'wound up'	0.23
HADS 3.	I get a sort of frightened feeling as if something awful is about to happen	0.27
HADS 5.	Worrying thoughts go through my mind	0.35
HADS 7.	I can sit at ease and feel relaxed	0.33
HADS 9.	I get a sort of frightened feeling like 'butterflies' in the stomach	0.19
HADS 11.	I feel restless as if I have to be on the move	0.12
HADS 13.	I get sudden feelings of panic	0.37

All coefficients were significant at $p < .001$

Squared multiple correlation coefficients (R^2) for each measured variable in the BBC well-being scale CFA model.

	R^2
Psychological well-being	
BBC 6. Do you feel that you are able to enjoy life?	.37
BBC 7. Do you feel you have a purpose in life?	.21
BBC 8. Do you feel in control over your life?	.18
BBC 9. Do you feel optimistic about the future?	.28
BBC 10. Do you feel satisfied with yourself as a person?	.38
BBC 11. Are you satisfied about your looks and appearance?	.38
BBC 12. Do you feel able to live your life the way you want?	.41
BBC 13. Are you confident in your own opinions and beliefs?	.41
BBC 14. Do you feel able to do the things you choose to do?	.40
BBC 15. Do you feel able to grow and develop as a person?	.43
BBC 16. Are you satisfied with yourself and your achievements?	.36
Relationships	
BBC 17. Are you satisfied with your personal and family life?	.48
BBC 18. Are you satisfied with your friendships and personal relationships?	.52
BBC 19. Are you comfortable about the way in which you relate to and connect with others?	.42

BBC 20. Do you feel able to ask someone for help with a problem if you needed to?	.15
Physical well-being	
BBC 1. Are you satisfied with your physical health?	.34
BBC 2. Are you satisfied with the quality of your sleep?	.36
BBC 3. Are you satisfied with your ability to perform your daily living activities?	.48
BBC 4. Are you satisfied with your ability to work?	.48
BBC 21. Are you satisfied that you have enough money to meet your needs?	.21
BBC 22. Are you satisfied with your opportunity for exercise and leisure activities?	.43
BBC 23. Are you satisfied with your access to health services?	.42

All coefficients were significant at $p < .001$

Appendix-7 Model indirect results for SEM model 7 along with confidence interval

	Lower .5%	Lower 2.5%	Lower 5%	Estimate	Upper 5%	Upper 2.5%	Upper .5%
ID BY							
REQ5	1.000	1.000	1.000	1.000	1.000	1.000	1.000
REQ7	1.028	1.080	1.107	1.247	1.387	1.414	1.467
REQ14	0.617	0.667	0.693	0.827	0.961	0.986	1.037
REQ15	0.884	0.941	0.970	1.121	1.273	1.302	1.359
REQ19	0.955	1.008	1.035	1.176	1.317	1.344	1.396
IF BY							
REQ4	1.000	1.000	1.000	1.000	1.000	1.000	1.000
REQ9	1.061	1.107	1.130	1.252	1.374	1.397	1.443
REQ11	0.868	0.912	0.934	1.051	1.168	1.191	1.234
REQ12	0.657	0.698	0.719	0.827	0.935	0.956	0.997
REQ16	0.858	0.906	0.931	1.058	1.186	1.211	1.258
ED BY							
REQ2	1.000	1.000	1.000	1.000	1.000	1.000	1.000
REQ10	0.818	0.867	0.892	1.024	1.156	1.181	1.231
REQ13	0.714	0.764	0.790	0.925	1.059	1.085	1.136
REQ17	0.781	0.835	0.862	1.005	1.148	1.175	1.229
REQ18	0.775	0.830	0.858	1.005	1.151	1.179	1.234
EF BY							
REQ1	1.000	1.000	1.000	1.000	1.000	1.000	1.000
REQ3	0.737	0.797	0.828	0.990	1.151	1.182	1.243
REQ6	0.913	0.975	1.007	1.173	1.340	1.371	1.434
REQ8	0.873	0.926	0.953	1.095	1.236	1.263	1.316
REQ20	0.952	1.014	1.046	1.211	1.376	1.408	1.470
REQ21	0.831	0.890	0.920	1.077	1.235	1.265	1.324
PSY BY							
BBC6	1.000	1.000	1.000	1.000	1.000	1.000	1.000
BBC7	0.679	0.707	0.722	0.796	0.871	0.885	0.913
BBC8	0.635	0.668	0.685	0.774	0.862	0.879	0.913
BBC9	0.762	0.792	0.806	0.884	0.962	0.977	1.006
BBC10	0.902	0.932	0.947	1.027	1.107	1.122	1.152
BBC11	0.950	0.984	1.001	1.091	1.181	1.198	1.232
BBC12	0.928	0.957	0.973	1.051	1.130	1.145	1.174
BBC13	0.883	0.912	0.926	1.003	1.080	1.095	1.123

