MULTIDIMENSIONAL PATHWAYS TO ADOLESCENT RESILIENCE: THE CASE FOR EMOTIONAL INTELLIGENCE

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LIST OF ABBREVIATIONS

Term	Abbreviation
Emotional intelligence	EI
Ability emotional intelligence	AEI
AEI instruments: Mayer-Salovey-Caruso Emotional Intelligence Test (adult)/Youth Version Research (adolescent)	MSCEIT/MSCEIT-YVR
Multifactor Emotional Intelligence Scale	MEIS
Trait emotional intelligence	TEI
TEI instruments: Emotional Quotient Inventory (adult)/Youth Version (adolescent)	EQi/EQi-YV
Schutte Self-report Emotional Intelligence Test	SREIT
Swinburne University Emotional Intelligence Test	SUEIT
Trait Emotional Intelligence Questionnaire/Adolescent Form/Adolescent Short Form/Child Form	TEIQue/TEIQue-AF/ASF/CF
Trait Meta-Mood Scale	TMMS
Multidimensional Emotional Intelligence Assessment	MEIA
Family dysfunction	FD
Socio-economic adversity	SEA
Negative life events	NLE
Depression	DEP
Disruptive behaviour	DRB
Neuroticism	N
Extraversion	E
Openness	O
Agreeableness	A
Conscientiousness	C
Positive affect	PA
Negative affect	NA

ABSTRACT

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Multidimensional pathways to adolescent resilience: The case for emotional intelligence

Emotional intelligence (EI) has been reliably associated with better mental health (Martins, Ramalho, & Morin, 2010) however the nature of this relationship in adolescence remains largely unexplored. The small body of existing adolescent research is disproportionately focussed upon the 'trait' versus 'ability' EI perspective and the association with mood (versus behavioural) disorders in the form of simple, descriptive relationships that reveal little about the processes underpinning such adaptive outcomes. This research redresses this imbalance and advances the field by examining *how* (whether directly or indirectly linked to known stress-illness processes) and *when* (under which stress conditions) EI (in both 'forms') might be associated with better adolescent mental health, whilst simultaneously exploring the conceptualisation of EI within this developmental period.

Adult literature is equivocal on both fronts. Firstly, evidence points to differential incremental contributions from ability and trait EI in the prediction of internalising versus externalising symptomatology beyond known correlates of performance, i.e., personality and cognitive ability (e.g., Gardner & Qualter, 2010; Peters, Kranzler, & Rossen, 2009). Secondly, whilst there is some evidence to suggest that trait EI may *directly* attenuate the effects of chronic and acute stressors to promote adaptation (e.g., Mikolajczak, Roy, Luminet, Fillée, & de Timary, 2007), the role of ability EI in this regard appears unclear (e.g., Matthews et al., 2006). *Indirect* links to adjustment are also hinted at; coping mediates trait EI-health outcomes in youth though not all EI-influenced 'adaptive' coping styles (e.g., problem-focussed) appear to contribute to this effect (e.g., Downey, Johnston, Hansen, Birney, & Stough, 2010). Using cross-sectional, self-reported data from 1,170 adolescents (mean age = 13.03 years; *SD* = 1.26) the present research aimed to address this lack of clarity.

Preliminary regression analyses found that collectively, EI made a significant, incremental contribution to the prediction of depression and disruptive behaviour in youth beyond the influence of higher-order personality dimensions and general cognitive ability. However, of the two, trait EI appeared the stronger predictor. Structural equation modelling of conditional indirect effects found that whilst both forms of EI can buffer the effects of stressors (family dysfunction, negative life events, socio-economic adversity) on disorder, the mechanisms by which this beneficial effect operates differs substantially according to context - effects appear contingent on stressor, health outcome and level of EI. For depression, ability EI influences the *selection* of avoidant coping when facing family dysfunction and negative life events, whilst trait EI modifies the *effectiveness* of active coping under family dysfunction only. In contrast, EI *directly* attenuates the effects of stressors on disruptive behaviour. Nevertheless, the results of supplementary path analyses augur for the importance of both forms of EI in adaptational processes; *actual* emotional skill (as ability EI) appears dependent on *perceived* competency (trait EI) to realise advantageous outcomes. Implications for the EI construct and related intervention programmes are discussed together with recommendations for progression of the field.

Keywords: emotional intelligence; mental health; depression; disruptive behaviour; coping; stress; personality; adolescence; incremental validity; structural equation modelling; mediation; moderation

DECLARATION

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PREFACE

The author received a first class honours degree in psychology from the University of Teesside in 2005 and a Master of Research (psychology) with distinction from the University of Manchester in 2007. After holding research posts at the Universities of Manchester (Research Assistant: School of Psychological Sciences, Division of Human Communication and Deafness, 2006-2007) and Birmingham (Research Associate: School of Psychology, Psychosis Research Group, 2008-2009), the author won a scholarship from the School of Education to support full-time PhD study commencing September 2009. She has also held a part-time Teaching Fellowship (MEd Psychology of Education programme) within the School of Education since September 2007. The following are works published by the author:

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Davis, S.K., & Humphrey, N. (2012). Emotional intelligence predicts adolescent mental health beyond personality and cognitive ability. *Personality and Individual Differences, 52,* 144-149.

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9. INTRODUCTION

The concept of emotional intelligence (EI) - capturing individual differences in the perception, communication, regulation and understanding of self and other-relevant emotions (Zeidner, Matthews, & Roberts, 2009) - has much theoretical appeal given potential links to psychological 'adaptation', which can be regarded as an individual's adjustment to external circumstances in order to maximise benefits and minimise harm (Matthews, Zeidner, & Roberts, 2002). This, coupled with recent evidence suggesting that EI competencies can be *improved* via targeted training in adults (Nelis et al., 2011) and through school-based programmes in youth (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011) has intensified interest in the construct. Empirically, research is emerging in support of an EI-adaptation link; EI appears to be inversely related to an array of disorders subsumed under the rubric of either internalising (e.g., Mikolajczak, Luminet, & Menil, 2006) or externalising symptomotology (e.g., Brackett, Mayer, & Warner, 2004), yet positively associated with indices of wellbeing (e.g., Petrides, Pita, & Kokkinaki, 2007). Moreover, links between EI and known stressors (e.g., life events; Ciarrochi, Dean, & Anderson, 2002) and mediators of the stress-illness relationship (e.g., coping; Petrides, Perez-Gonzalez, & Furnham, 2007) are also evident, all of which hint at the possible involvement of the construct in established mechanisms of risk underpinning resilience processes.

Resilience is not a static, individual quality (i.e., a specific trait) or outcome (e.g., absence of depression; achievement of developmental competency) but rather a dynamic process that involves an *interaction* between vulnerability and protective markers (internal or external to the individual) that serve to modify the effects of adversity (Luthar, Sawyer, & Brown, 2006; Olsson, Bond, Burns, Vella-Brodrick, & Sawyer, 2003; Rutter, 2006). Thus, 'resilient' youth are those individuals who demonstrate positive adaptation despite exposure to adversity (Luthar, Cicchetti, & Becker, 2000). Consequently, investigation of resilience processes necessitates the assessment of both risk *and* protective markers; where 'risk' acts "to intensify an individual's reaction to adversity (make more vulnerable) and a protective mechanism acts to ameliorate an individual's response to adversity (make more resilient)" (Olsson et al., 2003, p.3). That

said, risk markers are often bipolar in nature such that they have a positive pole associated with positive outcomes and vice versa (Masten, 2001). Indeed, much contention exists in the literature regarding how best to conceptualise, operationally define and measure markers of 'risk', 'protection' and 'adjustment' outcomes, with the variation in methods making cross-study comparisons problematic (Kaufman, Cook, Arny, Jones, & Pittinsky, 1994; Luthar et al., 2000; Masten, 2001). To add to this complexity, analyses may be *variable-focussed* (large, whole-sample investigations of statistical links between markers; suited to uncovering specificity), *person-focussed* (comparison of processes within 'resilient' versus 'vulnerable' groups of individuals; valuable for developing intervention programmes) or a combination of the two (Masten, 2001; Masten & Obradovic, 2006). Despite this lack of consensus, however, a 'short-list' of psychosocial markers have consistently emerged from the literature over recent years as being important correlates of early psychopathological outcomes, e.g., socio-economic disadvantage, family dysfunction etc (Rutter, 2000). Nevertheless, understanding exactly *how* these markers are implicated within/contribute towards underlying risk modifying *mechanisms* remains a priority for resilience researchers (Grant et al., 2003; Grant et al., 2006; Rutter, 2006) as does the continued search for further avenues of risk and protection to facilitate better understanding of the aetiology of youth psychopathology and develop optimal, evidence-based prevention programmes to promote healthy development (Masten, 2007). Whilst protective systems are known to operate across individual (e.g., specific resources, competencies, skills), social (e.g., family, peers) and societal levels of functioning (e.g., school, community) (Masten & Obradovic, 2006; Werner, 1995), it has been noted that the most commonly identified risk/protective markers all appear to tap *regulatory systems* to some extent; be that directly (e.g., aspects of emotion regulation; behavioural regulation; executive functioning) or indirectly (e.g., parental regulation of emotion; attachment; peer social support) (Masten, 2004).

Thus, contextualised within a resilience framework, it would seem plausible that EI, construed as an individual-level latent resource (indicative of emotion-related competencies including regulation), may represent an aspect of pronounced vulnerability (or protection) that operates within such dynamic pathways to adjustment. Accordingly, EI should be able to make a valid contribution to the prediction, understanding and

ultimately, as the focus of prevention programmes, the attenuation of psychopathology in youth. However, research into this 'ideal' is currently limited. Investigation has not progressed far beyond uncovering simple descriptive associations between variables (e.g., EI – depression; EI – coping); complex analyses have rarely been undertaken to explore *how* EI might be linked to mental health and under which circumstances (*when*) such processes are operational, with a dearth of youth-focussed research further compounding this issue. Moreover, the current paucity of evidence has meant that various conceptual and methodological caveats continue to pervade the literature; differences in theoretical underpinnings (i.e., EI as a 'trait' versus 'ability') and measurement (both 'type' and breadth) have so far limited definitive interpretations and the generalisability of findings. Specifically, the capacity of EI to incrementally predict adaptational outcomes beyond the influence of known predictors of performance allied to the construct (e.g., personality; general cognitive ability) remains vehemently debated (Brody, 2004; Fiori & Antonakis, 2011) and has not yet received attention with reference to adolescent mental health. Ultimately, we still do not know whether EI is really useful for those who need it the most - youth exposed to stressors for whom EI may offer some form of protection to promote resilience. Patently this is pivotal to establishing an adaptive account of EI, as Matthews et al., (2002) note, "not only must we show that EI is associated with individual differences in processing, but those processing differences must have significant consequences for real-world functioning" (p. 233). Building on existing EI literature and theoretical conjecture, the current work sets out to address these 'gaps' in the knowledge base by investigating how the construct contributes to adolescent wellbeing and under which circumstances.

A preliminary aim of the work is to explore the conceptualisation of EI in adolescence, including the 'dual-facetted' nature of EI (i.e., distinction between 'ability EI' and 'trait EI') and possible sub-groups differences. Additionally, it will be examined whether EI (in either form) relates to mental health (predictive validity) and whether these effects hold after controlling for the influence of related constructs (incremental validity). This first aim will be addressed via the following research questions:

1. To what extent are ability EI and trait EI related in adolescents? How does each 'type' of EI vary according to age and sex?

2. What is the nature of bivariate relationships between A/TEI and mental health (internalising [depression] and externalising [disruptive behaviour] symptomotology)?

3. If significant associations between A/TEI and mental health exist, does each construct continue to make a significant predictive contribution with the influence of the 'Big Five' personality traits (Neuroticism; Extraversion; Openness; Conscientiousness; Agreeableness) and general cognitive ability (proxy indicator: academic attainment scores) held constant?

The second (central) aim is to explore the processes underpinning the relationship between EI and adolescent mental health in an attempt to explain *how* and *when* EI operates. It is posited that EI may influence adjustment via two potential pathways; *directly* buffering the effects of stressors on mental health (though emotional competencies e.g., perception, regulation) or indirectly, setting in motion 'adaptive' ways of coping when faced with adversity. In line with Grant et al., (2003), EI is considered here as a *pre-existing* personal resource that may modify the impact of stressors, whilst coping is conceived as a *stressor-activated* process that explains the association between stress and psychopathology. Using a variable-focussed approach that builds on the framework proposed by Preacher, Rucker and Hayes (2007), a series of moderated mediation models (adapted to the latent variable context) will be specified to address the following questions:

4. Is EI best considered a 'direct' buffer of the effect of stressors on disorder (i.e., tested through a 'direct effect' moderation model)? If so, is there specificity in this relationship according to 'type' of disorder (depression versus disruptive behaviour), stressor (e.g., poverty, family dysfunction, negative life events) and EI (ability versus trait)? How does this effect differ according to level of EI?

5. Is an 'indirect' role for EI in stressor-health pathways plausible - does EI interact with stressors to affect 'upstream' *choice* of coping strategy ('a' path moderation model), or, does EI influence 'downstream' coping *implementation* to affect disorder ('b' path moderation model)? How do these effects differ according to level of EI? Specificity with respect to stressor, EI and outcome will be examined.

Accordingly, the current work offers a significant and unique contribution to the existing body of knowledge and ongoing research efforts within the field of EI and, more broadly, resilience research. This is the first piece of research to examine the capacity of EI to predict adolescent mental health beyond higher-order personality dimensions and general cognitive ability *and* the first to examine links between multiple coping styles, EI and mental health in the context of stress in adolescence. Hence, this evidence has both theoretical and applied importance; establishing the predictive validity and utility of the construct when situated in wider stress-health processes not only contributes towards building an 'adaptive' theoretical account of EI but also has practical relevance for optimising *Social and Emotional Learning* prevention programmes which have become a key feature of educational strategy both nationally (e.g., Department for Education and Employment, 1999) and internationally (e.g., Collaborative for Academic, Social and Emotional Learning, 2003).

Following an introduction to the EI construct (chapter 10), ensuing discussion provides a review of theory linking EI to mental health (chapter 11) and evaluates the evidence base to date (chapter 12), simultaneously highlighting how the current research will enhance and develop this fledgling field. The study methodology (sample, measures, procedure) and quantitative analyses are presented across chapters 13 and 14 respectively, whilst the final chapter (15) presents a detailed interpretation of the findings and a review of the implications and limitations of the research. Discussion closes by considering the future progression of the field.

10. EMOTIONAL INTELLIGENCE: A DIVIDED FIELD

Broadly defined, emotional intelligence (EI) captures individual differences in identifying, processing and regulating emotion (Zeidner, Roberts, & Matthews, 2008). Originally conceived as a form of intelligence (Salovey & Mayer, 1990), EI spawns from the notion of 'social' intelligence (for review see Landy, 2005) and closely aligns with Gardner's work on 'multiple intelligences' (e.g., Gardner, 1993), which argues for a broadening of the traditional taxonomy of human cognitive abilities (i.e., *g*: abstract, mechanical reasoning) to consider additional areas of competency; most pertinent to EI are the 'interpersonal' (ability to understand others and communicate effectively) and 'intrapersonal' intelligences (capacity for self-reflection/introspection to understand own emotions, goals and motivations). Since its inception, a variety of models of EI have come to the fore (e.g., Bar-On, 1997; Goleman, 1995; Petrides & Furnham, 2001; Salovey & Mayer, 1990; Schutte et al., 1998) each offering divergent perspectives on the relative components of EI and respective sampling domains upon which corresponding measurement instruments are predicated. Indeed it has been suggested that EI traverses at least four existing explanatory constructs; *temperament*, *information processing*, *emotional self-regulation*, *emotional knowledge and skills* (often termed *emotional competence*) (Matthews et al., 2002). Perhaps unsurprisingly therefore, theoretical accounts of EI together with rationalisations of its adaptational value, often 'borrow' from the comprehensive corpora of literature originating in each of these domains.

Such discordance in content has served to strengthen support for a 'dual-facetted' conceptualisation of EI, labelled by some as a 'schism' in the field (Mayer, Salovey, & Caruso, 2008). The *ability* perspective (referred to hereafter as AEI) maintains the original stance that EI is a distinct form of intelligence for reasoning about emotion, represented by a set of interactive cognitive abilities specialised for complex emotional information processing (Mayer, Roberts, & Barsade, 2008). Specifically, Mayer & Salovey (1997) defined EI as "the ability to perceive accurately, appraise, and express emotion...to access and/or generate feelings when they facilitate thought...to understand emotion and emotional knowledge and...regulate emotions to promote emotional and intellectual growth" (p.8). Hence, their accompanying model of EI consists of four branches of

hierarchically ordered sets of primary mental abilities (perceiving; facilitating [using]; understanding; managing). A distinction is made between relatively 'basic' or lower-order skills (such as simple identification of emotion in oneself) and the more complex self and other-regulatory capacities needed for successful affect management. Importantly, each skill set is ordered according to a developmental timescale where "people high in emotional intelligence are expected to progress more quickly through the abilities designated and to master more of them" (Mayer & Salovey, 1997, p.8). Additionally, the ordering of the branches reflects the extent to which the particular ability set is integrated into the individual's overarching psychological sub-systems, for instance personality. In this respect, branch one abilities, which are concerned with perception of emotion, would be tied to the emotion system, whereas branch four, which addresses regulatory capacities, would be influenced by plans and goals (Mayer, 2005; Mayer, Salovey, & Caruso, 2004). In contrast, proponents of the *trait* approach (hereafter, TEI) argue that EI is best represented as "a cluster of emotion-related self-perceptions and dispositions" partially determined by, yet sufficiently distinct from, existing higher-order personality dimensions, such as those described by the 'Big Five' or 'Giant Three' personality taxonomies (Petrides, Pita et al., 2007, p.273). As our 'emotional personality', TEI (or *emotional self-efficacy*) is concerned with self-perceived emotional functioning, emotional preferences and qualities, exemplified through traits such as empathy, adaptability, emotional expression and assertiveness. Hence, conceptually and empirically, TEI aligns with mainstream personality theory and is considered a lower-level personality trait(s) unrelated to general cognitive ability (Petrides, 2011a).

Consequently, each conceptualisation differentially keys into the aforementioned explanatory constructs; TEI taps *dispositional self-regulation* and *temperament* whilst AEI indexes *emotional knowledge and skills* (including *self-regulation proficiency*). As shall be seen in the following review, these theoretical distinctions (and convergences) carry important implications for the development of an adaptive account of EI, particularly with regard to mental health. Moreover, the preferred conceptualisation of EI dictates a mutually exclusive method of assessment. Whilst AEI lends itself to measures of *maximal* performance, akin to cognitive testing (i.e., capacity to pass mental tasks via external appraisal), TEI utilises self-report to evaluate *typical* performance (i.e., perceptions of

attributes via internal appraisal) in the vein of traditional personality testing (Zeidner et al., 2009). The former is exemplified by the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT: Mayer, Salovey, & Caruso, 2002) whilst TEI theory is operationalised through the Trait Emotional Intelligence Questionnaire (TEIQue: Petrides, 2009b)[1]. Recent empirical investigation with adults has corroborated the construct differentiation of EI, with negligible statistical associations reported between measures of AEI and TEI (e.g., Brackett & Mayer, 2003; Goldenberg, Matheson, & Mantler, 2006). Comparable research with youth is sparse owing to the limited availability of omnibus measures of AEI (the MSCEIT youth version, currently under development, is the only comprehensive option available). However, in pre-adolescents (i.e., samples ≤ 11 years), correspondence between the MSCEIT and trait measures appears moderate at best ($r \leq .33$) thus mirroring the adult trend (Barlow, Qualter, & Stylianou, 2010; Qualter, Gardner, Pope, Hutchinson, & Whiteley, 2012). Moreover, studies utilising 'proxy' ability measures drawn from the wider emotion research literature (e.g., *ACES*: Schultz, Izard, & Bear, 2004; *Ekman-60 Faces Test*: Young, Perrett, Calder, Sprengelmeyer, & Ekman, 2002) also report minimal concordance with TEI (Mavroveli, Petrides, Sangareau, & Furnham, 2009; Williams, Daley, Burnside, & Hammond-Rowley, 2009).

Evidence for construct differentiation is further provided through the patterning of associations between EI and allied constructs; AEI is moderately associated (ordinarily to the magnitude of $r \leq .4$) with measures of (predominantly crystallised) cognitive ability or proxies thereof, in both adult (e.g., Brackett & Mayer, 2003; Farrelly & Austin, 2007) and youth samples (e.g., Peters et al., 2009). Conversely, relationships between AEI and measures of personality are typically negligible, with the strongest associations ($r \leq .3$) generally found for trait agreeableness and openness (e.g., Zeidner & Olnick-Shemesh, 2010). By contrast, TEI shares robust associations ($r \leq .5$ contingent upon measurement

[1] Not all self-report measures map directly to trait EI theory; some questionnaires are theoretically derived from the ability model of EI (i.e., Mayer & Salovey, 1990, 1997) and/or purport to measure 'abilities' despite incorporating items assessing personality traits (e.g., Schutte Self Report Emotional Intelligence Inventory (SSREI), Schutte 1998; Emotional Quotient Inventory (EQi), Bar-On, 1997) which is contentious (see Zeidner et al., 2009). However it is argued that, irrelevant of labelling and origin, findings stemming from application of these 'mixed' measures are still valuable, if they are interpreted with reference to trait EI theory (Petrides, 2011). This will be adopted throughout the current review where the labels AEI and TEI will be used to demarcate assessment methodology.

model) with broadband personality dimensions, particularly trait Neuroticism and Extraversion, whilst is unrelated to cognitive ability in adults (Saklofske, Austin, & Minski, 2003) and youths (Ferrando et al., 2011; Mavroveli, Petrides, Shove, & Whitehead, 2008). Such empirical 'dissociations' are fully in-line with respective theoretical underpinnings and hence the emerging dichotomy between trait and ability perspectives appears persuasive. Nevertheless, the field remains fraught with conceptual and methodological issues, some of which are 'construct-specific' (e.g., A/TEI sampling domains and instrumentation) and others 'EI-generic' (e.g., application of the construct: predictive and incremental validity). Thus, before moving forward to explore links between EI and mental health, the former are briefly reviewed, whilst the more 'generic' issues are highlighted in due course with specific application to the mental health literature.

10.1 Challenges and controversies

Whilst proponents of the ability perspective maintain that their construct satisfies established criteria for an 'intelligence' - i.e., reflects an aptitude; increases with age and experience; is positively associated with other abilities (Mayer, Caruso, & Salovey, 1999) - this status is challenged both conceptually and empirically. The representation of AEI as an 'aptitude' depends on whether it can be successfully operationalised as a *skill* set that is amenable to assessment through *veridical* scoring of performance-based tasks (Matthews, Roberts, & Zeidner, 2004; Zeidner et al., 2008). For instance, psychometric *g* is indexed via dichotomous assessment of performance on traditional IQ tests, where responses are adjudged according to the properties of 'universal' rule-based systems (e.g., reasoning = logic; spatial = geometry). It is argued, however, that the subjective and highly contextualised nature of emotions/emotional processing nullifies any possibility of an 'ability' EI construct (Petrides, Furnham, & Mavroveli, 2007; Zeidner et al., 2009). Specifically, the ability perspective rests on the assumption that there exist universally-accepted, 'correct' ways to feel that can be reliably measured in a social vacuum and evaluated in accordance with some independently-derived criteria. Mayer and colleagues (see e.g., Mayer, Salovey, Caruso, & Sitarenios, 2003) have attempted to address these issues by adopting expert and consensus methods of scoring for the MSCEIT. A weighted

proportional score is awarded based on the extent to which the response accords with the pooled consensus of expert or normative-sample opinion. Hence, in this way there are no absolute right or wrong answers, just varying proportions of 'correctness'. For example, the MSCEIT-YVR emotion facilitation branch asks adolescents to rate the extent to which feeling *surprised* is like feeling *cold*; *energetic*; *quick*; *yellow* using a 5-point scale (1: 'Does not feel this way' through to 5: 'Definitely feels this way'). If 19 out of the panel of 21 emotion experts agreed that *energetic* definitely felt like surprise, then a score of .90 (19 ÷ 21) would be awarded to those selecting option 5.

However, as well as neglecting possible socio-cultural differences in emotional processing (Matthews et al., 2004) this methodology may also fail to identify extreme groups – a necessary requisite of all IQ-type tests (MacCann, Roberts, Matthews, & Zeidner, 2004). For instance, the 'right' response to complex emotional scenarios may be unusual and hence only detected by a small number of gifted individuals; however, divergence from the 'typical' response set (effectively exhibiting a *lack of* EI) would result in a *less*-correct proportional score. Indeed, the MSCEIT-YVR validation process has served to further illuminate this issue; it is now *only* possible to score adolescent responses via expert consensus since normative data analyses found that "the most frequently endorsed response by youth was clearly not the correct choice" (Papadogiannis, Logan, & Sitarenios, 2009, p.55). For many, the prospect of an elite set of emotion 'experts' dictating veridical criteria for complex and subjective affect-regulation processes remains questionable (Locke, 2005; Petrides, 2009a) and, as noted here, this raises some specific issues for the assessment of *developing* versus *established* emotional competencies in youth populations.

Scoring issues aside, many critics have argued that at best 'ability' measures provide assessment of *explicit emotional knowledge* (or beliefs) rather than *implicit skill* or competency in emotional functioning (Brody, 2004; Matthews et al., 2004; van Heck & den Oudsten, 2008). This, once again, sharply departs from traditional IQ testing where the mechanics of problem-solving are irrelevant; the response to the problem demonstrates level of competency. To take an example from the 'managing emotions'

sub-branch of the MSCEIT-YVR: an adolescent may *know* that challenging a rude and offensive individual to a fight is 'not at all helpful' in facilitating feelings of 'guilt and regret' in the perpetrator, and instead asking 'how he would feel if someone talked to him that way' and telling him 'he should be ashamed' would theoretically be more helpful. However, when faced with a similar situation in reality, such 'emotionally intelligent' knowledge may not be put into *practice* owing to the variety of context-specific, situational and implicit factors at play. Additionally, over and above the questionable ecological validity of paper-and-pencil vignette-based scenarios for rating hypothetical performance (Zeidner et al., 2008), the reliance on explicit, verbal report of emotional 'skill' raises issues concerning the potential confound of vocabulary proficiency (Wilhelm, 2005). The verbal reasoning ability required for completion of the MSCEIT may explain the tendency for correlations to be detected between AEI and crystallised versus fluid ability – and in particular, why this appears most robust for the emotional understanding (knowledge) branch (e.g., Austin, 2010; Farrelly & Austin, 2007). Consequently, the distinctiveness of this 'new' intelligence remains debated (MacCann, 2010; Wilhelm, 2005).

Patently, further work is needed to strengthen the conceptual foundations of AEI and, in line with this, further refine current measurement vehicles. Branch and full-scale scores derived from the adult MSCEIT have adequate levels of internal consistency (> .85; Mayer et al., 2002) and test re-test reliability (.86; Brackett & Mayer, 2003), however, individual task level reliabilities are considerably lower, particularly for tasks tapping the ability to use emotion (facilitation: .38 - .48) (Roberts et al., Palmer, Gignac, Manocha, & Stough, 2005; 2006). Moreover, correlations with established emotion 'ability' measures are also lower than expected - e.g., MSCEIT perceiving faces task/*Japanese and Caucasian Brief Affect Recognition Test*: r = .08 (Roberts et al., 2006) - and the original four-factor structure of the instrument is disputed; alternative one and two factor solutions have been recovered (e.g., Mayer et al., 2002; Rossen, Kranzler, & Algina, 2008) and a recent meta-analytic factor analysis (N = 10,573) advocated an alternative three factor structure (perceiving, understanding; managing emotion only) (Fan, Jackson, Yang, Tang, & Zhang, 2010). Additionally, little is known about the development of AEI with age and experience; in the absence of comprehensive longitudinal testing, findings from cross-sectional studies have been equivocal. Whilst Mayer et al., (1999, study 2) report an adult

(17-70 years) versus adolescent (12-16 years) advantage across sub-tasks of the MSCEITs predecessor, the Multifactor Emotional Intelligence Scale (MEIS) (understanding 'blends'; perceiving 'faces' and using 'synaesthesia'), this instrument was designed exclusively for use with adults and only a sub-set of tasks were administered for comparison (i.e., no branch or total score trends). Using the MSCEIT, Palmer et al., (2005) failed to find a significant correlation between age and total AEI in adults aged 18-79 years and negligible associations were recorded at branch level (age and skill in using: r = .16 and managing emotion: r = .12). Age was similarly unrelated to total AEI scores in children (Barlow et al., 2010) yet curiously, robustly associated in a small group (N = 50) of adolescents (r = .46; though 'perceiving' non-significant) (Peters et al., 2009).

Nevertheless, evidence of gender-specific sub-group differences have been more consistent and proffered as evidence to support the 'distinctiveness' of domain-specific emotional ability (MacCann, 2010). Studies of cognitive skill have found that whilst neither sex has an apparent advantage in general IQ (Colom, Juan-Espinosa, Abad, & Garcia, 2000), males dominate in certain types of numerical or spatial skill (Voyer, Voyer, & Bryden, 1995). In stark contrast, the general trend supports a female AEI advantage in adult (Brackett & Mayer, 2003; Brackett et al., 2004; Farrelly & Austin, 2007; Goldenberg et al., 2006; Karim & Weisz, 2010; McIntyre, 2010) and adolescent populations (Qualter et al., 2012; Zeidner & Olnick-Shemesh, 2010) – though the latter study reported male superiority in perceiving emotion and these differences have not been detected in children (Qualter, Barlow, & Stylianou, 2011). Adult studies reporting branch level data indicate that this difference could be largely attributed to skill in managing emotion (Farrelly & Austin, 2007; Goldenberg et al., 2006; Karim & Weisz, 2010) however continued exploration of branch level differences in adolescents is required. Doubtless multifarious methodological challenges continue to permeate discussion concerning AEI, nevertheless, interest in the construct continues to intensify and there is now a burgeoning evidence base linking AEI to a variety of adaptational outcomes (for recent review see Brackett, Rivers, & Salovey, 2011). Clearly, it is only through further rigorous research that these issues will be resolved, either to the eventual detriment or benefit of the construct.

In contrast to the conceptual controversies engulfing AEI, TEI theory would appear to offer a theoretically advantageous account of EI. Conceived as a lower order personality trait, TEI clearly connects to models of differential psychology (i.e., personality theory), sidesteps the issue of measuring 'abilities' through unreliable (self-report) techniques, and could potentially offer a more nuanced understanding of the influence of emotion-related traits on functioning. Indeed, researchers are actively exploring a possible expansion of the traditional personality sphere to accommodate the construct and applications thereof (e.g., Petrides, 2011b). Perhaps the major conceptual objection levelled at the notion of TEI is whether it offers anything novel to the field of individual differences research or whether it is just "old wine in new bottles" (Matthews et al., 2002, p.15). Whilst convergence with established personality traits is predicted, many argue that this (often substantial) overlap limits the predictive utility of the construct; for instance global TEI (indexed with the TEIQue) shares approximately 62% of its variance with the Big Five personality traits and 53% with the 'Eysenkian Three' (Petrides, Pita et al., 2007). There is however, a growing body of evidence to support both the predictive application of TEI to aspects of organisational, health, educational and social functioning, and its capacity to add incrementally to these predictive outcomes beyond the effects of established personality dimensions (for review see, Petrides, 2011a). Nevertheless, there are gaps in this literature and, arguably, the 'all-encompassing' vision of Petrides and colleagues (see e.g., Petrides, 2009a) to envelop *all* self-report instruments within TEI theory irrespective of theoretical origins and sampling domains, has served to 'muddy the water' and actually hinder progression of the field. As shall be seen in the following discussion of mental health, this presents specific difficulties when attempting to assimilate findings and has significant consequences for theoretical interpretations.

Psychometrically, the more popular self-report measures appear internally consistent and posses good test-retest reliability (see e.g., Bar-On, 2004; Petrides, 2009a; Schutte et al., 1998). However, the theorised factor structures of some instruments have not always been recovered through empirical replication (e.g., the EQi: Matthews et al., 2002; SSREI: Saklofske et al., 2003) - although the TEIQue appears more promising in this

respect (Petrides, 2009a). Similar to the MSCEIT, little is known about the development of TEI with maturity although some change is predicted over time assuming "people become less emotional and better socialised" (Petrides, Furnham et al., 2007, p.158). Personality theory traditionally assumes trait stability over time (John, Naumann, & Soto, 2008) although a degree of personality change as a result of person x environment interactions is in accordance with recent evidence and current thinking (Shiner & Caspi, 2003); for instance, a meta-analytic investigation reported only moderate correlations between traits measured in childhood, early adulthood (age 30) and again in later adulthood, with personality continuing to change over time before stabilising between age 50 and 70 (Roberts & DelVecchio, 2000). As with AEI, longitudinal TEI research is markedly absent and very few cross-sectional studies have reported on age group trends (particularly in adolescence). However, some research hints at the development of TEI with age, though the strength of this relationship appears stronger in children aged 8-11 years (r = .32; Barlow et al., 2010) than adults (r = .19; Mikolajczak, Luminet, Leroy, & Roy, 2007).

Additionally, the literature is equivocal on the nature of any sex-specific sub-group differences in TEI. Allied literatures predict differences; for instance, males tend to *self-rate* their general *(d* = .37), mathematical (*d* = .44) and spatial (*d* = .43) (though not verbal) abilities higher than females (Syzmanowicz & Furnham, 2011) *and* gender differences have been consistently reported in the Big Five personality traits; females report higher N, E, A and C (Schmitt, Realo, Voracek, & Allik, 2008). Although some studies have reported a female TEI advantage (Farrelly & Austin, 2007, study 2; Goldenberg et al., 2006), others have reported higher scores for males (Petrides, 2009a), whilst others still have failed to detect significant differences (Brackett & Mayer, 2003). This inconsistency is mirrored in younger participants, where the majority of studies have reported non-significant differences (Mavroveli, Petrides, Rieffe, & Bakker, 2007; Mavroveli et al., 2008; Williams et al., 2009), although some point to a female advantage (Ciarrochi, Chan, & Bajgar, 2001; Mavroveli & Sánchez-Ruiz, 2011; Qualter et al., 2012). Proponents of TEI suggest that these discrepancies arise largely because of the different levels of analysis (and TEI instruments) employed across studies; sex differences in lower level factors/facets are likely diluted or cancelled out through aggregation to result in

negligible differences at the global level (Mavroveli et al., 2009). Indeed, using the TEIQue, Siegling, Saklofske, Vesely, & Nordstokke (2012) found that males had higher levels of trait 'self-control', whilst females scored higher on 'wellbeing' and 'emotionality', despite non-significant global differences. Moreover, Petrides (2009a) found more fine-grained differences at facet level; males scored higher in emotion management (others), assertiveness, emotion regulation (self), stress management, social awareness and self-esteem whilst women perceived higher competencies in emotional expression, perception, relationships and trait empathy.

Beyond this, remaining methodological criticisms of TEI tend centre of the validity of the self-report methodology *per se*. For instance, it is widely accepted that the 'accuracy' of self-reported skills, abilities and characteristics are prone to bias, particularly over-optimism, which can stem from personal misinformation (e.g., feedback shaped by intrinsic motivations for image maintenance etc) or a lack of information concerning actual performance (Dunning, Heath, & Suls, 2004). Additionally, the tautology of TEI assessments (i.e., measurement of self-awareness *requires* self-awareness) further complicates the matter; with below par levels of emotional self-awareness, those low in TEI may actually self-report high levels of competency (Zeidner et al., 2009). Nonetheless, proponents of the approach suggest that perceptions of competency convey importance for functioning, irrespective of their relative accuracy - the impact of which may be best evaluated through objective outcomes (Petrides & Furnham, 2003).

10.2 The future of EI

Since its inception, EI has been met with equal measures of enthusiasm and opprobrium, and the construct remains debated at both conceptual and operational levels. Nevertheless, there is growing theoretical and empirical consensus favouring a 'dual-facetted' construct, represented by the ability and trait perspectives. Whilst each 'brand' of EI has its stalwart of supporters and critics, many researchers recognise the potential contribution of *both* perspectives for understanding adaptational processes (Mikolajczak, 2009; Schutte, Malouff, & Hine, 2011). Considering explicit socio-emotional

skill (AEI) may underpin but not necessarily translate into optimal 'on-line' functioning, which is influenced by implicit factors (e.g., self-efficacy, tapped by TEI), the two approaches could be viewed as complementary and mutually informative versus exclusive. In other words, AEI can give an indication of maximal potential (i.e., what we *could* do) whereas TEI signals typical behaviour (i.e., what we *usually* do) (Mikolajczak, 2009). It would appear that there is value, therefore, in further pursuing empirical comparisons of *both* trait and ability EI with respect to adaptational outcomes. Further exploration of the construct validity of both approaches will also serve to address many outstanding 'grey' areas (e.g., sub-group differences; age-related trends consistent with theory) and in particular the issue of conceptual redundancy. Critics have argued that EI may be unable to offer anything new to the prediction of key outcomes given close links to allied variables, particularly personality and general cognitive ability (Brody, 2004; Schulte, Ree, & Carretta, 2004). Thus, for many, advancement of the global construct depends on whether EI can account for a significant proportion of incremental and unique variance beyond known predictors of performance (Fiori & Antonakis, 2011; Wilhelm, 2005). This will be addressed in the current research where the central goal is to extend current knowledge of the utility of each of these differing manifestations of EI, with specific application to adolescent mental health. It is to exploration of this field that discussion now turns.

11. THEORETICAL RELATIONS BETWEEN EI AND MENTAL HEALTH

This chapter examines relevant theory to establish why, at a conceptual level at least, EI should be related to mental health. Presenting the positions of both the trait and ability perspectives, discussion considers how the allied constructs of emotion regulation and personality provide a platform for EI-mental health research and engender specific predictions concerning a direct role for EI in psychological adaptation. However, recent writings also suggest that both 'forms' of EI could operate indirectly to promote mental health via key coping processes. Discussion concludes by summarising potential explanatory pathways for EI in the stressor-health framework and emphasises the need to establish an adaptive account of EI.

EI shares obvious 'face validity' with clinical symptomotology; indeed, some form of 'emotional dysfunction' is a key hallmark of the majority of clinically recognised disorders (Hansen, Lloyd, & Stough, 2009). For instance, internalising disorders (e.g., generalised anxiety disorder; major depression) are traditionally characterised by difficulties in the *regulation* of excessive negative affect, accompanied by a negative attentional or *perceptual* bias. Similarly, externalising disorders (e.g., ADHD; conduct disorder) suggest difficulties in *self-regulation* (inhibition) of behavioural and emotional responses, often manifest through displays of enhanced negative emotional reactivity (e.g., irritability, hostility) in response to environmental events (Mullin & Hinshaw, 2007; Zeidner et al., 2009). As well as the maladaptive management of emotion, there are also clear parallels between clinical pathology and potential abnormalities in other facets of EI. For instance, it has been suggested that in youth-diagnosed conduct disorder characterised by reactive aggression (i.e., by defensive, behavioural responses to perceived provocation), deficits in emotion regulation may be underscored by difficulties in emotion recognition (*identifying* and *understanding* the socio-emotional cues of others), which ultimately leads to misinterpretation of environmental information (Mullin & Hinshaw, 2007). Indeed, Hessler & Katz (2010) reported the presence of significant concurrent and longitudinal associations between risky behaviours (hard drug use) and deficits in emotional *awareness* and *expression* of anger in a community sample of youth assessed at age 9 and again at age 16. Moreover, a recent meta analysis found that a lack

of *discrete emotion knowledge* (the ability to accurately understand basic emotional cues in others - happiness, sadness, anger, fear etc - as they manifest in typical social contexts, e.g., via facial expressions, vocal intonation) was related to increased internalising (n = 19; r = -.17) and externalising disorder symptomotology (n = 34; r = -.17) in youth aged between 3 and 15 years (Trentacosta & Fine, 2010).

These findings clearly resonate with EI. Indeed, proponents of the construct emphasise that 'intelligent' utilisation of emotion-related knowledge and allied skills is imperative for successful adaptation (Mayer & Salovey, 1997). It is argued that 'emotionally intelligent' individuals (i.e., high scorers on measures of EI) are better able to adapt to the demands of everyday life (Bar-On, 1997, 2006) and exhibit enhanced proficiency in perceiving, expressing, understanding and regulating emotions (Salovey, Bedell, Detweiler, & Mayer, 1999) - skills and traits which should ensure better psychological (and physical) health compared to low scoring, 'emotionally unintelligent' individuals. As Salovey & Mayer (1990) summarise from the perspective of AEI:

> "The person with emotional intelligence can be thought of as having attained at least a limited form of positive mental health. These individuals are aware of their own feelings and those of others...are open to positive and negative aspects of internal experience, are able to label them, and when appropriate, communicate them. Such awareness will often lead to the effective regulation of affect within themselves and others, and so contribute to well-being" (p.201).

Hence, within the ability perspective, proficiency in *affect regulation* (self and others) is identified as most crucial for mental health. This skill is assumed to be supported by/contingent upon the lower level abilities of perceiving, using emotion to facilitate thinking and understanding emotion, which contribute to a fundamental 'emotional awareness' necessary for adaptive emotion management. Conversely, trait EI is considered linked to psychological adaptation given that, "our appraisal of our circumstances and our reactions to life events may be partly filtered through our perceptions of our emotional abilities" (Petrides, Pita et al., 2007, p. 285) to such an

extent that, "...very low trait EI may have psychopathological consequences" (Petrides, Perez-Gonzalez et al., 2007, p.41). In other words, beliefs about emotional style, dispositions and competencies could influence *perception*, *interpretation* and *reactivity* to emotion-laden situations, such that positive self-perceptions may be crucial to successful navigation of our social and emotional worlds. Hence, consistent with divergent conceptualisations, each position appeals to a different, established theoretical construct to explain possible relationships with mental health; as an 'extrinsic', skills-based concept, AEI invokes the *emotion regulation* literature, whilst 'intrinsic', trait-based EI draws upon *personality* theory. Nevertheless, beyond this, these descriptions tell us little about *why* EI should be linked to better mental health. In order to elucidate this rationale, it is necessary to understand how each body of established literature connects to psychopathology.

11.1 Examining the nomological network (1): Ability EI, emotion regulation and mental health

In response to early writings concerning the hierarchical structure of AEI, many researchers have emphasised the importance of the 'management' sub-branch over others (e.g., Joseph & Newman, 2010), with some even choosing to exclusively focus on establishing links between MSCEIT 'emotion management' performance and health-related outcomes (e.g., Brackett, Palomera, Mojsa-Kaja, Reyes, & Salovey, 2010; Lopes et al., 2004). However, linking 'effective regulation of affect' to mental health is certainly not a new concept. Research efforts exploring links between emotion regulation processes and clinical pathology have been prolific and emotion regulation is now regarded by many as key to understanding the pathogenesis and cause of psychopathology (Kring & Sloan, 2010). Whilst there are myriad definitions and models of emotion regulation, Gross' (1998) definition of emotion regulation - the processes by which individuals "influence which emotions they have, when they have them, and how they experience and express them" (p.275) - is perhaps the most widely cited. Indeed this, taken in concert with his *process model of emotion regulation* (Gross, 1998; Gross & Thompson, 2007), has been identified as the preferential organising framework to best unify and guide research exploring emotion regulation in psychopathology (Bloch, Moran,

& Kring, 2010). The model provides a temporal account of the emotion-generation cycle and permits identification of distinct regulation strategies that may be dysfunctional or absent at particular points in the process. Such specificity permits fine-grained measurement of strategies and facilitates insight into potential treatments for differing forms of psychopathology (Bloch et al., 2010). In brief, the model holds that emotion may be regulated at five time points (reflecting families of processes) across the emotion-generative trajectory; *situation selection* (choosing whether to engage in a situation based on the likelihood that it will result in desirable emotions), *situation modification* (changing external, physical environments to alter emotional impact), *attentional deployment* (shifting internal or external attentional focus within the situation to influence emotion, e.g., distraction; concentration)*, cognitive change* (reappraisal of situation or self-efficacy to manage demands to change emotional impact), and *response modulation* (direct attempts to change behavioural, experiential, physiological responses e.g., suppression and avoidance) (Gross, 1998; Gross & Thompson, 2007). Corresponding to the first four points in the model, emotion may be regulated prior to the response, preceding activation of behavioural and physiological modulation (antecedent-focussed), or, can occur after the response and once the emotion tendency is underway (response-focussed).

Research indicates that the use of antecedent strategies such as *reappraisal* (restructuring thoughts about an emotion-eliciting situation to modify anticipated impact) are associated with better mental health outcomes than effortful, response-focussed strategies, such as *suppression* (i.e., inhibiting expressive behaviour, but not negative emotion, once the emotion state is in progress) (Gross & John, 2003). A recent meta-analysis of 114 studies has corroborated these trends; use of response-focussed strategies, including rumination, suppression and avoidance, were associated with increased psychopathology (depression, anxiety, eating disorder and substance use) whereas acceptance, reappraisal and problem-solving resulted in fewer psychopathological symptoms (Aldao, Nolen-Hoeksema, & Schweizer, 2010). Nevertheless, the strength of these relationships appears to vary according to type of disorder and strategy; internalising disorders were more consistently associated with specific strategies than externalising problems and, of these strategies, rumination

carried the largest effect size whilst reappraisal and acceptance represented only small to medium effects. Similarly, in adolescents, Garnefski, Kraaij, & van Etten (2005) found that those with internalising problems were more likely to engage in self-blame and rumination compared to individuals with externalising problems and a control group. Moreover Neumann, van Lier, Gratz, & Koot (2009) found that total difficulties in emotion regulation were related to anxiety, delinquency, aggression and depression, explaining 58%, 13%, 15% and 59% in each disorder respectively – again corroborating research suggesting a greater correspondence between internalising symptoms and emotion (dys)regulation. The construct has also been found to play a role in the development and maintenance of disorder. For instance, emotion regulation mediated the effect of maltreatment on psychopathology (both externalising and internalising symptoms) in children who displayed a pattern of insecure relatedness to their caregiver, suggesting that emotion regulation could be a potential vulnerability marker for disorder (Alink, Cicchetti, Kim, & Rogosch, 2009). Nevertheless, recent longitudinal research hints at specificity and complexity within such pathways; in a sample of maltreated children aged 6-12 years, low levels of emotion regulation were linked to externalising symptomotology (at time one; baseline) contributing to peer rejection and higher levels of later externalising problems (at time two; one year later). Yet in the same sample, higher emotion regulation predicted greater peer acceptance, which in turn led to lower levels of internalising symptomotology (Kim & Cicchetti, 2010).

Even from this cursory review of recent emotion regulation literature it can be seen that clear patterns of association have already emerged to support a link between emotion regulation and disorder in both adult and adolescent population groups – in particular between emotion regulation and mood disorders (see also Ehring, Tuschen-Caffier, Schnülle, Fischer, & Gross, 2010). Hence, by appealing exclusively to the 'emotion management' skill subsumed within ability EI to explain why emotionally intelligent individuals might enjoy better mental health, it could be argued that AEI has little to contribute beyond what is already established in this field. However, this view is perhaps misguided and premature; in their haste to map out an 'adaptive' roadmap for AEI, researchers have overlooked several fundamental differences between the traditional emotion regulation research and AEI which make one-to-one correspondence unlikely.

From a measurement perspective, the MSCEIT 'managing emotions' branch assesses the ability to "maintain emotions (e.g., preserving a good mood), repair emotions (e.g., calming down after feeling angry), and generate emotions appropriate for a given situation (e.g., motivating and supporting a co-worker before an important oral presentation)...[and] an individual's ability to dampen an overly good mood when a reduction in level or intensity is appropriate" (Papadogiannis et al., 2009, p.46). By measuring management of *mood* or an *emotional episode* this component taps more than just *emotion* regulation per se (i.e., up or down-regulation of emotion response tendencies) – moods are distinct from emotion in terms of initial trigger, course and duration (Gross, 1998). Additionally, by asking test-takers to decide upon the best course of action to make *someone else* feel better, rather than to make someone feel better to calm *oneself* down, items may actually assess 'emotion regulating' versus 'emotion regulated' processes (Kring & Sloan, 2010). In other words, MSCEIT items principally measure one's ability (or knowledge of strategies) to regulate the emotions of others for social outcomes, and not how other people influence one's *own* regulatory processes to affect wellbeing, which is at odds with definitions of 'self' and 'other' emotion regulation found in the traditional literature (Gross, 1998, 1999; Gross & Thompson, 2007). In practice, high levels of proficiency in this ability could only ever make an indirect contribution to wellbeing, perhaps by triggering positive emotions through the happiness/sense of satisfaction that comes from helping others.

This discordance in content has been borne out by recent research; MSCEIT 'emotion management' scores were not significantly related to self-reported emotion regulation strategies in patients with Borderline Personality Disorder or a typically-functioning group of adults (although *total* AEI was related to use of suppression in the clinical group) (Beblo et al., 2010). Whilst the discrepancy between self-reported emotion regulation strategy style and emotion-related management skill (indexed by AEI) could be partially attributed to differences in measurement format (i.e., maximal knowledge of management differs from typical regulatory behaviours), the lack of correspondence in both population groups suggests that AEI does not provide a direct measure of emotion regulation capacity in the traditional sense. Nevertheless, the fact that *total* AEI was related to use of suppression in the patient group indicates there is still partial evidence

of a link, albeit with qualifications (i.e., not via the assumed 'management' route). Scrutiny of the process model suggests that rather than direct assessment of emotion regulation proficiency (i.e., frequency/use of strategies), ability EI taps individual differences in *pre-requisite* skills underpinning successful emotion regulation. For instance, antecedent situation selection (i.e., decision to approach or avoid a setting based on emotional impact) requires accurate *perception* and *knowledge* of emotion and emotional consequences, whilst cognitive change (i.e., appraisal of situation/response interpreted in line with personal goals and relevance) might draw upon emotion *identification, knowledge* and the ability to *use* emotion to facilitate thinking/problem-solving to anticipate emotional consequences and select an appropriate course of action. Clearly, response-focussed modulation also requires emotional *understanding*, e.g., recognising the social advantages of response suppression. Indeed, this shift in thinking has been recently endorsed by proponents of AEI; Wranik, Feldman Barrett & Salovey (2007) argue for the importance of all four branches of EI for generating emotion regulation strategies but note that skills in *understanding* emotion are "at the heart of intelligent regulation, influencing the other branches [perceiving, facilitating, managing] and acting as the driving force" (p.395).

Taken together, the present analysis suggests that rather than attempting to uncover isolated connections between MSCEIT branch skills (particularly 'managing' emotion) and mental health, researchers should instead examine the importance of the *global* construct for adaptation (i.e., indexed via total MSCEIT scores). Latterly, this position has been echoed by some commentators who have argued against the popularity of 'carving up' EI models into standalone facets, noting the difficulties this presents for theoretical integration, "There should be no doubt...that the mere re-labelling of, say, 'emotion perception' as 'emotional intelligence' constitutes semantic wizardry, rather than scientific progress" (Petrides, Furnham et al., 2007, p.157). Thus, for explaining links to disorder, AEI should be reconceptualised as a broad, holistic framework which subsumes multiple competencies required for emotion regulation. Collective consideration of AEI skills not only circumvents redundancy with the emotion regulation construct, but should offer a unique perspective for capturing individual differences in adaptive regulatory skills required for better mental health in general.

However, the adaptational primacy of emotional knowledge (Wranik et al., 2007), keyed strongly by the MSCEIT (Brody, 2004; Matthews et al., 2004) hints at the possibility of specificity in direct associations with disorders; it would seem plausible that AEI may be a more robust correlate of externalising symptomotology, where deficiencies in emotional understanding are considered central (Hessler & Katz, 2010; Mullin & Hinshaw, 2007). Association with internalising symptomotology should be less robust given this is strongly indicated by deficient *use* of specific emotion regulation strategies (e.g., Garnefski et al., 2005; Neumann et al., 2009) – something only indirectly indexed via the MSCEIT.

11.2 Examining the nomological network (2): Trait EI, personality and mental health

Clearly, successful (purposeful) emotion regulation is not determined by exemplary 'skill' alone; dispositional characteristics (e.g., impulsivity, assertiveness, effortful control etc) are equally important (Wranik et al., 2007) – some of which are tapped by TEI. Early-emerging temperament[2] and later-developing personality traits mediate environmental interactions, influencing attention and perception to salient cues, appraisal of environmental experiences and ultimately the selection/modification of social and non-social contexts (John et al., 2008). Developmentally, temperament and emotion regulation are thus intrinsically linked. Consisting of two core dimensions, *self-regulation* and *emotional reactivity,* which encapsulate further fine-grained traits (e.g., negative emotionality, extraversion, effortful control, orienting) (Rothbart & Bates, 2006; Rothbart & Sheese, 2007), temperament influences initial reactivity to stressors and then directly constrains or facilitates the development of voluntary regulatory styles, impacting on the adoption of/preference for particular strategies over others (Bolger & Zuckerman, 1995). For instance, those characterised by high levels of reactivity in early life (i.e., increased motor, affective, physiological responses) and high trait Neuroticism in later life, present with higher levels of arousal (e.g., fear) in novel, potentially threatening situations. In early development, this produces *automatic* regulatory responses, such as

[2] Here 'temperament' and 'personality' (which collectively refer to individual differences in emotional reactivity, cognitive and behavioural style) are used interchangeably, reflecting current opinion on the conceptual overlap and move towards integration of the constructs and their respective frameworks of investigation (see e.g., Shiner & Caspi, 2003).

avoidance, withdrawal, behavioural inhibition, which can consequently lead to later difficulties with *volitional* regulation strategies, such as emotional expression (Carver & Connor-Smith, 2010; Compas, Connor-Smith, & Jaser, 2004). Evidently, effortful emotion regulation strategies that become established later in life are shaped by external, contextual influences beyond the effects of early temperament - successful emotion regulation requires more than inflexible, involuntary responding underpinned by high levels of (automatic) effortful control in early life (Rothbart & Sheese, 2007). Nevertheless, traits are highly instrumental in shaping emotion-related experiences, learning opportunities for the development of emotion knowledge, and ultimately, in governing the range of emotion regulation strategies acquired and used. As well as suggesting that traits play a primary role in affecting mental health, it is important to recognise that these developmental interactions carry important connotations for the roles of trait and ability EI; the inter-dependency of socio-emotional disposition (TEI) and knowledge (AEI) suggest that whilst distinct, both play a crucial role in supporting adaptation throughout development, converging with recent opinion in the field (Schutte et al., 2011) .

A significant body of research supports the notion that traits impact mental health directly and confer risk for the development of many forms of psychopathology (Rettew, 2008). For instance, the Dunedin longitudinal studies mapped profiles of childhood inhibition (an early manifestation of trait Conscientiousness) to increased risk for depression, personality disorder and substance abuse in early adulthood (Caspi, 2000). Similarly, individuals classified as 'resilient' at age 30 (socially, academically competent and rule-abiding despite encountering significant adversity) were higher in Conscientiousness, Openness, Agreeableness and lower in Neuroticism in childhood (age 10 years) and early adulthood (age 20 years), compared to those considered 'maladapted' in adulthood (greater antisocial behaviour, poor relationships, attainment and significant adversity) (Shiner & Masten, 2012). Moreover, a recent meta analysis detected a *qualitatively* similar pattern of 'maladaptive' broadband personality traits across the full range of Axis I clinical disorders (e.g., social phobia, schizophrenia etc; American Psychiatric Association, 2000) (Malouff, Thorsteinsson, & Schutte, 2005). There was a general trend towards high levels of Neuroticism (N) accompanied by low levels of

Agreeableness (A), Extraversion (E), and Conscientiousness (C) (effect sizes for Openness (O) did not reach significance) in clinical versus comparison groups. Markedly, this pattern remained consistent, only varying *quantitatively*, across broadband categories of disorder; whereas a diagnosis of Bipolar, Depression or SAD (i.e., 'mood disorders') were strongly indicated by high N, low E and low C, externalising disorders tended towards higher E, lower N and A – though effect sizes were strongest for mood disorders in all cases bar trait agreeableness (Malouff et al., 2005).

Research indicates that of the 'Big Five' dimensions, TEI (assessed via the TEIQue) is largely determined by trait Neuroticism, Extraversion and Conscientiousness, with the former most strongly keyed by six out of fifteen facets (Petrides, Pita et al., 2007; Vernon, Villani, Schermer, & Petrides, 2008). However, there is some variation across TEI measurement models, for instance the EQi and SREIT both index trait Agreeableness to a much greater extent (e.g., Austin, Saklofske, & Egan, 2005). Consequently, TEI would be expected to show direct links to mental disorders but particularly internalising disorders. Nevertheless, the construct should also be able to lend further clarification to these associations as a result of the inclusion of 'finely-tuned' primary-level facets concerning emotion-specific tendencies that contribute to additional variance that lies outside of traditional, secondary-level trait taxonomies (Petrides, Perez-Gonzalez et al., 2007; Zeidner et al., 2009). Evidence appears to corroborate this supposition. Whilst TEI derives from the combined effects of genetic heritability (approx. 40%) and non-shared environmental factors (approx. 60%) as per the 'Big Five' dimensions (Vernon, Petrides, Bratko, & Schermer, 2008), there remains a significant proportion of unexplained variance in the construct; only 41% of the variance in global TEI can be attributed to temperamental variables (i.e., effortful control; extraversion; orienting sensitivity, negative affect) (Gardner, Qualter, & Whiteley, 2011) and the 'Big Five' and 'Eysenkian 3' traits leave approximately 30-50% of the variance in total TEI unaccounted for (Petrides, Pita et al., 2007; Vernon, Villani et al., 2008). Thus, these studies highlight the related, yet distinct association between the two which may ultimately afford TEI greater explanatory power to further our understanding of associations between personality and mental health.

Summary: With appeal to established literatures, the preceding discussion has established that intrinsic, 'emotional personality' (TEI) and extrinsic 'emotional ability' (AEI) should share direct (inverse) links to disorder. However, some divergence in these associations is predicted on the basis of underlying conceptual differences; AEI may be more robustly associated with externalising symptomotology, whilst TEI should strongly relate to internalising disorders. The preceding discussion also suggests that a deficiency in A/TEI could confer risk for disorder. As alluded to previously, the *Diagnostic and Statistical Manual* (e.g., DSM-IV TR, American Psychiatric Association, 2000) distinguishes Axis I (i.e. the 'diagnosis' e.g., depression, schizophrenia etc) from Axis II disorders ('stable traits' that may not necessarily interfere with daily functioning but may predispose individuals to Axis I disorders, e.g., personality or developmental abnormalities), and it has been postulated that *low* EI (considered as a core latent trait *or* ability influencing behaviour, i.e., an Axis II disorder) might act as a *diathesis* in directly pre-disposing individuals to (more severe) disorder (i.e., Axis I) (Zeidner et al., 2009). In other words, A/TEI may be found to be specific marker of vulnerability, or in the case of high levels of competency, a protective resource - perhaps implicated in multiple disorders (Petrides, Perez-Gonzalez et al., 2007). Notably, this is in line with theorising about the influence of traits on mental health via the 'vulnerability' route (Nigg, 2006; Shiner & Caspi, 2003)[3]. However, it is cautioned that 'low EI' (in either form) is unlikely to be a ubiquitous, *direct* correlate of all disorders given the complex aetiological pathways implicated in the development and maintenance of mental illnesses (Matthews et al., 2002). Consequently, it has been suggested that EI might instead play a secondary, more *indirect* adaptive role in key vulnerability/protective *processes* governing the stress-illness relationship – specifically, EI could buffer stress by promoting positive ways of *coping* which could, in turn, lead to successful adaptation (Keefer, Parker, & Saklofske, 2009; Zeidner et al., 2009). Indeed, some commentators have argued that "EI is of scientific

[3] It is thought that traits may influence mental health via four major pathways. As well as being conceptualised as vulnerability (or protective) markers for disorder, traits have been viewed as part of a continuum with psychopathological symptoms ('spectrum' hypothesis). Alternatively, the 'pathoplastic' perspective suggests that trait(s) influence the development and course of disorder whilst inversely, the 'scar' hypothesis maintains that occurrence of early disorder influences development of trait(s) (for reviews see Nigg, 2006; Shiner & Caspi, 2003).

interest largely depending on whether it can be identified as a coherent quality of the person that underpins adaptive coping" (Matthews et al., 2002, p.285). Whilst space limitations preclude a thorough overview of literatures pertaining to *stress* and *coping* in the context of psychopathology, a brief synopsis of key concepts is warranted before attempting to theoretically locate EI within this milieu.

11.3 Stressors, coping and psychopathology

Stressors, defined here as "environmental or chronic conditions that objectively threaten the physical and/or psychological health or well-being of individuals of a particular age in a particular society" (Grant et al., 2003, p.449), can include both chronic adversity (e.g., abuse; poverty) and acute experiences (e.g., bereavement) of an environmental or interpersonal nature – all of which have been consistently linked at retrospective, concurrent and prospective levels of analysis to psychopathological symptoms across development. For instance, Kessler et al., (2010) explored associations between 12 retrospectively reported childhood adversities (e.g., *parental maladjustment* - criminality, mental illness; *interpersonal loss* - parental bereavement; maltreatment; *physical illness* and *family economic adversity*) and the onset of 20 DSM-IV Axis I disorders in data drawn from 51, 945 participants who were resident in one of 21 countries sampled as part of a World Health Organisation survey. Crucially, it was found that stressors tended to cluster together (e.g., family economic adversity with parental illness) and *all* were associated with increased risk for developing disorder, yet maladaptive family functioning conferred the greatest risk. Patently, there are limitations associated with retrospective self-report, however, even when reviewing more stringent tests of such associations Grant, Compas, Thurm, McMahon, & Gipson (2004) found that 88% of some 60 prospective studies that had tracked symptomotology across the lifespan provided evidence in favour of a predictive relationship between stressors and both internalising/externalising symptoms. Moreover, converging with Kessler et al., (2010), the existence of bi-directional associations was confirmed; as well as stressors predicting the presence of psychopathology; psychopathology enhanced the likelihood of exposure to further stressors.

Despite the overwhelming evidence implicating environmental stressors in the aetiology and maintenance of disorders, it is clear that not all individuals exposed to such risk(s) go on to develop disorder. Latterly, there has been a concerted shift in the research base to explore potential mediating (*how*) and moderating (*when*) processes that may mitigate the stressor-illness relationship and thus lead to 'resilience' in individuals (Mash & Dozois, 2003). As noted in the introductory chapter, resilience is not a static, individual quality (e.g., a specific competence) or life outcome (e.g., positive adjustment as in absence of psychopathology), but rather a dynamic process that involves an interaction between vulnerability and protective markers (both internal and external to the individual) that serve to modify the effects of adversity (Luthar et al., 2006; Rutter, 1985, 2006). Such resilience processes (i.e., risk and protective mechanisms) can operate across three levels of functioning; at the level of the individual (e.g. specific resources, competencies, skills), social level (family, peers) and wider society (school, community) (Garmezy, 1991; Werner, 1995). The search for consistent *moderators* (defined here in line with Grant et al., (2003) as *pre-existing* characteristics of the individual or environment that modify the impact of stressors) and *mediators* (*stressor-activated* processes that explain the association between stress and psychopathology) that operate within pathways to disorder remains work in progress and is often hampered by methodological ambiguity (Luthar et al., 2006). Nevertheless, *coping* has emerged as a significant mediator of a variety of stressor-symptom relationships in youth populations, including violence, divorce and parental illness (for review see e.g., Grant et al., 2006). For instance, in an adolescent sample, Wadsworth & Compas (2002) found that objective socio-economic adversity was distally related to externalising and internalising symptoms through perceived socio-economic adversity and family conflict, however coping mediated the association between family conflict and disorder (with active coping leading to fewer symptoms). Notably, evidence suggests the role of coping in mechanisms of risk may change over the course of development; whereby strategies may be activated or set in motion by stressors in childhood/adolescence to mediate outcomes, coping represents an established, dispositional response pattern (or fixed characteristic) in adulthood, moderating the stress-illness relationship (Wadsworth, Raviv, Compas, & Connor-Smith, 2005). This emphasises the importance of this enduring yet dynamic personal resource in establishing future patterns of adjustment.

It is important, however, to state from the outset that conceptualisations of coping vary significantly amongst theorists; some researchers elect to include both automatic and involuntary elements as well as conscious efforts to reduce threat, harm or loss within their theoretical expositions (e.g., Eisenberg, Fabes, & Guthrie, 1997) whilst others focus directly on conscious, purposeful efforts by the individual to reduce stress (Carver & Connor-Smith, 2010; Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001). Acknowledging conscious/non-conscious and automatic/controlled processes share complex interrelationships in the development of coping, for clarity, the present discussion focuses on coping responses recognised by the person as engaging in them (Carver & Connor-Smith, 2010). Allied to this complexity, myriad coping definitions and dimensions abound (e.g. approach vs. avoidance; primary vs. secondary control coping etc). In adult research, the theory and of Lazarus and Folkman (1984) remains most prominent. According to this perspective, coping is described as a person-environment transaction which involves, "constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p.141). The theory classifies coping efforts as either *problem-focussed* (attempts to directly change, including evasion, removal or attenuation of, the stress-eliciting situation e.g., seeking information; problem solving) or *emotion-focussed* (attempts to circumvent or reduce the negative emotions evoked by the stressor, e.g., emotional expression, garnering support).

However, such adult conceptualisations of the construct (which assume fully functional cognitive competencies, i.e. appraisal) together with broadband dimensions of coping (which may conceal diverse and distinct coping strategies associated with potentially disparate adjustment outcomes) have been found wanting when applied to youth populations (Compas et al., 2001). Hence a developmental perspective on coping is adopted for the current work, where coping represents, "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), whilst recognising such efforts as necessarily constrained by the developmental level of an individual (i.e., resource availability/type of strategy enacted). Moreover, strategies encompassed within

broadband 'emotion-focussed' and 'problem-focussed' dimensions will not be pre-categorised as more or less inherently 'adaptive', given that the relative advantage conferred by a strategy is contingent upon the *context* (i.e., the nature and duration of the stressor - perceived as controllable/surmountable and suited to problem-focussed/engagement strategies, or, deemed uncontrollable/insurmountable and appropriate for emotion-focussed/disengagement strategies), the *individual* (e.g., temperament, competencies, pre-existing symptomotology) and the '*outcome'* (operationalisation of 'successful adaptation' in light of stressor type and duration) (Carver & Connor-Smith, 2010; Compas et al., 2001; Folkman & Moskowitz, 2004). Notably, the dynamic nature of the coping process adds additional complexity as it is unlikely that single strategies are used to tackle stressors in isolation. Strategies resembling 'adaptive' approaches utilised as part of initial engagement with a stressor may well become less effective and hence considered 'maladaptive' if inflexibly persisted with when faced with a rapidly changing situation (Folkman & Moskowitz, 2004). Nevertheless, broadly speaking, in the context of psychopathology, problem-focussed or engagement strategies (including e.g., problem solving, reappraisal etc) are reportedly advantageous over emotion-focussed or disengagement strategies, such as avoidance or wishful thinking (e.g., see Compas et al., 2001).

