

Running Head: CONNECTEDNESS, COPING, AND PSYCHOLOGICAL ADJUSTMENT

The Collective Influence of Family Connectedness, School Connectedness and Coping  
during Adolescence on Psychological Adjustment in Emerging Adulthood

By

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### Abstract

Research shows that adolescent connections to the family and school environments both diminish across time and are predictive of psychological adjustment. Coping strategies displayed during adolescence are also thought to play a central role in the development of psychological adjustment outcomes. The present longitudinal study investigated trajectories of family and school connectedness during adolescence, the relationship of these trajectories to adjustment outcomes in emerging adulthood, and whether and how coping strategies might explain the relationships between family and school connectedness during adolescence and psychological adjustment in emerging adulthood. A sample of 946 adolescents were surveyed four times across an eight year period; three time points were during their secondary school years (2006, 2007, and 2008) and the final survey point was five years later (2013). Growth curve models were constructed to examine changes in family and school connectedness from Time 1 to Time 3, and to determine whether these changes predicted Time 4 adjustment outcomes. Mediation path models were also employed to determine whether and how Time 3 maladaptive and adaptive coping strategies functioned as mediators between Time 1 family and school connectedness and Time 4 psychological adjustment outcomes. Results demonstrated that those individuals who were well-connected to their family and school during adolescence were psychologically better adjusted in emerging adulthood. They also showed that levels of both family and school connectedness declined across adolescence for females, but not for males, and that declines in school connectedness were predictive of better psychological adjustment outcomes. Finally, greater family and school connectedness displayed during adolescence predicted reductions in the use of maladaptive coping and increases in the use of adaptive coping, which in turn, predicted increases in psychological adjustment in emerging adulthood. The findings are discussed in terms of their contributions

to the literature, their implications for the treatment of adolescent mental health difficulties, and suggestions for future research are made.

The Collective Influence of Family Connectedness, School Connectedness and Coping  
during Adolescence on Psychological Adjustment in Emerging Adulthood

Adolescence is a period characterised by changes, challenges, and growth, as children embark on the transition into adulthood (Auerbach, Bigda-Peyton, Eberhart, Webb, & Ho, 2011). Navigating this period successfully requires a complex set of cognitive, emotional, and social competencies (Cicchetti & Schneider-Rosen, 1986), including the formation of identity, the gaining of independence, the ability to form new relationships, and the ability to manage the many biological changes that occur during this period. Interference with the development of such competencies can create a chain of adjustment difficulties that may continue into adulthood (Patterson & Yoerger, 1993). Accordingly, difficulties during the adolescent period have been identified as a major risk factor for the onset of psychological maladjustment (Berk, 2009).

A wealth of research has demonstrated that connections to social environments are a core protective factor against the onset of maladjustment (e.g., Baumeister & Leary, 1995; Jose, Ryan, & Pryor, 2012; Lee & Robins, 1998; McGraw, Moore, Fuller, & Bates, 2008), and this so-called ‘social connectedness’ among adolescents has become a central focus of a robust line of research. Specifically, researchers are interested in how social connections within the family and school can influence adolescent health and well-being (e.g., Resnick et al., 1997). These connections are important due to the varying psychological risk and protective factors found within the family and school environments, and the gradual disengagement from these environments as adolescents begin to gain independence and replace these connections with other important social dimensions (Baer, 2002; Eccles & Midgely, 1989).

The current study examined adolescent connections to the family and school environments, whether and how these connections changed across time, and whether and how

these changes predicted psychological maladjustment (i.e., depression and anxiety) and psychological well-being (i.e., resilience) in emerging adulthood. In addition, the study also investigated risk and protective factors that may be learned within these environments (i.e., maladaptive and adaptive coping strategies) and examined how they may help explain the relationship between family and school connectedness and later psychological outcomes.

### **Psychological Maladjustment**

‘Psychological maladjustment’ can be defined as an umbrella term for the symptoms associated with cognitive, emotional and behavioural difficulties (Klima & Repetti, 2008). These symptoms manifest in countless forms, such as a lack of emotional understanding, low self-worth, feelings of hopelessness, the inability to develop and maintain relationships, and problems with concentration and motivation (Carr & McNulty, 2014). If left unnoticed or untreated, such symptoms can lead to severe psychological, social and functional impairments (Ferdinand, Stijnen, Verhulst, & Van Der Reijden, 1999).