BBC14	0.905	0.934	0.949	1.027	1.105	1.120	1.149
BBC15	0.918	0.947	0.962	1.040	1.119	1.134	1.163
BBC16	0.769	0.796	0.811	0.884	0.957	0.971	0.998

PHY BY

BBC1	1.000	1.000	1.000	1.000	1.000	1.000	1.000
BBC2	0.924	0.956	0.973	1.059	1.145	1.162	1.194
BBC3	1.028	1.061	1.078	1.166	1.254	1.271	1.303
BBC4	1.028	1.061	1.078	1.165	1.251	1.268	1.301
BBC21	0.681	0.714	0.730	0.817	0.903	0.919	0.952
BBC22	0.949	0.981	0.998	1.085	1.172	1.189	1.222
BBC23	0.961	0.993	1.010	1.095	1.180	1.197	1.229

REL BY

BBC17	1.000	1.000	1.000	1.000	1.000	1.000	1.000
BBC18	0.937	0.959	0.970	1.027	1.084	1.095	1.117
BBC19	0.826	0.852	0.865	0.934	1.003	1.016	1.041
BBC20	0.456	0.483	0.496	0.567	0.637	0.651	0.677

DEP BY

HADS2D1	1.000	1.000	1.000	1.000	1.000	1.000	1.000
HADS4D2	0.721	0.770	0.795	0.927	1.058	1.083	1.132
HADS6D3	0.503	0.552	0.578	0.710	0.842	0.868	0.917
HADS7A4	0.912	0.968	0.996	1.145	1.293	1.322	1.377
HADS10D5	0.484	0.543	0.574	0.733	0.892	0.923	0.982
HADS12D6	0.615	0.668	0.695	0.835	0.976	1.003	1.056
HADS14D7	0.657	0.703	0.727	0.850	0.973	0.996	1.042

ANX BY

HADS1A1	1.000	1.000	1.000	1.000	1.000	1.000	1.000
HADS3A2	0.847	0.892	0.915	1.036	1.156	1.179	1.224
HADS5A3	0.945	0.992	1.016	1.141	1.266	1.290	1.337
HADS6D3	0.242	0.276	0.293	0.383	0.474	0.491	0.525
HADS8D4	0.591	0.625	0.643	0.735	0.827	0.845	0.879
HADS9A5	0.527	0.567	0.587	0.691	0.796	0.816	0.856
HADS11A6	0.471	0.510	0.531	0.636	0.742	0.762	0.802
HADS13A7	0.885	0.932	0.955	1.079	1.203	1.227	1.273

FC BY

PBIFC1	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PBIFC5	1.006	1.061	1.089	1.236	1.384	1.412	1.467
PBIFC11	0.992	1.049	1.078	1.229	1.381	1.410	1.467
PBIFC12	0.812	0.857	0.881	1.002	1.123	1.146	1.192