Studying coping within a resilience framework (testing for the presence of moderating and mediating effects and specificity) offers the opportunity to address some of the aforementioned contextual issues inherent within coping research and has been called for repeatedly in the literature (e.g., Grant et al., 2003; Grant et al., 2006; McMahon, Grant, Compas, Thurm, & Ey, 2003). Within this paradigm it has been suggested that whilst coping reflects a key set of processes which lead to adaptational outcomes, these depend upon/draw from the (successful) operationalisation of key personal competencies or resources (Compas et al., 2001). This, therefore, begs the question: Could EI construed as either a skill set located at the intersection of cognition and emotion, or as our 'emotional personality' represent such personal resources that underscore such vital coping processes?

11.4 Building the nomological network: EI and coping processes

Theoretically, links to coping are apparent in both ability and trait EI accounts, with descriptions once again drawing from the related fields of *emotion regulation* and *personality* to support each rationale. Salovey et al., (1999) suggest that the 'resilient person' is distinct from an individual who copes poorly with stress-eliciting situations since, "[A]EI influences responses to emotional arousal and, as a result plays a significant role in the coping process" (p.141). As before then, it is suggested that AEI affords an adaptive advantage to 'emotionally intelligent' individuals given superiority in *affect regulation,* which serves to attenuate emotional reactivity to stressors. Specifically, it is suggested proficiency in emotion management could underlie emotional coping (e.g., rumination: difficulties in flexibly engaging with and/or detaching from an emotion to facilitate repair) and support seeking coping (maintenance/use of rich social networks developed through success in regulating the emotions of others, e.g. cheering up a friend when sad) (Salovey et al., 1999). These examples illustrate that by contributing to adaptive emotion regulation, AEI skills are assumed to underpin or *precede* effortful coping. However, it is notable that differences between *emotion regulation* and *coping* are not made salient; this is important as the two are not necessarily interchangeable. Whilst both are considered part of the domain of self-regulation (Gross, 1999), emotion regulation is principally concerned with the everyday, immediate modulation of positive and negative affect, whereas coping is focussed on managing stress-induced (negative) emotional *experience* and extends to cognitive approaches to combat external stressors (problem-solving) (John & Gross, 2007). Thus, despite appearing similar at the measurement level (e.g., coping scales usually encompass items assessing 'positive reappraisal', appearing similar to the process model 'cognitive change') most coping items focus on the consequences of encountering a stressful experience (e.g., personal growth) rather than assessing immediate modulation of an emotion eliciting event (John & Gross, 2007). Nevertheless, these writings extend previous discussion - as well as representing individual differences in the skills underpinning adaptive regulation of emotional states *per se*, it is clear that AEI should also act as a resource for managing emotion under conditions of stress, with ramifications for emotional (internalised, e.g., rumination) and problem-based (externalised e.g., support seeking) coping ability.

Conversely, in line with the *personality* literature, TEI is viewed "as central to the development and implementation of successful coping mechanisms" (Petrides, Perez-Gonzalez et al., 2007, p.29). In contrast to the ability perspective there is no specific emphasis of the importance of a single facet or function (i.e., perceived competency in emotion management) over others and no explicit, temporal distinction between coping and TEI. Critics have argued that relationships between TEI and stress-illness process variables are likely to be artificially inflated (and potentially confounded) by this 'centrality' (Zeidner et al., 2009). Many TEI instruments include facets and/or items that correspond directly to self-perceived competency in 'stress management', or characteristics associated with negative affect (e.g., items from the TEIQue-ASF include: "I find it hard to cope when things change in my life"; "I'm able to deal with stress"). In fact, this is not a new issue; debate over the distinctiveness of the *coping* construct from *personality* has pervaded the literature for decades, with boundaries between research domains, theories, ensuing terminology and blurred. Earlier discussion has already articulated the conceptual overlap between effortful emotion regulation and personality (section 11.2) and between emotion regulation and coping (section 11.3). As a result, critics have argued that coping should be considered *part of* personality processes (e.g., Vollrath, 2001). Nevertheless, this position has been supplanted by research that indicates only a partial overlap exists between personality traits and coping styles. A recent meta-analysis uncovered modest relationships between the 'Big 5' and coping dimensions; high levels of E (r = .15), C (r = .11) and O (r = .10) related to 'engagement' strategies including problem-solving, support seeking and cognitive restructuring, whilst N (r = .27), low C (r = -.15), and low A (r = -.13) were related to disengagement coping (e.g., wishful thinking, withdrawal, avoidance, denial) (Connor-Smith & Flachsbart, 2007). This, coupled with evidence that coping predicts adjustment outcomes more strongly than personality (Carver & Connor-Smith, 2010), suggests that coping is more than a direct manifestation of personality (or an extension of trait continuums) – instead, coping "may represent important ways that temperamental characteristics are put into action under conditions of heightened risk, specifically under conditions of stress" (Compas et al., 2004, p.27).

Hence, evidence emphasises the importance of investigating the role of traits and coping separately within stress-illness processes. In terms of TEI, the indexing of the Big 5 within measurement models would imply that high levels of TEI should relate positively to engagement strategies and negatively to disengagement coping. However, as a (nuanced) personality trait which additionally samples 'unique' facets of emotional self-competency (e.g., emotional expression, perception, etc) TEI also has the potential to uncover a degree of novel, predictive power in such relationships to further elucidate established links between personality and coping styles (Petrides, Furnham et al., 2007).

11.5 EI and stress-illness processes: toward an adaptive account of EI

At a theoretical level, links between EI and mental health are predicted and, despite the contrast between 'skills' and 'traits', similarities in outcome are expected for both conceptualisations (i.e., the suggestion that *higher* levels of TEI and AEI should contribute to better mental health). Importantly, both perspectives suggest there are measurable, systematic individual differences in EI (be that skills *or* dispositional qualities) that should, in turn, lead to differences in effective action across individuals in emotional situations (Matthews et al., 2002). Construed as a multi-facetted latent skill set specialised for emotion processing, AEI should reflect individual differences in adaptive emotion regulation which, if deficient, could confer direct vulnerability for disorder in general. Nevertheless, given the conceptual and measurement focus upon crystallized *knowledge* versus *actual performance* of emotional skill (e.g., recognition of emotional cues; understanding emotional meaning and the emotional consequences of managing other people's emotions for social outcomes), it likely that AEI will be a more robust correlate of externalising versus internalising symptomotology, where deficiencies in emotional understanding are considered a primary feature (Hessler & Katz, 2010; Mullin & Hinshaw, 2007). Such differences in emotional skill/knowledge may directly modify the risk for experiencing stressors; inaccurate decoding of environmental cues and poor regulation of emotional states could lead to increased exposure to stressful circumstances and/or increased reactivity once stressors are encountered. Alternatively, AEI may best represent a key personal resource from which coping processes draw to facilitate advantageous outcomes (Compas et al., 2001). In other words, (knowledge of)

socio-emotional skill may extrinsically 'power' the selection of 'adaptive' coping strategies (e.g., support seeking, less emotional coping) when faced with stressors.

Conversely, TEI maps to personality research, where it has been established that traits influence functioning via attentional/perceptual biases which affect initial selection of environments, the meaning extracted from environmental cues and reactions to this information (John et al., 2008), *and* specific patterns of traits confer direct vulnerability for disorder - in particular Neuroticism, Extraversion and Conscientiousness for mood disorders (Malouff et al., 2005). Given the strong indexing of these traits by most TEI measurement models (e.g., Austin et al., 2005; Vernon, Villani et al., 2008), it is expected that links to internalising disorder will be more pronounced than for externalising disorder. In line with the personality-stress framework proposed by Bolger & Zuckerman (1995), TEI may operate as a direct risk marker for disorder by influencing *exposure* to stressors (pre-disposing those with low TEI to preferentially select out/modify socio-emotional environments to evoke stressors, e.g., via dispositional mood bias) or *reactivity* once exposed (impacting perception and understanding of environmental emotional cues). In other words, TEI may directly moderate the effects of stress on disorder by increasing/reducing the number of stressful experiences encountered or reactivity to such events. For instance, it has been shown that individuals with high levels of Neuroticism experience greater levels of interpersonal conflict which results in higher levels of depression and anger (Bolger & Zuckerman, 1995). As with AEI, however, TEI may also operate indirectly to influence adaptation. It is plausible that the adoption or poor implementation of a 'maladaptive' coping strategy (i.e., less engagement; more disengagement) when experiencing stressors might perpetuate psychological distress in those with low TEI. For instance, Bolger & Zuckerman (1995) reported that for individuals with low N, self-control coping in the face of interpersonal stressors led to lower levels of depression, although avoidant coping increased depression, whilst the reverse was true for those classified as high N. Thus, it is also clear that there should be specificity in these relationships, such that the 'effectiveness' of individual coping strategies is dependent upon the characteristics of the person (e.g., high vs. low TEI) *and* stressor-type (e.g., TEI may be optimal within the context of controllable, proximal stressors of a socio-emotional nature) (Carver & Connor-Smith, 2010; Grant et al., 2003).

Hence to summarise, two potential pathways to better mental health are predicted for EI irrespective of the 'form'; the first *direct* route suggests that EI could represent 'upstream' individual differences in the *experience* of stress (exposure; reactivity), and the second *indirect* route suggests EI may underpin flexible selection and implementation of 'downstream' effortful coping strategies. In order for *any* form of adaptive account of EI to be realised, it must be demonstrated that EI does more than simply describe an individual's propensity to experience stress, capacity to manage daily emotional states, or use of 'adaptive' coping strategies – it must be established *how* (whether directly or indirectly linked to known stress-illness processes) and *when* (within which context) this happens (Zeidner et al., 2009). Although some researchers have attempted to situate EI (as a coherent quality of the person) within known stress-illness transactional models (see e.g., Matthews et al., 2002; van Heck & den Oudsten, 2008), there has been very little empirical testing of these mechanistic pathways, and, as will become apparent across the following sections, even basic level correlational research investigating links between EI and key variables of interest is somewhat limited in scope. It is to a review of this research evidence that discussion now turns.

12. EMPIRICAL RELATIONS BETWEEN EI AND MENTAL HEALTH

Through a comprehensive review of available evidence, this chapter aims to elucidate the most probable pathway (either 'direct' or 'indirect') that might best incorporate EI into stress-illness processes. With an initial focus on the correspondence between EI and mental health, discussion explores whether there are discernible trends in these associations that hold in the presence of allied constructs. The second portion of the review examines whether EI can be directly equated with individual differences in the experience of stressors per se and whether such differences translate into real benefits for psychological adaptation. Finally, evidence addressing the 'indirect' pathway is considered; the nature of basic associations between EI and coping are explored, before reviewing research that has simultaneously considered the effects of EI and coping on mental health outcomes when facing stressors. The chapter closes with a summary of the current research including broad aims and research questions.

Evidence attesting to the presence of significant, cross-sectional associations between EI and mental health has begun to emerge to support the theoretical conjecture. To date, the majority of investigations have focussed upon adult, non-clinical groups and, within this context, typically suggest the presence of *positive* associations with indicators of wellbeing, for both AEI (e.g., 'psychological wellbeing': Brackett & Mayer, 2003) and TEI (e.g., 'temporal satisfaction with life': Austin et al., 2005). Similarly, *negative* associations have been documented between both forms of EI and psychological maladjustment, for example, *depressive symptomotology* (Goldenberg et al., 2006; Petrides, Perez-Gonzalez et al., 2007, studies 2 & 3), *anxiety* (Bastian, Burns, & Nettelbeck, 2005), *personality disorder* (Petrides, Perez-Gonzalez et al., 2007, study 3), *paranoid/psychotic symptomotology*, *obsessive-compulsive disorders* (Mikolajczak et al., 2006, study one) and *socially deviant behaviour* (Brackett et al., 2004). Whilst extant literature is disproportionately weighted toward examination of trait rather than ability EI, in general, associations with both positive and maladaptive outcomes appear more robust for the former; correlations involving AEI are often small in magnitude (e.g., Bastian et al., 2005 report a correlation coefficient of .22 between AEI 'managing emotion' and satisfaction with life) and in some cases even non-significant (e.g., 'subjective wellbeing': Brackett & Mayer, 2003; Zeidner & Olnick-Shemesh, 2010).

These trends have been confirmed in two recent meta-analyses. The first conducted by Schutte, Malouff, Thorsteinsson, Bhullar, & Rooke (2007) was based on literature published between 1995 and early 2006. Analysis of the findings of 35 studies (*N*=7898; mean ages ranging 11-51 years) revealed a medium average effect size between mental health and EI (*r* = .29, collapsed across measures and weighted according to sample size), suggesting that around 8% of the variance in mental health might be accounted for by EI. However, with adjustment for measurement type (either TEI or AEI), only the relationship between mental health and TEI remained significant and, of the three TEI instruments scrutinised (TMMS, EQi and SREIT), the EQi was found to share the highest effect size with mental health. Whilst these relationships were not contingent on age, effect sizes were higher for studies that had examined single-sex groups (i.e., only males or females, not mixed participant groups). Thus, findings from this initial synthesis of available literature partially corroborated the aforementioned theoretical links; EI (though not AEI) shared a significant, positive, association with mental health. However, this early analysis is somewhat limited by the range of TEI measures focussed upon, all three of which have been referred to as 'first generation' instruments that suffer from psychometric shortcomings (Zeidner et al., 2009). For instance, the veracity of the EQi has been questioned over its differential sampling of the construct domain; whilst distinct 'EI' facets such as competency in regulating and perceiving emotion are omitted, peripherally-related personal capacities and qualities (e.g., 'self-actualisation') and outcome evaluations (e.g. 'self-regard') are included. Consequently, many consider the EQi a measure of general wellbeing or self-esteem rather than of EI and, patently, as the inverse of criterion measures of mental disorder (with high scores reflecting an absence of symptoms) any association between true 'EI' and psychopathology will be distorted (Perez, Petrides, & Furnham, 2005; Schutte et al., 2007; Zeidner et al., 2009). Notably, consistently high correlations between the EQi and measures of psychopathology have been documented (e.g., sub-scale correlations reaching up to - .67 with the Beck Depression Inventory: Dawda & Hart, 2000). The TMMS is similarly plagued by inadequate sampling of the EI domain, though this is principally owing to the fact that it was designed to assess proficiency in internal *mood regulation* rather than EI. Designed to yield three separate scores (attention; clarity and emotional repair), the practice of deriving a composite 'total TEI' score by summing the three orthogonal scales in (as was

performed here by Schutte and colleagues) has been cautioned against in the literature (e.g., Perez et al., 2005).

Notwithstanding these measurement limitations, the evidence base has continued to grow exponentially since 2006, prompting a more recent meta-analysis of EI-health relations to assess the stability of such trends. Building on the work of Schutte et al., (2007), Martins, Ramalho, & Morin (2010) performed a cumulative analysis capturing the previous studies (*n* = 34) plus newer studies published up until January 2010 (*n* = 46). A total of 105 effect sizes were analysed (*N* = 19,815; mean ages ranging between 15 and 53 years). On this occasion, significant overall effect sizes with mental health were found for *both* AEI (*r* = .17) and TEI (*r* = .34), though this effect was clearly stronger in the case of the latter (small versus medium). Markedly, the *overall* average association between EI and mental health (*r* = .36) was greater than the average association with psychosomatic (*r* = .33) and physical health (*r* =.27) – representing a clear increase in magnitude since the first meta-analysis. With the inclusion of arguably, better-specified, second-generation measures of TEI, the TEIQue was found to share the most robust relationship with mental health (*r* = .53); analyses with the EQi (*r* = .44); SREIT (*r* = .28) and TMMS (*r* = .24) produced small to medium effects. Echoing the findings of the 2007 analysis, no moderating effects of age were detected although a significant effect of gender (females reporting higher levels of TEI) was found with respect to some of the TEI instruments (EQi; SREIT). Moreover, supplementary analysis indicated that research establishing a descriptive link between EI and mental health has reached *sufficiency* (for AEI this was achieved in 2002; for TEI in 1997) and *stability* (reached in 2004 for AEI; TEI in 2000), suggesting that further basic research is both unnecessary and unlikely to alter these effects (Martins et al., 2010). Nevertheless, a degree of caution should be exercised with respect to these findings; the inclusion criteria employed in this analysis deemed that only studies which had reported at least three components of EI should be included - whilst this is not especially problematic for TEI investigations given that the majority of measures provide a combined/global TEI score, within AEI investigations it is commonplace for individual 'sub-skills' (e.g. emotion management) or area scores (e.g., 'experiential EI') to be reported, especially with respect to health outcomes (see e.g., Cha & Nock, 2009; Lopes et al., 2004). The practice of discounting these studies will have undoubtedly contributed to a bias in the estimation of effect sizes for AEI; an effect which

becomes amplified when one considers youth-based research where composite measures of AEI are only just becoming available (Papadogiannis et al., 2009).

Whilst collectively these meta-analyses present a strong case for the existence of a broadband link between EI and mental health, such generalist summaries of the data (with analyses collapsed across disorder 'types' *and* population groups) tell us very little about the specificity of this relationship - something which must be established in order to fully validate the EI construct. Additionally, this research does not consider the influence of conceptually-related variables (especially higher-order personality facets given their importance for health outcomes) and thus the importance of these associations cannot be established. As noted in chapter 10, many consider it essential to assess whether EI can make an *incrementally unique* contribution to adaptation beyond known predictors of performance (Fiori & Antonakis, 2011; Zeidner et al., 2009). Though presently this literature base is extremely limited, where such analyses have been undertaken, evidence would seem to point to distinct A/TEI trends in the prediction of mental health outcomes.

12.1 Can EI offer a unique contribution to adult mental health?

With the influence of personality (i.e., 'Big 5' or 'Eysenkian 3') and general cognitive ability (indexed by IQ assessments or proxies thereof, e.g. academic attainment) held constant, AEI does not appear predictive of *psychological distress* (combined index of sleep problems, anxiety, dysphoria, suicidal ideas), *positive* or *negative affect*, *life satisfaction* (Karim & Weisz, 2010) or *psychological wellbeing* (Rossen & Kranzler, 2009; Zeidner & Olnick-Shemesh, 2010) – although in evaluating these effects in non-native English speakers, the findings of Karim & Weisz (2010) may be compromised by the cross-linguistic transferability of potentially 'abstract' emotion terminology used in the MSCEIT. Notably, all three of the above cited studies found that personality facets accounted for the largest proportions of variance in criterion variables, and in line personality literature, particularly Conscientiousness, Extraversion and Neuroticism (e.g., Malouff et al., 2005). As might be expected, much lower contributions were attributed to cognitive ability (e.g., explaining 3% of the variance in 'psychological wellbeing' - Rossen & Kranzler, 2009). Nevertheless, in a less stringent tests of incremental capacity (no control for cognitive ability), AEI predicted 1% additional variance in satisfaction with life and 4% of the

variance in psychological wellbeing over the Big Five personality traits (Extremera, Ruiz-Aranda, Pineda-Galán, & Salguero, 2011). Overall, this evidence indicates that the capacity of AEI to uniquely influence positive or negative *internalised* emotionality is limited; indeed the weaker associations found in basic tests of association (e.g., Bastien et al., 2005) may be attributed to shared conceptual overlap with (crystallised) cognitive ability. Nevertheless, it would appear that an incremental contribution could be made to the prediction of disorders where externalising symptoms are a central feature (e.g., conduct disorder, disruptive behaviour, etc).

Whilst studies employing standardised clinical measures are markedly absent, there is evidence to suggest AEI shares significant associations with (reduced levels of) maladaptive and (increased) adaptive social behaviours. For instance, controlling for the influence of personality and cognitive ability, AEI significantly predicted reduced *alcohol use* (Brackett et al., 2004; Rossen & Kranzler, 2009), *illegal drug use* (Brackett et al., 2004) and *deviant behaviour*, defined here as recent vandalism and number of physical fights (Brackett & Mayer, 2003; Brackett et al., 2004). Although it should be noted there has been some inconsistency in this pattern of findings (e.g., AEI was not predictive of alcohol and drug use in Brackett & Mayer, 2003) and the proportion of incremental variance explained by AEI across these studies was generally moderate in size, ranging between 4 and 11% (e.g., alcohol use: $\Delta R^2 = .04$; social deviance: partial $r = -.27$ & $r = -.20$; drug use, partial $r = -.34$). Additionally, Brackett et al., (2004) stress the importance of examining sub-group differences in these effects; in their study, AEI was found to predict social deviance in males only. AEI also incrementally predicts variance in measures of *adaptive* social behaviours beyond personality and IQ, e.g., increased *positive relations with others* (Rossen & Kranzler, 2009), *satisfaction with relationships* (Lopes, Salovey, & Straus, 2003), *quality of social interaction* (Lopes et al., 2004), *pro-social behaviour* and *interpersonal sensitivity* (Lopes, Salovey, Cote, & Beers, 2005) (though in the latter three studies this applied to skill in 'management' of emotion only & in Lopes et al., 2003 there was no control for IQ).

In contrast, studies testing the incremental capacity of TEI hint at enhanced prediction of internalising over externalising disorders. Using total TEI (SREIT) scores, Saklofske et al., (2003) reported small yet significant incremental contributions in the prediction of *happiness* ($\Delta R^2 = 1.3\%$), *life satisfaction* ($\Delta R^2 = 2.8\%$), *social/emotional*

loneliness (ΔR^2 = 1.2 - 1.4%) and *depression* (ΔR^2 = 1.0%) over personality. This was corroborated in part by Petrides, Perez-Gonzalez & Furnham (2007, study 2) who demonstrated that total TEIQue scores remained significant, independent predictors of *depression* and *hostility* with personality variables entered into predictive models. However, Petrides et al., (2007) found that despite the presence of inverse correlations, TEI was unable to predict variance in either *physical*, *verbal aggression*, or *anger* beyond the influence of personality. Importantly, this was corroborated recently by Gardner and Qualter (2010) who found that none of three TEI measures employed (TEIQue, SREIT, MEIA) were able to incrementally predict *aggression* (physical or verbal) or *anger* beyond the effects of age, gender and personality in a mixed community/student sample. Nevertheless, in line with the earlier work of Saklofske et al., (2003) and Petrides et al., (2007), all three TEI measures *did* predict incremental variance in *loneliness* (ΔR^2 = 3 - 17%), *hostility* (ΔR^2 = 3 - 8%), *happiness* (ΔR^2 = 4 - 9%) and *life satisfaction* (ΔR^2 = 7 - 17%) with the TEIQue accounting for the highest proportion of incremental variance across all outcomes. Hence, these findings would appear to support earlier, theoretically-derived predictions of the relationship between TEI and mood disorders; *hostility* (as feelings of opposition towards others, e.g., resentment, suspicion) *depression* (sadness), and *anxiety* (nervousness) are all linked via negative affect as indexed by the Big Five trait model ('Neuroticism', Costa & McCrae, 1992) and its measurement instruments (see John et al., 2008) and, as noted earlier, Neuroticism would appear to be the strongest determinant of TEI (e.g., Austin et al., 2005: SREIT r= -.47; EQi r= -.62; Vernon, Villani et al., 2008: TEIQue r= -.61). Consequently, links to such markers of 'dispositional' (i.e., habitual, internal) emotionality are in line with expectations as is the lack of correspondence to *aggression,* which, as externalised anger, can be considered a 'situational' expression of emotion representing "purposeful, context-specific behaviour" (Petrides et al., 2007 p.34).

Hence the internalising (TEI)/externalising (AEI) distinction would appear to hold. AEI can incrementally predict 'purposeful', discrete behaviours of a quantifiable nature (i.e., deviance as number of recent fights or frequency of drug use) suggesting that deficits in emotional skills (perhaps underlying emotion regulation capacity) may be critical. Conversely, TEI is predictive of habitual emotional styles (i.e., feelings of depression, loneliness, etc) that may be intrinsically linked to lower levels of perceived emotional self-competence (perhaps reflective of 'maladaptive' emotional traits). There

have, however, been some exceptions to this trend: firstly, Gardner and Qualter (2010) and Petrides et al., (2007) report that TEI did not incrementally predict *anger* beyond personality which runs contrary to theory (anger also reflects 'negative affect'). However, in both cases all TEI measures showed significant associations at a bivariate level and, arguably, the measure of anger utilised to examine these relationships (the AQ: Buss & Perry, 1992), preferentially taps expression of anger (e.g., "some of my friends think I'm a hothead"; "sometimes I fly off the handle for no good reason") rather than internalised anger control/suppression. Secondly, total TEI scores have shown some incremental validity in predicting alcohol abuse (indexed via behavioural frequency) beyond personality (EQi: Brackett & Mayer, 2003; TEIQue: Gardner & Qualter, 2010) although in both cases, the contribution made (approx 2%) was lower than found with the MSCEIT (e.g., Brackett et al., 2004).

In sum, it is remarkable that despite the variety of TEI measures employed across the adult literature base, there remains consistency in the pattern of prediction (type of disorder) and in the proportion of variance explained. Furthermore, whilst evidence is emerging to support specificity in A/TEI-mental health relationships, the extent of the incremental validity afforded by the *overall* construct remains broadly consistent across the literature base (explaining moderate proportions of variance – up to 17% - in criterion variables). Therefore, despite being associated with different models and measurement methods, both make similar, beneficial contributions to health outcomes. However, although these trends appear persuasive, the EI-mental health evidence base is undoubtedly limited by an almost exclusive focus upon adult versus youth populations. To develop an overall 'adaptive' account of EI it must be consistently demonstrated that links found between EI and mental health in adulthood are similarly prevalent in child/adolescent populations. Moreover, the fact that that there are enduring and debilitating trajectories associated with many early-onset mental health problems, including unemployment, unstable personal relationships and poorer self-reported health (Collishaw, Maughan, Goodman, & Pickles, 2004), makes the study of any 'adaptive' effects of EI within this age group particularly vital. By definition, adolescence is a period characterised by rapid developmental transitions (including biological, social, emotional and cognitive change) which inherently presents complexity for researchers in interpreting findings (e.g., often direct mapping of constructs across adult/youth models is precluded). Indeed, as noted in chapter 10, it is theoretically assumed both forms of EI

should show some development with age (Mayer et al., 1999; Petrides, Furnham et al., 2007), although longitudinal empirical examination is awaited. However, if, as a first step, we are able to reliably detect 'diagnostic' continuities in EI-mental health relations, this would lend credence to the development of effective prevention and intervention programmes based on EI frameworks.

12.2 EI and adolescent mental health

Studies examining EI-mental health relationships in youth populations are sparse and the bias toward examination of the trait perspective is even more pronounced in this literature base (stemming in part from the lack of available composite measures of AEI suitable for use with youth) which presently precludes definitive interpretations from being drawn. Nevertheless, some AEI research has emerged in support of adult trends. The construct does not appear significantly related to measures of internalising disorders represented as *depression* or *anxiety* in children aged 10-11 years (Williams et al., 2009; Williams, Daley, Burnside, & Hammond-Rowley, 2010a), or *suicidal ideation* and *suicide attempts* in a small sample (*N*=54) of adolescents aged 12 – 19 years (Cha & Nock, 2009). However, only the latter study used a composite measure of AEI designed to explicitly concord with the Mayer & Salovey model (the MSCEIT-YV which is currently under development). Williams and colleagues used a variety of standalone measures to tap independent aspects of this model (e.g., youth had to provide a written response to four socio-emotional dilemmas which were rated for emotional content with respect to ability to perceive, use and manage emotion). Hence any firm inferences and comparison with the foregoing adult evidence must be tempered. Nevertheless, associations with externalising symptomotology or indicators of socially maladaptive behaviours have been uncovered; total AEI (indexed via the new MSCEIT-YV and specifically the sub-branches perceiving; using; understanding emotion) were found to share significant, inverse relationships with the *number of school discipline referrals* (ranging from minor behavioural problems to 'interventions') received within an academic year in students aged 11 and 18 years (Peters et al., 2009). This association remained significant (r = -.45, p < .05) after controlling for cognitive ability. Using clinical measures of externalising behaviour, Williams et al., (2009), reported the presence of significant, inverse associations between their measure of perceiving/using/managing emotion (described above) and *anger* (r = -.12, p < .01), *disruptive behaviour* (r = -.12, p < .01), and also

between scores obtained from a test of emotion recognition ability and disruptive behaviour (r = -.11, p < .01). Notably, similar correlation coefficients (rs ranging between -.10 to -.21) were documented for relationships between the same variables measured using the same instruments in a later study (Williams et al., 2010) though these were considered non-significant owing to the adoption of a more stringent significance criterion (p < .001).

Also in line with adult research, cross-sectional associations between TEI (global scores) and internalising disorders have been consistently reported in youth populations (despite instrument variation). Higher levels of TEI are significantly linked to lower levels of *depression* (Mavroveli et al., 2007; Mikolajczak, Petrides, & Hurry, 2009), *anxiety* (Ciarrochi et al., 2001) and frequency of *somatic complaints* (Mavroveli et al., 2007) in adolescents (correlations ranging between r =-.40 somatic complaints to r = -.60 depression) and *depression* and *anxiety* in children aged 10-11 years (Williams et al., 2009, 2010a). Where facet-level analyses have been conducted, studies have shown a rather mixed pattern of associations, though this may be attributed to the diversity of measures employed. Using the SUEIT in sample of 11-13 year old adolescents, Downey, Johnston, Hansen, Birney, & Stough (2010) found that self-reported emotional recognition/expression (r = -.19, p < .05) and emotional management (r = -.42, p < .01) were significantly related to a composite measure of internalising symptomotology (feeling withdrawn; somatic; anxious; depressed). However Siu (2009) found that of four factors derived from the SREIT, only 'positive use of emotion' predicted depression (5% of the variance in scores), whilst 'self-management of emotion' predicted 2% of the variance in anxiety as reported by a sample of adolescents in Hong Kong. Notably, significant positive associations have also been documented between TEI and self-esteem; for instance, Ciarrochi et al., 2001 report a (SREIT) correlation coefficient of r =.41, p < .01 and Williams et al., 2009 uncovered an even stronger relationship using the TEIQue-ASF (r = .63, p < .01). Importantly, however, there is evidence to suggest that even with the influence of self-esteem controlled, TEI can incrementally predict both depression and anxiety; using the TMMS with a sample of youth aged 14-19 years, self-perceived competency in emotional repair explained an 11% of the variance in depression over self-esteem and thought suppression (overall R^2 = 29%), whilst both 'repair' and 'clarity' were significant predictors of anxiety (explaining 22% of the variance; overall R^2 = 54%) beyond controls (Fernandez-Berrocal, Alcaide, Extremera, & Pizarro, 2006).

However, contrary to the adult literature and theoretical predictions, TEI appears to share significant associations with maladaptive expressive behaviours in youth samples (i.e., disruptive behaviour) as well as with measures of dispositional, intrinsic emotionality (anger, depression, anxiety). For instance, Siu (2009) found that a factor derived from the SREIT 'positive use of emotions' could predict 6% of the variance in *aggression* and 5% in self-reported *delinquent behaviours*. This was later corroborated by Williams et al., (2009) who, this time using global SREIT scores, found significant inverse associations between TEI and *anger* and *disruptive behaviour* (both $r = -.31$, $p < .001$), although stronger effects were found using the TEIQue-ASF total scores (anger $r = -.56$, $p < .001$; disruptive behaviour $r = -.43$, $p < .001$). Moreover, employing a third TEI measure (the SUEIT), Downey et al., (2010) found that perceived competency to understand ($r = -.18$, $p < .05$), manage ($r = -.29$, $p < .01$) and identify/express feelings ($r = -.17$, $p < .05$) was negatively related to self-reported *rule breaking/aggressive behaviours*. To complicate this embryonic field further, preliminary evidence further suggests that TEIQue scores are related to *objective* measures of socially 'maladaptive' behaviours; Petrides, Frederickson, & Furnham (2004) found that total TEIQue-ASF scores significantly predicted *unauthorised* (not authorised) *absence* in adolescents with a mean age of 16.5 years ($n = 48$) – a relationship which remained significant even when controlling for the effects of personality (Eysenckian three), accounting for 18% of the variance in this pattern of behaviour. Consistent with this, Mavroveli, Petrides, Shove, & Whitehead (2008) found that boys aged 8-12 years who had been either internally excluded from class ($n = 25$), externally excluded from school (for a fixed term, $n = 30$), or who had unauthorised absences ($n = 35$) all had lower levels of TEI when compared to a control group ($n = 98$) with no record of unauthorised absence or exclusions. Both of the analyses are limited however by restricted sample sizes and more crucially, by the lack of statistical control of factors such as self-esteem, socio-economic status and also general cognitive ability that are known to significantly contribute to behavioural difficulties at school. Even without these controls in place, it is marked that the proportion of variance explained by TEI in unauthorised absence, whilst controlling for personality, is very similar to the relationship reported earlier between AEI and 'discipline referrals' with cognitive ability controlled (18% versus 20.25%) despite the variability in outcome measurement.

Summary: There is overwhelming evidence to suggest the existence of a general, broadband association between mental health and EI in both guises (e.g., Martins et al., 2010). It might also be tentatively suggested, that within adulthood, deficits in ability EI are more strongly indicative of externalising behaviours rather than internalising symptoms whereas lower levels of trait EI are more strongly related to mood disorders. In both cases, EI can make significant, incremental contributions the prediction of these outcomes over personality and IQ. In youths, whilst AEI relationships have so far replicated the adult trend, associations between TEI and mental health are equivocal, with the construct sharing significant inverse associations with both mood *and* behavioural disorders. Evidently, however, a number of methodological caveats pervade the evidence base to preclude definitive qualification of the nature of this relationship. There has been a disproportionate emphasis on the examination of trait versus ability EI in relation to internalising rather than externalising symptomotology within adult as opposed to youth populations. Clearly, in order to establish the utility of EI in predicting mental health (and as a potential avenue for interventions in the treatment of clinical disorders), research needs to target a broader array of clinical presentations and focus upon younger population groups to establish if and where EI can make a useful contribution. Secondly, despite the need to identify the 'pure' influence of EI on mental health outcomes, only a small cluster of studies have so far examined the extent of any incremental validity afforded by EI over allied constructs (particularly personality and cognitive ability) and with the exception of Petrides et al., 2004, these have been exclusively concerned with adult participants. Future research must clearly address this to allay the critics (Zeidner et al., 2008). Thirdly, the sheer range of measures employed across studies (particularly TEI) limits the comparisons that can be drawn; as discussed earlier in relation to the EQi and TMMS, measures are based on a wide range of models which leads to differential sampling of the construct domain and complicates interpretation of any effects obtained (the consequences of which appear particularly pronounced within the youth domain). Fourthly, and perhaps most importantly of all, these basic, cross-sectional associations do not permit any inferences to be made as to the underlying *processes* that might underpin any such relationship. As commentators have noted, simply identifying 'emotionally unintelligent' capacities, such as impaired emotion management or perception in those with (emotional) disorder amounts to little more than descriptive, circular reasoning (i.e., inferring low EI from symptoms) and yields very little explanatory power alone (Zeidner et al., 2009). As outlined in chapter 11,

theory dictates that both forms of EI should influence key individual difference processes that contribute to adaptive health outcomes across individuals – discussion will now consider how far extant evidence supports these suppositions.

12.3 Direct pathways to adjustment: EI, stressors and mental health

As noted earlier (section 11.3), there is now much evidence to implicate a wide range of stressors encompassing chronic adversity (e.g., childhood abuse; poverty) and acute experiences (e.g., negative life events) in the developmental course of psychopathological disorders (Grant et al., 2004; Rutter, 2000). Whilst some stressors are known to exert proximal influences on disorder (e.g., maladaptive parenting styles; Ge et al., 1992) others operate more distally, exerting a multiplicative influence via intervening mediating and/or moderating variables that can operate at individual, family or environmental levels (Grant et al., 2006). For instance, family socio-economic adversity represents a chronic stressor that has been consistently linked to both externalising and internalising symptomotology in youth (McMahon et al., 2003), but those from poorer families also experience a greater number of acute interpersonal and environmental stressors; for example, family bereavement, illness (Amone-P'Olack et al., 2009), overcrowding, poorer housing, noise, family turmoil, violence and separation (Evans & English, 2002). Hence the effects of chronic adversity are two-fold; in depleting the resources available to an individual within the family setting (i.e., financial, social, emotional or cognitive) immediate vulnerability to disorder is directly increased, yet so too is the likelihood of encountering additional acute stressors such as injury, illness etc, which can in turn have cumulative detrimental effects on health outcomes (McLoyd, Jayaratne, Ceballo, & Borquez, 1994; Wadsworth et al., 2005). Indeed, Grant et al., (2006) found that family-based variables (e.g., decreased parental warmth, harsh/inconsistent discipline, increased levels of conflict, reduced parental support) were most consistently implicated as mediators of the poverty-adjustment relationship but note that these (uncontrollable) family-level stressors may explain differences in additional individual-level variables (e.g., low self-esteem, maladaptive coping) which in turn link to poorer outcomes. In other words, protective processes at the possible disposal of the individual (e.g., adaptive coping; support networks, etc) could be impacted as part of a complex chain of causality (Seiffge-Krenke, 2011). Consequently, EI

(conceived as a pre-existing, *individual-level* resource) may be differentially related to stressors; stronger links to proximal stressors of an interpersonal nature are anticipated and, crucially, as an *adaptive* emotional trait or skill-set, those with higher levels of T/AEI should report experiencing fewer stressors.

12.3.1 Does stressor exposure differ as a function of EI?

A body of research has sought to explore the correspondence between EI and individual reports of *stress symptoms* as a marker of stressor exposure (Extremera, Duran, & Rey, 2007; Gohm, Corser, & Dalsky, 2005; Hunt & Evans, 2004; Pau & Croucher, 2003; Pau et al., 2007; Por, Barriball, Fitzpatrick, & Roberts, 2011; Sahin, Guler, & Basim, 2009; Velasco, Fernandez, Paez, & Campos, 2006). Typically these studies require individuals to report the frequency with which they experience psychological distress (e.g., feelings of control over life events) and/or heightened physiological arousal (e.g., racing heart) across the recent past (usually within the previous month). TEI reliably demonstrates an inverse relationship with stress symptoms and studies have been consistent in reporting moderate to large global correlation coefficients across instruments, e.g., (SREIT) r = -.29 (Pau & Croucher, 2003; Pau et al., 2007 using the SSREI) to (EQi) r = -.40 (Por et al., 2011; Sahin et al., 2009). By contrast, very few studies have reported on this relationship from an ability EI perspective (notable exceptions being, Fox, Bergquist, Casey, Hong, & Sinha, 2010; Gohm et al., 2005) and existing findings point to non-significant (possibly indirect) relations. Collectively however, this body of research is severely limited by its operationalisation and measurement of 'stress'; stress *symptoms* share much overlap with the features of psychological disorders; for instance, example items from the commonly employed 'Perceived Stress Scale' (Cohen, Kamarck, & Mermelstein, 1983) include, "In the last month, how often have you been upset because of something that happened unexpectedly?" "...how often have you found that you could not cope with all the things that you had to do?"). Hence on the basis of the aforementioned links between EI and mental health an inverse EI-stress symptoms relationship is not unexpected as this essentially represents a restatement of positive health (e.g., absence of depression). Moreover, as the above examples illustrate, items measuring stress symptoms also clearly tap allied stress-related processes such as coping proficiency. Consequently, employing such 'response-based' approaches in the measurement of stressor exposure or reactivity has been cautioned against on the grounds of conceptual

clarity and empirical rigour, particularly when research aims to deconstruct stress processes by identifying potential moderating and mediating effects within stressor-adjustment pathways (Grant et al., 2003). Hence, this evidence base will not be further considered.

In contrast, very little research has examined direct links between EI and identified stressors, and of the little evidence available, most has been based upon adult, retrospective self-reports of childhood adversities, with a predominant focus upon uncovering developmental influences on EI. Nevertheless, findings have been relatively consistent across stressor-types. With respect to the experience of *chronic adversity*, Brown & Schutte (2006) found the level of TEI (SREIT) did not differ between students who had or had not reported a history of verbal, physical, or sexual abuse (*N*=167, mean age 27.95 years). Consistent with this, Gardner et al., (2011) found no associations between either TEI (SREIT) or AEI (MSCEIT) and the incidence of childhood physical abuse/neglect or emotional abuse/neglect in a group of students (*N*=97, mean age 22.29 years). Moreover, branch level correlations between AEI skills (MSCEIT) and history of sexual abuse did not reach significance in a community sample of adults (*N*=154, mean age 38.4 years)(Goldenberg, 2004). However, within the same study, some small inverse relationships were detected between a composite measure of abuse 'psychological & physical maltreatment' and TEI (SREIT factors identified as 'appraisal of emotion' $r = -.14$, $p < .05$; 'mood regulation' $r = -.19$, $p < .05$; 'experiencing/sharing emotion' $r = -.27$, $p < .001$) and with AEI 'management of emotion' ($r = .14$, $p < .05$). A small, positive association between AEI 'using emotion' and parental sexual abuse ($r = .14$, $p < .05$) was also reported. Whilst the author interprets these findings as evidence that TEI (though not AEI) can be detrimentally impacted by chronic stressors, given that the stressor-EI relationship was not examined concurrently (i.e., in childhood) it is equally plausible that characteristics associated with 'low' TEI might have enhanced the likelihood of exposure to abuse (e.g., childhood difficulties in perceived emotion management may have affected behaviour, leading to 'acting out' etc). Conversely, for those exposed to abuse, it would seem that the ability to effectively manage emotion (in the self and others) and use emotion to facilitate thought are skills that might become honed in the face of adversity, possibly as a result of the protective effect this might afford the individual within a risk context (i.e., control and regulation of negative emotion/using emotion to problem-solve). Nevertheless, despite this speculation the effect sizes reported are

negligible, and, in comparison with the foregoing null findings, possibly a result of differing measurement techniques across studies (i.e., the use of a composite measure of 'general' abuse which combines very different forms of physical and emotional abuse; associations detected at branch/factor level vs. global level in EI instruments). It is notable, though, that whilst the aforementioned body of research is undoubtedly limited by a focus upon retrospective reports of adversity, the general trend of findings has been corroborated more recently with respect to AEI using a concurrent design; in a sample of young people (*N* = 54, mean age 17.3 years) self-reported sexual abuse and AEI (MSCEIT YV-R) were not significantly related (Cha & Nock, 2009).

To date, there has been no formal examination of the links between another chronic stressor, *socio-economic adversity,* and EI in adolescence although two studies have investigated relationships between proxy indicators of socio-economic status and EI. In a sample of adolescents (*N* = 200, mean age 17.24 years), the first found that whilst total TEI (EQi) did not significantly differ according to self-reported family income or location of household (rural or urban), differences were detected according to level of parental education - as parental level of education increased (i.e., representing higher affluence) so did youth TEI (Harrod & Scheer, 2005). However these findings are clearly limited by the reporting method - estimates of family wealth (i.e., parental education, occupation, household income) are typically unknown and inaccurately reported by youth (Currie, Elton, Todd, & Platt, 1997). Perhaps more revealing are the contradictory findings of Kraus, Cote, & Keltner (2010, study one), who found that ability to perceive emotion in others (indexed via the MSCEIT) was *poorer* in adults with higher levels of education (degree versus high school) and this effect remained significant when controlling for gender and trait agreeableness. The authors speculate that within a 'risk context', where there is a chronic lack of resources and increased likelihood of exposure to stressors of an uncontrollable nature, individuals are more likely to be externally focussed to maximise the detection of salient information from their environment. Hence, enhanced abilities to perceive emotional cues in others would be a corollary of this. Despite its theoretical appeal, the study is limited by its focus upon a rather restricted sample (i.e., adults who had been in stable employment with a University for an average of 11 years), a restricted indicator of SES (a high-school level of education was classified as 'lower social class' from which 'risk' is inferred) and also a lack of consideration of the impact of general cognitive ability. The somewhat narrow focus upon one aspect of AEI also limits the generalisability

of these findings to the preceding research base, although it is notable that the emerging 'theme' compliments Goldenberg (2004); in addition to effective management and use of emotion, perception of emotion appears to be similarly enhanced in adults exposed to chronic stressors.

However, contradictory evidence has been found in relation to measures of cumulative *life events* with Ciarrochi et al., (2002) reporting non-significant associations between ability to perceive emotion (MEIS 'stories' subtest which requires identification of emotions in six vignettes) and daily hassles occurring over the past month (e.g., interpersonal conflicts) *and* also with major negative life events occurring over the past 6-12 months (acute events e.g., death of loved one) in a sample of students (N = 232, mean age = 20.6 years). Conversely, TEI 'managing self emotion' (though not 'managing others' emotions' or 'emotion perception' as indexed via the SREIT) was significantly related to fewer daily hassles (r = -.15, p < .01), yet as with AEI, there were no significant associations with major negative life events. However, the authors note the degree of overlap between items included within 'managing self emotion' and measures of dispositional optimism and general positive mood (e.g., "I expect good things to happen") hence, the extent to which this relationship reflects any unique contribution from TEI beyond general NA/PA cannot be determined. Consistent with this, Day, Therrien, & Carroll, (2005) reported inverse relationships between sub facets of the EQi ('adaptability', 'general mood', 'stress management' and 'intrapersonal' TEI) and the experience of fewer academic-related daily hassles (rs ranging between -.44 to -.61, p < .001) in a sample of students (N = 133, mean age = 21.6 years). However, as there is an explicit emphasis upon coping processes (i.e., adaptability; stress management) and PA/NA (i.e., happiness/optimism indexed by general mood), these associations are to be expected and the 'pure' nature of the TEI-stressor relationship cannot be discerned. Indeed, in line with Ciarrochi et al., (2002), all of these same components were highly correlated with a measure of Neuroticism (rs ranging between -.61 to -.68, p < .001); only 'interpersonal' EI did not share a significant association with N and, markedly, this was not related to daily hassles. Nevertheless, despite measurement differences (i.e., variable coverage of the TEI sampling domain across multiple instruments; lack of statistical control for higher-order personality traits) and an exclusive focus upon adult populations, there does appear to be some consistency across studies in detecting inverse relationships between TEI and daily hassles.

Similar limitations apply to the small body of literature addressing aspects of *family functioning.* Here, as with chronic adversity, researchers have largely focussed upon exploring how current levels of adult EI relate to retrospective perceptions of the early family environment. In general, TEI would appear to relate to qualities that reflect positive family functioning, for instance, adults (N = 296, mean age 19.4 years) with higher total TEI (SREIT) reported having experienced higher levels of 'conversation orientation' (i.e., engagement in open interaction: sharing thoughts, feelings, ideas) (r = .49, p < .05), whilst the relationship between TEI and 'conformity' (i.e., obedience to rules/parental authority) did not reach significance (Keaten & Kelly, 2008). In addition to communication patterns, Alegre & Benson (2010) found that TEI related positively to parental warmth/affection (TMMS attention: r = .22, p < .01; clarity: r = .20, p < .01) and negatively with harsh punishment (r = -.12, p < .05), though there was no significant relationship with discipline. Indeed, this study found that reduced ability to understand emotion (clarity) partially mediated the effect of parental warmth (lower levels) on internalising (higher levels) but not externalising disorder - providing tentative evidence to support the proposition that TEI may be implicated in multiply-determined, stressor-disorder pathways of a proximal nature. This also appears to fit with the pattern of predictive specificity gleaned from the literature thus far in that TEI did not predict externalising disorders. However, as noted elsewhere, the full content domain of TEI is not sampled by this measure (e.g., 'clarity' does not extend to understanding emotion *in others*) and the lack of control for broadband personality precludes any firm conclusions.

The importance of this latter point was emphasised by Ciarrochi et al. (2001) who found that initially significant bivariate associations between total (SREIT) TEI (r = .19, p < .05), managing self-relevant emotion (r = .23, p < .01), managing others' emotion/social skills (r = .20, p < .05) and parental warmth were no longer significant after controlling for self-esteem and trait anxiety in a sample of adolescents (N =131, mean age 13.8 years). Furthermore, the impact of TEI measurement variability was highlighted recently by Gardner et al., (2011) who, in contrast to the foregoing literature, failed to find any significant associations between total TEI (SREIT) and measures of family cohesion, expressiveness or conflict in adults with a mean age of 22.29 years. AEI was similarly unrelated to these measures. However, whilst relationships failed to reach significance,

the direction of associations would appear to accord with earlier emerging themes; TEI was related to 'adaptive' qualities (less conflict and a more cohesive and expressive family environment) whilst higher total AEI was associated with stressor exposure (less conflict but reduced cohesiveness and expressiveness), suggesting once again that AEI skills might be more attuned in individuals faced with interpersonal discord. It is noteworthy that across this sample of research, TEI would appear to only share relationships with 'adaptive' family attributes and not measures of 'dysfunction' (i.e. conflict, discipline) which perhaps serves to further underscore the influence of positive affect. However, despite offering a snapshot of relationships between EI and aspects of the family environment, comprehensive exploration of family functioning in its entirety is absent (i.e., aside from affective aspects, also roles; behaviours; problem-solving etc). This is something which is sorely needed in order to further understand the association between this proximal stressor and EI in youth.

Summary: Altogether, the lack of consistent, robust associations between ability EI and markers of both chronic and acute stressors suggests that level of emotional skill does not intrinsically influence *exposure* to adversity. However, this does not rule out a moderating role for AEI in stressor-adaptational pathways, whether this be via direct modification of the stressor experience (here a perception x chronic stressor interaction has been hinted at) or indirectly (transmitting its effects via coping). Whilst AEI theory suggests that higher skill universally equates to adaptive outcomes (also hinted at by some of the evidence reviewed above, i.e., early detection of salient emotional cues may facilitate 'adaptive' regulatory processes, attenuating symptomotology), the nature of the current literature (*a posteriori* reasoning through the reporting of retrospective stress contexts; limited measures of stressors; no measure of adaptation) precludes definitive interpretations in this regard. Indeed, it might be the case that instead of protection, higher AEI might amplify or pose increased risk for stressor *reactivity* (i.e., exaggerated stressor detection leading to increased reactivity and greater likelihood of disorder). This is particularly pertinent to the adolescent context, a period characterised by heightened sensitivity to social stressors – as established via objective markers of neuroendocrine and cardiovascular change (Stroud et al., 2009) and subjective assessment (Seiffge-Krenke, 2011) - where adolescents from high risk backgrounds exposed to multiple stressors, may be especially vulnerable to the onset of disorder (Spear, 2009). Clearly,

urgent attention must be given to further examine chronic and proximal stressor-T/AEI relations within adolescence and establish how these, in turn, relate to real-world mental health *outcomes*.

Nevertheless, there is greater continuity in literature examining TEI-stressor relations; higher TEI is more robustly associated with *reduced exposure* to stressors of an interpersonal, proximal nature (e.g., fewer cumulative daily hassles and the experience of 'adaptive' family environments: warm relationships, engaging communication styles) compared to chronic/distally related stressors (e.g., abuse, neglect, indicators of poverty). By indicating an intrinsic, *direct* role for TEI in stressor processes this provides preliminary support for the predictions derived from personality theory (e.g., Bolger & Zuckerman, 1995). However, the extent to which TEI offers a unique perspective on these relations is unclear; direct associations may represent a simple re-statement of the established effects of positive mood (e.g., optimism, happiness, high self-esteem) on the propensity to experience adversity (see e.g., Ciarrochi et al., 2001). Clearly, incremental testing of associations in the presence of high-order personality traits is required. Crucially, however, analysis of this self-report literature does not permit definitive qualification of the nature of any direct association between A/TEI and stressors; in order to assess whether variation in perceived or actual emotional ability underscores individual differences in stress *reactivity* and understand *how* this might occur (e.g., by influencing early perception and identification of emotional cues, or, once detected, management of emotional repercussions), scrutiny of experimental evidence is required. A small body of research has examined whether EI can buffer the physiological and psychological effects induced by acute stressors within a controlled environment and it is to consideration of this literature that discussion now turns.

12.3.2 Does stress reactivity differ as a function of EI?

Two major approaches have been utilised to manipulate and measure stress reactivity within the EI research domain – mood induction and stressor-confrontation – both of which follow similar experimental procedures. Following an initial measurement of emotional state (recorded either subjectively or objectively), individuals are then

subjected to a mood induction procedure (designed to elicit a positive or negative mood) or exposed to an acute situational stressor within the laboratory setting, immediately after which a second measurement of emotional state is recorded to gauge reactivity. Stressors contain a 'performance' element and, to date, have assumed a variety of forms including 'failure' experiences (generated through non-completion of cognitive tasks under time constraints, i.e., impossible anagrams, difficult items from non-verbal IQ tests etc), social evaluation (delivering a speech to an audience after limited preparation time followed by a timed cognitive task) and completion of demanding (i.e., complex working memory) or fatiguing (attentional vigilance) cognitive tasks. Participants are randomly assigned to either a 'stress' or 'control' condition – where the latter typically involves reading a magazine article or watching a neutrally valenced documentary (e.g., natural history). Mood induction procedures are similarly varied but, in contrast to stressors, all are 'passive' in nature and present no perceived threat to the individual; for instance, participants watch positively (e.g., a comedy sketch) or negatively valenced film clips (e.g. documentaries relating to the Holocaust; dying from cancer) and then read positively or negatively phrased statements concerning personal self-worth and mood (the Velten method), or asked to recall a negative event from memory (e.g., a past poor decision). Thus in line with the overall goals of each intervention, stressor studies typically measure reactivity in terms of changes in negative affect (NA), whereas mood induction studies often report changes in both NA and positive affect (PA), or sometimes a composite index of the two (subtracting NA from PA or vice versa). Despite these underlying differences in procedure and the variation in dependent variables, both methodologies have demonstrated that emotionally intelligent individuals differ in their response to stressors.

Turning first to subjective changes in emotional reactivity through mood induction, Petrides and Furnham (2003, study 2) found that those with higher levels of global TEI (TEIQue) reported *more* anxiety, anger and reduced vigour after watching a distressing film (and reduced confusion following an amusing film) compared to those with lower TEI. This was corroborated by Fernandez-Berrocal and Extremera (2006) who reported that global negative affect *increased* in response to a film clip selected to induce anger (but not sadness) for those high in TMMS clarity with baseline levels of NA and PA held constant. However, changes in *positive* affect following positive induction did not differ according to level of TEI. Additionally, Sevdalis, Petrides, & Harvey (2007, study 1)

found that, whilst all participants reported lower PA and higher NA after recalling a personal negative memory (a decision that led to intense negative affect), for those with higher TEI (TEIQue) these effects were more pronounced (i.e., a greater increase in NA and greater decrease in PA). Hence, all of these studies suggest that TEI relates to heightened reactivity to emotional stimuli, particularly material of a negative valence. Nevertheless, there have been some exceptions to this trend. Schutte, Malouff, Simunek, McKenley and Hollander, (2002, study 3) found that those with higher levels of TEI (SREIT) encountered *less* of a decrease in global PA following negative induction, however, it is unclear why changes in PA were reported rather than NA when the focus was on negative induction. Additionally, in direct contrast to Fernandez-Berrocal and Extremera (2006), Ramos, Fernandez-Berrocal and Extremera (2007) found that higher TMMS clarity related to *reduced* feelings of depression and fatigue in a sample of women following negative mood induction – although there was no control for baseline mood state (i.e., prior to induction). Nevertheless, Schutte et al., (2002, study 3) also found that higher TEI related to greater increase in PA after *positive* induction and therefore still offers partial corroboration for the 'enhanced reactivity' trend. Importantly, this literature indicates that TEI can reliably distinguish differences in emotional reactivity across individuals and hints that high TEI might not have universally adaptive consequences (i.e., experiencing increased mood deterioration is not necessarily useful or appropriate across all situations e.g., interpersonal conflict versus personal bereavement). Similar conclusions cannot be drawn with respect to AEI; only one study thus far has examined reactivity via mood induction and found that this did not differ according to level of AEI in response to positive mood induction – both high and low AEI individuals reported similar reductions in NA in comparison to post-induction affect levels for neutral stimuli (Ciarrochi, Chan, & Caputi, 2000). However, as highlighted earlier with reference to the TEI research base, the use of an incongruent measure of affect (i.e., NA to measure changes in positivity) is not ideal, and even more problematic in this case given that mood was treated as a uni-dimensional construct by combining self-reported sadness, unhappiness, cheerfulness, negativity, feeling tense and positivity into a single index.

Aside from differences in the recording of emotional reactivity across such studies, the mood induction evidence base is collectively limited by a number of key methodological issues which prevent generalisability. As noted above, particularly

problematic is the absence of statistical control for the influence of baseline mood state mood in analyses (e.g., Ciarrochi et al., 2000; Petrides & Furnham, 2003; Ramos et al., 2007; Sevdalis et al., 2007), especially given that individuals with high TEI universally reported more positive mood states prior to testing in the studies discussed above. Clearly, any post-induction changes in emotional reactivity may well be contaminated by these underlying differences in dispositional mood state. Indeed, Fernandez-Berrocal & Extremera (2006) found that pre-existing mood state accounted for between 20-40% of the variance in PA and NA post-induction – an effect which is likely amplified with respect to TEI when measures of mood and TEI (with shared method variance) are recorded in the same session (e.g., Petrides & Furnham, 2003; Schutte et al., 2002; Sevdalis et al., 2007). A similar 'contamination' problem may also stem from the use of repeated measures designs, and this could be the root cause of the somewhat equivocal findings pertaining to positive induction; in subjecting the same group of participants to negative followed by positive mood induction, any changes in PA post-positive induction might be a reflection of *regulation* following exposure to the earlier negative stimuli, rather enhanced 'reactivity' to positive material (e.g., Schutte et al., 2002).

Nevertheless, researchers have addressed some of these limitations through the examination of EI and emotional reactivity in response to *situational stressors*. In comparison to the foregoing mood induction research, this body of literature has yielded more consistent findings and also extended investigation to measure both subjective *and* objective changes in stress reactivity as a function of EI. With respect to TEI and *subjective* reactivity, the work of Mikolajczak and colleagues has been particularly influential; using the TEIQue with adult populations, studies have converged to show that individuals with higher TEI experience smaller increases in negative affect (i.e., less mood deterioration) following exposure to stressors compared to those with lower-levels of TEI – an effect which has held across different stressor 'types', including a failure experience (Mikolajczak, Luminet et al., 2007; Mikolajczak, Petrides, Coumans, & Luminet, 2009, study 1 & 2; Mikolajczak, Roy, Verstrynge, & Luminet, 2009) and social evaluation task (Mikolajczak, Petrides, Coumans et al., 2009, study 3) and when subjective reactivity is measured via 'traditional' instruments (i.e., positive and negative affect scale) as well as self-reported reactivity symptoms such as bodily sensations; action tendencies (Mikolajczak, Luminet et al., 2007). However, presently it remains unclear which TEI

facets might best afford such a protective effect amidst stress; where factor level analysis has been conducted 'self-control' (regulation of own emotion; impulse control and low impulsiveness) and 'sociability' (management of others emotion; assertiveness; social competence) have been most consistently implicated to attenuate emotional reactivity in response to failure experience (Mikolajczak, Luminet et al., 2007; Mikolajczak, Roy et al., 2009), which hints that competencies located within 'emotionality' (emotion perception - self and others; expression; empathy) might be implicated to a lesser extent in TEI-stressor reactivity relationships than emotion management capacities. Indeed this was borne out by the findings of a 'pooled sample analysis' conducted by Mikolajczak, Petrides, Coumans et al. (2009) who, in combining the responses of participants exposed to both types of stressor across three studies, found that whilst all TEI factors moderated the effect of stress on reactivity, 'sociability' had the largest effect and 'emotionality' the weakest. Altogether, the moderating effects on post-stressor NA appear consistent and it is encouraging to note that this effect appears to persist with personality and social desirability controlled (Mikolajczak, Luminet et al., 2007; Mikolajczak, Petrides, Coumans et al., 2009, study 3). However, some degree of caution should still be exercised with respect to these findings; although in some cases measures of mood and TEI were taken in separate testing sessions, the effects of baseline mood state have not always been statistically controlled (e.g., Mikolajczak, Roy et al., 2009, study 2). Moreover, the ability of TEI to modify changes in *positive* affect under stress have been less pronounced (converging somewhat with the mood induction literature) with some studies finding that individuals with high TEI show a smaller decrease in PA when faced with stress (Mikolajczak, Petrides, Coumans et al., 2009, study 2) yet others reporting a non-significant moderating effect (Mikolajczak, Petrides, Coumans et al., 2009, study 3).

Importantly, the moderating effect of TEI on stress reactivity has been corroborated using *objective* indices. Much of this research has measured levels of salivary cortisol which represent hypothalamus-pituitary-adrenal (HPA) axis activation in response to physiological or psychological stress. Early work with the TMMS suggested that increased understanding of one's own emotions (clarity) was related to lower *baseline* levels of cortisol secretion and (with control for baseline levels) predicted lower *overall* secretion when confronted by a series of performance-based stressors presented over consecutive sessions (Salovey, Stroud, Woolery, & Epel, 2002, study 2). Moreover,

higher attention to one's emotions was found to be similarly predictive of attenuated cortisol secretion and also reduced cardiovascular reactivity (decreased systolic blood pressure) when participating in a single stressful task (Salovey et al., 2002, study 3). Nevertheless, these studies only show a predictive association between certain TEI facets and physiological reactivity; the lack of control groups and subsequent testing for interaction effects tells us little about whether these facets might offer any *protection* against the effects of stress. However, work with the TEIQue has begun to address this. In line with the earlier findings, Mikolajczak, Roy, Luminet, Fillée, & de Timary, (2007) found that global TEI moderated mood deterioration following exposure to a social evaluation stressor task (such that those with higher TEI experienced less decrease in PA and less of an increase in NA) however, TEI also *moderated* cortisol secretion (such that those with higher TEI secreted less cortisol in the stress condition compared to their low TEI counterparts). Nevertheless consistent with associations reported in Salovey et al., (2002, study 2) further analyses revealed that this effect could be attributed to baseline differences in secretion; those with low TEI showed a stress-anticipatory effect, secreting higher levels of cortisol before the task began which maintained throughout the experimental session. This hints that low TEI could confer vulnerability for deleterious health outcomes via enhanced reactivity to *perceived* as well as *actual* stressors. Notably, this effect held across all TEI factors and after controlling for personality (traits N, A, O) and alexithymia (which were also inversely associated with cortisol secretion).

Similar effects have been reported in more recent work by a separate research team (Laborde, Brüll, Weber, & Anders, 2011). Here, heart rate variability was indexed via the LF/HF ratio which, in representing the balance between the sympathetic/parasympathetic systems, is expected to increase in response to stress. Heart rate was monitored in a group of male, German athletes both prior and following exposure to a sports-based stressor which involved listening to audio of negative self-referent statements (e.g., "motivation is leaving you") coupled with the noise of a booing crowd to simulate performance anxiety and lowered self-confidence in a competitive setting. Whilst heart rate variability increased in all participants after exposure to the stressor, the increase was higher for those with lower TEI (TEIQue) indicating greater susceptibility to stress. Yet in contrast to the foregoing literature, TEI 'emotionality' was found to be the most prominent predictor of the change in heart rate variability (with

'self-control' n.s) - although this perhaps reflects differences in the nature of the stressor (audio presentation of negative imagery might link to perception and expression of emotion). However, these findings can only be considered preliminary given that baseline heart rate (which was inversely related to TEI 'wellbeing') and personality facets were not controlled within these analyses and, most crucially, heart rate changes were not compared to a control group/control task.

Before leaving discussion of the TEI-reactivity literature, it is worth noting that this research represents a very preliminary examination of the link between EI and stress reactivity; there are clearly many different sub-processes that collectively contribute to 'reactivity' and researchers have begun to turn their attention towards examination of the impact of EI on some of these sub-processes in an attempt to deconstruct the underlying EI-stress reactivity relationship. For instance, Mikolajczak, Roy et al., (2009, study 2) examined whether early attentional processes were modified by level of TEI (TEIQue). Following exposure to an experimental stressor (failure experience) or control condition (reading magazine) participants completed a visual dot probe task which required participants to respond to the direction of a probe appearing in a position previously occupied by a neutrally, positively or negatively valenced word. *Faster* reaction times to an 'incongruent' probe position (i.e., where probe replaces a neutral word instead of emotive) indicate less attentional bias to emotional 'concern-related' material. Specifically, it was expected that in those exposed to stress, high levels of TEI would confer a bias towards *negative* stimuli (i.e., *slower* responses to incongruent probes following negatively valenced material) given the adaptive advantage afforded by early threat detection (i.e., facilitation of a quicker physiological/psychological response). Interestingly, only TEI 'self-control' was found to influence early attentional processes; within the *control condition*, those with higher self-control responded more quickly to incongruent probes (under normal conditions, less focus was afforded to emotional material), whereas the opposite was true for those with low self-control (diverted more attention to emotional words). Yet *under stress*, higher levels of self-control represented a bias in favour of emotional information (i.e., slower reaction times to incongruent positions), whilst those lower in self-control reduced their focus on emotional stimuli. Importantly, these effects held beyond the influence of personality and self-reported levels of depression and anxiety.

Hence, Mikolajczak, Roy et al., (2009) argue that this supports the 'adaptive' nature of high TEI – attention to emotional content under stress should enable downstream regulatory processes (e.g., explicit coping strategies) to come into effect more quickly to combat stressors vs. those with low TEI who disengage from emotional information. However, in actuality, this study only partly accords with this notion – these analyses found a *general* biasing effect for emotional content *per se* (i.e., attention directed towards/away from both positive and negative stimuli). To demonstrate a truly 'adaptive' effect, TEI should show specificity in *negative* emotional processing under stress. Moreover, the nature of this experimental design (involved attentional processing *post*-stressor), meant that *low* TEI might actually have reflected an adaptive response to stress – as those with lower self-control also reported higher levels of negative affect prior to commencement of the attentional task, disengagement from potentially distressing content might have conferred protection (automatic avoidance from uncontrollable stressor). Clearly, further examination of the moderating effect of TEI on early attentional processes is necessary, with a focus upon health outcomes and direct testing *under* stress, to determine the 'adaptive' nature of such effects. Nevertheless, this evidence suggests that there may be some early attentional processing differences as a function of TEI which may go some way to explaining how TEI attenuates psychological and physiological emotional reactivity under stress.

Before concluding, it is notable that, as with all other lines of enquiry, there has been less emphasis on exploring the relationship between AEI and experimental stressor reactivity – indeed, to the author's knowledge, only one study to date has investigated this relationship and with reference to subjective reactivity only (Matthews et al., 2006). With random assignment to one of four conditions (control or one of three stressor tasks: impossible anagrams; complex working memory; attentional vigilance) participants recorded pre and post-task levels of distress and worry. Across the whole sample, global AEI (MSCEIT without 'using emotions') predicted reduced *pre-task* distress and worry over the effects of personality (adding 2.5% and 5.2% incremental variance respectively) suggesting that those with higher AEI came to the experimental session in a more positive mood state than those with lower AEI. Controlling for this pre-task state, AEI and neuroticism were both predictive of post-task distress (together accounting for 3.7%

additional variance beyond mood and condition), however, contrary to predictions, higher AEI was linked to *increased* distress (as was high N). Furthermore, in contrast to the TEI literature base, AEI did not moderate the effect of stress on emotional reactivity (distress or worry). Therefore, despite those with higher AEI reporting a better subjective mood state initially (less distress, worry) this did not confer an advantage in the face of stressors; instead, AEI skills amplified reactivity and did not offer protection against task stress.