The personal and societal costs associated with psychological maladjustment can be significant. At the individual level, psychological maladjustment can lead to a failure to develop or retain the skills necessary to function adaptively in society (e.g., the ability to regulate emotion, form relationships, raise a family, receive an education, and remain in employment), which can lead to lifelong distress and dysfunction (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005). The World Health Organisation (WHO) estimates that, globally, over 450 million people are affected by psychological adjustment difficulties, and that one million people will commit suicide each year (WHO, 2001). Furthermore, the annual societal cost of depression and anxiety alone is an estimated \$160 billion across the USA and Europe (Greenberg et al., 1999; Sobocki, Jönsson, Angst, & Rehnberg, 2006), and depression is predicted to become the second most burdensome health problem worldwide by 2020 (WHO, 1999).

Given the severity of outcomes and the increasing lifetime prevalence of psychological maladjustment (Kessler et al., 2005), the early identification and prevention of psychological difficulties is of crucial importance. Central to preventing such difficulties is understanding the factors implicated in their development. The impact that the social environment has on this process is one factor that cannot be overstated.

### **The Social Environment and Adjustment Difficulties**

Whereas traditional perspectives portrayed mental health difficulties as inherent to the individual (Cicchetti & Toth, 2005), more recent approaches understand maladjustment as a consequence of dynamic relationships between the individual and his/her internal and external contexts (Sameroff, 2000). In other words, psychological outcomes are a product of reciprocal interactions between environmental, biological, and psychological processes, which either positively or negatively alter the course of development (Masten & Cicchetti, 2010). An influential model that describes these processes is Bronfenbrenner's (1977; 1979) Ecological Systems Theory (EST). Put simply, EST states that psychological well-being is contingent on the complex interplay between the individual and his/her proximal and distal environmental influences (Bronfenbrenner, 1979).

**Distal environments.** Distal environments are defined as the broader social influences that indirectly affect the health and psychological adjustment of individuals (Bronfenbrenner, 1979). These influences range from social policy decisions in government to the norms, attitudes, and ideologies espoused by a given culture. The emphasis that distal level environments place on meeting the needs of persons at the individual level can have a significant impact on their physical and psychological development (Berk, 2009). For example, policy decisions that contribute to a family's social and economic circumstance may impact on a parent's ability to attend to a child's developmental needs (e.g., providing access to adequate warmth and nutrition; Bornstein & Bradley, 2014). Further, cultures that

are accepting of mental health problems may help to limit such difficulties through the promotion of environments that foster an awareness of psychological processes and difficulties, and educate people in how to respond to such difficulties (e.g., health-promoting school environments; Bonell et al., 2014).

Supportive and accepting distal level influences are thus important in laying the foundations for more immediate (proximal) social environments, which have a direct influence on psychological well-being.

**Proximal environments and the individual.** Proximal environments are the systems embedded within the immediate social world (e.g., the family, school, and the community) that directly influence an individual's physiological and psychological vulnerabilities (e.g., temperament, cognitive style and self-regulatory ability; Bronfenbrenner, 1979). Arguably the most important proximal environment impacting on a child's development is the family (Berk, 2009).

***Family-based influences.*** From infancy through to adolescence there are a number of family-based developmental milestones that, when achieved, reduce the risk of psychological maladjustment. These include (but are in no way limited to) the development of language, a secure parent-child relationship, and the development of effective self-control or self-regulation strategies (Berk, 2009). The attainment of such milestones help facilitate the development of adaptive coping strategies (Leahy, Tirsch, & Napolitano, 2012), provide opportunities to learn about the nature of human relationships (Sroufe, Egeland, & Carlson, 1999), and help scaffold a secure base from which a child can explore and master new environments (Bowlby, 1969). This far from exhaustive list only offers a snapshot of the early life skills that a nurturing family can provide. What is important, however, is that competent models (i.e. effective parents) are available to facilitate the attainment of such milestones (Berk, 2009). A failure to develop such milestones can contribute to the

development of maladaptive coping responses (Berk, 2009) and places an individual at an increased risk for developing psychological adjustment difficulties (Masten & Cicchetti, 2010).

Such influences are not limited to the family environment; other important milestones are attained and solidified as individuals are exposed to other proximal environments, such as the school.

