THE UNIVERSITY *of* EDINBURGH

D.CLIN. PSYCHOL.
UNIVERSITY OF EDINBURGH / NHS (SCOTLAND)
TRAINING PROGRAMME

Investigating the Role of Attachment, Coping skills and Personality Traits in Risk-taking in Late Adolescence

Clemmie Walker

Doctorate in Clinical Psychology

The University of Edinburgh
2014

D. Clin. Psychol. Declaration of own work

This sheet must be filled in (each box ticked to show that the condition has been met), signed and dated, and included with all assignments - work will not be marked unless this is done

Name: Clemmie Walker

Assessed work: Thesis

Title of work: Investigating the Role of Attachment, Coping skills and Personality Traits in Risk-taking in Late Adolescence

I confirm that all this work is my own except where indicated, and that I have:

- Read and understood the Plagiarism Rules and Regulations √
- Composed and undertaken the work myself √
- Clearly referenced/listed all sources as appropriate √
- Referenced and put in inverted commas any quoted text of more than three words (from books, web, etc.) √
- Given the sources of all pictures, data etc. that are not my own √
- Not made undue use of essay(s) of any other student(s) either past or present (or where used, this has been referenced appropriately) √
- Not sought or used the help of any external professional agencies for the work (or where used, this has been referenced appropriately) √
- Not submitted the work for any other degree or professional qualification except as specified √
- Acknowledged in appropriate places any help that I have received from others (e.g. fellow students, technicians, statisticians, external sources) √
- Complied with other plagiarism criteria specified in the Programme Handbook √
- I understand that any false claim for this work will be penalised in accordance with the University regulations √
- (For R2 &Thesis) Received ethical approval from the University of Edinburgh, School of Health √

Signature ……**Date** ……

Acknowledgements

Thank you, husband, for keeping me on track and focussed at times when it felt as though my thesis would never get done. You are always an incredibly rational voice in my times of need.

Thanks to my parents for allowing me to escape to their house to write my thesis and for the endless supplies of snacks and juice.

I would also like to acknowledge the trainee room girls for listening and for their helpful suggestions around data collection and where to find information about SPSS and stats.

My thanks also to Professor Schwannauer for his invaluable feedback and suggestions.

Dedication

I dedicate this body of work to my wonderful daughter who I hope has remained oblivious to the occasional stress and time away that undertaking this thesis has meant. I hope that you know you can achieve anything you set your heart to, my darling.

Contents

1. Abstract

Introduction

Individual's attachment style and coping styles have been suggested to be related to each other whereby early attachment experiences shape the coping behaviours that individuals are most likely to engage in at times of stress. A systematic review was carried out to examine the available literature on attachment status and coping style in both adolescent and adult populations with the aim of establishing what is currently known about the association between these two concepts. A research study was carried out with the aim of investigating the relationship between adolescents' attachment type, coping style and participation in health risk behaviours. The study also aimed to explore the relationship between attachment, coping and personality state dominance.

Method

A literature search was conducted following PRISMA (2009) and Cochrane (2008) guidelines. Papers were quality assessed and strengths and limitations considered.

With regards the empirical project, a cross-sectional survey design was adopted to investigate the mediating role of coping style on adolescent risk taking and its relationship with attachment and state dominance (negativism and telic). Seventy-six first year psychology undergraduate students participated in the study. Participants completed the A-RQ attachment questionnaire, the ACS coping questionnaire, the TDS and NDS personality

trait questionnaires, the YRBS behaviour questionnaire and the SDQ mental health screening tool.

Results

The systematic review yielded an initial 812 papers from use of the search terms. Eleven papers met criterion for inclusion in the review. The papers were quality assessed and strength and difficulties of the papers were reviewed. The findings highlight the need for further robust investigations into the subject area, and recommendations are made for future investigations.

With regards the empirical project, analysis revealed that the relationship between attachment security and risk taking related to feelings of sadness and plans or attempts to carry out suicide. This was not mediated by use of higher levels of unproductive coping in adolescents. Analysis also revealed that high negativism dominance predicted increased participation in alcohol, tobacco and drug misuse. This relationship was not mediated by increased use of unproductive coping behaviours.

Conclusions

The need to establish a more consistent conceptualisation of coping was apparent. It was suggested that future research needs to address limitations in the field including the validity of some self-report measures of attachment, inconsistency in selection of measures, over-reliance on self-report measures and an absence of research out with westernised cultures.

Adolescents' attachment insecurity in key relationships would seem to be one vulnerability factor that contributes to the development of emotional difficulties and adolescents' preference for being in a rebellious state (high negativism dominance) would seem to contribute to participation in risky substance misuse and so at the very least, these should be considered as predictors for engagement in specific types of health risk behaviour.

2. Systematic Literature Review

Examining the relationship between attachment and coping styles: a systematic Literature Review

2.1 Abstract

Purpose: Individual's attachment style and coping styles have been suggested to be related to each other whereby early attachment experiences play a role in shaping the coping behaviours that individuals are most likely to engage in at times of stress. This systematic review therefore examined the available literature on attachment status and coping style in both adolescent and adult populations with the aim of establishing what is currently known about the association between these two concepts.

Method: Seven electronic databases were searched for published research, thesis papers and conference papers reporting on tests of an association between attachment status and coping style. Following an initial search that yielded 812 papers for consideration, 11 papers were identified as eligible for inclusion in the review and the quality of these papers was assessed using a quality rating scale.

Results: The findings that were reported across the eleven papers were inconsistent and limited by the use of different attachment and coping measures, making cross study comparisons difficult.

Conclusions: The early stage of this type of research was highlighted. The need to establish a more consistent conceptualisation of coping was

apparent. It was suggested that future research needs to address limitations in the field including the validity of some self-report measures of attachment, inconsistency in selection of measures, over-reliance on self-report measures and an absence of research out with westernised cultures.

- **Keywords:** Attachment; coping; systematic review

2.2.0 Introduction

The importance of social partners, and specifically parents to children's coping is well documented (e.g. Kliewer et al., 1994; Power, 2004) with parents playing a role in determining the stressors to which their children might be exposed as well as contributing to the development of children's coping resources such as social skills or self-efficacy. The precise mechanisms by which social influences shape children's coping are beginning to be explored (Eisenberg et al., 1997; Power, 2004; Skinner & Edge, 2002). Studies that focus on the ways by which parents socialise coping, for example through modelling and coaching (Kliewer et al., 1994) or via comforting, soothing and helping, that is to say by how responsive the parent can be to the child's physical and emotional needs (Holodynski & Friedlmeier, 2006; Sroufe, 1996) are of particular importance and may sit within an attachment theory framework including the importance of early care giving to children by their carers and their resultant attachment patterns based on these.

Whilst there has been considerable research on the relationship between attachment and coping, at present there is a lack of synthesis of findings in this area. Because large numbers of individuals present to adolescent and adult mental health services with difficulties indicative of poor emotion regulation and negative coping behaviours such as self-harming, suicidality, substance misuse and poor social skills, this paper sets out to systematically review the empirical studies that have examined the relationship between individuals' attachment patterns and their self-reported coping behaviours. The intention is to evaluate whether attachment style and coping are connected, what is demonstrated in the evidence to suggest whether

attachment plays a role in shaping the coping behaviours that individuals adopt and the need to consider the role that other mechanisms may play in development of coping behaviours. The concepts of attachment and coping will be discussed separately before considering how they may fit together.

2.2.1 Attachment Theory

Attachment theory (Bowlby, 1982, 1988; Ainsworth et al., 1978) proposes that children who experience a secure attachment relationship with their primary caregivers experience them as warm and consistently responsive to their emotional needs whilst encouraging autonomous exploration of the world around them. They are likely to develop internal models of others as caring and dependable and of themselves as love-worthy and competent. They seek comfort from others when distressed and are successful in eliciting positive responses. In contrast, insecurely attached infants (who experience mothers who are inattentive to or rejecting of their needs and behavioural overtures) are unsure whether someone will respond in a time of need and so form less favourable models of themselves and others and experience ambivalent, avoidant or disorganised relationships. Thus, the insecurely attached child with an avoidant attachment may avoid contact with others and reject offers to help when they are distressed (Ainsworth *et al.*, 1978; Elicker *et al.*, 1992).

The attachment model as described by Bowlby (1969) and Ainsworth et al. (1978) is subject to a number of criticisms and limitations (see Field, 1996) however, despite the evidentiary deficiencies supporting Ainsworth's categorisation of attachment and the limitations of Bowlby's model, it would

seem that a system exists that drives elicitation of proximity and caretaking by the infant. It would also seem to be the case that inter-individual differences in how that need is met shapes how the infant responds to others both at times of separation and at times of togetherness (e.g. Hazan & Shaver, 1994; Field, 1985).

Hazan and Shaver (1987) investigated attachment patterns in adults that conceptually corresponded to the descriptions of children's attachment behaviour patterns. The theory underpinning this rationale builds on Bowlby's (1973) proposition that people hold working models of the self and other that are thought to arise as individuals interact with close others (Markus & Cross, 1990, Mead, 1934). Specifically, they are understood to be derived from beliefs about how acceptable the self is in the eyes of early attachment figures, as gauged by the responsiveness of those figures. Working models of others are hypothesised to include expectations about who will serve as attachment figures, how accessible they are and about how they will respond when needed (Main et al., 1985). It has been proposed that individuals can hold different working models for different significant others because each model can be interconnected with other models within a complex hierarchical network (Collins & Read, 1994). That is to say that people do not hold a single set of working models of the self and others, but hold a family of models that include, at higher levels, abstract rules or assumptions about attachment relationships and, at lower levels, information about specific relationships and events within relationships (Pietromonaco & Fieldman Barrett, 2000).

Assessing Attachment in Adults and Adolescents

The original descriptions of adult attachment, as derived from infant attachment theory, did not distinguish between specific models of the self and models of others. However, it was assumed that working models were the foundation of the different styles. Later work has developed a more refined scheme that explicitly identifies quality of attachment relationships according to the variables of self and other (see Bartholmew & Horowitz, 1991) or according to the variables of attachment-related anxiety and attachment related avoidance (Brennan, Clark & Shaver, 1998). A number of measures have been devised that are intended to provide a measure of adult or adolescent attachment (for a review of adult attachment measures see Shaver & Mikulincer, 2002; and for a review of adolescent attachment see Wilson & Wilkinson, 2012). However, a number of types of measures have been prolific in studies of attachment. These include narrative accounts, clinical interviews and self-report questionnaires, each of which has positive and negative points. For example, self-report is the most widely used method of assessing individual differences in attachment security (Smith, Msetfi & Golding, 2010). They are relatively quick to complete, may be administered alongside other measures of interest and can be hand scored relatively quickly.

Self- report measures are subject to a number of practical limitations. These include a consideration of whether an individual can access and report on the unconscious processes of working models, meaning that self-report measures are at risk of missing out on higher level representations and expectations of relationships. It may be that they only access lower level information about specific relationships and events within relationships,

although it can be argued that this still provides a useful insight into one of the levels of the multifaceted representations held by individuals. Self-report measures are also subject to individual differences and how able an individual is able to provide an objective report on themselves and are affected by variables such as individuals wanting to present the best version of themselves, to anxieties that others might see what they have put down and judge them negatively because of this. These limitations, however, have to be weighed up against the ease with which they can be administered and the fact that they are less time and resource intensive than other means of measuring dimensions of attachment such as attachment interviews.

Attachment interviews are developed from ideas of attachment theory (Crowell & Treboux, 1995). For example, The Adult Attachment Interview (AAI; George, Kaplan & Main, 1995) aims to capture a generalized representation of attachment (secure/autonomous; insecure; insecure/dismissing, insecure/preoccupied; or unresolved). The language and discourse style used is considered to reflect the individual's attachment state of mind. The Current Relationship Interview (CRI; Crowell, 1990) investigates the attachment representations within the adult partnership by examining description of the attachment behaviour of self and partner via a system similar to the AAI. The subject is then classified into one of three major patterns; secure, dismissing and preoccupied. Stability and validity of attachment as measured by the AAI has been demonstrated in a number of studies (e.g. Bakermans-Kranenberg & van IJzendoorn, 1993; Benoit & Parker, 1994; Crowell & Treboux, 1995). Whilst attachment interviews do seem to provide a meaningful way of assessing adult and adolescent attachment patterns and may be better than self-report measures for

revealing some of the higher level abstract rules and assumptions individuals hold about attachment relationships, they are undoubtedly very resource intensive and require specific training to administer and score requiring resources beyond the capacity of many research projects.

The way in which adult attachment is understood and measured has developed from the theory of infant attachment and has moved beyond the somewhat simplistic three category model identified by Mary Ainsworth and colleagues for infant attachment. What is apparent is that assessing adult and adolescent attachment is subject to limitations of current measures of attachment including issues pertaining to reliability and validity, and the practicability of using them in research.

2.2.2 Coping

Coping with adverse events involves a number of ways of dealing with diverse person-environment transactions (Schwarzer and Schwarzer, 1996). Thus coping does not represent a homogeneous concept; it can be described in numerous terms including tactics, responses, strategies, cognitions or behaviour. Coping has been defined as a purposeful and active process of reacting to stimuli perceived as difficult or as exceeding a person's resources (Lazarus, 1993). As such, individual's methods of coping include behavioural, emotional and cognitive attempts to manage the demands raised by such stressors (Lazarus, 1998, as cited by Seiffge-Krenke & Beyers, 2005). A number of challenges exist in relation to defining and measuring coping in individuals. For example, a relatively recent evaluation of coping assessment tools with young people and adults (Skinner, Edge, Altman, and

Sherwood, 2003) identified over 400 ways of coping that were measured in 100 tools, thus demonstrating the vast scope of coping measurement and the subsequent challenges in interpreting, generalising, and acting on coping data.

A further consideration when defining and measuring coping pertains to the stability of the concept, for example when measuring coping with standardised measures, there is an implication that individuals have preferred ways of coping that they apply time after time. Additionally, measurement of coping assumes that individuals engage in a degree of generalisability across situations, coming up with a limited set of strategies to be reapplied in response to different stressors and there is some evidence to support that whilst holding a repertoire of coping behaviours to deal with specific events, individuals also tend to report characteristic coping styles (Carver *et al.*, 1989). Despite this, measuring coping in this way may miss the complexities of the stages people progress through when faced with a challenging situation; it fails to account for different strategies that may be employed at different time points in dealing with the same stressor.

Measurement of coping is further complicated by conceptual issues for example cognitive coping and cognitive appraisal can be confounding; appraising a situation as a threat may trigger coping. For example, further thoughts or defences that may imply a reappraisal of the same situation as being more or less threatening making it impossible to distinguish between appraisal and coping. Additionally, it is difficult to separate coping from coping resources such as personal and social resources and other antecedents of appraisals and coping (Schwarzer and Schwarzer, 1996). The concept of

dimensionality of coping has resulted in numerous interpretations and levels of coping constructs. Some of the main difficulties with developing dimensions of coping seem to be how to classify seemingly endless options of responses in relation to different stressors as well as establishing a hierarchy of coping concepts. This complicates the development of measures of coping. Any measure of coping used requires to be scrutinised with regards to their contributions to issues of stability, generalisability and dimensionality.

At this time, it is the case that the measurement of coping in adolescents is inconsistent with regards psychometrics and their use in research. It is apparent that progress is still required with developing consistent use of meaningful, representative and interpretable coping measures although at the very least, current measures of coping provided informative data (Garcia, 2010). The most commonly used coping measures for example the Adolescent Coping Orientation for Problem Strategies Questionnaire (A-COPE), the Adolescent Coping Scale (ACS), and the Coping Response Inventory (CRI) show reliability coefficients of internal consistency, indicating that they can be appropriate for use for measuring elements of coping. While this review identifies issues relating to difficulties with measuring coping in adolescents, it seems sensible to assume that similar issues affect measures of adult coping.

2.2.3 Attachment and Coping

In recent years, mental models of attachment have been shown to be related to affect regulation in times of distress (Cozzarelli, Sumer & Major, 1998) and

the ways in which individuals develop their styles of coping are proposed to be built on early experiences of social relationships and contexts (Compass, 1987, Macoby, 1983). An assortment of indirect evidence has been cited in support of the notion that working models guide the processes underlying attachment patterns, including individuals' emotional experience and coping styles (Fraley & Shaver, 1998: Mikulincer, Florian & Weller, 1993; Mikulincer & Orbach, 1995; Pietromanoco & Fieldman Barret, 1997b; Tidwell, Reis & Shaver, 1996). Coping styles adopted by individuals may also be shaped by the temperament of individuals and the ways by which this links in to specific ways of coping (e.g. Eisenberg et al., 1994). In line with this perspective, findings from investigations into attachment, social support, parenting, family processes, peer relationships, teaching and parent-child interactions have all shown links on the one hand, between availability of support and quality of relationships, and on the other hand, between children's physiological and psychological stress reactivity, regulation, and coping (Skinner & Zimmer-Gembeck, 2007).

2.2.4 Aim of the Review

The present review is concerned with examining the evidence that suggests a relationship between adolescent attachment status and coping style as has been proposed by theorists and some initial research efforts. Overall, the aim was to evaluate the robustness of these investigations and to provide clear evidence of a relationship between adolescent and adult attachment status and their coping strategies.

2.3 Method

2.3.1 Search strategy

The literature search was conducted in January 2014. The following databases were searched using combinations of the terms '*attachment*', *'coping', attachment behaviour', 'coping behaviour', attachment style';* YourJournals@Ovid (inclusive of PubMed/Medline (1970-213), PsychINFO (1970-2013), EMBASE (1980-2013), Global Health (1973-2014), CAB (1973-2014), AMED (1985-2014)) and Google Scholar(1985-2014). The databases were chosen to cover both psychological and social science research. The start date of the search was selected by the earliest year available on each database in order to be as inclusive as possible. The published literature was searched to verify that a similar review had not been conducted with no similar reviews identified. Studies cited in review articles or in selected review articles that were not identified through original literature search strategy were also included. To reduce any effect of publication bias, first authors of included studies were contacted to identify whether there were unpublished results for inclusion in the review. Ten authors were approached, five of whom did not respond. The five responding authors suggested six articles (all published). Five authors whose thesis abstracts indicated studies may be suitable for inclusion in review were contacted to request access to their thesis. Only one author responded by identifying a published journal article summarising their thesis results. Once a study was selected for full review, it was rated by two blind, independent reviewers who classified study design, level of research and other review data.

Disagreements between reviewers were resolved by discussion or by deferring to a third reviewer.

2.3.2 Eligibility criteria

Articles were included if: i) they were published in English (due to lack of feasibility for translation); ii) they were peer reviewed papers, submitted thesis, or published conference papers; iii) a measure of attachment was used and a measure of coping was used; iv) reported one or more tests of an association between attachment and coping. Given the limited research in this area, studies were included in which the primary aim of the research was not to investigate an association between perfectionism and interpersonal functioning, provided that this was stated as a secondary aim and that the relationship was addressed and clearly reported within the wider research context.

Exclusion criteria

Studies were excluded where coping was not measured using a specific measure of general coping style. Studies were also excluded when they assessed coping in relation to a specific traumatic event. Qualitative research was not included since qualitative research is not considered appropriate for exploring the relationship between specific variables.

2.3.3 Data collection and management process

The initial search strategy yielded a total of 812 publications (387 from Yourjournals@ovid and 425 from Google Scholar). Screening the titles of

these papers for no clear link to the topic being investigated based on the title, that referred to specific health conditions, that referred to specific trauma events such as abuse and that referred to studies of animals and that referred to infants and young children eliminated 785 papers. These papers were rejected on the basis that they were conducted on a topic disparate to the question of interest. The abstracts of the remaining 27 papers were then reviewed using the criteria outlined above. Papers were excluded where it was apparent from the abstract that coping and attachment had not been assessed in relation to each other. A further 4 papers were excluded and the reason for exclusion recorded. Duplicates across databases were removed, eliminating a further 7 papers. In the remaining 16 articles, it was unclear from the article whether the article met the eligibility criteria and the full paper was obtained in order to determine this. The papers were screened on the basis of target population, a measure of attachment being used, a measure of coping being used and these being investigated in relation to each other.

This process resulted in the identification of 10 papers meeting eligibility criteria. The reference lists of papers included in the review involved 319 potential articles for inclusion in the review (n=314). The majority of these were rejected based on their titles indicating they were not suitable for inclusion. One additional paper was identified through hand searching the reference and citation lists of these articles (see table 1) and four papers had already been identified during the initial search.

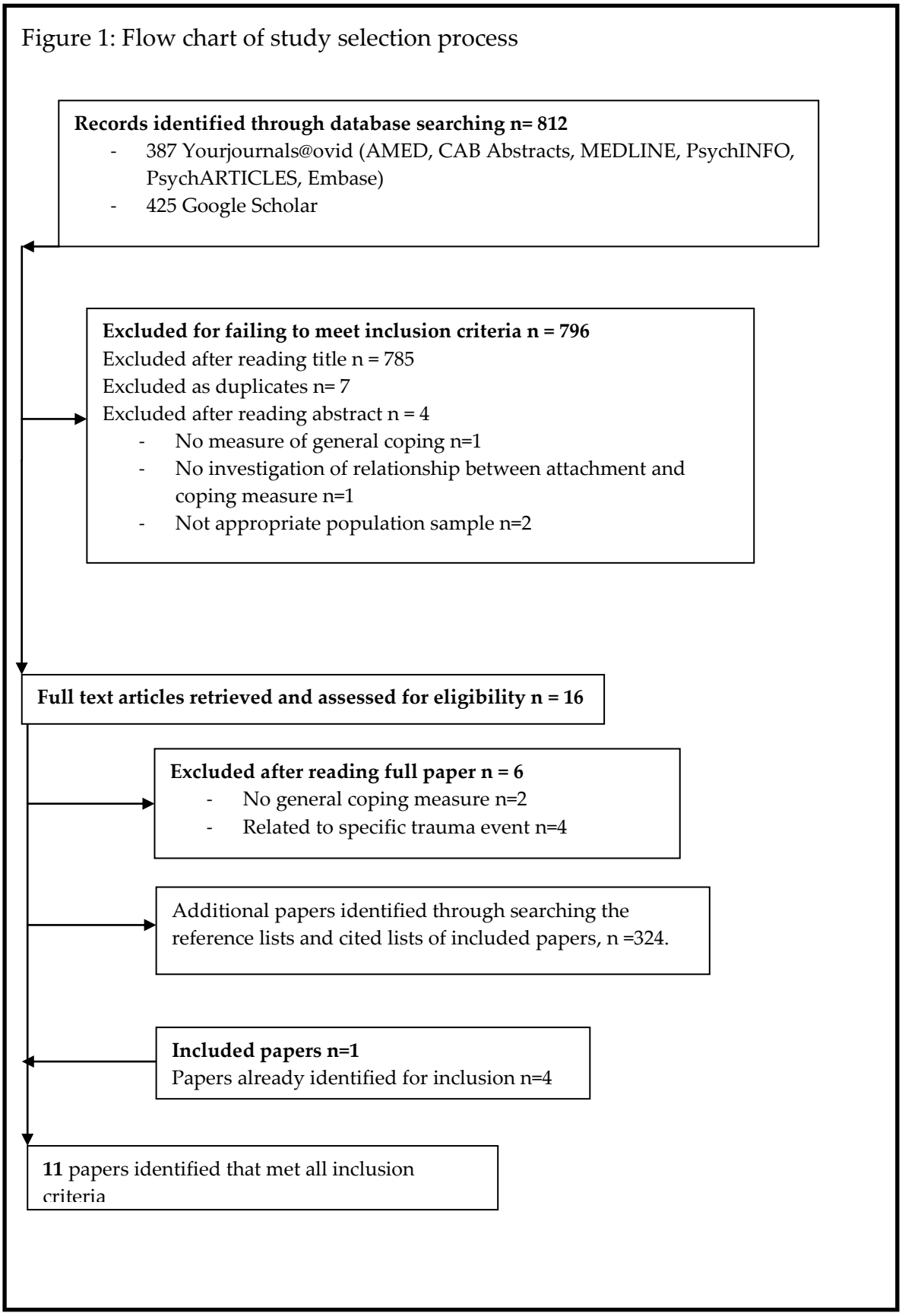
The flow of the systematic literature selection process is illustrated in figure 1 using the format recommended by the PRISMA group (Moher *et al.*, 2009).