Summary: Notwithstanding aforementioned methodological limitations inherent in this literature base (including small sample sizes and an exclusive focus upon adult populations), evidence from both mood induction and situational stress studies suggest that emotional reactivity does indeed differ according to emotional intelligence – though presently, this would appear to apply most definitively to TEI. Whilst those with higher levels of TEI appear more reactive to emotional stimuli when presented passively (particularly information of a negative nature), when faced with tangible threat, high TEI affords an adaptive advantage by minimising mood deterioration and physiological reactions (e.g., reduced heart rate variation and cortisol release). Indeed, this latter body of research also hints that high TEI might even underscore differences in reactivity to *perceived* as well as *actual* stressors. This effect is captured by global TEI, although TEI facets may differentially contribute depending upon the type of stressor faced, e.g., emotion regulatory facets appear to afford particular advantages for stressors requiring an individual performance element. Additionally, preliminary attempts to further deconstruct the overall stress reactivity process have suggested that TEI could moderate early attention processes when confronted with stressors – something which awaits exploration with respect to AEI. Indeed, extant literature pertaining to AEI is much less consistent; people with higher levels of AEI appear no more or less sensitive to emotional stimuli and emotional skill does not appear to confer a protective effect in the face of situational stressors. Indeed, contrasting with the tenets of AEI theory (and predictive links derived from emotion regulation research), higher levels of AEI would appear to predict *greater* negative emotional reactivity. Hence, this review suggests that whilst high levels of TEI confer stress *resistance*, high levels of AEI predict outcomes associated with stress *maladaptation*. Nevertheless, the ecological validity of this research base is limited by the study of artificial, acute 'stressors' within the laboratory. To lend credence to

these emergent findings, similar effects must be demonstrated in response to naturally occurring, chronic stressors that are known to be implicated in the onset and maintenance of disorder (e.g. interpersonal conflict, socio-economic adversity) and these differences linked to better mental health. Presently, there are very few studies that have investigated such associations and most have been conducted with adult populations. However, before reaching a final conclusion concerning the plausibility of *direct* influences from EI upon pathways to adjustment, this evidence base will be explored.

12.3.3 Can EI buffer the impact of stressors to promote adaptation?

Before exploring the small body of literature that has been concerned with EI-chronic stressor interactions, it is worth noting the findings of two studies which have attempted to assess the impact of EI on emotional reactivity when faced with normative, stressful events (examinations and school transition). First Mikolajczak et al., (2006, study 2) measured psychological and physical symptoms in a sample of students (N = 75; mean age 18.36 years) prior to (baseline) and during an examination period three months later (time two). Importantly, both physical and psychological symptoms increased at time two, signalling that as expected the students experienced greater stress reactivity during this period. TEI (TEIQue) was related to both baseline and mid-exam symptomotology, however crucially, when controlling for baseline differences, higher levels of TEI 'self-control' were predictive of reduced psychological distress and physical illness during the stressful period, with 'sociability' also predictive of fewer physical complaints. Therefore, competency in managing one's own emotions and the emotions of others would appear advantageous qualities for combating emotional reactivity to *natural* as well as *acute* stressors (e.g., Mikolajczak, Roy et al., 2009). However, the nature of the study design make it equally possible that intervening variables influenced this effect (e.g., those with high TEI may have engaged in more extensive preparations prior to the exams to alleviate negative symptoms). Assessing reactivity at the height of its occurrence (i.e., closer to the exam event) and corroborating subjective with objective measures of stress state (e.g., cortisol release) would have provided more robust results, although convergence with the experimental literature represents an important advancement for the TEI construct.

Nevertheless, it is unclear whether these effects extend to other academic-related stressors in younger populations. In children aged 10-11 years (*N*=274) Williams et al.,(2010a) measured self-concept, depression, anxiety, anger and disruptive behaviour symptomotology immediately prior to school transition (i.e., from primary to secondary school) and again 6 months later once children had begun their new schools (time two). With the effects of gender and socio-economic status held constant, total TEI (TEIQue-ASF) was predictive of time two positive self-concept (explaining 23% variance) and reduced symptomotology (explaining 9-13% variance) except for disruptive behaviour. However, in contrast to Mikolajczak et al., (2006, study 2) TEI failed to predict state change (i.e., when the influence of time one symptoms were controlled). Moreover, the issue of TEI measurement specific-effects was apparent; TEI indexed via the SREIT was unable to significantly predict *any* variance in health outcomes at time two, even before the effects of baseline state were controlled. Whilst these findings appear to contrast sharply with the earlier work of Mikolajczak and colleagues, there are important methodological differences which might limit comparisons; principally, across the 6 month period there would seem to have been little change in criterion scores - indeed mean scores indicate that contrary to predictions, mental health actually improved across this transitional period rather than worsened, although the statistical significance of these changes are not reported. Therefore, these findings are perhaps unsurprising given that there would have been little variability left for EI to explain within each predictive model. Clearly, it would have been preferable to assess post-transition reactivity much closer to the event as per Mikolajczak et al., (2006, study 2) (i.e., within one or two weeks of beginning the new school rather than after several months).

Whilst illuminating, the nature of the stressors investigated in both of the preceding works (implied vs. direct measurement) precludes more precise estimation of a moderating role of EI in stressor-health relations. To date, only three studies have explored possible interactive relationships and the first two have been concerned with establishing whether EI buffers the effects of cumulative negative life events and/or daily hassles on mental health outcomes in adults. Firstly, within a sample of university students (*N* = 232; mean age 20.6 years), Ciarrochi, Deane & Anderson (2002) found that depression, hopelessness and suicidal ideation were positively associated with daily hassles and negative life events, but contrary to predictions, neither AEI emotion

perception (MEIS: stories) or TEI (SREIT) factors 'emotion perception'; 'managing others emotions' moderated the effect of *major life events* in predicting disorder. However, *daily hassles* were associated with higher reported depression, hopelessness and suicidal ideation in those with *higher* scores on AEI perception. In contrast, *higher* levels of self-perceived skill in managing the emotions of others was related to *less* suicidal ideation in those experiencing high levels of daily hassles (though this did not moderate, despite predicting, the effects of daily hassles on depression or hopelessness). Notably, TEI emotion perception did not yield any significant predictive or interactive effects. These findings once again hint at differential roles for AEI and TEI within stressor-health relations; in the case of AEI, rather than affording protection, increased proficiency to perceive emotion appears to amplify sensitivity to stressors to increase the risk for internalising disorder. Notably, this converges with research discussed earlier reporting higher levels of AEI perception in adults from disadvantaged backgrounds (Kraus et al., 2010, study one) and how total AEI predicted increased distress in response to an acute stressor (Matthews et al., 2006). Conversely, skill at managing the emotions of others appears to confer protection against the effects of daily hassles and lead to better mental health, which, as well as making theoretical sense (i.e., better social skills would be useful for dealing with daily hassles of an interpersonal nature e.g., 'troublesome neighbours'; 'difficulty with friends' etc), lends credence to the experimental evidence base where TEI 'sociability' has been found to buffer the effects of acute stressors (e.g., Mikolajczak, Petrides, Coumans et al., 2009). However, generalisation to the *global* EI construct domain is precluded given the absence of analysis with total AEI and TEI.

By contrast, Day, Therrian and Carroll (2005) reported conflicting findings with respect to the capacity of TEI to modulate the relationship between daily hassles and health. With the focus again upon a group of young adult students (N = 114, mean age: 21.6 years) daily hassles were predictive of reduced wellbeing (life satisfaction), increased physical/psychological strain symptoms and burnout (three components: personal effectiveness; cynicism; emotional exhaustion) and, when controlling for the influence of hassles, TEI (EQi) was a direct predictor of all health outcomes. However, with additional controls for personality (Big Five) and type A behaviour pattern, TEI failed to incrementally predict any of the negative health outcomes (i.e., strain symptoms, cynicism or emotional exhaustion), although the 'general mood' component of this measure continued to predict 6% of the variance in wellbeing (total R^2 = 62%) and 7%

additional variance in personal effectiveness (total R^2 = 45%). Furthermore, TEI failed to moderate the effects of daily hassles on *any* of the five health outcomes (with or without control for personality variables). The implication that TEI neither affords protection nor enhances risk represents a sharp departure from the previous body of research relating to TEI-stress relationships and the research of Ciarrochi et al., (2002). Nevertheless, it is likely that these null findings are a result of measurement inconsistencies; whereas Ciarrochi et al., (2002) used measures of psychopathology as outcomes, Day et al., (2005) selected an array of non-clinical health indices and a much narrower measure of daily hassles (covering student-related hassles, e.g., academic deadlines etc). However, most marked are the differences in TEI instrumentation; as noted previously the EQi has received much criticism from proponents of both the trait and ability EI perspectives and its status as a measure of TEI vs. general wellbeing/self-esteem is questionable (e.g., Mayer, Salovey et al., 2008; Petrides, Furnham et al., 2007). Indeed, it is notable that significant predictive variance contributions could only be attributed to the 'general mood' subscale of the EQi which is construed as an 'enabler' rather than a central 'component' of EI within the model. In light of such limitations, Day et al., (2005) recommend that these findings should only be applied to research with the EQi and advise against further generalisation to the broader TEI domain.

However, more encouraging findings have been reported in relation to AEI and chronic stress in youth. In adolescents aged 12 to 19 years (*N* = 54), Cha and Nock (2009) examined whether emotion-related abilities could moderate the impact of self-reported child sexual abuse on suicidal behaviour (indexed separately via frequency of suicidal ideation and actual attempts within past year). As predicted, sexual abuse was significantly related to both suicide ideation and attempts. However, AEI (total scores) significantly moderated this relationship, such that for individuals with *low* AEI, child sexual abuse was strongly associated with suicidal behaviour whereas this relationship was weaker for those with *average* EI scores, and completely absent for those with *high* EI scores (with the overall interaction explaining 9.6% in suicidal ideation and 7.1% in attempts). Area-level AEI analysis found that this effect could be attributed to competency in 'strategic' (ability to understand and manage emotion), but not 'experiential' skills (perceiving and using emotion). This suggests that AEI might operate differentially within groups of 'at-risk' individuals; in this case, strategic EI acted as a protective resource to improve outcomes – those that were better able to manage and

understand emotions reported fewer suicide attempts and lower levels of suicide ideation despite experiencing chronic stress. However, the absence of a significant moderating effect for experiential AEI would appear at odds with the findings of Ciarrochi et al., (2002) who noted that ability to perceive emotion constituted *vulnerability* for suicidal ideation. In stark contrast, Cha and Nock (2009) found non-significant, inverse associations between experiential AEI and both suicidal ideation and attempts, which indicates potential *protection* rather than vulnerability. Nevertheless, across these studies two very different stressors were examined within different population groups; the adolescent sample in Cha & Nock (2009) all had a history of self-injurious behaviour vs. the group of healthy, adult participants studied in Ciarrochi et al., (2002). Moreover, there are differences in the two AEI measures utilised; firstly, Ciarrochi and colleagues did not investigate the full AEI domain covered by the adult MEIS, thus it is possible that strategic capacities might have differentially impacted the daily hassles-suicidal ideation association and, secondly, the measure of perceiving emotion within the MEIS is not directly comparable to the MSCEIT-YV used by Cha & Nock (2009) (perception of emotion identified through vignettes vs. facial emotion). In order to elucidate the role of AEI in stress-health relationships there is clearly an urgent need for further exploration of these effects within typical youth populations and with reference to a broader range of chronic, environmental stressors.

12.3.4 A direct role for EI in stressor- mental health processes: The state of the field

EI is reliably associated with better mental health but the mechanisms underpinning this adaptive relationship are largely unknown. It is plausible that EI acts directly to buffer stressors, cushioning the individual from prolonged adverse reactions to lessen the risk of developing psychological disorder. So far this review has shown that *exposure* to (interpersonal) stressors may differ according to trait EI and high levels of perceived emotional competency confer an intrinsic advantage when faced with stressors - TEI buffers acute stress by attenuating subjective and physiological reactivity and can moderate the impact of chronic stressors (at least of a proximal, interpersonal nature) to lead to better mental health (although these effects may be TEI measurement-contingent). In contrast, ability EI does not appear to influence exposure to stressors and whilst AEI relates to individual differences in mood management proficiency, this does not translate to reduced susceptibility to acute stressors – increased emotional skill

predicts amplified reactivity. Whilst some evidence suggests that AEI might protect against chronic stressors, so far this has only been found in 'at-risk' populations (i.e., those who self-harm) - in 'typical' populations exposed to stressors, there is evidence to suggest that high levels of AEI (perception) might actually increase risk for disorder. Thus, the literature suggests divergent roles for trait and ability EI within stress processes; consistent with personality theory and research (e.g., Bolger & Zuckerman, 1995; John et al., 2008) it would appear probable that TEI assumes a more centralised role, directly modifying the experience of stressors to impact health outcomes, whilst AEI may operate indirectly, influencing adaptation through additional personal competencies. However, these conclusions remain speculative owing to the limitations inherent in the research base; there is a dearth of research examining effects with respect to AEI, youth populations and EI-chronic stressor interactions. Furthermore, with the exception of the work of Day et al., (2005), there has been a lack of consideration of the influence of conceptually related variables (e.g. personality, IQ) upon these effects. It is also apparent that we are some way from disentangling the complexities of these relations; the effects of EI may be stressor *and* outcome specific (e.g., neither AEI or TEI moderated the influence of major life events on health and so far effects have only been noted with respect to internalising disorders). The current study will attempt to address some of these gaps by examining the moderating effect of TEI *and* AEI on a range of pertinent chronic stressors (including socioeconomic adversity, family dysfunction, negative life events) in relation to both internalising *and* externalising symptomotology in healthy youth.

Given the rather moderate effect sizes obtained for stressor-EI interactions, it remains equally possible that both forms of EI could confer *indirect* adaptive advantages by influencing other proximal, personal resources which are known to underscore pathways to adaptation. As noted in section 11.4, collectively, EI theory predicts links to coping, an established mediator of stress-illness processes and research reviewed thus far hints at the possibilities of links between the two constructs. For instance, TEI competency in managing the emotions of others has been consistently implicated as a buffer of both acute and chronic stress, hinting that TEI could also relate to an increased capacity or willingness to engage in support seeking coping behaviours as part of the overall stress resistance process. Whilst *emotional skills* are conceptually distinct from and should mobilise or drive coping processes, our *emotional personality* is described as

integral to coping. In this sense, low levels of AEI could link to ineffective selection of coping strategies in response to stressors whereas TEI may influence later implementation. As with the previous body of literature addressing the 'direct' pathway, research exploring links between EI and coping within the stress context is still at an embryonic stage and similarly hampered by many of the aforementioned methodological caveats – nevertheless, the available evidence will be reviewed next to assess the veracity of these theoretical predictions before drawing to a close and explicating the aims of the present research.

12.4 Indirect pathways to adjustment: EI, coping and mental health

Basic cross-sectional associations between coping and TEI have been quite extensively investigated in adults. However, synthesis of the findings from this research base is doubly complicated by variations in both the measurement of TEI *and* coping; there are often extensive differences across the coping models/strategies examined, with some researchers reporting associations with broadband coping dimensions (e.g., emotion-focussed vs. problem-focussed etc), others with specific strategies and others still elect to explore associations with idiosyncratic coping 'factors'. For instance, a particularly uninformative (and potentially misleading) analysis was conducted by Bastian et al., (2005) who claimed that TEI (total SREIT and a summed score presenting the TMMS) predicted 'coping' beyond the effects of IQ and personality (whilst AEI was not significantly related). However, since coping was represented by a single, total score which represented the combined use of all 'adaptive' and 'maladaptive' coping styles together, this analysis tells us nothing about the nature of these associations - 'more coping' is not necessarily advantageous. Similar difficulties are inherent in the work of Goldenberg et al., (2006) who factor analysed thirteen strategies representing traditional dimensions of problem-focussed, emotion-focussed and avoidance into 'problem solving' (positive loadings from 'approach' strategies but also negative loadings from 'avoidance', e.g. behavioural disengagement), 'social support/emotional expression' (included venting) and 'cognition/restraint'. TEI (SREIT total and sub-factors) shared significant, positive associations with all coping factors (with the exception of social support/expression and TEI regulation of emotion) in the range of r = .23 to .54, with the strongest associations found for 'problem-focussed' coping and the weakest for 'social support seeking/emotional expression'. However, once again, the lack of sensitivity of

this analysis limits the interpretations that can be drawn, for instance it might be expected that those higher in TEI would engage more frequently in support seeking but *not* emotional venting as a result of superior regulatory and social skills, yet the *overall* positive association here with 'social support/emotional expression' precludes this conclusion.

Indeed, when exploring links with traditional broadband coping dimensions more modest associations have been reported; Saklofske, Austin, Galloway, and Davidson (2007) found that higher total TEI (SREIT) was positively related to rational coping (r = .38) and inversely to emotional coping (r = -.26). Moreover, at a sub-scale level of analysis these effects become yet further diluted and more complex; whilst modestly associated with problem-solving (rs = .18 to .38) and positive reappraisal (rs = .18 to .30), the SREIT has been found *unrelated* to emotional support seeking/confrontation (with perceived competency in 'using' emotions completely unrelated to *any* style of coping) and only weakly associated with less avoidance (emotion regulation: r = -.16) and greater distancing (emotion regulation: r = .14) (Shah & Thingujam, 2008). Thus, it would appear that TEI as indexed via the SREIT is most closely linked to increased use of problem-oriented strategies (where this relationship is strongest for self-perceived skill in managing and understanding emotions), however associations with emotional forms of coping are inconsistent – although inversely associated with broadband emotional coping, the literature suggests this cannot be attributed to 'externalised' emotional coping (i.e., support seeking; confrontation). Speculatively, this effect may instead constitute reduced engagement in strategies concerned with the internal regulation of emotional experience, e.g., rumination. Notably, avoidant strategies share only weak direct associations with the SREIT.

Similar measurement ambiguities have plagued research examining relations between the TMMS and coping. For instance, Velasco et al., (2006) derived two factors from the TMMS and a measure of alexithymia and found the first factor (comprising low self-perceived proficiency in mood repair/clarity and difficulty describing and identifying emotion) correlated with increased emotional coping (inhibition), avoidance (denial), detachment (distancing) and with reduced 'active' coping (problem solving; social support; positive re-appraisal; confronting). Conversely, those who paid less attention to emotion and engaged in high levels of externally oriented thinking were less likely to

vent, behaviourally/cognitively disengage or accept their circumstances. In contrast to research employing the SREIT, these associations were smaller in size (*r*s from .10 to .28), though comparably, the strongest correlation was found for problem-solving. However, using a 'pure' measure of the TMMS, Montes-Berges and Augusto (2007) clarified these associations; whereas attention was once again linked to increased emotional coping (venting), this attribute was also positively linked to support seeking, confrontation and reappraisal (where repair and clarity were unrelated). Moreover, in sharp contrast to Velasco et al. (2006), all three components (attention, clarity and repair) were unrelated to problem-focussed coping (i.e., including problem-solving), and only clarity was inversely related to avoidance (i.e., not repair). Hence, differences across TEI measurement models (i.e., SREIT vs. the TMMS) lead to distinctive trends in coping associations; here self-perceived ability to perceive and understand self-relevant emotion are predominantly linked to greater us of emotional coping vs. problem-focussed styles, whilst managing emotion appears less central to these processes.

Fortunately, research administering the TEIQue and EQi to adult groups has converged on a clearer patterning of relationships. Using total TEI scores, both instruments have shown consistent, negative associations with broad dimensions of emotional coping and positive associations with both rational and detached coping (Petrides, Perez-Gonzalez et al., 2007, study 1 & 2; Petrides, Pita et al., 2007). However, associations with avoidant coping have been less consistent; some evidence points to the existence of weaker, though significant negative relationships with both TEI measures (Petrides, Perez-Gonzalez et al., 2007), however other studies have found the TEIQue to be unrelated (Petrides, Pita et al., 2007) and relationships with the EQi non-significant with control for the Big Five personality dimensions (Petrides, Perez-Gonzalez et al., 2007, study 1). Moreover, it would seem TEIQue-detached coping associations do not hold in the presence of the Eysenkian three and Big Five (with the 'wellbeing' component of the TEIQue removed) (Petrides, Pita et al., 2007). Hence, this evidence would point to more robust (and potentially unique) relationships between TEI and increased problem-focussed and reduced emotional coping. Encouragingly, these links persist at TEI facet and/or coping-style level; Mikolajczak, Nelis, Hansenne and Quoidbach, (2008) found that higher TEIQue wellbeing, emotionality, sociability and self-control related to increased use of adaptive, problem-oriented coping styles ('positive refocus', 'planning', 'positive reappraisal' and 'putting in perspective' though not 'acceptance') and less use of

emotional coping styles, rumination, self-blame and catastrophisation (although this only extended to wellbeing & self-control and there were no significant links to 'blaming others'). Overall, associations were stronger for problem-oriented vs. emotional coping styles and within this, self-perceived ability to manage self-relevant emotions showed the most consistent links whilst perceiving and expressing emotions appeared least influential. Similar patterns have been found at a sub-scale levels of analysis with the EQi; whilst all components have been found positively related to 'task-oriented' coping, relationships with emotion-focussed coping have been inverse but of smaller average magnitude, and weaker associations have been found for avoidant coping styles (though where significant - intrapersonal and interpersonal components have been found positively related to social diversion and negatively to distraction) (Austin, Saklofske, & Mastoras, 2010; Saklofske, Austin, Mastoras, Beaton, & Osborne, 2011).

Altogether it would appear that with the exception of the TMMS, research using a variety of TEI measurement models has converged to reliably indicate that those with higher levels of TEI engage more frequently in problem-oriented coping and less often in emotion-focussed approaches to combat stressors, and, of all TEI components, differences in self-perceived ability to manage *self-relevant* emotion appear to contribute to this relationship. However, associations with emotional coping are generally less robust and intriguingly, preliminary findings hint that this might be attributed to reduced engagement in internally-directed regulation of emotional experience (e.g., rumination, self-blame) rather than increased use of externally-oriented regulatory approaches (e.g., venting emotion, seeking support). In contrast, where significant associations with avoidant and detached forms of coping have been found, these have tended to be negligible and/or inconsistent.

A much smaller pool of studies have examined coping and TEI in youth populations, however, so far these have corroborated the adult trend. In younger adolescents (*N* = 282; mean age = 13.75 years) Mavroveli et al., (2007) found that total TEI (TEIQue-ASF) related to more problem-focussed ('problem confrontation') and less emotional ('depressive') coping, though a positive association was also found for social support. Moreover, there were differences according to gender; girls with higher TEI engaged less frequently in emotional expression and were more likely to reappraise stressful situations in an optimistic manner, whereas boys were less likely to employ

avoidant strategies (though this was only a weak association *r* = -.20). Importantly, this pattern has been replicated with reference to broader coping dimensions using different TEI measures at both total and sub-scale levels of analysis; in older adolescents (*N* = 490; mean age = 16.65 years) total TEI (TEIQue-ASF) was robustly associated with more rational (*r* = .46) and less emotional coping (*r* = -.53) and, in line with the adult literature, to a lesser extent with increased detached (*r* = .37) and less avoidant coping (*r* = -.26) (Mikolajczak, Petrides, & Hurry, 2009). In younger adolescents (*N* = 145, mean age = 12.02 years) higher self-perceived emotional competency in all areas (except using emotion to direct thinking) was related to increased problem solving coping (*r* range .25 to .32) and to decreased 'non-productive' emotional/avoidant coping (*r* range -.22 to -.34, though understanding emotion n.s.) (Downey et al., 2010). Interestingly, this latter study also found that TEI was unrelated to support seeking for problem solving purposes. Hence, whilst youth based research has yet to simultaneously examine specific coping-strategy/TEI factor relationships (or examine the TEI contributions beyond higher-order personality dimensions), current evidence proposes that higher levels of TEI relate most clearly to increased problem-focussed and decreased emotional coping (of an internal regulatory nature), although in younger populations it appears emotional (but not information-oriented) support seeking might be employed more frequently by those with higher self-perceived emotional competency. Concurring with adults, avoidant coping shares only weak, inverse associations with such competencies.

Fewer studies have investigated links between AEI and coping, however, to date findings have revealed a relatively consistent pattern of associations that appear distinct from TEI. In adults, Gohm et al., (2005) found that whilst emotionally intelligent individuals relied less upon avoidant coping styles (total AEI & behavioural disengagement *r* = -.23; drug disengagement, *r* = -.17; denial, *r* = -.29 – significant across all abilities bar perceiving emotion), they were *not* significantly more likely to engage in traditionally adaptive coping styles (either active coping; positive reinterpretation; planning). However, ability to manage emotion related positively to support seeking (for both emotional, *r* = .25 and informational purposes, *r* = .23). This was partially corroborated by Goldenberg et al., (2006) who found significant associations between ability to manage and perceive emotions and less use of behavioural/mental disengagement and denial (in both cases *r* = -.21). However, contrary to Gohm et al., (2005), those who were better able to understand emotions also engaged less in

meaning-focussed coping (e.g., acceptance; positive reinterpretation/growth, *r* = -.20) and higher skill in emotion management was weakly related to more problem-focussed coping (active; planning, *r* = .14) whilst collectively AEI was unrelated to 'social support/emotional expression'. Although comparisons are limited owing to the differing strategy vs. factor-level coping analyses performed across these two studies, work by MacCann, Fogarty, Zeidner and Roberts (2011) has recently attempted to clarify these emerging trends; here students with higher emotional abilities were less likely to use both emotion-focussed styles such as self-blame, worry, venting (*r* range: -.22 to -.36 - weakest perception) and avoidant coping (*r* range: -.25 to -.26 – perception n.s.) when faced with academic stress. Moreover, in line with Goldenberg et al., (2006), greater use of a problem-focussed approach (include planning, problem-solving) was only found to significantly relate to higher competency in managing emotion (*r* = .22).

It is notable that only one study has so far investigated these associations in adolescents, although has reported a similar coping profile. Using the MSCEIT-YV Peters et al., (2009) found that students (*N* = 50, mean age = 14.3 years) who were better able to perceive (*r* = -.50) and understand (*r* = -.48) emotions were less likely to employ an emotion-focussed coping style to combat stress, however AEI was unrelated to problem-focussed and, contrary to the adult literature, avoidant coping. Hence, in contrast to the TEI literature base, AEI appears to relate most strongly to reduced use of 'maladaptive' coping strategies (avoidance and emotional styles) rather than to increased use of 'adaptive' styles, although further differentiation of these trends (i.e., whether associated with external or internal emotion regulatory coping) is precluded given the dearth of strategy-level coping analyses with AEI. Nevertheless, skill in managing emotion (in self and others) has been most consistently linked with coping styles whilst perceiving emotion appears to be the least influential skill, being only weakly associated with emotional coping (although its influence might be more pronounced in youth rather than adults).

Summary: In general, taking an engaged, problem-oriented approach to dealing with stressors leads to better health outcomes; in a review of 63 studies published across 1988 to 2001, Compas et al. (2001) found that strategies classified as either 'problem-focussed' (i.e., direct attempts to ameliorate the source of the stress) or 'engagement'

(attempts to manage the source of stress and/or emotional reactions) were related to fewer internalising and externalising symptoms in youth and, of all approaches, the use of problem-solving, cognitive restructuring and positive reappraisal were most consistently implicated. Conversely, 'emotion-focussed' (i.e., directly concerned with the management of ensuing negative emotionality) or 'disengagement' (i.e., actively avoiding the problem and/or emotions) from stressors was associated with greater symptomotology, particularly venting, wishful thinking, self-blame, cognitive/behavioural avoidance and social withdrawal (Compas et al., 2001). Both styles of coping are considered unhelpful long-term strategies for reducing distress; an excessive focus upon negative emotions, e.g., self-blame, can promote intrusive thoughts whilst disengagement (particularly of a behavioural nature via drug/alcohol use) can promote extended health problems (Carver & Connor-Smith, 2010). Nevertheless, as noted earlier, these outcomes are necessarily context specific - where stressors are of an uncontrollable nature (e.g., parental illness, sexual abuse) the use of disengagement/emotional coping has been associated with fewer symptoms and engagement/problem-focussed strategies with greater levels of symptomotology in youth (Compas et al., 2001; Seiffge-Krenke, 2011). For instance, Clarke (2006) found that active coping was only associated with lower levels of externalising behaviours when endorsed by young people faced with controllable but not uncontrollable interpersonal stressors (argument with peer vs. parental conflict).

The preceding review of cross-sectional research cannot shed light on the 'adaptive' nature of EI-coping associations (i.e., in the absence of stressors and measures of adjustment). However, despite methodological issues, distinctive 'coping' profiles for TEI and AEI have emerged and the magnitude of these relationships (small to moderate depending upon the sensitivity of the analysis performed) argues against conceptual redundancy, such that EI construed as either emotional skills or emotional personality has the potential to *underpin* rather than *converge with* coping processes to modify stress processes. Importantly, the patterning of associations can be accommodated within the specificity of the EI-stressor buffering effects reviewed earlier; being less avoidant (AEI), less emotionally-focussed (AEI & TEI) and more problem-orientated (TEI) are potentially disadvantageous if faced with uncontrollable stressors, which may explain why both forms of EI were unable to offer protection against major negative life events (e.g.,

bereavement, illness, job redundancy etc) (Ciarrochi et al., 2002). Moreover, the tendency of those high in emotional self-competency to adopt problem-oriented coping styles would explain the TEI-buffering effects found for controllable stressors (i.e., both daily hassles and acute, situational lab-based stress). Following initial reactivity, both situations are amenable to an active coping approach to directly address the source of stress and ameliorate the stress reaction, whether that be via task-focussed problem-solving or changing interpersonal relationships to avoid repeated conflict. In contrast, the 'stress amplification effect' reported by Ciarrochi et al., (2002) might also be explained with reference to the AEI-coping profile; those with enhanced ability to perceive emotion may well use this efficiently to detect sources of stress but once detected, inappropriate coping strategies are selected for dealing with stressors (in this instance, emotional coping – to which perceiving emotion was most strongly associated with - would very likely exacerbate negative feelings stemming from interpersonal conflict). Thus, in this context, emotional skills are not used to best effect to mobilise the most appropriate responses. Altogether, then, it appears quite plausible that EI may impact indirectly on stress processes to preferentially set in motion 'downstream' coping efforts that may be more or less adaptive for mental health depending upon the characteristics of the stressor faced. However, in order to corroborate this conjecture it must be shown that firstly, EI-coping profiles are linked to adaptive health outcomes and secondly, that these associations are operational when faced with stress. The next section reviews evidence exploring the first proposition; namely whether choice of coping style can explain the link between EI and better mental health.

12.4.1 Does 'emotionally intelligent' coping lead to better mental health?

Few studies have explored mediating links between EI, coping and mental health and all of the research to date has explored these relationships from a trait rather than ability perspective. In contrast to other areas of investigation, however, the majority of mediation studies have targeted youth over adult populations. Nevertheless, the overall trend is remarkably convergent across population groups, indicating that the effect of TEI-influenced coping choice on health is largely developmentally invariant. In adults (*N*=223; aged 18-83 years), Goldenberg (2004) found that lower TEI (SREIT: 'mood

regulation' and 'experiencing/sharing emotion') was linked to greater use of avoidant coping and less use of problem-focussed and cognition/restraint styles which in turn related to poorer general mental health (higher incidence of depression, anxiety, somatisation, obsessive compulsiveness, somatisation symptomotology). Avoidant coping appeared to be the strongest partial mediator of the EI-health link (although the authors failed to conduct formal statistical testing of this effect, e.g., the Sobel test), whilst 'social support/emotional expression' coping was unrelated to health. Additionally, TEI competencies were significant independent predictors of health beyond the effects of coping, once again establishing the distinctiveness of the two constructs. Two studies have since employed the SREIT with youth populations to explore meditational relations using latent variable modelling. First, Chan (2005) found that social coping mediated the effect of TEI on psychological distress (including sleep problems, anxiety, dysphoria, suicidal ideas) to explain 52% of the variance in health in a sample of gifted Chinese students (N = 624, mean age 12.98 years); specifically avoidant coping mediated the effect of low 'self-relevant' TEI (perceived competency in managing and using emotion) on increased distress, whereas social interaction coping (helping others and peer acceptance) explained the link between higher levels of 'other-relevant' TEI ('empathy', 'social skills') and decreased distress. However, in contrast to Goldenberg (2004), there was no direct effect of TEI on distress.

This was corroborated by Campbell and Ntobedzi (2007) who again found no direct relationship between 'emotional competence' (comprising the SREIT scales and a measure of self-awareness) and general psychological distress in a small sample of older, Australian adolescents (*N* = 85; mean age 16.76 years). Nevertheless, composite emotional competence was related to fewer symptoms through increased 'adaptive' emotional coping ('stoicism'; 'social support' and 'self-care'), although there was no relationship with maladaptive emotional coping ('acting out'; 'rumination') and this in turn shared a stronger (inverse) association with symptomotology (with the model overall accounting for 41% of the variance in distress). This null finding appears to run contrary to previously discussed literature (e.g., Mavroveli et al., 2007) however, the combination of two very specific and divergent maladaptive emotional strategies (externally vs. internally oriented) together with the use of a composite measure of 'emotional competence' within this analysis limits the generalisations that can be drawn from this

work, above and beyond the difficulties associated with the small sample size. Indeed, it is very difficult to synthesise the findings of these latter studies given their focus upon selective coping strategies (i.e. of a social *or* emotional focus only and the exclusion of traditional 'problem-focussed' styles). However, it is clear that utilising others as a means of coping adaptively to reduce symptomotology is more prominent in youth vs. adult populations, thus concurring with earlier discussion. Moreover, in both adults *and* youth, lower levels of self-competency in emotion regulation enhances the likelihood of employing avoidant coping which contributes to poorer outcomes. Nevertheless, these conclusions are tentative, particularly as all three studies tested associations with global measures of general health (with a predominant focus upon internalising rather than externalising symptomotology).

Analyses targeting specific and dimensional health outcomes have revealed more consistent trends. Employing the TEIQue–ASF with youth (*N*= 490), aged 16-20 years Mikolajczak, Petrides and Hurry (2009) found that 27% of students reported having recently self-harmed (the majority of which was of a non-suicidal nature) and lower levels of total TEI were significantly associated with higher likelihood to engage in these behaviours (r = -.25, p < .001) – a relationship which held even after controlling for the influence of depression. Importantly, this association could be explained by choice of coping style; increased use of emotional (rumination, self-blame, expression, emotional support seeking) and avoidant (behavioural/cognitive disengagement and denial) coping (though not decreased use of rational and detached styles) both independently accounted for this association, however further analysis revealed that emotional coping was the primary mediator of this relationship (where the model overall accounted for 14% of the variance in self-harm). Hence, it appears that lower overall emotional self-competency predicts the use of ineffective coping strategies (which do not ameliorate either the negative affect or source of stress) which, in turn, promote self-harming behaviour. This was corroborated more recently with reference to internalising and externalising symptomotology; Downey et al., (2010) found that 'non-productive' coping (worry, wishful thinking, tension reduction, ignoring the problem, self-blame, keeping to oneself) mediated the link between self-perceived ability to manage/control emotion (measured via the SUEIT) and both forms of disorder in a sample of young adolescents (*N* = 145; mean age = 12.02 years). Hence in line with Mikolajczak et al., (2009), those who

were less confident in their emotional abilities (though regulation only and not recognition, expression, understanding or using emotions) were more likely to use avoidant and emotional coping styles which in turn related to poorer health outcomes. Similarly, the use of problem-focussed ('solving the problem') and social support ('reference to others' for problem solving) were not central to this association.

The current evidence overwhelmingly suggests that, consistent with prior research (e.g., Compas et al., 2001), engagement in traditionally maladaptive emotional and avoidant coping strategies has deleterious health consequences, yet crucially, the propensity to select such strategies can be partially attributed to deficiencies in TEI (particularly self-perceived ability to manage emotions). Moreover, the modest effect sizes reported are in line with personality research (e.g., Carver & Connor-Smith, 2010). Conversely, it would appear that the robust bivariate associations between TEI and problem-focussed coping may have limited impact on adjustment outcomes. This also carries implications for AEI; although no direct testing of mediating pathways has yet been conducted with respect to mental health, as the preceding discussion showed, AEI is most closely associated with avoidant and emotional coping rather than problem-focussed, so it remains plausible that this association may translate to better mental health. However, whilst evidence suggests that EI might underscore choice of coping strategy, for this to be construed as truly beneficial for adaptation it must be demonstrated that this relationship persists when faced with adversity – in other words, when faced with stressors, EI must influence *appropriate* selection of coping styles (i.e., suitable to the stressor faced), which must in turn be *effective* in reducing symptomotology. As noted earlier, engagement in reduced emotional and avoidant coping might not necessarily be effective under all stress conditions. Literature examining EI-coping profiles under stress is particularly scant, however, it is to this evidence discussion now turns before finally drawing to a close and explicating the aims of the current research.

12.4.2 Does EI promote coping under stress to foster adaptation?

Two studies have investigated whether TEI predicts specific coping styles when faced with experimental stressors. In the first of these, Salovey et al., (2002, study 2)

assessed coping ('active': planning, concentration, focusing on time, positive self statements vs. 'passive': denial, distraction, acceptance, giving up, self-blame) immediately prior to and post stressor exposure (timed cognitive tasks) in small group of women (*N* = 60; aged 30-45 years). It was found that those with higher competency in regulating emotions (TMMS 'repair') used less passive coping generally (r = -.31, p < .05) but, importantly, also less passive coping when completing the stressful task (r = -.34, p < .05). Active coping was not significantly related to TEI. This would appear somewhat counter-intuitive given the type of (controllable) experimental stressor faced; although reduced use of 'passive' emotional-avoidant styles would confer some secondary benefits (minimise unhelpful feelings and actions), taking an active, problem-focussed approach would appear to be the optimal strategy in this context. Nevertheless, this does accord with previous literature confirming links between TEI and reduced use of emotional and, to a lesser extent, avoidant coping (both featured within the 'passive' coping dimension employed here). However, the design of this study is particularly limiting; without a control group/measure of coping post control condition, it is not possible to ascertain whether the TEI-coping profile differed as a function of stress. Indeed, similar difficulties are inherent in the design of the second study.

On this occasion, a group of women (*N* = 144; mean age 19.5 years) were exposed to a stressful video scene depicting a sexual assault and 48 hours post-exposure they reported on the extent of intrusive thoughts they had experienced during the intervening period (akin to ruminative coping) (Ramos et al., 2007). Once again, higher levels of TMMS 'repair' (but not clarity or attention to emotion) significantly predicted lower rumination (β = -.23, p < .05) and higher clarity related to a reduction in negative affect (depression and fatigue) immediately post-exposure. However, ruminative coping mediated between repair and negative affect (depression and anger) following re-exposure to the same imagery, such that those with higher self-perceived ability to regulate their emotions were better able to control maladaptive emotionality and less likely to ruminate over the stressful scene, resulting in less emotional reactivity following the second viewing. This suggests that repair may underscore benefits for adaptation to *repeated* stressors over time, reducing the likelihood of accumulating negative affect and preventing maladaptive emotional coping, which fully supports research reporting the longer-term health benefits associated with this TEI facet (e.g., less self-harming and less

internalising disorder). However, these findings are undoubtedly limited by the nature of the sample recruited (all adult women) and the restrictive style of coping studied (i.e., a single emotional strategy). Moreover, both Salovey et al., (2002) and Ramos et al., (2007) failed to consider whether these associations held in the presence of personality.

Nevertheless, two recent studies have attempted to remedy many of these limitations using more complex analyses with reference to AEI. Firstly, Matthews et al., (2006) investigated whether total AEI (MSCEIT) was able to buffer stress and promote coping beyond the effects of the Big Five personality dimensions, when faced with a range of situational stressors. Following completion of one of four conditions (three of which involved stressful, timed cognitive performance tasks and one control condition – reading magazines) participants (*N*= 132; mean age 19.7 years) reported how they coped with the task. As expected, those exposed to stressors used more coping in general (emotional, avoidant and problem-focussed) however, consistent with the nature of the stressors (controllable), problem-focussed coping was engaged most frequently of all. Concordant with previously discussed trends, AEI related to reduced use of 'maladaptive' strategies only - emotional (r = -.37, p < .01) and avoidant coping (r = -.36, p < .01) - and predicted 1.8% of the variance in avoidant coping beyond personality (where, in fact, personality was not a significant predictor this form of coping). However, this effect was localised to the *control* group only and, subsequently, AEI did not significantly moderate the effects of stress condition on coping – in other words, contrary to theoretical predictions, AEI did not influence choice of coping under situational stress. It is notable however, that whilst trait Neuroticism was found to be a significant predictor of greater emotional coping within two out of three stress conditions, it too failed to moderate choice of coping under stress. Nonetheless, coping was found to be the strongest predictor of post-task reactivity (i.e., worry, distress and task engagement) accounting for between 10-28% of the variance over EI and N (which together predicted increased distress only: 4% variance). Furthermore, emotional coping fully mediated the effect of high trait Neuroticism on distress (where the mediation of EI on negative affect by coping was not significant). Hence, this research converges with established stressor literature in suggesting that coping is a consistent mediator of health outcomes (Grant et al., 2006) and, within this, can explain the effects of pre-existing individual differences (particularly N) on health (e.g., Bolger & Zuckerman, 1995). Consequently, it appears that coping

should be primary to both forms of EI within adjustment pathways and perhaps share stronger links to trait rather than ability EI. However, despite the lack of moderating effects found for AEI, high levels of emotional skill still clearly represent a reliable predictor of avoidant coping and even though this was not related to coping choice (or health) within a performance-based stress context, it remains plausible that adaptive benefits might be conferred in more ecologically valid contexts (i.e., perhaps when faced with chronic stressors of an interpersonal nature).

In fact research supporting this hypothesis has begun to emerge. Using an ability-based measure of EI developed for use within the Chinese context (Wong's Emotional Intelligence Scale) Peng, Wong and Che (2010) found that (total) AEI moderated the effect of self-reported emotional demands (an occupational stressor - the extent to which employees in customer-facing roles must maintain appropriate emotional 'display rules' in challenging circumstances) on emotional coping which in turn impacted physical exhaustion (a component of burnout) in a sample of adult insurance brokers (N = 418). Specifically, it was found that under high stress, those with higher emotional abilities tended to use more 'deep' acting coping (modify underlying feelings to promote 'true' expression, β = .10, p < .05) and, contrary to predictions, more 'surface' acting coping (superficial management of emotional expression, e.g., suppression, β = .16, p < .01). However, whilst in the former case this was considered adaptive such that deep acting coping explaining attenuated levels of exhaustion (overall model explaining 20% of the variance), greater surface acting coping was linked to higher levels of exhaustion and thus poorer physical health (accounting for 25% variance in health). Unfortunately, as each model was tested independently it is not possible to determine conclusively which mediated pathway constituted the greatest effect on health (i.e., maladaptive or adaptive – or even if these effects remained mutually significant in a combined model) hence these findings are equivocal regarding the status of AEI as a moderator of this pathway. However, it is notable that the maladaptive pathway did explain a greater proportion of overall variance (albeit moderate), thus, this would suggest, once again, that high levels of AEI are not universally adaptive when faced with stressors and may serve to amplify reactivity, particularly when faced with controllable, interpersonal stress (e.g., in line with Ciarrochi et al., 2002). Under these circumstances, this effect is transmitted indirectly via choice of 'maladaptive' coping styles (in contrast with Matthews et al., 2006). However,

this research is clearly restricted by the specificity of the variables under scrutiny (i.e., only nuanced emotional coping with a job-related stressor in relation to physical rather than mental health outcomes). Moreover, the measure of (A)EI employed diverges significantly from the ability model proposed by Mayer and colleagues (e.g., Mayer & Salovey, 1997) and the dominant AEI measurement instrument (i.e., the MSCEIT) in terms of content coverage (only partial assessment of strategic and experiential skills pertaining to self *and* others) and methodology (limited response options). Nevertheless, this research represents a positive step forward in exploring the role of EI in more complex adjustment pathways.

12.4.3 An indirect role for EI in stressor- mental health processes: The state of the field

There is a dearth of evidence addressing more complex indirect relationships between stressors, EI, coping, and mental health. However, emergent research suggests that this is a viable pathway within which EI might operate to affect health outcomes. Evidence from youth and adult populations show AEI and TEI share direct and distinct relationships with coping dimensions; both are related to decreased use of emotional and avoidant coping styles whilst the latter also shares links to more frequent use of problem-focussed styles. Actual or self-perceived proficiency in managing emotion appears to underpin these associations, though further pinpointing of specific coping style-EI facet links is precluded owing to the lack of research examining more fine-grained associations (particularly in youth populations). Nonetheless, it would appear that the link between EI and better mental health might be partially explained with reference to coping; specifically those with high TEI (particularly higher self-competency to manage own emotions) engage less often in 'maladaptive' emotional and avoidant strategies and this is linked to lower levels of psychological ill-health, both internalising and externalising symptomotology. So far, associations remain unexplored with reference to AEI. The inverse relationship between TEI and maladaptive coping persists in the context of acute, lab-based stressors however research with AEI has progressed further; emotional ability influences the choice of coping strategy when facing high levels of chronic, interpersonal (though not acute) stress, which in turn affects health, although findings are equivocal as to whether this contributes to 'adaptive' outcomes. Complex testing of the moderating

effect of TEI on coping under stress (either acute or chronic) and the impact on health remains, as yet, unexplored.

12.5 The present study

This review has shown that both TEI and AEI are associated with better mental health (Martins et al., 2010; Schutte et al., 2007). In adults, TEI appears to be most strongly predictive of reduced internalising rather than externalising symptomotology (e.g., Gardner & Qualter, 2010) whilst the reverse pattern holds true for AEI in both adult (e.g., Brackett et al., 2004; Karim & Weisz, 2010) and youth populations (e.g., Williams et al., 2009). By contrast, TEI appears equally predictive of mood and behavioural disorders in youth (e.g., Downey et al., 2010). Nevertheless, there is a paucity of research examining the association between AEI and mental health in adolescents using clinical measures of health outcomes and an omnibus measure of AEI to facilitate comparison with the adult research base (i.e., MSCEIT). Whilst in adults, these EI-mental health trends appear to hold beyond the influence of related constructs (i.e., personality and general cognitive ability), testing for incremental validity in youth populations has received little attention (with the exception of Petrides et al., 2004). The current study aims to address these existing gaps in the literature. However, demonstrating a reliable association between EI and health does not permit claims to be made about the 'adaptive' nature of EI – it must be established *how* EI contributes to wellbeing and under what circumstances. Theoretical conjecture suggests that EI (conceived as a pre-existing, individual-level resource) may operate within known risk trajectories to affect mental health. Perhaps buffering the effects of stress on health directly (though intrinsic emotional competencies e.g., perception, regulation) or indirectly, setting in motion 'adaptive' ways of coping when faced with adversity. The preceding review found tentative support for both pathways. TEI would appear suited to a direct role in stress processes; higher perceived emotional competency has been shown to attenuate subjective and physiological reactivity when exposed to stressors of an acute (controllable) nature (e.g., Mikolajczak, Roy et al., 2007) and, importantly, acts to reduce the impact of chronic (interpersonal) stressors to lead to better mental health (Ciarrochi et al., 2002). Conversely, AEI does not appear to afford direct protection against acute or chronic stressors in 'typical' populations and may even exacerbate the effects of stress on

health (Ciarrochi et al., 2002; Matthews et al., 2006), although in 'at-risk' populations there is some evidence to suggest that low levels of strategic AEI might represent vulnerability to chronic stressors (Cha & Nock, 2009). An indirect route for AEI appears plausible; whilst both AEI and TEI are related to coping styles, higher levels of actual emotional proficiency have been shown to moderate chronic (interpersonal) stress to impact choice of coping style and, in turn, health (Peng et al., 2010). This awaits testing with reference to TEI.

These conclusions are, nevertheless, made on the basis of limited literature; so far only two pieces of research have attempted to examine comprehensive models of association and no study has yet examined how EI-stressor interactions relate to both internalising *and* externalising symptomotology in typical adolescents. Moreover, the adult literature hints at specificity in these relationships – EI does not universally buffer against all stressors (e.g., major life events and daily hassles have been examined, with moderating effects found only in relation to the latter) and not all EI-influenced forms of coping appear to explain differences in health outcomes. Thus, a range of chronic and acute environmental stressors, identified from reviews of the literature as known correlates of psychopathology, will be examined in the current study to further extend this field of research. Importantly, by exploring both direct and indirect pathways to adjustment, this will be the first piece of research to examine links between multiple coping styles and EI within the context of stressors and disorder in youth.

Aims and research questions: This study will examine the relationship between EI and mental health across two distinct phases. The first (subsidiary) aim of the research is to further explore the conceptualisation of EI in adolescence. Specifically, the 'dual-facetted' nature of EI (i.e., distinction between 'ability EI' and 'trait EI') will be explored, alongside possible sub-groups differences. It will be examined whether EI (in either form) relates to mental health (predictive validity) and whether these effects hold after controlling for the influence of related constructs (incremental validity). This preliminary aim will be operationalised via the following research questions:

1. To what extent are ability EI and trait EI related in adolescents? How does each 'type' of EI vary according to age and sex?

2. What is the nature of bivariate relationships between A/TEI and mental health (internalising [depression] and externalising [disruptive behaviour] symptomotology)?

3. If significant associations between A/TEI and mental health exist, does each construct continue to make a significant predictive contribution with the influence of the 'Big Five' personality traits (Neuroticism; Extraversion; Openness; Conscientiousness; Agreeableness) and general cognitive ability (proxy indicator: academic attainment scores) held constant?

The second (central) aim of the work is to explore the processes underpinning the relationship between EI and mental health in an attempt to explain *how* and *when* EI operates. Specifically, analyses will examine whether EI can impact known stressor-health processes by moderating the effect of stressors on disorder, either directly or indirectly through coping. In line with Grant et al., (2003), EI is considered here as a *pre-existing* personal resource that may modify the impact of stressors, whilst coping is conceived as a *stressor-activated* process that explains the association between stress and psychopathology (see Figure 1 for conceptual model). Using the framework proposed by Preacher, Rucker and Hayes (2007), a series of moderated mediation models will be specified to address the following questions:

4. Is EI best considered a 'direct' buffer of the effect of stressors on disorder (i.e., tested through the 'direct effect' moderation model)? If so, is there specificity in this relationship according to 'type' of disorder (depression versus disruptive behaviour), stressor (e.g., poverty, family dysfunction, negative life events) and EI (ability versus trait)? How does this effect differ according to level of EI?

5. Is an 'indirect' role for EI in stressor-health pathways plausible - does EI interact with stressors to affect 'upstream' *choice* of coping strategy ('a' path moderation model), or, does EI influence 'downstream' coping *implementation* to affect

disorder ('b' path moderation model)? How do these effects differ according to level of EI? Specificity with respect to stressor, EI and outcome will be examined.

Importantly, the 'b path' moderation hypothesis has been alluded to within personality research (e.g., Bolger & Zuckerman, 1995; Carver & Connor-Smith, 2010) but has not yet received attention within the EI arena. Given that successful coping depends on both *choice* and *use* of a given strategy, coping efforts may be ultimately ineffective in decreasing symptoms owing to poor implementation *or* poor selection. For instance, those with lower levels of TEI may attempt active coping when faced with a controllable stressor (adaptive choice), but a lack of confidence in socio-emotional skill may undermine eventual implementation of the strategy, exacerbating negative emotionality and leading to increased disorder. Similarly, high levels of emotion skill/knowledge may underpin initial choice or successful execution of strategies (e.g., interpersonal skill required to enact support seeking coping). It is probable, therefore, that emotional competency could contribute to 'upstream' or 'downstream' coping processes; hence this will be operationalised through the testing of 'a' and 'b' path models and, in doing so, will offer a novel contribution to the field.

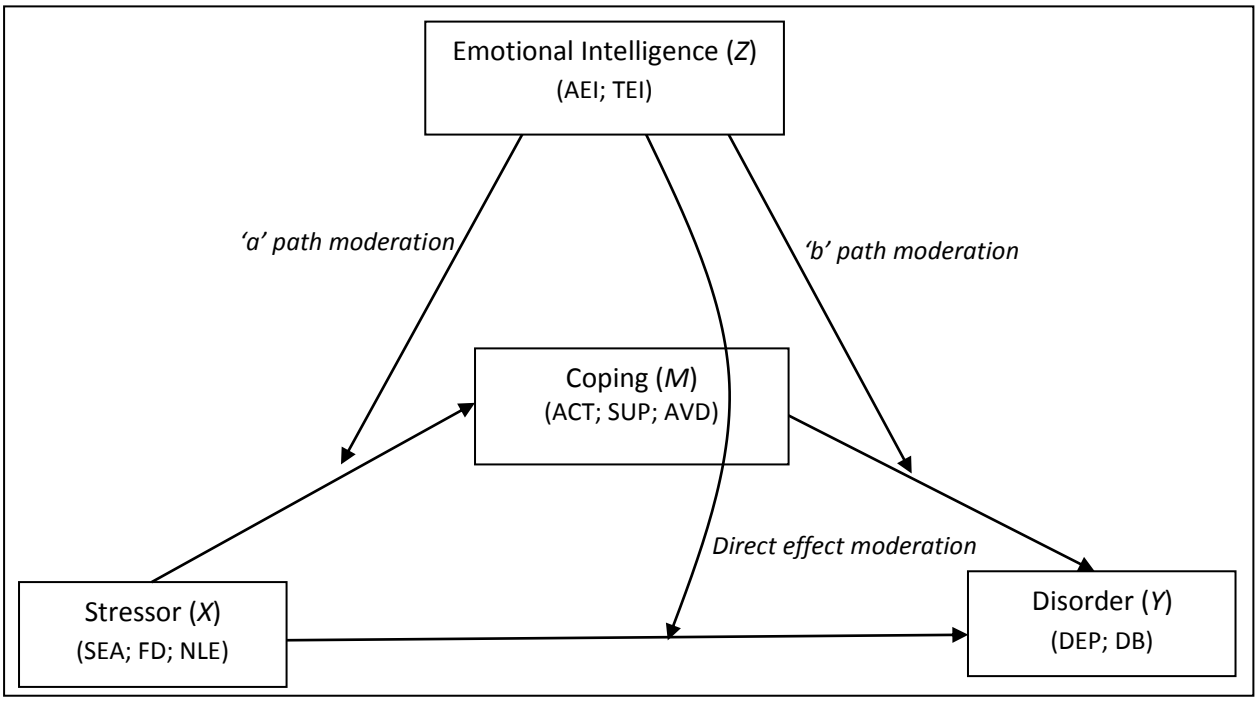


Figure 1: General conceptual model. The effects of stressors (X = socio-economic adversity: SEA; family dysfunction: FD; negative life events: NLE) on disorder (Y = depression: DEP; disruptive behaviour: DRB) moderated by emotional intelligence (Z = trait EI; ability EI) directly or indirectly through coping (M = support seeking: SUP; active: ACT; avoidant: AVD). *Note:* Emotional intelligence (A/TEI) is hypothesised to moderate pathways from X to M ('a' path), M to Y ('b' path) or the direct effect of X on Y. For simplicity, the underlying measurement model, additional regression paths and covariances are omitted here (see Fig. 9 and 10 for fully specified models).

13. METHOD

13.1 Design

A cross-sectional, comparative study design was utilised to collect self-report data. Masten (e.g., 2001; 2004) has identified three 'waves' of research underpinning research efforts in the field of resilience; early work in 'wave one' identifies and describes risk markers and predictors of positive adaptation; 'wave two' focuses on resilience processes, examining underlying risk mechanisms involving possible mediators and moderators of positive adjustment; whilst efforts in 'wave three' are concerned with designing and operationalising interventions to test resilience 'hypotheses' through experimental manipulation. By exploring the processes underpinning key risk (i.e., stressors) and protective markers (i.e., coping) and recognising the role of EI as a 'risk modifier' of these pathways, the current design represents a combination of first and second wave resilience research. Moreover, examining how mediated and moderated processes work conjointly to impact developmental outcomes is essential for establishing the conditions under which effects may be generalisable – something which has been acknowledged as crucial for the progression of resilience research (Appleyard, Yang, & Runyan, 2010; Morgan-Lopez & Mackinnon, 2006). Although the use of cross-sectional data does not permit direct testing of causality and change (Rutter, 2000), this design is suited to the current study given the aims and complexity of analyses which necessitate a large sample of data to be obtained from a representative sample of adolescents, thus enabling sufficient statistical power to detect effects. Moreover, this approach has been recognised by others as being preferable as an initial step in establishing which causal processes are implausible and which more likely (Ford, Goodman, & Meltzer, 2004; McKim & Turner, 1997) – important when seeking to develop an 'adaptive' account of EI.

13.2 Participants

Following Hancock (2006), an *a-priori* power analysis suggested that a minimum sample $N = 893$ was necessary to achieve .80 probability to reject a null hypothesis of unacceptable model fit (RMSEA ≥ .05), given a conservative level of true data-model fit in the population (RMSEA = .04) with df = 89 (minimum number of parameters to be tested per conditional indirect effects model). Consequently, 1170 adolescents (612 males; 558

females) aged 11 to 16 years (*M* = 13.03; *SD* = 1.26) were recruited from seven schools located across the West Midlands and North Yorkshire, UK. Educational establishments were selected via opportunity sampling from an initial pool of ninety-two schools contacted on the basis of location criteria (i.e., all community, foundation, voluntary aided schools and academies within a ten mile radius of a major city in the West Midlands/large town in North Yorkshire). During April 2010, letters (in hard copy and electronic form) were sent to respective headteachers/principals inviting schools to take part in the research (see Appendix A). In participating schools, individual student involvement was contingent upon both parental consent and student assent (see Appendix B for study information sheets and opt-out consent form). In six of the seven schools, the level of free school meal eligibility exceeded the national average of 15.9% (Department for Education, 2011). Collectively, student ethnic backgrounds were diverse; 41.6% were White/White European, 39.8% Asian/Asian British, 10% Black or Black British, 4.5% were of mixed background, 1.4% belonged to other ethnic groups and 1% were Chinese (with 1.8% refusing to provide information). This is fully representative of the trends found in the wider UK population from which the overall sample was drawn (see e.g., Office for National Statistics, 2002).

13.3 Measures

Risk markers were initially identified from recent reviews of the literature base (e.g., Grant et al., 2006; Rutter, 2000) and large-scale population-level surveys (e.g., Green, McGinnity, Meltzer, Ford, & Goodman, 2005) attesting to the viability of shared prospective associations with adolescent psychopathology. Final selection was contingent upon the plausibility of theoretical and empirical connections to EI, as outlined in the introductory section, with reference to pertinent selection criteria outlined in the literature; Luthar et al. (2006) maintain that markers must be *salient* (in the particular life context), *malleable* (amenable to change via intervention), *enduring* (continue to exert a positive or negative effect over time) and *generative* (they must set in action other protective processes). All variables eventually selected for inclusion in the current research satisfied these criteria.

To capture data representative of these markers, adolescent self-report scales were utilised for two primary reasons: a) they represent the most cost-effective and efficient method of obtaining data from a large, cross-sectional sample and b) compared to alternative methods (e.g., interview) the anonymity afforded by the self-report response format encourages greater disclosure of potentially sensitive information (e.g., negative life events) (Grant et al., 2004). This approach is also particularly advantageous when attempting to ascertain the extent of internalising symptomotology (i.e., depression, anxiety, social withdrawal, somatic complaints) which, as 'secret illnesses', are often difficult to detect using other methods, such as teacher/ parental reports; observation (Merrell, 2008; Sandler, Reynolds, Kliewer, & Ramirez, 1992). All tools were identified from detailed reviews of the domains of interest (e.g., for coping: Compas et al., 2001; Grant et al., 2004) to ensure theoretical compatibility with the construct definitions adopted by the research and that reliable measures validated for use in an adolescent context were selected. For brevity, standardised, short-form versions of scales were employed over longer versions where available. The following sections provide an overview of the instrumentation; whilst copyright restrictions prevent the reproduction of the MSCEIT-YVR (ability EI) and BYI II (depression; disruptive behaviour) copies of all remaining measures are located in Appendix C.

13.3.1 Coping

The *Children's Coping Strategies Checklist, First Revision* (CCSC-R1; Ayers, Sandler, West, & Roosa, 1996) is a self-report, multidimensional measure of coping style which allows young people to describe how they typically cope with stressors across situations. Although generalist 'trait' approaches have been criticised for oversimplifying the contextualised nature of coping (Folkman & Moskowitz, 2004), it is argued that measures of *aggregated* coping styles are more suitable for exploration of relationships between broadband stressors (e.g., cumulative negative life events) and adaptive outcomes (e.g., mental health) (Ayers et al., 1996). Accordingly, the CCSC has been successfully used to illuminate associations between coping dimensions and mental health in youth exposed to a range of stressors e.g., the indirect effect of negative life events on anxiety, depression and conduct problems through avoidant coping in children of divorce (Sandler, Tein, & West, 1994); the moderating effects of avoidant and support seeking

coping on daily hassles and internalising symptomotology in low income adolescents (Grant et al., 2000). The CCSC has undergone a rigorous programme of empirical testing (Program for Prevention Research, 1999) having been initially developed from items pooled from a review of coping literature/existing instruments, supplemented by content analysis of semi-structured interview responses from children of divorced families (Sandler et al., 1994). Additionally, as a *multi*dimensional classification system, the CCSC is preferable to the more simplistic *dual*-facetted systems (e.g., 'approach' versus 'avoidant' coping styles) upon which popular, alternative measures are based (e.g., Coping Responses Inventory - Youth: Moos, 1993). Attempting to classify multiple coping strategies into one of two broadband dimensions on the basis of a single feature (i.e., for approach/avoidance: orientation to stressor) leads to conceptual ambiguity; for instance, turning to others for help and advice as 'support seeking', can represent avoidance as well as approach (Skinner, Edge, Altman, & Sherwood, 2003). Consequently, the CCSC has been acknowledged as an optimal, multi-dimensional classification system of youth coping (Compas et al., 2001; Skinner et al., 2003).

The CCSC-R1 asks adolescents to describe their coping efforts with regard to a general stressor occurring in the past month by rating 60 brief statements using a 4-point scale ("never" [1] through to "most of the time" [4]) to indicate the frequency of the behaviour described. Items are intermittently prefaced by the phrase "When I had problems I...." to serve as a reminder that responses should be based on what would be typical when encountering a stressor and not what would be typical as part of general, everyday behaviour. Collectively, items represent 13 individual coping dimensions (see Table 1 for complete descriptions and example items) when scores for items representing each dimension are averaged (possible range = 1-4). Adequate levels of internal consistency have been reported for the 13 coping dimensions, e.g., α= .55 to .69 (Gaylord-Harden, Gipson, Mance, & Grant, 2008) together with one-week test-retest reliability coefficients in the range of .49 to .73 (Program for Prevention Research, 1999). As can be seen in Table 1, these moderate levels of internal consistency were replicated in the current sample (α = .51 [distracting actions] to .77 [support for problem-solving/feelings]). Four super-ordinate coping styles are derived from the summed averages of dimensions as follows: *Active coping* comprises cognitive decision making; direct problem solving; seeking understanding; control; positivity; optimism; *Avoidant*

coping encompasses avoidant actions; repression, wishful thinking, *Distraction* represents distracting actions; physical release of emotions, and finally, S*upport Seeking coping* is the summed average of both emotional and problem-oriented efforts with reference to peers, siblings, parents and other adults.

Table 1: CCSC-R1 coping dimensions (with alpha reliabilities), descriptions and example items

Coping dimension (α reliability)	Description	Example item (no. of items comprising dimension)
Cognitive decision making (.71)	Thinking about ways to solve the problem, i.e., options, methods, consequences (but not execution of this)	I thought about what would happen before I decided what to do (4)
Direct problem solving (.66)	Actual efforts to alter the problem situation; self or environment	I did something to solve the problem (4)
Seeking understanding (.65)	Attempting to find meaning in the problem situation	I tried to understand it better by thinking more about it (4)
Positivity (.68)	Focussing thoughts on positive events that have occurred	I reminded myself that overall things are pretty good for me (4)
Optimism (.70)	Focussing thoughts on possible future positive events	I told myself that things would get better (4)
Control (.66)	Self-assurance of capability to deal with/handle the problem	I reminded myself that I knew what to do (4)
Physical release of emotion (.64)	Efforts to work off feelings via some form of physical exertion	I did some exercise (4)
Distracting actions (.51)	Using activities to avoid thinking about the problem situation	I listened to music (4)
Avoidant actions (.58)	Actual behavioural efforts to avoid the problem	I tried to stay away from the problem (4)
Repression (.62)	Avoid thinking about the problem situation	I tried to ignore it (4)
Wishful thinking (.67)	Imagine that the problem situation was better	I wished that bad things wouldn't happen (4)
Support for problem solving (.77)	Seeking advice or direct assistance from others to problem-solve	I asked my mother/ father for help in figuring out what to do (7)
Support for feelings (.77)	Using others to provide emotional support (i.e. listening to feelings; providing understanding)	I told my friends about what made me feel the way I did (7)

Whilst confirmatory factor analyses of the scale have identified the intended four factor solution (e.g., Ayers et al., 1996), an alternative three factor solution has also been recovered (Gaylord-Harden et al., 2008). Here, distraction is omitted from the model, removing the often low-loading *physical release of emotions* and allowing *distracting actions* to load instead onto avoidant coping. More recently, a five factor model has also demonstrated a good fit to data drawn from a sample of 437 Dutch adolescents aged 9-12 years (de Boo & Wicherts, 2009). In this scenario, three of the six active coping dimensions (control, positivity, optimism) form an ancillary factor termed 'positive cognitive restructuring'. To identify the optimal model in the current data, confirmatory factor analyses of the three, four and five factor solutions were conducted using robust maximum likelihood estimation (MLR) in MPlus version 6.12 (Muthen & Muthen, 2010). In each case, scaling was established by fixing factor variances to 1.0; all factor loadings, residual variances and factor co-variances were freely estimated. The results of model fit are presented in Table 2.

Table 2: Fit indices of CCSC-R1 confirmatory factor analyses

Model	MLR X^2 (df)	Factor loading (λ) range		Factor correlation (*r*) range		Incremental fit indices		Absolute fit indices		Parsimony corrected fit
		min	Max	Min	max	CFI	TLI	SRMR	RMSEA (90% CI)	AIC
3 factor	230.02* (51)	.56	.89	.54	.72	.96	.95	.03	.06 (.05-.07)	22628.66
4 factor	264.76* (58)	.48	.89	.51	.70	.96	.94	.04	.06 (.05 - .07)	24795.09
5 factor	204.76* (55)	.48	.89	.51	.92	.97	.96	.03	.05 (.04 - .06)	24729.25

Note: df = degrees of freedom; CFI = Comparative Fit Index; TLI= Tucker-Lewis Index; SRMR = Standardised Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation; AIC = Akaike's Information Criterion. Standardised parameter estimates are presented.