***The importance of the school environment.*** As well as providing opportunities for academic achievement, the school represents one of the first extra-familial environments that expose children to a novel group of peers and adults (Cicchetti & Toth, 2005). Due to this dynamic, the school provides an alternative space to learn and consolidate numerous socially- and psychologically-based competencies, including strategies to cope with novel emotions, the ability to develop close friendships, and the ability to problem solve adaptively (Berk, 2009). It also provides a space to practice and generalise skills learned within the family environment (Berk, 2009). Furthermore, the school can allow opportunities for individuals to break free from maladaptive patterns that may be formed or perpetuated within the family. For example, a caring and supportive teacher could act as a substitute for a lack of a competent role model within the home, such as in the case of maltreating family environments (Cicchetti & Toth, 2005).

One seminal theory that demonstrates how maladaptive and adaptive modes of behaviour are transmitted between the environment and the individual is Bandura's (1977) Social Learning Theory (SLT).

***Social learning theory.*** Social learning theory asserts that individual characteristics, such as attitudes and behaviours, are learned via direct experience or by observing and imitating behaviour modelled by others (Bandura, 1977). This dynamic is also recognised as a 'social referencing' process, whereby social information is obtained, absorbed and



performed after observing a model's appraisal of, and emotional response to, a given object or situation (Murray et al., 2008). Learning to appraise and respond to the environment adaptively is very much contingent on the environment in which behaviour is learnt. For example, families engaging in coercive parenting strategies are likely to model impulsive and aggressive responses to distress, increasing the likelihood of children adopting such response patterns (Snyder, Reid, & Patterson, 2003). Attitudes and beliefs can be transmitted in a similar manner, and also work to maintain maladaptive response patterns (Akers & Jensen, 2006). For example, aggression may be adopted and reinforced in families with attitudes supportive of violence (Akers & Jensen, 2006); similarly, avoidant responses to distress may be maintained within families that discourage child independence and instil beliefs that the world is a dangerous and uncontrollable place (Hudson & Rapee, 2004). The continual display of such patterns of responding is known to increase the likelihood of maladjustment outcomes (Nolen-Hoeksema, 1991).

The above discussion offers only a brief overview of the way a person's environment can impact on their psychological wellbeing (see Berk, 2009, and Bronfenbrenner, 1979, for a comprehensive summary). It is clear, however, that experiences gained within social environments can either increase or decrease the likelihood of psychological maladjustment (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000). We turn now to a discussion on the impact that positive social connections can have on healthy psychological development.

### **Social Connectedness**

Social connectedness is defined in the literature as an internal sense of belonging to the social world (Lee & Robins, 1998). In 1995, Baumeister and Leary reviewed the existing human relatedness literature and concluded that a sense of belonging is a fundamental human motivation, whereby humans are driven by a pervasive need to form and maintain at least a

minimum quantity of lasting relationships (Baumeister & Leary, 1995). Their review also concluded that meaningful social connections are associated with increases in positive emotion, such as happiness and contentment, and conversely that a lack of belonging was associated with the presence of psychological and behavioural difficulties (Baumeister & Leary, 1995). In support of such observations, a seminal study by Resnick et al. (1997), which surveyed over 12,000 adolescents, found that connections to meaningful social environments were associated with reductions on various indicators of maladjustment. Specifically, they found that connections to family and school environments were protective against emotional distress, suicidality, substance use, violence, and risky sexual behaviour. These findings have spawned a wide interest in the study of adolescent social connections, with more recent studies linking positive connections to outcomes such as increased confidence and life satisfaction (Jose et al., 2012), positive future orientation (Crespo, Jose, Kielpikowski, & Pryor, 2013), and reductions in stress, depression, and anxiety (McGraw et al., 2008).

Two social connectedness dimensions that stand out in the literature as important predictors of psychological adjustment are connections to the family and school environments (e.g., Resnick et al., 1997), and they will be discussed next.