Table 1. Summary of literature sources and resultant review articles

	Number of potentially relevant articles initially screened for inclusion	**Number of articles included within this review**	**Review article number***
Your Journals@Ovid (AMED, CAB Abstracts, MEDLINE, PsychINFO, PsychARTICLES, Embase)	387	5	1, 5, 6, 7, 11
Google Scholar	425	8	2, 3, 4, 6, 7, 9, 10, 11
Suggested papers after contacting relevant 1st authors	5 ↓	0	
Manual search of reference list from included review articles	319	1	2, 6, 8, 11
All sources	1136	14(minus duplicates) =11	1-11

* Review article numbers denote review articles as follows: 1. Mota & Matos (2013); 2. Franczak (2012); 3. Holmberg *et al.*(2011); 4. Dawson (2009); 5. Seiffe-Kranke & Beyers (2005); 6. Howard & Medway (2004); 7. Wei, Heppner & Malinckrodt (2003); 8. Lopez *et al.*(2001); 9. Torquati & Vazsonyi (1999); 10. Kemp & Neimeyer (1999); 11. Greenberger & McLaughlin (1998).

Figure 1: Flow chart of study selection process



2.3.3 Quality rating system

A number of professional groups and independent research teams have developed guidelines for critical appraisal and several well established quality rating systems for the evaluation of RCTs and intervention studies are now in existence (e.g. Cochrane guidelines, Higgins *et al.,* 2008). However, all of the studies that were identified for inclusion in the current review were cross-sectional in design.

For the purposes of the current review a quality rating checklist was developed based on two recent documents: The NICE '*quality appraisal checklist for quantitative studies reporting correlations and associations'* (appendix 1, NICE, 2012) and the STROBE Statement '*checklist of items that should be included in reports of cross-sectional studies'* (von Elm *et al.,* 2008) (see appendix 2). These checklists were adapted to ensure that all items were appropriate for assessing the quality of cross-sectional studies. This resulted in a checklist of 10 quality criteria to be used in this review (see table 2). The quality ratings were completed in accordance with the outcome ratings used by SIGN (2008) for assessing the methodological quality of research articles. Studies could achieve one of five possible outcomes for each quality criterion; well covered, adequately addressed, poorly addressed, not addressed, and not reported.

It is understood that a combined score would not accurately portray the overall quality of the study (Higgins & Green, 2011) and so scores for each paper are not reported as some criteria would necessarily hold more weight than others. It is regarded as preferable to consider aspects of quality individually and in isolation of each other (Juni *et al.,* 1999). The assessment of quality inevitably involves a degree of subjective judgement and so the quality evaluation was therefore undertaken independently by a second researcher to ensure consistency in the ratings. Initial agreement was 90%. Discrepancies were resolved by discussion between raters or deferring to a third party.

Table 2: Description of quality assessment of studies on coping and attachment.

Quality categories	**Well covered**	**Adequately covered**	**Poorly covered**	**Not addressed**	**Not reported**
Participant characteristics reported including ethnicity, SES, gender, age range	All of the quality category participant characteristics are reported.	At least 3 out of 4 quality category characteristics are reported.	Only one or 2 out of 4 quality category characteristics are reported, or only characteristic not identified by quality criteria are reported.	No participant characteristics are reported and no explanation given as to why.	No participant characteristics are reported, an explanation is given as to why not.
Percentage of participants asked to participate and who consented to participate reported	Reports percentage who consented to participate and precise information given about number of people invited to participate. Includes characteristic	Reports percentage who consented to participate and precise information given about number of people invited to participate.	Reports percentage who consented to take part.	No information provided.	No information provided, an explanation is given as to why not.

	information regarding who did and did not take part.				
A power calculation is reported and sufficient power is achieved.	A power calculation is reported and sufficient power is achieved.	N/A	A statement is made that sufficient power was achieved but no further information provided about how this was determined,	No power calculation is reported.	No power calculation reported, an explanation given as to why not.
Attachment measure is evidenced to be both valid and reliable, and psychometric values are specified by the authors	Attachment measure is evidenced to be both valid and reliable, and psychometric values are specified by the authors	Psychometric values specified by author but reliability and validity are within adequate range only	Validity or reliability with psychometric values specified for the measure but not both.	Reliability and validity not reported	Reliability and validity not reported, an explanation is provided as to why not.
Coping measure is evidenced to be both valid and reliable, and psychometric values are	Coping measure is evidenced to be both valid and reliable, and psychometric	Psychometric values specified by author but reliability and validity are within adequate	Validity or reliability with psychometric values specified for	Reliability and validity not reported	Reliability and validity not reported, an explanation is provided as to why not.

reported by the authors.	values are reported by the authors.	range only	the measure but not both.		
Informant rating has been used to support self-report measure validity	Informant rating has been used to support self-report measure validity. Informant rating measure has good validity and reliability.	Informant rating used to support self-report measure validity but informant rating validity/reliability not reported.	Informant rating provided for only one of attachment or coping self-report measure.	No informant rating used	No informant rating used, this is addressed by the author.
Results are clearly reported so that independent interpretation can be carried out	Results of all findings are clearly reported so that independent interpretation can be carried out.	Results of main findings are clearly reported so that independent interpretation can be carried out.	Some reporting of some information to allow minimal independent interpretation of result.	No information reported to allow for any independent interpretation.	No information reported to allow for any independent interpretation, an explanation is provided as to why not.
Analysis can be carried out in a way that takes consideration of confounding variable-	A wide range of confounding variables are considered and analysis performed to take possible	Some consideration of confounding variables and analysis performed to take possible effects	Little consideration for confounding variables and where data relating to	Confounding variables not addressed.	Confounding variables not addressed, an explanation provided as to why not.

	effects into consideration.	into consideration.	these is gathered, they are not controlled for in analyses.		
Appropriate analysis has been performed on data	Comprehensive preliminary analysis and analysis of main hypothesis carried out. Analysis appropriate to number and type of variables is carried out.	Some preliminary analysis carried out, although this could be more thorough. Main analysis appropriate to number and type of variables is carried out.	Limited analysis carried out and this is difficult to interpret AND/OR type of analysis not specified AND/OR analysis not appropriate to number and types of variable.	Details of analysis not reported.	Details of analysis not reported, explanation provided as to why not.
Effect sizes are reported	Effect sizes and Standard deviations and means reported for all calculations.	Effect sizes reported for all calculations.	Effect sizes reported for some calculations or only standard deviations and means are reported.	No information pertaining to effect size reported	No information pertaining to effect size reported but explanation given as to why

2.4 Results

2.4.1 Overview of included studies

Eleven studies were identified for inclusion in the review and were quality rated (see table 3). With two exceptions all studies were cross-sectional in design. The exceptions were a longitudinal cohort study with data collected at five time points (Seiffe-Kranke & Beyers, 2005) and a longitudinal cohort study with data collected at two time points (Dawson, 2009). All of the studies were published between the years 1998 and 2013. The majority of the studies were conducted within the US (n-7). All of the studies were survey studies with the majority recruiting students from general student populations. One study (Mota & Matos, 2013) recruited from an institution for young people and one study (Franczak, 2012) recruited from a population of nurses. All of the studies reported the gender of participants in their final sample with all using predominantly female participants. One study reported using only females (Torquati & Vazsonyi, 1999). The mean age of the participants ranged from 14 to 45 and the sample sizes ranged from n= 55 to n= 515. Most studies reported a range of ethnic backgrounds, however all recruited from westernised populations.

The majority of studies (n=9) were interested in attachment and coping as related to other issues such as self-esteem (Mota & Matos, 2013), stress

(Howard & Medway, 2004; Kemp & Neimeyer, 1999) affect (Wei *et al.*, 2001; Lopez *et al.*, 2001), moderation of coping sequence (Holmberg *et al.*, 2011), externalising behaviour (Dawson, 2009) and aspects of personality (Greenberger & McLaughlin, 1998; Torquati & Vazsonyi, 1999). Two studies (Seiffe-Kranke & Beyers, 2005; Franczak, 2012) solely investigated attachment and coping.

2.4.2 Coping Measures

A range of self-report measures of coping were used. The measures used assessed a range of categories of coping ranging from three to four subcategories of coping (see table 4).

2.4.3 Attachment measures

All of the studies used a measure of attachment (see table 4). The majority of the studies (n-9) used self-rated measures of attachment whilst two studies (Seiffge-Kranke and Beyers, 2005; Dawson, 2009) used an interview process (Adult Attachment Interview) to determine attachment status.

Table 3. Ratings of study quality for included studies

Study number & reference	i) Participant characteristics	ii) Consent rate	iii) Sample size	iv) Attachment measure	v) Coping measure	vi) Informants	vii) Clarity of reporting	viii) Consideration of confounding variables	ix) Appropriateness of analysis	x) Effect sizes
1. Mota and Matos (2013)	AA	NR	PA	PA	AC	NA	WC	PA	WC	NR
2. Franczak (2012)	WC	NR	PA	PA	PA	NA	WC	PA	WC	NR
3. Holmberg *et al.*(2011)	PA	NR	PA	PA	NR	NA	WC	AA	WC	NR
4. Dawson (2009)	AA	NR	PA	NR	PA	PA	WC	AA	WC	NR
5. Seiffge-Kranke & Beyers, (2005)	WC	NR	PA	PA	PA	PA	WC	AA	WC	NR
6. Howard and Medway (2004)	AA	WC	PA	PA	PA	PA	WC	PA	PA	NR
7. Wei et al. (2003)	AA	NR	AA	WC	WC	NA	WC	PA	WC	NR
8. Lopez et al. (2001)	AA	NR	PA	WC	PA	NA	WC	PA	WC	NR
9. Torquati and Vazsonyi	AA	NR	PA	WC	PA	NA	WC	AA	WC	NR

(1999)										
10. Kemp & Neimeyer (1999)	WC	NR	PA	NR	PA	NA	WC	PA	WC	NR
11. Greenberger and McLaughlin (1998)	AA	NR	PA	PA	PA	NA	PC	PA	WC	NR

WC=well covered, AA= adequately addressed, PA=poorly addressed, NA=not addressed, NR=not reported

i) Participant characteristics reported including ethnicity, SES, gender, age range
ii) Percentage of participants asked to participate and who consented to participate reported
iii) A power calculation is reported and sufficient power is achieved.
iv) Attachment measure is evidenced to be both valid and reliable, and psychometric values are specified by the authors.
v) Coping measure is evidenced to be both valid and reliable, and psychometric VALUES are reported by the authors.
vi) Informant rating has been used to support self-report measure validity
vii) Results are clearly reported so that independent interpretation can be carried out
viii) Analysis can be carried out in a way that takes consideration of confounding variable-
ix) Appropriate analysis has been performed on data
x) Effect sizes are reported

- Consent Rate

Only one study (Howard and Medway, 2004) reported the percentage of those individuals approached that agreed to take part in the research.

- Sample Size

None of the papers that were included reported basing their sample size on a power calculation. One paper (Wei *et al.*, 2003) recruited a large sample size that was considered very likely to be sufficient to detect a medium effect size and thus met the criteria for the 'adequately addressed rating'.

- Measures Used

Reliability and validity: Six of the papers reported the reliabilities of the measures used and these were in the acceptable-excellent range. Of the remaining five studies, two reported reliability scores for the measure of attachment used but not for reliability of the measure of coping used (Holmberg *et al.*, 2011; Seiffge-Kranke & Beyers, 2005). Three reported reliability scores for the measure of coping used (all within the adequate-excellent range) but not the measure of attachment (Dawson, 2009; Kemp & Neimeyer, 1999; Greenberger & McLaughlin, 1998). Only one paper reported evidence for validity of the measures of attachment and coping used (Wei *et al.*, 2003). Two papers reported evidence for validity of only the coping measure (Mota & Matos, 2013; Seiffge-Kranke & Beyers, 2005). And three papers reported evidence for validity of only the attachment measure used (Lopez *et al.*, 2001; Torquati & Vazsonyi, 1999; Greenberger & McLaughlin,

1998). The remaining four papers did not report evidence for validity of the measures used.

Informants: Seven of the eleven studies received a 'not addressed' rating in this criterion for failing to include any measures other than those rated by the participants. Self-report measures are subject to biases such as social desirability responding that may be particularly relevant in the populations of adolescents and young adults in this review. Adolescents in general display high levels of concern over social acceptability and find it highly revealing and undesirable to admit personal shortcomings to others (Berndt, 1979). The failure to collect additional measures from a relevant other, for example a friend, parent or teacher, left the majority of studies open to biases.

Table 4. Characteristics of the included studies

Author and study locations	Sample Size	Mean age	Attachment measures	Coping measures	Key findings
1. Mota and Matos (2013) Portugal	109	16.19	IPPA	CASQ - active coping - internal coping – withdrawal coping	Peer attachment has a direct and positive effect on active coping. Social skills have a direct and positive effect on active. A mediating role of social skills between quality of peer attachment and development of active coping skills.
2. Franczak (2012) Poland	158	45	Attachment to parents in childhood Questionnaire	Ways of Coping - social support - distancing	Attachment styles differentiate the ways nurses cope with stress Secure attachments significantly predict ability to cope under difficult circumstances. Distorted attachments predict destructive and ineffective coping behaviours.

3. Holmberg *et al.* (2011), Canada		75	28.5	ECR	COPE - emotional support - planning & acting - seeking instrumental Support	For major stressors, dismissing attachment predicted earlier use of distancing coping and later support seeking from partners. Preoccupied attachment predicted earlier use of emotion-focussed coping.
4. Dawson (2009)	US	175	14	AAI, Q-set	COPE - emotional support seeking - seeking instrumental - planning & acting	Teen's preoccupied attachment at age 14 predicts likelihood of teen using negative coping strategies at age 22. Teen's dismissing attachment at age 14 was significantly related to teen using negative coping strategies at age 22.
5. Seiffge-Kranke and Beyers, (2005)		112	14	AAI	CASQ - active coping – internal coping	Secure individuals deal with problems more actively. Secure and dismissing individuals

					- withdrawal	use more internal coping than preoccupied individuals. Coping trajectories during adolescence and young adulthood are linked with attachment state of mind.
6. Howard and Medway (2004)	US	75	16yr7mo	A-RSQ, RQ	A-COPE - Negative avoidance -Positive avoidance - Anger - Family communication	Attachment security is positively related to family communication and negatively related to negative avoidance behaviours (drinking, using drugs). Attachment insecurity is positively related to negative avoidance.
7. Wei, Heppner and Mallinckrodt	US	(2003)515	18.93yr	AAS PSI	PF-SOC - reflective style - suppressive style - reactive style	SEM confirmed adult attachment is associated with stable ways in which people appraise and cope with distress. Persons with anxious and avoidant attachment appraise

					their coping as more ineffective.
8. Lopez, Mauricio, Gormley, Simko and Berger (2001). US		55	21.75yr	ECR	PF-SOC - reflective style - suppressive style - reactive style	Anxious attachment is significantly and negatively related to reactive coping Anxious attachment is not significantly correlated with suppressive coping. Avoidant attachment is significantly and negatively related to reactive and suppressive coping.
9. Torquati and Vazsonyi (1999),	US	73	20.6	AAS	CAPSI - Problem solving - Support seeking - avoidance	Insecure individuals are more likely to cope with interpersonal conflict through support seeking o OR avoidance. General and specific attachment style, affect, and appraisals significantly predict coping strategies.
10. Kemp & Neimeyer (1999)	US	193	18.7	RQ	Ways of coping - social support seeking - distancing	Secure attachment was not associated with higher levels of social support seeking. Dismissing attachment did not report higher levels of distancing coping.

11. Greenberger and McLaughlin (1998) US	157	20	A-RQ, RQ, AAS	COPE -emotional support seeking - seeking instrumental support – planning and acting	Secure attachment is positively related to support seeking and active problem coping styles. Security of adult attachments had stronger associations with female coping strategies than security of early attachment to parents
	solving				

Note: RSQ = Relationship Scale Questionnaire, AAI = Adult Attachment Interview, A-RSQ= Adolescent Relationship Scale Questionnaire, AAS= Adult Attachment Scale, ECR = Experiences in Close Relationships, RQ=Relationship Questionnaire, A-RQ= Adolescent Relationship Questionnaire, CASQ= Coping Across Situations Questionnaire, COPE Inventory = Coping Orientation for Problem Experiences, A-COPE= Adolescent Coping Orientation for Problem Experiences, PF-SOC= Problem-Focused Style of Coping, PSI=Problem Solving Inventory, CAPSI=Child and Adolescent Problem Solving Inventory.

Two studies (Seiffge-Kranke & Beyers, 2005; Dawson, 2009) benefitted from using interviewer-rating for assessing attachment state of mind and one study benefitted from using parents as respondents (Howard & Medway, 2004) however they received a 'poorly addressed' rating rather than 'adequately addressed' because they used only self-report measures for coping dimensions.

- Results

Clarity of reporting; most papers receive ratings of 'well-covered' for this criterion. The clarity of reporting allowed independent judgement of the results. Only one study (Howard & Medway, 2004) achieved 'adequately addressed'.

Consideration of confounding variables: Only four studies were strengthened by the use of analyses that allowed the researchers to control for the confounding variable of gender (Holmberg *et al.*, 2011; Dawson, 2009; Seiffge-Kranke & Beyers, 2005; Kemp & Neimeyer, 1999).

Appropriateness of analysis: Two studies (Mota & Matos, 2013; Wei *et al.*, 2003) used structural equation modelling to explore the relationships they were investigating. Regression analysis was performed by five studies (Franczak, 2012; Holmberg *et al.*, 2011; Lopez *et al.*, 2001; Torquati & Vazsonyi, 1999; Greenberger & McLaughlin, 1998). One study used mediation analysis (Dawson, 2009), one reported using ANOVA (Kemp & Neimeyer, 1999) and one reported using MANOVA followed by LCG modelling (Seiffge-Kranke & Beyers, 2005). One study (Howard & Medway, 2004) reported employing "correlations" only and therefore received the poorest rating.

Effect sizes: None of the studies reported the effect sizes that they obtained. The importance of reporting and considering effect sizes, in addition to the significance level of results, was highlighted in a recent paper by Masicampo and Lalande (2012). They reported that in the published literature there are a disproportionate number of significant findings that achieve significance with p values in the range of .045 to .05 i.e. just achieving criterion for statistical significance. They point out that the .05 criterion is an arbitrary cut off and that undue emphasis is placed on this over and above consideration of the actual size of the effect found. Therefore, effect sizes were calculated where descriptive statistics were reported and this could be done. This resulted in 3 papers' effect sizes being calculated. The remaining effect sizes could not be calculated due to limitations on information reported in the papers. See table 5.

2.4.5 Narrative synthesis of study findings

The variety of measures used across the studies precluded carrying out direct comparisons of the study findings. The majority of studies reported on the association between a person's attachment status, falling into secure or insecure categories, and the coping behaviours that they report using.

Franczak (2012) reported that in a moderate sample of nurses, attachment style differentiated the way that the nurses coped with stress. Secure attachment was reported to significantly predict ability to cope under difficult circumstances whilst insecure attachments predicted distorted and ineffective coping behaviours. Examination of the correlations and multiple regression analysis showed that attachment styles differentiate the ways of coping with stress and that attachment styles are essential predictors of the

ways of coping with stress. The author acknowledged that this study was limited to ways of coping in a specific group of (female) nurses and that the study did not take into account variables such as personality traits or the current family-environment situation of the respondents. Beyond this, the strength of these findings was limited by the use of self-report items to measure attachment and coping, the implications of which are detailed above. Additionally, a Polish translation of the Ways of Coping Questionnaire (Folkman & Lazarus, 1884) was employed although they do not present any further information regarding the proven validity of using the questionnaire in this way. Furthermore, whilst having collected demographic information regarding participants' marital status and educational attainment, these do not seem to have been considered as possible confounding factors within preliminary analysis.

Seiffge-Krenke and Beyers (2005) employed a longitudinal design. Coping was assessed at all five time points (age 14, 15, 16, 17 and 21) using the CASQ. Individuals retrospectively assigned to the secure attachment group were found to develop strategies of dealing with problems more actively across the five time periods; those assigned to the secure and dismissing attachment domains were found to develop use of more internal coping than preoccupied individuals. The authors identify a number of limitations of their study; they measured one of their main variables (attachment) at one point in time, explaining that this was because at the start of the study no adolescent adaptation of the AAI existed. Thus they have assumed that a stable attachment state of mind exists across early adolescence and into early adulthood. Self-report measures and small sample size were identified by the authors as being limitations of this study. A further potential limitation of

this study is that the stressfulness of certain life events that participants were asked to rate on was not assessed. Research on coping has demonstrated that the controllability of a stressor influences the extent to which a given coping mechanism is adapted (Lazarus, 1998).

In terms of generalizability of findings, the authors highlight that whilst previous studies analysis of German samples have shown marked differences in the differences of attachment representation, this study found distribution of attachment representation to be highly similar to the "standard distribution" reported for comparable American populations. It would seem that the author's failure to measure attachment across time is the greatest limitation of this study, particularly given the use of participants throughout their adolescence and into young adult hood. Adolescence is recognised as a period of transition with regards neurological, cognitive and socio-psychological development, and the advance of adolescence sees young people spending less time with parents and more time with peers (Moretti & Peled, 2004). The study would have benefitted from using some measure of attachment at each point in the study, as well as assessing attachment to parents and attachment to peers as separate factors.

Table 5. Effect sizes for relationships investigated between attachment and coping:

Paper	Relationship	Effect size
Lopez *et al.,* 2001	Anxious attachment negatively related to reactive coping ** Avoidant attachment negatively related to reactive coping and suppressive coping *	Could not be calculated: No mean or SD reported
Howard & Medway, 2004	Attachment security correlated with: -family communication** -negatively with negative avoidance** Insecure-fearful attachment correlated with: -negative avoidance** -positive avoidance* Insecure dismissive attachment correlated with: -negative avoidance **	Could not be calculated: No mean or SD for attachment groups with males and females grouped together (as this was how analysis was conducted) reported.
Dawson, 2009	Teens' preoccupied attachment predicts use of negative coping strategies ** Teens' dismissing attachment predicts use of negative coping strategies**	Could not be calculated: No mean or SD for attachment groups of males and females grouped together (as this was how analysis was conducted) reported.
Holmberg *et al.,* 2011	Attachment anxiety related to use of: -distancing	Could not be calculated: No mean or SD reported

	-emotion focussed	
	Attachment avoidance negatively related to use of:	
	-social support seeking from partner*** and family/friends***	
Wei *et al.*2003	Attachment anxiety correlated to use of:	
	-Suppression **	r=.14 (small)
	-Reaction **	r=.23 (small)
	Attachment avoidance (correlated to use of:	
	-Suppression****	r=.78 (large)
	-Reaction****	r=.76 (large)
Kemp & Neimeyer, 1999	No statistically significant relationships between coping and attachment found.	n/a
Mota & Matos, 2013	Peer attachment has a positive and direct effect on active coping.	
	Social skills mediates the relationship between peer attachment and active coping****	Could not be calculated: SD not reported
Franczak, 2012	Higher mother-avoidance attachment scores reveals a lower tendency to choose positive ways of coping:	
	• social support seeking**	r=.70 (large)
	• planned problem solving**	r=.70 (large)
	• positive revaluation*	r=.63 (large)
	Higher mother-fear scores reveals a higher likelihood of individuals blaming themselves for the source of stress**	r=.80 (large)
	The avoidance-father attachment score is positively correlated with coping with stress by:	
	• escaping source of stress **	r=.71 (large)

	The fear-father attachment score is significantly correlated with: • distancing • taking responsibility	 r=.87 (large) r=.89 (large)
Greenberger & McLaughlin, 1998	*Males*: Security in current, non-parental attachments made a unique contribution to effect coping by seeking the emotional support.* Early attachment to father made a unique contribution to coping by seeking emotional support and seeking instrumental support* Early attachment to mother made a unique contribution to coping by seeking instrumental support and planning and acting* *Females*: Adult security of attachment made a unique contribution to: • seeking emotional support** • seeking instrumental support**	Unstandardised regression coefficient sizes could not be calculated as SD of DV was not reported.
Seiffge-Krenke & Beyers, 2005	Attachment group related to use of different styles of coping. Dismissing individuals reported lower active coping than secure individuals. Secure and dismissing individuals showed significant increases in internal coping between ages 14 and 21.	MANOVA effect size calculator not available
Torquati & Vazsonyi, 1999	Insecure participants were more likely to use avoidance in relationships with: ▪ mother*** ▪ father*	 d=.68 (medium) d=.36 (small)

▪ partner**	d=.87 (large)
Insecure participants were more likely to use support seeking in reference to conflict with:	
▪ mother**	d=.60(medium)
▪ partner***	d=.87(large)

*p=<.05, **p=<.01, ***p=<.001, ****p=<.0001. SD=Standard deviation, M=Mean

In a study designed to assess the relationship between attachment styles and both coping style and reported stress in a sample of adolescents, Howard and Medway (2004) reported that adolescents who scored higher on attachment security also scored higher on the use of family communication, lower on negative avoidance strategies and higher on positive avoidance. Those scoring higher on the dismissive attachment showed greater negative avoidance. Those reporting more highly on the fearful attachment dimension reported greater endorsement of negative avoidance strategies and this was significantly negatively related to positive avoidance strategies. The data also showed a relationship between preoccupied avoidance and negative avoidance. Adolescents' view of self and other increasing in positivity was related to increases in positivity and coping through family communication and decreases in coping through negative avoidance.