PBIFC17	1.142	1.198	1.226	1.376	1.526	1.555	1.611
PBIFO23	0.557	0.599	0.621	0.734	0.847	0.868	0.911
PBIFC18	0.250	0.305	0.333	0.478	0.623	0.651	0.706
FOP BY							
PBIFO8	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PBIFO9	0.629	0.675	0.698	0.820	0.942	0.966	1.011
PBIFO13	0.545	0.588	0.610	0.725	0.839	0.861	0.904
PBIFO19	0.361	0.401	0.422	0.528	0.635	0.655	0.695
PBIFC18	-0.883	-0.839	-0.817	-0.699	-0.582	-0.559	-0.516
FA BY							
PBIFA7	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PBIFA15	1.025	1.055	1.070	1.150	1.230	1.245	1.275
PBIFA21	0.619	0.646	0.660	0.731	0.803	0.816	0.843
PBIFA25	0.329	0.354	0.367	0.433	0.500	0.512	0.537
MC BY							
PBIMC1	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PBIMC5	0.958	1.004	1.027	1.149	1.272	1.295	1.341
PBIMC11	0.837	0.886	0.911	1.041	1.172	1.197	1.246
PBIMC12	0.849	0.886	0.906	1.007	1.108	1.127	1.165
PBIMC17	0.918	0.964	0.988	1.111	1.234	1.258	1.304
PBIMO23	0.433	0.472	0.492	0.596	0.700	0.720	0.759
PBIMC18	0.213	0.258	0.280	0.399	0.517	0.539	0.584
MOP BY							
PBIMO8	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PBIMO9	0.653	0.692	0.712	0.816	0.921	0.941	0.980
PBIMO13	0.577	0.612	0.630	0.724	0.817	0.835	0.870
PBIMO19	0.349	0.383	0.400	0.492	0.583	0.601	0.635
PBIMC18	-1.095	-1.057	-1.037	-0.935	-0.832	-0.813	-0.774
MA BY							
PBIMA7	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PBIMA15	0.919	0.943	0.955	1.019	1.083	1.096	1.119
PBIMA21	0.692	0.715	0.726	0.786	0.846	0.858	0.880
PBIMA25	0.352	0.375	0.387	0.447	0.508	0.520	0.543
SS BY							
TOT1A	1.000	1.000	1.000	1.000	1.000	1.000	1.000
TOT2A	0.958	0.972	0.978	1.014	1.050	1.057	1.070
TOT3A	0.933	0.947	0.955	0.992	1.030	1.037	1.051
TOT4A	0.848	0.863	0.871	0.913	0.955	0.963	0.979
CARE BY							
MC	1.000	1.000	1.000	1.000	1.000	1.000	1.000

FC	0.716	0.777	0.808	0.970	1.132	1.163	1.224
OP BY							
MOP	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FOP	0.580	0.626	0.649	0.771	0.892	0.915	0.961
AUTH BY							
MA	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FA	0.811	0.879	0.913	1.093	1.273	1.308	1.375
DEP ON							
CARE	-0.300	-0.261	-0.241	-0.137	-0.032	-0.012	0.027
OP	-0.039	-0.021	-0.012	0.037	0.085	0.094	0.113
AUTH	-0.038	-0.024	-0.017	0.019	0.055	0.062	0.076
SS	-0.131	-0.109	-0.097	-0.038	0.021	0.032	0.054
ID	-0.020	0.053	0.090	0.284	0.478	0.516	0.588
ED	-0.135	-0.079	-0.051	0.098	0.247	0.276	0.332
IF	-0.275	-0.213	-0.182	-0.017	0.148	0.179	0.241
EF	-0.658	-0.584	-0.545	-0.346	-0.147	-0.109	-0.035
ANX ON							
CARE	-0.119	-0.071	-0.046	0.083	0.212	0.237	0.285
OP	0.015	0.040	0.053	0.119	0.185	0.198	0.223
AUTH	-0.006	0.012	0.021	0.068	0.116	0.125	0.143
SS	-0.085	-0.057	-0.043	0.032	0.106	0.121	0.149
ID	0.353	0.462	0.517	0.809	1.100	1.155	1.264
ED	-0.515	-0.434	-0.393	-0.177	0.039	0.080	0.161
IF	-0.519	-0.429	-0.383	-0.142	0.100	0.146	0.236
EF	-0.573	-0.472	-0.420	-0.147	0.125	0.177	0.278
PSY ON							
CARE	-0.008	0.037	0.059	0.178	0.298	0.320	0.365
OP	-0.242	-0.217	-0.205	-0.139	-0.073	-0.061	-0.036
AUTH	-0.159	-0.141	-0.132	-0.083	-0.034	-0.025	-0.007
SS	-0.059	-0.031	-0.016	0.059	0.134	0.149	0.177
ID	-1.106	-0.998	-0.942	-0.653	-0.363	-0.308	-0.200
ED	-0.102	-0.022	0.019	0.234	0.449	0.490	0.570
IF	0.164	0.257	0.305	0.555	0.804	0.852	0.946
EF	-0.460	-0.360	-0.309	-0.041	0.226	0.277	0.378
PHY ON							
CARE	0.004	0.049	0.072	0.192	0.313	0.336	0.381
OP	-0.226	-0.202	-0.190	-0.126	-0.062	-0.050	-0.027
AUTH	-0.170	-0.153	-0.145	-0.099	-0.053	-0.045	-0.028
SS	-0.050	-0.024	-0.010	0.061	0.132	0.145	0.172
ID	-1.052	-0.954	-0.903	-0.640	-0.377	-0.326	-0.228
ED	-0.102	-0.029	0.008	0.202	0.396	0.433	0.506
IF	-0.025	0.059	0.102	0.327	0.552	0.596	0.680