### **Family Connectedness**

Family connectedness can be defined as the integration, care and emotional attachment one feels within one's family (Rew, Resnick, & Blum, 1997). This sense of connection is influenced by many interacting processes, of which a cohesive family structure, engagement in family rituals, and a shared family identity are central components (Olson, Bell, & Portner, 1982). Cohesive families are those that operate as supportive units, allowing for emotional bonding between family members and an acceptance of individual autonomy (Gauze, Bukowski, Aquan-Assee, & Sippola, 1996). Family rituals are defined as mutual

activities that carry a symbolic meaning shared by the family (e.g., eating dinner together, weekend events, family holidays; Fiese et al., 2002), and family identity refers to a family's subjective sense of its own character and continuity over time (Gillis, 1996). These elements of family connectedness are thought to share specific relationships with child developmental processes. For example, high family cohesion is thought to facilitate healthy parent-child attachment bonds and emotional closeness (Laursen & Collins, 1994), whereas family rituals can provide platforms for children to learn about the nature of relationships, and opportunities for parents to model adaptive behaviour (Crespo, 2012). Family identity can help determine the values and beliefs held by children (Fiese, 2006) that go on to guide behavioural choices (Steg, Bolderdijk, Keizer, & Perlaviciute, 2014). It is well-established in the research literature that meaningful family connections are positively associated with psychological well-being. For example, family connectedness has been linked to reductions in symptoms of anxiety (Markson & Fiese, 2000), depression (Czyz, Liu, & King, 2012; Eisenberg, Olson, Neumark-Sztainer, Story, & Bearinger, 2004; Houltberg, Henry, Merten, & Robinson, 2011), suicidal ideation (Czyz et al., 2012), substance use (Eisenberg et al., 2004), and increases in self-esteem (Fiese, 1992; Resnick, 1997).

Although positive family connections are important for adolescent well-being, healthy development is also contingent on the granting of adequate autonomy during this period (Lanza, Huang, Murphy, & Hser, 2012). Accordingly, it is normative for adolescents to slowly separate themselves from the family environment.

### **Normative Decline in Family Connectedness**

According to the separation-individuation theory (Blos, 1967), the adolescent need for autonomy alters the internalised childhood view of family where parents are regarded as omnipotent governors of behaviour to a view that defines the self as an autonomous agent (Meeus, Iedema, Maassen, & Engels, 2005). In this way, adolescents begin viewing the

fulfilment of childhood responsibilities (e.g., obeying rules and instructions) as interfering with their growing sense of autonomy and independence (Pomerantz, Qin, Wang, & Chen, 2011). Accordingly, this period is characterised by a decline in adolescent perceptions of family connectedness (Baer, 2002), a hypothesis that is well supported in the research literature. Studies have demonstrated that the adolescent period is associated with increases in perceived parent-child conflict (De Goede, Branje, & Meeus, 2009; Laursen, Coy, & Collins, 1998), declines in levels of family cohesion (Baer, 2002), declines in perceived parental power (De Goede et al., 2009), declines in feelings of obligation toward parents (Pomerantz et al., 2011), and reductions in the importance of parental influence in terms of adolescent self-definition (Pomerantz, Qin, Wang, & Chen, 2009).

At face value this diminishment of family connectedness appears to be problematic, however, research suggests that it is a normative and adaptive part of adolescent development (Laursen & Collins, 2009). Cohesive families that are able to adapt to the developmental needs of the adolescent (i.e., those that provide a more equal power balance and opportunities for autonomy development) are associated with better psychological outcomes (Steinberg, 2001). Conversely, overly cohesive families, which lack the ability to adapt to developmental demands, are associated with poorer psychological outcomes (Laursen & Collins, 2009). For example, studies have found that parental over-control and over-involvement during adolescence is associated with childhood depression (e.g., Mcleod, Wood, & Weisz, 2007), and links have also been found between childhood anxiety and families that fail to encourage autonomy (e.g., Peleg-Popko, 2002).

The disconnection from family during adolescence also coincides with a need to explore identities that are separate from the family (Forbes & Dahl, 2010), as such, adolescents are likely to turn to social institutions outside the family as sources of influence,

such as the school (Vieno, Santinello, Pastore, & Perkins, 2007; Wang, Dishion, Stormshak, & Willett, 2011).

### **School Connectedness**

School connectedness can be defined as the extent to which students feel accepted, respected, included, and supported within the school environment (Goodenow, 1993). As with connections to the family, there are many interacting elements that determine one's level of connection to school, ranging from having supportive relationships with teachers and classmates, to feeling included and accepted by the wider school community.