The authors do not explain why analysis consisted only of simple correlation analysis but small sample size may have limited ability to carry out a more thorough investigation of findings. The study benefitted from using a number of measures of attachment, including asking parents to estimate their children's attachment style. Whilst the authors recognise a degree of skew in their sample toward high motivation, low stress, low substance use and low peer relationship problems, a lack of consideration of confounding variables, small sample size and limited analysis of findings resulted in this paper being considered to have very limited generalizability.

Torquati and Vazsonyi (1999) reported on an investigation of a number of concepts relating to coping and attachment. With regards specific reporting on the relationship between coping and attachment, they compared strategies of coping (using the Child and adolescent problem solving

inventory) with interpersonal conflict as a function of attachment style (measured using the AAS). They reported results supportive of attachment as an organisational construct for coping, with insecure participants being more likely to use avoidant strategies to cope with conflict in relationships with parents and partners, and being more likely to seek support in relation to conflict with mothers and dating partners. They interpret this as being consistent with previous research indicating insecure attachment to be associated with more emotion-focussed attachment. The study benefitted from separating out parental and partner attachment as this adds to our understanding of the effect of past and current relationships on ability to cope with life stressors.

Whilst the authors identified a number of limitations including the small sample size, exclusive use of self-report measures and a female-only sample, additional limitations not identified or addressed by them include not assessing age as a confounding variable. They also report devising their own items for measuring "activation" of the attachment system. Yet do not elaborate how these were devised nor their validity for use in the study. There is also some confusion within their reporting of their findings as they describe using t-tests to assess the relationships between attachment and coping, they report ANOVA F-values in their table of results. These limitations may restrict the value and generalizability of their findings.

Kemp and Neimeyer (1999) used a sample of participants who had been pre-screened for clearly identifiable attachment styles. They reported on the relationship between attachment style and coping. Their findings ran contrary to predictions in that secure attachment was not significantly

associated with social support seeking. The authors propose that low Cronbach alphas for the WOC instrument may be responsible for the failure to find predicted differences in social support seeking, or alternatively that the stress levels of the stressful events were not high enough to evoke social support seeking in this group.

Hypothesis regarding dismissing attachment were also not born out, as they did not report higher levels of distancing coping. It was suggested by the authors that participants in this group are so effective at suppressing awareness of distress that they do not experience (so do not report) avoidance or distancing behaviours. They suggest that physiological measures and clinical judgement may have been more effective measures with the dismissing group over and above the use of self-report measures as was employed in this study. Of note, participant age was not considered as a potential confounding variable. Given that participants' ages ranged from 14 to 19 years and the transitions that occur during adolescence, it may be that they have missed a contributing factor in their analysis.

In a study of college students, Greenberger and McLaughlin (1998) investigated the relative importance of perceived security in early parental relationships versus security in adult (non-parental) relationships for understanding respondents' coping dispositions and explanatory styles. They reported that secure attachment is positively related to support seeking and active problem solving coping styles and that security of adult attachments had stronger associations with female coping strategies than security of early attachment to parents. The reverse was true for males. This was interpreted as a difference in girls' earlier progress in emotional

autonomy from parents and earlier progress in establishing intimate relationships with peers. This was the only study in the review that examined the associations of both early security with parents and current non-parental relationship security to adolescents' coping and explanatory styles. The authors of this study questioned the brief measures and reliance on self-report used in their study to assess attachment.

This study benefitted from use of measures of attachment to parental (mother and father) and non-parental others; this allows for additional understanding of the effect of past and current relationships on ability to cope with life stressors. However, they did not include a measure to identify parent relationship status and contact the participant had with each parent during their childhood. Maternal and paternal ratings of attachment between participants may have been skewed by such factors. Additionally, participant age and ethnicity were not controlled for in analysis.

Two studies (Holmberg *et al.*, 2011; Lopez *et al.*, 2001) looked at coping in relation to insecure attachment dimensions. Holmberg *et al.* (2011) reported on the link between adult insecure attachment dimensions and coping. They reported that attachment avoidance predicted less social support seeking from both partner and others and attachment anxiety predicted more emotion-focussed coping. They investigated the sequence of employing coping strategies, reporting that dismissing attachment predicted later use of support seeking from partner and earlier use of distancing coping whereas preoccupied attachment predicted earlier use of emotion-focussed coping.

The authors identify some limitations of their study; detecting interactions using regression analysis with such a small sample may have led to some

findings being missed in the analysis.; the study also required participants to think of a stressful event that had happened within the last 6 months, meaning that they were retrospectively considering how they had coped with a stressor. Retrospective recall may reveal more about how participants think they ought to have coped rather than how they did cope. Additional limitations of this study are that they did not control for age or gender and whilst it was a requirement for participating in their research, they did not gather corroborative evidence that participants had been in a relationship for at least 6 months so participants may not have actually met inclusion criteria.

Lopez *et al.* (2001) examined relations among adult attachment dimensions (using the ECR), maladaptive coping styles (using the PF-SOC) and current distress. They reported findings that anxious attachment is significantly and negatively related to reactive coping but is not significantly correlated with suppressive coping. They also reported that avoidant attachment is significantly related to reactive and suppressive coping.

The authors highlight a number of limitations to their study including the fact that the correlation nature of their analysis precluded causal inferences of conclusions about the observed variable relationships, and the small sample size in this study meant that power was limited, precluding sensitive assessment of possible interaction effects. They also highlighted their reliance on self-report measures for this study as a limitation. A further potential limiting factor with this study is the categories of attachment that they used. They used a measure that produces scores of attachment anxiety and attachment avoidance and these were used for analysis. This may mean that nuances of attachment insecurity including preoccupied attachment

styles may have been missed in analysis. Use of a measure that differentiates attachment states along additional scales such as the RQ may have been helpful for interpretation of results.

Three studies (Mota & Matos, 2013; Dawson, 2009; Wei *et al.*, 2003) were interested in attachment and coping in relation to factors that may mediate or be mediated by these dimensions. In a study of Portuguese adolescents living in orphanages, Mota and Matos (2013) investigated the contribution of peer attachment in predicting active coping and self-esteem. They also explored the mediating role of social skills in the association between peer attachment, coping, and self-esteem. The main finding with regards the relationship between attachment status and coping was that peer attachment had a direct and positive effect on active coping. SEM revealed that social skills have a direct and positive effect on active coping and there is a mediating role of social skills between quality of peer attachment and development of active coping skills. This highlights the complexity of the relationship between attachment and development of coping skills and shows that there are other contributing factors that must be considered when thinking about this relationship; it cannot be reduced down to a simple causal relationship between attachment and coping.

Whilst these findings indicate important links in the formation and use of relationships, coping and personal resources, the authors indicate that they are limited in their generalizability to other populations because of small sample size, gender bias and specific type of sample. Use of self-report measures was highlighted as a study limitation, with the method bias this inherently brings. Furthermore, some of the measures used (i.e. some

dimensions of the CASQ) presented low levels of reliability, which may have compromised some of the results presented. Another important limitation presented by the authors is that despite using SEM to test causal models, because data was collected at one time-point, results do not provide proof of actual causal relationships. A limitation not identified by the authors is that they whilst they proposed to measure only peer attachment within their sample, they do not control for participants' attachment to significant adults in their lives for example orphanage staff. This may account for some of the effect of peer attachment used in their mediation model and so conclusions about the SEM may be seriously compromised.

Dawson (2009) reported on the relationship between attachment insecurity (measured using the AAI) and negative coping (measured using COPE) as part of a larger, longitudinal investigation into adolescent social development. They reported that teens' preoccupied attachment at age 14 predicts likelihood of teens using negative coping strategies at age 22 and that teens' dismissing attachment at age 14 was significantly related to teens using negative coping strategies at age 22. These findings were investigated as part of a mediation model that also included reported externalising behaviour in insecurely attached individuals.

Mediation analysis revealed that the use of negative coping strategies by young adults mediated the relationship between adolescent insecure attachment classifications and self-reported externalizing behaviours exhibited in young adult hood. The authors highlight what appear to be the main study weakness in that coping was measured concurrent to externalising behaviour approximately eight years after the attachment

classification was made. It would have been more helpful had negative coping been assessed originally with attachment to give a measure of change over time. Insecure attachment was assumed to be stable over time, and the study may have been better served by assessing attachment again at time two. There is not sufficient consistency or sufficient longitudinal findings to support attachment classification as being stable throughout development. The other main limitation identified by the authors was the failure to use a measure of attachment that explored all attachment subtypes. The importance of this has been reviewed above.

Finally, Wei *at al.* (2003) examined perceived coping as a mediator between adult attachment and psychological distress. They used a large sample to conduct SEM analysis. They reported that perceived coping fully mediated the relationship between attachment avoidance and psychological distress and partially mediated the relationship between attachment avoidance and psychological distress. SEM also confirmed adult attachment is associated with stable ways in which people appraise and cope with distress and that people with anxious and avoidant attachment appraise their coping as more ineffective. Their findings provide additional information about the link between attachment and coping by focussing on dispositional measures of problem solving or coping; the results confirmed that adult attachment is associated with stable ways in which people appraise and cope with distress. The authors highlight what they consider strengths of this study in terms of increased power, stronger statistical analyses, and stronger conceptualisation and measurement of both coping and psychological distress. They recognise limitations with their study design with regards use of correlational analysis and making claims regarding causal relationships, use of self-report

measures and mood effects. Study limitations that they did not address include no reporting on participant age and no consideration of this as a potential confounding variable, and they only considered attachment anxiety and avoidance in their study, again, limiting consideration of the effect other sub-types of attachment might have on coping.

2.5 Discussion

The aim of this review was to identify what is currently known about the relationship between attachment status and coping style in adolescent and adult populations.

2.5.1 Summary of the evidence base.

The systematic search revealed very little research evidence currently available regarding an association between attachment and coping. The studies that were identified showed mixed results all identified significant methodological issues with their study designs. As a result and taking into account the problems described above, it is difficult to draw meaningful conclusions. The review suggests that there would be some value in carrying out studies designed to longitudinally assess the stability of ways of coping associated with attachment status.

Whilst the majority of the studies were conducted from the perspective that attachment would predict coping, the cross-sectional nature of the research means that all of the results reported could equally support a relationship in the opposite direction. That is that an individual's ability to cope shapes

their current attachment status. Investigations focussing causal modelling of attachment on development of coping styles would allow for conclusions to be drawn about whether attachment precedes an individual's coping strategies or whether the reverse is true. Investigations into the mechanisms underlying the relationship between these concepts are more revealing about how these are related to each other and how they influence behaviour.

Some of the studies identified in the review reported the results of analyses intended to investigate potential mechanisms underlying the relationship between attachment and coping style, and other interactions between these two concepts that may affect individuals' capacity to cope with distress. The findings from these exploratory studies point towards the need for developing robust longitudinal studies to further our understanding of the regulatory processes that underpin coping. They emphasise the need to develop a complex developmental model of coping that is inclusive of a of a variety of developmental variables and takes account of the ways that developmental, experiential and environmental factors may influence, at the very least changes in individual coping and attachment experiences.

2.5.2 Limitations of the included studies

Only eleven papers were identified that addressed this issue. The papers that were identified for inclusion in the review demonstrated marked variations in the measures of attachment and coping dimensions that they elected to investigate, revealing a lack of clarity concerning the concepts central to these studies. More significantly, the review also highlighted problems with the conceptualisation and measurement of attachment that

has been used in the research i.e. the validity of short-item measures versus interview methods and use of categorisation of attachment versus attachment dimensions lying along continuums of, for example, fear and avoidance.

With regards the papers included in this current review, whilst most of the studies retrospectively identified use of self-report measures as somewhat of a problem in measuring these constructs, only two of the included studies used an interview method (Seiffge-Kranke & Beyers, 2005; Dawson, 2009) and these were longitudinal studies who only assessed attachment at one time point across the study. And only one study (Howard & Medway, 2004) asked informants to complete measures about the subjects. Limitations to their use of informants included the fact that they only used informants for a measure of attachment and not for the measure of coping.

It is also necessary to consider whether or not attachment is stable over time, in particular whether it is appropriate to assess this during adolescence, a time when young people are moving away from parental attachments and investing more heavily in peer attachments. Nine of the eleven studies used populations in adolescence and a number of those used populations of students who had recently transitioned to college or university. It was deduced that this had a considerable impact on the validity and generalizability of the findings of the studies included in this review.

Conceptualisation and how insecure attachment categories are implemented in the studies also posed challenges for interpretation with the majority of studies separating insecure attachment into categories of

avoidant/dismissing attachment and anxious/preoccupied attachment whilst some (Torquati & Vazsonyi, 1999) grouped these together as 'insecure attachment' due to low numbers of participants. Other studies reported on dimensionality of attachment using fear and avoidance scores to represent security and insecurity. It is also apparent that the way in which people's coping is measured would benefit from being done in relation to how stressful what they are being asked to think about coping with was.

Only one study included in the review (Kemp & Neimeyer, 1999) attempted to measure the stressfulness of an event by measuring distress caused by the event. A further consideration is how far one can infer a causal relationship between attachment style and coping mechanism (as is suggested by attachment theory) given the more recent SEM analysis studies that are demonstrating the interplay between attachment, coping and aspects of personality traits. On the basis of these observations, it is therefore suggested that priority is given to establishing clarity in the conceptualisation and measurement of attachment as a stable construct and consistent use of these measures in research thereafter. Alongside this, consistency in use of measures of coping combined with distress experienced resulting from the event to be coped with should be an important aspect of studies hoping to assess these constructs. Furthermore, due to the prevalence of correlation statistics reported among the papers, a causation relationship cannot be proven between attachment and coping.

2.5.3 Strengths and weaknesses of review method

The application of broad search terms increased confidence that all possible papers were identified, however, a number of factors meant that this was not

guaranteed. A limited number of databases were searched due to time constraints and only English-language papers were included due to resource limitations. Although papers that were published in languages other than English were excluded, this did not, in fact, result in the exclusion of any studies on this basis alone and this was therefore not considered to be a limitation for this review. The review was limited by lack of access to thesis papers where their published abstracts indicated they should have been included in the review. Authors of all identified thesis were contacted but only one responded (Wei *et al.,* 2003) with details of a published article summarising their thesis research.

Publication bias is a recognised problem when completing a systematic review (Chalmers *et al.,* 1990; Dickersin & Min, 1993). In order to address the potential for publication bias, first authors of identified studies were contacted to request information about any studies relating to the field of search they may have had that had been unpublished. Of the authors that responded, none reported having any unpublished findings.

2.5.5. Implications for practice and future research

The clearest implication of the review is that more research is needed to confirm the links and the direction of the links between attachment and coping style. Additional high quality, longitudinal studies are likely to be the most appropriate design given questions relating to stability of attachment and the link with coping style through adolescence and into adulthood. However, we propose that a necessary first step would be to establish the most appropriate and meaningful way to conceptualise and

measure attachment. A more robust conceptualisation could involve a divergence of studies looking at attachment processes stemming from early experiences of being parented (i.e. studies that assess attachment using interview methods such as the AAI) and of studies looking at attachment processes stemming from current peer and romantic experiences (i.e. the RQ and RSQ). If research can be clearly defined along these lines, a developmentally informed approach to attachment processes and coping styles may be developed.

Additional studies of variables that might mediate the relationship between attachment and coping would provide a more meaningful evidence-base as would a consideration of how attachment and coping present in countries out with the western world. The consistent application of a small subset of measures of attachment and coping would aid comparison of findings across studies and using a variety of sources to obtain information (e.g. self, clinicians, interviewers, observers, parents and peers) would increase the strength of evidence.

Research in this field is important for a number of reasons. Findings that underscore the important role of attachment histories in helping children deal with crises that will affect them later in life indicate that parents and caregivers play a central role in helping their children develop buffers in adolescence and adulthood from stress and crisis (Howard & Medway, 2004). This type of research can also inform psychological interventions for use with young people and adults, for example indicating what skills could be enhanced in young people and adults with regards their attachment style

that may help them cope with difficult life events and stress (Lopez *et al*., 2001)

2.6 References

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978).Patterns of attachment: Assessed in the strange situation and at home. Hillsdale, NJ: Erlbaum.

Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (1993). A psychometric study of the Adult Attachment Interview: Reliability and discriminant validity. *Developmental Psychology, 29,* 870–879.

Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (1993). A psychometric study of the Adult Attachment Interview: Reliability and discriminant validity. *Developmental Psychology, 29,* 870–879.

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

Bowlby, J. (1982/1969). Attachment and loss: Vol. 1. Attachment (2nd ed.). New York: Basic Books.

Bowlby, J. (1988). A secure base: Clinical applications of attachment theory. London: Routledge.

Brennan, K. A., Clark, C. I., & Shaver, P. R. (1998). Self-report measurement of adult attachment. In J. A. Simpson & W.S. Rhodes (Eds.) *Attachment Theory and Close Relationships* (pp. 46-76). New York, Guildford.

Carver, C. S., Scheier, M. F., Weintraub, J. K. (1989) Assessing coping strategies: A theoretically based approach. Journal of Personality and Social Psychology, 56(2), 267-283.

Chalmers, T. C., Frank, C. S., & Reitman, D. (1990). Minimizing the three stages of publication bias. *JAMA: The Journal of the American Medical Association, 263*(10), 1392-1395.

Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology, 58*(4), 644-663.

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

Cozzarelli, C., Sumer, N., & Major, B. (1998). Mental models of attachment and coping with abortion. *Journal of Personality and Social Psychology*, 74, 453-467.

Crowell, J. A. (1990) *Current relationship interview*. Unpublished manuscript, State University of New York at Stony Brook.

Crowell, J.A. & Treboux, D. (1995) A review of adult attachment measures: Implications for theory and research. Social Development, 4, 294-327.

Crowell, J., Treboux, D., Owens, G., & Pan, H. (1995) *Is it True the Longer You're Together the More You Think Alike? Examining two hypotheses of attachment theory*. Paper, presented at the Biennial Meeting of the Society for Research in Child Development. Indianapolis, Indiana.

Dawson, A. E. (2009) Negative coping strategies mediating the relationship of adolescent attachment classifications on future externalising behaviours. Presented at a research conference.

Dickersin, K., & Min, Y. (1993). Publication bias: The problem that won't go away. *Annals of the New York Academy of Sciences, 703*(1), 135-148.

Eisenberg, N., Fabes, R. A., & Guthrie, I. (1997). Coping with stress: The roles of regulation and development. In J.N. Sandler & S.A. Wolchik (Eds.), *Handbook of children's coping with common stressors: Linking theory, research and intervention (pp. 41-70).* New York: Plenum.

Eisenberg, N., Fabes, R. A., Nyman, M., Bernzweig, J. & Pinuelas, A. (1994). The relations of emotionality and regulation to children's anger-related reactions. *Child Development, 65,* 109-128.

Elicker, J., Englund, M. & Sroufe, L.A. (1992). Predicting peer competence and peer relationships in childhood from early parent-child relationships. In R. D. Parke & G. W. Ladd (Eds), *Family-peer relationships: Modes of linkage* (pp.77-106). Lawrence Erlbaum; Hillsdale, NJ:

Field, T. (1985). Attachment as psychobiological attunement: being on the same wavelength. In Reite, M . & Field, T. (Eds). *Psychobiology of Attachment and Separation.* New York: Academic pp. 455–80.

Field, T. (1996). Attachment and separation in young children. *Annual Review of Psychology, 47,* 541-562.

Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: A study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology, 48,* 150-170.

Fraley, R. C., & Waller, N. G. (1998). Adult attachment patterns: A test of the typological model. In J. A. Simpson & W. S. Rholes (Eds.) *Attachment theory and close relationships* (pp. 77-114). New York: Guilford Press.

Franczak, K. (2012). Attachment Styles and the Ways of Coping with Stress in Polish Nurses Attachment Styles and the Ways of Coping with Stress in Polish Nurses. *Advances in Palliative Medicine,* 11, 62-73.

Garcia, C. (2010). Conceptualization and measurement of coping during adolescence: a review of the literature. Journal of Nursing Scholarship, 42(2), 166-185.

George, C., Kaplan, N., & Main, M. (1996). *Adult Attachment Interview protocol(3rd ed).* Unpublished manuscript, University of California at Berkley.

Greenberger, E. & McLaughlin, C. S. (1998). Attachment, coping and explanatory style in late adolescence. *Journal of Youth and Adolescence, 27,* 121-139.

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.

Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52,* 511–524.

Hazan, C., & Shaver, P. R. (1994). Attachment as an organizational framework for research on close relationships. *Psychological Inquiry, 5,* 1–22.

Higgins, J. P., & Green, S. (2011). Cochrane handbook for systematic reviews of interventions. Retrieved 12 December 2013, from www.handbook.cochrane.org

Holmberg, D., Lomore, C.D., Takacs, T.A. & Price, L. (2011). Adult attachment styles and stressor severity as moderators of the coping sequence. *Personal Relationships,* 18(3), 502-517.

Holodynski, M. & Friedlmeier, W. (2006). Development of emotions and emotion regulation. New York: Springer.

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

Jüni, P., Witschi, A., Bloch, R., & Egger, M. (1999). The hazards of scoring the quality of clinical trials for meta-analysis. *The Journal of the American Medical Association, 282*(11), 1054-1060.

Kemp, M. A. & Neimeyer, G. J. (1999). Interpersonal attachment: experiencing, expressing and coping with stress. *Journal of Counseling Psychology, 46*, 388-394.

Kliewer, W., Sandler, I. N., & Wolchik, S. (1994) Family socialization of threat appraisal and coping: Coaching, modeling and family context. In F. Nestmann & K. Hunelmann (Eds.), *Social networks and social support in childhood and* adolescence (pp. 271–291). Berlin: de Gruyter.

Lazarus, R. S. (1993). Coping theory and research: Past, present, and future. *Psychometric Medicine, 55,* 234-247.

Lazarus, R. S. (1998). *Stress and emotion: A new synthesis.* New York: Springer.

Lopez, F. G., Mauricio, A. M., Gormley, B., Simko, T. & Berger, E. (2001). Adult attachment orientations and college student distress: The mediating role of problem solving styles. *Journal of Counseling and Development, 79,* 459-464.

Maccoby, E. E. (1983). Social-emotional development and response to stressors. *In N. Garmezy & M. Rutter (Eds.), Stress, coping and development: Issues and perspectives* (pp. 217-234) McGraw-Hill.

Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood and adulthood: A move to the level of representation. *Monographs of the Society for Research in Child Development, 50*(1-2, Serial No. 209).

Markus, H., & Cross, S. (1990). The interpersonal self. In L. A. Pervin (Ed.) *Handbook of Personality: Theory and Research* (pp. 576-608). NY: Guilford.

Masicampo, E., & Lalande, D. R. (2012). A peculiar prevalence of p values just below. 05. *The Quarterly Journal of Experimental Psychology, 65*(11), 2271-2279.

Mead, G. H. (1934). *Mind, self and* society: Chicago: University of Chicago Press.

Mikulincer, M., & Florian, V. (1995). Appraisal and coping with a real-life stressful situation: The contribution of attachment styles. *Personality and Social Psychology Bulletin, 21,* 408-416.

Mikulincer, M., Florian, V., & Weller, A. (1993). Attachment styles, coping strategies, and posttraumatic psychological distress: the impact of the Gulf War in Israel. *Journal of personality and social psychology, 64 (5),* 817.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G. (2009). The PRISMA Group *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement.

Moretti, M. and Peled, M. (2004) Adolescent-parent attachment: Bonds that support healthy development. *Paediatrics and Child Health*, 9 (1), 551-555.

Mota, C. P. & Matos, P. M. (2013). Peer attachment, coping and self-esteem in institutionalized adolescents: The mediating role of social skills. *European Journal of Psychology of Education, 28,* 1, 87-100.

NICE (2012). Methods for the development of NICE public health guidance (third edition), Appendix G Quality appraisal checklist – quantitative studies reporting correlations and associations. Retrieved 12 December 2013 from http://publications.nice.org.uk/methods-for-the-development-of-nice-public-health-guidance-third-edition-pmg4/appendix-g-quality-appraisal-checklist-quantitative-studies-reporting-correlations-and

Pietromonaco, P. R. & Feldman Barret, L. (2000). The internal working models concept: What do we really know about the self in relation to others? *Review of general psychology, 4*(2), 155-175.

Power, T. G. (2004). Stress and coping in childhood: The parents' role. *Parenting Scientific Practice, 4,* 271-317.

Seiffge-Krenke, I. & Beyers, W. (2005). Coping trajectories from adolescence to young adulthood: Links to attachment state of mind. *Journal of Research on Adolescence, 15*(4), 561-582.

Shaver, P.R. and Mikulincer, M. (2002). Attachment-related psychodynamics. *Attachment and Human Development, 4*(2), 133-161.