EF -0.300 -0.209 -0.162 0.083 0.328 0.375 0.467

REL ON
CARE 0.179 0.235 0.263 0.412 0.561 0.589 0.645
OP -0.257 -0.229 -0.215 -0.142 -0.068 -0.054 -0.026
AUTH -0.115 -0.096 -0.087 -0.038 0.011 0.020 0.038
SS -0.047 -0.015 0.001 0.085 0.169 0.185 0.217
ID -0.703 -0.604 -0.554 -0.290 -0.027 0.024 0.123
ED -0.345 -0.268 -0.229 -0.025 0.179 0.218 0.294
IF -0.222 -0.136 -0.092 0.137 0.366 0.410 0.496
EF -0.111 -0.009 0.043 0.314 0.586 0.638 0.740

SS ON
CARE 0.214 0.248 0.265 0.357 0.448 0.466 0.500
OP -0.249 -0.231 -0.222 -0.173 -0.125 -0.116 -0.097
AUTH -0.078 -0.065 -0.058 -0.023 0.013 0.020 0.033

ID ON
CARE -0.674 -0.625 -0.600 -0.470 -0.340 -0.315 -0.267
OP 0.019 0.043 0.055 0.120 0.184 0.197 0.221
AUTH -0.135 -0.117 -0.108 -0.060 -0.013 -0.004 0.014

ED ON
CARE -0.523 -0.478 -0.456 -0.337 -0.218 -0.195 -0.151
OP 0.045 0.070 0.083 0.151 0.218 0.231 0.257
AUTH -0.182 -0.163 -0.153 -0.102 -0.051 -0.041 -0.022

IF ON
CARE -0.069 -0.025 -0.003 0.114 0.231 0.253 0.297
OP -0.236 -0.210 -0.197 -0.128 -0.059 -0.046 -0.020
AUTH -0.110 -0.089 -0.077 -0.019 0.039 0.050 0.072

EF ON
CARE 0.212 0.255 0.276 0.389 0.502 0.523 0.566
OP -0.159 -0.138 -0.127 -0.071 -0.015 -0.004 0.017
AUTH -0.163 -0.144 -0.134 -0.084 -0.033 -0.024 -0.005