Research into school connectedness suggests that these elements play differential roles with regard to adolescent development. For example, school group membership and extracurricular activities can help promote the exploration and expression of individual identities (Barber, Eccles, & Stone, 2001). Similarly, supportive teachers can model effective coping strategies, and help children learn to label and manage the different emotions experienced in the classroom (Pianta, 1999). Importantly, skills learned within the school can also compensate for a lack of connection to other nurturing environments, for example, if one's family environment fails to provide adequate support for developmental needs (Ripperger-Suhler & Loukas, 2012).

The research literature has consistently linked school connectedness to indicators of well-being. For example, positive school connections have been associated with reductions in symptoms of depression (Anderman, 2002; Jacobson & Rowe, 1999; Ross, Shochet, & Bellair, 2010; Shochet, Dadds, Ham, & Montague, 2006), reductions in symptoms of anxiety (Joyce & Early, 2014; Lester, Waters, & Cross, 2013; McGraw et al., 2008), decreases in problem behaviour (Dornbusch, Erikson, Laird & Wong, 2001; Resnick et al., 1997) and increases in self-esteem (Osterman, 2000).

Similar to the decline in family connectedness, it is also normative for adolescents to slowly diminish their connections to the school environment during the transition from adolescence to early adulthood.

### **Normative Decline in School Connectedness**

Eccles and Midgely's stage-environment fit model (1989) suggests that the decline in school connectedness is due to a mismatch between the school environment and the developmental needs of the adolescent. For example, a school's emphasis on rules, control, and discipline may clash with the growing need for autonomy and individuality (Eccles et al., 1996). Similarly, large and impersonal classrooms often found in secondary schools may limit opportunities for individuality and hinder the coinciding need for close and caring student-student and student-teacher relationships (Loukas, Ripperger-Suhler, & Horton, 2009). Such factors are thought to undermine positive orientations to the school over time (Loukas et al., 2009). In support of these notions, research has consistently demonstrated a decline in levels of school connectedness across the adolescent period. For example, using growth curve model analyses, Hawkins, Guo, Hill, Battin-Pearson, and Abbott (2001) found that perceptions of school bonding (i.e., a sense of enjoyment and connection to school) declined from ages 13 to 18 years. Similarly, Wang and Dishion (2012) found that positive perceptions of school climate (e.g., academic support, teacher social support, peer social support, and behaviour management) declined from ages 11 to 15 years. Other studies examining connections to the school environment have yielded similar results (e.g., Simons-Morton, & Chen, 2009). Way, Reddy, & Rhodes, 2007; Whitlock, 2006).

However, contrary to what has been found within family connectedness research, declines in school connectedness have predominantly been associated with maladjustment outcomes. For example, studies comparing growth curve trajectories to behavioural and psychological outcomes have linked declines in school connectedness to increases in

behavioural problems (Wang & Dishion, 2012), deviant peer affiliation (Rudasill, Niehaus, Crockett, & Rakes, 2013), depressive symptoms (Way et al., 2007), and reductions in self-esteem (Way et al., 2007). However, these studies only examined the decline in school connectedness and outcome variables concurrently, and research is yet to document the decline's relationship to more long-term health outcomes.

It is clear in the theoretical and experimental literature that the contexts of family and school play significant roles in protecting adolescents against maladjustment. But what skills are learned within these environments that either reduce or exacerbate psychological difficulties? One resource with an important relationship with psychological adjustment is the ability to effectively cope with stressful life events. The next section discusses the relationships that have been identified between coping and psychological adjustment.

### **Coping and Psychological Adjustment**

Coping can be defined as the cognitive and behavioural strategies employed by a person to manage the internal and/or external demands that are appraised as distressing (Folkman & Lazarus, 1988). Endler and Parker (1990) propose three types of coping that either exacerbate or reduce one's psychological distress: task-oriented coping, emotion-oriented coping, and avoidant-oriented coping. Task-oriented approaches (e.g., problem solving and seeking social support) are associated with more adaptive outcomes (Frydenberg & Lewis, 2009), whereas emotion- and avoidant-oriented approaches (e.g., rumination, externalisation, and avoidance) are linked to maladaptive outcomes (Michl, McLaughlin, Sheperh, & Nolen-Hoeksema, 2013). Coping styles are thought to be learned socially from a person's proximal environments (Nolen-Hoeksema 1991). For example, parents who express high levels of negative affect (e.g., sadness, anxiety, & anger) during times of stress may increase the likelihood of their children learning and adopting such responses (Hilt, Armstrong, & Essex, 2012; Verona, Sachs-Ericsson, & Joiner, 2014).