Schwarzer, R. & Schwarzer, C. (1996). A critical survey of coping instruments. In M. Zeidner & N. S. Endler (Eds.) *Handbook of Coping*. New York: Wiley.

Skinner, E. A., & Edge, K. (2002). Parenting, motivation, and the development of children's coping. In L. J. Crockett (Ed.). Agency, motivation, and the life course: The Nebraska symposium on motivation (Vol. 48, pp. 77–143). Lincoln, NE: University of Nebraska Press.

Skinner, E., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: A review and critique of category systems for classifying ways of coping. Psychological Bulletin, 129, 216-269.

Smith, A. E. M., Msetfi, R. M., & Golding, L. (2010). Client self rated adult attachment patterns and the therapeutic alliance: A systematic review. Clinical Psychology Review, 30(3), 326-337

Skinner, E. A. & Zimmer-Gembeck, M. J. (2007). The development of coping. *Annual Review of Psychology, 58*, 119-144.

Sroufe, L. A. (1996). Emotional development: The organization of emotional life in the early years. New York: Cambridge University Press.

Torquati, J.C. & Vazsonyi, A.T. (1999). Attachment as an organizational construct for affect, appraisals, and coping of late adolescent females. *Journal of Youth and Adolescence,* 28(5), 545-562.

Wei, M., Heppner, P. & Mallinckrodt, B. (2003). Perceived coping as a mediator between attachment and physiological distress: A structural equation modeling approach. *Journal of Counseling Psychology, 50*(4), 438-447.

Wilson, J. M. & Wilkinson, R. B. (2012). The Self-Report Assessment of Adolescent Attachment: A Systematic Review and Critique. *Journal of Relationships Research, 3*, 81-94.

2.7 Appendices

Appendix 1. NICE Checklist (Appraisal checklist – quantitative studies reporting correlations and associations)

Study identification: Include full citation details	
Study design: Refer to the glossary of study designs (appendix D) and the algorithm for classifying experimental and observational study designs (appendix E) to best describe the paper's underpinning study design	
Guidance topic:	
Assessed by:	
Section 1: Population	
1.1 Is the source population or source area well described? Was the country (e.g. developed or non-developed, type of health care system), setting (primary schools, community centres etc), location (urban, rural), population demographics etc adequately described?	++ + – NR NA
1.2 Is the eligible population or area representative of the source population or area? Was the recruitment of individuals, clusters or areas well defined (e.g. advertisement, birth register)? Was the eligible population representative of the source? Were important groups underrepresented?	++ + – NR NA
1.3 Do the selected participants or areas represent the eligible population or area? Was the method of selection of participants from the eligible population well described? What % of selected individuals or clusters agreed to participate? Were there any sources of bias? Were the inclusion or exclusion criteria explicit and appropriate?	++ + – NR NA
Section 2: Method of selection of exposure (or comparison) group	
2.1 Selection of exposure (and comparison) group. How was selection bias minimised? How was selection bias minimised?	++ + – NR NA
2.2 Was the selection of explanatory variables based on a sound theoretical basis? How sound was the theoretical basis for selecting the explanatory variables?	++ + – NR NA
2.3 Was the contamination acceptably low? Did any in the comparison group receive the exposure?	++ +

If so, was it sufficient to cause important bias?	– NR NA
2.4 How well were likely confounding factors identified and controlled? Were there likely to be other confounding factors not considered or appropriately adjusted for? Was this sufficient to cause important bias?	++ + – NR NA
2.5 Is the setting applicable to the UK? Did the setting differ significantly from the UK?	++ + – NR, NA
Section 3: Outcomes	
3.1 Were the outcome measures and procedures reliable? Were outcome measures subjective or objective (e.g. biochemically validated nicotine levels ++ vs self-reported smoking –)? How reliable were outcome measures (e.g. inter- or intra-rater reliability scores)? Was there any indication that measures had been validated (e.g. validated against a gold standard measure or assessed for content validity)?	++ + – NR, NA
3.2 Were the outcome measurements complete? Were all or most of the study participants who met the defined study outcome definitions likely to have been identified?	++ + – NR, NA
3.3 Were all the important outcomes assessed? Were all the important benefits and harms assessed? Was it possible to determine the overall balance of benefits and harms of the intervention versus comparison?	+++ – NR, NA
3.4 Was there a similar follow-up time in exposure and comparison groups? If groups are followed for different lengths of time, then more events are likely to occur in the group followed-up for longer distorting the comparison. Analyses can be adjusted to allow for differences in length of follow-up (e.g. using person-years).	++ + – NR, NA
3.5 Was follow-up time meaningful? Was follow-up long enough to assess long-term benefits and harms? Was it too long, e.g. participants lost to follow-up?	++ + – NR, NA
Section 4: Analyses	
4.1 Was the study sufficiently powered to detect an intervention effect (if one exists)?	++ +

A power of 0.8 (i.e. it is likely to see an effect of a given size if one exists, 80% of the time) is the conventionally accepted standard. Is a power calculation presented? If not, what is the expected effect size? Is the sample size adequate?	− NR, NA
4.2 Were multiple explanatory variables considered in the analyses? Were there sufficient explanatory variables considered in the analysis?	++ + − NR, NA
4.3 Were the analytical methods appropriate? Were important differences in follow-up time and likely confounders adjusted for?	++ + − NR, NA
4.6 Was the precision of association given or calculable? Is association meaningful? Were confidence intervals or p values for effect estimates given or possible to calculate? Were CIs wide or were they sufficiently precise to aid decision-making? If precision is lacking, is this because the study is under-powered?	++ + − NR, NA
Section 5: Summary	
5.1 Are the study results internally valid (i.e. unbiased)? How well did the study minimise sources of bias (i.e. adjusting for potential confounders)? Were there significant flaws in the study design?	++ + −
5.2 Are the findings generalisable to the source population (i.e. externally valid)? Are there sufficient details given about the study to determine if the findings are generalisable to the source population? Consider: participants, interventions and comparisons, outcomes, resource and policy implications.	++ + −

Appendix 2. STROBE Statement—Checklist of items that should be included in reports of *cross-sectional studies*

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	
Objectives	2 Explain the scientific background and rationale for the investigation being reported
Methods Study design	3 State specific objectives, including any prespecified hypotheses
Setting	
Participants	4 Present key elements of study design early in the paper
Variables	5 Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection
Data sources/	6 (*a*) Give the eligibility criteria, and the sources and methods of selection of participants

measurement	
Bias	7 Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable
Study size	
Quantitative variables	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
Statistical methods	
Results	
Participants	9 Describe any efforts to address potential sources of bias
	10 Explain how the study size was arrived at
Descriptive data	11 Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why
Outcome data	
Main results	12 (*a*) Describe all statistical methods, including those used to control for confounding
Other analyses	(*b*) Describe any methods used to examine subgroups and interactions
Discussion	(*c*) Explain how missing data were addressed
Key results	(*d*) If applicable, describe analytical methods taking account of sampling strategy (*e*) Describe any sensitivity analyses
Limitations	
Interpretation	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
Generalizability	(b) Give reasons for non-participation at each stage
Other information	(c) Consider use of a flow diagram
Funding	
	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
	15* Report numbers of outcome events or summary measures
	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 17 Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses 18 Summarise key results with reference to study objectives 19 Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias 20 Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence 21 Discuss the generalizability (external validity) of the study results 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

3. Bridging chapter

3.1 Introduction

A review of the literature reveals that it has proven difficult to devise quality, robust investigations into the role that attachment may play in determining the coping behaviours used by individuals. The majority of studies also fail to embed their correlational observations about attachment states and coping behaviours within a model of the development of coping. Whilst there is some limited evidence that sits in line with theoretical suppositions that attachment security correlates with coping behaviours used by individuals, the literature also indicates that it is too simplistic to consider a direct and linear relationship between attachment state and coping behaviours. Rather, it would seem to be the case that there are a number of factors that interplay to shape how an individual will respond to life stressors.

It is beyond the scope of this research project to investigate all of the potential mechanisms that may contribute to determining coping behaviours. However, developing our understanding of the potential contributors is key because coping plays such an important role in how able individuals are to manage the effects of stress and adversity that come into their lives (Skinner & Zimmer-Gembeck, 2007). Coping in adolescence in particular is a relevant concept in health risk behaviour (Steiner et al., 2002) given that this period is marked by an expansion and diversification of ways of dealing with stressors (Mullis & Chapman, 2000). This project proposes to consider some of the processes that underpin coping in adolescents, explore the relationship between some of the identified concepts that underpin and shape coping

behaviours and how these also contribute to adolescent participation in health risk behaviours.

3.2 Conceptualising the Coping Process

Considering definitions of coping and conceptualisation of the coping process is an important first step before examining contributors that may shape or guide coping behaviours. However, difficulties in establishing clear conceptualisation of coping as well as a consensus of how this can best be done has led to some confusion. This includes uncertainty around measurement, difficulties in carrying out meta-analysis and direct comparison between studies, as well as creating difficulties in documenting other differences in coping that relate to numerous other variables (Compas et al., 2001).

Models of coping include Lazarus and Folkman's (1984) model which views coping as a dynamic process which changes in response to the changing demands of a given stressor. Coping is conceptualised as purposeful responses involving problem-focused coping (to resolve the stressful relationship between self and environment) and emotion-focussed coping (palliating negative emotions that arise from stress). Thus, coping is defined as a goal-directed process where resolving the source of stress and managing the emotional reactions to stress are the focus of the individuals thoughts and behaviours. This sits within a broader motivational model of psychological stress and emotion that highlights the role of cognitive appraisal in determining what an individual finds stressful (Lazarus, 1993).

Where Lazarus and Folkman's (1984) model focuses on purposeful, conscious appraisal and action, Skinner and Wellborn's (1994) model includes both volitional and involuntary or automatic responses to manage threats to competence, autonomy and relatedness (Skinner, 1995). They define coping as "how people regulate their behaviour, emotion, and orientation under conditions of psychological stress" (p. 112). Their model sits within a motivational model of coping and psychological control focussing on basic human motives or needs for competence, autonomy, and relatedness.

Coping has also been defined as a subset of the broader category of self-regulation (Eisenberg et al., 1997). That is to say individuals are involved in the regulation of their behaviour and emotions on an ongoing basis, and coping refers specifically to self-regulation in response to stress. (Eisenberg et al., 1996). Three aspects of self-regulation are distinguished including emotion-focussed coping, problem focussed coping and behaviour regulation (Eisenberg et al., 1997). Similar to Skinner and colleagues, they recognise that whilst coping and emotional regulation are processes that typically require effort, coping is not always conscious and intentional and so their framework includes both conscious and automatic response to stress.

It can be seen that models of coping have evolved from describing conscious efforts by the individual to resolve stress and manage the emotions evoked in stressful situations to becoming models that recognise the unconscious processes that play a role in individuals' behavioural and emotional response to stress. Later models have developed these ideas further by categorising coping as a self-regulatory process that relates specifically to the

management of stress-inducing events on both conscious and unconscious levels. A model of coping has also been developed that takes into account factors that contribute to individuals' regulatory processes including aspects of the biological, cognitive, social and emotional development of the individual. These processes include social development, which in itself can be viewed to be underpinned by attachment processes (Compas, 1987; Maccoby, 1983), and biological development, including physiological reactivity tied to autonomic arousal (e.g. Boyce, Barr & Zeltzer, 1992; Lewis, 1989).

If coping has come to be understood as an emotion-regulation process that is underpinned by these factors, it is worthwhile examining how some of these factors may contribute to individuals' coping behaviours. By developing our understanding of the factors that shape coping, we will be better placed to develop psychological and behavioural interventions that will allow individuals to increase their capacity to cope with stress and reduce the negative outcomes for individuals who engage in behaviours typified as unhelpful coping including low mood, substance abuse and interpersonal difficulties.

3.3 Measuring Coping in Adolescents

Individual coping is identified as an important factor in relation to health and well-being. In a number of studies, coping has been shown to make significant contributions to adolescent adjustment and engagement in health risk behaviours (Printz et al., 1999; Seiffge-Krenke et al., 2000). Adolescent coping scales have been criticised for poor statistical choices throughout the

process of scale development and lack of best practice in follow through of their development (Sveibjornsdottir & Thorsteinsson, 2008). Thus, at this time, there is still empirical research to be done in search of latent constructs and possible dimensions of coping through the implementation of exploratory factor analysis. This also means that at this time, there is no stand-out best measure to use for assessing adolescent coping.

One example of a measure of adolescent coping is the Adolescent Coping Scale (ACS: Frydenberg & Lewis, 1993). It has been shown to have moderate test-retest reliability and predictive validity in a range of situations. Reliability has been shown to range between Cronbach alphas of .67 and .79 (Frydenberg and Lewis, 1996). Test-retest reliability has been shown to be moderate, ranging from .44 to .81 (Frydenberg & Lewis, 1996). In common with other self-report measures of coping, the ACS allows for a consideration of a profile of coping responses. Also in common with other measures of coping, the ACS asks respondents to indicate how they deal with, or would in a hypothetical situation deal with, a particular stressful situation. It identifies three coping styles which summarise the various strategies adolescents use. These coping styles are productive, non-productive and reference to others. *Productive coping style* strategies involve solving the problem, focusing on the positive, seeking to belong, physical recreation, seeking relaxing diversions and working hard and achieving. *Non-productive coping style* (inability to cope) strategies include worrying, investing in close friends, wishful thinking, seeking to belong, ignoring the problem, tension reduction, keeping to self, not coping and self-blame. *References to others* strategies include seeking support, seeking spiritual support, seeking professional support and social action.

Whilst current coping measures can provide us with useful information about how individuals perceive their own coping and their capacity to access coping strategies, they are flawed in that they may be influenced by respondents providing answers in line with how they *think* they should respond to stress rather than how they really do respond to stress. One way of uncovering whether what individuals say they do actually reflects how well they are coping with life stressors is to ask them about specific aspects of health-related behaviours, which, as already discussed often have poor output where individuals are not coping in productive ways. For example, alcohol and drug use has been identified as a coping response to psychological strain (Preston, 2006), which may result from an avoidant, unproductive coping style. Additionally, coping with stress through escape behaviour induced by risk taking (Brady& Donenberg, 2006) has also been recognised. Such research indicates that coping mechanisms influence adolescent engagement in risk-taking (Steiner et al., 2002) and emphasises the importance of clinical interventions which promote adaptive coping strategies, maintaining healthy behaviour, effective problem solving and stress management techniques (Goodwin, 2006).

3.4 Attachment Processes and coping

Developmental research concerned with how coping behaviour is shaped has recognised the importance of social relationships and contexts in shaping coping behaviour (Compas, 1987; Maccoby, 1983, Murphy & Moriarity, 1976). The important role that social partners and in particular parents play in the development of children's coping has been well documented (Kliewer

et al., 1994; Power, 2004, Skinner & Edge, 2002, Zimmer-Gembeck & Locke, 2006). This includes the role that parents play in determining the stressors their children are exposed to throughout childhood, parents' ability to help their children develop their self-efficacy and social skills and through parents' own emotions and actions. Parents also help children to learn from bad experiences for example how to proactively cope by planning behaviour to prevent the reoccurrence of negative events. In line with this, research on attachment processes has demonstrated links between availability of support and quality of relationships and between children's physiological and psychological stress reactivity, regulation and coping (Skinner & Zimmer-Gembeck, 2007). It would therefore seem to be the case that early relationship experiences are tied to early coping development. The precise mechanisms through which social forces shape coping are beginning to be explored (Eisenberg et al., 1997; Power, 2004) and of particular interest are studies which examine the ways that children are socialised into coping by their carers both implicitly (via comforting, helping and soothing e.g. Holodynski & Fridlemeier, 2006; Sroufe, 1996) that is to say whether carers are able to respond appropriately to the child's emotional needs in a warm and caring manner or not, and explicitly (through modelling and coaching e.g. Kliewer et al., 1994).

Attachment theory (Bowlby, 1982, 1988; Ainsworth et al., 1978) can suggest the psychological mechanisms by which implicit socialisation by caregivers influences coping behaviour in westernised populations. It proposes that children who experience a secure attachment relationship with their primary caregivers are likely to develop internal models of others as caring and dependable and of themselves as love-worthy and competent. They are

therefore equipped to seek comfort from others when distressed and are successful in eliciting positive responses. In contrast, insecurely attached infants are unsure whether someone will respond in a time of need and so form less favourable models of themselves and others so may avoid contact with others and reject offers to help when they are distressed (Ainsworth *et al.,* 1978; Elicker *et al.,* 1992).

Attachment processes are theorised to be activated across the life span, albeit in different ways to the parent and child relationship and instead operating in the attachment relationship between two adults (Ainsworth, 1989; Hazan & Shaver, 1994; Shaver, Hazan & Bradshaw, 1988). Hazan and Shaver (1987) investigated attachment patterns in adults that conceptually corresponded to the descriptions of children's attachment behaviour patterns. Following on from this work, research has examined "adult attachment' in a variety of relationships including romantic partners, parents, same and opposite-sex friends, co-workers and strangers (e.g. Carnelley et al., 1994; Collins & Read, 1990; Tidwell et al., 1996; Mikulincer & Nachshon, 1991; Hazan & Shaver, 1992, as cited by Pietromanaco & Fieldman Barret 2001). Thus, research has focussed on a range and variety of adult relationships that may or may not serve attachment needs. It is necessary that what constitutes an adult attachment relationship is examined as some of the research carried out has been done without reference to a specific relationship partner and so may not actually be accessing aspects of adult attachment.

Pietromonaco and Fieldman Barret (2001) propose that "adults experience felt security when their attachment figure confirms that (a) they are loved and lovable people, and (b) they are competent or have mastery over their

environment" (p. 167). With regards activation of regulatory behaviours, an individual perceives themselves to be under threat when a press arises for which the individual feels they are not equipped to manage (Tomaka & Blascovich, 1994). They propose that individuals experience threat when their self-esteem is in question, either because of negative information or they feel unable to deal with a perceived danger on their own. Experiencing a self-relevant threat results in behaviours that will help to re-establish or promote feelings of security. Therefore, securely attached adults (who generally feel competent and worthy) may seek out attachment figures only in relation to experiencing a specific, external threat to the self. They engage in attachment-related behaviours (e.g. support seeking) only when necessary as they infrequently feel threatened. On the other hand, where individuals have a less certain and poorer view of themselves (e.g. people with insecure-preoccupied or insecure fearful adult-relationship attachments) may see many situations as potentially threatening to their sense of self. Thus they may engage frequently in attachment-related behaviours such as support-seeking. In contrast, individuals with a more certain view of themselves but less positive view of others (e.g. dismissing-avoidant individuals) who prefer not to depend on others are less likely to use others as a way of regulating felt security even when they ought to do so. The original descriptions of adult attachment, as derived from infant attachment theory, did not distinguish between specific models of the self and models of others. However, it was assumed that working models were the foundation of the different styles. Later work has developed a more refined scheme that explicitly identifies quality of attachment relationships according to the variables of self and other for example The Relationship Questionnaire (RQ; Bartholomew and Horowitz, 1991; adapted for adolescents by Scharfe, 2002).

It can be seen that the social process of attachment as it develops across the life span plays a role in determining how a person will act in response to threat. It does this first of all by influencing what is perceived as unmanageable and threatening to an individual and secondly by influencing how or whether an individual will engage in attachment-related behaviours to increase felt security. These behaviours are one way by which attachment shapes coping outlined above. As described by Compas and colleagues (Compas, 1998; Compas et al., 1997, 1999) adult attachment processes very likely play a role in driving or inhibiting "conscious volitional efforts to regulate emotion, cognition, behaviour, physiology, and the environment in response to stressful events or circumstances" (Compas et al., 2001, p. 89). Alongside having a role in shaping coping across the lifespan, attachment has also been shown to be correlated with risk taking in adolescence (e.g. Cooper, Shaver & Collins, 1998). A number of later studies investigating the links between attachment security and risky or delinquent behaviours in adolescence have revealed that adolescent attachment security predicts increases in social skills. Conversely, preoccupied teens show relative decreases in skill levels and increases in delinquent behaviour over time (Allen, Marsh, McFarland et al., 2002 and Sarrachino et al., 2010). Such studies have also revealed that securely attached adolescents rate more highly in emotional and social adjustment and are less likely to engage in externalised problem behaviour, including delinquent and aggressive behaviour than insecurely attached teens. These studies indicate that attachment status is linked to features of the adolescent that may influence their involvement in risk behaviours via their development, or not, of certain coping skills. Therefore, it may be that the relationship between attachment

and risky behaviour in adolescents is mediated by their dominant coping profile.

3.5 Temperament and coping

As highlighted above in relation to coping, social factors would seem to play an important role in the development of coping styles. Of particular interest when looking to uncover the underlying processes that guide the development of individual styles of coping, is that it has been suggested that the kinds of parenting that promote children's coping depends on children's temperamental characteristics (Eisenberg & Valiente, 2004). Theorists have suggested that temperament has a potential connection to coping that extends across the lifespan (Compas, 1987; Maccoby, 1983). However, research that links dimensions of temperament to specific ways of coping involves only a handful of studies (e.g. Eisenberg et al., 1994; Lengua & Sandler, 1996).

Temperament can be described as a neurobiological element of the individual, differing from person to person in emotions, sociability and self-control. It is understood that temperament originates in the genes but is also affected by child-rearing practices (Hong & Park, 2012) in that parenting is a reciprocal process where the child and parent influence each other. Where parents have the capacity to modify their behaviour to fit the needs of their children, the influence of temperament on the attachment bond may be negligible (Seifer & Schiller, 1995). However, infants with a difficult temperament may be at risk for developing attachment insecurity when their main caregiver is limited in their capacity to modify their behaviour to fit the

child's needs (Hong & Park, 2012). Thus it can be seen that individuals' temperament may play a role in determining attachment security and also on the development of coping styles via parenting strategies used to teach and facilitate coping in childhood.

Whilst theorists (Compas, 1987; Maccoby, 1983; Rutter, 1983) have pointed out potential connections between coping and temperament, little research has been carried out that links dimensions of temperament to specific ways of coping (Skinner & Zimmer-Gembeck, 2007). Inborn physiological differences in sets of behaviour of responding to environmental stimulation conceptualises temperament at very general level. One group of dimensions relating to coping focuses on reactivity, which describes individuals' differences in arousability or the level of stimulation required to produce positive and negative reactions. For example, children who are highly inhibited are more likely to react to novel stimulus with fear and withdrawal (Fox et al. 2005), whereas some children are predisposed to react to mild stressors (for example, delay) with frustration and anger (e.g. Calkins et al., 2002). High reactivity is generally associated with inhibited temperament and low reactivity with uninhibited temperament. Individual differences in reactivity and temperament are proposed to be related to coping because they affect individuals' initial automatic response to stress and may inhibit or facilitate certain types of coping responses (Compas, 1987). Inhibited temperament relates to the tendency to experience high levels of arousal in novel, threatening or stressful situations and may result in use of avoidance and withdrawal as coping mechanisms. Uninhibited temperament on the other hand is expected to be related to more active and approach-oriented coping responses.

Another broad group of dimensions of temperament that relate to coping refers to regulatory processes. This provides a description of the constitutional differences with how easily infants can modulate their reactivity, either inhibiting or facilitating affective, motor, and attentional responses. Infants higher in dispositional regulation are more able to direct their behaviour and attention, for example disengaging attention from distressing stimuli in ways that return arousal to manageable levels (Rothbart et al,. 1994). Dimensions that describe an "easy" temperament have been implicated in coping (Rutter, 1983). For example, children who are more emotionally positive and sociable have been found to be more resistant to the effects of stress, possibly due to the advantages that their disposition conveys to coping. Coping styles have been shown to correlate with certain personality traits within adult populations also (Maltby et al., 2004). For example, maladaptive shame and avoidant coping style have been found to be associated with psychopathic and impulsive traits in a non-clinical adult population (Campbell & Elison, 2005).

With regards temperament, coping and risk taking in adolescents, coping style and risk-taking behaviour have been shown to be mediated by state dominance, that is to say, the innate bias individuals show in the state of arousal they prefer to experience (Cogan & Schwannauer, 2010). Additionally, Lafreniere and colleagues (Lafreniere et al., 2013) found that there was a correlation between temperament variables and meta-motivational dominance, setting this within a theoretical framework based upon Rothbart and colleagues (2000) model of individual differences in reactivity and self-regulation. Within this model, temperament is measured

based on four overall factors; negative affect (fear, sadness, discomfort, frustration); extraveron/surgency (sociability, positive affect, high intensity pleasure); orienting sensitivity (neural and affective perceptual sensitivity); and effortful control which comprises of the three sub-constructs of attentional control (ability to shift and focus attention appropriately), inhibitory control (ability to suppress inappropriate responses), and activation control (ability to perform an action despite a strong tendency to avoid it). With a focus on effortful control, meta-motivational dominance was explored using reversal theory (Apter, 1982) which suggests people switch between motivational states that are opposite to each other. Lafrenier et al. (2013) also found that rebelliousness and effortful control predicted involvement in risky behaviours. Both of these studies suggests paths by which during adolescence, meta-motivational (i.e. state) dominance influences coping styles and increased participation in health risk behaviours. Given that effortful control is theorised to be part of the system that determines how individuals cope under stress, it may be that the relationship between rebelliousness and involvement in risky behaviours is mediated by an individual's dominant coping profile.