* $p < .001$

Given the widely acknowledged sensitivity of the likelihood ratio (X^2) statistic to sample size (Byrne, 2012), probabilities below .001 are to be anticipated and are thus not solely relied upon when adjudging model fit. Ideally, measures of incremental fit, e.g.,

CFI/TLI, should exceed .95 and absolute fit indices, e.g., RMSEA, should be less than .6 to signify a well-fitting model (Hu & Bentler, 1999). Although it is argued that CFI values > .90 and RMSEA values up to .08 can still indicate a moderate level of fit (Marsh, Hau, & Wen, 2004). In line with these criteria, table 2 suggests that the 5 factor model appears marginally superior to the 3 and 4 factor solutions. However, scrutiny of the standardised factor loadings indicate that *physical release of emotions* had a particularly low loading ($\lambda = .48$) in models 4 and 5; considerably lower than all other dimensions ($\lambda \geq .60$). Moreover, model 5 also evidenced an uncomfortably high intercorrelation between the new latent factor, positive cognitive restructuring and active coping ($r = .92$, $p < .001$) suggesting that with 85% shared variance these dimensions essentially tap the same underlying latent construct (i.e., active coping). Hence, model three provided a superior fit to the data (also suggested by the reduced AIC value) and consequently active ($\alpha = .90$), avoidant ($\alpha = .75$), and support seeking ($\alpha = .93$) coping styles were retained for subsequent analysis. Appendix D contains a schematic representation of the final measurement model (figure 2).

13.3.2 Emotional intelligence: Ability

The *Mayer-Salovey-Caruso Emotional Intelligence Test-Youth Version, Research Edition* (MSCEIT-YV R; Mayer, Salovey, & Caruso, in press) is a performance-based measure of EI suitable for youth aged between 10 and 18 years of age. It is currently the only omnibus assessment of AEI available for use with this age group. The measure comprises 101 items in total, 97 of which variously assess skill in *experiential* (perceiving emotion; using emotion to facilitate thought) and *strategic* (understanding; managing emotion in self and others) emotional information processing - see Table 3 for content description, together with example items and response options. Item responses are scored by the test publishers (Multi-Health Systems) and assigned a scaled value between 0 (less correct) and 2 (more correct) to represent the degree of concordance with expert consensus opinion. Higher scores indicate higher agreement, hence higher AEI skill. Averaged item scores create branch scores (i.e., perceiving, using, understanding;

managing), from which average experiential and strategic area scores are derived, the mean of which yields a total AEI score (where standardised values: *M* = 100, *SD* = 15).

The MSCEIT-YVR is still under development and, as such, comprehensive psychometric testing is awaited. However preliminary analyses with the tool (*N* = 2000, mean age = 13.22 years) have yielded adequate split-half reliabilities; .67 perceiving emotion; .81 using/managing emotion; .86 understanding emotion; .90 for total AEI (Papadogiannis et al., 2009)[4]. These authors also reported the presence of moderate yet significant branch-level associations, ranging from *r* = .34 for perceiving/managing, to *r* = .67 for understanding/managing (D. Logan, personal communication May 19 2011). In the present sample, a similar pattern of moderate intercorrelations were found (average *r* = .33) and all branches were significantly associated with the total score (range *r* = .41 - .84; see Table 8). Confirmatory factor analyses of AEI using branch-level, sub-scale scores as indicators, represented a reasonable fit to the data: MLR X^2 (2) = 17.36, $p < .001$, CFI = .98, TLI = .93, SRMR = .03, RMSEA =.08 [CI = 0.05–0.13] (see Appendix D, figure 3 for graphical depiction). Whilst managing and understanding emotion both exhibited strong, significant loadings on latent AEI (which accounted for 58-62% of the variance in each sub-skill respectively), loadings for using (.47) and perceiving emotion (.32) were somewhat lower, although still significant. Markedly, the same patterning of loadings has been recently recovered in MSCEIT-YVR data obtained from a younger sample (*N* = 413; aged 10-11 years) (Qualter et al., 2012) which may signify the need for modification to the final instrument. Nevertheless, the fidelity of the present research was safeguarded by focussing analyses on the global AEI construct (as manifest 'total AEI' scores and latent AEI as detailed above). This ensured that predictive and explanatory inferences contrasting TEI and AEI were based on analyses at the same level/bandwidth (see 10.2.3 for TEI), maximising measurement reliability (Gardner & Qualter, 2010) and the likelihood of future replication, whilst simultaneously minimising the number of (complex) analyses required (i.e., reducing Type I error).

[4] As the MSCEIT-YV is still undergoing final validation, test publishers were unable to release scored item-level data hence sample-specific, split-half reliabilities could not be directly computed.

Table 3: MSCEIT-YVR branch descriptions, example items and response options

<table>
<tr><th>Branch Level Description</th><th>Response Options</th><th>Example Item</th></tr>
<tr><td>Perceiving emotions Assesses the ability to accurately identify emotions in others drawing upon skills in attending to and decoding emotional signals.</td><td>Item parcel format: Participants rate the emotional content of a set of 8 faces using a 5-point scale</td><td>How much of each feeling below do you see in this face (circle an answer for each emotion)?
 
<table><tr><th></th><th>None at all</th><th>A little feeling</th><th>A medium feeling</th><th>A strong feeling</th><th>A very strong feeling</th></tr><tr><td>1.surprise</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>2.sadness</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>3.happiness</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>4.disgust</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td></tr>
<tr><td>Using emotions Tests the ability to harness emotion to aid cognitive processing, e.g., reasoning, problem-solving, socio-communication etc.</td><td>Item parcel format: Participants match sensory experiences (colour, temperature, speed) to 6 different emotions using a 5-point scale across 24 items.</td><td>Imagine that you like someone. How much is this feeling of liking someone like each of the following (circle an answer for each emotion)?
<table><tr><th></th><th>Does not feel this way</th><th>Feels a little this way</th><th>Feels somewhat this way</th><th>Feels this way</th><th>Definitely feels this way</th></tr><tr><td>1.warm</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>2.soft</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>3.light</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>4.pink</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td></tr>
<tr><td>Understanding emotions Assesses emotional knowledge relating to self/ others: including emotional vocabulary; knowledge of how emotions combine and transition.</td><td>Individual item multiple choice: participants circle 1 of 5 options across 23 items</td><td>When you have something really nice, and then you lose it, you end up feeling (choose one answer):
1. Happy
2. Afraid
3. Jealous
4. Sad
5. Disgusted</td></tr>
<tr><td>Managing emotions Assesses how well participants are able to regulate their own moods/emotional episodes, and those of others.</td><td>Item parcel format: participants rate the usefulness of actions for attaining a target feeling (either in self or others) using a 5-point scale across 6 vignettes.</td><td>A boy received some very sad news. He wants to feel happy before going to a fun party. How helpful would each of the following be in getting the boy to feel happy (circle an answer for each action)?
1. Action: the boy watches a sad movie
Not at all helpful A little helpful Somewhat helpful Moderately helpful Very helpful
2. Action: The boy reads a good book
Not at all helpful A little helpful Somewhat helpful Moderately helpful Very helpful
3. Action: The boy plays a game with his best friend
Not at all helpful A little helpful Somewhat helpful Moderately helpful Very helpful</td></tr>
</table>

13.3.3 Emotional intelligence: Trait

As a self-report assessment of individual differences in adolescent emotional self-efficacy, the *Trait Emotional Intelligence Questionnaire-Adolescent Short Form* (TEIQue-ASF; Petrides, 2009b) is one of a family of age appropriate long and short form measures (e.g. TEIQue-CF; TEIQue, TEIQue-SF, TEIQue-AFF) based on the TEI model of EI. Originally developed from a content analysis of existing EI frameworks and related constructs, such as alexithymia and empathy (Petrides & Furnham, 2001), TEIQue forms have followed a rigorous programme of validation (see below) and have been endorsed as superior to alternative, 'first generation' mixed-model measures such as the EQi (Bar-On, 1997) and SREIT (Schutte et al., 1998) which attempt to assess *actual* emotional skill via self-report (Zeidner et al., 2009). In contrast, TEI theory conceives the construct as a finer-grained personality trait(s), some facets of which are subsumed within traditional higher-order personality dimensions, and hence sets out to measure emotional self-perceptions and dispositions rather than 'skill' or 'ability' (Petrides, Pita et al., 2007). Items for the TEIQue-ASF were adapted from the adult short form to represent age-appropriate wording and grammatical complexity and it has been used successfully with youth aged 10 to highlight relationships between TEI and psychopathology (Williams et al., 2009). The instrument consists of 30 brief statements to which participants respond using a seven-point scale; strongly disagree (1) to strongly agree (7). Items represent 15 individual TEI facets which together tap four dimensions: *sociability, emotionality, self-control* and *well-being* (see Table 4 for descriptions and example items). Following reversals, a global score (possible range 30–210), together with scores for each of the four TEI factors, can be derived from summed item responses; higher scores signal higher levels of TEI.

The adult version of the TEIQue has demonstrated excellent psychometric properties including 12-month test-retest reliability (global TEI: $r = 0.78$, $p < .001$) and robust levels of internal consistency at facet (average $\alpha = .77$), factor ($\alpha = .78$ [emotionality] to .83 [wellbeing]) and global levels ($\alpha = .90$) (Petrides, 2009b). The adolescent short form is not designed to yield facet scores and factor level reliability is

expected to be lower than values found for the full form (Petrides, 2009b). However, in the current data α levels were in fact moderate; ranging between .50 (emotionality) and .79 (wellbeing). Full-scale internal consistency for the TEIQue-ASF global score is typically very good and holds cross-culturally e.g., in a group of British adolescents (*N* = 490; aged 16 – 19 years), α = 0.83 (Mikolajczak, Petrides, & Hurry, 2009) and in Dutch adolescents (N = 282; mean age 13.75 years) α = 0.81 (Mavroveli et al., 2007). This trend was corroborated in the present sample: α = .84. To the authors' knowledge, there are currently no published confirmatory factor analyses based on the TEIQue-ASF, however, the four-factor TEI model has been recovered in adult data (e.g., Freudenthaler, Neubauer, Gabler, Scherl, & Rindermann, 2008). In light of the multidimensional, a-priori structure of the TEI model and the presence of internally consistent 'factors' in the current data (Kishton & Widaman, 1994), the fit of wellbeing, sociability, emotionality, and self-control subscales indicated by global TEI was tested via CFA. Importantly, this approach also has precedence in the literature (e.g., Frederickson, Petrides, & Simmonds, 2012). With the latent factor variance constrained to 1 to establish scaling, a single-factor model was found to offer a reasonable fit to the data: MLR X^2 (2) = 15.37, $p < .001$, CFI = .98, TLI = .93, SRMR = .02, RMSEA =.08 [CI = 0.05–0.12]; where all λ ≥ .58 (see Appendix D, figure 4 for graphical depiction). Consequently, all subsequent structural equation modelling is based on global TEI derived from this measurement model.

Table 4: The trait emotional intelligence model with example items from the TEIQue-ASF

	Factor Description	Facets	Example items from TEIQue-ASF
Global TEI	**Emotionality** Describes perceived emotion-related competencies necessary for development of strong personal relationships	• Relationships • Emotional expression • Emotional perception: self & others • Empathy	It's easy for me to talk about my feelings to other people I'm able to 'get into someone's shoes' and feel their emotions
	Self-control Perceived capability in controlling internal urges and external pressure or stress	• Emotional regulation – self • Impulsiveness (low) • Stress management	I can control my anger when I want to I'm able to deal with stress
	Sociability Describes how an individual typically feels and behave in a social context (e.g. perceived skills in negotiation, networking etc)	• Emotional management - others • Assertiveness • Social awareness	I can make other people feel better when I want to Sometimes, I get involved in things I later wish I could get out of
	Well-being Allows description of degree of satisfaction with life based on past and future events or expectations	• Optimism • Happiness • Self-esteem	I believe things will work out fine in my life My life is not enjoyable
		Auxiliary facets (not keyed to any factor): • Self-motivation • Adaptability	I find it hard to keep myself motivated I'm able to cope well in new environments

Source: Petrides (2009b).

13.3.4 Family dysfunction

The *general functioning* subscale of the *McMaster Family Assessment Device* (FAD; Epstein, Baldwin, & Bishop, 1983) provides a global index of the 'health' vs. 'pathology' of a family as perceived by the respondent. Derived from the clinically orientated McMaster Model of family functioning, the full-form FAD comprises 60 self-report items tapping six family dimensions, indexed by seven subscales: *problem solving* (resolution of issues inside and outside the family), *communication* (clarity and specificity of verbal interaction), *roles* (established response patterns for everyday tasks), *affective responsiveness* (emotionality in reaction to environmental events), *affective involvement* (extent of involvement/interest in other family members), *behaviour control* (existence of rules or standards for behaviour), and *general functioning* (Byles, Byrne, Boyle, & Offord, 1988; Epstein et al., 1983). However, the latter general functioning subscale (FAD-GF), is considered to be a brief yet robust version of the full-form FAD; early analyses suggested that with FAD-GF scale scores held constant, partial correlations between the remaining scales approach zero (range: $r = 0.01$ to $r = 0.23$) (Epstein et al., 1983) - a finding which has been more recently corroborated via exploratory and confirmatory factor analyses (Ridenour, Daley, & Reich, 1999). Consequently, only the FAD-GF was administered to participants. Importantly, family functioning as measured by the FAD-GF, has been linked to a number of adjustment outcomes; for instance, as part of a large scale population-level survey in the UK, lower parental-report scores on the FAD-GF were associated with greater levels of internalising and externalising disorder in youth aged 5-15 years (Meltzer, Gatward, Goodman, & Ford, 2000), and in particular Oppositional Defiant Disorder and Conduct Disorder (Ford et al., 2004). Moreover, Martin, Bergen, Richardson, Roeger, & Allison (2004) found that family functioning mediated the association between sexual abuse and suicidality as reported by an Australian sample of 2,485 adolescents aged between 13 and 16 years.

The FAD-GF comprises 12 short statements, e.g., "In times of crisis we can turn to each other for support", to which participants indicate the extent of their agreement using a 4-point scale; strongly agree (1) to strongly disagree (4). Six items are phrased to

reflect healthy functioning (as in the example above), whilst the remaining six screen for unhealthy characteristics (e.g., "we don't get along well together") - see Appendix C for a complete copy of the instrument. A higher mean scale score (possible range 1.0 – 4.0) indicates greater levels of family pathology, with scores > 2.0 reflective of clinically unhealthy functioning (Miller, Epstein, Bishop, & Keitner, 1985). Internal consistency of the FAD-GF is good (e.g., N = 503; α = 0.92), as is test-retest reliability over a 7 day period (r =.71), and FAD scores have successfully differentiated between clinical and nonclinical families (see Epstein et al., 1983; Miller et al., 1985). In the current sample, Cronbach's alpha = .85.

Previous research has confirmed the unidimensionality of the FAD-GF (e.g., Evans, Cowlishaw, Forbes, Parslow, & Lewis, 2010) and this was verified with the current data. Exploratory factor analysis with oblique (geomin) rotation indicated a strong primary factor; loadings ranged between .53 to .71 and the ratio of eigenvalues for the first factor (5.32) to the second factor (1.43) was 3.72:1 - far exceeding the recommended criterion of 2.5:1 necessary to obtain consistent parameter estimates from item parcels (Hall, Snell, & Foust, 1999). Given the unidimensional nature of the scale, items were randomly assigned to one of four, 3 item-averaged parcels to form indicators of the latent variable 'family dysfunction' for the basis of subsequent structural equation modelling. Whilst the efficacy of item parcelling continues to be debated, the technique has been advocated when the primary goal of research is to investigate *structural* relations amongst latent variables (vs. indicator-level relations); in reducing the ratio of manifest indicators to latent constructs, and hence the number of parameters to be estimated, sample size requirements are reduced and the likelihood of obtaining an adequate model fit is increased (Hall et al., 1999; Little, Cunningham, Shahar, & Widaman, 2002). Moreover, measurement reliability and distributional assumptions are often improved through the use of aggregated data (Little et al., 2002). Importantly, this approach has precedence in the literature with FAD-GF items (Evans et al., 2010) and in the present data, a CFA of the single-factor model with four parcelled indicators provided an excellent fit to the data: MLM X^2 (2) = 4.95, p = .08, CFI = .99, TLI = .99, SRMR = .01, RMSEA =.04 [CI = .00–.07], average standardised factor loading = .76 – see Appendix D, figure 5.

13.3.5 General cognitive ability

Key Stage 2 *average points scores* (APS) were collected from school records and used as a proxy measure for general cognitive ability (GCA). APS are computed from National Curriculum levels which range from 'W' (working towards) to '8' (to be attained at the end of Key Stage 3). Each level has a point equivalence as follows: W = 3, level 1 = 9, level 2 = 15, level 3 = 21, level 4 = 27, level 5 = 33, level 6 = 39, level 7 = 45 and level 8 = 51 points. Hence, the difference between each level is represented by a 6-point increment, where a single point represents progress per term. The APS per student is calculated as the mean of the total scores gained in English, Mathematics and Science, which, at Key Stage 2, represents achievement at age 11 assessed via national testing. For instance, an APS of 35 would indicate the student is mainly achieving Level 5 or 6 across the curriculum (Department for Education, 2010a). APS can range between 3 and 58 and at Key Stage 2 students are expected to attain level 4 (i.e., 27 points). The current sample average APS of 30.25 (SD = 3.47, range: 16.20 – 37.00) accords well with this. Whilst the shortcomings of using proxy measures in place of standardised measures of psychometric *g* have been duly noted (Rossen & Kranzler, 2009), this was unavoidable given sampling constraints. As objective, nationally available data, APS represent a viable proxy and this approach has precedence in the EI construct validation literature (e.g., Brackett & Mayer, 2003).

13.3.6 Mental health

Depression and disruptive behaviour symptomotology were measured with respective scales from the *Beck Youth Inventories of Emotional and Social Impairment, 2nd Edition* (BYI II; Beck, Beck, Jolly, & Steer, 2005). The depression inventory indexes feelings of sadness, hopelessness, negative thoughts about the world or self and physiological symptoms (e.g., "I want to be alone"; "I feel like crying"). In contrast, adolescent experiences of disruptive behaviour are tapped through items measuring thoughts, feelings or behaviours associated with conduct/oppositional defiant disorder including, aggression toward people/animals; destruction of property; arguing with and

defying adults; blaming others (e.g., “I break into cars, houses, or other places”; “I like being mean to others”). Each scale contains 20 items to which participants indicate how often each statement has been true for them recently by means of a 4-point scale; never (0) through to always (3). In both cases, higher summed item values (range 0 - 60), represent higher levels of disorder.

The brevity (five minutes completion per scale) yet specificity of the assessment afforded by each of the BYI II scales (20 items tailored to depression) make the instrument advantageous over similar measures; for instance, the Strengths and Difficulties Questionnaire (Goodman, 2001) which taps general ‘emotional symptoms’ using only 5 items, or the Youth Self-Report (Achenbach, 1991) which at 112 items is considerably lengthier. Moreover, the BYI have been used comprehensively with youth populations and have consistently demonstrated robust psychometric properties (see e.g., Kumar, Steer, & Gulab, 2010; Williams et al., 2010a). Normative standardisation of the BYI II (*N* = 1,000; aged 7-18 years), yielded high levels of internal consistency across three age bandings (depression inventory: α = 0.90-0.95; disruptive behaviour: α = 0.86-0.91) and 7-day test-retest reliability produced coefficients ≥ 0.73 (Beck et al., 2005). In the current sample internal consistency was α = .93 (depression) and α =.89 (disruptive behaviour). Whilst the authors assert that each of the five BYI II scales are unidimensional in nature, there has been little work exploring the underlying structure of individual scales vs. the collective instrument (five inventories in total). Nevertheless, using data drawn from the BYI I, support for unidimensionality has been documented in a Danish sample (*N* = 1116, 7-14 years) (Thastum, Ravn, Sommer, & Trillingsgaard, 2009), a clinical sample (*N* = 300, 7-12 years) (Steer, Kumar, Beck, & Beck, 2005), and for the depression inventory specifically, in an all female sample (*N* = 859, aged 9-13 years) (Stapleton, Sander, & Stark, 2007). In light of the foregoing research, confirmation of the unidimensionality of the BYI II items was sought. Exploratory factor analysis with oblique (geomin) rotation indicated the presence of a dominant single factor within both sets of items; first to second factor eigenvalue ratios (depression = 11.20:1.15; disruptive behaviour = 10.14:1.60) were substantially greater than 2.5:1, and collectively, the minimum rotated factor loading was .53. Hence, with unidimensionality established,

items were randomly assigned to one of four, 5 item-summed parcels to form indicators for subsequent latent variable modelling. CFA found both of the single-factor models with parcelled indicators to offer good fits to the data; depression = MLM X^2 (2) = 2.41, p = .30, CFI = .99, TLI = .99, SRMR = .01, RMSEA =.01 [CI = .00–.06], average standardised factor loading = .85; disruptive behaviour = MLM X^2 (2) = 13.79, p < .01, CFI = .99, TLI = .97, SRMR = .02, RMSEA =.07 [CI = .04–.11], average standardised factor loading = .80 – see Appendix D, figures 5 and 6.

13.3.7 Negative life events

The *Adolescent Perceived Events Scale-Short Form* (APES-SF; Compas, Davis, Forsythe, & Wagner, 1987) is a cumulative checklist measure of 90 items relating to normative and non-normative *major* and *daily* life events - see Appendix C for a full copy of the measure. Importantly, indices of cumulative events have been found to capture more variance in outcomes than measures of 'independent' risk markers (see e.g., E. Flouri & Kallis, 2007), and are thus particularly useful for initial explorations of broadband associations between stressors and psychopathology. Originally generated from open-ended questionnaire responses (N = 658, aged 12 -20 years), items target adolescent experiences across a variety of contexts (Compas et al., 1987; Wagner & Compas, 1990); *network events* occurring in the lives of others in the adolescent's social network (e.g., "parent loses job" – 25 items), *family events* (e.g., "not spending enough time with family members" – 19 items), *romantic events* (e.g., "breaking up with or being rejected by a boyfriend/girlfriend" – 8 items), *peer events* (e.g., "feeling pressured by friends" – 15 items), and *academic events* (e.g., "doing poorly on a test or exam" – 14 items). In line with recent guidelines for 'best practice' when employing cumulative stressor checklists (Grant et al., 2004), seven items were removed from the instrument to minimise possible criterion contamination (e.g., "emotional worries"). Participants were invited to endorse events that had occurred within the past four months and to indicate the desirability of the event using a 9-point scale; extremely bad (-4) through to extremely good (+4). A weighted sum of negative events can be computed - total and/or sub-types (e.g., Wagner

& Compas, 1990); in all cases, higher scores reflect higher levels of experienced stressful life events.

As the APES is a checklist measure of potentially non-related life events, computation of internal consistency (appropriate for scales addressing a single underlying construct) is not recommended nor deemed necessary, as Fergusson & Horwood (1986) summarise, "The model underlying both the split half and coefficient alpha-measures assumes that each observed item z_i is a fallible estimate of a common underlying trait measured by the items. This is clearly incorrect for life event items which do not measure a common underlying trait but rather a set of heterogeneous items grouped together because they are assumed to have a common effect rather than arising from a common source" (p.54). A clear example of this is given by the author of the APES, "It cannot be assumed that all events relevant to a particular domain of a youngster's life (e.g., family or school) are likely to occur contemporaneously...the events 'parent getting a new job' and 'change in parents' financial status' are likely to occur together, while 'increase in number of arguments with parents' and 'parent getting a new job' will not necessarily co-occur. Thus, internal consistency reliability will be less important to determine than test-retest reliability" (Compas, 1987, p. 283). The APES has demonstrated excellent test-retest reliability over a two week period (r = .74 to .89 for weighted negative events) and inter-rater reliability (self vs. close friend) in older adolescents was 97% concordant (Compas et al., 1987). Indeed, demonstration of such robust psychometric properties represents a relative strength of the APES over many other adolescent checklist measures, which lack documented empirical validation (e.g., Tolor, Murphy, Wilson, & Clayton, 1983; Yeaworth, York, Hussey, Ingle, & Goodwin, 1980). For the purposes of later structural equation modelling, CFA of a single-factor 'negative life events' model, indicated by five continuous scale scores (network, romantic, family, peer, academic) was tested. With the latent factor variance constrained to 1 to establish scaling, the model was found to offer an excellent fit to the data: MLR X^2 (5) = 17.67, p < .01, CFI = .99, TLI = .99, SRMR = .02, RMSEA =.05 [CI = .03–.08]; where all $\lambda \geq .57$ (see Appendix D, figure 8 for the full measurement model).

13.3.8 Personality

The *Big Five Inventory-Adolescent Form* (BFI-44-A; John, Donahue, & Kentle, 1991) consists of 44 short statements that tap prototypical traits considered central to the 'Big Five' taxonomy of higher-order, individual differences in Neuroticism (N); Extraversion (E); Openness (O); Agreeableness (A) and Conscientiousness (C) (see John & Srivastava, 1999 for historical overview of the development of the 'Big Five'). The BFI-44-A was particularly well-suited to the aims and design of the current study owing to its brevity (5-10 minute completion), composition (short statements vs. adjectives to aid comprehension) and scope (measurement of broadband dimensions vs. differentiated facets), qualities which set it apart from possible alternative measures, e.g., NEO Five Factor Inventories (Costa & McCrae, 1992); Trait Descriptive Adjectives (Goldberg, 1992) and its abbreviated 'mini-markers' form (Saucier, 1994). Table 5 provides further description of the five dimensions together with example items from the scale (a full copy of which is located in Appendix C). In each case, statements are prefaced by the phrase "I see myself as someone who..." and participants indicate the extent of their agreement by means of a five-point scale: strongly disagree (1) through to strongly agree (5). Following reversals, computation of item averages yields dimensional scores (*n* items per dimension range from 8-10). The adult form of the BFI has shown excellent levels of internal consistency across dimensions (mean $\alpha > 0.82$) and test-retest reliability over an eight-week period (mean $\alpha = 0.83$) (Rammstedt & John, 2007). Convergent and discriminant validity with alternative Big Five measures, e.g., NEO Five Factor Inventory (Costa & McCrae, 1992); Trait Descriptive Adjectives (Goldberg, 1992) is also good (see John et al., 2008). Administering the adolescent form to 230,000 youth aged between 10-20 years, Soto, John, Gosling, & Potter (2008) reported adequate levels of internal consistency (α range: .57 [O] to .76 [A; C]) and a robust factor structure for the dimensions across development (even at age 11, coefficients were at least .91 with 86% of the items loading on the intended dimension). An average Cronbach's alpha value = .71 was achieved in the present data (Table 5).

Table 5: Personality dimensions (with alpha reliabilities), descriptions and example items from the BFI-44-A

Dimension (alpha)	Description	Example traits	Example items (*n* items per dimension)
Neuroticism (N) (α = .70)	Extent of emotional stability, evidenced through feelings of anxiousness, nervousness, sadness	• *moody vs. stable* • *anxious vs. calm*	I see myself as someone who... • Worries a lot • Is emotionally stable (R) (8)
Extraversion (E) (α = .71)	An energetic approach toward the social and material world	• *assertive* vs. *quiet* • *outgoing* vs. *withdrawn*	I see myself as someone who... • Takes charge • Is sometimes shy, inhibited (R) (8)
Openness (O) (α = .73)	Measures attributes associated with the individual's mental and experiential life	• *wide vs. narrow interests* • *imaginative vs. shallow*	I see myself as someone who... • Is creative and inventive • Doesn't like artistic things (e.g., plays, movies) (R) (10)
Agreeableness (A) (α = .67)	A pro-social or communal orientation toward others, as oppose to and antagonistic outlook/approach	• *kind, altruistic vs. cold, hostile* • *trusting vs. unfriendly*	I see myself as someone who... • Is helpful and unselfish with others • Tends to find fault with others (R) (8)
Conscientiousness (C) (α = .75)	Addresses socially prescribed impulse control exemplified through high levels of organisation; a methodical/planful approach to tasks; delaying gratification	• *organised, vs. disorderly* • *thorough vs. careless*	I see myself as someone who... • Does things carefully and completely • Tends to be disorganised (reversed) (10)

Sources: John & Srivastava,(1999); John, Naumann, & Soto, (2008).

13.3.9 Socio-economic adversity

Traditional indices of socio-economic status utilised in adult research (e.g. level of occupation; education; income) have proven problematic to employ in an adolescent context; young people either lack knowledge of or are unwilling to report this type of information with respect to their caregivers (Currie et al., 2008). For instance, using data from a sample of 1,824 UK adolescents, Wardle, Robb & Johnson (2002) reported high levels of non-response for parental occupation (46.4% non-completion for fathers and 45.95% for mothers). This issue is exacerbated by a documented bias in non-responding; those from lower socio-economic groupings show higher levels of non-response to traditional socio-economic status items (Currie et al., 2008; Wardle et al., 2004). In an effort to overcome these difficulties the *Family Affluence Scale (FAS)* was developed, originally for use as part the World Health Organisation's four-yearly youth self-report survey - the Health Behaviour of School-Aged Children (Currie et al., 1997). The second revision of the scale - the FASII (Currie et al., 2004) – was utilised in the present study (see Table 6 for details). Developed from the work of Carstairs and Morris (1991) and Townsend (1987), the FASII consists of four accessible, non-sensitive self-report items representative of family expenditure and consumption (e.g., "Does your family own a car, van or truck?") to which categorical responses are assigned a value (e.g., no = 2; yes, one = 1; yes, more than one = 0). Item responses can be summed and categorised to reflect low, moderate and high affluence status groups to mirror traditional socio-economic schemes (e.g., Boyce, Torsheim, Currie, & Zambon, 2006), however, in the current study, items formed a composite indicator of family material affluence/deprivation – an approach common in other studies with a focus upon health gradients (e.g., Torsheim et al., 2004). Consequently, participant FASII scores had a possible range of 0 (most affluent) to 9 (most deprived); with the standard FASII scoring key being reversed to facilitate interpretation of the variable (higher scores = greater exposure to adversity).

Table 6: FASII items, response codes and scoring key

FASII item	Response code	Scoring key
Does your family own a car, van or truck?	No	2
	Yes, one car or van	1
	Yes, more than one car or van	0
Do you have your own bedroom for yourself?	No	1
	Yes	0
During the past 12 months, how many times have you travelled away on holiday with your family?	Not at all	3
	Once	2
	Twice	1
	More than twice	0
How many computers does your family own? (*do not include Playstation, Xbox or other computers used only for games*)	None	3
	One	2
	Two	1
	More than two	0

(Source: Currie et al., 2008)

Excellent completion rates have been reported in studies utilising FAS items (for instance, Wardle et al., (2002) report only 2% missing data for computer and car items) and in the current study this was replicated, with 100% completion across all items. Adolescent responses have shown good rates of concordance with parentally-reported FAS data (e.g., Andersen et al., 2008) and positive associations with traditional indicators of SES, e.g., maternal level of education (r = .19, p < .001) and family structure (r = .16, p < .001) (Boudreau & Poulin, 2009). Substantial three-week test-retest reliability has been documented (N=95, 11-15 years: item intraclass correlations ranging from .76 [holiday] to .95 [bedroom] and scale score = .88) (Liu et al., 2011). However, levels of internal consistency have fluctuated across culturally diverse adolescent populations (range: α .35 to .60) (Lin, 2011; Veselska et al., 2009) and in the present data, scale-level Cronbach's alpha was low (.43). Nevertheless, this is consistent with the conceptualisation of socio-economic adversity (SEA) assumed in this research. Here, items are regarded as relatively independent, 'objective' measures of discrete exposures to adversity that can be usefully tallied; not as interchangeable, standalone measures of this multidimensional construct (Wardle et al., 2002). Accordingly, FASII inter-item correlations are typically moderate though significant (e.g., average r = .28 (Liu et al., 2011); r = .12 (Lin, 2011)) and this was corroborated in the current data (average r = .17, p < .05). Whilst the FAS has been used widely to investigate associations with a range of adolescent health inequalities including

mental health and well-being (e.g., Giannakopoulos, Mihas, Dimitrakaki, & Tountas, 2009) the authors accept that items may be susceptible to bias; for instance car ownership and bedroom occupancy items could both be influenced by factors associated with urban/rural living. Consequently, it has been suggested that additions/omissions and review of FAS items should be ongoing to ensure markers optimally capture material affluence (Currie et al., 2008). With this in mind, data referencing student *free school meal eligibility (FSM)* were obtained from school records (coded non-eligible: 0; eligible: 1) to be included as an additional measure of family SEA.

As a means-tested benefit directly linked to caregiver income, FSM has been widely employed in the literature as a measure of income deprivation (see e.g., Guerra, Huesmann, Tolan, Van Acker, & Eron, 1995; Wadsworth & Compas, 2002). Moreover, self-reported FSM has been included in the Home Affluence Scale, a measure similar to the FAS that has been recently developed in the UK (Wardle et al., 2002). Qualifying criteria are subject to change however currently, caregivers can apply for student free school meals if they are in receipt of various benefits (including income support; income based job-seekers allowance; child tax credit with an income less than £16,190; State Pension Credit, guarantee element) (Department for Education, 2010b). Students are officially recorded as being 'eligible' once they have applied for and are in receipt of a free school meal, or the appropriate documentation has been checked and is in the process of authorisation. Clearly these criteria do not sufficiently capture true 'eligibility' in terms of economic deprivation; not all families with youth who are eligible will apply and subsequently take up FSM and/or youth in 'low income' families who are not in receipt of benefits may be ineligible for FSM. Hitherto, it has been argued that FSM is a "very coarse index of economic disadvantage"(Kounali, Robinson, Goldstein, & Lauder, 2008, p.14). Nevertheless, as part of their analysis of household and child data drawn from the Family Resources Survey (2001/2 & 2004/5), Hobbs & Vignoles (2010) concluded that although FSM is an imperfect proxy for family income, it still has utility; analyses found that children registered as eligible for FSM were most likely to live in the lowest income families.

In the present data, FSM and the FASII scale score shared only a moderate proportion of variance (r =.12, p<.001), though this is fully consistent with previous research; in addition to a bivariate correlation of r = .20, p<.001, Kehoe and O'Hare (2010) report findings from an exploratory factor analysis in which the FASII items loaded on a related (r = .29, p < .05) yet distinct factor to FSM, thereby affirming the ability of all five proxy items to capture relatively unique aspects of SEA. The use of cumulative indices of adversity has historical precedence in the literature (e.g., Luthar, 1991) and whilst unique contributions from individual indicators are obscured by this practice, statistical power is maximised - useful in complex models and when structural relations between constructs are the primary focus of investigations (Burchinal, Roberts, Hooper, & Zeisel, 2000). Consequently, the summation of FSM and FASII items created a broadband measure of SEA with a possible range of 0 to 10 (higher scores indicative of higher levels of adversity).

13.4 Procedure and ethical considerations

Following the recruitment procedure outlined previously (section 13.2) data collection took place in participating schools between May 2010 and July 2011. Pilot work (n = 145) conducted in May 2010 established that completion of the measurement package was both feasible and acceptable (i.e., with respect to length, content and format). Across participating schools, the researcher liaised closely with teaching staff to ensure minimal disruption to curriculum delivery and that data collection sessions took place at a time convenient to individual class teachers (i.e., where possible, during registration or enrichment periods versus curriculum time). At the beginning of each session, students were given verbal and written instructions before individually completing counterbalanced questionnaire booklets within the whole-class setting. Assurances were given regarding confidentiality and students were advised of their right to withdraw from the research, at any time, without detriment. Questionnaire booklets were completed anonymously; each student was assigned a unique ID number which was also included on individual information sheets. Students were advised that they should use this (rather than other identifiable information e.g., name) in any subsequent contact with the researcher. The researcher and/or class tutor were present for the duration of

sessions to provide support where required (e.g., to provide completion instructions; clarify the purpose of the study, etc) and ensure independence of responding. Additionally, psychological risk was monitored by an ongoing procedure of consent checking; participants were advised that if they were unwilling, unable or uncomfortable answering particular items for whatever reason, these could be left blank. Average completion time was 1 hour. At the end of each session, students were collectively debriefed; 'coping with stress' factsheets issued by the Royal College of Psychiatrists were distributed (Appendix E) and students were encouraged to email the researcher direct if they required any further information, or wished to withdraw from the study at a later date. Reports containing aggregated school-level data trends (according to age and sex) were produced as bespoke feedback for participating schools. Data (both in hard copy and electronic format) were stored securely with restricted access (researcher only; password protected). The research was fully compliant with the BPS Code of Ethics and Conduct (British Psychological Society, 2009) and received full internal ethical clearance from the University Research Ethics Committee prior to commencement (Appendix F).

14. RESULTS

This chapter is divided into three major sections; following presentation of descriptive statistics, the predictive and incremental validity of EI with respect to adolescent mental health is examined through bivariate correlations and hierarchical regression analyses. The final section presents findings from latent variable modelling of conditional indirect effects between stressors, coping, mental health and EI.

14.1 Screening and descriptive statistics

Preliminary analysis of study variables highlighted five univariate outliers (detached from the distribution with z-scores ± 3.29 *SD* from the mean) and six multivariate outliers (Mahalanobis distance greater than X^2 (20) = 45.315, $p < .001$) which were subsequently deleted from the data set (Tabachnick & Fidell, 2007). This yielded a final total sample *N* of 1159 adolescents (554 females; 605 males; mean age = 13.30, *SD* = 1.26). Time restrictions and unpredictable classroom circumstances (e.g., late arrivals to class, discipline issues) meant that some students were unable to complete all measures (see section 13.3). However, administration was counterbalanced to minimise order effects and prevent single-measure repeat omissions; accordingly, missing data was found to be distributed randomly throughout the dataset (Little's MCAR test: X^2 = 812.018 (758) $p = .085$). Tables 2 and 4 describe *n* per variable.

The data indicated non-normality; both mental health variables (depression; disruptive behaviour) and negative life events evidenced a degree of positive skew and kurtosis, with respective *z*-values exceeding 1.96, $p < .05$ (see tables 8 and 11). Whilst this trend is expected in research involving non-clinical populations (e.g., Stapleton et al., 2007), to adjust for non-normality, all main analyses were conducted using robust estimation procedures (FIML with robust standard errors: MLR) in Mplus (version 6.11, Muthen & Muthen, 2010) following recommendations in the literature (Byrne, 2012; Yuan & Bentler, 2000). Importantly, this method of estimation is also recommended for

samples with incomplete data considered missing at random (Schafer & Graham, 2002) – applicable to the current analysis. As it is not possible to conduct hierarchical regression in Mplus, this was conducted in SPSS version 15.0 (IBM, 2006) using pairwise data. However, any possible bias arising from missing observations and non-normality in the mental health variables was investigated through supplementary hierarchical regression analyses - the first involving complete cases only (i.e., no missing data) and the second based on (square root) transformed variables (see tables 9b and 9c in Appendix G). All three analyses yielded comparable results, hence for clarity, findings from the pairwise, untransformed data are reported in the passages that follow.

Table 7 displays descriptive statistics for the study variables according to gender. Whole-sample descriptive statistics are located in tables 8 and 11. Turning first to mental health, comparison with normative data suggests that depression and disruptive behaviour scores in the current sample were not restricted in range – in both cases, t-score conversions of the data range indicate the presence of "average" through to "extremely elevated" levels of disorder (Beck et al., 2005). Moreover, the percentages of adolescents reporting sub-clinical (i.e., "moderately elevated" and above) levels of symptomotology compared well with national trends (Green et al., 2005) – for disruptive behaviour this applied to between 5 - 6% of the sample (6.6% nationally) and for depression this was 7 - 9% (5% nationally). Compared to males, females reported significantly higher levels of depression, whilst the reverse was true for disruptive behaviour, with both findings representing small to medium effects. Depression was not significantly associated with age, however there was a tendency for older adolescents to report higher levels of disruptive behaviour (r = .12, p < .001). With regard to emotional intelligence, there were no significant gender differences in trait EI, however, females outperformed males in ability EI; this trend applied to all skill domains bar perceiving emotion (n.s.) but appeared most pronounced with respect to proficiency in managing emotion (where d = .30, representing a small to medium effect). AEI also appeared to increase with age (total AEI r = .27, p < .001) although not universally so; whereas skill in perceiving (r = .12, p < .001), understanding (r = .35, p < .001), and managing emotion (r = .21, p < .001) all increase with maturity, it would seem the ability to use emotion to

facilitate thinking does not (r = .04, p = .21). Conversely, age was unrelated to TEI (r = -.01, p = .92).

Significant gender differences were also observed with respect to personality, where females exhibited higher levels of trait Conscientiousness (C); Openness (O); Agreeableness (A) and Neuroticism (N), the latter of which constituted the largest effect (d = .41). Age related differentially to C and N; whilst younger adolescents appeared more conscientious (r = -.14, p < .001), older adolescents reported higher levels of trait Neuroticism (r = .09, p < .01). Compared to their male counterparts, females were also more frequent endorsers of avoidant and support seeking coping strategies, although use of the latter decreases with maturity (r = -.14, p < .001). In general, experience of stressors (negative life events: NLE; family dysfunction: FD) did not differ according to sex, although females tended to report higher levels of socio-economic adversity (d = .22). Nevertheless, there were some age-related trends; experience of NLE and FD was greatest in older adolescents (NLE: r = .07, p < .05; FD: r = .07, p < .05), whilst the youngest adolescents were amongst the poorest in the sample (SEA r = -.18, p < .001). With the exception of the relationship between age and AEI, all significant correlations reported here represent small effect sizes, r < .30 (Cohen, 1992).

As a result of the presence of significant age and sex related trends in the data, the influence of both variables were controlled in all main analyses.

Table 7: Descriptive statistics for study variables by sex

	Males		Females		*t*	*d*
Variables	*M* (*SD*)	Range	*M* (*SD*)	Range		
1. Coping						
Active	2.35 (.57)	1.00 - 4.00	2.41 (.56)	1.00-4.00	-1.78	.11
Avoidant	2.33 (.52)	1.00-3.81	2.45 (.53)	1.06- 4.00	-3.63***	.23
Support seeking	1.91 (.60)	1.00 - 4.00	2.14 .63)	1.00- 4.00	-5.89***	.39
2. Emotional intelligence (EI)						
Ability EI: Total	95.24 (15.81)	55.37- 125.60	98.93 (13.90)	57.02-126.58	-3.93***	.25
Ability EI: Perceiving	89.11 (16.73)	28.57 – 122.65	90.28 (17.62)	28.57 – 126.35	-1.10	.07
Ability EI: Using	100.34 (17.40)	56.60 – 137.65	102.77 (15.74)	50.36 – 136.61	-2.37*	.15
Ability EI: Understanding	99.43 (15.45)	56.88 – 126.39	101.87 (13.37)	60.19 – 126.39	-2.72**	.17
Ability EI: Managing	92.98 (14.44)	64.54 – 124.06	97.33 (14.34)	62.59 – 124.06	-4.81***	.30
Trait EI	133.51 (21.61)	62.00 – 203.00	131.69 (21.03)	78.00 – 203.00	1.37	.09
3. General cognitive ability						
KS2 average points score	29.99 (3.56)	16.20 – 37.00	30.52 (3.37)	17.60 – 36.50	-1.73	.15
4. Mental health						
Depression	10.43 (9.37)	.00 – 52.00	12.72 (9.57)	0.00 – 49.00	-4.08***	.24
Disruptive behaviour	8.27 (7.48)	.00 – 41.00	6.12 (6.10)	0.00 – 41.00	5.33***	.32
5. Personality						
Neuroticism	2.70 (.65)	1.00 - 4.88	2.97 (.68)	1.00 – 5.00	-6.37***	.41
Extraversion	3.37 (.66)	1.25 – 4.88	3.42 (.68)	1.25 – 5.00	-1.09	.06
Openness	3.55 (.60)	1.40 – 4.90	3.70 (.62)	1.80 – 5.00	-4.02***	.25
Conscientiousness	3.23 (.65)	1.33 – 5.00	3.36 (.68)	1.44 – 5.00	-3.11**	.20
Agreeableness	3.46 (.64)	1.00 – 5.00	3.61 (.61)	1.50 – 5.00	-4.06***	.24
6. Stressors						
Family dysfunction	1.96 (.50)	1.00 – 4.00	1.90 (.51)	1.00 –3.83	1.82	.12
Total negative life events	32.88 (31.79)	.00 – 182.00	34.17 (33.84)	.00 – 88.00	-.61	.04
Socio-economic adversity	3.09 (1.87)	.00 – 8.00	3.52 (2.05)	.00 – 9.00	-3.73***	.22

Note: Self-report data: male *ns* varied from 505-605; female *ns* varied from 468-554. School obtained data (GCA): male *n* = 263; female *n* = 254. Standardised scores for ability EI (*M* = 100; *SD* = 15) are presented. Effect sizes (*d*) correspond to tests of mean difference (*t*) between male and female scores; values of 0.2, 0.5, and 0.8 represent small, medium, large effects respectively (J. Cohen, 1988).
* $p < .05$; ** $p < .01$; *** $p < .001$

14.2 EI and mental health in adolescence: Predictive and incremental validity

To establish the nature of relationships between EI, internalising and externalising disorder in adolescence and examine how both 'types' of EI relate to allied constructs (i.e., the 'Big Five' personality traits; general cognitive ability), bivariate intercorrelations were produced (see table 8)[5]. As expected, measures of AEI and TEI were only weakly related. Overall, EI was inversely associated with symptomotology; however, whilst higher TEI was significantly associated with fewer depressive symptoms *and* less disruptive behaviour, higher levels of AEI were significantly linked to the latter only. In both cases, TEI shared more robust associations with mental health than AEI, with correlations representing medium $r > .30$ (disruptive behaviour) and large $r > .5$ (depression) effects (Cohen, 1992). TEI was significantly associated with all higher-order personality dimensions, sharing a negative association with Neuroticism (N) and positive relations with Conscientiousness (C), Agreeableness (A), Extraversion (E) and Openness to experience (O). With the exception of the latter, all effects were medium to large. Notably, mental health variables shared a similar patterning of association with personality, although depression was unrelated to O, and disruptive behaviour was unrelated to E. In contrast to TEI, AEI was only moderately associated with Openness and associations with Extraversion, Conscientiousness and Agreeableness were negligible (Neuroticism n.s.). General cognitive ability was more strongly associated with AEI (particularly understanding emotion) than TEI and only weakly associated with mental health.

[5] As noted in section 13.3.2 in order to ensure the fidelity of the present analysis (where the predictive 'performance' of AEI versus TEI was to be compared at the level of manifest variables), total AEI scores from participants were utilised to enable comparisons at the same level/bandwidth; mitigating the effects of measurement asymmetry and maximising measurement reliability (Gardner & Qualter, 2010).

Table 8: Correlations and whole-sample descriptive statistics for EI, mental health, personality and general cognitive ability

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. DEP	-													
2. DRB	.48***	-												
3. N	.50***	.19***	-											
4. E	-.19***	-.04	-.30***	-										
5. O	.01	-.09**	-.04	.33***	-									
6. C	-.23***	-.31***	-.30***	.16***	.28***	-								
7. A	-.22***	-.46***	-.35***	.08*	.28***	.49***	-							
8. GCA	-.14**	-.12**	-.07	.16**	.31***	.07	.18***	-						
9. TEI	-.55***	-.35***	-.55***	.36***	.25***	.42***	.41***	.20***	-					
10. AEI: Total	-.05	-.16***	.06	.10**	.37***	.09**	.20***	.39***	.17***	-				
11. AEI: PER	-.06*	-.09**	.00	-.01	.05	-.01	.01	.03	.06	.41***	-			
12. AEI: USE	-.05	-.13***	.03	.11***	.30***	.12***	.16***	.29***	.10**	.67***	.07*	-		
13. AEI: UND	-.04	-.12***	.06*	.07*	.31***	.02	.13***	.43***	.17***	.83***	.31***	.36***	-	
14. AEI: MAN	-.02	-.15***	.05	.08*	.30***	.11**	.21***	.24***	.14***	.84***	.23***	.39***	.59***	-
N	1148	1144	1041	1041	1041	1041	1041	517	1034	1011	1065	1062	1050	1016
Mean (*SD*)	11.52 (9.53)	7.25 (6.91)	2.83 (.68)	3.39 (.67)	3.62 (.62)	3.29 (.66)	3.53 (.63)	30.25 (3.47)	132.64 (21.33)	96.98 (15.04)	89.66 (17.16)	101.48 (16.68)	100.58 (14.54)	95.04 (14.55)
Range	.00 – 52.00	.00 – 41.00	1.00 – 5.00	1.25 - 5.00	1.40 – 5.00	1.33 – 5.00	1.00 – 5.00	16.20 – 37.00	62.00 – 203.00	55.37– 126.58	28.57 – 126.35	50.36– 137.65	50.36 – 137.65	62.59 – 124.06
Skew	1.07	1.56	.09	-.13	-.23	.12	-.05	-.81	.20	-.52	-.67	-.31	-.55	-.20
Kurtosis	1.11	3.14	.22	.05	-.30	.02	.07	1.15	.08	-.39	.52	-.34	-.40	-.98

Note: DEP = Depression; DRB = Disruptive behaviour; N = Neuroticism; E = Extraversion; O = Openness; C = Conscientiousness; A = Agreeableness; TEI = Trait emotional intelligence; AEI = Ability emotional intelligence; PER = perceiving emotion; USE = using emotion; UND = understanding emotion; MAN = managing emotion. Standardised scores for ability emotional intelligence (*M* = 100; *SD* = 15) are presented. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

14.2.1 Incremental validity of EI to predict mental health beyond personality and general cognitive ability

Given the presence of significant intercorrelations between EI, personality, general cognitive ability (GCA) and mental health, it is important to establish whether both TEI and AEI can contribute meaningfully to the prediction of depression and disruptive behaviour after controlling for the influence of these allied constructs. Consequently, four hierarchical regressions were conducted to assess the incremental contribution of AEI and TEI in this regard. Depression and disruptive behaviour scores were each separately regressed on gender and age (step 1), GCA (step 2), the Big Five personality dimensions (step 3) and EI (step 4). Table 9a presents regression statistics. Importantly, none of the regression models appeared to be adversely affected by multicollinearity amongst predictor variables (r <.9; variance inflation factors < 1.8; tolerance > .2).

Models predicting depression were significant; for AEI: F (9, 431) = 18.72, p < 0.001; R^2_{adj} = .27 and TEI: F (9, 451) = 30.74, p < 0.001; R^2_{adj} = .37. However, only TEI significantly contributed to the final step of the model, accounting for 10% of the variance in depression. Significant models for disruptive behaviour were also realised; for AEI: F (9, 431) = 16.50, p < 0.001; R^2_{adj} = .24, and TEI: F (9, 451) = 19.52, p < 0.001; R^2_{adj} = .27. Nevertheless, in contrast to depression, both AEI *and* TEI made significant incremental contributions to the prediction of externalising symptoms on the final step of the model, adding 1% and 4% respectively. Markedly, the Big Five personality dimensions accounted for the largest proportion of variance overall (depression: ΔR^2 = .24; disruptive behaviour: ΔR^2 = .20), whilst contributions from GCA at step 2 of the model were negligible (depression: ΔR^2 =.02 and disruptive behaviour: ΔR^2 =.01).

Table 9a: Hierarchical regression of mental health on sex, age, general cognitive ability, personality and emotional intelligence

	Depression						*Disruptive behaviour*					
Variable	β	*SE*	*t*	R^2	ΔR^2	ΔF	β	*SE*	*t*	R^2	ΔR^2	ΔF
Step 1				.02	.02	4.19*				.04	.04	8.76***
Sex	.12	.89	2.68**				-.15	.64	-3.20**			
Age	.06	.35	1.30				.11	.25	2.45*			
Step 2				.04	.02	10.62**				.05	.01	5.98*
GCA	-.15	.13	-3.26**				-.11	.09	-2.44*			
Step 3				.28	.24	29.53***				.25	.20	23.49***
Extraversion	-.07	.64	-1.65				.01	.47	.13			
Agreeableness	-.04	.74	-.78				-.39	.55	-7.68***			
Conscientiousness	-.11	.68	-2.22*				-.11	.51	-2.21*			
Neuroticism	.41	.67	8.69***				.04	.49	.87			
Openness	.13	.72	2.69**				.07	.54	1.52			
Step 4				.28	.00	2.69				.26	.01	6.28*
Ability EI	-.08	.03	-1.64				-.13	.02	-2.51*			
Step 4				.38	.10	75.40***				.28	.04	21.92***
Trait EI	-.43	.02	-8.68***				-.25	.02	-4.68***			

Note: For each model, variables across steps 1-3 remain the same with only variables on Step 4 changing (i.e., type of EI). Thus, results for Steps 1-3 are presented for each outcome only once.

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

14.3 Conditional indirect effects: EI, stressors, coping and mental health

Having established a robust, predictive link between EI and mental health, this final section explores *how* and *when* EI may be associated with better adolescent mental health, through an examination of the interrelationships between stressors (family dysfunction; negative life events, socio-economic adversity), EI (TEI; AEI) and coping styles (active, avoidant, support seeking) with reference to both internalising (depression) and externalising (disruptive behaviour) disorder. Specifically, analyses explore whether EI (in either form) can impact stressor-health pathways by moderating the indirect effect of stressors on disorder via coping. Put simply, the extent to which 'adaptive' coping *depends on* perceived or actual competency in emotional processing is examined. Following an initial overview of the techniques to be employed, preliminary descriptive trends relating to both observed and latent variables are presented. The final two sections document the testing of conditional indirect effects in relation to depression and disruptive behaviour.

14.3.1 Analysis methodology

Relationships between latent constructs were estimated via structural equation modelling (SEM) using MPlus version 6.12 (Muthen & Muthen, 2010). Compared with 'traditional' manifest regression techniques, SEM permits the modelling of measurement error (unreliability) in observed variables, thus leading to more efficient, unbiased parameter estimates (Marsh, Wen, & Hau, 2004). Nevertheless, EI researchers have been slow to adopt this methodology, despite repeated calls in the literature (e.g., Fiori & Antonakis, 2011). Hence much of the EI research base is limited in this regard, especially given that measurement error is known to have a particularly detrimental effect on any nonlinear (e.g., interaction) terms included in manifest models (Moosbrugger, Schermelleh-Engel, Kelava, & Klein, 2009). The current design addresses these limitations. Another central feature of the present analysis concerns the testing of multiple vs. simple mediation effects through coping. It is widely acknowledged that 'real-world' coping requires the flexible deployment of *multiple* strategies to combat

stressors; for instance, both avoidant (escape from negative emotionality) and active (problem-oriented towards future plans) styles may be appropriate for dealing with the death of a family member (Folkman & Moskowitz, 2004). Indeed, the simultaneous effect of coping strategies on internalising symptomotology has been documented recently in an adolescent sample (Gaylord-Harden, Cunningham, Holmbeck, & Grant, 2010). Consequently, the practice of testing simple mediation effects involving isolated coping styles could be theoretically misleading. Moreover, from a methodological standpoint, modelling complex mediation is preferable; parameter bias arising from individual testing of intercorrelated mediators is reduced and by contrasting the relative magnitudes of significant specific effects, the technique can illuminate the *unique* contribution of a particular mediator (i.e., coping strategy) over others (Preacher & Hayes, 2008). However, despite the merits of this approach, there is currently a dearth of EI research deconstructing stressor-health processes in the context of multiple coping strategies; examining separate links between constructs has so far been the norm. The current analysis seeks to remedy this shortcoming.

To test for the presence of conditional (i.e., moderated) indirect effects, the Latent Moderated Structural Equations (LMS) approach (Klein & Moosbrugger, 2000) is used. Whilst a variety of methods for estimating non-linear effects in latent models have been proposed, including 'constrained' (Joreskog & Yang, 1996) and 'unconstrained' (Marsh, Wen et al., 2004) approaches, the LMS distribution analytic technique differs by directly utilising the first-order variance of the latent predictors to estimate the latent interaction. Hence, the construction of observed product indicators and complex model constraints to specify error variances/factor loadings for a nonlinear measurement model are not required, and relationships between the latent interaction and other latent predictors are not estimated (Kelava et al., 2011; Moosbrugger et al., 2009). Instead, the joint distribution of the interaction effect (vector XY) represents the weighted sum of a mixture distribution (means, variances, covariances) of the observed predictor variables, conditioned on the latent criterion (given that the latent predictor and moderator approximate a normal distribution) (Kelava et al., 2011). In this way the LMS method is advantageous over product indicator approaches reliant upon normal theory; no distributional assumptions are imposed on the interaction effect (product indicators and

criterion indicators) which is known to be non-normal in nonlinear models (Moosbrugger, Schermelleh-Engel, & Klein, 1997). Importantly for the current analyses, LMS has been shown to outperform un/constrained approaches in terms of estimation efficiency (less bias in the standard errors of latent variances/covariances) and greater power to detect interaction effects in complex models with correlated linear predictors under increasing multicollinearity (Kelava, Moosbrugger, Dimitruk, & Schermelleh-Engel, 2008; Kelava et al., 2011; Moosbrugger et al., 2009).

Model specification follows guidelines for testing conditional indirect effects proposed by Preacher, Rucker and Hayes (2007), adapted to the latent modelling context. Within this framework, it is possible to operationalise each the three research questions outlined in section 12.5 via the testing of a series of structural equation models represented in figures 9 and 10. Figure 9 addresses whether EI interacts with stressors at an early 'upstream' stage to either affect mental health directly, or, mobilise adaptive coping to indirectly impact mental health (via 'a' paths). Conversely, figure 10 explores whether EI is implicated further 'downstream' to play a role in coping implementation ('b' paths); rather than drive selection of coping strategies, the success of coping efforts indexed via reduced symptomotology could depend on EI. The LMS method in Mplus uses adaptive numerical integration with a default of 15 integration points per dimension; here, 'a' path models contain 2 dimensions of integration whilst 'b' path models comprise 4. The computational burden for estimation involving 3-4 dimensions of integration is described as heavy (Muthen & Muthen, 2010) and models with more than 4 dimensions are currently not recommended given numerical instability (L. Muthen, personal communication 15 February 2012). Consequently, this precluded the estimation of *nested* model comparisons using the Loglikelihood ratio (i.e., -2 * loglikelihood difference), given that the combined, fully constrained model would necessitate 5 dimensions of integration. Instead, in line with recent recommendations (Kelava et al., 2011; Lee & Song, 2008), the current analysis adjudged *non-nested* model fit using the Bayesian Information Criterion (BIC) in concert with guidelines proposed by Raferty (1995) for interpreting Bayes factors (and ΔBIC).

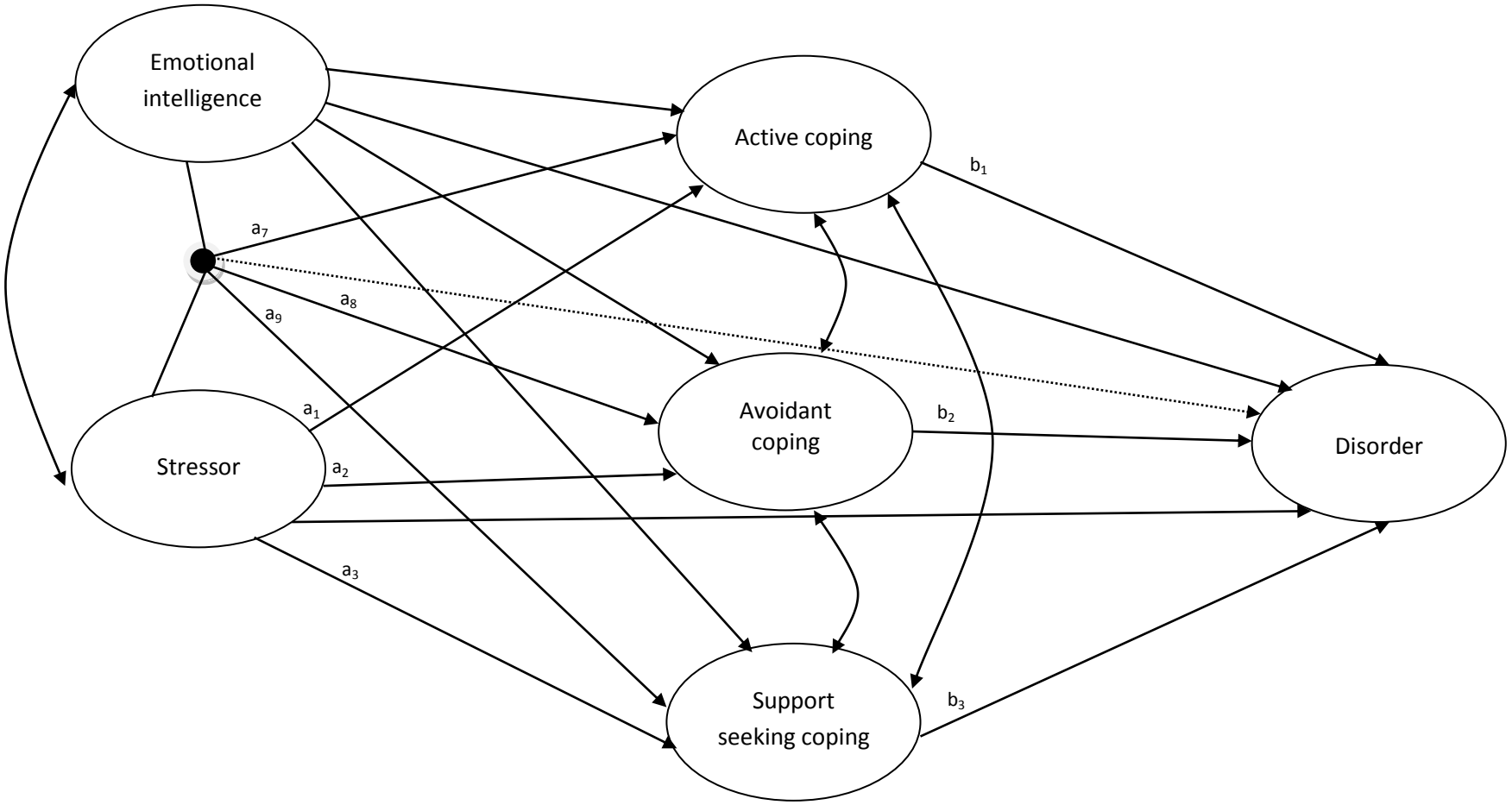


Figure 9: Conditional indirect effects model testing the effect of stressors (family dysfunction; negative life events; socio-economic adversity) on disorder (depression; disruptive behaviour) through coping (active, avoidant, support seeking) moderated by EI acting on the 'a' pathways (stressor x EI).

Note: Interaction denoted by filled circle. Dotted line represents the direct effect of the interaction on disorder and double headed arrows represent covariances. For ease of interpretation the full measurement model is not shown (see Appendix D). All latent variables were regressed onto control variables (age, sex).

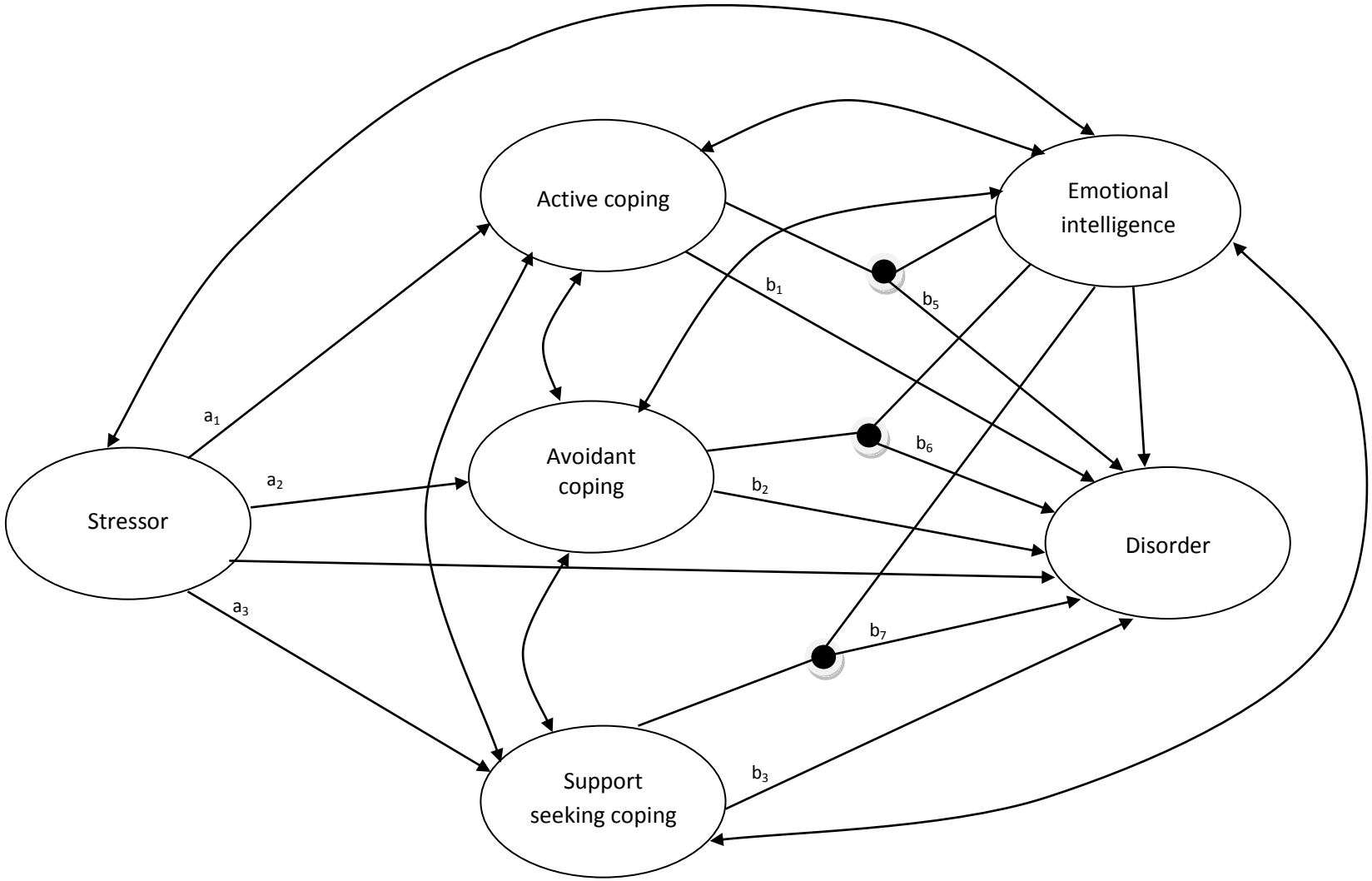


Figure 10: Conditional indirect effects model testing the effect of stressors (family dysfunction; negative life events; socio-economic adversity) on disorder (depression; disruptive behaviour) through coping (active, avoidant, support seeking) moderated by EI acting on the 'b' pathways (coping x EI).

Note: Interactions denoted by filled circles; double headed arrows represent covariances. For ease of interpretation the full measurement model is not shown (see Appendix D). All latent variables were regressed onto control variables (age, sex).