An influential theory that recognises the coping-adjustment relationship is Nolen-Hoeksema's (1991) response style theory (RST). RST asserts that psychological maladjustment is maintained through the consistent use of and exposure to maladaptive coping styles (Nolen-Hoeksema, 1991). One style of coping that has been explicitly linked to this theory is rumination (Nolen-Hoeksema, 1991).

### **Ruminative Coping**

Rumination is an emotion-focussed coping style, whereby individuals think continuously about the causes, consequences, or symptoms of distress, without taking any active steps to reduce distress (Nolen-Hoeksema, 1991). This fixation on negative experiences and absence of task-orientated strategies makes rumination a powerful predictor of psychological maladjustment (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). The most frequently found relationship is rumination's ability to predict increases in symptoms of depression and anxiety (e.g., Aldao, Nolen-Hoeksema, & Schweizer, 2010; Hong, 2007; Jose & Weir, 2013). Other outcomes linked to rumination include disordered eating and substance use (e.g., Nolen-Hoeksema, Stice, Wade, & Bohon, 2007), to name but a few examples. The rumination-maladjustment relationship is also reciprocal; longitudinal studies have found that increases in maladjustment also lead to increases in ruminative coping (e.g., Jose & Weir, 2013; Nolen-Hoeksema et al., 2007). Rumination has also been found to mediate the relationship between social connectedness variables and maladjustment outcomes, including parental trust and symptoms of depression (Ruijten, Roelofs, & Rood, 2011), school bullying and symptoms of depression (Mathieson, Klimes-Dougan, & Crick, 2014), and peer alienation and disordered eating (Hilt, Roberto, & Nolen-Hoeksema, 2013).

Another emotion-focused coping strategy with links to maladjustment is the employment of externalising behaviours to cope with emotionally distressing situations.



**Externalising Behaviour**

Externalising problems are characterised as a disturbance in the regulation of behaviour (Hughes & Gullone, 2008), which commonly manifests as impulsive, aggressive and hostile responses to emotional distress (Stoltz et al., 2013). A well-established link in the literature has been made between externalising behaviours and psychological maladjustment. Studies have found that adolescent externalizing problems predict adult depression and anxiety (Colman et al., 2009; Roza, Hofstra, van der Ende, & Verhulst, 2003), suicidality (Verona et al., 2014), low self-esteem (Glass, Flory, Martin, & Hankin, 2011) and substance use (Timmermans, Van Lier, & Koot, 2008). Given the overt nature of externalising behaviours, they are also a consistent predictor of negative social outcomes, such as peer rejection, delinquency, and decreased academic performance (Broidy et al., 2003). Moreover, externalising behaviours are also found to mediate the relationships between various social domains and maladjustment outcomes, including low school connectedness and adolescent substance use (Schwartz et al., 2008), family conflict and substance use (Skeer et al., 2011), and abusive family environments and attempted suicide (Swogger, You, Cashman-Brown, & Conner, 2011).

Maladjustment outcomes also share a relationship with avoidant-oriented coping responses, which can foster and maintain many forms of psychological distress.

**Avoidant Coping**

Avoidant coping can be defined as attempts to avoid emotions, cognitions, behaviours, and situations that individuals appraise as distressing (Dozois, Seeds, & Collins, 2009). Avoidance both restricts access to evidence that may disconfirm stress appraisals, and inhibits the capacity to learn adaptive responses to distress (Kase & Ledley, 2007); furthermore, attempts at avoiding distressing thoughts and emotions can increase their frequency, severity and accessibility (Gold & Wegner, 1995). Such factors make avoidant-

oriented coping a powerful maintainer of psychological maladjustment (Penley, Tomaka, & Wiebe, 2002), a relationship that is well supported in the research literature. For example, avoidant coping has been associated with depression, anxiety (Aldao et al., 2010; Johnson, Turner, & Iwata 2003), substance use (Chua, Milfont, & Jose, 2014), self-harm behaviour (Mikolajczak, Petrides, & Hurry, 2009), and symptoms of post-traumatic stress disorder (Marx & Sloan, 2005). Avoidant coping also plays a role in the pathway between adverse social experiences and psychological maladjustment. For example, avoidant coping has been found to mediate the relationship between degrading parenting behaviour and adolescent symptoms of depression and anxiety (Caples & Barrera, 2006), child trauma experiences and psychological distress and substance use (Min, Farkas, Minnes, & Singer, 2007), and appearance-related bullying and low self-esteem (Lodge & Feldman, 2007).