3.6 Reversal Theory

Reversal theory is primarily concerned with how we experience emotion and how this influences our experience and behaviour (Apter, 1982). The theory proposes that individuals fluctuate between different motivational states, or "metamotivational modes", that are opposites of each other. Four main pairs of metamotivational pairs are suggested by reversal theory. The *telic/paratelic* mode relates to felt arousal where the paratelic state is oriented towards gaining as much arousal as possible with high arousal being experienced as pleasant (excitement) and low arousal as unpleasant (boredom). The telic state relates to attempts to reduce arousal as far as possible as in this case, high arousal is experienced as unpleasant (anxiety) and low arousal as pleasant (relaxation). The *negativistic/conformist* modes refer to opposing the rules or tacit requirements of one's current context, or going along with the rules. The *mastery/sympathy* modes concern exerting control over people, situations or things versus wanting sympathy, attention or closeness. The final mode *autic/alloic* refer to directing ones attention and efforts towards oneself (autic) or toward other people (alloic).

A switch or reversal from one state to the other may be brought about under different circumstances with the result that people tend to switch back and forth between the states during the course of everyday life (Apter, 1982). One main way by which people differ from each other is in terms of the innate bias that they have to one state or the other (Apter, 2005), the direction of bias being referred to as state dominance. Dominance implies that individuals will contingently reverse more easily into their dominant state and will satiate more easily and become less frustrated when in this state (Apter, 2001). The concept of dominance allows for the self-contradictions

individuals often display as the concept of dominance rather than trait suggests that one spends more time in that state yet can often be in a non-dominant state as experience it as fully as someone for whom it is dominant (Rutledge & Tucker, 2007). It has been proposed that attempts to induce a particular metamotivational state may help young people cope with stressors (Svebak, 1983; 1991).

In the present study, the constructs of negativism dominance and telic dominance are of particular interest. Negativism or "rebelliousness" due to its presumed connection with adolescent risk-taking behaviour (McDemott, 1988) and which has been demonstrated to be correlated with temperament variables (Lafrenier et al., 2013) and telic state due to its relationship with affect regulation which, as already discussed, is a key component of many models of coping.

3.7 Conclusion

Models of the development of coping draw on a number of underlying biological and psychological mechanisms which contribute to coping behaviour (e.g. Lazarus & Folkman, 1984; Skinner & Wellborn, 1994; Eisenberg et al., 1997; Compas *et al*., 1997, 1999). These include aspects of the biological, cognitive, social and emotional development of the individual. In particular, the effects of early parenting and attachment experiences have been shown to shape coping in individuals (Kliewer et al., 1994; Power, 2004). Adolescent and adult attachment relationships have also been demonstrated to have a role in determining how well individuals believe

they are able to cope and whether or not they will approach others for assistance (Pietromonaco & Fieldman Barret, 2001).

With regards other variables that shape coping, temperament has been shown to influence both attachment experiences and early exposure to coping behaviours (Eisenberg & Valiante, 2004). It has been suggested that temperament has a connection to coping across the lifespan (Compas, 1987, Maccoby, 1983) and the role that temperament plays in coping provides a model of stress-response behaviour that indicates that meta-motivational dominance effects risk taking behaviours in adolescence (Lafreniere et al., 2013). This is of key importance in developing an understanding about the factors that contribute to adolescent participation in health risk behaviours.

A model of adolescent participation in health risk behaviours is proposed that demonstrates that the know relationships between attachment and risky behaviour, and state dominance and risky behaviour are mediated by use of productive, and unproductive coping styles.

3.8 References

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: Assessed in the strange situation and at home. Hillsdale, NJ: Erlbaum.

Allen, J. P., Marsh, P., McFarland, C., McElhaney, K. B., Land, D. J., Jodl, K. M., et al. (2002). Attachment and autonomy as predictors of the development of social skills and delinquency during midadolescence. *Journal of Consulting & Clinical Psychology*, 70, 56-66

Apter, M. J. (1982). The experience of motivation: The theory of psychological reversals. London: Academic Press.

Apter, M. J. (2001). *Motivational styles in everyday life: A guide to reversal theory*. Washington, DC: American Psychological Association.

Apter, M. J. (2005). *Personality Dynamics; key concepts in reversal theory.* Loughborough, U.K.: Apter International Ltd.

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

Bowlby, J. (1982/1969). Attachment and loss: Vol. 1. Attachment (2nd ed.). New York: Basic Books.
Bowlby, J. (1988). A secure base: Clinical applications of attachment theory. London: Routledge.

Boyce, W. T., Barr, R.G., & Zeltzer, L.K., (1992). Temperament and the psychology of childhood stress. *Paediatrics, 90,* 483-486.

Brady, S.S. & Donenberg, G. R. (2006). Mechanisms linking violence to exposure to health risk behaviour in adolescence: motivation to cope and sensation seeking. *Journal of the American Academy of Child and Adolescent Psychiatry, 45,* 673-680.

Calkins, S. D., Dedmon, S. E., Gill, K. L., Lomax, L. E. and Johnson, L. M. (2002), Frustration in Infancy: Implications for Emotion Regulation, Physiological Processes, and Temperament. *Infancy, 3*, 175–197.

Campbell, J. S., & Elison, J. (2005). Shame coping styles and psychopathic personality traits. *Journal of Personality Assessment, 84,* 96-104.

Cogan, N. & Schwannauer, M. (2010). Understanding adolescent risk-taking behaviour: Exploring the motivations, personalities and coping styles of young people in a school-based population. In Frydenberg. E. (Ed), *Personality, stress, and coping: Implications for education.* Routledge.

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

Compas, B. E. (1998). An agenda for coping research and theory: Basic and applied developmental issues. *International Journal of Behavioural Development, 22,* 231-23.

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

Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M.E. (2001). Coping with stress during childhood and adolescence: Problems, progress, and potential in theory and research. *Psychological Bulletin, 127(1),* 87-127.

Compas, B. E., Connor, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M.E. (1999). Getting specific about coping: Effortful and involuntary responses to stress in development. In M. Lewis & D. Ramsay (Eds.), *Soothing and stress* (pp. 229-256). New York: Cambridge University Press.

Cooper, M.L., Shaver, P., & Collins, N.L. (1998). Attachment styles, emotion regulation, and adjustment in adolescence. Journal of Personality and Social Psychology, 74, 1380-1397.

Eisenberg, N., Fabes, R. A., & Guthrie, I. (1997). Coping with stress: The roles of regulation and development. In J.N. Sandler & S.A. Wolchik (Eds.), *Handbook of children's coping with common stressors: Linking theory, research and intervention (pp. 41-70).* New York: Plenum.

Eisenberg, N., Fabes, R. A., Guthrie, I., Murphy, B. C., Maszk, P., Holmgren, R., & Suh, K. (1996). The relations of regulation and emotionality to problem behaviour in elementary school children. *Development and Psychopathology, 8,* 141-162.

Eisenberg, N., Fabes, R. A., Nyman, M., Bernzweig, J. & Pinuelas, A. (1994). The relations of emotionality and regulation to children's anger-related reactions. *Child Development, 65,* 109-128.

Eisenberg, N., & Valiente, C. (2004). Elaborations on a theme: Beyond main effects in relations of parenting to children's coping and regulation. *Parenting: Science and Practice, 4,* 319-323.

Elicker, J., Englund, M., & Sroufe, L. A. (1992). Predicting peer competence and peer relationships in childhood from early parent-child relationships. In R. D.

Parke & G. W. Ladd (Eds), *Family-peer relationships: Modes of linkage* (pp.77-106). Lawrence Erlbaum; Hillsdale, NJ:

Fox, N. A., Henderson, H. A., Marshall, P. J., Nichols, K. E., & Ghera, M. M. (2005). Behavioral inhibition: Linking biology and behavior within a developmental framework. Annual Review of Psychology, 56, 235-262.

Frydenberg, E., & Lewis, R. (1993). *Adolescent Coping Scale*. Melbourne: Australian Council for Educational Research.

Frydenberg, E., & Lewis, R. (1996). A replication study of the structure of the *Adolescent Coping Scale*: Multiple forms and applications of a self-report inventory in a counselling and research context. *European Journal of Psychological Assessment*, *12*(3), 224–235.

Goodwin, R.D. (2006). Association between coping with anger and feelings of depression among youth. *American Journal of Public Health, 96,* 664-669.

Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52,* 511–524.

Hazan, C., & Shaver, P. R. (1994). Attachment as an organizational framework for research on close relationships. *Psychological Inquiry, 5,* 1–22.

Holodynski, M., & Friedlmeier, W. (2006). Development of emotions and emotion regulation. New York: Springer.

Hong, R. R. & Park, J. S. (2012). Impact of attachment, temperament and parenting on human development. *Korean Journal of Paediatrics, 55* (12), 449-454.

Kliewer, W., Sandler, I. N., & Wolchik, S. (1994) Family socialization of threat appraisal and coping: Coaching, modeling and family context. In F.

Nestmann & K. Hunelmann (Eds.), *Social networks and social support in childhood and* adolescence (pp. 271–291). Berlin: de Gruyter.

Lafreniere, K. D., Menna, R., & Cramer, K. M. (2013). Rebelliousness, effortful control, and risky behaviour: Metamotivational and temperamental predictors of risk-taking in older adolescents. *Journal of Motivation, Emotion, and Personality, 1,* 17–26.

Lazarus, R. S. (1993). Coping theory and research: Past, present and future. *Psychosomatic Medicine, 55,* 2324-2347.

Lazarus, R. S. & Folkman, S. (1984). *Stress, Appraisal and Coping*. New York, Springer

Lengua, L. J., & Sandler, I. S. (1996). Self-regulation as a moderator of the relation between coping and symptomatology in children of divorce. *Journal of Abnormal Child Psychology, 24,* 681-701.

Lewis, M. (1989). Culture and biology: The role of temperament. In P.R. Zelazo & R.G. Barr (Eds.), *Challenges to developmental paradigms: Implications for theory, assessment and treatment* (pp. 203-223). Hillsdale, NJ: Erlbaum.

Maccoby, E. E. (1983). Social-emotional development and response to stressors. *In N. Garmezy & M. Rutter (Eds.), Stress, coping and development: Issues and perspectives* (pp. 217-234) McGraw-Hill.

Maltby, J., Day, L. & Barber, L. (2004). Forgiveness and mental health variables: Interpreting the relationship using an adaptational-continuum model of personality and coping. *Personality and Individual Differences, 37,* 1629-1641

McDermot, M. R. (1988). Measuring rebelliousness: The development of the negativism dominance scale. In M. J. Apter, J. H. Kerr & M. P. Cowles (Eds), *Progress in reversal theory* (pp. 297-312). Amsterdam: Elsevier.

Mullis, R.L. & Chapman, P. (2000). Age, gender and self esteem differences in adolescent coping styles. *Journal of Social Psychology, 140*, 539-541

Murphy, L. B., & Moriarty, A. E. (1976). *Vulnerability, coping and growth from infancy to adolescence*. Oxford, UK: Yale University Press.

Pietromonaco, P. R. & Feldman Barret, L. (2000). The internal working models concept: What do we really know about the self in relation to others? *Review of general psychology, 4*(2), 155-175.

Power, T. G. (2004). Stress and coping in childhood: The parents' role. *Parenting Scientific Practice, 4*, 271-317.

Preston, P. (2006). Marijuana Use as a Coping Response to Psychological Strain: Racial, Ethnic, and Gender Differences Among Young Adults. *Deviant Behaviour, 26,* 397-421.

Printz, B. L., Shermis, M. D., & Webb, P. M. (1999). Stress-buffering factors related to adolescent coping: a path analysis. *Adolescence, 34(136),* 715-34.

Rothbart, M. K., Ahadi, S. A., & Hershey, K. L. (1994). Temperament and social behavior in childhood. *Merrill-Palmer Quarterly, 40,* 21-39.

Rothbart, M. K., Ahadi, S. A., & Evans, D. E. (2000). Temperament and personality: Origins and outcomes. *Journal of Personality and Social Psychology, 78(1),* 122-135.

Rutledge, H. & Tucker, J. (2007). *Reversing forward: A practical guide to reversal theory.* Fairfax, Virginia: Otto Kroeger associates.

Rutter, M. (1983). Stress, coping and development: Some issues and some questions. *In N. Garmezy & M. Rutter (Eds.), Stress, coping and development: Issues and perspectives* (pp. 1-41) McGraw-Hill.

Sarracino, D., Presaghi, F., Degni, S. & Innamorati M. (2011). Sex-specific relationships among attachment security, social values, and sensation seeking in early adolescence: implications for adolescents' externalizing problem behaviour. *Journal of Adolescence, 34*, 541-554.

Seifer, R. & Schiller, M. (1995). The role of parenting sensitivity, infant temperament, and dyadic interaction in attachment theory and assessment. *Monographs for the Society of Research in Child Development, 60,* 146-174.

Seiffge-Krenke, I., Weidemann, S., Fentner, S., Aegenheister, N., & Poeblau, M. (2001). Coping with school-related stress and family stress in healthy and clinically referred adolescents. *European Psychologist, 6,* 123 – 132.

Shaver, P. R., Hazan, C., & Bradshaw, D. (1988). Love as attachment: The integration of three behavioral systems. In R. J. Steinberg & M. L. Barnes

(Eds.), *The psychology of love* (pp. 68-99). New Haven, CT: Yale University Press.

Skinner, E.A. (1995). *Perceived control, motivation and coping.* Thousand Oaks, CA: Sage.

Skinner, E. A., & Edge, K. (2002). Parenting, motivation, and the development of children's coping. In L. J. Crockett (Ed.). Agency, motivation, and the life course: The Nebraska symposium on motivation (Vol. 48, pp. 77–143). Lincoln, NE: University of Nebraska Press.

Skinner, E.A., & Wellborn, J.G. (1994). Coping during childhood and adolescence: A motivational perspective. In D. Featherman, R. Lerner, & M. Perlmutter (Eds.), *Life-span development and behaviour* (pp. 91-133). Hillsdale, NJ: Erlbaum.

Skinner, E. A. & Zimmer-Gembeck, M. J. (2007). The development of coping. *Annual Review of Psychology, 58*, 119-144.

Sroufe, L. A. (1996). Emotional development: The organization of emotional life in the early years. New York: Cambridge University Press.

Steiner, H., Erickson, S. J., Hernandez, N., & Pavelski, R. (2002). Coping styles as correlates of health in high school students. *Journal of Adolescent Health, 30*, 326-335.

Svebak, S. (1983). The effect of information load, emotional load and motivational state upon tonic physiological activation. In H. Ursin & R.

Murison (Eds), *Biological and psychological basis of psychosomatic disease: Advances in the bioscience* (pp. 61-73). Oxford: Pergamom Press.

Sveinbjornsdottir, S. & Thorsteinsson, E. B. (2008), Adolescent coping scales: A critical psychometric review. *Scandinavian Journal of Psychology, 49,* 533–548.

Tomaka, J. & Blascovich, J. (1994). Effects of justice beliefs on cognitive appraisal of and subjective physiological and behavioral responses to potential stress. *Journal of personality and social psychology 67* (4), 732-740.

Zimmer-Gembeck, M. J., & Locke, E. M. (2007). The socialization of adolescent coping: Relationships at home and school. *Journal of Adolescence, 30*, 1-16.

4. Thesis Aims and Hypothesis

Study aims

The following study will seek to investigate the mediating role that coping plays in the relationship between attachment and participation in risky behaviour as well as the mediating role coping plays in the relationship between state dominance and participation in risky behaviour. It is anticipated that this will further inform our understanding of the psychological processes that lead teenagers to engage in risk behaviours. A number of hypotheses are proposed:

Hypothesis 1. The relationship between attachment profile and participation in risky behaviours will be mediated by coping style whereby:

Attachment profile will correlate with the use of certain coping behaviours:

- A secure attachment profile will predict increased use of productive coping strategies compared to insecure (fearful, preoccupied and dismissing) attachment profiles.
- Insecure attachment profiles will predict increased use of unhelpful coping strategies compared to secure attachment profiles.
- Insecure attachment profiles will correlate with increased participation in risky behaviour.
- The relationship between insecure attachment status and increased participation in risky behaviour will be mediated by use of unproductive coping strategies.

Hypothesis 2. The relationship between state dominance and participation in risky behaviours will be mediated by coping style whereby:

State dominance will correlate with the use of certain coping behaviours:

- High telic dominance will predict increased use of productive coping strategies.
- High negativism dominance will predict increased use of unhelpful coping strategies.
- High negativism dominance will predict increased levels of participation in health risk behaviours.
- The relationship between negativism dominance and increased participation in risky behaviour will be mediated by use of unproductive coping strategies.

5. Journal Article

Investigating the role of coping skills in the relationship between attachment and personality traits in risk-taking in late adolescence

5.1 Abstract:

Background

This study examines the relationship between coping behaviour and attachment and state dominance, as described in reversal theory. The study also considers health risk outcomes in late adolescence that arise from having profiles indicating a trend towards participation in unhelpful coping behaviour.

Methods

In a non-experimental, cross-sectional study of 76 first year undergraduate psychology students, level of risk taking behaviour in relation to coping behaviour, attachment status and telic and negativistic dominance were assessed using questionnaires.

Results

Analysis revealed that the relationship between attachment security and risk taking related to feelings of sadness and plans or attempts to carry out suicide. This was not mediated by use of higher levels of unproductive coping in adolescents. Analysis also revealed that high negativism dominance predicted increased participation in alcohol, tobacco and drug misuse. This relationship was not mediated by increased use of unproductive coping behaviours.

Keywords

Adolescent, Adolescence, Attachment, Coping, Risk, Behaviour, Personality

5.2 Introduction

Adolescence has been widely recognised to be a period of stress for many young people (Howard & Medway, 2004). In a report detailing aspects of mental health issues for young people in the UK, Hagel *et al.* (2013) highlight the prevalence of difficulties amongst children and young people within the domains of mental health, sexual behaviours and health behaviours. Adolescent participation in unhelpful or unhealthy behaviours has been linked to use of negative styles of coping (Jorgensen and Dusek, 1990).

Building upon earlier work developing models of coping (i.e. Lazarus & Folkman, 1984; Skinner & Wellborn, 1994; Eisenberg et al., 1996) Compas and colleagues (Compas, 1998; Compas et al., 1997, 1999) view coping as being one aspect of responding to stress. They define coping as "conscious volitional efforts to regulate emotion, cognition, behaviour, physiology, and the environment in response to stressful events or circumstances" (2001, p. 89). They emphasise that these regulatory processes both tap into and are constrained by the biological, cognitive, social and emotional development of the individual. Thus coping behaviour is conceptualised to be embedded in a developmental bio-psychosocial model whereby coping, as a regulatory response to stress, is underpinned by numerous individual factors including attachment experiences and individuals' temperament.

5.2.1 Attachment processes and coping

It has been established that early relationship experiences are tied to early coping development (Compas, 1987; Maccoby, 1983; Kliewer et al., 1994; Murphy & Moriarity, 1976; Power, 2004; Skinner & Edge, 2002; Skinner & Zimmer-Gembeck, 2007; Zimmer-Gembeck & Locke, 2006;). The precise

mechanisms through which social forces shape coping are beginning to be explored (Eisenberg et al., 1997; Power, 2004) and of particular interest are studies which examine the ways that children are socialised into coping by their carers both implicitly via comforting, helping and soothing (e.g. Holodynski & Fridlemeier, 2006; Sroufe, 1996), that is to say whether carers are able to respond appropriately to the child's emotional needs in a warm and caring manner or not, and explicitly through modelling and coaching (e.g. Kliewer et al., 1994).

Attachment theory (Bowlby, 1982, 1988; Ainsworth et al., 1978) can suggest the psychological mechanisms by which implicit socialisation by caregivers influences coping behaviour in westernised populations. It proposes that children who experience a secure attachment relationship with their primary caregivers are likely to develop internal models of others as caring and dependable and of themselves as love-worthy and competent. They are therefore equipped to seek comfort from others when distressed and are successful in eliciting positive responses. In contrast, insecurely attached infants are unsure whether someone will respond in a time of need and so form less favourable models of themselves and others so may avoid contact with others and reject offers to help when they are distressed (Ainsworth *et al.*, 1978; Elicker *et al.*, 1992).

Attachment processes are theorised to be activated across the life span, albeit in different ways to the parent and child relationship and instead operating in the attachment relationship between two adults (Ainsworth, 1989; Hazan & Shaver, 1994; Shaver, Hazan & Bradshaw, 1988). With regards activation of regulatory behaviours, an individual perceives themselves to be under threat when a press arises for which the individual feels they are not

equipped to manage (Tomaka & Blascovich, 1994). They propose that individuals experience threat when their self-esteem is in question, either because of negative information or they feel unable to deal with a perceived danger on their own. Experiencing a self-relevant threat results in behaviours that will help to re-establish or promote feelings of security. Therefore, securely attached adults (who generally feel competent and worthy) may seek out attachment figures only in relation to experiencing a specific, external threat to the self. They engage in attachment-related behaviours (e.g. support seeking) only when necessary as they infrequently feel threatened. On the other hand, where individuals have a less certain and poorer view of themselves (e.g. people with insecure-preoccupied or insecure fearful adult-relationship attachments) may see many situations as potentially threatening to their sense of self. Thus they may engage frequently in attachment-related behaviours such as support-seeking. In contrast, individuals with a more certain view of themselves but less positive view of others (e.g. dismissing-avoidant individuals) who prefer not to depend on others are less likely to use others as a way of regulating felt security even when they ought to do so.

Alongside having a role in shaping coping across the lifespan, attachment has also been shown to be correlated with risk taking in adolescence (e.g. Cooper, Shaver & Collins, 1998) A number of later studies investigating the links between attachment security and risky or delinquent behaviours in adolescence have revealed that adolescent attachment security predicts increases in social skills. Conversely, preoccupied teens show relative decreases in skill levels and increases in delinquent behaviour over time (Allen, Marsh, McFarland et al., 2002 and Sarracino et al., 2011). Such studies have also revealed that securely attached adolescents rate more highly in

emotional and social adjustment and are less likely to engage in externalised problem behaviour, including delinquent and aggressive behaviour than insecurely attached teens. These studies suggest that attachment status is linked to features of the adolescent that may influence their involvement in risk behaviours via their development, or not, of certain coping skills. Therefore, it may be that the relationship between attachment and risky behaviour in adolescents is mediated by their particular ways of coping.

5.2.2 Temperament and coping

As highlighted above in relation to attachment states of mind, social factors would seem to play an important role in the development of coping styles. Of particular interest when looking to explore the underlying processes that guide the development of individual styles of coping, is the suggestion that the kinds of parenting that promote children's coping depends on children's temperamental characteristics (Eisenberg & Valiente, 2004). Theorists have suggested that temperament has a potential connection to coping that extends across the lifespan (Compas, 1987; Maccoby, 1983). However, research that links dimensions of temperament to specific ways of coping involves only a handful of studies (e.g. Eisenberg et al., 1994; Lengua & Sandler, 1996).

Temperament can be described as a neurobiological element of the individual, differing from person to person in emotions, sociability and self-control. It is understood that temperament originates in the genes but is also affected by child-rearing practices (Hong & Park, 2012) in that parenting is a reciprocal process where the child and parent influence each other. Infants

with a difficult temperament may be at risk for developing attachment insecurity when their main caregiver is limited in their capacity to modify their behaviour to fit the child's needs (Hong & Park, 2012). Thus it can be seen that individuals' temperament may play a role in determining attachment security and also on the development of coping styles via parenting strategies used to teach and facilitate coping in childhood.

With regards temperament, coping and risk taking in adolescents, coping style and risk-taking behaviour have been shown to be mediated by state dominance, that is to say, the innate bias individuals show in the state of arousal they prefer to experience (Cogan & Schwannauer, 2010). Additionally, Lafreniere and colleagues (Lafreniere et al., 2013) found that there was a correlation between temperament variables and meta-motivational dominance, setting this within a theoretical framework based upon Rothbart and colleagues (2000) model of individual differences in reactivity and self-regulation. Within this model, temperament is measured based on four overall factors; negative affect; extraveron/surgency; orienting sensitivity; and effortful control. Effortful control comprises of the three sub-constructs of attentional control (ability to shift and focus attention appropriately) inhibitory control (ability to suppress inappropriate responses) and activation control (ability to perform an action despite a strong tendency to avoid it). With a focus on effortful control, meta-motivational dominance was explored using reversal theory (Apter, 1982) which suggests people switch between motivational states that are opposite to each other. Lafrenier et al. (2013) also found that rebelliousness and effortful control predicted involvement in risky behaviours. Both of these studies suggests paths by which during adolescence, meta-motivational (i.e. state) dominance results in increased participation in health risk behaviours.