14.3.2 Model construction and descriptive statistics

As before, sample *N* = 1159 with preliminary data screening outlined previously in section 14.1. Construction of individual latent variable measurement models representing active, avoidant, support seeking coping, AEI, TEI, family dysfunction, depression, disruptive behaviour and negative life events are described across sections 13.3.1 – 13.3.4 and 13.3.6 – 13.3.7, with corresponding figures located in Appendix D. Latent socio-economic adversity (SEA) was indicated by the single, manifest SEA scale score, with residual variance fixed to 2.203 to reflect measurement reliability.[6] A series of basic measurement models (with all latent covariances estimated) were run to ascertain the overall fit of each of the 12 combinations of predictors and outcomes that would form the basis of subsequent nonlinear modelling. Predictor scaling and model identification was achieved by fixing factor variances to 1, with all indicator loadings and residual variances freely estimated. To facilitate interpretation of interaction effects, latent depression and disruptive behaviour were scaled by constraining one of the four indicator loadings to 1. As Table 10 shows, these basic CFA models fitted the data very well; all RMSEA/SRMR values $<$ .6 and CFI values > .90, with the majority ≥ .95. Moreover, all factor loadings remained statistically significant (p < .001).

[6] computed as (1 – reliability) * sample variance

Table 10: Measurement model fit indices

Model	MLR X^2 (*df*)	Absolute fit indices		Incremental fit indices	
		RMSEA [90% CI]	SRMR	CFI	TFI
AEI, NLE, DEP	763.154* (260)	.04 [.03-.04]	.04	.95	.95
AEI, NLE, DRB	741.618* (260)	.04 [.03-.04]	.04	.95	.95
AEI, SEA, DEP	511.463* (175)	.04 [.04-.05]	.04	.96	.95
AEI, SEA, DRB	499.534* (175)	.04 [.03-.04]	.03	.96	.95
AEI, FD, DEP	650.679* (237)	.04 [.03-.04]	.04	.96	.95
AEI, FD, DRB	636.461* (237)	.04 [.03-.04]	.04	.96	.95
TEI, FD, DEP	733.455* (237)	.04 [.04-.05]	.04	.95	.95
TEI, FD, DRB	741.048* (237)	.04 [.04-.05]	.04	.95	.94
TEI, NLE, DEP	889.277* (260)	.05 [.04-.05]	.04	.94	.94
TEI, NLE, DRB	883.038* (260)	.05 [.04-.05]	.04	.94	.93
TEI, SEA, DEP	606.462* (175)	.05 [.04-.05]	.04	.95	.94
TEI, SEA, DRB	607.977* (175)	.05 [.04-.05]	.04	.95	.93

Notes: AEI = ability emotional intelligence; TEI = trait emotional intelligence; NLE = negative life events; SEA = socio-economic adversity; FD = family dysfunction; DEP = depression; DRB = disruptive behaviour; *df* = degrees of freedom; CFI = Comparative Fit Index; TLI= Tucker-Lewis Index; SRMR = Standardised Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation. All estimated models included the latent variables active, avoidant and support seeking coping. CFI/TLI values >.95 and RMSEA/SRMR values < .6 signify a well-fitting model (Hu & Bentler, 1999). CFI values in excess of .90 and RMSEA values up to .08 indicate a moderate level of fit (Marsh, Hau et al., 2004). * $p < .001$

Latent correlations are displayed in the upper portion of Table 11, together with descriptive statistics and correlations between manifest variables (descriptive statistics, including skew/kurtosis values for the latent indicators, can be found in the relevant sections of Appendix D)[7]. As expected, correlations between latent variables tended to be larger than those between respective manifest variables, given the attenuation due to measurement error. Depression was inversely associated with active coping and TEI (though AEI n.s.), whilst shared positive relationships with avoidant coping, family

[7] With the exception of NLE, skew and kurtosis values for predictor variables were acceptable. Whilst is has been suggested that highly non-normal predictor distributions can lead to Type I error when utilising ML-based approaches to nonlinear effects modelling (Marsh, Wen et al., 2004), the LMS method employs an expectation-maximisation algorithm with MLR estimation which generates robust standard errors for parameter estimates. Nevertheless, as a precautionary measure, analyses were re-run with log-transformed NLE. Substantive conclusions did not differ from analyses based on non-transformed NLE hence, for simplicity, the latter is reported hereafter.

dysfunction and negative life events. Conversely, a higher level of disruptive behaviour symptomotology was associated with less coping *per se* (i.e., across all three styles), in addition to lower EI and higher levels of family dysfunction and negative life events. Whilst socio-economic adversity was unrelated to symptomotology and coping, poverty was inversely linked to both forms of EI, as were negative life events and family dysfunction (with correlations representing medium to large effects). Those high in trait and ability EI more frequently engaged in active and support seeking strategies which were in turn linked to lower levels of family dysfunction. In contrast, avoidant coping was unrelated to all stressors and only weakly associated with lower TEI (AEI n.s.).

Before proceeding, it is important to note that the absence of an initial 'total' effect of a predictor variable on the criterion (e.g., between socio-economic adversity and disorder) does not preclude the examination of indirect effects; measurement precision, sample size and ultimately the relative power of *a* and *b* paths (stronger) compared to the total effect of *X* on *Y* (weaker), make the detection of significant indirect effects in the presence of a non-significant total effect possible (Rucker, Preacher, Tormala, & Petty, 2011). Indeed, as a total effect essentially represents the 'end-product' of numerous paths of influence (be that indirect or direct, either present or absent in the final model) it is plausible that multiple indirect effects may exert *opposing* intermediate influences on the criterion, cancelling each other out, to produce a non-significant total effect (Hayes, 2009). With this in mind, analysis now turns to detection of such effects.

Table 11: Correlations and whole-sample descriptive statistics for EI, mental health, coping and stressors

Variable	1	2	3	4	5	6	7	8	9	10
1. DEP	-	N/A	-.08*	.18***	-.06	-.68***	-.05	.43***	.27***	.06
2. DRB	.48***	-	-.17***	-.11**	-.15***	-.44***	-.18***	.40***	.31***	.01
3. ACTIVE	-.07*	-.16***	-	.72***	.64***	.30***	.14***	-.26***	-.04	-.07
4. AVOID	.14***	-.07*	.59***	-	.55***	-.10*	.03	.01	.04	.08
5. SUPPORT	-.06	-.14***	.62***	.48***	-	.21***	.14***	-.27***	-.02	.06
6. TEI	-.55***	-.35***	.23***	-.09**	.17***	-	N/A	-.58***	-.31***	-.19***
7. AEI (Tot)	-.05	-.16***	.10**	.01	.12***	.17***	-	-.27***	-.14***	-.31***
8. FD	.42***	.38***	-.22***	.02	-.24***	-.48***	-.24***	-	N/A	N/A
9. NLE	.26***	.27***	-.03	.05	.02	-.24***	-.13***	.23***	-	N/A
10. SEA	.04	.02	-.05	.06	.03	-.11***	-.16***	.08*	.04	-
N	1148	1144	1015	1015	1015	1034	1011	1115	973	1159
Mean	11.52	7.25	2.38	2.38	2.02	132.64	96.98	1.93	33.50	3.30
(*SD*)	(9.53)	(6.91)	(.57)	(.53)	(.63)	(21.33)	(15.04)	(.50)	(32.78)	(1.97)
Range	.00 – 52.00	.00 – 41.00	1.00 – 4.00	1.00 – 4.00	1.00 – 4.00	62.00 – 203.00	55.37 – 126.58	1.00 – 4.00	.00 – 188	.00 9.00
Skew	1.07	1.56	.16	.05	.48	.20	-.52	.27	1.71	.23
Kurtosis	1.11	3.14	.01	.03	-.16	.08	-.39	.07	3.30	-.50

Note: DEP = Depression; DRB = Disruptive behaviour; ACTIVE = active coping; AVOID = avoidant coping; SUPPORT = support seeking coping; TEI = trait emotional intelligence; AEI = ability emotional intelligence; FD = family dysfunction; NLE = total negative life events; SEA = socio-economic adversity. Manifest correlations appear below the diagonal; average latent correlations from baseline measurement models are presented above the diagonal (N/A = not applicable: latent correlation not estimated). Standardised manifest scores for ability emotional intelligence (*M* = 100; *SD* = 15) are displayed.

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

14.3.3 The indirect effect of stressors on depression conditional on EI

Six groups of non-nested models were specified to test the effects of each of the three stressors (family dysfunction, negative life events, socio-economic adversity) on depression symptomotology, moderated by EI (either trait or ability). To address whether EI exerted an effect *directly* or *indirectly* (via coping), each of the groups comprised a set of four competing sub-models. Serving as a reference point, model 1 included the baseline measurement model plus the structural paths depicted in figures 9 and 10 (excluding coping on EI), with all interaction terms omitted. Across models 2 - 4, interaction terms were systematically introduced; model 2 tested for moderation of the direct effect (i.e., stressor x EI on depression), model 3 examined moderation of the indirect effect through coping via the 'a' paths (i.e., stressor x EI on active, avoidant and support seeking coping) and finally, model 4 tested for conditional indirect effects via the 'b' paths (i.e., each coping style x EI on depression). In models containing significant interaction parameters, information criteria were used to establish preferential model fit. Lower Bayesian (BIC) and Akaike's information criterion (AIC) values signify better fit, however Raferty (1995) proposed specific guidelines for interpreting relative 'effect sizes' for ΔBIC derived from pairwise comparisons (i.e., BIC model 2 – BIC model 1); values greater than 0 indicate no support for model 2; -2 < ΔBIC < 0 = weak support; -6 < ΔBIC < -2 = positive support; -10 < ΔBIC < -6 = strong support; ΔBIC < -10 represents decisive support for model 2. Hence, these criteria were used when adjudging model fit throughout.

Table 12 presents results for TEI. At baseline (i.e., model 1) no significant *unconditional* indirect effects were detected, however, as Preacher et al., (2007) noted these are not a necessary requirement for exploring *conditional* indirect effects. Model 2 estimations revealed significant 'direct' interactions involving two of the three stressors, suggesting that TEI attenuates the effects of both family dysfunction and negative life events on depression. However, results for model 4 indicated that this effect could be explained with reference to coping; whilst there was no support for the presence of conditional indirect effects via the 'a' pathways (i.e., coping mobilisation: model 3), TEI significantly moderated the effect of family dysfunction on depression via the 'b'

pathways (i.e., coping implementation: model 4). Here, statistically significant interactions implied a protective effect; for those with higher TEI, the effect of active coping on depression is larger (*B* = .98, *SE* =.36, *p* = .005) and the effect of avoidant coping smaller (*B* = -1.24, *SE* =.36, *p* = .001) than for those with lower perceived emotional competency (see Appendix H, figure 11 for full structural diagram with parameter estimates). Following established procedures (Aiken & West, 1991; Preacher et al., 2007), conditional indirect effects were estimated at high (+3 *SD* from the mean) through to low levels (-3 *SD* from the mean) of TEI. Analyses found that whilst simple slopes involving both active and avoidant coping do change as a function of TEI, only the conditional indirect effect through active coping was detectably different from zero. At mean levels of TEI, a single unit change in family dysfunction triggers an *increase* of .19 in depression, per a *decrease* of .27 in active coping. However, as figure 12 illustrates, the indirect effect becomes negative at *high* levels of TEI; hence, the active coping efforts of adolescents with higher perceived emotional competency (TEI levels ≥ +2 SD from the mean, scoring 177.30 or more) are more effective in reducing depression (*B* = - .61, *SE* =.16, *p* < .001) when faced with family dysfunction, relative to those with lower self-competency (*B* = .99, *SE* =.53, *p* = .06) for whom depression increases.

Although conditional indirect effects were not significant in models predicting depression from negative life events and socio-economic adversity, all three 'b' path models offered superior fits of the data when compared to corresponding 'baseline' (ΔBIC FD: - 90.07; NLE: - 77.42; SEA: - 80.41), 'direct effect' (ΔBIC FD: - 47.27; NLE: - 65.53; SEA: - 78.92) and 'a path' models (ΔBIC FD: - 105.33; NLE: - 93.59; SEA: - 82.47) , with effect sizes suggesting very strong support for these models. AIC values were similarly lower for all 'b' path models.

Table 12: Conditional indirect effects for stressors on depression moderated by trait emotional intelligence

Model	AIC/BIC (*n* parameters)	Stressor x TEI on disorder	Stressor x TEI on coping			Coping x TEI on disorder			Conditional indirect effects at level of TEI (+/-3 *SD* from *M*)							
			Active	Avoid	Support	Active	Avoid	Support		-3	-2	-1	0	1	2	3
Family dysfunction	1. 58431.88 58932.36 (99)	-	-	-	-	-	-	-	Active	.99	.72	.46	.19	-.08	-.34*	-.61***
	2. 58373.91 58879.44 (100)	-.36***	-	-	-	-	-	-	Avoid	.06	.04	.03	.01	-.00	-.02	-.03
	3. 58431.98 58947.62 (102)	-	.00	.07	.01	-	-	-	Support	-.04	-.02	-.01	.01	.02	.03	.05
	4. 58326.64 58842.29 (102)	-	-	-	-	.98**	-1.24**	-.05								
Negative life events	1. 83610.49 84126.13 (102)	-	-	-	-	-	-	-	Active	-	-	-	-	-	-	-
	2. 83593.54 84114.24 (103)	-.28***	-	-	-	-	-	-	Avoid	-	-	-	-	-	-	-
	3. 83611.49 84142.30 (105)	-	.09	.04	.04	-	-	-	Support	-	-	-	-	-	-	-
	4. 83517.90 84048.71 (105)	-	-	-	-	1.03*	-1.27*	-.02								
Socio-economic adversity	1. 57032.06 57481.98 (89)	-	-	-	-	-	-	-	Active	-	-	-	-	-	-	-
	2. 57025.51 57480.48 (90)	-.33	-	-	-	-	-	-	Avoid	-	-	-	-	-	-	-
	3. 57018.94 57484.03 (92)	-	.00	.20*	.14*	-	-	-	Support	-	-	-	-	-	-	-
	4. 56936.47 57401.56 (92)	-	-	-	-	1.04*	-1.27*	-.03								

Notes: AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion; Active = active coping; Avoid = avoidant coping; Support = support seeking coping; TEI= trait emotional intelligence. Model 1: baseline measurement model with regression coefficients; Model 2: direct effect interaction only; Model 3: 'a' path interactions only; Model 4: 'b' path interactions only. Models highlighted in bold type have significant conditional indirect effects - point estimates displayed in column 6. Unstandardised estimates presented throughout; latent variables standardised via scaling prior to analysis. *** $p < .001$, ** $p < .01$, * $p < .05$

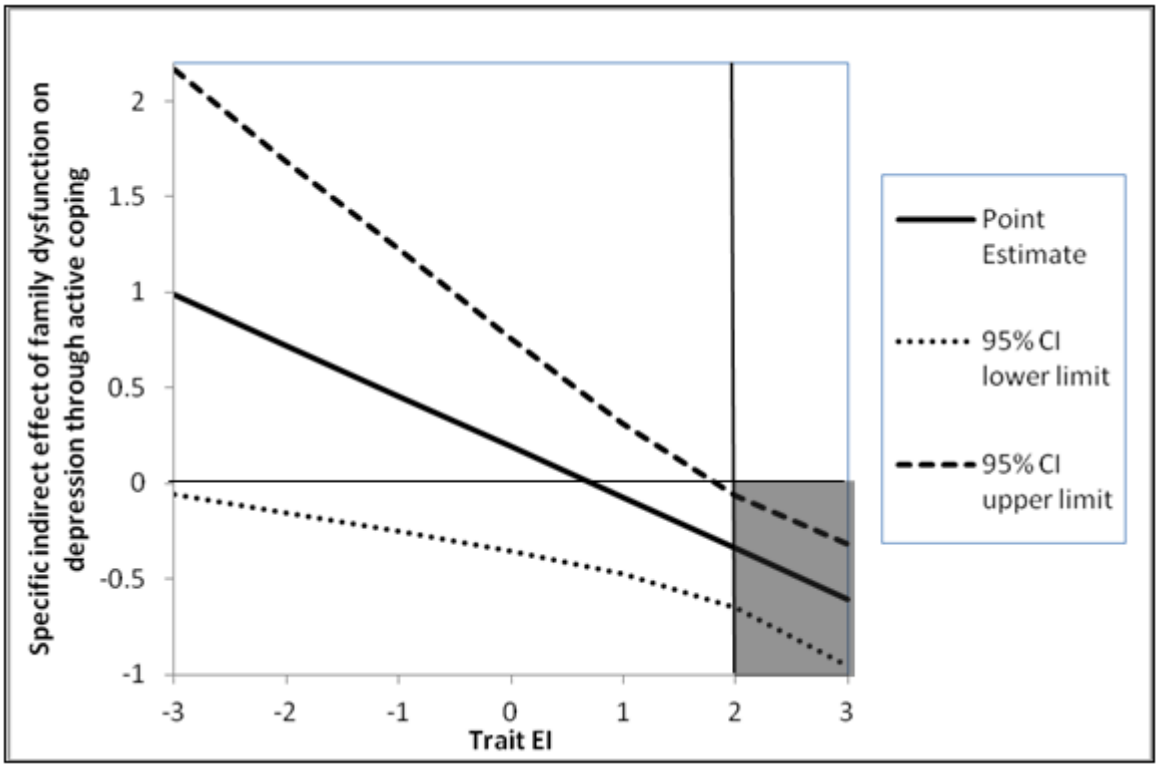


Figure 12: A plot of the specific indirect effect of family dysfunction on depression through active coping versus the moderator trait EI with confidence bands.

Notes: The horizontal line indicates a specific indirect effect of zero; the vertical line represents the boundary of the region of significance, highlighted within the shaded area (trait EI ≥ 2SD from the mean). Confidence interval estimates derived from Monte Carlo re-sampling with 20,000 repetitions (Selig & Preacher, 2008).

Table 13 displays results for conditional indirect effects on depression involving AEI. Significant (unconditional) indirect effects were present in baseline models predicting depression from family dysfunction (total indirect effect = .13, *SE* = .05, *p* = .004) and negative life events (total indirect effect = .08, *SE* = .04, *p* = .018). Model estimation suggested that AEI directly moderated the effect of negative life events, but not family dysfunction or socio-economical adversity, on depression. However, AEI also significantly interacted with negative life events (*B* = .15, *SE* =.05, *p* = .002) and family dysfunction (*B* = .14, *SE* =.05, *p* = .007) to predict use of avoidant coping (model 3), which, with post-hoc probing at high (+3 *SD*) to low levels (-3 *SD*) of AEI, resulted in significant negative conditional indirect effects in both models (see Appendix H, figures 13 and 14 for full path diagrams). Specifically, for every single unit change in family dysfunction, depression should *decrease* by .38, as avoidant coping *decreases* by .61, conditioned on mean AEI. Similarly, for a single unit change in negative life events, depression reduces by .59, per a reduction of .62 in avoidant coping given average levels of AEI. As figures 15

and 16 illustrate, both effects were stronger at *lower* levels of AEI; hence, individuals with emotional ability scores ≤ +2 *SD* from the mean (i.e., 127.06 and below) use less avoidant coping, thereby reducing depression when faced with family dysfunction (*B* = - .63, *SE* =.28, *p* = .023) and negative life events (*B* = - 1.04, *SE* = .41, *p* = .011) compared to those with extremely high emotional capabilities (FD: *B* = -.13, *SE* = .08, *p* = .105; NLE: *B* = -.15, *SE* = .10, *p* = .130). Both models offered a preferential fit to the data compared to corresponding baseline (ΔBIC FD: - 11.27; NLE: -11.26) and direct effect models (ΔBIC FD: - 18.31; NLE: -14.27) with effect sizes indicating decisive support for these 'a' path explanations. Notably, there were no significant conditional effects in models examining the effect of coping implementation on depression ('b' paths), or in any models exploring the effect of socio-economic adversity on depression.

Summary: Results suggest that adolescents with higher TEI are more effective at *implementing* active coping to reduce depression, but this is only beneficial when facing family dysfunction, not negative life events or socio-economic adversity. Conversely, adolescents with lower AEI *choose* avoidant styles less often to reduce depression but again, this effect is context-specific; a reduction in avoidant coping and depression is manifest only when facing negative life events and family dysfunction, not socio-economic adversity.

Table 13: Conditional indirect effects for stressors on depression moderated by ability emotional intelligence

Model	AIC/BIC (*n* parameters)	Stressor x AEI on disorder	Stressor x AEI on coping			Coping x AEI on disorder			Conditional indirect effects at level of AEI (+/-3 *SD* from *M*)							
			Active	Avoid	Support	Active	Avoid	Support		-3	-2	-1	0	1	2	3
Family dysfunction	1. 82042.67 82543.15 (99)	-	-	-	-	-	-	-	Active	-.05	-.03	-.01	.01	.03	.05	.07
	2. 82044.66 82550.19 (100)	.01	-	-	-	-	-	-	Avoid	-.63*	-.55*	-.46*	-.38*	-.29*	-.21	-.13
	3. 82016.24 82531.88 (102)	**-**	-.05	.14**	-.09	-	-	-	Support	.01	.00	.00	.00	.00	-.00	-.00
	4. 82044.10 82559.74 (102)	-	-	-	-	.23	-.37	.02								
Negative life events	1. 107196.59 107712.24 (102)	-	-	-	-	-	-	-	Active	.20	.18	.15	.13	.11	.08	.06
	2. 107184.44 107715.25 (103)	.28***	-	-	-	-	-	-	Avoid	-1.04*	-.89*	-.74*	-.59*	-.45*	-.30*	-.15
	3. 107180.24 107700.98 (105)	**-**	.03	.15**	.02	-	-	-	Support	.03	.03	.03	.02	.02	.02	.01
	4. 107194.93 107725.74 (105)	-	-	-	-	.23	-.42	-.00								
Socio-economic adversity	1. 80604.23 81054.15 (89)	-	-	-	-	-	-	-	Active	-	-	-	-	-	-	-
	2. 80604.02 81059.00 (90)	-.17	-	-	-	-	-	-	Avoid	-	-	-	-	-	-	-
	3. 80589.41 81054.50 (92)	-	-.09	.07	.08	-	-	-	Support	-	-	-	-	-	-	-
	4. 80604.71 81069.80 (92)	-	-	-	-	.23	-.34	-.05								

Notes: AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion; Active = active coping; Avoid = avoidant coping; Support = support seeking coping; AEI= ability emotional intelligence. Model 1: baseline measurement model with regression coefficients; Model 2: direct effect interaction only; Model 3: 'a' path interactions only; Model 4: 'b' path interactions only. Models highlighted in bold type have significant conditional indirect effects - point estimates displayed in column 6. Unstandardised estimates presented throughout; latent variables standardised via scaling prior to analysis. *** $p < .001$, ** $p < .01$, * $p < .05$

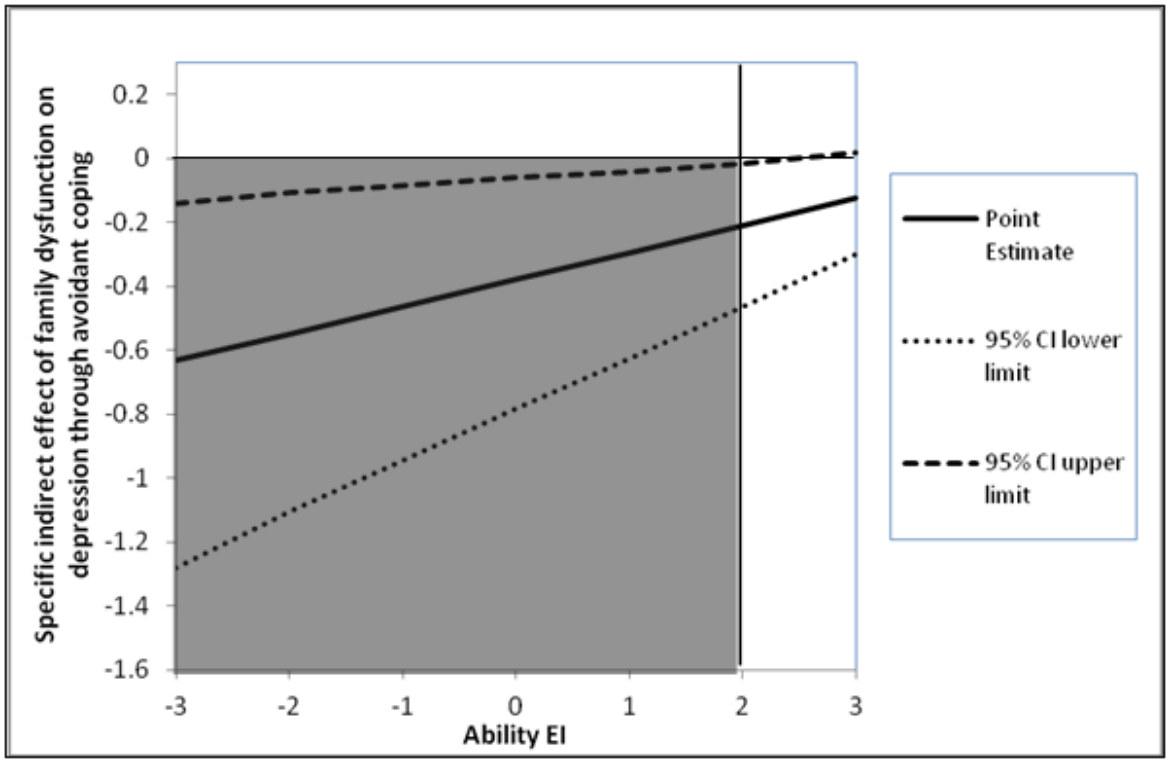


Figure 15: A plot of the specific indirect effect of family dysfunction on depression through avoidant coping versus the moderator ability EI with confidence bands. *Notes:* The horizontal line indicates a specific indirect effect of zero; the vertical line represents the boundary of the region of significance, highlighted within the shaded area (ability EI ≤ 2SD from the mean). Confidence interval estimates derived from Monte Carlo re-sampling; 20,000 repetitions (Selig & Preacher, 2008).

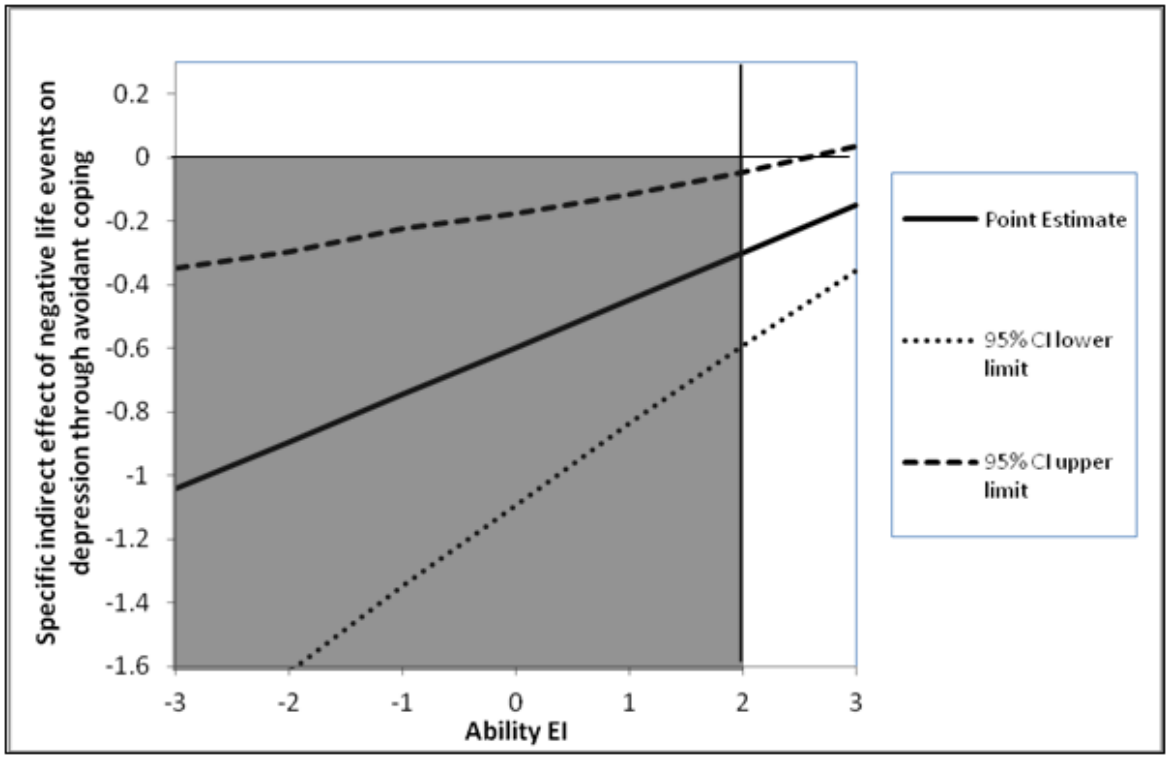


Figure 16: A plot of the specific indirect effect of negative life events on depression through avoidant coping versus the moderator ability EI with confidence bands. *Notes:* The horizontal line indicates a specific indirect effect of zero; the vertical line represents the boundary of the region of significance, highlighted within the shaded area (ability EI ≤ 2SD from the mean). Confidence interval estimates derived from Monte Carlo re-sampling; 20,000 repetitions (Selig & Preacher, 2008).

14.3.4 The indirect effect of stressors on disruptive behaviour conditional on EI

A further six groups of non-nested models were specified to test the effects of each of the three stressors (family dysfunction, negative life events, socio-economic adversity) on disruptive behaviour, moderated by EI (either trait or ability). As before, each of the groups comprised a set of four competing sub-models to facilitate comparison of *direct* and *indirect* effects via coping.

Table 14 displays results for TEI. Significant (unconditional) indirect effects were present in the baseline model predicting disruptive behaviour from family dysfunction (total indirect effect = -.10, *SE* = .03, *p* = .004). Nevertheless, subsequent model estimation indicated that relationships between each of the three stressors and disruptive behaviour were modified *directly* by TEI; there were no detectable, indirect influences on either the selection (despite significant 'a' path interactions) or implementation of coping styles to impact externalising symptomotology in the context of stressors. Indeed, pairwise comparison of BIC values indicted decisive support for direct effect models when compared with 'a' path explanations (ΔBIC FD: - 15.36; NLE: - 14.38, SEA: -107.46). The strength of supporting evidence differed with reference to baseline models; whilst direct effect models predicting disruptive behaviour from socio-economic adversity (ΔBIC = - 111.45) and family dysfunction (ΔBIC = - 7.52) could be considered 'decisive' and 'very strong', only 'weak' support was found for the negative life events model.

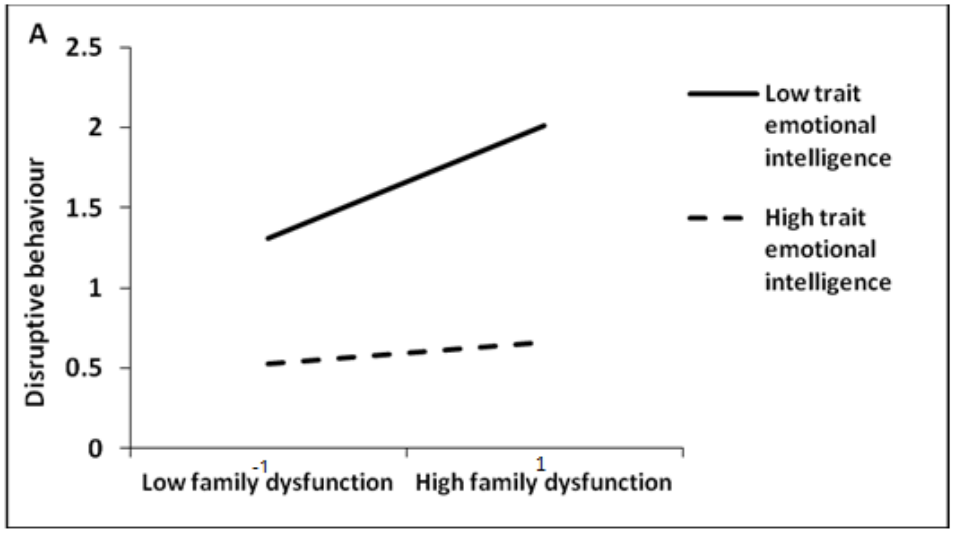
Each effect was probed at conditional values of TEI (-3 to +3 *SD* from the mean with centred predictor variables: latent mean = 0, variance set to 1). As figure 17A illustrates, the TEI x family dysfunction interaction was ordinal within the possible range of values of the stressor; simple regression lines would cross at 3.75 *SD* below the mean of family dysfunction. Consequently, those with *high* perceived emotional competency reported *less* disruptive behaviour at high levels of FD (*B* = -.43, SE = .16 *p* < .001) relative to those with low levels of perceived emotional competency (*B* = .43, SE = .16, *p* < .001). A similar, ordinal interaction was found for the effect of TEI x negative life events on

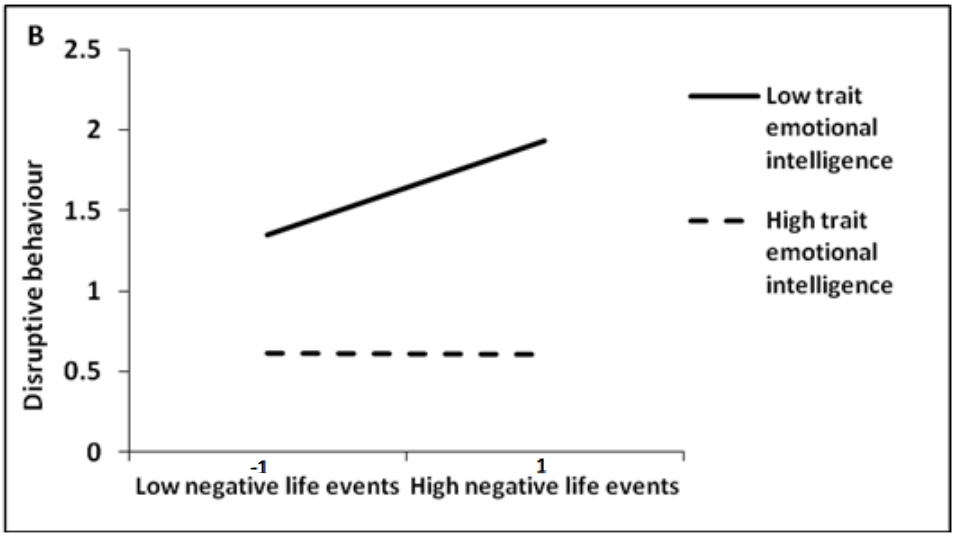
disruptive behaviour (figure 17B), with the point of intersection occurring at - 3.51 *SD* from the mean of negative life events. Once again, *higher* TEI was related to *fewer* externalising symptoms at higher levels of NLE (*B* = -.44, SE = .21 $p < .05$), in comparison to those with lower TEI (*B* = .44, SE = .21 $p < .05$). This trend is continued in Figure 17C; TEI was also protective against the effects of poverty on disruptive behaviour at high (*B* = -1.57, SE = .11, $p < .001$) relative to low (*B* = 1.57, SE = .11, $p < .001$) levels of competency. Here, the crossing point occurs at 1.25 *SD* below the mean of socio-economic adversity.

Table 14: Conditional indirect effects for stressors on disruptive behaviour moderated by trait emotional intelligence

Model	AIC/BIC (*n* parameters)	Stressor x TEI on disorder	Stressor x TEI on coping			Coping x TEI on disorder			Conditional indirect effects at level of TEI (+/-3 *SD* from *M*)							
			Active	Avoid	Support	Active	Avoid	Support		-3	-2	-1	0	1	2	3
Family dysfunction	1. 56657.33 57157.81 (99)	-	-	-	-	-	-	-	Active	-	-	-	-	-	-	-
	2. 56644.76 57150.29 (100)	-.14**	-	-	-	-	-	-	Avoid	-	-	-	-	-	-	-
	3. 56650.01 57165.65 (102)	-	.03	.12**	.02	-	-	-	Support	-	-	-	-	-	-	-
	4. 56654.72 57170.36 (102)	-	-	-	-	-.08	.22	-.01								
Negative life events	1. 81822.11 82337.75 (102)	-	-	-	-	-	-	-	Active	-	-	-	-	-	-	-
	2. 81815.38 82336.08 (103)	-.15*	-	-	-	-	-	-	Avoid	-	-	-	-	-	-	-
	3. 81819.65 82350.46 (105)	-	.12*	.10	.04	-	-	-	Support	-	-	-	-	-	-	-
	4. 81810.97 82341.77 (105)	-	-	-	-	-.18	.32	.05								
Socio-economic adversity	1. 55269.51 55719.43 (89)	-	-	-	-	-	-	-	Active	-	-	-	-	-	-	-
	2. 55153.00 55607.98 (90)	-.52***	-	-	-	-	-	-	Avoid	-	-	-	-	-	-	-
	3. 55250.35 55715.44 (92)	-	-.04	.25**	.10	-	-	-	Support	-	-	-	-	-	-	-
	4. 55261.14 55726.23 (92)	-	-	-	-	-.09	.27	.01								

Notes: AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion; Active = active coping; Avoid = avoidant coping; Support = support seeking coping; TEI= trait emotional intelligence. Model 1: baseline measurement model with regression coefficients; Model 2: direct effect interaction only; Model 3: 'a' path interactions only; Model 4: 'b' path interactions only. Models highlighted in bold type have significant conditional indirect effects – point estimates displayed in column 6. Unstandardised estimates presented throughout; latent variables standardised via scaling prior to analysis. *** $p < .001$, ** $p < .01$, * $p < .05$





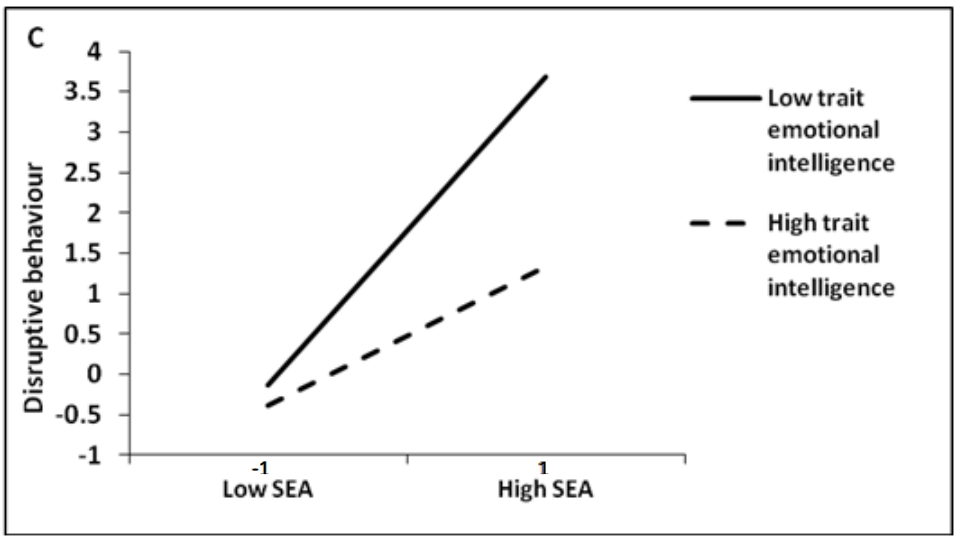


Figure 17: Data plots of 'direct effect' simple slope interactions for (A) trait emotional intelligence (TEI) x family dysfunction (B) TEI x negative life events and (C) TEI x socio economic adversity (SEA) on disruptive behaviour.

Finally, Table 15 displays results for conditional indirect effects on disruptive behaviour involving AEI. No significant (unconditional) indirect effects were detected initially in baseline models. Subsequent model estimation suggested that AEI *directly* attenuated the effects of socio-economic adversity on externalising symptomotology (*B* = -.42, SE = .12, $p < .001$), with pairwise BIC contrasts finding model 2 preferable to baseline (ΔBIC = -32.25), 'a' (ΔBIC = -29.03) and 'b' path (ΔBIC = -9.64) models. Figure 18 illustrates post-hoc probing of this effect at conditional values of AEI (-3 to +3 *SD* from the mean onto standardised latent predictors). Those with *high* emotional ability reported *less* disruptive behaviour at high levels of adversity (*B* = -1.25, SE = .35 $p < .001$) relative to those with low emotional skill (*B* = 1.25, SE = .35, $p < .001$), with simple regression lines expected to cross at 3.02 *SD* below the mean of socio-economic adversity. Conversely, there were no direct effects in models predicting externalising symptoms from family dysfunction or negative life events, with pairwise BIC contrasts favouring 'b' path models. However, whilst AEI significantly interacted with family dysfunction and negative life events to influence the selection of avoidant coping (model 3) and the implementation of both active and avoidant coping (model 4), none of these effects produced significant conditional indirect effects that were detectably different from zero within the plausible range of AEI skill (i.e., -3 to +3 *SD* from the mean).

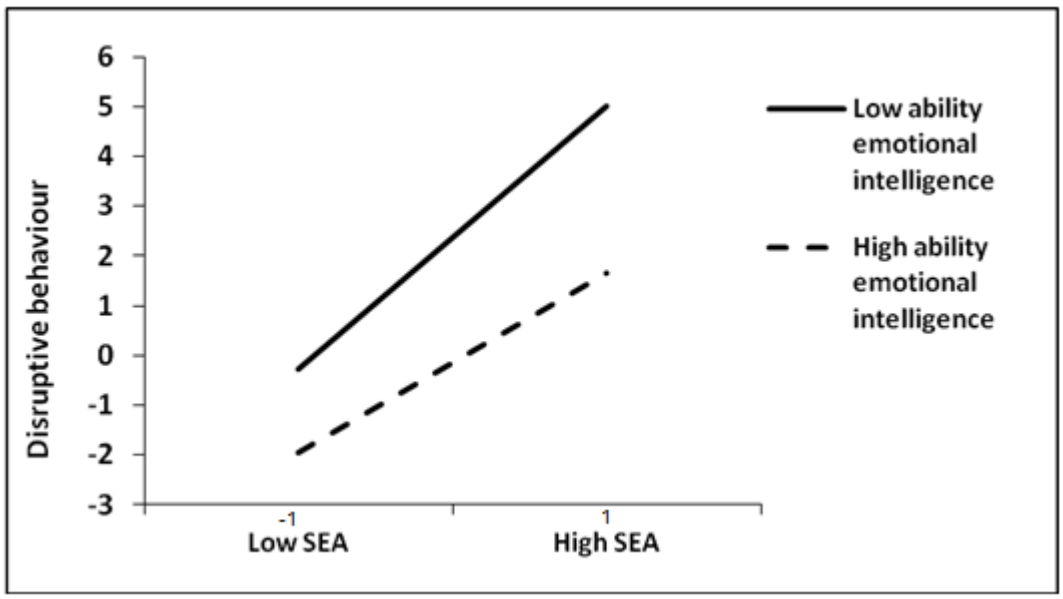


Figure 18: Data plot of the 'direct effect' simple slope interaction for ability emotional intelligence x socio-economic adversity (SEA) on disruptive behaviour.

Table 15: Conditional indirect effects for stressors on disruptive behaviour moderated by ability emotional intelligence

Model	AIC/BIC (*n* parameters)	Stressor x AEI on disorder	Stressor x AEI on coping			Coping x AEI on disorder			Conditional indirect effects at level of AEI (+/-3 *SD* from *M*)							
			Active	Avoid	Support	Active	Avoid	Support		-3	-2	-1	0	1	2	3
Family dysfunction	1. 80084.57 80585.05 (99)	-	-	-	-	-	-	-	Active	-	-	-	-	-	-	-
	2. 80079.04 80584.57 (100)	-.12	-	-	-	-	-	-	Avoid	-	-	-	-	-	-	-
	3. 80053.15 80568.79(102)	-	-.05	.16**	-.09	-	-	-	Support	-	-	-	-	-	-	-
	4. 80036.77 80552.41 (102)	**-**	**-**	**-**	**-**	-.53**	.81***	-.09								
Negative life events	1. 105183.55 105699.19 (102)	-	-	-	-	-	-	-	Active	-	-	-	-	-	-	-
	2. 105181.81 105702.51 (103)	-.09	-	-	-	-	-	-	Avoid	-	-	-	-	-	-	-
	3. 105177.14 105707.95 (105)	-	.04	.13**	.02	-	-	-	Support	-	-	-	-	-	-	-
	4. 105146.74 105677.55 (105)	-	-	-	-	-.49**	.74***	-.14								
Socio-economic adversity	1. 78603.92 79053.84 (89)	-	-	-	-	-	-	-	Active	-	-	-	-	-	-	-
	2. 78566.14 79021.59 (90)	-.42***	-	-	-	-	-	-	Avoid	-	-	-	-	-	-	-
	3. 78585.53 79050.62 (92)	-	-.10	.09	.07	-	-	-	Support	-	-	-	-	-	-	-
	4. 78566.61 79031.23 (92)	-	-	-	-	-.47*	.80***	-.19								

Notes: AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion; Active = active coping; Avoid = avoidant coping; Support = support seeking coping; AEI= ability emotional intelligence. Model 1: baseline measurement model with regression coefficients; Model 2: direct effect interaction only; Model 3: 'a' path interactions only; Model 4: 'b' path interactions only. Models highlighted in bold type have significant conditional indirect effects - point estimates displayed in column 6. Unstandardised estimates presented throughout; latent viable standardised via scaling prior to analysis. ** $p < .001$, ** $p < .01$, * $p < .05$

Summary: In contrast to models predicting depression, TEI does not operate indirectly via coping to influence disruptive behaviour symptomotology. However, a widespread protective effect was still detected; a higher level of perceived emotional competency *directly* reduces disruptive behaviour with exposure to all three stressors. Subsequent analyses found this effect replicated (in part) with respect to AEI; here, higher levels of emotional skill *directly* reduce disruptive behaviour, however, this is only apparent when facing socio-economic adversity and not family dysfunction or negative life events.

14.3.5 Supplementary analysis

The preceding analyses suggested that trait and ability EI act differentially to influence indirect pathways from stressors to disorder via coping. In models predicting depression, AEI acted on 'a' paths to influence coping choice, whereas TEI operated via 'b' paths to influence coping effectiveness. Whilst disruptive behaviour was explained through a series of direct effects models, there were, nevertheless, significant AEI x coping interactions (i.e., 'b' paths) and each of the stressors interacted with TEI ('a' paths). Moreover, results hint that different levels of trait and ability EI may be desirable within particular contexts, e.g., lower ability yet higher trait EI yielded advantageous effects with respect to family dysfunction and depression. Hence, it is plausible that both types of EI might exert a *combined* effect on stressor-health processes to simultaneously influence both the selection *and* implementation of coping to impact adaptation (i.e., dual moderation of the 'a' and 'b' paths).

The specification and testing of such effects via the latent variable approach employed thus far is not appropriate given the computational burden and possibility of numerical instability (i.e., models estimating 4 interaction effects based on 6 dimensions of integration). However, this can be tested via path analysis at the level of manifest variables. Whilst this type of analysis does not explicitly model measurement error, and

therefore has reduced power to detect significant effects, this was deemed sufficient for the purposes of initial, exploratory analyses. Consequently, 12 path models were specified to model the effects of each of the three stressors (family dysfunction, negative life events, socio-economic adversity) on depression and disruptive behaviour. Six models estimated conditional indirect effects when ability EI moderated the 'a' paths (i.e., stressor x AEI) and trait EI influenced the 'b' paths (coping x TEI), whilst the remaining six models tested the reverse pattern (i.e., 'a' paths moderated by TEI; 'b' path interactions involving AEI). All predictor variables were mean-centred with analyses based on robust estimation of complete cases only.

As expected, none of the models predicting *disruptive behaviour* from stressors contained significant conditional indirect effects (with T/AEI acting on either 'a' or 'b' paths). However, the impact of all three stressors on *depression* could be explained with reference to indirect pathways through coping, conditional on AEI moderating the 'a' path and TEI the 'b' path (modelling the reverse positions yielded n.s. findings). Between 33-38% of the variance in depression could be explained by individual models (FD: F (10, 796) = 48.42, $p < 0.001$; $R^2 = .38$; NLE: F (10, 740) = 41.13, $p < 0.001$; $R^2 = .36$; SEA: F (10, 814) = 40.86, $p < 0.001$; $R^2 = .33$). As Table 16 shows, pathways involving avoidant coping were significantly influenced by AEI (predicting selection of avoidant coping with exposure to stressors) *and* TEI (effects of avoidant coping reduce as a function of TEI across all models). Whilst TEI also amplified the effects of active coping on depression (in all models) and AEI influenced the selection of support seeking coping under family dysfunction, only the specific conditional indirect effect through avoidant coping was detectably different from zero, conditioned on both TEI and AEI.

Table 16: Parameter estimates for significant indirect effects models predicting depression conditional on ability and trait EI

Mod.		Active coping		Avoidant coping		Support seeking coping		Depression	
	Predictor	Estimate (parameter)	SE	Estimate (parameter)	SE	Estimate (parameter)	SE	Estimate (parameter)	SE
FD	Active	-	-	-	-	-	-	.29 (b1)	.71
	Avoidant	-	-	-	-	-	-	1.19 (b2)	.68
	Support	-	-	-	-	-	-	.32 (b3)	.58
	FD	-.21*** (a1)	.04	.05 (a2)	.04	-.29*** (a3)	.04	4.63***	.63
	AEI	.00	.01	-.00	.00	-.01***	.01	-	-
	FD x AEI	-.01 (a7)	.01	.01* (a8)	.01	-.01 ** (a9)	.01	-	-
	TEI	-	-	-	-	-	-	-.21***	.02
	TEI x Active	-	-	-	-	-	-	.08* (b5)	.03
	TEI x Avoid	-	-	-	-	-	-	-.11*** (b6)	.03
	TEI x Support	-	-	-	-	-	-	.01 (b7)	.03
	Age	.04*	.02	-.02	.02	-.10**	.02	.50*	.23
	Sex	.04	.04	.12*	.04	.34**	.07	2.08**	.57
NLE	Active	-	-	-	-	-	-	-.06 (b1)	.75
	Avoidant	-	-	-	-	-	-	1.45* (b2)	.72
	Support	-	-	-	-	-	-	-.07 (b3)	.62
	NLE	-.00 (a1)	.00	.01* (a2)	.01	.00 (a3)	.00	.04**	.01
	AEI	.00	.00	-.00	.00	-.01**	.01	-	-
	NLE x AEI	.00 (a7)	.00	.01* (a8)	.01	.00 (a9)	.00	-	-
	TEI	-	-	-	-	-	-	-.24***	.02
	TEI x Active	-	-	-	-	-	-	.07* (b5)	.03
	TEI x Avoid	-	-	-	-	-	-	-.08** (b6)	.03
	TEI x Support	-	-	-	-	-	-	.02 (b7)	.03
	Age	.04	.04	-.03	.02	-.04	.02	.43	.25
	Sex	.07	.07	.12*	.04	.20***	.05	1.56**	.60
SEA	Active	-	-	-	-	-	-	-.18 (b1)	.73
	Avoidant	-	-	-	-	-	-	1.74* (b2)	.69
	Support	-	-	-	-	-	-	-.11 (b3)	.59
	SEA	-.01 (a1)	.01	.01 (a2)	.01	-.01 (a3)	.01	.42**	.08
	AEI	.00	.00	-.00	.00	-.01**	.00	-	-
	SEA x AEI	-.00 (a7)	.00	.01* (a8)	.01	.00 (a9)	.00	-	-
	TEI	-	-	-	-	-	-	-.25***	.01
	TEI x Active	-	-	-	-	-	-	.08** (b5)	.03
	TEI x Avoid	-	-	-	-	-	-	-.09** (b6)	.03
	TEI x Support	-	-	-	-	-	-	.01 (b7)	.03
	Age	.01	.02	-.01	.02	-.04*	.02	.57*	.24
	Sex	.04	.04	.11*	.04	.22***	.04	1.72**	.58

Notes: FD = family dysfunction; NLE = negative life events; SEA = socio-economic adversity; Active = active coping; Avoid = avoidant coping; Support = support seeking coping; TEI= trait emotional intelligence; AEI = ability emotional intelligence. *N* =751 (NLE); 807 (FD); 825 (SEA). Parameter labels correspond to regression paths denoted in figures 9 and 10. Unstandardised estimates presented; predictor variables standardised prior to analysis.

*** $p < .001$, ** $p < .01$; * $p < .05$

Each of the specific indirect effects of stressors on depression via avoidant coping were estimated at high (95th percentile) through to low (10th percentile) values of AEI and TEI. Percentile values were selected to ensure that these exploratory effects were estimated within the range of the sample data. The direct effect of family dysfunction on depression was .46 (*SE* = .63, $p < .001$) where at mean levels of EI (i.e., 50th percentile), a single unit change in family dysfunction triggers an *increase* of .08 in depression, per a *increase* of .05 in avoidant coping. However, as figure 19A illustrates, the indirect effect significantly differentiates at above average levels of AEI (≥ 75th percentile), becoming *negative* in individuals with extremely *high* levels of TEI (90th percentile = -.22, *SE* = .18, [95% CI: -.69, -.02]), but remaining *positive* in those with *low to average* levels of TEI (10th percentile = .53, *SE* = .28, [95% CI: .13, 1.33]). This suggests that high levels of trait EI (scores ≥ 160) coupled with above average to extremely high levels of ability EI (scores of 108.67 or more) are beneficial in reducing the impact of family dysfunction on depression via avoidant coping. Yet at lower levels of TEI, outcomes are poorer despite above average levels of emotional skill, and crucially, this effect is stronger. Although not detectably different from zero, it is notable that indirect effects reversed with *decreasing* AEI, transitioning at the 25th percentile (for the bottom 10% of AEI/TEI scorers: conditional effect = - .22, SE = .28 [95% CI: -.86, .27]).

Similar patterns of findings were detected for both negative life events (direct effect = .04, *SE* = .01, $p < .001$) and socio-economic adversity (direct effect = -.11, *SE* = .15, $p = .48$), though both were of a lesser magnitude. For every single unit change in negative life events and socio-economic adversity, depression is expected to *increase* by .003 and .02 respectively, per an *increase* of .01 in avoidant coping at average levels of trait and ability EI. Again, figures 19B and 19C depict how, in both cases, the indirect effect changes at higher levels of AEI. When facing stressful life events, *average to extremely high* levels of AEI (scores ≥ 99.44/50th percentile) coupled with *low to average* levels of TEI (scores ≤ 131.50) results in an *increase* in depression, with the strongest effect seen in individuals with extremely high emotional ability (top 10% of scorers) yet extremely low emotional self-efficacy (bottom 10%); conditional effect = .01, *SE* = .01, [95% CI: .004, .03]. Specific indirect effects were not detectably different from zero at low to average

levels of AEI (i.e., below the 50th percentile), or in those with above average to extremely high levels of TEI (75th percentile and above). Likewise, exposure to socio-economic adversity teamed with extremely high levels of AEI (scores ≥ 115.12/90th percentile) but extremely low levels of TEI (scores ≤ 108.00/10th percentile) results in the largest increase in depression through avoidant coping (conditional effect = .13, *SE* = .01, [95% CI: .004, .03]). Once again, indirect effects were not detectably different from zero at low to average levels of AEI (i.e., below the 75th percentile) or in those with above average to extremely high levels of TEI (75th percentile and above).

Summary: Preliminary analyses suggest that trait and ability EI exert combined yet differential influences on the indirect effect of stressors on depression via avoidant coping. Possessing an emotionally 'intelligent' skill-set is, by itself, insufficient for successful adaptation; indeed, a profile of high emotional skill coupled with low emotional self-confidence is deleterious under stress (particularly with exposure to family dysfunction and socio-economic adversity). Adolescents with finely-tuned emotional capabilities are more likely to *choose* avoidant strategies and without the emotional self-confidence to *implement* these effectively, depression increases. However, the corollary of this potentially sub-optimal choice can be lessened with increasing self-confidence (and completely overridden through extremely high TEI in the context of family dysfunction); adolescents with high emotional skill *and* increasing levels of emotional self-efficacy do better. These adolescents believe they can accurately perceive, understand, control and express emotion to positively impact on their situation, such that any negative emotion arising from the implementation of cognitive and behavioural avoidance is mitigated. In other words, TEI acts as a protective buffer once avoidant coping is enacted at high levels of AEI. Notably, conditional indirect effects were not significant at lower levels of AEI and did not extend to models predicting disruptive behaviour. Whilst TEI amplified the positive effects of active coping on depression, this effect was not conditional on AEI mobilising an active style under stress.

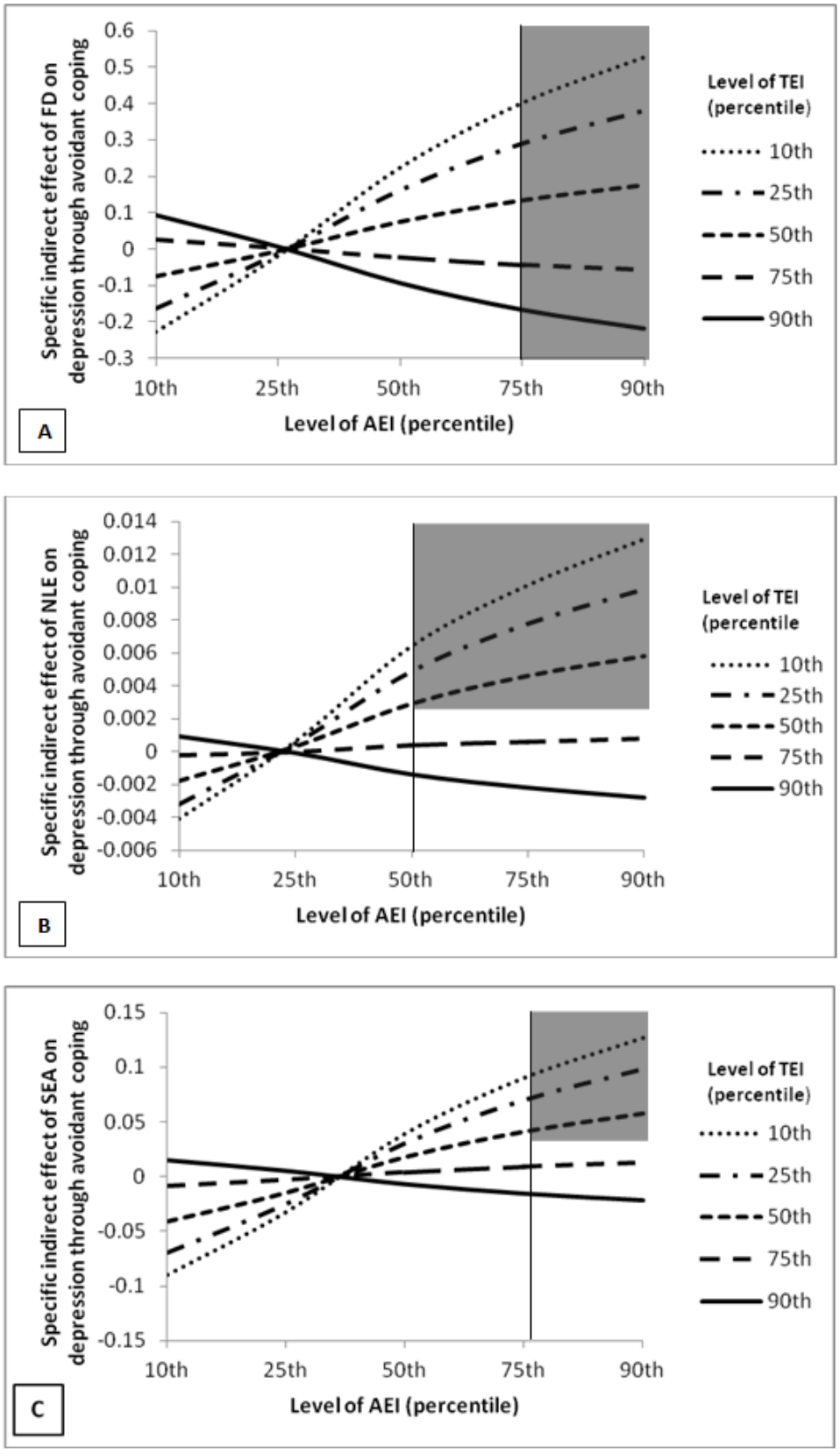


Figure 19: Data plots of the specific indirect effect of (A) family dysfunction (FD) (B) negative life events (NLE) and (C) socio-economic adversity (SEA) on depression through avoidant coping versus the moderators, ability EI (AEI) and trait EI (TEI).

Notes: In each case, the vertical line represents the boundary of the region of significance highlighted within the shaded area.

14.4 On the relationship between EI and mental health: Key findings

This chapter explored the predictive and incremental validity of both trait and ability EI regarding mental health and examined *how* and *when* EI might contribute to adaptational processes. The following key points emerged:

- Age and sex effects were detected for AEI but not TEI. There was only weak correspondence between the two 'forms' of EI, indexed via performance-based and self-report assessment.

- Whilst TEI was inversely related to both internalising and externalising symptomotology, higher AEI was related to a decrease in the latter only.

- TEI shared medium to large associations with low trait Neuroticism, high trait Conscientiousness, Agreeableness, Extraversion and Openness, but was negligibly related to general cognitive ability. The reverse pattern was found for relationships involving AEI.

- In spite of these associations, both forms of EI contributed incrementally to the prediction of disorder beyond personality and general cognitive ability. TEI explained an additional 10% of the variance in depression, whilst the prediction of disruptive behaviour was enhanced by both TEI *and* AEI, accounting for 4% and 1% incremental variance respectively.

- The predictive relationship between EI and mental health can be explained with reference to direct and indirect processes. The indirect effect of stressors on depression is contingent on EI; AEI influences the *selection* of avoidant coping when facing family dysfunction and negative life events, whilst TEI modifies the *effectiveness* of active coping under family dysfunction. In contrast, EI directly

attenuates the effects of stressors on disruptive behaviour (though the 'widespread' effects found for TEI were not replicated for AEI, which directly protects against socio-economic adversity only).

- Preliminary evidence suggests that trait and ability EI work in tandem to modify the selection and efficacy of avoidant coping, influencing the indirect effect of stressors on depression but not disruptive behaviour. High levels of AEI are not always universally adaptive; higher levels of skill may be harmful when coupled with low emotional self-competency.

15. DISCUSSION

This research set out to examine *why*, *how* and *when* EI might be associated with better adolescent mental health and simultaneously explored the conceptualisation of EI within this developmental period. Findings are mixed; there is clear support for the construct differentiation of trait and ability EI (in line with theory and prior research) and evidence that both can make a unique contribution to the prediction of disorder beyond the 'Big 5' personality dimensions and general cognitive ability. However, qualifications regarding the 'adaptive' nature of each construct are warranted. It would appear that whilst emotional personality *and* emotional processing skill do confer protection when faced with stressors, the mechanisms by which these operate differ substantially, with effects contingent on stressor context, health outcome and level of EI. Nevertheless, preliminary evidence augurs for the importance of both in adaptational processes; *actual* emotional skill appears dependent on *perceived* competency to realise advantageous outcomes. This chapter presents a detailed analysis of these findings across three key sections before reviewing the implications and limitations of the research. Discussion closes by considering the future progression of the field.

15.1 The nature of EI in adolescence

Findings from the present research lend credence to the construct differentiation of EI, extended to adolescence. At a basic level, trait and ability EI scores were negligibly related ($r = .17$, $p < .001$; $< 3\%$ shared variance) which replicates the pattern found in adults (e.g., Brackett & Mayer, 2003; Goldenberg et al., 2006), pre-adolescents (Barlow et al., 2010; Qualter et al., 2012) and is in line with two recent meta-analyses reporting average corrected correlations of $r = .12$ (for 'ability' based trait measures), $r = .26$ ('mixed' trait measures) (Joseph & Newman, 2010) and $r = .14$ (overall TEI, irrespective of model) (Van Rooy, Viswesvaran, & Pluta, 2005). Importantly, these meta-analytical findings point to potential variation in the magnitude of the AEI-TEI relationship according to differences in TEI instrument sampling domains. Indeed, the current research suggests that even *within* 'type' (e.g., across 'mixed' trait instruments) there could be substantial variation in associations; for instance, in youth populations, MSCEIT and EQi scores

appear to share 13-18% variance (Peters et al., 2009; Windingstad, McCallum, Bell, & Dunn, 2011) which is substantially greater than the proportion found here between the TEIQue and MSCEIT. This could, however, be attributed to differential sampling of facets relating to higher order personality dimensions; despite both instruments being classified as 'mixed' trait EI measures, the EQi taps trait Agreeableness to a greater extent than the TEIQue (e.g., Austin et al., 2005; Petrides, Pita et al., 2007) which, as will discussed below, is one of two higher-order dimensions indexed by the MSCEIT.

As a form of *intelligence* specialised for reasoning about emotion, AEI should only weakly relate to personality but share positive associations, of at least moderate magnitude, with general cognitive ability (Mayer et al., 1999; Mayer, Roberts et al., 2008). With respect to the latter, previous research predicts a relationship in the range of $r = .25$ to .40, depending on whether a 'pure' measure of IQ (Austin, 2010; Farrelly & Austin, 2007; Joseph & Newman, 2010; Van Rooy et al., 2005) or a proxy (such as grade point average) is used (e.g., Brackett & Mayer, 2003; MacCann et al., 2011; Peters et al., 2009). More robust correlations are typically found with proxy indicators and this was corroborated in the current research ($r = .39$, $p < .001$). Whilst the use of a proxy precludes firm inferences concerning the relative distinctiveness of AEI from fluid/crystallised ability (Austin, 2010; MacCann, 2010; Wilhelm, 2005), it is notable that all three branches that draw heavily on crystallised, verbal ability for task completion (i.e., understanding; using; managing emotion) made significant contributions to this association, whilst non-verbal skill in perceiving emotion was unrelated. Markedly, this replicates the pattern found in recent adolescent research where coefficients with IQ *and* proxy measures of general cognitive ability have been reported (Peters et al., 2009; Qualter et al., 2012) and accords with an AEI-IQ only meta-analysis (Joseph & Newman, 2010) – in all cases, understanding emotion consistently presents as one of the strongest contributors to this association, with perceiving emotion the least influential.

By contrast, the current data found (total) AEI negligibly related to Extraversion, Conscientiousness and unrelated to Neuroticism. However, stronger associations were detected for trait Openness ($r = .37$) and Agreeableness ($r = .20$), as recovered previously (e.g., Brackett & Mayer, 2003; Van Rooy et al., 2005; Zeidner & Olnick-Shemesh, 2010).

Notably, with the exception of Agreeableness, the magnitude of relationships indicated by the current data appear very similar to those documented for general cognitive ability and personality traits (Judge, Jackson, Shaw, Scott, & Rich, 2007). Whilst such reasoning by analogy would appear to lend further support the conceptualisation of ability EI as an 'intelligence', this patterning once again calls into question the distinctiveness of this 'new' ability (MacCann, 2010). Nevertheless, sub-branch analyses appear largely in line with theoretical predictions. Mayer and colleagues maintain that within their hierarchical framework, higher-level abilities should be increasingly integrated within psychological (e.g., personality) sub-systems, given the influence of context-dependent, motivational factors on behaviour, whereas skills sub-serving lower-level abilities (i.e., emotion perception) should predominately relate to the emotion system (Mayer, 2005; Mayer et al., 2004). The current data provides tentative support for these predictions; perceiving emotion was unrelated to any of the higher-order personality dimensions whereas using, understanding and managing contributed equally to trait Openness. However, this trend appears less clear-cut in adult samples (Joseph & Newman, 2010), perhaps hinting at developmentally-contingent relationships. Comprehensive longitudinal studies charting the inter-relationships between personality and ability EI will be necessary to better understand these complexities.