The above discussion has focussed on emotion-focussed and avoidant-oriented coping strategies and their relationship to psychological maladjustment; we turn now to a discussion on task-oriented or adaptive approaches that are protective against such difficulties. Firstly, however, it is important to outline the concept of resilience; a protective factor that shares a relationship with adaptive coping.

## **Resilience**

Resilience refers to the capacity of individuals to cope with and bounce back from distressing experiences (McGrath & Noble, 2003; 2011). As a research concept, resilience is inferred from evidence that certain individuals are better adjusted than others after experiencing similar levels of adversity (Rutter, 2012). To exemplify, a large research study examining a sample across 50 years found that, despite serious life stressors and adverse living environments, 30-50% of participants thrived and flourished (Vaillant, 2003).

One's degree of resilience is determined from protective resources found within the individual (e.g., coping skills, competence, and self-efficacy) and resources that are external

to the individual (e.g., parental support, peer support, and community organisations; Fergus & Zimmerman, 2005). The employment of such resources helps maintain a level of well-being in the face of distressing circumstances (Fergus & Zimmerman, 2005). Accordingly, the research literature has consistently linked resilience to positive psychosocial outcomes, including the prevention of violence, suicide and substance abuse (Fuller, 2001), enhanced well-being (Sanders, Munford, Thimasarn-Anwar, Liebenberg, & Ungar, 2015), and the promotion of long-term occupational and life successes (Fuller, 2001). Resilience has also been found to reduce depressive symptom severity for those exposed to childhood abuse and trauma experiences (Wingo, Wrenn, Pelletier, Gutman, Bradley, & Ressler, 2010).

Many factors contribute to one's resiliency, including biological, psychological and socially derived resources (Panter-Brick & Leckman, 2013). Task-oriented coping represents one of these resources, of which an individual's ability to solve problems is an important strategy.

### **Problem Solving**

Problem solving is a cognitive-affective-behavioural process whereby individuals identify, discover, or invent solutions to their problems during times of distress (D'Zurilla, 1986). It is defined as the intentional actions taken to understand a distressing problem, generate solutions for the problem, and follow through on plans until the problem is resolved (Stone & Neale, 1984). In this way, problem solving works to modify or eliminate the psychosocial experiences that individuals find distressing (Aldao et al., 2010). Accordingly, problem solving is considered a core feature of emotion- and self-regulation processes (Stone & Neale, 1984) and an important contributor to psychological well-being (Bell & D'Zurilla, 2009).

The research literature has consistently linked effective problem solving to indicators of well-being, including life satisfaction, self-esteem (Hamarta, 2009), optimism (Karademas,

2006), and effective interpersonal functioning (Richards & Gross, 2000). Conversely, impaired problem solving is associated with negative psychological outcomes, such as depression and anxiety (Aldao et al., 2010). Impaired problem solving has also been found to mediate the relationship between adolescent maltreatment and symptoms of depression (Calvete, 2007), and life stress and suicidal ideation (Chang, 2002). Furthermore, a study looking at the role of family influences on behaviour found that ineffective maternal problem solving mediated the relationship between maternal avoidance and adolescent avoidance behaviours (Feeney, 2006).

Another task-oriented coping approach that shares a relationship with psychological well-being is the use of social support.

### **Social Support**

Social support is defined as information received from others that shows one is loved, cared for, valued, and part of a network of mutual communication (Cobb, 1976). As a coping resource, social supports not only help regulate emotion and behaviour during times of distress (Lakey & Orehek, 2011), but they also provide informational guidance that aids in planning future coping responses (Sarason, Sarason, & Pierce, 1994). The scope of social support includes *perceived* availability of support (Choenarom, Williams, & Hagerty, 2005). For example, coping competence can be increased through the comfort of knowing that support is available if needed (Wethington & Kessler, 1986). Notably, one's perception of social support has been found to have a greater impact on psychological outcomes than the actual level of support received (Dunkel-Schetter & Bennett, 1990).