Given that effortful control is theorised to be part of the system that determines how individuals cope under stress, it may be that the relationship between rebelliousness and involvement in risky behaviours is mediated by an individual's dominant coping profile.

5.2.3 Reversal Theory

Reversal theory is primarily concerned with how we experience emotion and how this influences our experience and behaviour (Apter, 1982). The theory proposes that individuals fluctuate between different motivational states, or "metamotivational modes", that are opposites of each other. Four main pairs of metamotivational pairs are suggested by reversal theory. The *telic/paratelic* mode relates to felt arousal where the paratelic state is oriented towards gaining as much arousal as possible with high arousal being experienced as pleasant (excitement) and low arousal as unpleasant (boredom). The telic state relates to attempts to reduce arousal as far as possible as in this case, high arousal is experienced as unpleasant (anxiety) and low arousal as pleasant (relaxation). The *negativistic/conformist* modes refer to opposing the rules or tacit requirements of one's current context, or going along with the rules. The *mastery/sympathy* modes concern exerting control over people, situations or things versus wanting sympathy, attention or closeness. The final mode a*utic/alloic* refer to directing ones attention and efforts towards oneself (autic) or toward other people (alloic).

One main way by which people differ from each other is in terms of the innate bias that they have to one state or the other (Apter, 2005), the direction of bias being referred to as state dominance. Dominance implies that

individuals will contingently reverse more easily into their dominant state and will satiate more easily and become less frustrated when in this state (Apter, 2001). It has been proposed that attempts to induce a particular metamotivational state may help young people cope with stressors (Svebak, 1983; 1991). In the present study, the constructs of negativism dominance and telic dominance are of particular interest; negativism or "rebelliousness" due to its presumed connection with adolescent risk-taking behaviour (McDemott, 1988) and which has been demonstrated to be correlated with temperament variables (Lafrenier et al., 2013), and telic state due to its relationship with affect regulation which, as already discussed, is a key component of many models of coping.

5.2.4 Conclusion

Models of the development of coping draw on a number of underlying biological and psychological mechanisms which contribute to coping behaviour (e.g. Lazarus & Folkman, 1984; Skinner & Wellborn, 1994; Eisenberg et al., 1997; Compas et all, 1997, 1999). These include aspects of the biological, cognitive, social and emotional development of the individual. In particular, the effects of early parenting and attachment experiences have been shown to shape coping in individuals (Kliewer et al., 1994; Power, 2004). Adolescent and adult attachment relationships have also been demonstrated to have a role in determining how well individuals believe they are able to cope and whether or not they will approach others for assistance (Pietromonaco & Fieldman Barret, 2001). With regards other variables that shape coping, temperament has been shown to influence both attachment experiences and early exposure to coping behaviours (Eisenberg

& Valiante, 2004). It has been suggested that temperament has a connection to coping across the lifespan (Compas, 1987, Maccoby, 1983) and the role that temperament plays in coping provides a model of stress-response behaviour that indicates that meta-motivational dominance effects risk taking behaviours in adolescence (Lafreniere et al., 2013). Coping in adolescence in particular is a relevant concept in health risk behaviour (Steiner et al., 2002) given that this period is marked by an expansion and diversification of ways of dealing with stressors (Mullis & Chapman, 2000). This project proposes to consider some of the processes that underpin coping in adolescents by exploring the relationship between some of the identified concepts that underpin and shape coping behaviours and how these also contribute to adolescent participation in health risk behaviours (see figure 1). Two main hypotheses are proposed:

Hypothesis 1. The relationship between attachment profile and participation in risky behaviours will be mediated by coping style whereby:

Attachment profile will correlate with the use of certain coping behaviours:

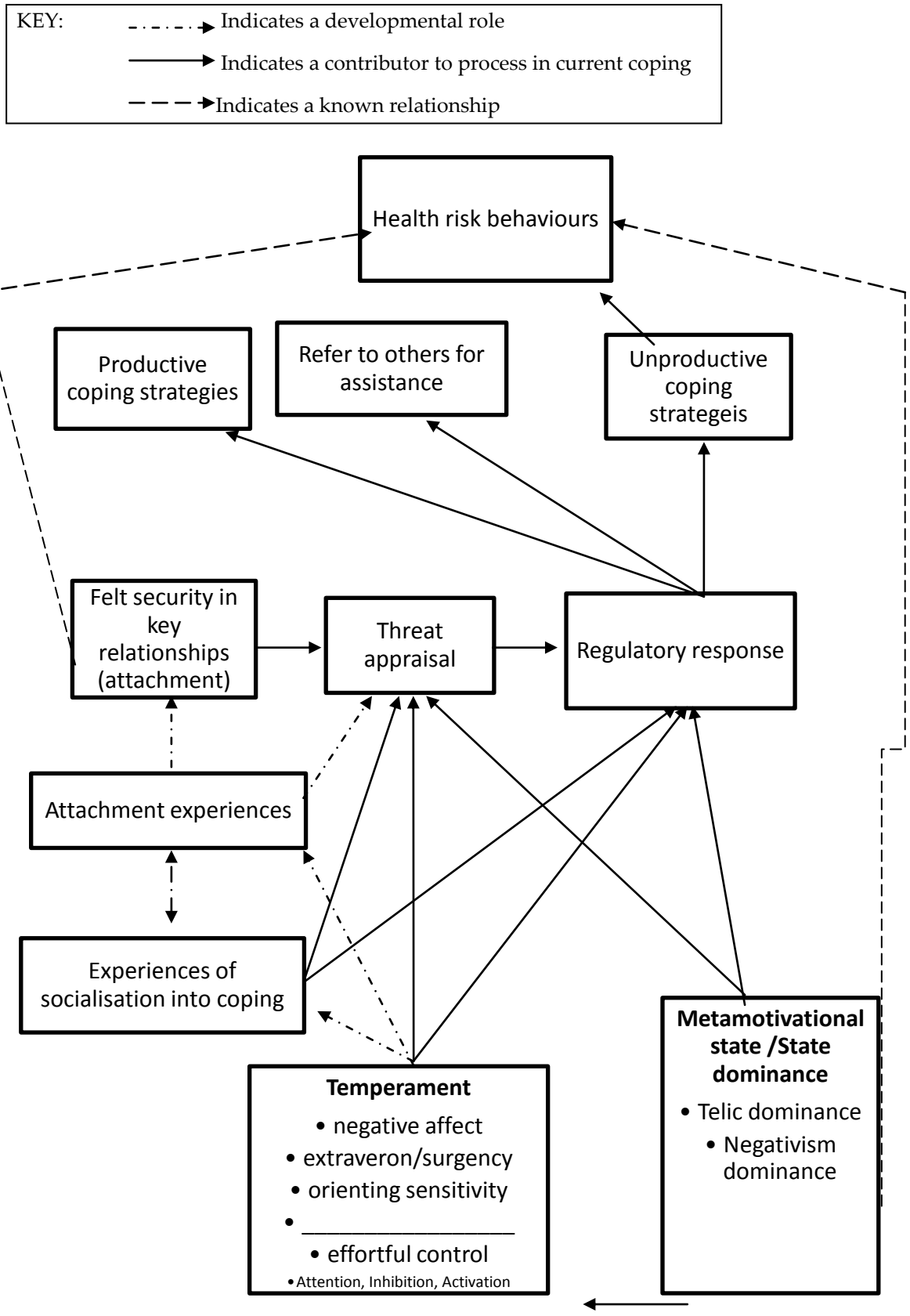
- A secure attachment profile will predict increased use of productive coping strategies compared to insecure (fearful, preoccupied and dismissing) attachment profiles.
- Insecure attachment profiles will predict increased use of unhelpful coping strategies compared to secure attachment profiles.
- Insecure attachment profiles will correlate with increased participation in risky behaviour.
- The relationship between insecure attachment status and increased participation in risky behaviour will be mediated by use of unproductive coping strategies.

Hypothesis 2. The relationship between state dominance and participation in risky behaviours will be mediated by coping style whereby:

State dominance will correlate with the use of certain coping behaviours:

- High telic dominance will predict increased use of productive coping strategies.
- High negativism dominance will predict increased use of unhelpful coping strategies.
- High negativism dominance will predict increased levels of participation in health risk behaviours.
- The relationship between negativism dominance and increased participation in risky behaviour will be mediated by use of unproductive coping strategies.

Figure 1. Model of factors that lead to participation in risk taking by adolescents



5.3 Methods

Power calculation

In order to detect a medium effect size (.15; Cohen, 1992) using two independent variables at an alpha level of .05 and power of .8, Cohen (1992) suggests a sample size of 67 for multiple regression analyses.

Participants

A total of 78 adolescents took part in the study. Two respondents were excluded as their survey packs were incomplete. The 76 remaining participants (11.4% males/88.6 % females) ranged in age from 17 to 19 years of age. Over half of the participants were of white British origin (63.1%), other white (35.4%), black British (1.2%), other black (1.2%), other Asian (1.2%). The adolescents were first year undergraduate students undertaking a psychology degree at UK universities.

Procedure

An e-mail was sent to course administrators at a number of universities in the UK, asking if they would be able to disseminate an e-mail invitation to take part in the research to all first year undergraduate psychology students. The invitation e-mail included a link to an online survey where potential participants could access information about the research, give their consent to take part and complete the questionnaires. Once participants had given informed consent, they were instructed to complete a number of questionnaires on an online database. Questionnaires were administered in the same order to all participants. The online questionnaire pack was composed of the following measures (described below): (a) a demographic questionnaire to assess age, gender and ethnicity; (b) a measure of health risk behaviour; (c) two measures of attachment; (d) a measure of coping (e) a measure of internalising and externalising symptoms and (f) two measures

of personality. Ethical approval was gained on the 6th February 2014 (Appendix i) following application to the University of Edinburgh Ethics Committee.

Measures

Attachment

Attachment status was determined using the Adolescent Relationship Questionnaire (A-RQ, Scharfe, 2002; adapted from the RQ, Bartholomew & Horrowitz, 1992). The questionnaire measures 'secure', 'fearful', 'preoccupied' and 'dismissing' attachment styles in terms of the degree to which each style applies to the individual and what that individual perceives is their dominant attachment style. The Adolescent Relationship Questionnaire (A-RQ) is freely available online and differs from the RQ in word choice only in order to make the concepts more accessible to the adolescent population. The RQ has been used effectively in many studies (e.g. Troisi *et al.*, 2001) including studies of young adults and adolescents (Broberg *et al.*, 2001; Scharfe & Eldredge, 2001). Studies have found that the RQ has a modest agreement of classification of attachment style with the George and colleagues' Adult Attachment Scale (1985, as cited in Steele & Steele, 2008; Allen *et al.*, 2001; Griffin & Bartholomew, 1994) and high concurrent validity with the Vulnerable Attachment Style Questionnaire (Bifulco *et al.*, 2003). Mean and average ratings on each of the attachment dimensions as well as on scores of self -view and view of others were compared with findings from a large (n=300) UK sample (Schmitt *et al.*, 2004). These were found to be comparable i.e. within one standard deviation.

Psychological Adjustment

The SDQ is designed to measure psychological adjustment in children and adolescents (Goodman, 1997) and has been established as a widely used tool in child mental health research (Vostanis, 2006). This brief behavioural

screening questionnaire is freely available online and is available both as a self-report and as an informant-report measure. It asks about 25 attributes, some positive and others negative. The SDQ has been found to have good internal consistency (Cronbach alpha 0.73, Goodman, 2001) and acceptable retest stability (Cronbach alpha 0.62; Goodman, 2001). This sample had an unusually high number of people scoring within the borderline (18%) and clinically significant (23%) ranges for total difficulties score. The authors of the SDQ state that it would be expected that 10% of a community sample would score within borderline range and 10% within clinical range on total difficulties score.

Risk-Taking

Students completed The Youth Risk Behaviour Survey (YRBS-modified; Eaton *et al.*, 2011) that measures level of participation in a number of health risk behaviours including those that contribute to unintentional injuries and violence, tobacco use, alcohol and other drug use, sexual behaviours such as might contribute to unplanned pregnancy and sexually transmitted diseases including human immunodeficiency virus infection, detrimental dietary behaviours and physical inactivity. A test-retest comparison revealed high reliability (kappa = 61-100%; Brener *et al.*, 1995).

Coping

Coping was assessed using the Adolescent Coping Scale-short form (ACS: Frydenberg & Lewis, 1993). This 19 item self-report questionnaire measures a broad range of coping approaches employed by adolescents. It identifies three coping styles that summarise the various strategies adolescents use. These coping styles are productive, non-productive and reference to others. The ACS has been shown to have moderate test-retest reliability and predictive validity in a range of situations. Reliability has been shown to

range between Cronbach alphas of .67 and .79 (Frydenberg and Lewis, 1996). Test-retest reliability has been shown to be moderate, ranging from .44 to .81 (Frydenberg & Lewis, 1996). In this study, Cronbach alphas ranged from 0.29 (reference to others), to 0.65 (productive coping), to 0.68 (non-productive coping) indicating that the reference to others coping scale lacked the internal reliability to be included in hypothesis testing.

Personality Traits

Students completed the Telic Dominance Scale (TDS; Murgatroyd *et al.*1978) which measures telic state versus paratelic state dominance. The telic state is when the individual sees them self as working towards some essential goal. Pleasure is derived from achievement or anticipation of achievement of the goal. The telic state is characterised by attempts to lower arousal and so avoid anxiety. The paratelic state is typified by the attempt to raise arousal and so search out excitement. Participants are asked to complete a number of items by selecting which telic or paratelic alternative they would prefer, or if they are not sure. A number of validity studies have revealed that the scale satisfies reliability and validity needs and that the subscales are related to a significant extent with Cronbach alphas for each subscale reported to be between 0.66 and 0.73 (Murgatroyd *et al.,* 1978). In the study presented here a Cronbach alpha of 0.73 was found for total telic dominance. Mean scores and standard deviations for each of the subscales and total telic score were comparable (within one standard deviation) to those reported by Murgatrotd *et al.* (1978) using a larger sample population (n=119).

Negativism dominance was assessed using the Negativism dominance scale (NDS;

McDermott, 1988). The NDS permits the investigation of two dimensions of negativism, distinguishing between proactive negativism (taking part in

negativistic or rebellious behaviour to provoke fun and exciting circumstances), and reactive negativism (reacting to disappointments and frustrations with feelings of resentment, and/or malicious or vengeful behaviour) via two seven-item subscales. The subscales are then summed to provide an overall negativism score. Investigations have revealed moderate support for the reliability and construct validity of the scale indicating Cronbach alphas >.60 (e.g. Klabbers, Bosma, van den Akker, van Boxtel, Kempen, McDermott, and van Eijk, 2009; Tacon and Abner, 1993; Boddington and McDermott, 2013). In the study presented here, a Cronbach alpha of 0.72 for total negativism dominance was found.

5.3.1 Preliminary analysis

Data was analysed for outliers and collinearity and transformations made In order to minimise potential biasing effects. Two outliers on negativism scores were detected. They were changed to one unit above the next highest score on the data set (Field, 2009). The Kolmogorov-Smirnov test indicated that the data were sufficiently normally distributed to justify using parametric tests for state dominance and coping styles.

Preliminary analysis demonstrated that the influences of age and psychological adjustment were negligible and would not need to be controlled for in the main analysis. Preliminary analysis indicated that gender would need to be controlled for in the testing of hypotheses concerning state dominance, coping style, and health risk behaviours. Further investigation of state (telic and negativistic) dominance total scores and their subscales indicated use of total scores only for further analysis. The health risk behaviour variables were found to be inter-related and could

be further tested using these three underlying factors sadness and suicidality (SAD.SUI), substance misuse (SUB.MISUSE) and physical inactivity and violence (PHY.VIO).

5.4 Results

Hypothesis 1. Attachment and coping.

The relationship between attachment profile and participation in risky behaviours will be mediated by coping style whereby:

Attachment profile will correlate with the use of certain coping behaviours:

- **A secure attachment profile will predict increased use of productive coping strategies compared to insecure (fearful, preoccupied and dismissing) attachment profiles.**
- **Insecure attachment profiles will predict increased use of unhelpful coping strategies compared to secure attachment profiles.**

One-way between subjects ANOVA revealed a significant relationship between attachment status and productive coping $F(3, 72) = 3.12$, $p = .03$. Post hoc Tukey HSD tests indicated that securely attached adolescents ($M = 3.65$, $SD = .61$) were significantly ($p = .024$) more likely to report using productive coping than adolescents with insecure preoccupied attachment ($M = 3.10$, $SD = .74$).

A significant difference was found between attachment status and non-productive coping $F(3, 72) = 9.50$, $p = <.001$. Post hoc Tukey HSD tests indicated that adolescents with insecure fearful attachment ($M = 3.38$, $SD = .60$)

were significantly (p=.002) more likely to report using non-productive coping than securely attached adolescents (r=-.02, M=3.65, SD=.61).

Adolescents with insecure preoccupied attachment (M=3.09, SD=.74) were significantly more likely (p=<.001) to report using non-productive coping than securely attached adolescents (r=-.39, M=3.65, SD=.61). Post hoc analysis also revealed that insecure preoccupied adolescents (M=3.09, SD=.74) were significantly more likely (p=.01) to report using non-productive coping than insecure dismissive adolescents (r=.42, M=3.70, SD=.53).

- **Insecure attachment profiles will correlate with increased participation in risky behaviour.**

A one way between subjects ANOVA was conducted to compare the effect of attachment on the SAD.SUI health risk factor. There was a significant effect of attachment type on the SAD.SUI factor at the p<.01 level between the groups, F (3, 75) = 4.494, p=.006. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for the For the SAD.SUI health risk factor, a one-way analysis of variants revealed a significant difference between the groups, F (3, 75) = 4.494, P=.006.

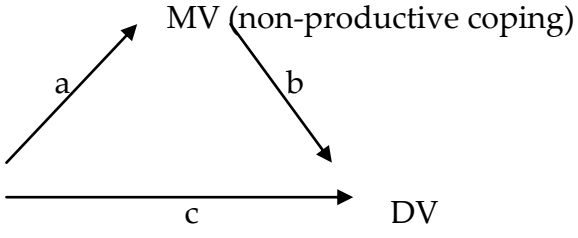
Post hoc comparisons using the Tukey HSD test indicated that the mean score for secure attachment (M = 27, SD = .74) was significantly different than the mean score for fearful (M = 26, SD = 1.48) and preoccupied (M 19, SD = 1.38) attachment. However dismissive attachment (M = 4, SD = .00) did not differ significantly from the other attachment groups. Taken together, these results suggest that attachment security has an effect on the SAD.SUI risk factor. Specifically, these results suggest that insecure fearful and preoccupied attachment report more behaviours on the SAD.SUI risk factor than those with secure or dismissive attachment.

A one way between subjects ANOVA was conducted to compare the effect of attachment on the PHYS.VIO health risk factor. There was no significant effect of attachment type on the PHYS.VIO factor at the p<.01 level between the groups, F (3, 75) = 2.799, p=ns.

A one way between subjects ANOVA was conducted to compare the effect of attachment on the SUB.MIS health risk factor. There was a not a significant effect of attachment type on the SUB.MIS factor, F (3, 75) = 1.840, ns.

- **The relationship between insecure attachment status and increased participation in risky behaviour will be mediated by use of unproductive coping strategies.**

Because insecure attachment was found to have a relationship with only the SAD.SUI risk factor, further analysis considered only this factor.



(attachment) (SAD.SUI risk factor)

Conditions for mediation:

i) The IV (attachment) is significantly related to the DV (SAD.SUI risk factor):

Table 2. Model summary

Model	R	R Square	Adjusted R	Std. Error of

			Square	the estimate
1	.194	.038	.025	1.26

The R Square reveals that only 3.8% of the variance in SAD.SUI is predicted by attachment. The ANOVA revealed that the relationship was non-significant F (1, 75) = 2.902, ns (see table 2).

These findings indicate that whilst a small amount of the variance in SAD.SUI is explained by attachment status, the relationship is non-significant. Therefore, conditions are not met for testing mediation (Baron & Kenny, 1986).

Hypothesis 2. The relationship between state dominance and participation in risky behaviours will be mediated by coping style whereby:

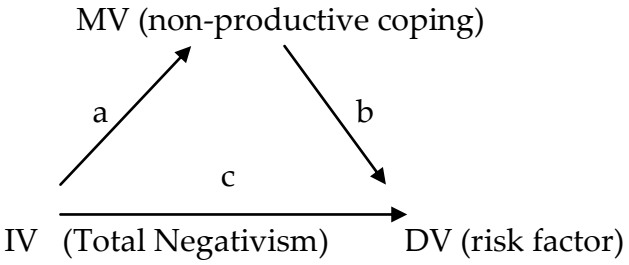
State dominance will correlate with the use of certain coping behaviours:

- **High telic dominance will predict increased use of productive coping strategies.**
- **High negativism dominance will predict increased use of unhelpful coping strategies.**

Total telic score did not correlate significantly with use of productive coping, r=.19, n = 76, ns, two tails.

Total negativism score was negatively correlated with productive coping (r=-.26, n = 76, p = .025). Thus, higher negativism was associated with decreased use of productive coping. Total negativism did not correlate with increased use of unproductive coping (r = .221. n = 76, p = ns).

- **High negativism dominance will predict increased levels of participation in health risk behaviours.**
- **The relationship between negativism dominance and increased participation in risky behaviour will be mediated by use of unproductive coping strategies.**



Conditions for mediation:

i) The IV (total negativism) is significantly related to the DV (SUB.MIS) risk factor).

ii) The IV is significantly related to the MV (unproductive coping).

iii) The MV is significantly related to the DV.

iv) When controlling for the effects of the MV on the DV, the effect of the IV on the DV s no longer significant.

SUB.MIS risk factor:

At analysis one, the R Square reveals that 11% of the variance in SUB.MIS is predicted by total negativism. The ANOVA revealed that the relationship was significant F (1, 75) = 9.066, p=.004.

At analysis two, the R Square reveals that 10% of the variance in SUB.MIS is predicted by unproductive coping. The ANOVA revealed that the relationship was significant F (1, 75) = 9.55, p=.005.

At analysis 3, the effect of total negativism on SUB.MIS does not become non-significant indicating that the effect is not mediated by coping style (see table 3).

Table 3. SUB. MIS Model summary

	R	R Square	R Square change	Beta
Analysis One: Total negativism on SUB.MIS	.330	.109**		.330**
Analysis Two: Coping on SUB.MIS	.316	.100**		.316**
Analysis 3: Step 1: Total neg on coping	.316	.100**	.100	.289**
Step 2: Total neg on SUB.MIS	.438	.192**	.092	.305**
Note* p<.05, **p<.01				

SAD.SUI risk factor:

Regression analysis revealed that variance in SAD.SUI was not predicted by total negativism F (1, 75) = .998, ns, therefore conditions were not met for testing a mediation relationship. Of note, high use of unproductive coping predicted 16.3 % of variance in SAD.SUI scores, F (1, 75) = 14.421, p=<.001.

PHYS.VIO risk factor:

Regression analysis revealed that variance in PHYS.VIO was not predicted by total negativism F (1, 75) = .3.185, ns, therefore conditions were not met for testing a mediation relationship. High use of unproductive coping did not predict any variance in PHYS.VIO scores, F (1, 75) = 1.406, ns.

5.5. Discussion

Two mediation models were tested that examined the relationship between attachment, risk taking behaviour and coping, and between the meta-motivational factor of negativism dominance, risk taking and coping. Analysis revealed that adolescent attachment security was related to use of either productive or unproductive coping strategies whereby attachment security correlated with increased use of productive coping than insecure preoccupied attachment. Attachment insecurity predicted increased use of non-productive coping compared to those who were securely attached. This sits in line with theoretical suppositions about the role that attachment experiences play in the development of coping skills. Attachment insecurity was also correlated with risky behaviour in that feelings of sadness and thoughts, plans or attempts to carry out suicide were correlated with insecure attachment. These findings indicate that individuals with insecure fearful and preoccupied attachments are more likely to take part in behaviours that form the SAD.SUI risk factor than participants who have a secure attachment. This did not inform whether there would be a strong predictive relationship between attachment and the SAD.SUI risk factor. Regression analysis revealed that there was not a significant predictive contribution of attachment on the SAD.SUI risk factor.