Turning to TEI, the expected associations with higher-order personality dimensions and general cognitive ability were also confirmed. Reflecting *emotional personality*, TEI taps lower-level, affect-related self-perceptions and dispositions that are partially determined by higher-order dimensions (Petrides, Pita et al., 2007). Hence, in line with personality theory, relationships with the Big 5 traits are anticipated, as are negligible relations with cognitive ability (Petrides, 2011a). Here, TEI was associated with all personality traits, most notably with Neuroticism (r = -.55, p < .001) but less so with Openness to experience (r = .25, p < .001) which is fully in line with adult TEIQue research (Petrides, Pita et al., 2007; Vernon, Villani et al., 2008) and, importantly, represents the mirror-image of associations found for AEI and personality. Effect sizes also compare favourably with Ferrando et al., (2011) who detected significant associations with Extraversion (r = .39) and trait Anxiety (r = .46) in a sample of pre-adolescents. However, in contrast to the adult research base, in the current adolescent sample trait

Agreeableness shared a higher proportion of overlap with TEI (approx 17% versus 6.2 – 10.2% in the adult studies). As this is the first piece of research to document how the Big 5 relate to TEI (TEIQue scores) in adolescents, comparisons with other developmentally-equivalent samples cannot be made and the use of short-form measures precluded factor/facet level analyses to determine the source of this discrepancy. Clearly, it will be of interest to replicate this research and formally examine whether the location of the TEIQue in Big 5 factor space (Petrides, Pita et al., 2007) is consistent across adult *and* adolescent samples, e.g., it is possible that facets other than 'assertiveness' and 'relationships' key into Agreeableness (or to a greater or lesser extent) at this developmental stage. Irrespective of instrumentation and sample characteristics it is notable, however, that the magnitude of coefficients obtained here (medium to large) accord with those found in a recent meta-analysis of 'mixed' TEI measures and personality (Joseph & Newman, 2010). Consequently, demonstrating the capacity of TEI to predict meaningful outcomes above and beyond the effects of these higher-order dimensions would appear similarly critical for adolescent research.

By contrast, as predicted, a weaker association was detected between TEI and general cognitive ability ($r = .20$, $p < .001$) – notably, half the size of the coefficient found for AEI. Typically non-significant or negligible relations have been reported between TEI and performance on tests of 'pure' IQ in adults, adolescents and children (Bastian et al., 2005; Farrelly & Austin, 2007; Ferrando et al., 2011; Frederickson et al., 2012; Mavroveli et al., 2008; Mikolajczak, Luminet et al., 2007; Qualter et al., 2012; Saklofske et al., 2003). However, the strength of these associations would again appear dependent upon measurement instrument and sample characteristics; for instance, more robust associations with IQ have been reported for the EQi ($r > .28$) over the TEIQue ($r > .18$) in adolescents (Frederickson et al., 2012; Qualter et al., 2012) whilst both share non-significant associations with IQ in adults (Farrelly & Austin, 2007, study 2; Mikolajczak, Luminet et al., 2007). However, when proxy measures of general cognitive ability are used, this association can become inflated in both adult (e.g., O'Connor & Little, 2003) and youth samples (Ferrando et al., 2011; Mavroveli et al., 2009; Mavroveli et al., 2008; Mavroveli & Sánchez-Ruiz, 2011; Parker et al., 2004; Peters et al., 2009; Qualter et al., 2012) with correlations reaching up to $r = .33$, convergent with the current findings.

Whilst associations are inconsistent across subject-specific proxy indicators (e.g., TEI has been related to Maths achievement (Mavroveli et al., 2009; Mavroveli & Sánchez-Ruiz, 2011) yet elsewhere, English and spelling ability but not Maths or Science achievement (Mavroveli et al., 2008; Qualter et al., 2012)), the presence of *any* significant correlations would appear to contradict theoretical predictions. However, evidence suggests that this can be attributed to the combined contributions of higher-order personality dimensions and 'pure' cognitive ability on academic achievement – in other words, personality (and by extension TEI) may be related to academic achievement as a result of shared links with IQ (Chamorro-Premuzic & Furnham, 2006). Specifically, trait Extraversion, Neuroticism and Openness are known correlates of IQ (Ackerman & Heggestad, 1997) and the latter, together with trait Conscientiousness, contribute to academic achievement (Poropat, 2009). Therefore, with IQ controlled, relationships between TEI (which keys N, E and C in particular) and academic achievement should become negligible. Whilst the absence of a formal measure of IQ precluded analysis in the current data, this has been borne out by other studies (Ferrando et al., 2011; Mavroveli et al., 2009; Mavroveli et al., 2008). Moreover, this shared overlap with personality offers a plausible explanation for the differences found in the meta-analysed coefficients obtained for ability versus personality-based TEI instruments and IQ, where the latter is reportedly of larger magnitude (Joseph & Newman, 2010).

Altogether then, the expected empirical 'dissociations' with allied constructs were recovered for both trait and ability EI in the current data, lending support to a 'dual-facetted' EI in adolescence. Nevertheless, some convergence across the two conceptualisations was expected in relation to sex differences and age-related trends.

15.1.1 Sex differences and age-related trends

As noted in the introductory chapter, theoretically, sex differences are anticipated for both constructs. Studies of cognitive ability suggest that males have higher levels of *actual* numerical or spatial skill (Voyer et al., 1995) and *perceived* proficiency in general, mathematical and spatial (though not verbal) skill (Syzmanowicz & Furnham, 2011), yet females report higher levels of Neuroticism, Extraversion, Agreeableness and

Conscientiousness (Schmitt et al., 2008). Moreover, emotion research points to a female advantage in facial and non-verbal emotional expression (J. A. Hall, 1984; LaFrance, Hecht, & Levy Paluck, 2003), emotional decoding (McClure, 2000) and in complex emotional knowledge (Ciarrochi, Hynes, & Crittenden, 2005). Importantly, gender differences in emotional processing have been explained with reference to the impact of socialisation (Eagly & Wood, 1999) – a theme which has also permeated theorising concerning the developmental origins of EI (e.g., 'Investment Theory' of Matthews et al., 2002); specifically, whilst females are socialised towards nurturing roles, intimacy motives and interdependence, males are traditionally socialised to be 'providers', fostering control motives and independence (Cross & Madson, 1997). Nevertheless, it is widely acknowledged that emotional processing is necessarily context-dependent, influenced by proximal (feedback from 'online' social interactions; consistency with individual 'identity', goals, motivations, expectations) and distal factors (temperament, gendered interactions with family/peers, socio-cultural stereotypes), hence inconsistencies in the patterning of emotion-related sex differences are also expected (Brody & Hall, 2010).

In line with these theoretical predictions, sex differences were detected in AEI, with females exhibiting higher levels of emotional skill - corroborating previous adult (Brackett & Mayer, 2003; Brackett et al., 2004; Farrelly & Austin, 2007; Goldenberg et al., 2006; Karim & Weisz, 2010; McIntyre, 2010) adolescent (Barlow et al., 2010; Qualter et al., 2012; Zeidner & Olnick-Shemesh, 2010) and meta-analytic research (Joseph & Newman, 2010). Indeed females outperformed males in all areas (bar perceiving emotion which did not reach significance) but particularly in emotion management proficiency, corroborating the trend in recent research (Farrelly & Austin, 2007, study 2; Goldenberg et al., 2006; Qualter et al., 2012; Zeidner & Olnick-Shemesh, 2010). The non-significant findings relating to perceptual ability are also consistent with the mixed picture that has emerged with respect to sex effects in 'lower level' MSCEIT sub-skills, which may ultimately reflect developmental or cultural differences manifest within the various distal and proximal influences noted above. For instance, in a group of older Israeli adolescents, males were significantly better than females at perceiving emotion (Zeidner & Olnick-Shemesh, 2010), whilst Pakistani adult females outperformed their male counterparts in perceiving and using emotion - a difference which did not extend to French adults (Karim

& Weisz, 2010). Moreover in British children, global level differences in emotion-related skill have not always been found (Qualter et al., 2011). It should also be noted that the magnitude of effects in the current data were small ($d \leq .30$) compared to previous research (e.g., Farrelly & Austin, 2007; Qualter et al., 2012; Zeidner & Olnick-Shemesh, 2010) where medium to large effects have been documented ($d \leq .77$), although much of the previous research has featured smaller groups of participants. That said, the continued detection of a reliable sex-based, sub-group difference in AEI converges with allied emotion processing/cognitive ability research to perhaps further verify the status of the construct as an index of *emotional aptitude,* which could be distinct from measures of spatial/numerical ability (MacCann, 2010).

By contrast, no discernible sex differences were detected for TEI which is in line with previous adult (e.g., Brackett & Mayer, 2003) and adolescent research (e.g., Mavroveli et al., 2007; Mavroveli et al., 2008; Williams et al., 2009). Indeed, the lack of detectable sex differences appears to be one trend that does not appear contingent on TEI instrument type (Joseph & Newman, 2010). Nevertheless, this appears to run contrary to established personality research where the Big five dimensions that dominate the TEI sampling domain (particularly Neuroticism) are known to differ across genders (Schmitt et al., 2008). However, some studies have reported significantly higher TEI levels in females (Ciarrochi et al., 2001; Farrelly & Austin, 2007, study 2; Goldenberg et al., 2006; Mavroveli & Sánchez-Ruiz, 2011; Qualter et al., 2012) or males (Petrides, 2009a) and it is notable that the trend in the current study was towards the latter. Since sex-differences were probed only at the global level, it is quite plausible that lower-level facet/factor differences were present yet diluted through aggregation, as suggested by proponents of the construct (Mavroveli et al., 2009). For instance, factor level differences in trait 'self-control' have been found for males yet higher perceived 'wellbeing' and 'emotionality' for females, despite non-significant global differences (Siegling et al., 2012). Similarly, at the facet level, males self-rate their competency in emotion management (others), assertiveness, emotion regulation (self), stress management, social awareness and self-esteem more highly than females who report higher competency in emotional expression, perception, relationships and trait empathy (Petrides, 2009a). Interestingly, the pattern of sex-related trait facets detected in this work would appear broadly

consistent with the *in*dependent (i.e., *self*-control, *self*-esteem etc) versus *inter*dependent (i.e., relationships, trait empathy) socialised identities described earlier. Indeed, Siegling et al., (2012) suggest that the inherently 'intrapersonal' nature of the TEIQue versus the predominantly 'interpersonal' MSCEIT (i.e., assessing management of *others* emotions; perception of emotion in *others*) are both uniquely positioned to capture these divergent qualities. As a next step, it will be important to clarify these lower-level TEI sex differences in adolescents using a long-form measure.

A final point of divergence for the ability and trait perspectives was found in their associations with age. AEI should show progression across development if it is representative of a true ability, yet whilst some early data (based on a now defunct AEI instrument) suggested adult versus adolescent differences in specific tasks tapping perceiving, understanding and managing emotion (Mayer et al., 1999, study 2), more recent correlational research has been less conclusive; non-significant relationships between age and total MSCEIT scores have been documented in children and adults (Barlow et al., 2010; Palmer et al., 2005), yet elsewhere a positive correspondence has been reported in adults (Goldenberg et al., 2006) and a small group of adolescents (Peters et al., 2009). Moreover, in contrast to the earlier work of Mayer et al., (1999) none of these studies found an association between age and ability to perceive emotion, although proficiency in managing emotion appeared to increase with age across all groups (Goldenberg et al., 2006; Palmer at al., 2005; Peters et al., 2009). The current research does little to clarify this literature base; whilst total AEI was positively related to age (r = .27) this appeared attributable to the development of strategic emotional skill (i.e., understanding and managing emotion) rather than experiential ability (ability to use emotion was unrelated to age and perceiving emotion negligibly so, r = .12). Clearly, definitive conclusions cannot be drawn from simple cross-sectional analyses of age trends. However, whilst the lack of an association with age could be justified in adult samples on the basis of reaching 'mature' ability, the absence of an association in children together with the sporadic links found for experiential skills in adolescents are potentially problematic for a construct which is predicated on acquisition of developmentally-sensitive emotion-related skills (Mayer & Salovey, 1997). It is possible however that these inconsistent findings are a result of limitations in the sampling domain of the

MSCEIT-YV (used here and in Barlow et al., 2010 & Peters et al., 2009) which is still under validation. For instance, whilst the adult MSCEIT provides assessment of ability to perceive emotion in faces *and* pictures (landscapes; abstract designs), the youth version assesses only the former. Hence, it is plausible that this restricted content range may not be sensitive to the developmental change occurring from pre-adolescence up to 18 years of age. Detailed longitudinal investigation is required to help resolve these outstanding issues.

Patently, this is also a necessary next step for TEI research. Perceived emotional competence was unrelated to age in the current group of adolescents which would appear inconsistent with longitudinal research documenting changes in the Big 5 traits across development (Roberts & DelVecchio, 2000) and recent theorising (Shiner & Caspi, 2003). Moreover, even proponents of TEI forecast some degree of change as a result of improved socialisation and reduced emotional lability (Petrides, Furnham et al., 2007). Indeed, when plotting age-related changes in TEI across a group of adults aged 19 to 84 years, Derksen, Kramer, and Katzko (2002) found that (EQi) scores followed a curvilinear relationship, reaching a peak between ages 35 and 44 years before decreasing again. Notably, this is broadly in line with the aforementioned Big 5 research in which trait stability was reached between ages 50-70 years (Roberts & DelVecchio, 2000). To date however, very few researchers have documented correlations between age and TEI, and findings are inconclusive across those cross-sectional studies that have; for instance, positive associations between TEI and age have been reported in children (Barlow et al., 2010) and some adult groups (Mikolajczak, Luminet et al., 2007; Petrides & Furnham, 2006) but not others (Goldenberg et al., 2006), or in adolescents aged 13 to 15 years (Ciarrochi et al., 2001). It is possible that fine grained examination of lower level TEI factors across a wider age range (e.g., 10-18 years) would reveal differences otherwise obscured through aggregation, however, as noted earlier, longitudinal tracking of TEI from childhood into adulthood is urgently required.

Summary: The construct differentiation of EI in adolescence has been supported by the current data. Trait and ability EI scores were negligibly related in line with previous adult and pre-adolescent research (e.g., Barlow et al., 2010; Brackett & Mayer, 2003;

Goldenberg et al., 2006; Qualter et al., 2012). Additionally, both conceptualisations were associated with allied constructs as anticipated; TEI was more robustly associated with the Big 5 personality dimensions (particularly Neuroticism; less so Openness) than general cognitive ability, whilst the reverse pattern was found for AEI (unrelated to Neuroticism; stronger associations with Openness) corroborating earlier findings (Brackett & Mayer, 2003; Peters et al., 2009; Petrides, Pita et al., 2007; Zeidner & Olnick-Shemesh, 2010). The present analysis also hints at further divergence with respect to age and sex effects; both were found for ability but not trait EI. Nevertheless, questions regarding the status and nature of EI remain. Whilst the current patterning of relationships found for AEI lends support to its 'ability' status, the holistic nature of this aptitude in adolescence remains unclear. Contrary to other sub-skills, competency in perceiving emotion appeared orthogonal to allied constructs, did not differentiate between males/females and was negligibly associated with age. These patterns are not supported by summative adult data (Joseph & Newman, 2010) which points to developmental specificity and/or the potential insensitivity of the MSCEIT-YVR to capture age-appropriate performance, both of which carry important implications for applied adolescent research using AEI. Moreover, the distinctiveness of this 'new' ability remains unresolved; AEI and IQ appear similarly associated with personality dimensions and the robust relationship between verbally-loaded AEI skills (particularly emotional understanding) and general cognitive ability implies shared overlap with crystallised ability (MacCann, 2010). This requires further examination utilising 'pure' measures of cognitive ability in adolescents. Potential variation in TEI is also hinted at; strong associations with trait Agreeableness coupled with a lack of sex and age effects in adolescence, appear at odds with adult TEI research. Nevertheless, the latter findings may be an artefact of the aggregated, global level analyses conducted. Comprehensive longitudinal research with the fully-validated MSCEIT-YV and long form TEIQue-AF is warranted to clarify these issues and further examine developmental and cultural sensitivity. Measurement issues aside, however, the detection of medium to large correlations between A/TEI and respective allied constructs clearly signals substantial overlap as many critics have highlighted (e.g., Schulte et al., 2004) and emphasises the need for personality and general cognitive ability to be controlled when adjudging the capacity of EI to predict meaningful, adaptational

outcomes. The discussion now turns to consider the repercussions of doing so with respect to mental health in adolescence.

15.2 Can EI predict adolescent mental health?

Consistent with EI theory (Bar-On, 1997; Petrides, Perez-Gonzalez et al., 2007; Salovey & Mayer, 1990) and a wealth of adult-based research in this field (e.g., Bastian et al., 2005; Brackett et al., 2004; Goldenberg et al., 2006; Petrides, Perez-Gonzalez et al., 2007), higher levels of EI were linked to lower levels of disorder in adolescents. However, the strength of these direct associations varied according to type of EI and the nature of symptomotology. TEI was more robustly associated with both internalising (r = -.55, p < .001) and externalising disorder (r = -.35, p < .001) compared to AEI, which was weakly related to disruptive behaviour (r = -.16, p < .001) and unrelated to depression (r = -.05, p > .05). Notably this replicates the trend detected in two recent meta-analyses of EI-general mental health relationships, where medium average effect sizes were documented for TEI, versus small or non-significant effects for AEI (Martins et al., 2010; Schutte et al., 2007). Additionally, the more robust correlations found here between TEI and depression, as opposed to disruptive behaviour, converge with recent adult (TEIQue) research reporting weaker or non-significant correlations for aggression compared to internalising symptoms (Gardner & Qualter, 2010; Petrides, Perez-Gonzalez et al., 2007, study 2). Moreover, research employing the TEIQue in youth samples has reported a similar trend. Global-level coefficients with depressive symptomotology have ranged between r = -.48 to -.59 (Mavroveli et al., 2007; Mikolajczak, Petrides, & Hurry, 2009; Williams et al., 2009, 2010a) yet between r = -.28 and -.43 for disruptive behaviour (Williams et al., 2009, 2010a). Nevertheless, this trend could be contingent on the measurement model adopted. When alternative, 'ability-based' trait EI measures are used, the magnitude of coefficients appears significantly reduced such that TEI appears to be an equally moderate predictor of *both* internalising and externalising disorders; for instance total SREIT scores correlate similarly with depression and disruptive behaviour in the range of r = -.10 to -.31 (Williams et al., 2009, 2010a) and sub-branch scores from the SUEIT correlate up to r =-.29 with rule breaking/aggressive behaviours (Downey et al., 2010). Indeed, in line with this, Martins et al., (2010) reported that the TEIQue shared the

strongest association with overall mental health compared with the EQi (another 'trait' measure), the ability-based SREIT and the Trait Meta-Mood Scale (TMMS). These differences are likely due to variations in the sampling domain of TEI models and, in particular, the proportion of shared overlap with higher-order personality dimensions, which, in turn, are related to mental disorders.

As noted earlier, TEIQue scores shared a large, inverse relationship with trait Neuroticism in the current sample (r = -.55), followed by Conscientiousness (r = .42), Agreeableness (r = .41), Extraversion (r = .36) and Openness (r = .25) and a large body of literature links these traits to the development and maintenance of psychopathology. For instance, childhood inhibitory control is associated with the development of depression and substance abuse (Caspi, 2000) and higher Conscientiousness, Openness and Agreeableness coupled with lower Neuroticism in childhood, differentiates 'resilient', rule-abiding individuals from 'maladapted' young adults (Shiner & Masten, 2012). Importantly, the Big 5 dimensions share specific patterns of association with internalising and externalising disorders; whilst high levels of Neuroticism, low Extraversion and low Conscientiousness are hallmarks of mood disorders, behavioural disorders relate positively to Extraversion, to comparably lower levels of Neuroticism and low Agreeableness (Malouff et al., 2005). Indeed, this patterning was largely consistent with coefficients obtained from the current data – depression, but less so disruptive behaviour, was strongly related to higher Neuroticism (r = .50 versus r = .19) whilst Agreeableness appeared the strongest correlate of disruptive behaviour but not depression (r = -.46 and -.22 respectively). Also consistent with Malouff et al., (2005), depression was related to less Extraversion and Conscientiousness although, contrary to predictions, the former was unrelated to disruptive behaviour. Thus, on the basis of the strength of direct associations found in the current data, TEI, as emotional personality, would be expected to be a stronger predictor of depression - indeed, it is notable that TEI correlated identically with both depression and Neuroticism (r = -.55, p < .001).

It is similarly plausible that shared links to personality might account for the disorder-based trends noted for AEI. As noted in section 15.1, AEI was unrelated to the strongest determinant of depression, trait Neuroticism, however, significant associations

were detected with correlates of disruptive behaviour, most notably trait Agreeableness (r = .20, p < .001). Hence, these associations would immediately make a relationship between AEI and disruptive behaviour most likely. Links to externalising rather than internalising disorder also concur with the previous theoretical analysis which concluded that AEI should be considered representative of pre-requisite *emotional skills* that potentially underpin adaptive emotion regulation (Wranik et al., 2007). Given the measurement focus on assessment of emotional knowledge versus actual emotional performance (which permeates all sub-skills tapped by the MSCEIT, i.e., labelling emotion; defining emotion; understanding the consequences of managing others emotions for social outcomes), AEI should indicate deficiencies in emotional understanding that are considered a central feature of externalising but less so mood disorders (Hessler & Katz, 2010; Mullin & Hinshaw, 2007). Indeed, the fact that all sub-skills significantly related to disruptive behaviour in the current sample supports this perspective. Whilst comparable literature is sparse, existing research converges with the internalising/externalising distinction for AEI. In adults, negligible associations with internalising symptomotology have been detected (Bastian et al., 2005; Goldenberg et al., 2006) and in younger age groups, this appears non-significant (Cha & Nock, 2009; Williams et al., 2009, 2010a). However, AEI has been more consistently linked to reduced maladaptive (Brackett & Mayer, 2003; Brackett et al., 2004; Rossen & Kranzler, 2009) and increased adaptive social behaviours in adults (Lopes et al., 2004; Lopes et al., 2005; Lopes et al., 2003). Moreover, in youth, Williams et al., (2009) reported inverse associations between a composite measure of perceiving, using and managing emotion and self-reported anger (r = -.12, p < .01), disruptive behaviour (r = -.12, p < .01), and between a measure of emotion recognition ability and disruptive behaviour (r = -.11, p < .01) – relationships which were later replicated in Williams et al., (2010). Markedly, similar findings were documented using an objective indicator of socially maladaptive behaviours in youth; the MSCEIT-YV sub-branches of perceiving (r = -.60, p < .05), using (r = -. 47, p < .05) and understanding emotion (r = -.33, p < .05) were all inversely linked to number of school discipline referrals in a small sample of 50 adolescents (Peters et al., 2009). Hence, the magnitude of coefficients detected in the current research (rs ranging from -.09 [perceiving] to -.15 [managing emotion]) compares favourably with other research based on self-reported clinical symptoms.

Nevertheless, it is notable that general cognitive ability related weakly, though significantly, to both depression (*r* = - .14) and disruptive behaviour (*r* = - .12). Whilst this is expected in light of research suggesting that cognitive ability is a likely risk factor for internalising and externalising disorder (Mortensen, Sorensen, Jensen, Reinisch, & Mednick, 2005; Zammit et al., 2004), this indicates that beyond the influence of Agreeableness, the direct relationship between AEI and disruptive behaviour might also be artificially inflated as a result of shared links with general cognitive ability. As the previous discussion explored, this should be less of an issue for TEI relations, particularly given evidence suggests associations between proxy measures of cognitive ability and TEI arise largely from the shared overlap with personality (e.g., Mavroveli et al., 2009). Nonetheless, the potential for theoretical redundancy in both types of EI is patent given shared relationships with both personality and cognitive ability domains. Thus, in an effort to establish the 'pure' contributions of A/TEI to mental health and address critics of the field (Matthews et al., 2004; Schulte et al., 2004; Wilhelm, 2005) the current analyses examined whether these trends would hold after partialling out the influence of general cognitive ability and higher-order personality dimensions.

15.2.1 Predicting adolescent mental health: The incremental validity of EI

Crucially, in spite of these associations, it would appear that both forms of EI *can* make a significant, incremental contribution to the prediction of mental health in adolescence, although this appeared more convincing for trait than ability EI. As anticipated, the Big 5 dimensions accounted for the largest proportion of variance in depression (ΔR^2 = .24) and disruptive behaviour (ΔR^2 = .20), with trait Neuroticism and Agreeableness particularly influential. Contributions from general cognitive ability were much smaller - adding 2% to the prediction of depression and 1% to disruptive behaviour – which is fully in line with similar, adult-based research predicting 'psychological wellbeing' (Rossen & Kranzler, 2009). Importantly however, beyond these influences, the earlier-detected trends for EI held; *perceived* emotional competency was a broader predictor and accounted for more unique variance in disorder (semi-partial *r* depression = -. 32; disruptive behaviour = -.19) than *actual* emotional skill which contributed to

disruptive behaviour only (semi-partial *r* disruptive behaviour = -.10). The effect of TEI on depression was of medium magnitude whilst both AEI and TEI had small effects on disruptive behaviour. Nonetheless, it has been suggested that since focal variables within predictive models in the Social Sciences are often inherently inter-related, semi-partial correlations in the range of .15 to .20 on the *third* step of a regression can be considered meaningful (Hunsley & Meyer, 2003). Thus, given the stringent nature of the current analysis (i.e., multiple control variables) the smaller incremental contribution from AEI also represents an important influence in the prediction of adaptation.

Whilst it is possible that common method variance (e.g., Likert scale response format; single-respondent; single-occasion) artificially inflated TEI-outcome relationships, post-hoc exploration of personality, TEI and health variables using Harman's single-factor test (Podsakoff & Organ, 1986) suggests that analyses were not unduly affected by bias arising from shared methodology - multiple factors (25 with Eigenvalues > 1) emerged in the data, the first of which accounted for only 14% of the total variance. Additionally, recent work indicates that TEI-mental health associations are robust against socially desirable responding (Choi, Kluemper, & Sauley, 2011) and criterion contamination – relationships between scores on the Beck Youth Inventories and TEIQue-ASF remained stable in pre-adolescents, even after the removal of 16 out of 30 TEI scale items (Williams, Daley, Burnside, & Hammond-Rowley, 2010b). Nonetheless, it is notable that the latter research retained the TEI 'wellbeing' factor in this analysis which includes items tapping trait optimism, happiness and self–esteem which would appear to overlap substantially with items measuring health outcomes (e.g., the inverse of depression symptoms). Indeed Zeidner, Matthews and Roberts (2011) found that TEI wellbeing was the only significant factor-level predictor of general mental health with personality controlled. Clearly, it will be important for future research to establish how each TEI factor uniquely contributes to depression and disruptive behaviour in adolescence with control for the Big 5.

Importantly, these findings extend the embryonic EI-mental health evidence base in adolescence and, as the first study to examine *incremental* contributions beyond personality dimensions and cognitive ability, they represent a significant contribution to

knowledge. Notably, in the absence of youth-based research, findings corroborate the trend found in studies of adult incremental validity. As noted earlier, some significant relationships between AEI and internalising symptoms have been found previously (e.g., Bastian et al., 2005; Goldenberg et al., 2006) however, with control for personality and IQ, associations are typically non-significant (Karim & Weisz, 2010; Rossen & Kranzler, 2009; Zeidner & Olnick-Shemesh, 2010). Hence caution should be exercised where less stringent controls (i.e., personality only) are implemented; the proportion of variance accounted for by AEI in the prediction of psychological wellbeing (4%) and satisfaction with life (1%) (Extremera et al., 2011) appears to correspond with that accounted for by general cognitive ability, as found in the current study and elsewhere (Rossen & Kranzler, 2009). By contrast however, AEI remains a significant predictor of maladaptive social behaviours beyond allied variables, explaining between 4 and 11.5% additional variance in (reduced) alcohol use, drug abuse and less frequent deviant behaviour (Brackett & Mayer, 2003; Brackett et al., 2004; Rossen & Kranzler, 2009). AEI also remains predictive of more positive relationships with others, satisfaction with relationships, pro-social behaviour and interpersonal sensitivity, explaining up to 11% additional variance (Lopes et al., 2004; Lopes et al., 2005; Rossen & Kranzler, 2009). Perhaps unremarkably, with control for IQ only, associations between AEI and the number of discipline referrals in adolescents also remains significant (Peters et al., 2009). Whilst the percentage of variance detected in the current study (1%) sits in the lower range of previously significant findings, this is the first study to employ an omnibus AEI instrument (MSCEIT-YVR) and clinical outcome measure to assess relationships – prior to this investigations have examined association with discrete measures of social 'maladaptation' (e.g., number of physical fights, amount of alcohol consumed, etc) or objective indicators (e.g., number of discipline referrals) which do not capture the full range of clinical symptoms. Hence, whilst these measures may be more reliable (i.e., not clouded by the limitations of self-report methodology), they provide limited information.

Adult research also supports the fact that 'stripped-down', TEI can explain more variance in dispositional, internalised emotional outcomes compared to markers of situational, behaviourally-based emotional expression, explaining 1 - 17% of the variance in depression, hostility, loneliness, happiness and life satisfaction but no additional

variance in physical, verbal aggression or anger beyond the effects of personality (Gardner & Qualter, 2010; Petrides, Perez-Gonzalez et al., 2007; Saklofske et al., 2003). Nevertheless, there have been some exceptions to this; for instance TEI predicted approximately 2% of the variance in alcohol abuse (SREIT: Brackett & Mayer, 2003; TEIQue: Gardner & Qualter, 2010) and 18% of the variance in the number of unauthorised absences in adolescents beyond the Eysenkian 3 (Petrides et al., 2004). However, these proportions are less than those linked to AEI and importantly, with the exception of Brackett and Mayer (2003) these studies represent less stringent tests of predictive validity – in contrast to the aforementioned AEI research, the influence of cognitive ability on relationships was not accounted for, which would be particularly pertinent to the prediction of broad, school-based markers of adolescent delinquency (e.g., unauthorised absence). Additionally, the prediction of alcohol use beyond the influence of personality dimensions has not been found consistently across all TEI measures e.g., the SREIT did not contribute significantly in Gardner and Qualter (2010) yet did in Brackett and Mayer (2003). This may reflect differences in the sensitivity of outcome measures utilised across studies; whereas a 35-item alcoholism screening test was used in the former study, only 5-9 behavioural frequency items were used in the latter (e.g., number of bottles of beer owned). That said these earlier findings accord well with the pattern and proportion of incremental variance attributed to adolescent TEI in the present study which represent valuable evidence of the predictive utility of the construct.

Nevertheless, it will be necessary to expand investigation to consider a broader range of representative disorders in future A/TEI research and, in particular, investigate the capacity of TEI to predict specific types of *internalising* disorder in adolescence. Individuals with depression and anxiety disorders would be expected to obtain similarly low scores on measures of TEI given that excessive negative affect (NA) is common underlying feature of both. However, each disorder is unique in its onset, course, treatment requirements and underlying symptomotology; depression is associated with anhedonia whilst anxiety with physiological hyperarousal (Clark & Watson, 1991). Hence, it will be important to demonstrate that TEI can distinguish between these mood disorders. Recent research hints that this could be possible; whilst mood disorders relate non-specifically to individual differences in NA (i.e., as keyed by Neuroticism: fear,

sadness, guilt, hostility), low levels of positive affect, indexed as joviality (happiness, enthusiasm), self-assurance (confidence) and attentiveness (alertness, concentration), relate more specifically to depressive over anxiety disorders (Watson, Clark, & Stasik, 2011; Watson & Naragon-Gainey, 2010). Importantly, as well as NA, TEI indexes key elements of PA - particularly joviality which has been found specific to depression. Therefore, the potential for TEI to distinguish depression more strongly than other mood disorders remains possible and augurs for diagnostic utility. Whilst comprehensive testing in adolescence (with adequate controls) is awaited, it is notable that TEI has been found more strongly related to depression than anxiety in pre-adolescents (Williams et al., 2009).

Summary: Converging with prior literature and theory, higher EI was linked to lower levels of psychopathology. Importantly, both ability and trait EI can make meaningful incremental contributions to the prediction of disorder beyond the effects of personality dimensions and cognitive ability. However, *perceived* emotional competency appears a stronger, direct predictor of depression and disruptive behaviour compared to *actual* emotional skill – with the latter contributing to externalising symptomotology only. This is fully in line however with predictions from allied literatures that suggest intrinsic emotional personality and extrinsic emotional ability should show divergence as a result of underlying conceptual differences. Demonstrating that TEI explains approximately 10% additional variance in depression is especially valuable evidence for the advancement of the construct. Despite being partially determined by personality (particularly trait Neuroticism - an established predictor of mood disorders), the unique variance captured by the finer-grained, emotion-related facets included within the TEI sampling domain would appear to safeguard the explanatory and incremental capacity of the construct (Petrides, Pita et al., 2007). However, future investigation might additionally control for possible criterion contamination (e.g., self-esteem) and examine contributions from constituent TEI factors using a long-form measure. This research has also gone some way to address critics who have argued that a 'blanket' vulnerability account for EI (e.g., low EI = poor mental health) is unhelpful for furthering understanding, diagnosis and treatment of psychopathology given the sheer range of disorders that implicate emotional deficiencies as diagnostic symptomotology (Matthews et al., 2002; Zeidner et al., 2011).

Findings illustrate clear divergence in the strength and nature of relations between A/TEI and externalising/internalising disorder. Nevertheless, it will be necessary to expand investigation to consider a broader range of representative disorders in future research and, in particular, investigate the capacity of TEI to predict specific types of *internalising* disorder in adolescence. Additionally, the magnitude of effects obtained in the current findings (i.e., absent or small to medium) indicate that both AEI and TEI could be implicated in complex, multiply determined pathways to adjustment. Thus, whilst valuable, the basic predictive and incremental associations established here tell us very little about the underlying *processes* underpinning EI-mental health relationships. Hence, the next section of the analysis sought to determine *how* (whether directly or indirectly linked to known stress-illness processes) and *when* (within which context) EI influences adaptation.

15.3 Explaining the EI-mental health relationship with reference to wider stressor-health processes

Consistent with existing literature examining concurrent and prospective associations between psychosocial risk and disorders, both depression and disruptive behaviour symptoms were positively related to family dysfunction and negative life events in the current adolescent sample (Briggs-Gowan et al., 2010; Flouri & Kallis, 2011; Grant et al., 2004; Kessler et al., 2010; McMahon et al., 2003; Rutter, 2000; Sternberg, Baradaran, Abbott, Lamb, & Guterman, 2006). Indeed, the basic cross-sectional analysis reported here found 7 – 18% shared variance between stressors and outcomes, concurring with Grant et al.'s (2004) review of prospective links between stressors and psychopathology which, with control for prior levels of symptomotology, reported small to moderate effects (1 - 21%). Of the two stressors, family dysfunction was most strongly linked to disorder which converges with the work of Kessler et al., (2010) who found that of 12 retrospectively reported childhood adversities (e.g., parental maladjustment; interpersonal loss; maltreatment; physical illness; family economic adversity) maladaptive family functioning conferred the greatest risk for the onset of Axis I disorders in adults. Indeed, it is widely acknowledged that psychosocial stressors that involve disruption to

relationships (e.g., functioning of the family, maltreatment, negative interpersonal life events) are central to the development of depression and behavioural disorders (Briggs-Gowan et al., 2010; Sanchez, Lambert, & Ialongo, 2012; Thapar, Collishaw, Pine, & Thapar, 2012) - Sternberg et al., (2006) reported that children who experienced and witnessed violence were 2.57 times more likely to develop severe internalizing problems and at 2.91 times greater risk for developing severe externalizing problems than children not subject to violence at home. By contrast, socio-economic adversity was not directly related to disorder, however this pattern is consistent with research suggesting that this distal stressor is linked to adjustment through a complex chain of proximal intervening variables (Grant et al., 2006; Wadsworth & Compas, 2002). For instance, uncontrollable, environmental life events (e.g., parental job loss) have been shown to mediate between socio-economic status and internalising and externalising disorder, with stronger effects for the former (Amone-P'Olak et al., 2009). Additionally, maternal warmth and harsh parenting have been identified as mediators of this association, though for the prediction of externalising disorder only (Gonzales et al., 2011). The possibility that socio-economic adversity might be implicated in complex, indirect pathways to disorder was further suggested by the presence of weak, inverse associations with both forms of EI. This converges with previous research that has uncovered negligible (inverse) or non-significant direct associations between A/TEI and indices of other forms of chronic adversity (i.e., physical, emotional, sexual abuse) in adults (Brown & Schutte, 2006; Gardner et al., 2011; Goldenberg, 2004) and adolescents (Cha & Nock, 2009). Whilst there have been some exceptions to this trend for AEI – i.e., skills in using and managing emotion have been found *positively* related to chronic abuse in adults (Goldenberg et al., 2004) and the ability to perceive emotion enhanced in those with *lower* socio-economic status (Kraus et al., 2010, study one) – these studies focussed on isolated sub-branch analyses rather than the global AEI construct (as in the current data) and used somewhat idiosyncratic outcome measures of 'stressors' (e.g., in the latter study a high-school level of education was classified as 'lower social class' from which risk was inferred in a group of adults who had, nevertheless, been in stable University employment for an average of 11 years).

In contrast, both forms of EI were associated with attenuated experience of proximal, interpersonal stressors - negative life events and family dysfunction - with effects most robust for the latter. This contrasts with adult literature that failed to detect a direct relationship between AEI (perceiving emotion) and either major life events or daily hassles (Ciarrochi et al., 2002) although converges with prior evidence of inverse relationships between subcomponents of trait EI and fewer daily hassles (Ciarrochi et al., 2002; Day et al., 2005). Again, these anomalies could be due to measurement inconsistencies across studies; for instance, previous analyses of TEI were restricted to examination of subcomponents of the EQi and SREIT, rather than global level (TEIQue) scores, as reported here, and only partial sub-branch analysis involving the MSCEIT. Moreover, there is considerable variability across outcome measures; whilst a cumulative measure combining both hassles and acute major life events was used in the current study, previous research has employed separate indices of each and, in some cases, items have been specifically tailored to the focal participant demographic thus limiting applicability (e.g., academic-related hassles for a student sample: Day et al., 2005). In a similar vein, as this is the first study to comprehensively assess global family functioning (i.e., including affect, roles, behaviours, problem-solving) from a concurrent/adolescent versus retrospective/adult self-report perspective, comparison with directly compatible findings is limited. Nevertheless, on balance, most related research does suggest that higher TEI (indexed either via the SREIT; TMMS) is positively related to 'adaptive' family qualities, e.g., conversation orientation (not conformity), parental warmth and affection (not discipline) and negatively linked to 'maladaptive' aspects, e.g., harsh punishment (Alegre & Benson, 2010; Ciarrochi et al., 2001; Keaten & Kelly, 2008). That said, associations between both A/TEI (SREIT) and a measure of family cohesion, expressiveness and conflict did not reach significance in adults, although the general pattern for TEI relations was in the direction noted above (Gardner et al., 2011). Again, measurement inconsistencies (particularly the discrete aspects of family functioning combined with the retrospective nature of this study) may offer a reason for this discrepancy. Thus, taken together, this first, basic scrutiny of stressor-EI associations in the current data suggested that those with higher actual and perceived emotional competency do experience fewer stressors and (with the exception of TEI-family dysfunction) the presence of small coefficients augured for the involvement of both as

potential moderators in adjustment pathways (be that directly through interaction with the stressor or indirectly via coping).

Before turning to evaluate these possibilities in light of the current analysis, it is noteworthy that the expected patterning of associations between disorders and coping styles were detected; consistent with a recent review of the literature (Compas et al., 2001) both were related to less active (e.g., positive cognitive restructuring; direct problem-solving etc) and support seeking coping (though the latter did not reach significance for depression), with increased use of avoidance coping (e.g., behavioural avoidance; distraction; wishful thinking; repression) linked to greater levels of depression. Perhaps counter-intuitively, however, use of avoidance coping appeared linked to *lower* levels of disruptive behaviour. Without appropriate context (i.e., situating this link with control for other forms of coping within the wider stressor-adjustment process) reliable interpretation of this finding is precluded, although it is widely held that avoidance strategies can be advantageous in some situations, particularly when faced with uncontrollable stressors (e.g., parental discord, sexual abuse) (Clarke, 2006; Compas et al., 2001; Folkman & Moskowitz, 2004; Seiffge-Krenke, 2011). Notably, in the current study, all three stressors contained elements of uncontrollability hence further detailed analysis would serve to clarify this. It is marked however, that the magnitude of effects found here (small: r = .07 to .16) concur with the earlier comprehensive review which documented effects in the range of .10 to .40 (Compas et al., 2001). Basic associations between A/TEI and coping also appeared 'adaptive' in nature. Converging with previous adult (Goldenberg et al., 2006; Mikolajczak et al., 2008; Petrides, Perez-Gonzalez et al., 2007, study 1 & 2; Petrides, Pita et al., 2007; Shah & Thingujam, 2008) and adolescent research (Downey et al., 2010; Mavroveli et al., 2007; Mikolajczak, Petrides, & Hurry, 2009), higher TEI was most strongly linked to greater use of active strategies (e.g., problem-focussed), to a lesser extent support seeking coping and only weakly related to (less frequent) avoidance coping. This consistency is remarkable given the range of 'ability' and 'trait' based TEI instruments employed across studies (e.g., above cited include the SREIT, TEIQue, EQi and SUEIT) coupled with differences in coping measurement (i.e., bandwidth and content).

Conversely, research examining AEI-coping links is scarce and the current findings appear to contrast with available literature; in adolescents, higher emotional skill related to greater use of active and support seeking coping but was not significantly associated with avoidant styles. The consensus from adult research supports direct (inverse) links with avoidant coping, with findings equivocal with respect to support seeking and active coping (Gohm et al., 2005; Goldenberg et al., 2006; MacCann et al., 2011) – indeed, where significant associations with the latter two styles have been detected, these have been restricted to isolated sub-skills (particularly the ability to manage emotions) rather than total AEI. These discrepancies perhaps reflect developmental differences between the populations – evidence from a small adolescent sample (N = 50) would appear to lend partial support to this notion; in contrast with the adult literature and in line with the current findings, AEI was unrelated to avoidant coping (though also to problem-focussed strategies) (Peters et al., 2009).

Clearly, simple analysis of isolated links between coping styles and EI tells us very little about the adaptive utility of these associations with reference to wider stress processes or whether this is reflective of 'real-life' coping, where multiple strategies can be used to combat stressors (Folkman & Moskowitz, 2004) – both of which will be explored below in light of the final, more detailed set of analyses. However, it is important to note from this initial examination of coping and EI that the magnitude of correlations documented here (r range .09 to .23) argues against conceptual redundancy; EI construed as either emotional skill or emotional personality shares little overlap with coping styles and thus has the potential to *underpin* rather than *converge with* coping processes in adjustment pathways. This is particularly pertinent to TEI in the context of the wider personality/coping debate (e.g., Vollrath, 2001) alluded to in earlier chapters – here the view is taken that coping is distinct from/more than a direct manifestation of personality traits and, as such, represents the way in which personality (and by extension TEI as our emotional temperament) operates under stress (Carver & Connor-Smith, 2010; Compas et al., 2004; Matthews et al., 2002). This position runs contrary to some existing TEI research with the EQi in which, following the detection of particularly high correlations between TEI and coping (e.g., up to r = .58), the two have been merged to create composite factors implicated in the prediction of key outcomes, including

perceived stress, academic achievement and life satisfaction (e.g., Austin et al., 2010; Saklofske et al., 2011). However, this once again, serves to highlight the variability across TEI measurement models and perhaps questions the legitimacy of interpreting all self-report-based EI research with reference to TEI theory – at the very least there is a need for caution when assimilating findings.

Summary: Basic bivariate associations between stressors, coping, depression, disruptive behaviour and EI were broadly consistent with prior literature. Proximal stressors (family dysfunction and negative life events) were associated with poorer mental health and lower ability and trait EI. Consistent with research suggesting that poverty is linked to adjustment through a complex chain of intervening variables (Grant et al., 2006; Wadsworth & Compas, 2002) socio-economic adversity was unrelated to disorder and only weakly correlated with both forms of EI. More frequent active coping was related to less depression, disruptive behaviour and higher levels of both A/TEI. With the exception of depression, the same pattern was found for support seeking coping. Conversely, avoidance coping was associated with increased depression but lower levels of disruptive behaviour and TEI. However, the adaptive value of EI, in either guise, cannot be inferred from this evidence alone. In order to elucidate the role of EI in pathways to adjustment, the main analysis tested if/how these variables operate collectively. These findings will be explored next.

15.3.1 Pathways to disorder: The role of trait EI

Models testing direct and indirect pathways between stressors and disorder revealed that TEI does play an adaptive role in adjustment but its mechanism of influence differs according to outcome and stress context. For depression, TEI is implicated *indirectly*, supporting the implementation of coping processes to buffer the effects of stressors. Specifically, adolescents with high levels of TEI are more effective at executing an *active* coping style (in the context of avoidant and support seeking coping) to reduce internalising symptoms. However, this most clearly manifests when faced with family dysfunction, not negative life events or socio-economic adversity (where conditional indirect effects were not detectably different from zero). Moreover, in the current

sample, this protective effect was only operational in those with TEI scores greater than 177.30, which equated to 2.3% of the sample. In contrast, TEI *directly* attenuated the effects of all three stressors (although effects were most conclusive for socio-economic adversity and family dysfunction) on behavioural problems. Notably, the pattern of direct effect interactions supports a 'diathesis-stress' (i.e., lower TEI results in poorer outcomes at higher risk) rather than a 'differential susceptibility' account, where vulnerability (i.e., low TEI) can lead to better outcomes in individuals exposed to more favourable contexts (Belsky & Pluess, 2009). All bar one of these interactions were ordinal (non-crossover) in the plausible range of stressors (i.e., -3 to +3 *SD* from the mean) and all represented contrastive effects – where the sign of the association between independent and dependent variables reverses at high vs. low levels of the moderator (Roisman et al., 2012). Notably, even though the interaction involving socio-economic adversity and TEI was disordinal, 97.84% of the sample experienced increasing levels of adversity yet better outcomes with higher TEI. Roisman et al., (2012) suggest that for differential susceptibility to be assumed (i.e., that as well as decreasing risk, EI increasing positive outcomes) more than 16% of the sample should fall below the crossing point.

Turning first to examine effects associated with depression, it would seem that in a multidimensional coping context, TEI supports *downstream* coping processes, such that the active coping efforts of adolescents with high TEI reduce depression. Theoretically, this finding concurs with commentators who view TEI as "central to the development and implementation of successful coping mechanisms" (Petrides, Perez-Gonzalez et al., 2007, p.29) and adaptive coping as "emotional intelligence in action" (Matthews et al., 2002, p.287). As this is the first study to provide a comprehensive analysis of EI-coping links with mental health under adversity, very little comparable research exists to aid interpretation of the findings. Nevertheless, simple mediation studies have suggested that lower TEI could be linked to higher levels of internalising symptomotology via increased use of avoidant or emotional coping (Chan, 2005; Goldenberg, 2004; Mikolajczak, Petrides, & Hurry, 2009) and less problem-focussed or social interaction coping (Chan, 2005; Goldenberg, 2004). Additionally, higher TEI appears linked to lower levels of general psychological distress through increased 'stoicism', 'social support' and 'self-care' (Campbell & Ntobedzi, 2007). However, in three of these studies (Campbell &

Ntobedzi, 2007; Goldenberg, 2004; Mikolajczak, Petrides, & Hurry, 2009), it was the 'maladaptive' emotional coping strategies (e.g., rumination) that had the greatest impact on symptomotology and not adaptive, active coping as in the current study. Indeed, this trend was further corroborated in the only study so far to examine externalising as well as internalising symptoms; Downey and colleagues (2010) found that 'non-productive' coping (as a blend of avoidant and emotional strategies) and not problem-focussed or support seeking styles, explained the association between lower perceived competency in emotion management (SUEIT) and higher levels of both behavioural and mood problems in adolescents. Additionally, two studies employing the TMMS in a lab-based context found that individuals with higher TEI (perceived ability to repair emotion) engaged in less 'passive' (emotional and avoidant coping) but *not* more 'active' coping when faced with an acute, situational stressor (timed cognitive task) and less rumination leading to lower levels of depression and fatigue following exposure to a stressful video (Ramos et al., 2007; Salovey et al., 2002). This evidence, implying that the propensity to *select* 'maladaptive' coping styles may be driven by deficiencies in TEI, clearly contrasts with the current findings where TEI did not influence initial choice but *interacted* with 'adaptive' coping to promote efficacy. However, none of this pre-existing research systematically tested for moderating effects or deconstructed how EI impacted mental health in the context of *multiple* coping strategies; examination of isolated links between particular coping styles, EI and mental health has so far been the norm which, as noted earlier, is a practice which is both theoretically and methodologically inadequate (Folkman & Moskowitz, 2004; Gaylord-Harden et al., 2010; Preacher & Hayes, 2008; Rucker et al., 2011). It would seem that within an ecologically valid, 'real-life' context, incorporating assessment of chronic and acute psychosocial stressors, those who feel more 'emotionally confident', who consider themselves able to process the (negative) emotion arising from contact with a stressor, can use this self-belief to optimally implement an active approach, without fear of negative consequences, to improve mental health outcomes.

In order to explore why this might be the case, and indeed, why this effect was so selective (i.e., depression not disruptive behaviour; only family dysfunction), findings must be interpreted through the lens of personality theory and allied processes. As noted

earlier, traits influence functioning via attentional/perceptual biases which in turn affect initial environment selection together with ongoing appraisal processes and reactivity to environmental cues (John et al., 2008). Hence, traits can represent latent vulnerability to disorder (Malouff et al., 2005), influencing *exposure* to stressors (preferentially selecting/modifying environments to evoke stressors through dispositional mood bias) and/or *reactivity* once exposed (appraisal processes can constrain or promote effortful coping) (Bolger & Zuckerman, 1995). In line with this, evidence suggests that traits influence coping strategy selection; for instance, Neuroticism is linked to anger through active coping (Bolger & Zuckerman, 1995) whilst higher reward sensitivity (Extraversion) promotes reduced levels of delinquency through greater problem-focussed coping (Hasking, 2007). Indeed, a recent meta-analysis found that high levels of Extraversion, Conscientiousness and Openness related to engagement strategies (e.g., problem-solving, support-seeking, cognitive restructuring) whereas Neuroticism, low Conscientiousness and low Agreeableness related to disengagement coping (e.g., wishful thinking, withdrawal, avoidance) (Connor-Smith & Flachsbart, 2007). Whilst relationships were modest (up to r = .27), it is notable that traits keyed by TEI shared the most robust associations with coping dimensions (i.e., Extraversion, Conscientiousness, Neuroticism). Of central import to the current findings, however, is evidence that the Big Five may also facilitate or interfere with strategy implementation as well as selection. It is hypothesised that high levels of Extraversion and Agreeableness should confer intrinsic skill for eliciting but also utilising social support (Vollrath, 2001) whilst highly conscientious individuals may be more likely to engage and *persist* in problem-solving coping (Carver & Connor-Smith, 2010) to increase the likelihood of beneficial outcomes.

Whilst most research has focussed on Neuroticism, findings support the involvement of traits in coping efficacy. For instance, when facing interpersonal stress, those with lower levels of Neuroticism are effective in reducing depression through problem-focussed rather than avoidant coping, whilst the reverse is true of those high in Neuroticism (Bolger & Zuckerman, 1995). In other words, higher levels of unregulated distress appear to impede active efforts to cope with interpersonal stress. Similarly, the problem-focussed coping efforts of those characterised by high (but not low) levels of self-critical perfectionism (a lower level trait affiliated with Neuroticism) are ineffective in

promoting positive affect *and* these individuals appear more vulnerable to increased negative affect with the experience of achievement-related stress, social hassles and criticism (Dunkley, Zuroff, & Blankstein, 2003). This also transfers to the experience of acute, situational stress; a disengaged coping style (e.g., denial, wishful thinking, avoidance) had beneficial effects on health outcomes for individuals exhibiting an involuntary, lab-induced, stress response (Connor-Smith & Compas, 2004). Thus, personality theory predicts specificity in coping processes according to characteristics of the person (e.g., high versus low N) and stressor-type (Carver & Connor-Smith, 2010; Grant et al., 2003). This lends support to the current findings where the level of TEI (i.e., representing an amplified or reduced 'pro-social' trait profile: low Neuroticism, high Extraversion, Agreeableness and Conscientiousness) determined skill in using adaptive coping (in this case an active rather than avoidant approach) when facing interpersonal stressors. Importantly, even though those with lower TEI adopted the same style, their attempts to use these strategies were poorer in that depression was perpetuated. In other words, individual differences in personality can also result in the same coping response impacting depression differentially (Compas et al., 2004). In accordance with personality theory, therefore, successful implementation could stem from an increased intrinsic *capability* to cope actively, such that confidence in socio-emotional capabilities might promote a desire to better understand and then change/improve a stressful situation, drawing on enhanced interpersonal skills to do so, whilst safe in the knowledge that any negative emotion can be identified, understood and managed effectively. However, TEI may also determine *willingness* to engage in active coping (i.e., individuals may be more motivated to cope and thus expend greater effort in doing so).

This latter explanation is plausible when one considers the conceptual underpinnings of the construct. As the earlier incremental analysis demonstrated, TEI is more than a direct manifestation of higher-order personality dimensions. Indeed, factor analysis with adult TEIQue data (Petrides, Pita et al., 2007) has shown that *empathy*, *social awareness (skills/networking)*, *relationships (maintenance)*, *emotion management (others), expression (communication) and perception (identifying feelings in self and others)* represent 'novel' TEI facets. This has led some to conclude that once personality is stripped away, TEI essentially represents 'emotional self-regard' (Zeidner et al., 2009)

or ‘emotional self-concept’, predominantly comprising “positive beliefs about personal competence in internal regulation of emotions” (MacCann, Matthews, Zeidner, & Roberts, 2004, p.39). Indeed, where sub-factor analyses have been conducted between the TEIQue and adaptive coping styles, most suggest that this can be attributed to increased perception of competency in emotional self-control (e.g., Mikolajczak et al., 2008). Moreover, it is notable that whilst AEI does not appear to relate to adaptive use of self-reported emotion regulation strategies (Beblo et al., 2010) TEI does (Schutte, Manes, & Malouff, 2009) - something which is especially significant here given the link to internalising disorders (e.g., Aldao et al., 2010). The notion that TEI represents emotional self-concept is further borne out by the high associations documented between TEI and self-esteem, which in youth have ranged, for example, between r =.36 and r = .63 (Ciarrochi et al., 2001; Ferrando et al., 2011; Williams et al., 2009, 2010a). Furthermore, with statistical control for this relationship, some previously significant associations are rendered non-significant, e.g., parental warmth (Ciarrochi et al., 2001) though elsewhere they persist, e.g., depression and anxiety (Fernandez-Berrocal et al., 2006). Additionally, as noted previously, it has been shown that the TEIQue ‘wellbeing’ factor (comprising trait optimism; happiness; self–esteem; self-motivation) is the only significant factor-level predictor of general mental health in adults with personality controlled (Zeidner et al., 2011). That said, it would appear that with ‘wellbeing’ removed, TEI still contributes incrementally to the prediction of rational and emotional coping (but not detached) beyond the influence of the Big Five (Petrides, Pita et al., 2007). Whilst the predictive utility of TEI in adolescents with extension to the role of self-concept remains unexplored (and clearly warrants attention) for the purposes of the current discussion this research provides a strong indication that, in addition to personality, TEI represents *emotional self-concept* which, as a self-system *belief* (Sandler, 2001), clearly illustrates why TEI might be a powerful driver of coping efficacy.

Self-system processes are internal beliefs sets (e.g., perceived competence, positive self-evaluation, self-efficacy) which are actively constructed by individuals with reference to their wider social environment (Prelow, Weaver, & Swenson, 2006; Sandler, 2001). Consequently, these are considered central to the resilience process; the experience of perceived or actual psychosocial adversity can impact self-system beliefs

(e.g., via disruption of salient interpersonal relationships or restricting opportunities to experience rewarding activities) which can, in turn, influence future appraisal of stressors and subsequent behaviour under adversity. Conversely, advantageous experiences that satisfy basic needs of *competence (self-worth)*, *social relatedness, autonomy (control)* and *safety* (e.g., through the experience of quality relationships/care-giving etc) can strengthen self-systems and help to buffer later adversity (Sandler, 2001). For instance, positive self-esteem (at age 18 years) was found to be a moderator of the link between early childhood adversity and positive outcomes to predict better adjustment in adulthood (age 32) (Werner, 1993). Yet as well as operating directly to attenuate stressors, self-worth is assumed to play a crucial, cyclical role in coping processes; successful coping experiences (e.g., resulting in a reduction of negative emotion, improvement in stressful situation) attenuate adversity but they also serve to maintain positive self-worth and motivate persistence in further (e.g., active) efforts in the future - lower self-worth may limit coping persistence under stress and consequently leave individuals vulnerable to further declines in self-worth (Sandler, 2001). In other words, adaptive coping should satisfy the need to main positive (emotional) self-concept (i.e., feeling of control; capacity to react to stressors to positively change the situation), simultaneously fostering the development of coping efficacy and better adaptational outcomes. Indeed, research with adolescents suggests that higher self-esteem and active coping are linked to lower levels of disorder (Dumont & Provost, 1999) and greater coping efficacy explains the association between increased active yet reduced avoidant coping and fewer internalising symptoms (Sandler, Tein, Mehta, Wolchik, & Ayers, 2000). However, there may be some variability in the form of this beneficial relationship as a function of contextual factors; whilst replicating the above findings with respect to active coping, Mosher and Prelow (2007) found that higher levels of coping efficacy related to avoidant coping and this still resulted in fewer depressive symptoms, but for African American not European American adolescents (where, for this group, the relation between coping efficacy and avoidance did not reach significance).

It is apparent, therefore, that personality and self-system processes are equally pivotal to successful coping. Yet importantly, both are inherently interlinked - appraisal processes are central to the evaluation of threat to the self-system (e.g., identifying

nature of threat and perceived impact on relevant self-system e.g., possible diminishment of self-worth) and, as noted earlier, traits govern the appraisal process through early perceptual/attentional biases which influence interaction with the environment (Cloninger, Svrakic, & Przybeck, 1993). Hence, early temperamental traits support construction and evolution of the self-system and directly influence perception of coping resources and competency (Connor-Smith & Flachsbart, 2007). For instance, individuals with lower levels of trait Neuroticism (less avoidant) and higher levels of Extraversion, Agreeableness, Conscientiousness, and Openness (novelty, reward, persistence) would be more likely to approach and engage with their social environment which optimises chances for reward/reinforcement of positive self-evaluation, and, as a corollary of this, the likelihood of engaging and persisting in adaptive coping. Indeed, research with adults suggests that Extraversion is associated with greater self-concept which, in turn, predicts more problem-focussed coping (Hudek-Knezevic & Kardum, 1996). Thus, as an amalgamation of self-system processes (i.e., self-concept) and personality, we should expect high levels of TEI (representing pro-social traits and high levels of emotional self-concept) to support persistent active coping efforts, as per the current findings. Nevertheless, the specificity of this effect appears perplexing at first; as the proximal family environment (e.g., high quality parental relationships, discipline, overall cohesion etc) represents a key resource known to foster coping engagement (Power, 2004) *and* the self-system process of coping efficacy (Vélez, Wolchik, Tein, & Sandler, 2011) it would seem unusual for TEI to proposer (and then contribute to stress protection) within a context of family *dysfunction*. However, a recent review of behavioural-genetic research concluded that, similar to the Big 5 personality traits (e.g., Vernon, Villani et al., 2008), additive genetic and non-shared environmental factors (as influences outside the family/unique to individuals e.g., peer relations, etc) are the major contributors to self-esteem (approximately 30-50% and 50% respectively), with shared environmental effects negligible (Neiss, Sedikides, & Stevenson, 2002). Indeed, this composition is remarkably similar to TEI; approximately 40% of global TEI can be attributed to genetic influences, with the remaining 60% to non-shared environmental factors (Vernon, Petrides et al., 2008). Hence, given factors external to the family play a role in the development and maintenance of TEI, and the allied constructs of self-esteem and personality, the influence of TEI in this context remains plausible theoretically.

Nevertheless, this does not help to clarify why TEI did not underscore the stress-buffering coping process in the context of negative life events or socio-economic adversity. It must be remembered, however, that TEI is not identical to generalist self-esteem and represents a more nuanced *emotional* self-concept and personality. There is evidence that negative life events and socio-economic adversity impact depression differentially via self-system processes and this may be further complicated by pre-existing experience of stressors. For instance, Prelow et al., (2006) found that cumulative risk did not directly affect *social* competence but led to significantly lower levels of self-esteem and coping-efficacy (which both then explained the association between risk and depression) in a community sample of adolescents aged 13-19 years. Moreover, Sandler (2001) found that *academic* competence was directly associated with cumulative adversity in children of divorce (aged 9-12 years) but not in those who had experienced bereavement (8-16 years) and hence, mediated the effects of adversity on depression in the former group only. Indeed both studies suggest that general self-worth/self-esteem may be more central than domain-specific perceived competencies in explaining the effects of life events and socio-economic adversity on depression; in both cases, associations between competence and depression could be explained by self-worth (Prelow et al., 2006; Sandler, 2001). Additionally, it has been postulated that the moderating effects associated with developmentally-sensitive, self-perceived competencies are likely to be inconsistent and/or weak until they become fully established as cognitive diatheses in late adolescence or early adulthood (Tram & Cole, 2000).

Altogether, therefore, it is likely that both the nature of the stressors studied *and* the characteristics of the adolescents included in the current research (age range 11-16 years; general community sample) both contributed to the specificity of effects obtained. It is possible that socio-economic adversity (lack of material resources) and cumulative negative life events (including interpersonal and uncontrollable, environmental events, e.g., daily hassles versus parental job loss) were too far removed from the individual-level resources of coping and TEI to make an impact on proximal mediating and moderating processes contributing to depression. To establish the importance of contextual factors,

it will be necessary to conduct finer-grained analysis of life events by subtype (i.e., representative of domains most closely associated with emotional self-competence, e.g., loss events) and also conduct person-centred analyses of these pathways within groups of at-risk youth (e.g., those exposed to chronic poverty/neglect, divorce, bereavement). Conducting developmentally-sensitive analyses will also be an important next step; as discussed earlier, the developmental trajectory of 'typical' TEI is still largely unknown and it will be important to understand how prolonged experience of risk affects this, e.g., given the bi-directional impact of adversity on the development of self-system beliefs, TEI may only be operational as part of protective mechanisms in those experiencing transient rather than chronic family dysfunction. Additionally, in order to fully understand why TEI operates in this specific manner it will be necessary to deconstruct the essence of TEI in adolescence to clarify theoretical and empirical associations with allied self-system processes – presently it is unclear whether TEI is best construed as emotional self-concept, perceived emotional competence, emotional personality or as some hybrid combination of all three. Until this is resolved, understanding the role of TEI in resilience remains problematic.

Despite these ambiguities and the lack of sensitivity of the current design, analyses detected remarkably clear divergence in the protective role of TEI according to disorder type. Rather than operating indirectly via coping, higher TEI *directly* interacted with all three types of stressors (particularly socio-economic adversity and family dysfunction) to reduce disruptive behaviour. There are two possible interpretations for this finding; TEI may operate at an early stage, influencing initial exposure to the stressor through selection/interpretation of environmental cues, and/or reactivity via the management of emotional repercussions, or, TEI might influence protective mechanism(s), other than coping, that are more pertinent to disruptive behaviour and were unmeasured here.

The first possibility is theoretically plausible given the established influence traits have on emotion regulatory processes. As noted earlier, it has been suggested that deficits in identifying and understanding emotions may lead to misinterpretation of socio-emotional cues, thus contributing to/perpetuating reactive aggression in individuals

diagnosed with early-onset conduct disorder (Mullin & Hinshaw, 2007). Moreover, longitudinal research confirms that risky behaviours are linked to deficits in emotional awareness and the expression of anger (Hessler & Katz, 2010) and a recent meta analysis found externalising disorders related to a lack of discrete emotional knowledge (Trentacosta & Fine, 2010). Whilst this research describes deficits in abilities rather than traits or self-perceptions, connective 'risk' pathways between temperamental traits and these abilities have been posited. Specifically, (negative) emotional reactivity and poor effortful control are thought to underscore difficulties in emotion regulation and, as a result of the ensuing unmanaged negative affect (particularly aggression), social relationships can be impaired along with further learning opportunities to interpret, attend to and encode emotional cues (Frick & Morris, 2004). Lower levels of (fearful) inhibitory control might also place individuals at heightened risk for developing conduct problems – individuals with this trait profile may be predisposed to engage in novel, risky behaviours and/or the development of qualities necessary for a moral 'conscience' may be thwarted, e.g., guilt and empathy (Frick & Morris, 2004). Indeed, much research has corroborated the involvement of traits in behavioural disorders. For instance, trait Agreeableness moderated the effects of adversity (cumulative negative life events) to predict rule-abiding versus antisocial conduct such that in those with a history of low levels of Agreeableness (measured at age 10 and 20 years of age), high levels of adversity predicted poorer conduct in early adulthood (age 20) (Shiner & Masten, 2012). Moreover, along with access to cognitive enhancing resources and parental warmth, an 'outgoing temperament' (as adjustment to new situations, social competence, self-confidence) in 5 year old twins buffered the effects of socio-economic deprivation on antisocial behaviour (Kim-Cohen, Moffitt, Caspi, & Taylor, 2004) and temperament is considered to be a key individual-level protective factor against the effects of experiencing interpersonal violence (Howell, 2011).

Hence, the current findings would appear consistent with existing personality theory and research (Bolger & Zuckerman, 1995) - TEI, considered as emotional personality, should represent a broadband vulnerability marker for disruptive behaviour, directly influencing exposure (modification of environment) and/or reactivity (perception and understanding of emotional cues) to stressors which might lead indirectly to further

downstream difficulties in emotional processing. Importantly, this concurs with evidence that TEI influences stress reactivity. The majority of passive, mood induction studies have suggested that high levels of TEI might underscore heightened reactivity to negative emotional stimuli (Fernandez-Berrocal & Extremera, 2006; Petrides & Furnham, 2003, study 2; Sevdalis et al., 2007, study 1), though there are some exceptions to this (Ramos et al., 2007). Whether TEI exerts changes to positive affect following negative mood induction is less clear; some studies have reported less of a decrease in those with high TEI (Schutte et al., 2002, study 3), more of a decrease (Sevdalis et al., 2007, study 1) or found no difference between individuals on the basis of TEI level (Fernandez-Berrocal & Extremera, 2006). However, perhaps more importantly, when faced with *situational stressors* higher TEI appears to confer a *protective* effect; smaller increases in negative affect (less mood deterioration) been found consistently across stressor types (e.g., failure experience, social evaluation) and outcome indices (e.g., measures of PA/NA; self-reported reactivity symptoms) and these effects appear to hold with control for personality (Mikolajczak, Luminet et al., 2007; Mikolajczak, Petrides, Coumans et al., 2009; Mikolajczak, Roy et al., 2009). Yet, converging with the mood induction literature, it remains unclear whether high TEI serves to modify positive affect under situational stress (Mikolajczak, Petrides, Coumans et al., 2009). However, objective indicators of stress reactivity confirm this protective effect beyond subjective reports of improved mood/stress symptoms; those high in TEI secrete less salivary cortisol (Mikolajczak, Roy et al., 2007; Salovey et al., 2002, study 2), show less of an increase in systolic blood pressure (Salovey et al., 2002, study 3) and evidence less heart rate variability (Laborde et al., 2011) when faced with acute lab-based stressors. Studies examining cortisol secretion found that baseline differences might account for this effect; those with lower TEI secreted more cortisol in anticipation of stress, which importantly, suggests a vulnerability to perceived as well as actual stress.