DEP ON
SELF_R -0.078 -0.061 -0.052 -0.006 0.041 0.049 0.067
OTHER_R -0.064 -0.043 -0.033 0.022 0.077 0.088
0.108

ANX ON
SELF_R -0.161 -0.138 -0.127 -0.066 -0.005 0.006 0.029
OTHER_R -0.146 -0.119 -0.105 -0.033 0.039 0.052
0.079

PSY ON

SELF_R -0.041 -0.019 -0.008 0.051 0.110 0.121 0.143
OTHER_R -0.086 -0.058 -0.044 0.030 0.104 0.118 0.146

PHY ON
SELF_R -0.016 0.006 0.017 0.075 0.132 0.143 0.165
OTHER_R -0.120 -0.093 -0.079 -0.007 0.065 0.079 0.106

REL ON
SELF_R -0.012 0.011 0.024 0.087 0.150 0.162 0.186
OTHER_R -0.099 -0.071 -0.056 0.020 0.097 0.111 0.140

SS ON
SELF_R -0.067 -0.051 -0.043 -0.001 0.042 0.050 0.066
OTHER_R -0.015 0.000 0.009 0.051 0.093 0.102 0.117

ID ON
SELF_R -0.244 -0.221 -0.210 -0.150 -0.089 -0.078 -0.055
OTHER_R -0.035 -0.014 -0.003 0.056 0.114 0.125 0.147

ED ON
SELF_R -0.116 -0.094 -0.083 -0.023 0.037 0.049 0.071
OTHER_R -0.052 -0.029 -0.017 0.044 0.105 0.116 0.139

IF ON
SELF_R -0.165 -0.139 -0.126 -0.058 0.010 0.023 0.049
OTHER_R -0.196 -0.170 -0.157 -0.088 -0.019 -0.006 0.020

EF ON
SELF_R -0.038 -0.016 -0.005 0.054 0.113 0.124 0.146
OTHER_R -0.029 -0.007 0.005 0.064 0.123 0.134 0.156

IF WITH
EF 0.188 0.203 0.211 0.253 0.295 0.303 0.318
ID 0.162 0.176 0.183 0.220 0.257 0.264 0.278

ID WITH
ED 0.148 0.163 0.170 0.210 0.250 0.257 0.272

ED WITH
IF 0.081 0.093 0.099 0.131 0.163 0.169 0.181

EF WITH

ID	0.063	0.073	0.079	0.106	0.133	0.138	0.149
ED	0.088	0.099	0.105	0.135	0.164	0.170	0.181

PSY WITH

PHY	0.111	0.121	0.126	0.152	0.177	0.182	0.192
REL	0.139	0.148	0.153	0.179	0.204	0.209	0.219

PHY WITH

REL	0.128	0.137	0.142	0.166	0.190	0.195	0.204

DEP WITH

ANX	-0.051	-0.045	-0.042	-0.027	-0.011	-0.008	-0.002
PSY	-0.071	-0.065	-0.062	-0.046	-0.030	-0.027	-0.020
PHY	-0.067	-0.061	-0.058	-0.042	-0.026	-0.022	-0.016
REL	-0.074	-0.068	-0.065	-0.048	-0.031	-0.028	-0.022

ANX WITH

PSY	-0.049	-0.041	-0.037	-0.017	0.004	0.007	0.015
PHY	-0.066	-0.058	-0.054	-0.034	-0.014	-0.010	-0.003
REL	-0.057	-0.049	-0.045	-0.024	-0.003	0.000	0.008

FC WITH

FOP	-0.031	-0.025	-0.022	-0.006	0.009	0.012	0.018
FA	-0.087	-0.079	-0.075	-0.054	-0.033	-0.029	-0.021

FA WITH

FOP	-0.031	-0.020	-0.015	0.013	0.041	0.046	0.057

MC WITH

MOP	-0.036	-0.029	-0.025	-0.006	0.013	0.017	0.024
MA	-0.071	-0.063	-0.059	-0.037	-0.015	-0.010	-0.002

MA WITH

MOP	-0.060	-0.049	-0.043	-0.014	0.016	0.021	0.032

CARE WITH

AUTH	-0.142	-0.133	-0.128	-0.103	-0.078	-0.074	-0.064
OP	-0.037	-0.031	-0.027	-0.009	0.009	0.012	0.019
SELF_R	-0.009	-0.005	-0.003	0.007	0.017	0.019	0.022
OTHER_R	-0.007	-0.003	-0.001	0.009	0.020	0.022	0.026

OP WITH

AUTH	-0.145	-0.132	-0.125	-0.089	-0.053	-0.046	-0.032
SELF_R	-0.065	-0.058	-0.055	-0.036	-0.017	-0.014	-0.007
OTHER_R	0.011	0.018	0.022	0.040	0.059	0.062	0.069

SS WITH

EF	0.024	0.031	0.034	0.050	0.067	0.070	0.076
IF	0.030	0.036	0.040	0.058	0.076	0.079	0.086
ID	-0.005	0.000	0.003	0.017	0.032	0.034	0.040
ED	-0.007	-0.002	0.001	0.015	0.029	0.032	0.038

AUTH WITH

SELF_R	-0.041	-0.034	-0.030	-0.012	0.006	0.010	0.017
OTHER_R	-0.049	-0.042	-0.038	-0.020	-0.001	0.003	0.010