The findings did not support the prediction that the relationship between attachment insecurity and increased risk taking would be mediated by use of unhelpful coping styles. This suggests that there are other factors that contribute to feelings of sadness and suicidal thoughts and plans and that this type of health risk behaviour does not stem solely from individual's lack of productive coping skills. Rather, it is possible that experiences of attachment and state of current attachment relationships may be one vulnerability factor that contributes to this kind of risky behaviour. Whilst a measure of mental health was completed by participants, the measure chosen did not have a specific focus on assessing low mood so whilst preliminary analysis did not identify this as a contributing variable, the test may not have been sensitive to the symptoms of moderate-severe depression that would normally be expected to lead to feelings of severe sadness and thoughts of suicide. Therefore, the findings indicate that attachment security and insecurity may play a role in shaping individuals' profiles of coping behaviour. Additionally, attachment insecurity would seem to contribute to risky behaviour via other pathways, perhaps by increasing individuals' vulnerability to other psychological difficulties and specific interpersonal issues as has previously been suggested by Allen et al. (2002).

With regards the influence of state dominance on coping and risk-taking behaviour, telic dominance did not predict increased or decreased use of particular coping behaviours nor of increased participation in risky behaviours. This would suggest that within late adolescence, where they express a preference for being in the telic state, the telic drive to reduce arousal as far as possible is tempered by other factors. Given that the sample population consisted of 1st year university undergraduates, it may be that

factors such as peer pressure, the opportunity to try out new things and try out 'new' personalities cancelled out the telic drive.

On the other hand, increased negativism dominance predicted a decreased in productive coping and in increase in health risk behaviours, in particular risky behaviours associated with substance misuse. Eleven percent of the variance in SUB.MIS was predicted by total negativism and ten percent was predicted by unproductive coping. The relationship between negativism dominance and risk taking was not mediated by coping. This suggests that meta-motivational dominance within the rebellious domain is itself a predictor for participation in risky behaviours and independent of patterns of coping. However, because it only accounted for a small portion of the variance found, other factors must still be considered as contributors to risk for the SUB.MIS factor. It is possible that factors such as peer group, mental health, social learning and other temperament sensitivities that were not explored in this research may contribute. It is interesting to note that whilst higher total negativism was correlated with decreased use of productive coping, this did not result in increases in unproductive coping or of referring to others for help. It may be that a reduction in productive coping is compensated for by participation in externalising distancing behaviours, for example substance misuse, which were not measured by the coping measure used in this study.

Whilst attachment and negativism dominance both correlated with coping styles, and coping accounted for a portion of the variance in risky behaviour, coping did not mediate the attachment and negativism relationships with risky behaviour. Instead, whilst these two factors may have some role in shaping profiles of coping in individuals, the findings suggest that adolescent participation in certain risky behaviours, that is to say sadness

and suicidal thoughts and plans on the one hand, and substance misuse on the other, are underpinned by different psychological processes. Adolescents' attachment insecurity in key relationships would seem to be one vulnerability factor that contributes to the development of emotional difficulties, whereas adolescents' preference for being in a rebellious state (high negativism dominance) would seem to contribute to participation in risky substance misuse.

Limitations of the present research should be noted. Primary limitations of this study concern the use of self-report measures and the relatively small sample size drawn from an educational setting. The sample was drawn from a British undergraduate sample of psychology students and so generalisability of findings is limited. Additionally, the survey was completed online which has been demonstrated to lead to numerous sampling disadvantages (see Wright, 2005) which further limits generalisability. All data was gathered from the same means and by the same method (self-report). The correlational nature of the analyses precludes any causal inferences or conclusions about the observed variable relationships. The case could be made that the observed relationships between attachment and coping, and coping and state dominance may be the result of a common response tendency (e.g. to view things in a favourable or unfavourable way) (Seiffge-Krenke & Beyers, 2005) or other unknown distortion or self-enhancing biases. Given that interactions are notoriously difficult to detect in a regression context (McClelland & Judd, 1993), it is possible that some theoretically interesting findings may have been missed given the relatively modest sample size. It is therefore encouraged that replication of these findings be carried out within a larger and more diverse sample.

5.6. Conclusion

A wide range of research has recorded the increasing incidence of adolescent participation in risky health behaviours, including use of tobacco, alcohol and other substances, risky sexual activity, physical inactivity and accidental and intentional injury (Johnson & Malow-Iroff, 2008; Olshen, 2007). The biggest determinants of morbidity and mortality amongst adolescents typically involve risk taking (Testa & Steinberg, 2010). Whilst a large number of research studies have investigated the correlates of health risk behaviours, few have examined models of mediation. This study tested conceptual relationships explaining how health risk behaviour may be linked to adolescent attachment security in relationships and aspects of personality, using Reversal theory (Apter, 2001) and based upon a developmental model of coping. Coping style was not found to mediate the relationships between attachment and risky behaviour nor between negativistic state dominance and risky behaviour. However, adolescents' attachment insecurity in key relationships would seem to be one vulnerability factor that contributes to the development of emotional difficulties and adolescents' preference for being in a rebellious state (high negativism dominance) would seem to contribute to participation in risky substance misuse and so at the very least, these should be considered as predictors for engagement in specific types of health risk behaviour.

5.7. References

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: Assessed in the strange situation and at home. Hillsdale, NJ: Erlbaum.

Allen, J. P., Marsh, P., McFarland, C., McElhaney, K. B., Land, D. J., Jodl, K. M., et al. (2002). Attachment and autonomy as predictors of the development of social skills and delinquency during midadolescence. *Journal of Consulting & Clinical Psychology*, 70, 56-66

Apter, M. J. (1982). The experience of motivation: The theory of psychological reversals. London: Academic Press.

Apter, M. J. (2001). Motivational styles in everyday life: A guide to reversal theory. Washington, DC: American Psychological Association.

Apter, M. J. (2005). Personality Dynamics; key concepts in reversal theory. Loughborough, U.K.: Apter International Ltd.

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*, 1173-1182

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

Bifulco, A., Mahon, J., Kwon, J-H., Moran, P. M. and Jacobs, C. (2003) The Vulnerable Attachment Style Questionnaire (VASQ): an interview-based measure of attachment styles that predict depressive disorder. Psychological Medicine, 33(6), 1099-1110.

Boddington, E.L., & McDermott, M.R. (2013). Predicting resistance to health education messages for cannabis use: the role of rebelliousness, autic mastery, health value and ethnicity. *Journal of Health Psychology, 18*(2), 157–166.

Bowlby, J. (1982/1969). Attachment and loss: Vol. 1. Attachment (2nd ed.). New York: Basic Books.

Bowlby, J. (1988). A secure base: Clinical applications of attachment theory. London: Routledge.

Brener, N.D., Collins, J.L., Kann, L., Warren, C.W. & Williams, B.I. (1995). Reliability of the Youth Risk Behaviour Survey questionnaire. *American Journal of Epidemiology, 141(6),* 575-580.

Broberg, A., Hjalmers, I. & Nevonen, L. (2001) Eating disorders, attachment and interpersonal difficulties: a comparison between 18- to 24-year-old patients and normal controls. European Eating Disorders Review, 9, 381–96.

Cogan, N. & Schwannauer, M. (2010). Understanding adolescent risk taking: Exploring the motivations, personalities and coping styles of young people in a school-based population. In: Frydenberg E (Ed): Personality, stress, and coping: Implications for education. Routledge.

Cohen, J. (1992). A power primer. *Quantitative Methods in Psychology, 112 (1),* 155-159.

Compas, B. E. (1998). An agenda for coping research and theory: Basic and applied developmental issues. *International Journal of Behavioural Development, 22,* 231-23.

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

Compas, B. E., Connor, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M.E. (1999). Getting specific about coping: Effortful and involuntary responses to stress in development. In M. Lewis & D. Ramsay (Eds.), *Soothing and stress* (pp. 229-256). New York: Cambridge University Press.

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

Cooper, M.L., Shaver, P., & Collins, N.L. (1998). Attachment styles, emotion regulation, and adjustment in adolescence. Journal of Personality and Social Psychology, 74, 1380-1397.

Eaton, D. K., Kann, L., Kinchen, S., Shanklin, S., Flint, K. H., Hawkins, J., Harris, W. A., Lowry, R., McManus, T., Chyen, D., Whittle, L., Lim, C., Wechsler, H. (2011). Youth risk behavior surveillance – United States. Centres for Disease Control and Prevention (CDC). MMWR Surveillance Summary, 8, 1-162.

Eisenberg, N., Fabes, R. A., & Guthrie, I. (1997). Coping with stress: The roles of regulation and development. In J.N. Sandler & S.A. Wolchik (Eds.), Handbook of children's coping with common stressors: Linking theory, research and intervention (pp. 41-70). New York: Plenum.

Eisenberg, N., Fabes, R. A., Guthrie, I., Murphy, B. C., Maszk, P., Holmgren, R., & Suh, K. (1996). The relations of regulation and emotionality to problem behaviour in elementary school children. *Development and Psychopathology, 8*, 141-162.

Eisenberg, N., Fabes, R. A., Nyman, M., Bernzweig, J. & Pinuelas, A. (1994). The relations of emotionality and regulation to children's anger-related reactions. *Child Development, 65,* 109-128.

Eisenberg, N., & Valiente, C. (2004). Elaborations on a theme: Beyond main effects in relations of parenting to children's coping and regulation. *Parenting: Science and Practice, 4,* 319-323.

Elicker J, Englund M, Sroufe LA. (1992). Predicting peer competence and peer relationships in childhood from early parent-child relationships. In R. D. Parke & G. W. Ladd (Eds), *Family-peer relationships: Modes of linkage* (pp.77-106). Lawrence Erlbaum; Hillsdale, NJ:

Field, A. P. (2009). Discovering statistics using SPSS. London, England: SAGE.

Frydenberg, E., & Lewis, R. (1993). *Adolescent Coping Scale*. Melbourne: Australian Council for Educational Research.

Frydenberg, E., & Lewis, R. (1996). A replication study of the structure of the *Adolescent Coping Scale*: Multiple forms and applications of a self-report inventory in a counselling and research context. *European Journal of Psychological Assessment*, *12*(3), 224–235.

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A Research Note. Journal of Child Psychology and Psychiatry, 38, 581-586.

Goodman, R. (2001). Psychometric properties of the Strengths and Difficulties Questionnaire (SDQ). *Journal of the American Academy of Child and Adolescent Psychiatry, 40*, 1337-1345.

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.

Hagel A, Coleman J, Brooks F (2013) Key Data on Adolescence 2013, London: Association for Young People's Health

Hazan, C., & Shaver, P. R. (1994). Attachment as an organizational framework for research on close relationships. *Psychological Inquiry, 5,* 1–22.

Holodynski, M., & Friedlmeier, W. (2006). Development of emotions and emotion regulation. New York: Springer.

Hong, R. R. & Park, J. S. (2012). Impact of attachment, temperament and parenting on human development. *Korean Journal of Paediatrics, 55* (12), 449-454.

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

Johnson, P.B. & Marlow, M. S. (2008). *Adolescents and risk: making sense of adolescent psychology,* United Kingdom: Greenwood Press.

Jorgensen, R. S. & Dusek, J. B. (1990). Adolescent adjustment and coping strategies, Journal of Personality, 58(3), 503-513.

Klabbers. G, Bosma. H, van den Akker. M, van Boxtel. M. P. J, Kempen G. J. I. M. (2009). Measuring rebelliousness and predicting health behaviour and outcomes: an investigation of the construct validity of the social reactivity scale. *Journal of Health Psychology, 14*, 771-9.

Kliewer, W., Sandler, I. N., & Wolchik, S. (1994) Family socialization of threat appraisal and coping: Coaching, modeling and family context. In F. Nestmann & K. Hunelmann (Eds.), *Social networks and social support in childhood and* adolescence (pp. 271–291). Berlin: de Gruyter.

Lafreniere, K. D., Menna, R., & Cramer, K. M. (2013). Rebelliousness, effortful control, and risky behaviour: Metamotivational and temperamental

predictors of risk-taking in older adolescents. Journal of Motivation, Emotion, and Personality, 1, 17–26.

Lazarus, R. S. & Folkman, S. (1984). *Stress, Appraisal and Coping*. New York, Springer

Lengua, L. J., & Sandler, I. S. (1996). Self-regulation as a moderator of the relation between coping and symptomatology in children of divorce. *Journal of Abnormal Child Psychology, 24,* 681-701.

Maccoby, E. E. (1983). Social-emotional development and response to stressors. *In N. Garmezy & M. Rutter (Eds.), Stress, coping and development: Issues and perspectives* (pp. 217-234) McGraw-Hill.

McClelland, G. H., & Judd, C. M. (1993). Statistical difficulties of detecting interactions and moderator effects. *Psychological Bulletin, 114(2),* 376-390.

McDermot, M. R. (1988). Measuring rebelliousness: The development of the negativism dominance scale. In M. J. Apter, J. H. Kerr & M. P. Cowles (Eds), Progress in reversal theory (pp. 297-312). Amsterdam: Elsevier.

Mullis, R.L. & Chapman, P. (2000). Age, gender and self esteem differences in adolescent coping styles. *Journal of Social Psychology, 140*, 539-541.

Murgatroyd, S., Rushton, C., Apter, M. & Ray, C. (1978). The development of the Telic Dominance Scale; *Journal of Personality Assessment, 42 (5),* 519-28.

Murphy, L. B., & Moriarty, A. E. (1976). *Vulnerability, coping and growth from infancy to adolescence*. Oxford, UK: Yale University Press.

Olshen, E., McVeigh, K.H., Wunsch-Hitzig, R.A. & Rickert, V.I. (2007). Data violence, sexual assault, and suicide attempts among urban teenagers, *Archives of Paediatrics and Adolescent Medicine, 161,* 539-545.

Pietromonaco, P. R. & Feldman Barret, L. (2000). The internal working models concept: What do we really know about the self in relation to others? Review of general psychology, 4(2), 155-175.

Power, T. G. (2004). Stress and coping in childhood: The parents' role. *Parenting Scientific Practice, 4,* 271-317.

Rothbart, M. K., Ahadi, S. A., & Evans, D. E. (2000). Temperament and personality: Origins and outcomes. Journal of Personality and Social Psychology, 78(1), 122-135.

Sarracino, D., Presaghi, F., Degni, S. & Innamorati M. (2011). Sex-specific relationships among attachment security, social values, and sensation seeking in early adolescence: implications for adolescents' externalizing problem behaviour. *Journal of Adolescence, 34*, 541-554.

Scharfe, E. & Eldredge, D. (2001). Associations between attachment representations and health behaviors in late adolescence. Journal of Health Psychology, 6, 287-299.

Schmitt, D., Alcalay, L., Allensworth, M. Allik, J., Ault, L., Austers, I., et al. (2005). Patterns of adult romantic attachment across 62 cultural regions; Are models of self and other pancultural constructs? Journal of Cross-Cultural Psychology, 35, 367-402.

Seiffge-Krenke, I. & Beyers, W. (2005). Coping trajectories from adolescence to young adulthood: Links to attachment state of mind. *Journal of Research on Adolescence, 15*(4), 561-582.

Shaver, P. R., Hazan, C., & Bradshaw, D. (1988). Love as attachment: The integration of three behavioral systems. In R. J. Steinberg & M. L. Barnes (Eds.), *The psychology of love* (pp. 68-99). New Haven, CT: Yale University Press.

Skinner, E. A., & Edge, K. (2002). Parenting, motivation, and the development of children's coping. In L. J. Crockett (Ed.). Agency, motivation, and the life course: The Nebraska symposium on motivation (Vol. 48, pp. 77–143). Lincoln, NE: University of Nebraska Press.

Skinner, E. A., & Wellborn, J. G. (1994). Coping during childhood and adolescence: A motivational perspective. In D. Featherman, R. Lerner, & M. Perlmutter (Eds.), *Life-span development and behaviour* (pp. 91-133). Hillsdale, NJ: Erlbaum.

Skinner, E. A. & Zimmer-Gembeck, M. J. (2007). The development of coping. *Annual Review of Psychology, 58*, 119-144.

Sroufe, L. A. (1996). Emotional development: The organization of emotional life in the early years. New York: Cambridge University Press.

Steele, H. & Steele, M. (Eds.). Clinical applications of the Adult Attachment Interview. New York: Guildford.

Steiner, H., Erickson, S. J., Hernandez, N., & Pavelski, R. (2002). Coping styles as correlates of health in high school students. *Journal of Adolescent Health, 30*, 326-335.

Svebak, S. (1983). The effect of information load, emotional load and motivational state upon tonic physiological activation. In H. Ursin & R. Murison (Eds), Biological and psychological basis of psychosomatic disease: Advances in the bioscience (pp. 61-73). Oxford: Pergamom Press.

Tacon, P., & Abner, B. (1993). Normative and other data for the Telic Dominance and Negativism Dominance scales. In Kerr, J.H., Murgatroyd, S. & Apter, M.J. (Eds.). *Advances in reversal theory (pp. 165-175).* Amsterdam: Swets & Zeitlinger.

Testa, C. R. & Steinberg, L. (2010). Depressive symptoms and health-related risk taking in adolescence. *Suicide and Life Threatening Behaviour, 40,* 298-305.

Tomaka, J. & Blascovich, J. (1994). Effects of justice beliefs on cognitive appraisal of and subjective physiological and behavioral responses to potential stress. *Journal of personality and social psychology 67* (4), 732-740.

Troisi, A., D'Argenio, A., Peracchio, F. & Petti, P. (2001). Insecure attachment and alexithymia in young men with mood symptoms. Journal of Nervous and Mental Disease, 189, 311–316.

Vostanis, P. (2006). Strengths and difficulties questionnaire: Research and clinical applications, Clinical Child Psychology and Psychiatry, 11, 513-528.

Wright, K. B. (2005), Researching Internet-Based Populations: Advantages and Disadvantages of Online Survey Research, Online Questionnaire Authoring Software Packages, and Web Survey Services. Journal of Computer-Mediated Communication, 10: 00. doi: 10.1111/j.1083-6101.2005.tb00259.x

Zimmer-Gembeck, M. J., & Locke, E. M. (2007). The socialization of adolescent coping: Relationships at home and school. *Journal of Adolescence, 30*, 1-16.

6. Complete Reference List

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: Assessed in the strange situation and at home. Hillsdale, NJ: Erlbaum.

Allen, J. P., Marsh, P., McFarland, C., McElhaney, K. B., Land, D. J., Jodl, K. M., et al. (2002). Attachment and autonomy as predictors of the development of social skills and delinquency during midadolescence. *Journal of Consulting & Clinical Psychology*, 70, 56-66

Apter, M. J. (1982). The experience of motivation: The theory of psychological reversals. London: Academic Press.

Apter, M. J. (2001). *Motivational styles in everyday life: A guide to reversal theory*. Washington, DC: American Psychological Association.

Apter, M. J. (2005). *Personality Dynamics; key concepts in reversal theory.* Loughborough, U.K.: Apter International Ltd.

Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (1993). A psychometric study of the Adult Attachment Interview: Reliability and discriminant validity. *Developmental Psychology, 29,* 870–879.

Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (1993). A psychometric study of the Adult Attachment Interview: Reliability and discriminant validity. *Developmental Psychology, 29,* 870–879.

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*, 1173-1182

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

Bifulco, A., Mahon, J., Kwon, J-H., Moran, P. M. and Jacobs, C. (2003) The Vulnerable Attachment Style Questionnaire (VASQ): an interview-based measure of attachment styles that predict depressive disorder. Psychological Medicine, 33(6), 1099-1110.

Boddington, E. L., & McDermott, M. R. (2013). Predicting resistance to health education messages for cannabis use: the role of rebelliousness, autic mastery, health value and ethnicity. *Journal of Health Psychology, 18*(2), 157–166.

Bowlby, J. (1982/1969). Attachment and loss: Vol. 1. Attachment (2nd ed.). New York: Basic Books.

Bowlby, J. (1988). A secure base: Clinical applications of attachment theory. London: Routledge.

Boyce, W. T., Barr, R.G., & Zeltzer, L.K., (1992). Temperament and the psychology of childhood stress. *Paediatrics, 90,* 483-486.

Brady, S.S. & Donenberg, G. R. (2006). Mechanisms linking violence exposure to health risk behaviour in adolescence: motivation to cope and sensation seeking. *Journal of the American Academy of Child and Adolescent Psychiatry, 45,* 673-680.

Brener, N.D., Collins, J.L., Kann, L., Warren, C.W. & Williams, B.I. (1995). Reliability of the Youth Risk Behaviour Survey questionnaire. *American Journal of Epidemiology, 141(6),* 575-580.

Brennan, K. A., Clark, C. I., & Shaver, P. R. (1998). Self-report measurement of adult attachment. In J. A. Simpson & W.S. Rhodes (Eds.) *Attachment Theory and Close Relationships* (pp. 46-76). New York, Guildford.

Broberg, A., Hjalmers, I. & Nevonen, L. (2001) Eating disorders, attachment and interpersonal difficulties: a comparison between 18- to 24-year-old patients and normal controls. European Eating Disorders Review, 9, 381–96.

Calkins, S. D., Dedmon, S. E., Gill, K. L., Lomax, L. E. and Johnson, L. M. (2002), Frustration in Infancy: Implications for Emotion Regulation, Physiological Processes, and Temperament. *Infancy, 3*, 175–197.

Campbell, J. S., & Elison, J. (2005). Shame coping styles and psychopathic personality traits. *Journal of Personality Assessment, 84,* 96-104.

Carver, C. S., Scheier, M. F., Weintraub, J. K. (1989) Assessing coping strategies: A theoretically based approach. Journal of Personality and Social Psychology, 56(2), 267-283.

Chalmers, T. C., Frank, C. S., & Reitman, D. (1990). Minimizing the three stages of publication bias. *JAMA: The Journal of the American Medical Association, 263*(10), 1392-1395.

Cogan, N. & Schwannauer, M. (2010). Understanding adolescent risk-taking behaviour: Exploring the motivations, personalities and coping styles of young people in a school-based population. In Frydenberg. E. (Ed), *Personality, stress, and coping: Implications for education.* Routledge.

Cohen, J. (1992). A power primer. *Quantitative Methods in Psychology, 112 (1),* 155-159.

Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology, 58*(4), 644-663.

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

Compas, B. E. (1998). An agenda for coping research and theory: Basic and applied developmental issues. *International Journal of Behavioural Development, 22,* 231-23.

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

Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M.E. (2001). Coping with stress during childhood and adolescence: Problems, progress, and potential in theory and research. *Psychological Bulletin, 127(1)*, 87-127.

Compas, B. E., Connor, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M.E. (1999). Getting specific about coping: Effortful and involuntary responses to stress in development. In M. Lewis & D. Ramsay (Eds.), *Soothing and stress* (pp. 229-256). New York: Cambridge University Press.

Cooper, M.L., Shaver, P., & Collins, N.L. (1998). Attachment styles, emotion regulation, and adjustment in adolescence. Journal of Personality and Social Psychology, 74, 1380-1397.

Cozzarelli, C., Sumer, N., & Major, B. (1998). Mental models of attachment and coping with abortion. *Journal of Personality and Social Psychology*, 74, 453-467.

Crowell, J. A. (1990) *Current relationship interview*. Unpublished manuscript, State University of New York at Stony Brook.

Crowell, J.A. & Treboux, D. (1995) A review of adult attachment measures: Implications for theory and research. Social Development, 4, 294-327.

Crowell, J., Treboux, D., Owens, G., & Pan, H. (1995) *Is it True the Longer You're Together the More You Think Alike? Examining two hypotheses of attachment theory*. Paper, presented at the Biennial Meeting of the Society for Research in Child Development. Indianapolis, Indiana.

Dawson, A. E. (2009) Negative coping strategies mediating the relationship of adolescent attachment classifications on future externalising behaviours. Presented at a research conference.

Dickersin, K., & Min, Y. (1993). Publication bias: The problem that won't go away. *Annals of the New York Academy of Sciences, 703*(1), 135-148.
Eaton, D.K., Kann, L., Kinchen, S., Shanklin, S., Flint, K.H., Hawkins, J., Harris, W.A., Lowry, R., McManus, T., Chyen, D., Whittle, L., Lim, C., Wechsler, H. (2011). Youth risk behavior surveillance – United States. Centres for Disease Control and Prevention (CDC). MMWR Surveillance Summary, 8, 1-162.

Eisenberg, N., Fabes, R. A., & Guthrie, I. (1997). Coping with stress: The roles of regulation and development. In J.N. Sandler & S.A. Wolchik (Eds.), *Handbook of children's coping with common stressors: Linking theory, research and intervention (pp. 41-70).* New York: Plenum.

Eisenberg, N., Fabes, R. A., Nyman, M., Bernzweig, J. & Pinuelas, A. (1994). The relations of emotionality and regulation to children's anger-related reactions. *Child Development, 65,* 109-128.