Attempts to further deconstruct the mechanisms of this protective stress reactivity effect have provided preliminary evidence that TEI could promote differences in early *perceptual* processes. In non-stressful conditions, TEI is positively related to accuracy in perceiving dynamic verbal and non-verbal behaviour within social situations (SREIT, r = .27) (Farrelly & Austin, 2007, study 1) and adults with higher levels of TEI are

able to provide accurate perceptions of morphed expressions more quickly than their lower TEI counterparts, particularly positive expressions such as happiness and surprise (Petrides & Furnham, 2003). Using an inspection time paradigm to gauge *speeded* emotional perception, Austin (2004) found that self-perceived ability to appraise emotion (SREIT) was significantly related to accuracy in discriminating *both* positive and negative stimuli (from neutral expressions), although, with the effect of 'general processing speed' (skill in symbolic, non-emotional processing) controlled, only the association between appraisal and speeded accuracy in discriminating *negative* stimuli held, thus diverging somewhat from Petrides & Furnham (2003).

Importantly, TEI also illuminates differences in the processing of emotional information more generally. Using the emotional Stroop paradigm with the TMMS, Coffey, Berenbaum, & Kerns (2003) found that higher self-reported 'attention' to emotion was significantly related to *slower* response latencies across both positive and negative stimuli, indicating an attentional bias towards emotional information, whilst the 'clarity' factor showed the reverse pattern, indicating limited interference from emotional content (though this did not reach statistical significance). In a recent replication, TMMS 'attention' was once again found related (albeit marginally) to an attentional bias for negative (r = -.22, p = .09) and this time neutral (r = -.24, p = .06) stimuli and data from event related potentials (recorded as the task progressed) confirmed that this was driven by a preference for heightened *early* perception of all stimuli (irrespective of valence) – a trend that was also found for those with high levels of anxious arousal (Fisher et al., 2010). Nevertheless, as per Coffey et al. (2003), higher levels of 'clarity' related to a more adaptive pattern of *reduced* extended processing of negative stimuli, where those high on anxious arousal symptomotology displayed the reverse profile - increased engagement with negative material - a trend associated with anxiety disorders (Cisler et al., 2011). Importantly, early perceptual differences also manifest when exposed to situational stressors in the laboratory; those with high TEI (TEIQue 'self-control') devote more attention to emotive material *per se* when stressed, but not in non-stressful conditions, which is considered 'adaptive' for setting in motion downstream regulatory processes (Mikolajczak, Roy et al., 2009, study 2). Whilst this latter finding appears to contrast with earlier findings of a *non-specific* vigilance bias for environmental information under

neutral conditions, the aforementioned shortcomings of the TMMS content domain limit generalisability to the mainstream TEI research base - for example, further assimilation of this evidence is precluded given that TMMS 'attention' and 'clarity' together assess self-perceived ability to notice, think about and understand one's *own* feelings vs. the SREIT 'appraisal' which is concerned with the perception, expression and understanding of emotion in oneself and *others*. Replication is warranted in order to reliably confirm or refute the direction of this effect.

Altogether, it appears quite plausible that early perceptual differences in emotion-related processing may drive the protective-reactivity effects observed subjectively and physiologically in experimental work. Total TEI appears related to accurate perception of static facial expressions and superior processing of dynamic non-verbal and verbal cues, with evidence from two experimental paradigms hinting at the possibility that elements of TEI might be differentially related to early cognitive-emotional processing. The implication that some TEI facets might not be wholly advantageous across all contexts (i.e., high TMMS 'attention') also offers a glimpse of why 'maladaptive' biases in these perceptual processes could lead to disruptive behaviour. For instance, a lack of inhibition/'filtering' (protracted processing) may lead to similar processing of neutral and emotive material, hence false detection (misinterpretation) of threat and more frequent adverse stress reactions manifest as aggression/anger etc (Fisher et al., 2010). Yet, as well as effecting changes in early perceptual processing, evidence points to individual differences in (automatic) mood regulation which could also directly attenuate reactivity to stressors.

Proficiency in mood repair has been measured and manipulated using the two experimental methods detailed previously - mood induction and exposure to situational stressors. However in this case, rather than assessing *immediate* reactivity, a measure of emotional state is obtained after a substantial period of time has elapsed post-intervention (in most studies this time is filled by an intervening activity to facilitate mood management 'behaviour', such as memory recall or story generation), thus allowing individuals time to manage any adverse emotional effects. Ciarrochi et al., (2001) found that adolescents with higher levels of 'managing self relevant emotions' (SREIT)

generated more positively valenced stories following exposure to positive vs. neutral mood induction, compared to their lower TEI counterparts (who generated more negative stories following negative vs. neutral mood induction). However, by contrast, levels of subjective emotional reactivity measured post-story recall did not differ according to whether individuals were high or low 'regulators' (i.e., extent of positive and negative emotional reactivity was the same). Hence, this suggests that whilst differences in mood management behaviour might be influenced by TEI, these behaviours do not directly translate to better mood recovery post-induction. Furthermore, without adequate control and measurement of pre-existing mood state, it is also probable that differences in the affective quality of the stories generated was simply a manifestation of positive mood which is represented by high EI generally (see e.g., Schutte et al., 2002). However, a significant moderating effect *was* detected by Fernandez-Berrocal et al., (2006) who measured emotional reactivity in a group of adults fifteen minutes post positive or negative mood induction (with no assisted mood regulation). Controlling for baseline mood states, those with higher levels of TMMS 'clarity' showed a greater increase in PA post negative induction (for induced sadness but not anger) compared to those with lower clarity. However, there were no changes in NA according to level of TEI following negative or positive induction which suggests that those who report a better understanding of emotion are able to use this to enact mood recovery, although this operates via up-regulation of positive, rather than down-regulation of negative emotionality.

There is also some evidence to suggest that beneficial regulatory effects can be detected with reference to discrete emotional responses; Sevdalis et al., (2007, study 2) exposed a small group of adults to a failure experience (negotiation task) and found that whilst there was no significant relationship between total TEI (TEIQue) and feelings of regret and disappointment immediately post-stressor (which stands in contrast to previous findings, e.g., Mikolajczak, Luminet et al., 2007 etc), those with higher TEI reported reduced levels of these negative emotions (regret: $r = -.62$, $p < .01$; disappointment: $r = -.49$, $p < .05$) five days after the failure experience. Similarly, after viewing a negatively valenced film (depicting a sexual assault) twice across consecutive days, Ramos et al., (2007) found that higher self-perceived ability in mood repair was

significantly related to lower levels of depression, anger and anxiety in a group of adult females. Clearly however, both of these latter studies are extremely limited methodologically; there was no measure of/subsequent control for dispositional mood state, or even comparison to a control group – hence in both cases these might just reflect a 'typical' recovery effect (habituation to the video content and negative outcome).

Indeed, the importance of controlling for pre-existing mood was reinforced again more recently in work by Mikolajczak, Roy et al.,(2009, study 1) who found that, following participation in a non-threatening control condition, those with higher levels of TEI 'self-control' (TEIQue), were more likely to generate positive memories compared to those with lower levels of self-control who generated mood-congruent memories (i.e., of neutral valence) – thereby reflecting the propensity to experience positive dispositional mood states. However, in contrast to the earlier findings of Ciarrochi et al., (2001) after exposure to a stressor (failure experience) those with lower self-control generated more positively toned memories vs. *higher* self-regulators who produced more *negative* memories. Whilst the authors postulate that this signals 'adaptive', stress-combative behaviour for high TEI, such that the recall of mood-congruent (negative) memories should trigger memories of similar past negative events and facilitate optimal strategies for managing the stress (e.g., choose to disengage when uncontrollable, insurmountable etc), clearly, there are situations in which concentration upon negative information becomes problematic, for example a ruminative focus on negative internal or external events and feelings is considered a maladaptive coping strategy contributing to mental ill-health (Aldao et al., 2010). Furthermore, since higher regulators reported less mood deterioration prior to memory recall, it is equally plausible that those with lower self-control engaged in positive memory recall in an attempt to up-regulate their, more heavily impacted, mood following stress. However, given there was no measure of final mood state post-memory recall to gauge overall effectiveness, conclusive support for either interpretation is precluded. Clearly, there is considerable variation across the research designs employed within this small body of literature, which undoubtedly limits the extent of comparisons that can be drawn, however it would appear that TEI most likely exerts impact on early regulatory proficiency via positive mood maintenance

(though the up-regulation of positive affect) rather than to negative mood repair (down-regulation of negative affect), though this conclusion lacks consistent replication at present.

From this review, it is clear that emotional reactivity differs according to trait EI and, more specifically, differences in early perception or later regulatory mechanisms are likely responsible for the protective effect observed in experimental studies and, by extension, the driver of adaptation found in the current study. Importantly, the stress-buffering effect also appears to translate to the experience of selected (naturalistic) chronic stressors which lends further credence to the current analysis; higher TEI predicted reduced psychological and physical distress during an examination period (Mikolajczak et al., 2006, study 2) and reduced suicidal ideation in those experiencing high levels of daily hassles (Ciarrochi et al., 2002). Whilst null findings have also been reported – TEI did not directly interact with major life events to predict internalising symptoms (Ciarrochi et al., 2002) or with daily hassles to predict non-clinical health outcomes (Day et al., 2005) and failed to predict change in psychopathological symptoms across the school transition (Williams et al., 2010a) – these differences may have arisen in part due to measurement and design inconsistencies across studies. There is considerable variability in TEI instrumentation and the level of analysis conducted across studies (e.g., a focus on specific facets e.g., 'self-control', 'managing emotion in others' has been the norm), measures of 'outcome' (non-clinical versus clinical) and stressors (implied versus direct assessment). Additionally, all bar one of these studies focussed upon adults. Consequently, in finding that TEI might act as a widespread protective marker for disruptive behaviour in adolescents the current analysis both converges with and extends extant TEI research and offers an important contribution to knowledge. However, in order to further corroborate the tenets of personality theory and the predictions from adult TEI research, it will now be important to examine whether stress-elicited, early perception and regulatory processes differ as a function of TEI in adolescents with a diagnosis of disruptive behaviour disorder.

Whilst the direct TEI x stressor interactions documented here appear to fit with theory and research it is quite plausible that the models (via coping) tested here did not adequately capture processes central to the mitigation of externalising symptomotology. In contrast to depression where direct connections between temperament and effortful coping have been postulated (e.g., Compas et al., 2004) (and confirmed in the current analysis), literature concerning externalising disorder makes only indirect links between temperament and coping, for instance via impairments in social relationships (e.g., Frick & Morris, 2004). Indeed, disruptive behaviour (anti-social personality and conduct disorder) appears somewhat unique from other psychiatric syndromes (including depression, anxiety and substance disorders) in that this is more strongly determined by *shared* environmental effects (Kendler, Prescott, Myers, & Neale, 2003). Thus, family-level factors, e.g., maternal characteristics (mental health; lifestyle factors: smoking, low level of education etc), maternal parenting (hostile-coercive) and family dysfunction are thought to make pivotal environmental contributions to risk trajectories, alongside individual-level qualities of the child (Howell, 2011; Moffitt, 2005; Tremblay, 2010). Hence, it is possible that in more complex pathways involving additional intervening variables, TEI might be better understood as a downstream protective resource exerting an effect on more specific family-level influences i.e., aspects of perceived family dysfunction such as parenting, conflict, dysfunctional affect etc. Indeed, within a context of risk, maternal factors (high levels of warmth, low over-involvement and control) appear to promote pro-social behaviour (Brennan, Le Brocque, & Hammen, 2003) which, as the polar opposite of externalising disorder, has been associated with high TEI in youth (Frederickson et al., 2012; Mavroveli et al., 2007; Mavroveli et al., 2009; Petrides, Sangareau, Furnham, & Frederickson, 2006). Furthermore, as noted earlier, preliminary links between TEI and specific aspects of adaptive family functioning have been uncovered, e.g., conversation orientation (not conformity), parental warmth and affection (not discipline), together with negative links to 'maladaptive' aspects, e.g., harsh punishment (Alegre & Benson, 2010; Ciarrochi et al., 2001; Keaten & Kelly, 2008).

Additionally, in sharp contrast with mood disorder research, self-beliefs appear inconsistently associated with behavioural symptoms, thus further hinting at the

possibility that TEI, considered emotional self-concept, may be implicated further downstream perhaps driving changes in family-level factors. For instance, Pargas, Brennan, Hammen & Le Brocque (2010) found that high *self-esteem* at age 15 years had a widespread protective effect predicting better mental health (composite indicator including mood and behavioural symptoms) at age 20 in those individuals with a family history of (maternal) depression *and* a normative comparison sample. However, in the at-risk group, parental relationship quality was also a robust predictor of resilience. Nevertheless, using more specific risk and outcome measures, self-esteem did not explain the effects of negative life events on externalising symptoms in bereaved youth (Haine, Ayers, Sandler, Wolchik, & Weyer, 2003) or in a adolescent community sample (Dubois, Felner, Meares, & Krier, 1994) although both studies found significant effects for internalising symptoms. By contrast, *self-worth* was found to be a significant mediator of the effects of cumulative life events and socio-economic adversity on externalising disorder in bereaved children (though intriguingly predicted more behavioural problems), but not in children of divorce, with academic *competence* showing the opposite pattern (Sandler, 2001). This evidence confirms that maintenance of positive self-evaluation (perhaps serving to stave off depressogenic cognitions such as hopelessness) is more central to protective mechanisms involving internalising symptoms and effects associated with externalising behaviours are variable, contingent on context and type of belief. Altogether, therefore, it will be important for future research to build on the current findings to further rule out or confirm the involvement of TEI (conceived as either emotional personality or self-concept) in additional proximal psychosocial processes known to contribute to the development and maintenance of externalising disorder.

Summary: TEI is useful for mitigating the effects of stressors on disorder although its mechanism of action varies in response to the type of stressor encountered and with respect to symptom outcome. High levels of TEI not only ensure more effective active coping in the face of family dysfunction to reduce depression, but can also directly buffer the impact of negative life events, socio-economic adversity and family dysfunction to reduce disruptive behaviour. Studying complex interactions between TEI and multiple coping styles in the context of psychosocial stressors and depression extends existing

research (e.g., Downey et al., 2010; Mikolajczak, Petrides, & Hurry, 2009) to show that it is through the *implementation* of *active* coping, rather than a reduced propensity to *select maladaptive* forms of coping (i.e., emotional or avoidant), that TEI makes a difference to mental health outcomes in adolescence. With TEI construed as *emotional personality,* this finding fully converges with prior literature examining the role of traits in coping processes (Bolger & Zuckerman, 1995; Carver & Connor-Smith, 2010; Connor-Smith & Compas, 2004; Dunkley et al., 2003; Vollrath, 2001). Both the content (a 'pro-socio-emotional' trait profile) and intensity (high versus low level) of TEI would appear to offer an explanation for the specificity of the coping process observed. Additionally, viewed as *emotional self-concept,* TEI should influence *willingness to persist* in active coping efforts to maintain positive self-worth, as predicted by self-system research (Dumont & Provost, 1999; Mosher & Prelow, 2007; Sandler, 2001; Sandler et al., 2000). Compared to general self-worth, domain-specific perceived competencies appear less influential in buffering the effects of distal stressors on depression which might further illuminate why TEI did not act in pathways involving socio-economic adversity and negative life events. Nevertheless, to establish the importance of contextual factors developmentally-sensitive, person-centred analyses of at-risk youth are now required. That TEI acted as a direct buffer of stressors for disruptive behaviour concurs with both personality theory (Bolger & Zuckerman, 1995; John et al., 2008) and previous adult TEI research. High TEI confers a protective effect when facing situational and chronic stressors (e.g., Ciarrochi et al., 2002; Mikolajczak et al., 2006; Mikolajczak, Roy et al., 2007; Salovey et al., 2002) and experimental evidence hints that perceptual differences in emotion-related processing (e.g., Fisher et al., 2010; Mikolajczak, Roy et al., 2009) and automatic mood recovery capacity (e.g., Fernandez-Berrocal & Extremera, 2006; Ramos et al., 2007; Sevdalis et al., 2007, study 2) could be drivers of this process. Nevertheless, insights from behavioural-genetic and self-belief research (e.g., Kendler et al., 2003; Pargas et al., 2010) suggest that additional family-level influences, not captured by the current study, may have a role to play, such that TEI may impact further 'downstream' in the modelling of more complex pathways. In order to confirm or deny these inferences, it will be important to examine whether stress-elicited reactivity processes differ as a function of TEI in clinically diagnosed adolescents *and* extend naturalistic study to examine specific proximal processes assumed more central to disruptive behaviour.

15.3.2 Pathways to disorder: The role of ability EI

Modelling the direct and indirect influences of stressors on disorder also implied a protective role for ability EI, yet once again this function differed according to the type of stressor and disorder under scrutiny. Converging with the TEI analysis, an EI-driven coping process appeared central to explaining the effects of stressors on internalising but not externalising disorder. However, the protective effect conferred by emotional skill operated at an earlier, *upstream* stage in the process; AEI *directly* interacted with stressors to *mobilise* an 'adaptive' (i.e., less avoidant) coping choice in adolescents to reduce depression. Like TEI, this effect was similarly stressor-specific (operating only in the context of family dysfunction and negative life events), however, in contrast to TEI, manifest in those with *lower* levels of ability (scores below +2 *SD* from the mean; 127.06). Nevertheless, this could be applied to 87% of the adolescents in the current sample and thus in actuality represented a more widespread protective effect than that found for TEI. AEI assumed a similar upstream role to attenuate disruptive behaviour in the face of stressors; this time better outcomes were associated with *higher* levels of emotional ability, however, this beneficial effect was restricted to the experience of socio-economic adversity only (although significant interactions involving active and avoidant coping were detected in other models, conditional indirect effects were not detectably different from zero). Notably, the pattern of this direct effect interaction again supports a 'diathesis-stress' account (contrastive; ordinal within the range of data) (Roisman et al., 2012). At this juncture, it is worth emphasising that these analyses illustrate the importance of specifying more complex models to better capture the relationship between EI and health. Even though basic, bivariate analyses found no direct relationship between AEI and depression, this work has shown that emotional skill makes an important contribution when multiple, intervening influences (of opposing directions) are appropriately modelled.

Thus, the chief role of AEI was to underscore individual differences in the experience of stressors to lead to the reduction of symptoms either indirectly (through adaptive effortful coping selection for proximal stressors and depression) or directly (i.e., not via coping for distal, chronic stress and disruptive behaviour). Notably, this trend is

consistent with the predictions derived from earlier theoretical discussion; as a pre-requisite skill-set for supporting general affect regulation yet most strongly determined by emotional *knowledge* (Wranik et al., 2007), a more direct role in pathways to externalising disorder was anticipated given the centrality of deficiencies in emotional understanding in conduct disorders (Hessler & Katz, 2010; Mullin & Hinshaw, 2007). Conversely, the nature of AEI (as emotional knowledge versus action) made indirect links to depression – a disorder closely associated with emotion regulatory activity (see e.g., Aldao et al., 2010; Compas et al., 2004) - more likely. That said, findings only partially concur with the early writings of AEI proponents. Whilst converging with the suggestion that ability EI underpins and *precedes* adaptive coping under stress (Salovey et al., 1999), that individuals "with emotional intelligence can be thought of as having attained at least a limited form of positive mental health" (Salovey & Mayer, 1990, p.201) requires qualification in light of the current findings. Here, very high levels of skill were not universally advantageous (i.e., only beneficial for disruptive behaviour but not depression) in adolescents. Whilst the AEI-stressor literature base is far smaller than for TEI, and exclusively focussed upon internalising outcomes, existing research offers some hints as to why these effects were observed.

The current analyses collectively suggests that (up to a point) those who are better able to identify and decode emotional cues, understand emotional consequences and manage reactivity once stressors are encountered, experience reduced levels of both internalising and externalising symptoms. Some evidence has examined whether AEI underscores differences in (protracted) mood management behaviour or immediate emotional reactivity to stressors. Ciarrochi, Chan and Caputi (2000) found that individuals with high levels of total AEI (MEIS) were more likely to recall positive (school-associated) memories following both positive and negative mood induction compared to their low AEI counterparts (who in fact showed no differences in the valence of memory recall across induction conditions). However, following this activity, differences in post-memory recall mood state were only found for *positive* affect following *positive* induction (i.e., higher AEI, specifically 'emotion management', related to higher levels of PA following positive induction but not lower levels of *negative* affect following *negative* induction when compared to low AEI individuals). Hence, this suggested that AEI might only be

useful for positive mood maintenance but not negative mood repair. To ensure this was reflective of mood management ability rather than differences in early reactivity, a follow-up study measured self-reported mood *immediately* following mood induction. No significant difference in immediate emotional state as a function of AEI was found, indicating that the effect reported by the original study (i.e., detectable differences in mood when given adequate time to 'manage' this) was robust. Nevertheless, the adaptive utility of this behaviour is unclear. Proficiency in mood repair, as self-regulatory responses to attenuate sadness, dysphoria is considered central to depression (Kovacs & Lopez-Duran, 2010) whilst the self-regulation of anger is also indirectly related to conduct problems (Frick & Morris, 2004), yet the management of such negative affect was not demonstrated here; positive mood maintenance did not operate in the presence of 'stress' (i.e., negative mood induction).

Work examining the relationship between AEI and experimentally-induced stressor reactivity is similarly equivocal. Matthews et al., (2006) found that total AEI predicted reduced *pre-task* distress and worry over the effects of personality (adding 2.5% and 5.2% incremental variance respectively) suggesting that those with higher AEI came to the experimental session in a more positive mood state than those with lower AEI. However, controlling for this pre-task state, higher levels of both AEI and trait Neuroticism were predictive of *increased post-task* distress and, in contrast to TEI, AEI did not modify the effect of stress (condition) on emotional reactivity (distress or worry). Therefore, converging with Ciarrochi et al., (2000) any benefits of higher AEI would seem to be restricted to positive rather than negative affectivity and this may have limited applicability within a stress context. Despite those with higher AEI reporting a better subjective mood state initially (less distress, worry) this did not confer any advantage in the face of stressors. AEI predicted increased reactivity and did not offer protection against a situational stressor. Taken together, these studies offer a perplexing picture; both converge in suggesting that AEI might represent differences in the capacity to experience (more) positive affect, with the work of Ciarrochi et al., (2000) indicating that individuals with higher emotional skill are able to utilise this 'hedonic' capacity for mood management (use their enhanced positive cognitive bias to generate positive memories to maintain a positive mood). This is important since low positive emotionality is thought

to be a precursor to the development of internalising disorder (Durbin, Klein, Hayden, Buckley, & Moerk, 2005; Kovacs & Lopez-Duran, 2010). However, this does not appear to translate into an effective strategy when facing passive or experimental stressors. Clearly, the reactivity and mood management capabilities associated with AEI require further concentrated investigation (and extension to physiological-level changes) but early indications are that AEI does not exert a protective advantage through mood repair.

Another potential mechanism through which AEI may afford an upstream advantage is through enhanced detection and filtering of emotional cues from the environment. Indeed, proponents of AEI theory argue that emotionally 'intelligent' responding should equate to efficient performance, as faster accurate responding, in experimental paradigms assessing early emotional-information processing (Matthews et al., 2002; Mayer, Roberts et al., 2008). In line with this, Farrelly and Austin (2007, study 2) found proficiency in perceiving, using and understanding emotion was associated with negative expression discrimination on a speeded inspection time task (total MSCEIT: r = .23, p < .01), whilst ability to perceive and use emotion was linked to accurate decoding of dynamic verbal and non-verbal cues (total MSCEIT: r = .29, p < .01) (Farrelly & Austin, 2007, study 1 though not study 2). Moreover, Martin and Thomas (2011) found that total AEI was associated with better performance on the Emotional Stroop task, i.e., reduced response latencies/less interference from negative emotional content (r = -.27, p < .01), though this effect appears more strongly related to enhanced emotion management and perception rather than the ability to use emotion to facilitate thought (i.e., in this case, protect though processes from interference), running contrary to predictions in the literature (Roberts et al., 2006). However, this latter research can only be considered exploratory given that the participants involved were non-native English speakers and, most likely as a result of cross-linguistic transferability issues, scored well below the normative MSCEIT mean performance. Nevertheless, very recent work reports only negligible relationships between AEI and improved performance on a primed lexical decision task designed to tap selective attention to emotional information (e.g., latent correlation with emotion management = -.09) (Fiori & Antonakis, 2012). Indeed, structural equation modelling found only trait Openness and IQ to be significant predictors of faster correct performance. Nevertheless, cross-task methodological

differences may account for these anomalies, e.g., as well as differences in task complexity (inclusion of a lexical decision task), stimuli in Fiori & Antonakis (2012) were presented at a flat rate of 350 milliseconds whilst Farrelly & Austin (2007) varied stimulus presentation in increments up to 400 milliseconds. Clearly these divergences together with the fact that these processing differences have not been investigated in the context of lab-induced stress limit the interpretations that can be drawn from this small body of research. Nevertheless, on balance, they do hint that high AEI might be linked to faster detection and enhanced filtering/inhibition of emotional cues (particularly those of a negative valence).

This would appear to offer a plausible explanation for both of the upstream protective effects found in the current research. As noted across the opening chapters, attentional deployment and re-orienting are capacities considered central to emotion regulation processes (Gross & Thompson, 2007) and when these go awry can manifest as maladaptive regulatory practices (e.g., rumination, passivity) that are linked to disorder (Aldao et al., 2010; Garnefski et al., 2005; Neumann et al., 2009). Moreover, attentional processes (appraisal) are also pivotal to effortful coping, governing threat evaluation (detection; controllability) and ensuing strategy selection, e.g., engagement or disengagement (Carver & Connor-Smith, 2010; Compas et al., 2001; Lazarus & Folkman, 1984). Hence early identification and attentional control of socio-emotional cues from the environment when under stress could be directly *and* indirectly advantageous. This interpretation would appear partially consistent with conclusions drawn from aforementioned adult research where elements of AEI are reportedly enhanced in individuals with a history of exposure to chronic stress i.e., physical/psychological maltreatment, sexual abuse and poverty (Goldenberg, 2004; Kraus et al., 2010, study 1). Interestingly, the same effect was not found between AEI and retrospective reports of early family dysfunction in adults (Gardner et al., 2011). Although both of the former analyses did not explicitly link these associations to measures of adaptation and relied on retrospective reports of childhood adversity, they imply that AEI might be especially useful (and thus become honed with practice) in chronically under-resourced and neglectful environments. Within these settings, being externally-orientated towards

environmental cues might mitigate the chance of exposure to further uncontrollable stressors (Kraus et al., 2010). Work by Cha and Nock (2009) with 'at-risk' adolescent females further corroborates this notion in finding that emotional abilities (particularly managing and understanding emotion) moderated the impact of concurrently reported sexual abuse on suicidal behaviour (frequency of suicidal ideation and actual attempts within past year). The potential specificity of this effect to chronic (uncontrollable) rather than interpersonal (controllable) stressors is further highlighted by research that failed to detect a protective effect for AEI (perceiving emotion) against negative life events and finding instead that high levels of AEI may even constitute *vulnerability* in the face of daily hassles (Ciarrochi et al., 2002). Hence, this small body of research not only provides some indication as to why AEI might confer protection under stress but is also consistent with the specificity of the effects observed in the present analysis (i.e., that higher emotional skill directly mitigates the effects of chronic socio-economic adversity on disorder).

Taken together, this evidence supports the notion that an AEI-driven buffering mechanism, perhaps best attributed to differences in early emotional processing, may only have a beneficial *direct* effect on disorder in the context of *chronic* stress. Whilst the nature of the current, cross-sectional design precludes inferences as to whether this protective mechanism arises from the 'developmental honing' of AEI under conditions of chronic adversity, these findings nevertheless offer an intriguing platform upon which base future longitudinal research that will be better positioned to explore this hypothesis. Nevertheless, in contrast to existing research, the current effect was found to apply to externalising but not internalising disorder. Firm inferences as to why this might be the case are not possible given this is the first study to examine how AEI relates to disruptive behaviour and stressors. Although some evidence indicates that lower socio-economic status may be a stronger distal correlate of externalising rather than internalising disorder (e.g., Amone-P'Olack et al., 2009) a recent review of the literature failed to conclusively substantiate this trend (McMahon et al., 2003). Additionally, as per the earlier TEI discussion, it cannot be ruled out that AEI could act through additional intervening, family-level variables, not captured by the current research, to mitigate behaviour

problems in adolescents. Indeed, a growing body of research emphasises the 'social' advantages of high levels of emotional skill, e.g., increased positive relations with others, satisfaction with relationships, quality of interaction, pro-social behaviour and interpersonal sensitivity (Lopes et al., 2004; Lopes et al., 2005; Lopes et al., 2003; Rossen & Kranzler, 2009), though again, this has not yet been explored in adolescents. Replication of this analysis with extension to the inclusion of social, family-level factors will be warranted to affirm the distinct mood/behavioural disorder pathways found here. However, the aforementioned findings that reported inconsistent and/or ambiguous buffering effects associated with interpersonal stressors (i.e., daily hassles, major negative life events) could be considered inadvertent support for the fact that AEI operates indirectly to exert an effect on internalising symptoms.

The present discussion makes a case that the benefits of AEI (as superior early emotion processing) are channelled via effortful coping to impact depression, such that socio-emotional skill extrinsically powers the selection of adaptive coping strategies when faced with stressors of an interpersonal nature. Importantly, the preference for less frequent use of a traditionally 'maladaptive' avoidant style of coping found here is in line with the small pool of existing studies that have examined isolated links between AEI and coping strategies; the most consistent associations have been found for reduced use of avoidant or emotional styles rather than increased active approaches (Gohm et al., 2005; Goldenberg et al., 2006; MacCann et al., 2011; Peters et al., 2009) and AEI would appear to be a significant moderator of the effects of occupational stress on emotional coping style to impact physical health (Peng et al., 2010). Moreover, in an experimental setting, AEI again predicted less avoidant and emotional coping (not more problem-focussed) coping with task-induced stress but, diverging from the current findings, did not moderate the effects of stress to predict coping choice (Matthews et al., 2006). Nevertheless, this conflicting finding may arise from differences in the stressor experience measured (i.e., an acute, performance-based lab stressor versus broad, naturalistic interpersonal stressors) which clearly differ according to intensity and duration. Instead, it is suggested here that in response to ecologically-valid stressors AEI can be useful in mobilising these forms of coping. That AEI related to less frequent selection of *avoidant*

coping when faced with family dysfunction and negative life events can be seen as 'adaptive' given that increased use of avoidant strategies (here comprising distracting actions, avoidant actions, wishful thinking and repression) in the face of controllable stressors is typically associated with poorer outcomes (Compas et al., 2001; Seiffge-Krenke, 2011). Both the measure of family dysfunction (i.e., tapping perceived roles, communication etc) and negative life events (network, romantic, academic etc) assume aspects of 'controllability' consistent with this interpretation, however, future fine-grained analysis of life events by subtype together with isolated elements of the family environment are required in order for this conclusion to be verified.

Yet since analyses show that AEI does not alternatively promote an active or support seeking approach that would help to tackle the problem head-on (perhaps by changing interpersonal relationships to avoid repeated conflict or by addressing the negative affect arising from these encounters) it can only be speculated at this stage why merely being *less* avoidant results in successful adaptation. The tentative proposal made here is that by representing individual differences in early emotional processing (particularly attentional deployment/control and speed in identifying negative affect), individuals with higher levels of AEI rely less on effortful, downstream avoidant strategies because they are more adept at *early* selection of appropriate situations (choosing whether to enter and engage in stressful situations) and, once within a setting, engage in effective modification of the internal and external environment (i.e., use attentional control to filter/inhibit emotional information and redirect internal focus). Notably, these features correspond to *antecedent* strategies within the framework of the Process Model of emotion regulation, occurring before the emotion response arises along with the need for up or down-regulation (Gross & Thompson, 2007) and have been linked to lower levels of distress in young children, adolescents and adults (for review see Kovacs & Lopez-Duran, 2010). However, the present findings also indicate that very high levels of emotional proficiency are ineffective in reducing depressive symptoms, partially concurring therefore with the earlier findings of enhanced post-stressor reactivity (Matthews et al., 2006) and amplified internalising symptomotology with daily hassles

(Ciarrochi et al., 2002). This would imply that being less avoidant is unhelpful for those with extremely high levels of emotional awareness and knowledge.

Speculatively, it is possible that heightened early perception of emotional cues contributes to an 'over-vigilant' state in these individuals, in that they are hyperaware of negative emotional content which becomes overwhelming and (in light of the earlier discussion) triggers unmanageable levels of negative affect. Hence, for these individuals being *more* avoidant would be the optimal effortful coping strategy under stress. Indeed, evidence confirms that heightened physiological arousal interferes with mood repair and may produce a bias towards negative emotional memory recall (ruminative focus) which contributes to depression (Kovacs & Lopez-Duran, 2010). In order to verify whether this is a plausible account of the effects found here, investigation into how the physiological reactivity of individuals under stress varies as a function of AEI requires urgent attention. Establishing the relative protection and/or physiological vulnerability afforded by AEI is especially critical for adolescents given that this age group are characterised by heightened sensitivity to stressors (particularly those of a social nature) (e.g., Stroud et al., 2009). Additionally, this 'early-regulatory' interpretation could be further examined using self-report data to statistically probe whether a better fitting model encompasses significant paths from AEI-stressor interactions on to depression direct *and* also on to avoidant coping (i.e., as an indirect influence). Empirically, work might be extended to examine whether AEI links to the self-reported use of these antecedent-focussed strategies and how this in turn fits within the stressor-health process – whilst a basic correspondence between antecedent and response focussed strategies has been investigated with reference to TEI in adults (Schutte et al., 2009) this has not yet received attention in the AEI arena. Moving away from this early-regulatory explanation, it is also possible that AEI did promote active and support seeking approaches but that these associations were obscured through aggregation in the current dimensional analyses. For instance, 'active' coping reflected a composite of problem-solving and positive cognitive restructuring strategies, the latter of which are 'meaning focussed' and represent a way that positive affect may be generated and harnessed within stress process (Folkman & Moskowitz, 2000). Given the earlier discussed links to positive affectivity, higher AEI could

reasonably be expected to relate to this latter cluster of strategies (e.g., positive reframing, control, optimism etc). Future work could rule out this possibility by conducting strategy or cluster-specific coping analyses.

Summary: The importance of examining how AEI influences wider stressor-health processes was underscored by the present work where emotional skill was found to confer a protective effect in pathways to both externalising *and* internalising symptoms (despite the lack of a direct effect linking AEI to the latter). Contrary to TEI, emotional skill was found to operate at an earlier, upstream stage in proceedings – for depression, AEI interacted with family dysfunction and negative life events to mobilise adaptive coping, whilst for disruptive behaviour AEI attenuated the effects of socio-economic adversity directly. However, contrasting with AEI theory (Salovey & Mayer, 1990) very high levels of emotional skill were not beneficial for mitigating the effects of interpersonal stressors on depression. Whilst the dearth of research examining the role of AEI under stress makes extrapolations from existing evidence tentative, a review of available literature suggests that AEI does not reflect superiority in mood repair skills (Ciarrochi et al., 2000; Matthews et al., 2006) but may confer an advantage through enhanced early detection and filtering of emotional cues (Martin & Thomas, Farrelly & Austin, 2007; 2011) - processes pivotal to both early emotion regulation (attention deployment, orienting etc) and later effortful coping (threat evaluation; strategy selection) (Carver & Connor-Smith, 2010; Gross & Thompson, 2007). Evidence suggests that these skills (as represented by AEI) might thrive within and protect against exposure to *chronic* stressors directly (Cha & Nock, 2009; Goldenberg, 2004; Kraus et al., 2010) and that poverty may be a more robust correlate of externalising rather than internalising symptomotology (Amone-P'Olack et al., 2009) thereby supporting the pathway detected for disruptive behaviour. That emotional skill interacted with stressors to power coping strategies is consistent with prior AEI research examining *interpersonal* (Peng et al., 2010) but not performance based stressors (Matthews et al., 2006) thus corroborating the nature of the indirect mechanism found in the current analysis. Crucially, less frequent use of avoidant coping in the face of interpersonal (controllable) stressors can be considered 'adaptive' (Compas et al., 2001). It is speculated that superiority in emotion-focussed attentional deployment (influencing situation selection; modification etc) would engender less

reliance on later effortful avoidant coping but at the same time very high levels of proficiency might represent a hyper-vigilance or over-awareness of negative emotional cues. This could explain why less avoidant coping was ineffective in reducing depression at very high levels of ability EI. Nevertheless, these interpretations require empirical corroboration; in particular, work must now examine whether underlying physiological reactivity and recovery to stressors differs in adolescents as a function of AEI and how AEI maps to specific antecedent emotion regulatory processes.

15.3.3 Emotional skill and personality: Dual influences on adaptation

Rather than viewing AEI and TEI as competing, mutually exclusive perspectives (see e.g., Mayer, Roberts et al., 2008; Petrides, 2011a), this work adopted the position that they represent complementary approaches to the study of EI and both have the potential to offer valuable insight into adaptational behaviours - after all, emotional skill, as indexed via AEI, indicates maximal potential (i.e., what we *could* do given optimal circumstances) but not necessarily what we *typically* do in practice, which could be influenced by a variety of implicit factors, some aspects of which are captured by TEI (Gohm et al., 2005; Mikolajczak, 2009). Indeed, earlier discussion has already emphasised how traits influence perception and action; specifically, the manifestation of key adaptational processes - emotion regulation and coping (Bolger & Zuckerman, 1995; Rothbart & Sheese, 2007). Corroborating this position, latent variable modelling found that whilst both emotional skill and personality supported the coping process, they assumed distinctive roles, either as a 'mobiliser' or 'implementer' of coping styles, raising the possibility that a specific skill/trait profile exists to *collectively* underscore optimal adaptation under stress. Importantly, the present work differs from the uni-directional/ co-varying stance taken by other EI researchers who suggest that "higher levels of ability emotional intelligence may predispose individuals to display more often emotionally intelligent characteristics [that] will tend to result in higher trait emotional intelligence" (Schutte et al., 2011, p.261). The previous analysis found that high levels of emotional skill were not universally beneficial but that high levels of competency could be. Hence it follows that there might be instances where individuals may possess high levels of actual skill but have lower self-perceptions of their abilities and therefore lack the emotional

confidence to translate this (coping) knowledge into practice. Importantly, prior research also hints at this possibility. For instance, Zeidner, Shani-Zinovich, Matthews & Roberts (2005) found that academically gifted individuals had higher levels of emotional skill but lower levels of perceived emotional competency compared with non-gifted students (who intriguingly showed the reverse trend). Moreover, in adults, high levels of AEI differentially related to lower levels of perceived stress as a function of TEI (TMMS facets: 'intensity', 'clarity'); AEI appeared advantageous when 'clarity' and 'intensity' were either uniformly high or low, but was not beneficial for those who were potentially most vulnerable – individuals experiencing intense emotions and a lack of perceived emotional understanding (Gohm et al., 2005).

In the present research, supplementary path analyses provided further support for this idea. Trait and ability EI were found to work conjointly, influencing the effect of all three stressors on disorder through coping (although this effect was specific to depression only). Converging with earlier latent variable modelling, AEI mobilised the selection of avoidant coping whilst TEI modified the effectiveness of this approach under stress (TEI also amplified the effects of active coping on depression, as per earlier analyses, but this was not conditional on both AEI and TEI). Importantly, effects were found to be significant at *above average* levels of AEI and thus shed light on why coping processes appeared less effective in mitigating the effects of stressors on depression at high levels of emotional skill in earlier analyses. Across all contexts (but particularly family dysfunction), the most deleterious effects were found for adolescents with above average levels of AEI yet below average levels of TEI; higher levels of emotional skill interacted with stressors to trigger avoidant coping but with lower levels of emotional self-concept, depression increased. As a rejoinder to the previous discussion, it would seem that with increasing emotional skill there is a tendency to activate avoidant coping under stress, perhaps in an effort to minimise any negative emotional reactivity arising as a consequence of the emotional hyper-acuity associated with high levels of skill. Yet critically, this defence can fail to protect individuals with low levels of TEI; these *self-effacing* individuals lack confidence in their abilities and cannot (or are unwilling to) implement avoidant strategies appropriately to circumvent the negative emotionality

arising from stress. However, better outcomes were found with increasing levels of emotional confidence and, at very high levels of TEI, the effects of family dysfunction on depression were significantly attenuated (conditional indirect effect becomes negative). These individuals have good levels of actual emotional ability yet crucially, also possess *accurate perceptions* and confidence in their skills (i.e., believe they can identify, control, express emotions and make a positive impact on their situation). This positive self-belief/pro-social personality profile confers protection against any negative emotion arising from cognitive/behavioural avoidance to reduce depression. Whilst effects appeared small in magnitude, the proportion of adolescents adversely affected by family dysfunction and poverty as a function of this 'maladaptive' EI profile equated to 8% (*n* = 92), whilst for negative life events this was greater, affecting 16% of adolescents (*n* = 186). Conversely, 12% (*n* = 138) of adolescents benefitted from having very high levels of TEI and AEI when facing family dysfunction.

As well as demonstrating that high levels of AEI could be harmful when coupled with very low emotional self-competency, analyses illustrated that there may also be occasions where high levels of TEI are counter-productive. Although not reaching statistical significance, the trend across all three models suggested that adolescents with low levels of actual emotional skill yet extremely high levels of emotional self-competence do more poorly relative to those with lower levels of TEI and AEI. Hence it would appear that this group inaccurately perceive and *overestimate* their abilities, wrongly believing that they have exemplary emotional skill, and a corollary of this is increased depression through avoidant coping. In fact proponents of TEI anticipate this scenario; Petrides (2011) postulated that high TEI scores may actually be "indicative of hubris and self-promotion" adding that "low trait EI scorers are more likely than their high-scoring counterparts to be straightforward and less likely to be afflicted by a need for self-verification and image management" (p. 661). The idea that self-aggrandisement leads to negative outcomes has a rich history and applicability here given that TEI reflects both a self-system belief (as emotional self-concept) as well as emotional personality. Whist, as noted in the previous discussion, maintaining positive self-worth can have benefits for mental health (e.g., Noble, Heath, & Toste, 2011; Prelow et al., 2006) there is

also ample evidence that highly inflated (and unstable) levels of self-esteem can lead to negative consequences, including aggression (for review see Baumeister, Campbell, Krueger, & Vohs, 2003) - particularly when "such beliefs are bought at the cost of gross distortions of reality, have to be constantly defended against evidence from the environment, or require foregoing the development of competence in socially valued roles" (Sandler, 2001, pp. 30-31). Indeed, very recent research reported a *positive* association between TEI and subclinical narcissism (Petrides, Vernon, Schermer, & Veselka, 2011) which, as one of the 'Dark Triad' traits reflecting grandiose self-regard and superiority has also been linked to externalising behaviours (Baumeister, Bushman, & Campbell, 2000). Self-regulation failure may contribute to this effect; Baumeister, Heatherton, and Tice (1993) found that when threatened, individuals with inflated 'egotistical' illusions were found to set unrealistic, unattainable goals which actually increased the likelihood of failure on a performance-based lab task compared to those with lower self-esteem. However, it would appear that *underestimating* ones performance can be similarly detrimental. Corroborating the current findings, evidence suggests that both embellished and diminished perceptions of abilities can have deleterious health consequences; in students, both self-*effacement* (less favourable perception relative to actual cognitive ability) and self-*enhancement* (more favourable perception of cognitive ability relative to actual performance) were related to increased depression and to higher levels of dejection-related emotion following experimentally-induced (inconsistent) performance feedback (Kim & Chiu, 2011). This provides support for the idea that there is an optimal level for positive illusions (e.g., Baumeister, 1989) but that *accuracy* of self-perceptions is most advantageous.

Summary: Building on earlier latent variable modelling, path analyses explored how ability and trait EI work together to influence coping processes and promote adaptation. Converging with earlier analyses, results suggested that the EI-driven coping process is more central to depression rather than disruptive behaviour where there may be other mechanisms at play. However, it would seem that having high levels of emotional skill are not universally advantageous for reducing depression; individuals who know what to do when faced with stressors (i.e., apply emotional knowledge and skill to

set in motion an appropriate coping strategy) do not always have the optimal levels of emotional self-confidence to implement this course of action effectively. It would seem any deleterious effects arising from behavioural or cognitive avoidance can be overridden by high levels of TEI - these individuals have confidence in their emotional skills and make an avoidant style work for them, although this effect only reached significance when facing family dysfunction. Data suggested that inaccuracies in self-reports (i.e., mismatches between perceived and actual emotional competency - both self-enhancement *and* self-effacement) might perpetuate mental ill-health through the coping process. Whilst results require replication with control for measurement error (currently precluded by the complexity of non-linear modelling required) they nevertheless carry important implications for EI-based interventions.

15.4 Implications for policy and practice

Early identification of mental health problems in young people together with the development of effective prevention and intervention programmes is of vital importance. As noted earlier, prevalence rates for clinically recognisable mental disorders amongst UK adolescents aged 11-16 years are estimated at 11% (13% for boys and 10% for girls) of which 6.6% of young people have been identified as having externalising disorders and 5% emotional problems (Green et al., 2005). Moreover, there has been an incremental rise in the prevalence of childhood conduct and emotional disorders over the last quarter of a century (Maughan, Collishaw, Meltzer, & Goodman, 2008), the significance of which is heightened given the enduring and often debilitating trajectories associated with child-onset mental health problems (Kim-Cohen et al., 2003; Rutter, Kim-Cohen, & Maughan, 2006). For instance, high self-reported conduct problems in adolescence are strongly associated with poorer long-term outcomes, e.g., unemployment, less stable relationships and poorer self-reported health (Collishaw et al., 2004). Schools are regarded as central to the promotion of positive wellbeing in children and adolescents; they offer a protective, supportive environment (which may in itself act as a key resource in the stress-buffering process) and are key settings for the delivery of universal, targeted and indicative prevention and intervention programmes (Weare & Nind, 2011). Indeed,

in the UK, the 'emotionally healthy' school has been at the heart of recent educational strategy which recognises a link between health behaviours and achievement; promoting emotional health and wellbeing was one of eight key areas of activity prioritised by the *National Healthy School Standard* (Department for Education and Employment, 1999), contextualised by the *Every Child Matters* framework which advocated the need for national services to ensure that young people are healthy, enjoy and achieve, stay safe, make a positive contribution and have economic wellbeing (Department for Education and Skills, 2003). The development of social and emotional competencies in youth is viewed as integral to achieving this standard and government-endorsed, whole-school based *Social and Emotional Learning* (SEL) programmes have been developed to try to meet this need (e.g., Department for Education and Skills, 2005; Department for Education and Skills, 2007). This trend parallels SEL programming in other countries (see e.g., Collaborative for Social and Emotional Learning, 2003) where the goals are to build competency in emotion recognition and management, problem-solving, self-regulation (for setting and achieving positive goals) and skills for establishing/maintaining positive relationships (Zins & Elias, 2007).

Whilst commentators here (e.g., Craig, 2007) and in the US (e.g., Mayer & Cobb, 2000) cautioned that full-scale integration of a 'feelings' curriculum had been too readily adopted in the wake of the journalistic popularisation of EI (i.e., Goleman, 1995) and lacked an informed evidence base, latterly, research supporting the effectiveness of universal (i.e., non-targeted) SEL programmes has begun to emerge. A recent meta-analysis of 207 intervention effects found that well-implemented SEL programmes can reduce internalising and externalising symptoms (mean post effect sizes = .22; .24) and impact positively on social and emotional skills (.57), pro-social behaviour (.24), attitudes towards self and others (.23) and academic achievement (.27) in youth aged 5-18 years (Durlak et al., 2011). Whilst these effects were of small to moderate magnitude and potentially lacked longevity (remaining significant but reducing markedly in 6-month follow-up data involving 15% of the studies reviewed), findings do suggest that there is value in promoting SEL competencies in school and, importantly, that these skills can be 'taught' to some extent. However, the most appropriate method of programme delivery is still debated; compared to universal *prevention* (i.e., positive health promotion for all,

including youth without difficulties), effects of *interventions* (i.e., targeted approaches for 'at risk' youth) have often been found to have greater impact (Weare & Nind, 2011). Indeed, following their review of reviews of the efficacy of both types of programmes, these authors concluded that a combined approach may be optimal advancing the notion that, "It may well be that mental health promotion in schools needs to redress the balance somewhat in favour of more work on targeted approaches, while continuing to embed and integrate them within a robust universal approach" (Weare & Nind, 2011, p.64).

The current research both converges with *and* extends the evidence base pertaining to SEL. Whilst SEL programmes are focussed on teaching *integrated* socio-emotional skills which clearly encompass more than just the nuanced components of trait or ability EI (e.g., responsible decision making, setting realistic goals etc, in addition to empathy, emotional awareness) the *collective* importance of EI for mental health outcomes is nevertheless emphasised by the SEL efficacy literature and in the current findings – both emotional self-concept/personality and skills can have an impact in mitigating disorder and are mutually beneficial in working towards better health. However, by situating T/AEI in the wider stress context, the current work extends existing EI evidence pertaining to youth (which has so far largely focussed on examining isolated connections to related variables) by uncovering *how* each of these resources might operate in pathways to adjustment. This also goes beyond the SEL literature and represents an important contribution to knowledge of import to practitioners and policy-makers. Specifically, the impact of teaching the component parts of SEL (i.e., discrete emotional skills or perceived competency) has not been investigated despite the fact that determining how these skills, or combinations thereof, contribute to different outcomes is considered key for the *optimisation* of intervention and prevention programmes (Collins, Murphy, Nair, & Strecher, 2005; Durlak et al., 2011). Hence, finding that the mechanism of action for perceived versus actual emotional skill differs in terms of outcome (internalising versus externalising symptoms) *and* as a function of stress context (proximal versus chronic) represents an important advancement of knowledge and one which converges with Weare and Nind (2011) - a 'one size fits all', blanket-style approach to SEL promotion may be missing the mark for youth who would benefit the most.

Moreover, in addition to understanding more about *who* might benefit most from SEL programming and *when* (i.e., under which circumstances), these findings also emphasise *what* should be taught in order to optimise the content of preventions for maximal gains. The current findings indicate that it is important to boost emotional knowledge/skills *in tandem* with emotional self-concept to bolster coping processes, particularly for those exposed to family dysfunction who are at-risk for depression. However, it is notable that, to date, programme effects on improving social and emotional 'skills' have been predominantly evaluated by measuring changes in SEL components via self-report/questionnaire methods (e.g., akin to TEI) rather than ability based approaches (see e.g., Durlak et al., 2011). Hence, it remains quite plausible that, in their current format, the effectiveness of SEL programmes may be restricted to raising *self-efficacy* or *perceived* competencies rather than *actual* ability. Indeed, a recent national evaluation of a government-sponsored, small group work intervention in UK schools found improvements in aspects of self-reported emotional competency, however effects on component emotional *abilities* (understanding and identifying emotion) were non-significant (Humphrey et al., 2008). This is clearly something that needs to be addressed in future programme efficacy evaluations. Programmes must be able to demonstrate measureable impact in both domains - if it is found that this is not the case, steps must be taken to further tailor teaching delivery and/or programme content to redress the balance between skills and self-efficacy. However, whilst the current findings highlight the importance of both facets of EI by suggesting that emotional knowledge alone is not enough to achieve beneficial outcomes and that youth should be given opportunities to practice using emotional competencies in a safe environment to build emotional self-efficacy, there is an important caveat to this message. Programmes should not focus on boosting emotional self-concept arbitrarily; this should be performance related with opportunities for reflective practice to facilitate *accurate* self-perceptions.

Importantly, these themes are echoed in a parallel body of research examining whether it is possible to train EI in adults. Nelis, Quiodbach, Mikolajczak and Hansenne (2009) devised a short (10 hour) training programme which exposed an intervention group (19 adults; mean age 21 years) to four sessions of targeted teaching of theory

underpinning each of the four-branch skills of the AEI model. As part of this process, participants attended lectures, engaged in role plays, and applied taught knowledge to the analysis of personal emotional experiences. Compared to controls (*n* = 18) intervention participants evidenced significant improvements, sustained over a 6 month follow-up period, in perceived emotional awareness, self and other related emotion management and global TEI (though not emotional understanding; perceiving emotion not assessed). Thus, as hinted at by the youth prevention literature, there appears to be yet further divergence between trait and ability EI; as well as operating differentially as protective resources, it would seem that not all facets of EI may be similarly enhanced in adulthood (i.e., predominantly trait and not ability EI). However, caution is warranted given the small sample size, limited follow-up period and the fact that only two component 'skills' of global AEI were assessed (and performance was not indexed via the MSCEIT). Additionally, the use of only self-reported assessment represents a further methodological confound. Nevertheless, the same research group have more recently corroborated these findings in larger adult samples (intervention *N* ranging between 29 to 72) using a mixture of self, other report and objective measures of improvement (Kotsou, Nelis, Gregoire, & Mikolajczak, 2011; Nelis et al., 2011). As well as enhancement in global TEI, emotional understanding and management, improvements in a range of additional adaptive outcomes have been found including, increased life satisfaction, happiness, social functioning and decreased perceived stress symptoms, somatic complaints, mental ill-health and salivary cortisol levels (measured immediately post-intervention). Importantly, Kotsou et al., (2011) found that improvements can be maintained up to a year post intervention *but* that pre-existing level of TEI may moderate outcomes; those with lower TEI at baseline improved to a greater extent than those with higher baseline levels. This converges with youth-focussed prevention literature to reinforce the notion that a *targeted* training approach, perhaps focussing on those most 'at-risk' (i.e., with lower levels of competency), may be optimal. Nevertheless, this literature is collectively limited by its focus on typically functioning adult volunteers – in fact only adults who demonstrated a motivation to change or improve their emotional functioning were included in the above studies which clearly differs from the universal (obligatory) school-based approaches for youth attending school.

Summary: Given that both trait and ability EI are differentially involved in buffering the effects of stressors on depression and disruptive behaviour there is now clear impetus to promote these competencies in young people. Evidence suggesting that emotional skills and self-competencies can be improved in young people via school-based universal prevention programmes (and in adults via targeted training) serves to amplify the importance of the findings of the current research. Indeed, demonstrating the 'trainability' of TEI (i.e., as emotional *personality*) is particularly important - this challenges the notion that traits are fixed entities, impervious to change, and converges with recent research charting the relative instability of the Big Five until late adulthood (e.g., Roberts & DelVecchio, 2000). Evidence suggests that environmental input can trigger some change even in typically functioning adults. Nevertheless, much work remains to be done to establish the timing and sensitivity of these effects on adjustment in typical populations *and* in 'at-risk' or 'indicated' groups (e.g., adolescents exposed to chronic disadvantage/facing family dysfunction or those exhibiting prodromal symptoms of depression/disruptive behaviour). Additionally, it will be important to establish the longevity of prevention efforts at programme level but also with respect to components of EI (e.g., understanding emotion, managing emotion etc as embedded within SEL programmes) to ensure optimised programme content and delivery. Prevention evidence and targeted EI training in adult groups hints that programmes tailored to the needs of young people may have the greatest impact but that not all facets of EI may be similarly enhanced.

15.5 Limitations and future directions

This research has shown that TEI and AEI can predict adolescent mental health beyond the effects of higher-order personality dimensions and general cognitive ability and, more importantly, both serve 'adaptive' protective functions in pathways to disorder. Nevertheless, each construct operates differentially and with limited applicability within the stress-buffering process – high levels of EI are not universally advantageous across all contexts or outcomes. EI directly buffers the effects of stressors on externalising disorder but exerts an indirect effect through coping (with AEI interacting with stressors to mobilise coping choice and TEI influencing coping implementation) to

mitigate internalising symptoms. However, these effects were stressor-specific; collectively, EI was most influential in models predicting disorder from the proximal stressor, family dysfunction (all significant bar disruptive behaviour/AEI). Nevertheless, this is particularly significant for the potential utility of the EI construct given research suggests that 46% to 82% of all daily stressors reported by adolescents are of an interpersonal nature, i.e., problematic relationships with peers, parents and romantic partners (Seiffge-Krenke, 2011; Seiffge-Krenke, Aunola, & Nurmi, 2009). Supplementary path analyses emphasised the importance of *both* AEI and TEI in buffering the effects of stressors on depression via coping – above average/competent levels of emotional skill are ineffective if not coupled with high levels of emotional self-confidence, though the latter could be detrimental in the absence of emotional skill. In all cases, adolescents with accurate self-perceptions (i.e., realists) appear to fare better. Thus, by situating EI in a wider stressor-health context, these findings simultaneously extend the embryonic EI research base in adolescence and provide theoretical grounding for the importance of SEL-based prevention programmes in schools.

However, several design limitations mean that these findings can only be considered preliminary evidence for the involvement of EI in pathways to disorder. Firstly, significant effects (i.e., conditional indirect, direct and incremental) were small. Whilst this is anticipated in non-experimental studies (e.g., Hunsley & Meyer, 2003; McClelland & Judd, 1993) and the magnitude of conditional effects were in line with similar studies, e.g., examining the impact of stressors on disorder via the moderating and mediating influence of personality (Spinhoven et al., 2011), it is clear that the current analyses require replication in order to lend credence to the trends found. This is particularly important given the relatively new distribution analytic method of estimation (Latent Moderated Structural Equations: LMS) utilised for examining nonlinear latent effects in the main analysis. As noted in section 14.3.1, LMS has many advantages over traditional 'constrained' and 'unconstrained' product indicator approaches given its simplicity, distributional assumptions, estimation efficiency and power to detect effects in complex models with correlated linear predictors (Kelava et al., 2008; Kelava et al., 2011; Moosbrugger et al., 2009) all of which made it the methodology of choice for conducting

the current analyses. However, this is a computationally demanding technique and thus nested model comparisons together with additional testing for the presence of quadratic *and* interaction effects simultaneously were precluded. It is quite possible, for instance, that stressor effects could be curvilinear, such that adolescents may benefit more from a single unit decrease in stressors when stress is high rather than low (e.g., high socio-economic adversity might become increasingly harmful under conditions of high adversity and this might be more likely in adolescents with low EI). Thus, it will be important for future analyses to demonstrate that these interaction effects remain significant with control for quadratic terms (Roisman et al., 2012). To achieve this in the near future, it may be possible to utilise an alternative distribution analytic method – the Quasi Maximum Likelihood (QML) approach (Klein & Muthen, 2007) – which has shown promise for more complex modelling, although there is a speed/accuracy trade-off in terms of the numerical precision afforded by this technique (i.e., as an approximation of the true likelihood function) (for an overview see Kelava et al., 2011).

Secondly, and perhaps most importantly, the cross-sectional design utilised in the current research limits definitive interpretations regarding the nature of effects obtained. In particular, the possibility of *reverse causality* (i.e., that the presence of disorder elicits changes in EI, prolonging poor coping and/or increases the likelihood of experiencing stressors) cannot be ruled out – indeed, previous research with adolescents has found that psychopathology can lead to deficits in coping skills through a negative feedback loop (Seiffge-Krenke, 2000). Moreover, cross-sectional data only affords a snapshot of the developmental processes at work which restricts inferences regarding the longevity and stability of the EI-contingent effects demonstrated. As noted at earlier points in this discussion, it is likely that there will be *developmentally sensitive* time points within such pathways to adjustment; in addition to the predicted increases in both trait and ability EI across development (Mayer et al., 1999; Petrides, Furnham et al., 2007), literature suggests the use of specific coping styles changes with age (Amirkhan & Auyeung, 2007), potentially paralleling increases or decreases in the experience of stressors in mid adolescence (Sanchez et al., 2012; Seiffge-Krenke, 2000). Moreover, these changes are likely to be population, stressor *and* disorder specific. For instance, Sanchez et al., (2012)

found that over time, the effect of network events on depression differed according to type of event (e.g., family, peer etc) and these effects showed specificity according to gender. Similarly, Sternberg et al., (2006) reported that the timing of exposure to violence results in differential effects for dimensional disorders; experiencing violence increases the likelihood of developing severe externalising symptoms in younger children (ages 4-6 years) yet poses a greater risk for developing internalising disorder in adolescence (10-14 years). Consequently, using the current findings as a platform, research must now examine these associations prospectively via longitudinal designs that can model developmental change. Considered as the 'litmus test' for examining stressor-health relations (Grant et al., 2004) prospective designs circumvent the issue of reverse causality by tracking changes in symptoms (i.e., time 2) stemming from earlier-occurring or concurrent stressors with control for prior levels of symptomotology (i.e., time 1). Collecting outcome data across the developmental trajectory also affords statistical advantageous in that the familywise Type 1 error rate (i.e., falsely rejecting the null hypothesis) is also significantly reduced.

Whilst this work has taken an exploratory, variable-focussed approach to examining relations within a 'universal' sub-clinical sample of adolescents, it will be of interest to develop this line of investigation by conducting *person-centred*, longitudinal analyses of particular groups of 'at-risk' adolescents in relation to specific stressors. For instance, the current findings hint that youth exposed to broadband, interpersonal stressors (particularly family dysfunction but also negative life events) may most consistently benefit from the protective effects of EI. Thus, conducting fine-grained analyses to deconstruct if/how different forms of interpersonal stress (e.g., aspects of family dysfunction: discipline, roles, communication etc, or types of negative events: romantic, academic, peer etc) impact disorder via EI will represent a valuable extension to the current findings - particularly for understanding the protective function of EI in pathways to disruptive behaviour, where it remains plausible that many key, family-level variables were not captured by the present modelling. Gathering *other*-informant reports of stressors (e.g., parental data) to complement the adolescent (i.e., self-report) perspective will serve to strengthen enquiry in this regard; indeed, the use of stressor

interviews, which are suited to detailed probing of the timing and nature of more specific events (and are hence potentially more sensitive to tracking changes in symptoms) would appear most appropriate for this purpose (Grant et al., 2004). Moreover, examining whether the indirect (depression) and direct (disruptive behaviour) protective mechanisms uncovered in the current data hold in groups of adolescents exposed to high levels of socio-economic adversity will also be a necessary next step for research given previous studies indicate that this distal, chronic stressor may contribute to disorder via multiplicative intervening variables (e.g., Wadsworth et al., 2005). Indeed, this may well account for the apparent lack of association in models predicting depression from socio-economic adversity via the EI-coping process (i.e., poverty may relate to negative life events which in turn impacts this mechanism). It will also be of import to examine whether EI confers the same benefits to clinical groups and/or adolescents reporting a wider diversity of sub-clinical symptomotology. As noted earlier, modelling EI-influenced stress-resistance processes across a broader range of symptoms is particularly pertinent for establishing the 'diagnostic' utility of TEI given that the sampling domain (tapping aspects of negative and positive affect) dictates a strong association to mood disorders and depression in particular. Beyond this, integrated analyses accounting for the effects of co-morbidity (i.e., between internalising and externalising disorder) in stressor-symptomotology pathways will represent an important empirical development; this analysis has demonstrated that stressors may have common and distinct effects on dimensional disorders but that there is correspondence between the two clusters of symptoms (r = .48, p < .001) which could stem from a common casual factor (e.g., negative affect; temperamental self-control) (Lilienfeld, 2003) represented by EI and associated protective processes.

However, in order to further deconstruct exactly how EI confers protection it will be necessary to extend the findings of this self-report study to lab-based exploration of the attentional, regulatory and biological processes underpinning stress reactivity in adolescence. Extrapolating from the adult EI evidence base, earlier discussion speculated that EI may confer a protective effect by underscoring individual differences in emotional information processing (AEI/TEI) and/or automatic mood recovery under stress (TEI),

which, in turn, may directly or indirectly influence disorder – however, this remains unexplored in adolescents. Linking self-reported to objective markers of EI-influenced adaptive change in adolescents will not only help to combat the issue of common method variance – a limitation of the current research – but will also serve to link EI to the broader biopsychosocial processes known to be implicated in the onset and maintenance of disorder. It is widely held that there is a complex interplay between stressor-exposure, genetic, hormonal and developmental processes which can collectively increase the risk of disorder (Thapar et al., 2012) and impact resilience mechanisms (Luthar & Brown, 2007), for instance, stressors occurring in a context of poverty can affect the development of early self-regulatory skills through physiological changes (Blair, 2010). Hence, it will be necessary to examine whether EI represents individual differences in adolescent physiological reactivity and ultimately, whether this differs as a function of early stressor exposure in young people.

Moreover, there would appear to be much value in pursuing the role of *positive affectivity* in the stress-buffering process from both an objective/physiological and subjective/self-report perspective with reference to EI. A theme emerging from earlier discussion suggested that, in adults at least, both trait and ability EI might represent individual differences in dispositional positive affect and positive affect regulation (e.g., Ciarrochi et al., 2001; Ciarrochi et al., 2000; Schutte et al., 2002). This, taken in concert with evidence that positive affect is linked to specific forms of (problem-focussed) coping (Folkman & Moskowitz, 2000, 2004) and that *positive* life events may independently contribute to the course of symptomotology (e.g., Overbeek et al., 2010; Spinhoven et al., 2011), would suggest an exclusive focus on stressful (i.e., negatively valenced) events may not fully capture how EI operates to promote adaptation. It may be that EI exerts an effect on both the experience of stressful *and* positive life events and this may be particularly pronounced for TEI. For instance, evidence suggests that whilst negative events increase depression over time, the reverse is true for positive events *but* both of these effects are influenced by personality characteristics; higher levels of trait Neuroticism amplify the effects of positive but not negative life events whilst those with high levels of Extraversion appear more likely to engage in positive life events (Spinhoven

et al., 2011). Nevertheless, it is still unclear whether considered collectively, the experience of multiple positive events outweighs or mitigates the adverse effects of negative life events on disorder (Overbeek et al., 2010). It will be important to establish whether/how EI influences these processes. Examining stress reactivity in controlled lab conditions should also help to disentangle links between positive affect and stress processes in adolescents (i.e., whether high EI represents enhanced capacity for hedonic mood regulation versus negative mood repair as in adults, etc) which will be vital for confirming that the relationship between TEI, active coping (which includes problem-focussed and *positive* cognitive restructuring styles) and depression is not simply a manifestation of pre-existing (positive) emotional state represented by high levels of TEI.

This latter point also, in part, relates to ongoing issues of conceptual clarity that have dogged the construct since inception (see e.g., Matthews et al., 2004). The focus of this research was to examine the predictive and explanatory validity of EI with reference to mental health and analyses did not permit rigorous investigation of construct-specific measurement issues as introduced in section 10.1 (e.g., the extent to which AEI measures emotional knowledge versus actual skill/represents crystallised versus fluid IQ/scoring issues or how self-report response bias affects TEI). Nevertheless, the current findings, in concert with the accompanying discussion, imply that whilst EI (in both guises) may be useful as an *explanatory* construct in stressor-health processes, its relative 'novelty' is questionable. Statistically, this research demonstrated that although both ability and trait constructs contribute to the prediction of health outcomes, with allied variables controlled (personality and general cognitive ability) predictive power is substantially reduced. Despite the fact that TEI remained a stronger incremental predictor of disorder than AEI, the nature of the protective role assumed by TEI in explanatory pathways together with the high correlations reported between TEI and self-esteem/concept (e.g., Williams et al., 2009, 2010a) serve to reinforce the notion that what is 'distinctive' about TEI (i.e., beyond personality) might essentially represent *emotional self-concept* - specifically, perceived capacity for *emotional self-regulation* (MacCann, Matthews et al., 2004; Zeidner et al., 2009) - facets of which are already subsumed within existing self-system belief constructs (e.g., perceived social competence, self-efficacy, self-esteem etc)

(Sandler, 2001). However, it should be noted that these inferences (together with the implications drawn from the current analysis) pertain only to the TEIQue as the key measurement vehicle of TEI theory – the sampling domains of other self-report EI instruments (e.g., TMMS, EQi) diverge significantly from this and may represent quite different conceptual mixtures. Tests of incremental capacity were particularly detrimental for AEI which commentators have often regarded as offering the most viable and 'unique' form of EI (e.g., Matthews et al., 2004). Indeed, the fact that the verbally-loaded sub-branches of the MSCEIT-YVR correlated most robustly with proxy IQ supports the notion that AEI may ultimately represent a form of crystallised knowledge specialised for emotional functioning (MacCann, 2010; Wilhelm, 2005). Nevertheless, such acculturated emotion knowledge *does* appear useful for directly buffering stressors in an upstream protective role which is not inconsistent with the notion that this may underpin adaptive regulatory proficiency (Wranik et al., 2007). Clearly, much more research is needed to examine the processing bases of the MSCEIT in adolescents in order to ascertain exactly how high and low scorers differ - either at an implicit or explicit level of emotional information processing (Fiori, 2009) – together with continued examination of the construct differentiation of the TEIQue (from allied variables e.g., self-beliefs) to enable future progression of the field. It is the view of this author that conceptual clarity will only be achieved in TEI research if there is significant streamlining of self-report instruments and/or relabeling of existing measures. Currently, the difficulty of pinpointing with any certainty exactly what EI (in either form) represents, limits the interpretations that can be drawn from research and any diagnostic applications A/TEI may have in clinical settings. Additionally, whilst the complexity of the main analysis in the current research meant that the influence of higher-order personality dimensions and proxy IQ were not controlled, to be certain that EI represents a clinically significant diagnostic tool and/or intervention marker, this will need to be investigated in future research.

As an addendum to this, it should be noted that the current work treated both forms of EI has *holistic* constructs (i.e., representing general individual-level markers of vulnerability/protection) with analyses focussed on global level scores. This approach has been recommended in the literature for exploratory analyses of new constructs

(particularly when structural analyses are the focus), when the need for parsimony and generalisability are of paramount concern to ensure future replication (Petrides & Furnham, 2001, 2006). Going forward, however, sub-branch/factor level analyses of both EI constructs will permit us to resolve some of the conceptual questions noted above. For instance, it would be of interest to establish whether the MSCEIT branches of *understanding* and *managing* emotion are the most influential direct buffers of stressors and whether the incremental prediction of disruptive behaviour can be attributed to these branches. Alternatively, it is quite plausible that exemplary performance in certain branch skills (e.g., perceiving emotion) coupled with lower levels of proficiency in other areas (e.g., management) leads to a 'vulnerable' AEI profile that perhaps amplifies stressor reactivity and poor coping choices – where such incongruence may be particularly pronounced in clinical groups (Zeidner et al., 2011). Similarly, determining whether the TEIQue *wellbeing* factor (including self-esteem, optimism etc) is the driver of coping efficacy and the sole incremental predictor (beyond personality) of depression and disruptive behaviour would carry important connotations for the theoretical mapping of TEI. This could be profitably explored in future research using a long form measure of adolescent TEI. However, conducting fine-grained analyses would appear especially pivotal to the future of the EI construct in adolescence (as assessed via the MSCEIT-YVR and predicted on the four-branch model). Although the youth measure is still under validation, this research has hinted that the coherency of the MSCEIT-YVR (and hence global AEI in adolescence) is questionable in its present form. The sub-branch 'perceiving emotion' was unrelated to allied constructs, age or gender and shared only moderate relations with the remaining branches – the latter being consistent with other research that has utilised this tool (Qualter et al., 2012; Windingstad et al., 2011). At best, it is plausible that there may be shortcomings in the sampling domain of the tool (i.e., developmental insensitivity to age-appropriate performance) that may be refined by the test developers. At worst, this may signal the unfeasibility of attempting to gather together a mixture of non-verbal/verbally-based emotional 'skills' to be labelled as cohesive 'AEI'. Careful psychometric examination of the instrument across the adolescent period will help to shed light on these issues. Nevertheless, Matthews, Zeidner and Roberts (2012) now caution that we should consider abandoning the search for a 'global' EI (tapped by any single 'omnibus' instrument and theory) and instead advocate the use

of a range of alternative paradigms to better capture potentially disparate aspects of emotional competence. For instance, whilst TEI questionnaires may be uniquely suited to examine emotional personality, speeded emotional information processing tasks can tap elements of emotion recognition (e.g., Farrelly & Austin, 2007), the emotional Stroop captures individual differences in emotion-related attentional control (e.g., Martin & Thomas, 2011) and the vignette-based Situational Test of Emotional Understanding (STEU) and Management (STEM) have shown promise as alternatives to the MSCEIT (Austin, 2010) with extension to dynamic presentation (i.e., video-based scenarios) a further avenue for development (see e.g., Farrelly & Austin, 2007). However, as with many other areas of investigation, the application of these methods to the adolescent EI domain is awaited.

Concluding summary: The current work contributes significantly to the existing body of knowledge and ongoing research efforts within the field of EI. Firstly, by establishing that both TEI and AEI can predict adolescent mental health beyond the effects of higher-order personality dimensions and general cognitive ability, this research has 'plugged a gap' in the field and provided key evidence for the validity of the construct (in both guises). Secondly, as the first comprehensive investigation to situate ability and trait EI in wider stressor-health processes in adolescence, this work moved beyond investigation of simple, descriptive associations to begin to uncover *how* these processes are linked and in which circumstances (*when*). Analyses found that both forms of EI are implicated in adaptive processes that mitigate the effects of stressors on disorder. However, effects varied according to type of stressor, outcome and level of competency, suggesting that EI may not be universally beneficial across all contexts. This departs from the perspective of some proponents of EI (Bar-On, 2006; Mayer & Salovey, 1997) yet offers vital evidence that could inform the optimisation of school-based intervention programmes which are beginning to successfully train elements of EI under the broader banner of social and emotional competencies (Durlak et al., 2011). Whilst findings are undoubtedly limited by elements of the design (i.e., cross-sectional; shared method variance) which restrict the scope of interpretations, they do offer a promising platform upon which to base future research. It will be particularly important for future research

to model developmental changes in these protective mechanisms via prospective designs with extension to at-risk and indicated groups of adolescents (perhaps with reference to more specific interpersonal stressors). Additionally, researchers much now begin to examine whether EI influences the psychobiological processes underpinning stress reactivity in adolescents under controlled conditions. However, in order for the field to move forward, more attention must be given to charting the developmental foundations of EI in youth and to tackling outstanding construct-specific measurement issues. In particular, potential measurement inadequacies of the MSCEIT-YVR may mean that it has limited use as a coherent diagnostic tool for adolescents at present. Ultimately, the current research suggests that whilst both trait and ability EI have utility as *explanatory* constructs, the conceptual overlap with allied literatures (i.e., personality, self-system beliefs, emotion regulation) is such that they may not be *unique* or critical for the prediction of/influence over adaptational outcomes. Echoing the sentiments of other commentators (e.g., Zeidner et al., 2011), the current evidence and research review would suggest that it is only the sampling and re-branding of select elements of existing constructs under the label 'EI' that is new - not the content itself. However, in the drive to understand the complex aetiology and maintenance of disorders, locating EI as a malleable, individual-level resource within multidimensional pathways to adolescent resilience represents a positive step forward for prevention research.

16. REFERENCES

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Appendix A: Letter to Schools

The University of Manchester

«Title» «First_Name» «Last_Name»
«Job_Title»
«School»
«Address_line_1»
«Address_line_2»
«Address_line_3»
«County»
«Postcode»

April 2010

Dear «Title» «Last_Name»

ALL ABOUT ME

I am writing to offer your school the opportunity to take part in a doctoral research project entitled *'All About Me'* which is taking place in the West Midlands and Greater Manchester area. The aim of the project is to explore the different factors that affect how young people (aged 11-16 years) feel & behave. Knowing this will help us to determine how best to help those who might be at risk for experiencing mental health problems. Of particular interest is whether differences in the way young people recognise, understand & use information about emotions (their own and others) can have an impact on their wellbeing.

The research will involve young people completing an anonymous tick-box, paper-based survey which asks questions about their family, personality, health, life events, coping strategies and emotions. In total this should take around an hour to complete but this can be done across multiple sessions at times convenient to staff, young people and your school timetable (for instance, it could be completed during form-time over a couple of days). **The aim is to include up to 1,500 young people in the research overall and I would like to work with at least one form group from Years 7, 8, 9, 10 and 11 in your school.**

Should your school participate in the study, I will be able to provide bespoke, **aggregated feedback** following collation of the data from your students, something which could be extremely useful in illuminating general health/well-being issues in your school & identifying areas for potential intervention (information detailing how your school data compares to other participating schools will also be provided). I will also be happy to discuss doing some **voluntary work at your school** in recognition of your commitment to my research. Data collected in the research will be analysed and the findings presented in a PhD research report. It is also likely that articles for academic journals will be written. Anonymity and confidentiality will be strictly adhered to at all times – the names of young people or individual schools will not be used in any of the reports written. I have undergone a full CRB check at the Enhanced Disclosure level (copy available on request) and the project has been granted full ethical approval by the University of Manchester Research Ethics Committee.

I will follow up this letter with a telephone call in around 10 days. In the meantime, if you are interested in discussing the project further, please do get in touch via phone (0161 275 3534) or email (sarah.k.davis@manchester.ac.uk).

Yours sincerely

Sarah Davis
BSc (Hons) Psychology, MRes Psychology
School of Education: Ellen Wilkinson Building
University of Manchester
Oxford Road
MANCHESTER M13 9PL

Appendix B: Study information sheets and parental consent form

The University of Manchester

ID number here

Student Information Sheet

You are being invited to take part in a research study, '**All About Me'**, which is taking place at your school. Please keep this information sheet, it has your ID number in the top right hand corner and the contact details of the researcher from the University of Manchester, which you will need if you think of any questions you want to ask later or want to contact us about the information you have given in the survey.

What is this research about?

We are trying to find out about some of the different things that could affect how young people feel & behave so that we can learn more about how best to help those who might feel sad, worried or angry. We are interested in seeing whether the way young people use information about feelings (their own feelings and the feelings of others) can affect health and wellbeing.

Why have I been chosen?

You are being asked to take part in this research because you are aged between 11 and 16 years old and attend a school in either the West Midlands or Greater Manchester area. In total, 1500 young people are being invited to take part.

What do I have to do if I take part?

You will be asked to fill out a tick box survey which asks some questions about your family, personality, health, things that may have happened to you, how you cope with problems and how you feel. This should take about an hour to do during class.

What happens to the information I give in the survey?

The information you give will be added to other people's information and analysed by a computer programme so that we can make a report of the findings for the University. Your information will be treated as private and confidential and will be completely anonymous – that means ***no-one will be able to tell who has answered the survey and only the researchers will see what has been written***. If, though, you tell me something that indicates that you, or another student, are at risk of quite serious harm then I may need to tell somebody else to keep you safe.

Do I have to take part?

Your parent(s)/carer(s) have agreed that you can take part in this research. However, if you do not want to take part you do not have to. Also, if you decide to take part now by filling out the survey and then later change your mind, just tell the researcher (contact email: sarah.k.davis@manchester.ac.uk) and your information will be withdrawn from the study. You do not have to give a reason for this.

What if something goes wrong?

To answer the questions, you will have to think about yourself and any recent events that might have happened to you. For some people this might be upsetting. If you feel upset and would like some help with how you feel, please read the information sheet called 'coping with stress' which includes advice on where to get help and provides contact details for useful websites and support groups.

Any questions about the research?

Please contact: Sarah Davis, School of Education, University of Manchester, Oxford Road, Manchester, M13 9PL. Tel: 0161 275 3534 or Email: sarah.k.davis@manchester.ac.uk

Caregiver Information Sheet

Your child is being invited to take part in a research study taking place at school. Before you decide whether or not you agree for your child to be involved, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. **If there is anything that is not clear or if you would like more information, please contact Sarah Davis on 0161 275 3534 or email sarah.k.davis@manchester.ac.uk.** Thank you for reading this.

Who will conduct the research? Sarah Davis, School of Education, Ellen Wilkinson Building, University of Manchester, Oxford Road, Manchester, M13 9PL. Email: sarah.k.davis@manchester.ac.uk Tel: 0161 275 3534.

Title of the Research: All about Me

What is the aim of the research? Young people (aged between 11 and 16 years) living in the West Midlands and North Yorkshire area are being asked to complete a survey on health and well-being. Researchers at the University of Manchester are trying to find out about some of the different things that could affect how young people feel & behave in an effort to learn more about how best to help those who might be at risk for experiencing mental health problems. We are particularly interested in seeing whether the way young people use information about feelings (their own and others) can have an impact on wellbeing.

Why has my child been chosen? Your child is being invited to participate in this research as they are aged between 11 and 16 years and attend a school in either the West Midlands or Greater Manchester area. In total, 1500 young people are being invited to take part.

What would my child be asked to do if they took part? Your child would be asked to complete a tick box, paper-survey which asks questions about their family, personality, health, life events, coping strategies and how they process emotions and emotional information. This should take about an hour to complete during form periods at school. We may also access school records held about your child. Completing the survey should not cause any physical pain or discomfort to those taking part. However, in answering the questions, young people will be required to think about themselves and recent events that might have happened to them which, for some, may have the potential to be upsetting. In order to minimise the risks associated with this, the researcher will be giving all participants an information sheet (from the Royal College of Psychiatrists) entitled 'coping with stress' which includes advice on where to get help and provides contact details for specialist sources of help and support. In addition, young people will be encouraged to contact the researcher if they have any queries about the research.

What happens to the data collected? The data collected from the survey will be analysed by the researcher at the University of Manchester and the findings will be presented in a PhD research report (your child's school will receive a summary of this report). It is likely that articles for academic journals will also be written based on what we find out from the study. Your child's name will not be used in any of the reports written.

How is confidentiality maintained? All information provided by your child will be treated as confidential and will be completely anonymous (no-one will be able to match the information your child provides with their identity). However, in exceptional circumstances, where there is sufficient evidence to raise serious concern about the health, welfare or safety of your child, appropriate third parties may be informed without prior consent. Completed paper copies of the questionnaires will be stored in a secure filing cabinet within the department of Education at the University. All electronic survey data will be stored on a secure, password protected computer system to which only the researcher will have access.

Does my child have to take part? Participation is entirely voluntary. If you would like your child to take part you do not need to do anything – we will be in contact with the school shortly to arrange a time to deliver the surveys. However, if you do not want your child to take part then please complete the enclosed opt-out consent sheet and return it to your child's form tutor. If you and your child decide to take part and then later change your mind, either before or during the study, you can withdraw your consent without giving any reason, and, if you wish, your child's data will be destroyed.

Will I be paid for participating in the research? We are not able to offer any payment or incentive for taking part in this survey.

Criminal Records Check The researcher has undergone a Criminal Records Bureau check at the Enhanced Disclosure level.

What if something goes wrong? If you have any queries please contact the researcher in the first instance (details above). If you wish to make a formal complaint about the conduct of this research you should contact the Head of the Research Office, Christie Building, University of Manchester, Oxford Road, Manchester, M13 9PL.

The University of Manchester

School of Education

ALL ABOUT ME

OPT-OUT/ REFUSAL FORM

I have read the enclosed information sheet and **do not** wish my child to take part in the project entitled '*All about me'* beginning **_____ 2010**.

SIGNATURE (Parent/Guardian/Caregiver):.....

CHILD'S NAME: .....

CHILD'S D.O.B (day/month/year): ____ /____ /_____

NAME OF SCHOOL: .....

YEAR GROUP (please circle): Y7 Y8 Y9 Y10 Y11

Please return this sheet to ....., as soon as possible.

If this refusal form is not returned to the school before the start date of the study we will assume that you agree to your child taking part.

Appendix C: Study measures (CCSC-R1; TEIQue-ASF; BFI-44-A; APES-SF; FAD-GF)

ABOUT HOW I COPE WITH PROBLEMS *(CCSC-R1)*

Sometimes young people have problems or feel upset about things. When this happens they may do different things to solve the problem or to make themselves feel better. For each item below, choose the answer that best describes *how often you usually did this* to solve your problems or make yourself feel better during the past month.

		Never	Sometimes	Often	Most of the time	Don't know
1	When I had problems, I thought about what I could do before I did something					
2	I told myself that I could handle this problem					
3	I went bicycle riding					
4	I daydreamed that everything was ok					
5	I asked my mother or father for help in working out what to do					
6	I did something to make things better					
7	When I had problems, I sought God's help					
8	I told myself that things would get better					
9	I tried to ignore it					
10	I told my mother or father how I felt about the problem					
11	I thought about why it happened					
12	I tried to notice or think about only the good things in my life					
13	I listened to music					
14	I tried to stay away from the problem					
15	I told adults (other than my mother or father) what I wanted to do					
16	When I had problems, I thought about what would happen before I decided what to do					
17	I told myself I have taken care of things like this before					
18	I put my trust in God					
19	I played sports					
20	I talked about my feelings with an adult other than my mother or father					
21	I imagined how I'd like things to be					
22	I told my mother or father how I would like to solve the problem					
23	When I had problems, I tried to make things better by changing what I did					
24	I told myself that it would be ok					
25	I went for a walk					
26	I tried to put it out of my mind					
27	I told my friends about what made me feel the way I did					
28	I tried to understand it better by thinking more about it					
29	I reminded myself that I was better off than a lot of other young people					
30	I went skateboarding, roller blading or roller skating					
31	When I had problems, I tried to stay away from things that made me feel upset					
32	I talked with friends about what I would like to happen					
33	I tried to find comfort in my religion					
34	I thought about which things are best to do to handle the problem					
35	I told myself I could handle whatever happens					
36	I read a book or a magazine					
37	I wished that bad things wouldn't happen					
38	I told my mother or father how I felt					
39	When I had problems, I did something to solve the problem					
40	I told myself that in the long run, things would work out for the best					
41	I did some exercise					
42	I didn't think about it					
43	I talked to an adult (other than my mother or father) who could help me solve the problem					

		Never	Sometimes	Often	Most of the time	Don't know
44	I thought about what I could learn from the problem					
45	I reminded myself that overall things are pretty good for me					
46	I watched TV					
47	When I had problems, I avoided the people who made me feel bad					
48	I told an adult (other than my mother or father) how I felt					
49	I thought about what I needed to know so I could solve the problem					
50	I reminded myself that I knew what to do					
51	I prayed more than usual					
52	I did something like video games or a hobby					
53	I wished that things were better					
54	I worked out what I could do by talking with one of my friends					
55	When I had problems, I did something in order to get the most I could out of the situation					
56	I told myself that it would work itself out					
57	I just forgot about it					
58	I talked with my brother or sister about my feelings					
59	I tried to figure out why things like this happen					
60	I reminded myself about all the good things I have going for me					
61	I talked with my friends about my feelings					
62	I avoided it by going to my room					
63	I went for a run					
64	I talked to my brother or sister about how to make things better					

ABOUT MY EMOTIONS *(TEIQue_ASF)*

In this section, please answer by putting a circle around the number that best shows how much you agree or disagree with each sentence below. If you *strongly disagree* with a sentence, *circle a number close to 1*. If you *strongly agree* with a sentence, *circle a number close to 7*. If you're n*ot too sure* if you agree or disagree, *circle a number close to 4*. Work quickly, but carefully – once again, there are no right or wrong answers.

		Disagree						**Agree**
1	It's easy for me to talk about my feelings to other people	1	2	3	4	5	6	7
2	I often find it hard to see things from someone else's point of view	1	2	3	4	5	6	7
3	I'm a very motivated person	1	2	3	4	5	6	7
4	I find it hard to control my feelings	1	2	3	4	5	6	7
5	My life is not enjoyable	1	2	3	4	5	6	7
6	I'm good at getting along with my classmates	1	2	3	4	5	6	7
7	I change my mind often	1	2	3	4	5	6	7
8	I find it hard to know exactly what emotion I'm feeling	1	2	3	4	5	6	7
9	I'm comfortable with the way I look	1	2	3	4	5	6	7
10	I find it hard to stand up for my rights	1	2	3	4	5	6	7
11	I can make other people feel better when I want to	1	2	3	4	5	6	7
12	Sometimes, I think my whole life is going to be miserable	1	2	3	4	5	6	7
13	Sometimes, others complain that I treat them badly	1	2	3	4	5	6	7
14	I find it hard to cope when things change in my life	1	2	3	4	5	6	7
15	I'm able to deal with stress	1	2	3	4	5	6	7
16	I don't know how to show the people close to me that I care about them	1	2	3	4	5	6	7
17	I'm able to "get into someone's shoes" and feel their emotions	1	2	3	4	5	6	7
18	I find it hard to keep myself motivated	1	2	3	4	5	6	7
19	I can control my anger when I want to	1	2	3	4	5	6	7
20	I'm happy with my life	1	2	3	4	5	6	7
21	I would describe myself as a good negotiator	1	2	3	4	5	6	7
22	Sometimes, I get involved in things which I later wish I could get out of	1	2	3	4	5	6	7
23	I pay a lot of attention to my feelings	1	2	3	4	5	6	7
24	I feel good about myself	1	2	3	4	5	6	7
25	I tend to "back down" even if I know I'm right	1	2	3	4	5	6	7
26	I'm unable to change the way other people feel	1	2	3	4	5	6	7
27	I believe that things will work out fine in my life	1	2	3	4	5	6	7
28	Sometimes, I wish I had a better relationship with my parents	1	2	3	4	5	6	7
29	I'm able to cope well in new environments	1	2	3	4	5	6	7
30	I try to control my thoughts and not worry too much about things	1	2	3	4	5	6	7

ABOUT MY PERSONALITY *(BFI-44-A)*

Here are some statements that may or may not describe what you are like. For each statement, please tick the box which shows how much you agree or disagree that it describes you. For example, do you agree that you are someone who ***is bossy***? If you think this is a lot like you, put a tick in the box for 'agree strongly'; if you think it's a little bit like you tick 'agree a little'; if you are unsure, tick 'neither agree or disagree'; if this is not really like you tick 'disagree a little', or, if it is not at all like you tick 'disagree strongly'.

	I see myself as someone who...	**Disagree strongly**	**Disagree a little**	**Neither agree nor disagree**	**Agree a little**	**Agree strongly**
1	Is talkative					
2	Tends to find fault with others					
3	Does things carefully and completely					
4	Is depressed, blue					
5	Is original, comes up with new ideas					
6	Is reserved – keeps thoughts and feelings to self					
7	Is helpful and unselfish with others					
8	Can be somewhat careless					
9	Is relaxed, handles stress well					
10	Is curious about many different things					
11	Is full of energy					
12	Starts quarrels with others					
13	Is a reliable worker					
14	Can be tense					
15	Is clever, thinks a lot					
16	Generates a lot of enthusiasm					
17	Has a forgiving nature					
18	Tends to be disorganised					
19	Worries a lot					
20	Has an active imagination					
21	Tends to be quiet					
22	Is generally trusting					
23	Tends to be lazy					
24	Doesn't get easily upset – emotionally stable					
25	Is creative and inventive					
26	Takes charge, has an assertive personality					
27	Can be cold and distant with others					
28	Keeps working until things are done					
29	Can be moody					
30	Likes artistic and creative experiences					
31	Is sometimes shy, inhibited					
32	Is considerate and kind to almost everyone					
33	Does things efficiently (quickly and correctly)					
34	Stays calm in tense situations					
35	Likes work that is the same every time (routine)					
36	Is outgoing, sociable					
37	Is sometimes rude to others					
38	Makes plans and sticks to them					
39	Gets nervous easily					
40	Likes to think and play with ideas					
41	Doesn't like artistic things (plays, music)					
42	Likes to co-operate; goes along with others					
43	Is easily distracted; has trouble paying attention					
44	Knows a lot about art, music or books					
45	Is the kind of person almost everyone likes					
46	People really enjoy spending time with					

ABOUT THINGS THAT HAVE HAPPENED TO ME *(APES-SF)*

The following is a list of events which **may or may not have happened to you**. Some of these are events which have happened to nearly everybody, others are events which only happen once in a while and not to everybody.

Please decide whether you have had each of these experiences in the past six months. If the event has happened, please put a cross (X) in the box next to the statement where it says 'Event has happened'. Then, for each event that has happened please decide how desirable the event was – that is, how good or bad it was when it happened to you. Good (desirable) events are ones which are pleasant or make us happy, while bad (undesirable) events are ones that upset us or make us feel scared, sad or angry. For each event tick the box which best describes how desirable (good or bad) each event was when it happened to you.

		Event has happened in last 6 months (X)	**How bad or good was this?**								
			Extremely bad	Very bad	Somewhat bad	Slightly bad	Neither good or bad	Slightly good	Somewhat good	Very good	Extremely good
1	Hobbies or activities (watching TV, reading, playing an instrument, etc)										
2	Doing things/spending time with family members										
3	Spending time talking with a boyfriend/girlfriend										
4	Dating or doing things with people of the opposite sex										
5	Feeling pressured by friends *(friends expecting you to do things or be a certain way)*										
6	Family members, relatives, step parents moving in or out of the house										
7	Helping other people										
8	Fight or problems with a friend										
9	Restrictions at home (*not being allowed at home to do something you wanted to do, e.g. having to be in at a certain time, etc*)										
10	Death of a family member										
11	Family member becoming pregnant or having a baby										
12	Attending school										
13	Hospitalisation of a family member or relative										
14	Falling in love or beginning a relationship with a boyfriend/girlfriend										
15	Poor relationship between family members and friends (*don't get along)*										
16	Doing poorly on a test or exam										
17	Talking or sharing feelings with friends										
18	Being around people who are inconsiderate or offensive (*rude, selfish*)										

19	Arrest of a family member										
20	Getting into trouble or being suspended from school										
21	Hassles, arguments or fights with other students at school										
22	Financial troubles or worries about money										
23	Getting bad grades or progress reports at school										
24	Having bad classes or teachers										
25	Meeting new people										
26	Parent getting married										
27	Having few or no friends										
28	Arguments or fights between parents										
29	Getting good grades or progress reports at school										
30	Having good classes or teachers										
31	Understanding classes or homework										
32	Change in relationship with boyfriend/girlfriend										
33	Change in relationship(s) with family member(s)										
34	Change in relationship(s) with friend(s)										
35	Pressures or expectation from parents										
36	Visiting a parent who doesn't live with you										
37	Having plans fall through										
38	Visiting relatives										
39	Going to parties, dances, concerts										
40	Friends getting drunk or using drugs										
41	Death of a relative										
42	Obligations at home *(things you have to do)*										
43	Family member or relative having emotional problems (*being really sad)*										
44	Friend or family member recovering from being sick or injured										
45	Arguments or problems with boyfriend/girlfriend										
46	Something bad happens to a friend										
47	Changes in privileges or responsibilities at home (*changes in what you are allowed to do or have to do)*										
48	Change in health of a family member or relative										
49	Change in health or a friend										
50	Change in number of friends *(make new friends or lose friends)*										

51	Parents discover something you didn't want them to know										
52	Brother or sister getting engaged or married										
53	Brother or sister getting separated or divorced										
54	Not spending enough time with family members or friends										
55	School or job change of a family member *(drops out of school, gets a job etc)*										
56	Advancing a year in school (*starting a new year group*)										
57	Living with only one parent										
58	Talking on the phone										
59	Discussions or long talks with parents										
60	Homework or studying										
61	Taking care of younger brother(s) or sister(s)										
62	Problems or arguments with parents, siblings or family members										
63	Problems or arguments with teachers or headteacher										
64	Spending time at home										
65	Achieving something at school										
66	Doing household chores										
67	Something good happens to a friend										
68	Alcohol or drug use by family members or relatives										
69	Breaking up with or being rejected by boyfriend/girlfriend										
70	Death of a friend										
71	Family moves (to a new home)										
72	Parent loses job										
73	Returning to school after time off										
74	Parents getting divorced										
75	Not getting along with the parents of your friends										
76	Doing well on an exam or test										
77	Spending time (relaxing or going out) with friends										
78	Friend(s) move away or you move away from friends										
79	Getting punished by parents										
80	Being in love or having a relationship with a boyfriend/girlfriend										
81	Not having a boyfriend/girlfriend										
82	Friend having emotional problems (being really upset, sad, etc)										
83	Friend becoming pregnant or having a child										

ABOUT MY FAMILY (FAD-GF)

The following are a list of statements about families. Read each statement carefully and decide how well it describes your own family. This time there are four possible choices – tick *'agree strongly '* if you think the statement describes you family very well; tick *'agree'* if the statement describes your family for the most part; *'disagree'* if the statement **does not** describe your family **for the most part;** *'disagree strongly'* if you feel the statement **does not** describe your family **at all**.

		Agree strongly	**Agree**	**Disagree**	**Disagree strongly**
1	Planning family activities is difficult because we misunderstand each other				
2	In times of crisis we can turn to each other for support				
3	We cannot talk to each other about the sadness we feel				
4	Individuals are accepted for what they are				
5	We avoid discussing our fears and concerns				
6	We can express feelings to each other				
7	There are lots of bad feelings in the family				
8	We feel accepted for what we are				
9	Making decisions is a problem for our family				
10	We are able to make decisions about how to solve problems				
11	We don't get along well together				
12	We confide in each other				

Appendix D: Confirmatory factor analyses (coping; AEI; TEI; family dysfunction; depression; disruptive behaviour; negative life events)

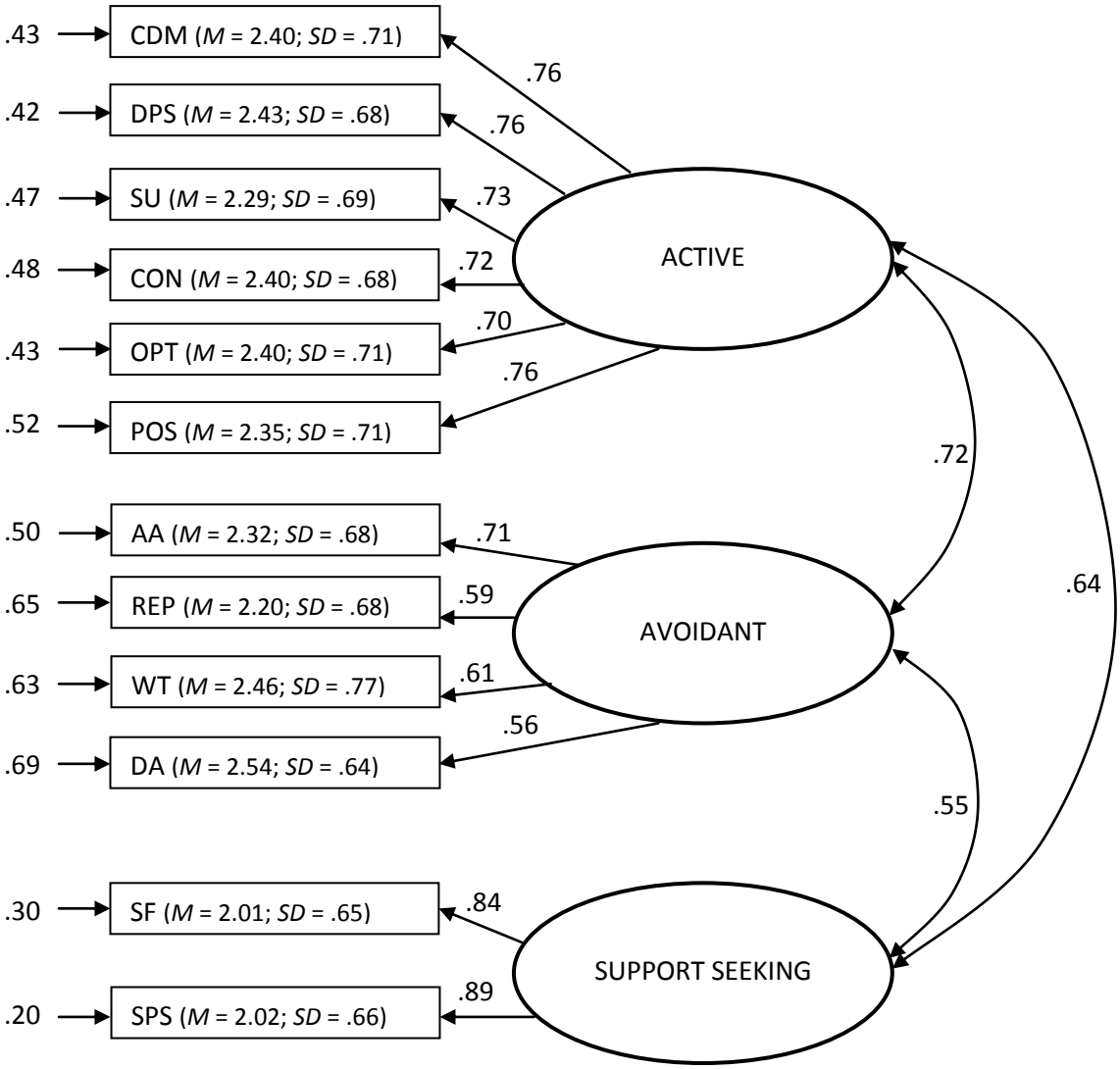

Figure 2: Confirmatory factor analysis of the final three-factor coping model (CCSC-R1).

Note: Latent variance set to 1 to establish scaling. Standardised parameter estimates are displayed with indicator *M* and *SD* shown in brackets next to label. Curved arrows represent covariances. CDM = cognitive decision-making (skew (s) = .13; kurtosis (k) = -.35); DPS = direct problem-solving (s = .09; k =-.39); SU = seeking understanding (s = .20; k =-.37); CON = control (s = .11; k =-.09); OPT = optimism (s = .13; k =-.44); POS = positivity (s = .21; k =-.40); AA = avoidant actions (s = .10; k =-.38); REP = repression (s = .40; k =-.11); WT = wishful thinking (s = .05; k =-.73); DA = distracting actions (s = .01; k =-.25); SF = support for feelings (s = .52; k =-.-03); SPS = support for problem-solving (s = .46; k =-.29).

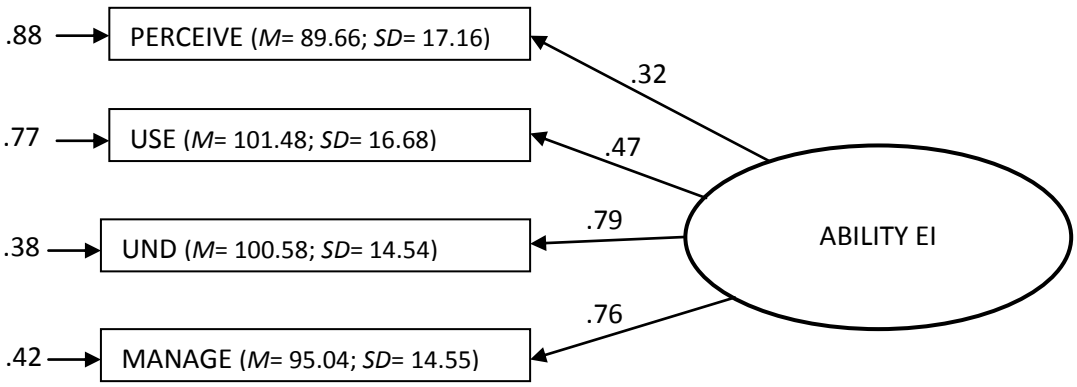

Figure 3: Confirmatory factor analysis of ability EI (MSCEIT-YVR).

Note: Latent variance fixed to 1 for identification purposes. Standardised parameter estimates shown with indicator *M* and *SD* shown in brackets next to label. PERCEIVE = ability to perceive and identify emotion (skew (s) = -.67; kurtosis (k) = .52); USE = ability to use emotion to facilitate thought (s = -.31; k =-.34); UND = ability to understand emotion (s = -.55; k =-.41); MANAGE = ability to regulate emotion in oneself and others (s = -.20; k =-.98).

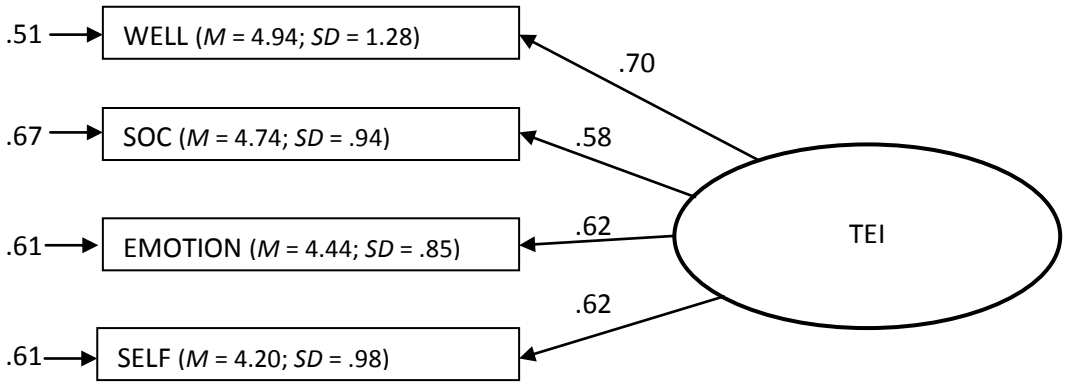

Figure 4: Confirmatory factor analysis of global TEI (TEIQue-ASF).

Note: Latent variance fixed to 1 for identification purposes. Standardised parameter estimates are displayed with indicator *M* and *SD* shown in brackets next to label. WELL = wellbeing (skew (s) = -.42; kurtosis (k) = -.29); SOC = sociability (s = .09; k =-.09); EMOTION = emotionality (s = .14; k =.31); SELF = self-control (s = -.05; k =.39).

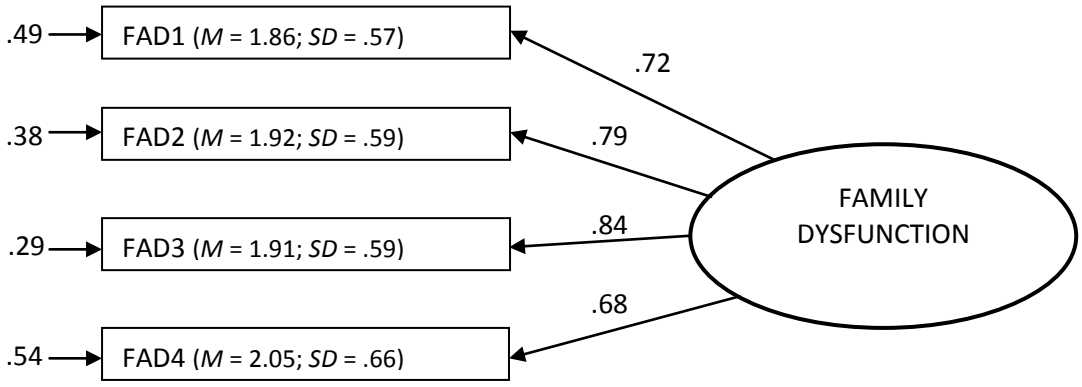

Figure 5: Confirmatory factor analysis of the FAD-GF scale with item parcels.

Note: Latent variance fixed to 1 for identification purposes. Standardised parameter estimates are shown with indicator *M* and *SD* in brackets next to label. FAD1: skew (s) = .32; kurtosis (k) = -.21; FAD 2: s = .40; k =.14; FAD3: s = .44; k =.25; FAD4: s =.49; k =.13.

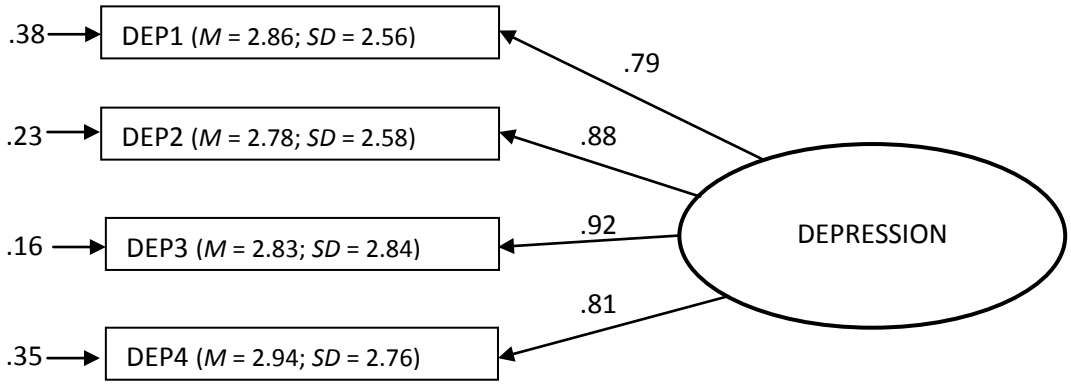

Figure 6: Confirmatory factor analysis of the BYI II depression scale with item parcels.

Note: Latent variance fixed to 1 for identification purposes. Standardised parameter estimates are shown with indicator *M* and *SD* in brackets next to label. DEP1: skew (s) = 1.18; kurtosis (k) = 1.74; DEP 2: s = 1.02; k = 1.02; DEP3: s = 1.25; k =1.68; DEP4: s =1.17; k =1.82.

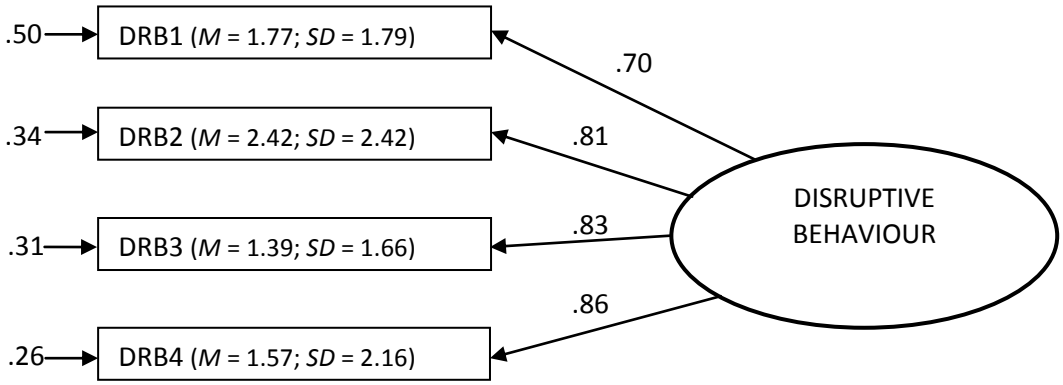

Figure 7: Confirmatory factor analysis of the BYI II disruptive behaviour scale with item parcels.

Note: Latent variance fixed to 1 for identification purposes. Standardised parameter estimates are shown with indicator *M* and *SD* in brackets next to label. DRB1: skew (s) = 1.40; kurtosis (k) = 2.60; DRB2: s = 1.37; k = 2.63; DRB3: s = 1.89; k =4.82; DRB4: s =2.08; k = 5.80.

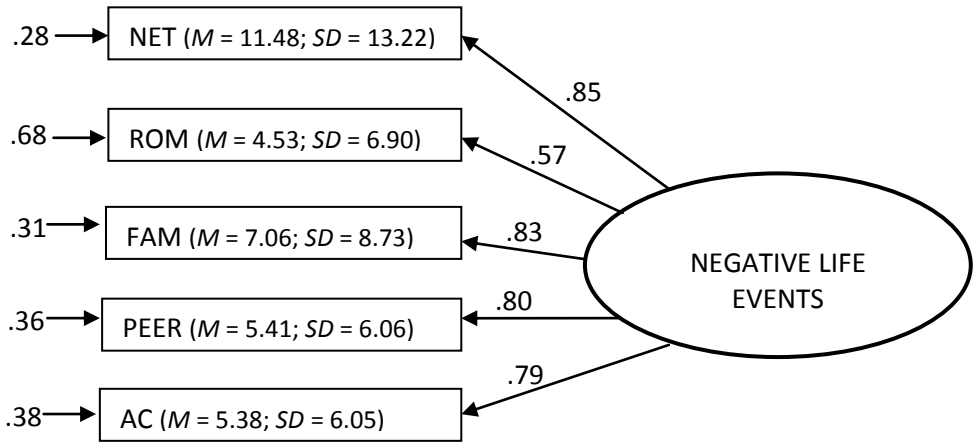

Figure 8: Confirmatory factor analysis of negative life events (APES-SF).

Note: Latent variance fixed to 1 for identification purposes. Standardised parameter estimates are displayed with indicator *M* and *SD* shown in brackets next to label. NET = network events (skew (s) = 2.03; kurtosis (k) = 5.26); ROM =romantic events (s = 2.28; k =-6.18); FAM = family events (s = 2.11; k =6.54); PEER = peer events (s = 2.09; k =8.67); AC = academic events (s = 1.79; k =6.12).

Appendix E: Debrief material - *Coping with stress* factsheet issued by the Royal College of Psychiatrists (p.1/2 only)

32 Coping with stress

Factsheet for young people

About this factsheet

This is one in a series of factsheets for parents, teachers and young people entitled *Mental Health and Growing Up*. The aims of these factsheets are to provide practical, up-to-date information about mental health problems (emotional, behavioural and psychiatric disorders) that can affect children and young people. This factsheet looks at what stress is, what causes it and how it might feel to be suffering from stress. It also gives some practical advice about how to cope with different types of stress.

Introduction

What is stress?

Everyone feels stressed at times. You may feel under pressure, worried, tense, upset, sad, angry – or maybe a mixture of uncomfortable feelings. There are many ordinary situations that can make you feel stressed. For example, your school work may pile up, preparing for exams may seem as if it's taking forever, you may be being teased or bullied at school, or having problems with teachers. At home you may be arguing with parents, brothers or sisters, or close friends.

Stress can be even worse if your family is breaking up, someone close to you is ill or dies, or if you are being physically or sexually abused.

The effects of stress

Stress can affect you physically. Your body is designed to be able to cope with stresses such as danger, illness and emergencies. This is called your 'fight or flight' instinct, where hormones such as adrenaline and cortisol gear your body up to cope with immediate stressful situations. For example, if you accidentally step into the road when a car is coming, adrenaline will pump around your body enabling you to jump out of the way of the car – this is your 'flight' instinct coming into play in a short-lived stressful situation. Your body is less able to cope with longer-lasting pressure. This can make you feel tired, make you go off your food and find it difficult to sleep. You may get stomach-aches or headaches.

Stress can affect you mentally as well as physically. You may find it hard to keep your mind on your work, to cope with frustration or to control your temper. You might get depressed. Stress that goes on for a long time can be exhausting.

Understanding and support from other people can make it much easier to cope. If you have someone you can trust to talk to, this can help. Feeling alone makes it harder.

Coping with stress

There are several things that you can do to help yourself cope. For things that happen every day, it can be useful to think of your stress as a puzzle to be solved:

- Think about the situations that stress you, and how you behave.
- Think about how you could behave differently in these situations, so that you would feel more in control.
- Imagine how other people might behave if you acted differently.
- List all the things you can think of that would make life easier or less stressful – write them down on a piece of paper. This can help you sort things out in your head.

Where can I get help?

Sometimes stress gets on top of you. Especially when the situation causing the stress goes on and on, and the problems just seem to keep building up. You can feel trapped, as if there is no way out and no solution to your problems. If you feel like this, it is important to get help.

People you might want to talk to:

- parents, a family member or family friend
- a close friend or carer
- a school nurse, teacher or school counsellor
- a social worker or youth counsellor

Appendix F: Ethical approval - University of Manchester Research Ethics Committee

MANCHESTER 1824

The University of Manchester

Secretary to Research Ethics Committees
Room 2.004 John Owens Building

Tel: 0161 275 2206/2046
Fax: 0161 275 5697
Email: timothy.stibbs@manchester.ac.uk

Compliance and Risk Office
University of Manchester
Oxford Road
Manchester, M13 9PL

ref: ethics/10262

Sarah Davis,
Teaching Fellow,
Psychology of Education,
School of Education,
Ellen Wilkinson Building

1st December 2010

Dear Sarah,

Research Ethics Committee 2
Davis, Humphrey: Multidimensional pathways to adolescent resilience: the case for emotional intelligence (ref 10262)

I write to confirm that the clarification and the additional information in your memorandum of 11th November 2010 satisfies the concerns of the Committee and that the project therefore has a favourable ethical opinion.

This approval is effective for a period of five years and if the project continues beyond that period it must be submitted for review. It is the Committee's practice to warn investigators that they should not depart from the agreed protocol without seeking the approval of the Committee, as any significant deviation could invalidate the insurance arrangements and constitute research misconduct. We also ask that any information sheet should carry a University logo or other indication of where it came from, and that, in accordance with University policy, any data carrying personal identifiers must be encrypted when not held on a university computer or kept as a hard copy in a location which is accessible only to those involved with the research.

Finally, I would be grateful if you could complete and return the attached form at the end of the project or by October 2011.

We hope the research goes well.

Yours sincerely

Timothy Stibbs

Dr T P C Stibbs
Secretary to the University Research Ethics Committee

Appendix G: Supplementary hierarchical regression analyses

Table 9b: Hierarchical regression of mental health on sex, age, general cognitive ability, personality and emotional intelligence with complete cases only (N = 400 – 442)

	Depression						*Disruptive behaviour*					
Variable	β	*SE*	*t*	R^2	ΔR^2	ΔF	β	*SE*	*t*	R^2	ΔR^2	ΔF
Step 1				.02	.02	3.45*				.03	.03	7.37**
Sex	.12	.93	2.60*				-.17	.65	-3.55***			
Age	-.02	.39	-.44				.08	.28	1.54			
Step 2				.04	.03	11.81**				.05	.01	5.80*
GCA	-.16	.14	-3.44**				-.11	.10	-2.41*			
Step 3				.26	.22	25.45***				.25	.21	23.78***
Extraversion	-.04	.74	-.86				-.02	.53	-.49			
Agreeableness	-.02	.81	-.37				-.37	.57	-7.39***			
Conscientiousness	-.12	.78	-2.41*				-.12	.55	-2.31*			
Neuroticism	.41	.77	8.29***				.08	.54	1.65			
Openness	.11	.77	2.25**				.18	.55	3.54***			
Step 4				.24	.00	1.43				.26	.01	5.65*
Ability EI	-.07	.04	-1.20				-.13	.03	-2.38*			
Step 4				.32	.06	40.50***				.26	.01	6.03*
Trait EI	-.33	.02	-6.36***				-.13	.02	-2.46*			

Notes: For each model, variables across steps 1-3 remain the same with only variables on Step 4 changing (i.e., type of EI). Thus, results for Steps 1-3 are presented for each outcome only once. Models predicting depression were significant: AEI: F (9, 399) = 13.90, $p < 0.001$; R^2_{adj} = .23; TEI: F (9, 443) = 22.84, $p < 0.001$; R^2_{adj} = .31 but only TEI significantly contributed to the final step of the model, accounting for 6.3% of the variance in depression. Models for disruptive behaviour were also significant: AEI: F (9, 400) = 14.92, $p < 0.001$; R^2_{adj} = .24, and TEI: F (9, 441) = 16.97, $p < 0.001$; R^2_{adj} = .26. Both AEI and TEI made significant incremental contributions to the prediction of externalising symptoms on the final step of the model, adding 1% respectively.

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

Table 9c: Hierarchical regression of mental health on sex, age, general cognitive ability, personality and emotional intelligence with square root transformed health variables

	Depression						*Disruptive behaviour*					
Variable	β	*SE*	*t*	R^2	ΔR^2	ΔF	β	*SE*	*t*	R^2	ΔR^2	ΔF
Step 1				.02	.02	5.52**				.03	.04	6.98**
Sex	.16	.15	3.32**				-.16	.13	-3.33**			
Age	-.01	.06	-.210				.08	.05	1.76			
Step 2				.04	.02	7.86**				.04	.01	3.59
GCA	-.13	.02	-2.80**				-.11	.09	-2.44*			
Step 3				.28	.24	29.45***				.27	.23	27.81***
Extraversion	-.09	.12	-1.87				.01	.10	.16			
Agreeableness	-.05	.13	-.90				-.37	.11	-7.40***			
Conscientiousness	-.10	.13	-2.04*				-.13	.11	-2.70**			
Neuroticism	.42	.12	8.68***				.13	.11	2.86**			
Openness	.13	.13	2.67**				.15	.11	3.11**			
Step 4				.28	.00	2.69				.28	.01	1.74*
Ability EI	-.04	.01	-.60				-.11	.01	-2.05*			
Step 4				.34	.06	37.59***				.29	.01	8.69**
Trait EI	-.31	.01	-6.13***				-.16	.00	-2.95**			

Note: For each model, variables across steps 1-3 remain the same with only variables on Step 4 changing (i.e., type of EI) - results for Steps 1-3 are presented for each outcome only once. Models predicting depression were significant: AEI: F (9, 399) = 15.84, $p < 0.001$; R^2_{adj} = .25; TEI: F (9, 443) = 24.95, $p < 0.001$; R^2_{adj} = .33. Again, only TEI significantly contributed to the final step of the model, accounting for 5.7% of the variance in depression. Models for disruptive behaviour were also significant: AEI: F (9, 400) = 15.85, $p < 0.001$; R^2_{adj} = .25, and TEI: F (9, 441) = 19.30, $p < 0.001$; R^2_{adj} = .27, with AEI and TEI significantly contributing to the final step of the model, adding 1% and 1.4% respectively.

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

Appendix H: Path diagrams for significant conditional indirect effects models

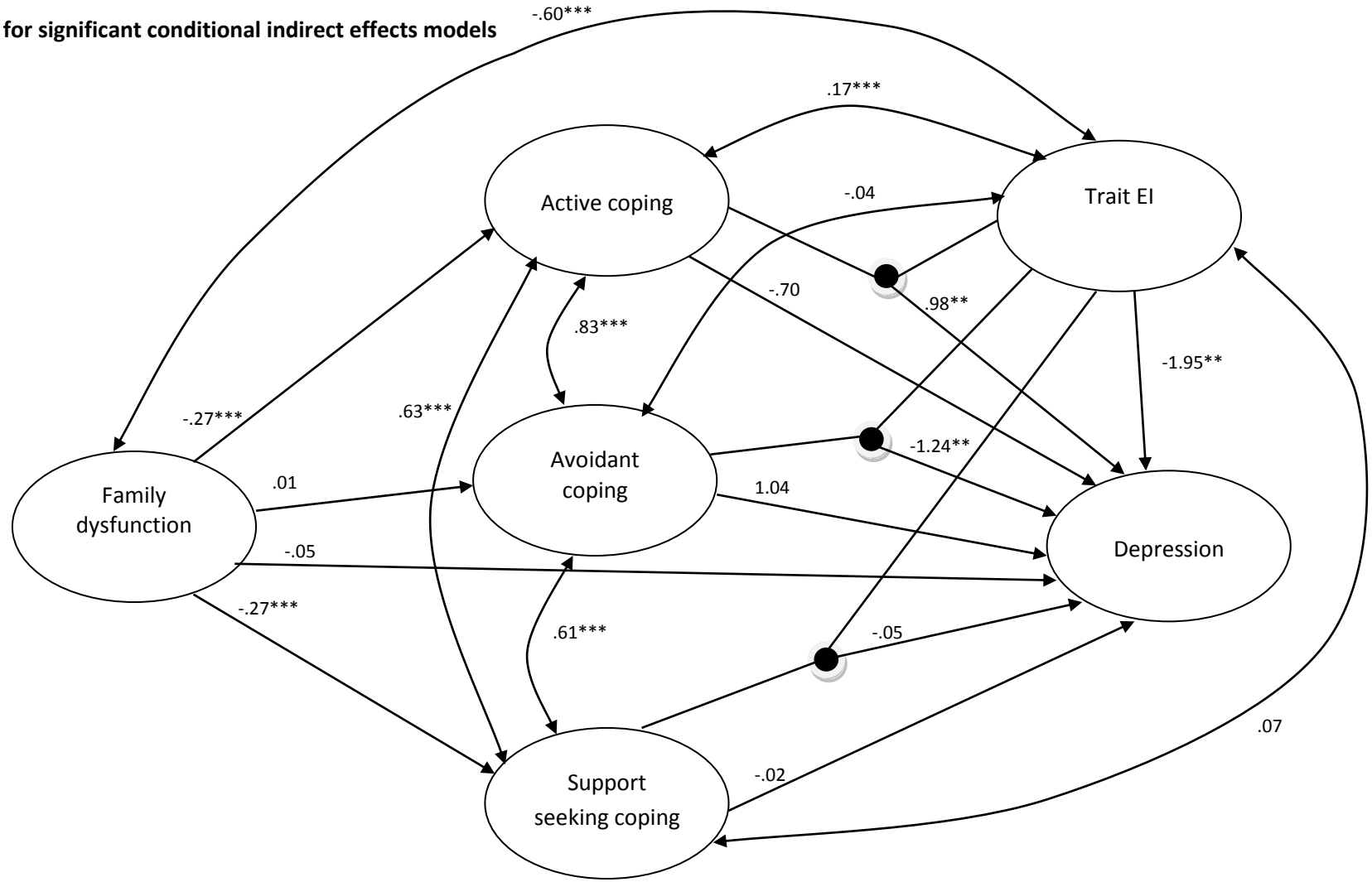

Figure 11: The effect of family dysfunction on depression through coping moderated by TEI acting on the 'b' pathways (coping x TEI).

Notes: Unstandardised estimates shown. Interactions denoted by filled circles; double headed arrows represent covariances. All latent variables were regressed onto control variables age, sex; significant parameters involving age: active coping =.05**, support seeking = -.10***; significant parameters for sex: avoidant coping = .24**, support seeking = .34***.

*** $p < .001$, ** $p < .01$, * $p < .05$

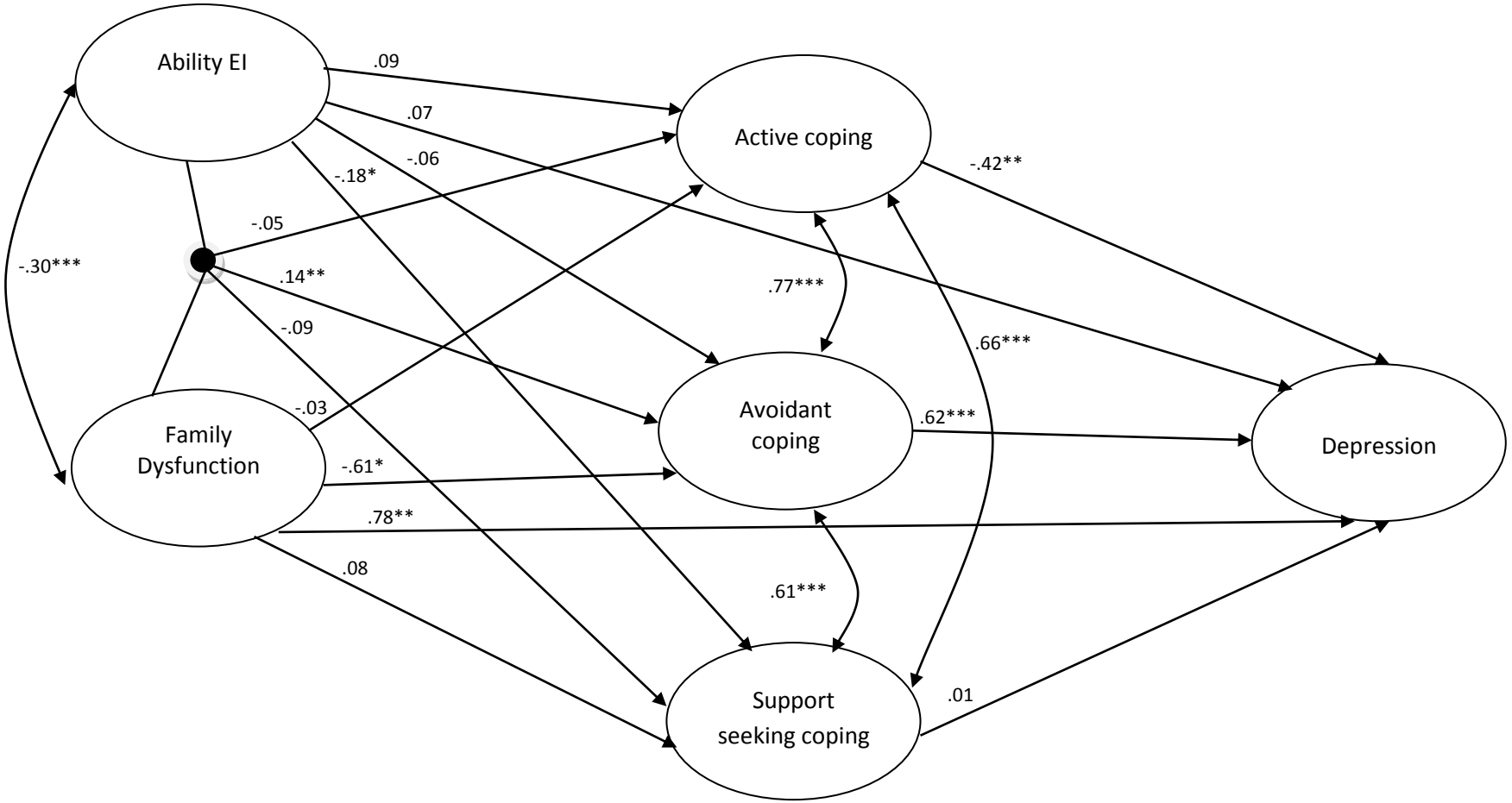

Figure 13: The effect of family dysfunction on depression through coping moderated by AEI acting on the 'a' pathways (stressor x AEI).

Notes: Unstandardised estimates shown. Interactions denoted by filled circles; double headed arrows represent covariances. All latent variables were regressed onto control variables age, sex; significant parameters involving age: family dysfunction =.05*, AEI = .31***; significant parameters for sex: depression = .40**, avoid = .24**, support seeking = .44***, AEI = .38***

*** $p < .001$, ** $p < .01$, * $p < .05$

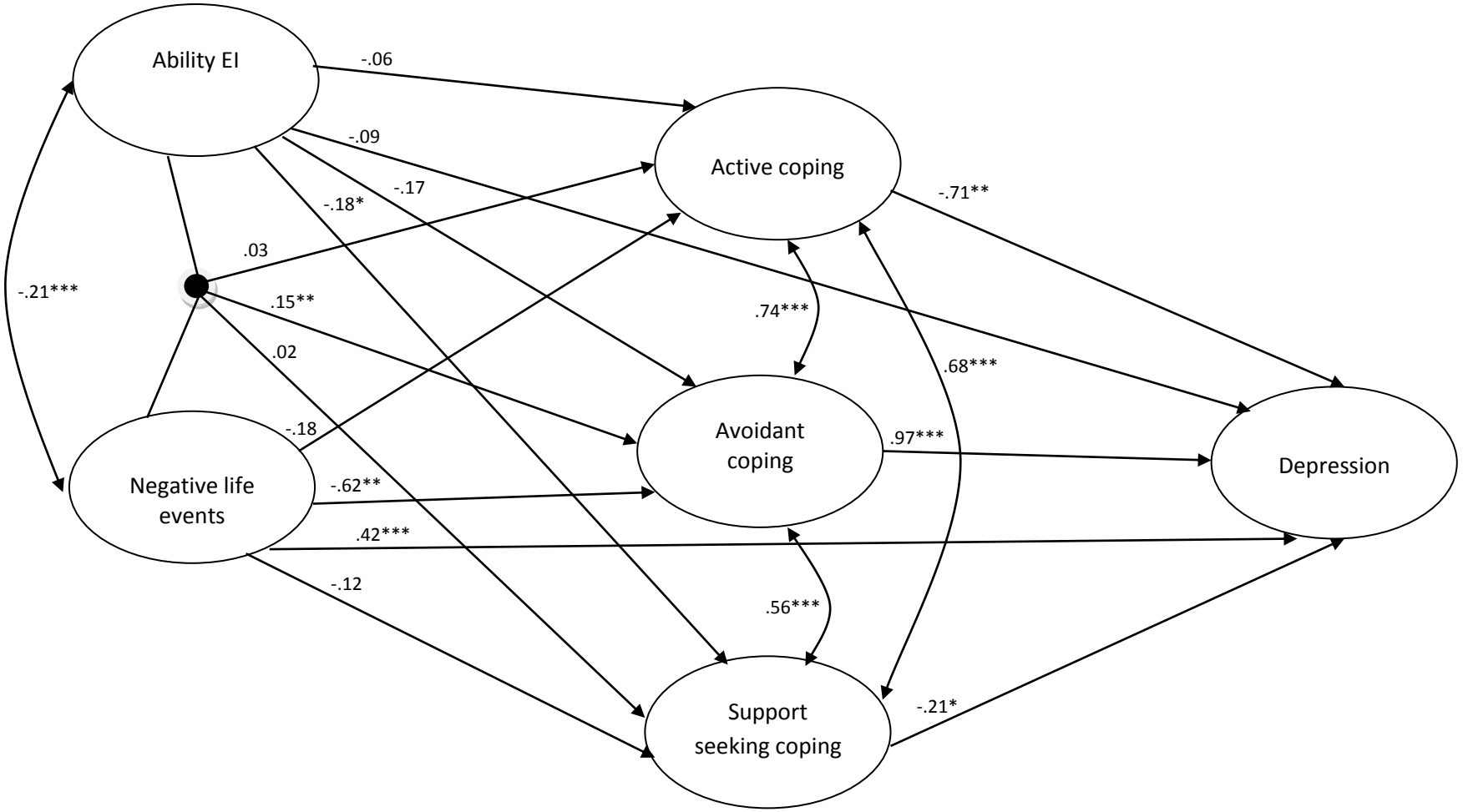

Figure 14: The effect of negative life events on depression through coping moderated by AEI acting on the 'a' pathways (stressor x AEI).

Notes: Unstandardised estimates shown. Interactions denoted by filled circles; double headed arrows represent covariances. All latent variables were regressed onto control variables age, sex; significant parameters involving age: depression = .14*, avoidant coping = -.08*, negative life events =.09**, AEI = .33***; significant parameters for sex: depression = .39**, avoid = .24**, support seeking = .42***, AEI = .34***

*** $p < .001$, ** $p < .01$, * $p < .05$