Eisenberg, N., Fabes, R. A., Guthrie, I., Murphy, B. C., Maszk, Polmgren, R., & Suh, K. (1996). The relations of regulation and emotionality to problem behaviour in elementary school children. *Development and Psychopathology, 8,* 141-162.

Eisenberg, N., & Valiente, C. (2004). Elaborations on a theme: Beyond main effects in relations of parenting to children's coping and regulation. *Parenting: Science and Practice, 4,* 319-323.

Elicker J, Englund M, Sroufe LA. (1992). Predicting peer competence and peer relationships in childhood from early parent-child relationships. In R. D. Parke & G. W. Ladd (Eds), *Family-peer relationships: Modes of linkage* (pp.77-106). Lawrence Erlbaum; Hillsdale, NJ:

Field, A. P. (2009). Discovering statistics using SPSS. London, England : SAGE.

Field, T. (1985). Attachment as psychobiological attunement: being on the same wavelength. In Reite, M . & Field, T. (Eds). *Psychobiology of Attachment and Separation.* New York: Academic pp. 455–80.

Field, T. (1996). Attachment and separation in young children. *Annual Review of Psychology, 47*, 541-562.

Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: A study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology, 48,* 150-170.

Fox, N. A., Henderson, H. A., Marshall, P. J., Nichols, K. E., & Ghera, M. M. (2005). Behavioral inhibition: Linking biology and behavior within a developmental framework. Annual Review of Psychology, 56, 235-262.

Fraley, R. C., & Waller, N. G. (1998). Adult attachment patterns: A test of the typological model. In J. A. Simpson & W. S. Rholes (Eds.) *Attachment theory and close relationships* (pp. 77-114). New York: Guilford Press.

Franczak, K. (2012). Attachment Styles and the Ways of Coping with Stress in Polish Nurses Attachment Styles and the Ways of Coping with Stress in Polish Nurses. *Advances in Palliative Medicine,* 11, 62-73.

Frydenberg, E., & Lewis, R. (1993). *Adolescent Coping Scale*. Melbourne: Australian Council for Educational Research.

Frydenberg, E., & Lewis, R. (1996). A replication study of the structure of the *Adolescent Coping Scale*: Multiple forms and applications of a self-report inventory in a counselling and research context. *European Journal of Psychological Assessment*, *12*(3), 224–235.

Garcia, C. (2010). Conceptualization and measurement of coping during adolescence: a review of the literature. Journal of Nursing Scholarship, 42(2), 166-185.

George, C., Kaplan, N., & Main, M. (1996). *Adult Attachment Interview protocol(3rd ed).* Unpublished manuscript, University of California at Berkley.
Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A Research Note. *Journal of Child Psychology and Psychiatry, 38*, 581-586.

Goodman, R. (2001). Psychometric properties of the Strengths and Difficulties Questionnaire (SDQ). *Journal of the American Academy of Child and Adolescent Psychiatry, 40*, 1337-1345.

Goodwin, R.D. (2006). Association between coping with anger and feelings of depression among youth. *American Journal of Public Health, 96,* 664-669.

Greenberger, E. & McLaughlin, C. S. (1998). Attachment, coping and explanatory style in late adolescence. *Journal of Youth and Adolescence, 27,* 121-139.

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.

Hagel A, Coleman J, Brooks F (2013) Key Data on Adolescence 2013, London: Association for Young People's Health

Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52,* 511–524.

Hazan, C., & Shaver, P. R. (1994). Attachment as an organizational framework for research on close relationships. *Psychological Inquiry, 5,* 1–22.

Higgins, J. P., & Green, S. (2011). Cochrane handbook for systematic reviews of interventions. Retrieved 12 December 2013, from www.handbook.cochrane.org

Holmberg, D., Lomore, C.D., Takacs, T.A. & Price, L. (2011). Adult attachment styles and stressor severity as moderators of the coping sequence. *Personal Relationships,* 18(3), 502-517.

Holodynski, M., & Friedlmeier, W. (2006). Development of emotions and emotion regulation. New York: Springer.

Hong, R. R. & Park, J. S. (2012). Impact of attachment, temperament and parenting on human development. *Korean Journal of Paediatrics, 55* (12), 449-454.

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

Johnson, P.B. & Marlow, M. S. (2008). *Adolescents and risk: making sense of adolescent psychology,* United Kingdom: Greenwood Press.

Jorgensen, R.S. & Dusek, J.B. (1990). Adolescent adjustment and coping strategies, Journal of Personality, 58(3), 503-513.

Jüni, P., Witschi, A., Bloch, R., & Egger, M. (1999). The hazards of scoring the quality of clinical trials for meta-analysis. *The Journal of the American Medical Association, 282*(11), 1054-1060.

Kemp, M. A. & Neimeyer, G. J. (1999). Interpersonal attachment: experiencing, expressing and coping with stress. *Journal of Counseling Psychology, 46*, 388-394.

Klabbers. G, Bosma. H, van den Akker. M, van Boxtel. M.P.J, Kempen G.J.I.M. (2009). Measuring rebelliousness and predicting health behaviour and outcomes: an investigation of the construct validity of the social reactivity scale. *Journal of Health Psychology, 14*, 771-9.

Kliewer, W., Sandler, I. N., & Wolchik, S. (1994) Family socialization of threat appraisal and coping: Coaching, modeling and family context. In F.

Nestmann & K. Hunelmann (Eds.), *Social networks and social support in childhood and* adolescence (pp. 271–291). Berlin: de Gruyter.

Lafreniere, K. D., Menna, R., & Cramer, K. M. (2013). Rebelliousness, effortful control, and risky behaviour: Metamotivational and temperamental predictors of risk-taking in older adolescents. *Journal of Motivation, Emotion, and Personality, 1,* 17–26.

Lazarus, R. S. (1993). Coping theory and research: Past, present, and future. *Psychometric Medicine, 55,* 2324-2347.

Lazarus, R. S. (1998). *Stress and emotion: A new synthesis.* New York: Springer.

Lazarus, R. S. & Folkman, S. (1984). *Stress, Appraisal and Coping*. New York, Springer

Lengua, L. J., & Sandler, I. S. (1996). Self-regulation as a moderator of the relation between coping and symptomatology in children of divorce. *Journal of Abnormal Child Psychology, 24,* 681-701.

Lewis, M. (1989). Culture and biology: The role of temperament. In P.R. Zelazo & R.G. Barr (Eds.), *Challenges to developmental paradigms: Implications for theory, assessment and treatment* (pp. 203-223). Hillsdale, NJ: Erlbaum.

Lopez, F. G., Mauricio, A.M., Gormley, B., Simko, T. & Berger, E. (2001). Adult attachment orientations and college student distress: The mediating role of problem solving styles. *Journal of Counseling and Development, 79,* 459-464.

Maccoby, E. E. (1983). Social-emotional development and response to stressors. *In N. Garmezy & M. Rutter (Eds.), Stress, coping and development: Issues and perspectives* (pp. 217-234) McGraw-Hill.

Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood and adulthood: A move to the level of representation. *Monographs of the Society for Research in Child Development, 50*(1-2, Serial No. 209).

Maltby, J., Day, L. & Barber, L. (2004). Forgiveness and mental health variables: Interpreting the relationship using an adaptational-continuum model of personality and coping. *Personality and Individual Differences, 37*, 1629-1641.

Markus, H., & Cross, S. (1990). The interpersonal self. In L. A. Pervin (Ed.) *Handbook of Personality: Theory and Research* (pp. 576-608). NY: Guilford.

Masicampo, E., & Lalande, D. R. (2012). A peculiar prevalence of p values just below. 05. *The Quarterly Journal of Experimental Psychology, 65*(11), 2271-2279.

Mead, G. H. (1934). *Mind, self and* society: Chicago: University of Chicago Press.

McClelland, G.H., & Judd, C.M. (1993). Statistical difficulties of detecting interactions and moderator effects. *Psychological Bulletin, 114(2),* 376-390.

McDermot, M. R. (1988). Measuring rebelliousness: The development of the negativism dominance scale. In M. J. Apter, J. H. Kerr & M. P. Cowles (Eds), *Progress in reversal theory* (pp. 297-312). Amsterdam: Elsevier.

Mikulincer, M., & Florian, V. (1995). Appraisal and coping with a real-life stressful situation: The contribution of attachment styles. *Personality and Social Psychology Bulletin, 21,* 408-416.

Mikulincer, M., Florian, V., & Weller, A. (1993). Attachment styles, coping strategies, and posttraumatic psychological distress: the impact of the Gulf War in Israel. *Journal of personality and social psychology, 64 (5),* 817.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G. (2009). The PRISMA Group *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement.

Moretti, M. and Peled, M. (2004) Adolescent-parent attachment: Bonds that support healthy development. *Paediatrics and Child Health*, 9 (1), 551-555.

Mota, C. P. & Matos, P. M. (2013). Peer attachment, coping and self-esteem in institutionalized adolescents: The mediating role of social skills. *European Journal of Psychology of Education, 28,* 1, 87-100.

Mullis, R.L. & Chapman, P. (2000). Age, gender and self esteem differences in adolescent coping styles. *Journal of Social Psychology, 140*, 539-541.

Murgatroyd, S., Rushton, C., Apter, M. & Ray, C. (1978). The development of the Telic Dominance Scale; *Journal of Personality Assessment, 42 (5),* 519-28.

Murphy, L. B., & Moriarty, A. E. (1976). *Vulnerability, coping and growth from infancy to adolescence*. Oxford, UK: Yale University Press.

NICE (2012). Methods for the development of NICE public health guidance (third edition), Appendix G Quality appraisal checklist – quantitative studies reporting correlations and associations. Retrieved 12 December 2013 from http://publications.nice.org.uk/methods-for-the-development-of-nice-public-health-guidance-third-edition-pmg4/appendix-g-quality-appraisal-checklist-quantitative-studies-reporting-correlations-and

Olshen, E., McVeigh, K.H., Wunsch-Hitzig, R.A. & Rickert, V.I. (2007). Data violence, sexual assault, and suicide attempts among urban teenagers, *Archives of Paediatrics and Adolescent Medicine, 161,* 539-545.

Pietromonaco, P. R. & Feldman Barret, L. (2000). The internal working models concept: What do we really know about the self in relation to others? *Review of general psychology, 4*(2), 155-175.

Power, T. G. (2004). Stress and coping in childhood: The parents' role. *Parenting Scientific Practice, 4,* 271-317.

Preston, P. (2006). Marijuana Use as a Coping Response to Psychological Strain: Racial, Ethnic, and Gender Differences Among Young Adults. *Deviant Behaviour, 26,* 397-421.

Printz, B. L., Shermis, M. D., & Webb, P. M. (1999). Stress-buffering factors related to adolescent coping: a path analysis. *Adolescence, 34(136),* 715-34.

Rothbart, M. K., Ahadi, S. A., & Evans, D. E. (2000). Temperament and personality: Origins and outcomes. *Journal of Personality and Social Psychology, 78(1),* 122-135.

Rothbart, M. K., Ahadi, S. A., & Hershey, K. L. (1994). Temperament and social behavior in childhood. *Merrill-Palmer Quarterly, 40,* 21-39.

Rutledge, H. & Tucker, J. (2007). *Reversing forward: A practical guide to reversal theory.* Fairfax, Virginia: Otto Kroeger associates.

Rutter, M. (1983). Stress, coping and development: Some issues and some questions. *In N. Garmezy & M. Rutter (Eds.), Stress, coping and development: Issues and perspectives* (pp. 1-41) McGraw-Hill.

Sarracino, D., Presaghi, F., Degni, S. & Innamorati M. (2011). Sex-specific relationships among attachment security, social values, and sensation seeking in early adolescence: implications for adolescents' externalizing problem behaviour.
Journal of Adolescence, 34, 541-554.
Scharfe, E. & Eldredge, D. (2001). Associations between attachment representations and health behaviors in late adolescence. Journal of Health Psychology, 6, 287-299.

Schmitt, D., Alcalay, L., Allensworth, M. Allik, J., Ault, L., Austers, I., et al. (2005). Patterns of adult romantic attachment across 62 cultural regions; Are models of self and other pancultural constructs? Journal of Cross-Cultural Psychology, 35, 367-402.

Seifer, R. & Schiller, M. (1995). The role of parenting sensitivity, infant temperament, and dyadic interaction in attachment theory and assessment. *Monographs for the Society of Research in Child Development, 60,* 146-174.

Seiffge-Krenke, I. & Beyers, W. (2005). Coping trajectories from adolescence to young adulthood: Links to attachment state of mind. *Journal of Research on Adolescence, 15*(4), 561-582.

Seiffge-Krenke, I., Weidemann, S., Fentner, S., Aegenheister, N., & Poeblau, M. (2001). Coping with school-related stress and family stress in healthy and clinically referred adolescents. *European Psychologist, 6,* 123 – 132.

Shaver, P. R., Hazan, C., & Bradshaw, D. (1988). Love as attachment: The integration of three behavioral systems. In R. J. Steinberg & M. L. Barnes (Eds.), *The psychology of love* (pp. 68-99). New Haven, CT: Yale University Press.

Shaver, P. R. and Mikulincer, M. (2002). Attachment-related psychodynamics. *Attachment and Human Development, 4*(2), 133-161. Skinner, E.A. (1995). *Perceived control, motivation and coping.* Thousand Oaks, CA: Sage.

Schwarzer, R. & Schwarzer, C. (1996). A critical survey of coping instruments. In M.

Zeidner & N. S. Endler (Eds.) *Handbook of Coping*. New York: Wiley.

Skinner, E.A. (1995). *Perceived control, motivation and coping.* Thousand Oaks, CA: Sage.

Skinner, E. A., & Edge, K. (2002). Parenting, motivation, and the development of children's coping. In L. J. Crockett (Ed.). Agency, motivation, and the life course: The Nebraska symposium on motivation (Vol. 48, pp. 77–143). Lincoln, NE: University of Nebraska Press.

Skinner, E., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: A review and critique of category systems for classifying ways of coping. Psychological Bulletin, 129, 216-269.

Skinner, E.A., & Wellborn, J.G. (1994). Coping during childhood and adolescence: A motivational perspective. In D. Featherman, R. Lerner, & M. Perlmutter (Eds.), *Life-span development and behaviour* (pp. 91-133). Hillsdale, NJ: Erlbaum.

Skinner, E. A. & Zimmer-Gembeck, M. J. (2007). The development of coping. *Annual Review of Psychology, 58*, 119-144.

Smith, A. E. M., Msetfi, R. M., & Golding, L. (2010). Client self rated adult attachment patterns and the therapeutic alliance: A systematic review. Clinical Psychology Review, 30(3), 326-337

Skinner, E. A. & Zimmer-Gembeck, M. J. (2007). The development of coping. *Annual Review of Psychology, 58*, 119-144.

Sroufe, L. A. (1996). Emotional development: The organization of emotional life in the early years. New York: Cambridge University Press.

Steele, H. & Steele, M. (Eds.). Clinical applications of the Adult Attachment Interview. New York: Guildford.

Steiner, H., Erickson, S.J., Hernandez, N., & Pavelski, R. (2002). Coping styles as correlates of health in high school students. *Journal of Adolescent Health, 30*, 326-335.

Svebak, S. (1983). The effect of information load, emotional load and motivational state upon tonic physiological activation. In H. Ursin & R. Murison (Eds), *Biological and psychological basis of psychosomatic disease: Advances in the bioscience* (pp. 61-73). Oxford: Pergamom Press.

Sveinbjornsdottir, S. & Thorsteinsson, E. B. (2008), Adolescent coping scales: A critical psychometric review. *Scandinavian Journal of Psychology, 49,* 533–548.

Tacon, P., & Abner, B. (1993). Normative and other data for the Telic Dominance and Negativism Dominance scales. In Kerr, J.H., Murgatroyd, S. & Apter, M.J. (Eds.). *Advances in reversal theory (pp. 165-175).* Amsterdam: Swets & Zeitlinger.

Testa, C. R. & Steinberg, L. (2010). Depressive symptoms and health-related risk taking in adolescence. *Suicide and Life Threatening Behaviour, 40,* 298-305.

Tomaka, J. & Blascovich, J. (1994). Effects of justice beliefs on cognitive appraisal of and subjective physiological and behavioral responses to potential stress. *Journal of personality and social psychology 67* (4), 732-740.

Torquati, J. C. & Vazsonyi, A. T. (1999). Attachment as an organizational construct for affect, appraisals, and coping of late adolescent females. *Journal of Youth and Adolescence,* 28(5), 545-562.

Troisi, A., D'Argenio, A., Peracchio, F. & Petti, P. (2001). Insecure attachment and alexithymia in young men with mood symptoms. Journal of Nervous and Mental Disease, 189, 311–316.

Vostanis, P. (2006). Strengths and difficulties questionnaire: Research and clinical applications, Clinical Child Psychology and Psychiatry, 11, 513-528.

Wei, M., Heppner, P. & Mallinckrodt, B. (2003). Perceived coping as a mediator between attachment and physiological distress: A structural equation modeling approach. *Journal of Counseling Psychology, 50*(4), 438-447.

Wilson, J. M. & Wilkinson, R. B. (2012). The Self-Report Assessment of Adolescent Attachment: A Systematic Review and Critique. *Journal of Relationships Research, 3*, 81-94.

Wright, K. B. (2005), Researching Internet-Based Populations: Advantages and Disadvantages of Online Survey Research, Online Questionnaire Authoring Software Packages, and Web Survey Services. *Journal of Computer-Mediated Communication, 10*, 00. doi: 10.1111/j.1083-6101.2005.tb00259.x

Zimmer-Gembeck, M. J., & Locke, E. M. (2007). The socialization of adolescent coping: Relationships at home and school. *Journal of Adolescence, 30*, 1-16.

7. Appendices

7.1 Appendix 1. E-mail content sent to potential participants:

Colleges/Universities:

I am currently taking part in a D.Clin.Psychol (Doctorate in Clinical Psychology) training programme at the University of Edinburgh. As part of this training, we are required to complete a doctoral thesis. I hope to investigate the links between attachment styles, personality traits and risk-taking behaviour among young people.

I would therefore like to invite you to take part in my research study that asks young people about these things.

The study involves completing a number of online surveys that should take 30-40 minutes to complete. If you are interested in taking part in the survey, please follow the link below to find more information about the study, to give your consent to take part and to start the questionnaires.

<insert link to survey here>

Many thanks for your time.

Clemmie Walker

7.2 Appendix 2. Ethical Approval from the University of Edinburgh

SCHOOL *of* HEALTH IN SOCIAL SCIENCE
CLINICAL PSYCHOLOGY

The University of Edinburgh
Medical School Doorway 6,
Teviot Place
Edinburgh
EH8 9AG
Telephone 0131 651 3969
Fax 0131 650 3891
Email submitting.ethics@ed.ac.uk

Clemmie Walker

Trainee Clinical Psychologist

Ref: CLIN047

06 February 2014

Dear Clemmie,

Application for Level 2/3 Approval

Re: An investigation into the attachment processes mediating risk taking in adolescents

Thank you for submitting the above research project for review by the Section of Clinical Psychology Ethics Research Panel. I can confirm that the submission has been independently reviewed and was approved on the 6th February 2014.

Should there be any change to the research protocol it is important that you alert us to this as this may necessitate further review.

Yours sincerely,

Kirsty Gardner

Secretary

Clinical Psychology

7.3 Appendix 3. Author Guidelines Psychological Review

(For literature review)

Length

There is no upper bound on the length of Psychological Review articles. However, authors who submit papers with texts longer than 25,000 words will be asked to justify the need for their length.
Submissions must be under 5 MB in total size.

Manuscript Preparation

Prepare manuscripts according to the Publication Manual of the American Psychological Association (6th edition). Manuscripts may be copyedited for bias-free language (see Chapter 3 of the Publication Manual).
Review APA's Checklist for Manuscript Submission before submitting your article.
Double-space all copy. Other formatting instructions, as well as instructions on preparing tables, figures, references, metrics, and abstracts, appear in the Manual.

Below are additional instructions regarding the preparation of display
Abstract and Keywords

All manuscripts must include an abstract containing a maximum of 250 words typed on a separate page. After the abstract, please supply up to five keywords or brief phrases.
References

List references in alphabetical order. Each listed reference should be cited in text, and each text citation should be listed in the References section.
Examples of basic reference formats:
Journal Article:
Hughes, G., Desantis, A., & Waszak, F. (2013). Mechanisms of intentional binding and sensory attenuation: The role of temporal prediction, temporal control, identity prediction, and motor prediction. Psychological Bulletin, 139, 133–151. http://dx.doi.org/10.1037/a0028566
Authored Book:
Rogers, T. T., & McClelland, J. L. (2004). Semantic cognition: A parallel distributed processing approach. Cambridge, MA: MIT Press.
Chapter in an Edited Book:
Gill, M. J., & Sypher, B. D. (2009). Workplace incivility and organizational trust. In P. Lutgen-Sandvik & B. D. Sypher (Eds.), Destructive organizational

communication: Processes, consequences, and constructive ways of organizing (pp. 53–73). New York, NY: Taylor & Francis.

7. 4 Appendix 4. Author Guidelines: British Journal of Social Psychology

(For empirical research)

British Journal of Social Psychology

Edited By: Karen Douglas and Nick Hopkins

Author Guidelines

The British Journal of Social Psychology publishes original papers in all areas of social psychology. Topics covered include social cognition, attitudes, group processes, social influence, intergroup relations, self and identity, nonverbal communication, and social psychological aspects of personality, affect and emotion, and language and discourse. Submissions addressing these topics from a variety of approaches and methods, both quantitative and qualitative are welcomed.

We publish papers of the following kinds:

• Empirical papers that address theoretical issues

• Theoretical papers, including analyses of existing social psychological theories and presentations of theoretical innovations, extensions, or integrations

• Review papers that provide an evaluation of work within a given area of social psychology and that present proposals for further research in that area

• Methodological papers concerning issues that are particularly relevant to a wide range of social psychologists

1. Circulation

The circulation of the Journal is worldwide. Papers are invited and encouraged from authors throughout the world.

2. Length

The word limit for papers submitted for consideration to BJSP is 7000 words and any papers that are over this word limit will be returned to the authors. The word limit does not include the abstract, reference list, figures, or tables. Appendices however are included in the word limit. The Editor retains

discretion to publish papers beyond this length in cases where the clear and concise expression of the scientific content requires greater length. In such a case, the authors should contact the Editor before submission of the paper.

3. Brief Reports

Brief reports should be limited to 3,500 words (including abstract, but excluding references, tables, and figures). Abstracts should not exceed 120 words. Brief reports may include research studies but we also welcome theoretical contributions. Paper evaluation will focus on the theoretical contribution, innovation and relevance to the Journal. Brief reports will be treated as a priority during the review process and they will also be prioritized once they are accepted. However, please note that we publish only a limited number of these kinds of reports and that their contribution must be clearly innovative and make a substantive contribution to knowledge in order to stand a chance of success.

4. Submission and reviewing

All manuscripts must be submitted via http://www.editorialmanager.com/bjsp/. The Journal operates a policy of anonymous peer review. Before submitting, please read the terms and conditions of submission and the declaration of competing interests.

5. Manuscript requirements

• Contributions must be typed in double spacing with wide margins. All sheets must be numbered.

• Manuscripts should be preceded by a title page which includes a full list of authors and their affiliations, as well as the corresponding author's contact details. A template can be downloaded from here.

• Tables should be typed in double spacing, each on a separate page with a self-explanatory title. Tables should be comprehensible without reference to the text. They should be placed at the end of the manuscript with their approximate locations indicated in the text.

• Figures can be included at the end of the document or attached as separate files, carefully labelled in initial capital/lower case lettering with symbols in a form consistent with text use. Unnecessary background patterns, lines and shading should be avoided. Captions should be listed on a separate sheet. The resolution of digital images must be at least 300 dpi.

• All articles should be preceded by an Abstract of between 100 and 200 words, giving a concise statement of the intention, results or conclusions of the article.

• For reference citations, please use APA style. Particular care should be taken to ensure that references are accurate and complete. Give all journal titles in full and provide DOI numbers where possible for journal articles.

• SI units must be used for all measurements, rounded off to practical values if appropriate, with the imperial equivalent in parentheses.

• In normal circumstances, effect size should be incorporated.

• Authors are requested to avoid the use of sexist language.

• Authors are responsible for acquiring written permission to publish lengthy quotations, illustrations, etc. for which they do not own copyright.

• For guidelines on editorial style, please consult the APA Publication Manual published by the American Psychological Association.

6. Supporting Information

BJSO is happy to accept articles with supporting information supplied for online only publication. This may include appendices, supplementary figures, sound files, video clips etc. These will be posted on Wiley Online Library with the article. The print version will have a note indicating that extra material is available online. Please indicate clearly on submission which material is for online only publication. Please note that extra online only material is published as supplied by the author in the same file format and is not copyedited or typeset. Further information about this service can be found at http://authorservices.wiley.com/bauthor/suppmat.asp