As well as its role in supplying emotional assistance, the use of social resources have also been found to increase a sense of belongingness (Sarason et al., 1994), strengthen relationships with significant others, and facilitate greater self-compassion and compassion toward others (McMillen, 1999). Accordingly, social support plays an important role in

maintaining psychological well-being. For example, it has been associated with increased self-efficacy (Vieno et al., 2007), life satisfaction, positive affect (Siedlecki, Salthouse, Oishi, & Jeswani, 2014), and self-esteem (Goodwin, Costa, & Adonu, 2004). Furthermore, social support is also an important mediator in the relationship between adverse social environments and psychological adjustment. For example, it has been found to mediate the relationship between child maltreatment and reductions in levels of anxiety and depression (Sperry & Widom, 2013), and peer bullying and reduced depressive symptomology (Seeds, Harkness, & Quilty, 2010).

### **The Current Study**

The aim of the present study was to examine the relationships between family and school connectedness during adolescence and subsequent psychological outcomes in emerging adulthood. Analyses were performed on data taken from the Youth Connectedness Project (YCP; Jose & Pryor, 2010), a longitudinal study that surveyed adolescents over three time points during their secondary school years and again at a time point five years later in emerging adulthood. This research direction is of interest given the dearth of longitudinal research that examines whether and how multiple social connectedness dimensions predict long-term psychological outcomes (Jose & Lim, 2014).

The study first sought to replicate findings reported in previous literature that has found significant relationships between family and school connectedness and psychological adjustment outcomes (e.g., Anderman, 2002; Cxyz et al., 2012; Eisenberg et al., 2004; Osterman, 2000). Specifically, it was predicted that feeling connected to one's family and school environments as an adolescent would be negatively related to depression and anxiety and positively related to resilience in emerging adulthood (Hypothesis 1).

The study also sought to replicate findings that suggest a normative decline in family and school connectedness across the adolescent period (e.g., Baer, 2002; Hawkins et al.,

2001; Wang & Dishion, 2012); it also examined how these trajectories themselves predict later psychological outcomes. Given the findings in the literature, it was predicted that levels of family and school connectedness would decline across the study's three time points (Hypothesis 2). Further, it was predicted that the expected decline in family connectedness would be negatively related to depression and anxiety in emerging adulthood, and positively related to resilience (Hypothesis 3). These predictions were based on research linking such declines to normative and adaptive development (e.g., Laursen & Collins, 2009). Given the lack of research investigating the long-term effects of declining school connectedness levels, the investigation with regard to whether adolescent school connectedness trajectories would predict depression, anxiety, and resilience in emerging adulthood was an exploratory one. Consequently the following research question (Research Question 1) was posed: Are there long-term psychological benefits linked to the expected normative decline in school connectedness across adolescence?

Finally, the present study also sought to investigate how coping strategies displayed in adolescence may help explain the expected relationships between family and school connectedness and later adjustment outcomes. This final phase in the investigation was of special interest given that only a few mediational analyses examining such relationships exist (i.e., Mathieson, Klimes-Dougan, & Crick, 2014; Ruijten, Roelofs, & Rood, 2011). It was predicted that adolescents who were well connected to their family and school at Time 1 would engage in less maladaptive coping and more adaptive coping at Time 3, which would then result in better psychological adjustment outcomes at Time 4. In terms of specific outcome predictions, it was expected that reductions in maladaptive coping and increases in adaptive coping would mediate the relationship between family and school connectedness and reductions in depression (Hypotheses 4a and 4b), family and school connectedness and reductions in anxiety (Hypotheses 4c and 4d), and family and school connectedness and

increases in resilience (Hypothesis 4e and 4f). These predictions were based on the theoretical literature (e.g., Nolen-Hoeksema 1991) and the several mediational studies that have evidenced such relationships (e.g., Schwartz et al., 2009; Sperry & Widom, 2013).

## Method

### Participants

Participants were 946 adolescents who took part in the Youth Connectedness Project (YCP). The YCP is a large New Zealand longitudinal study focusing on young people's connections to families, schools, peers, and communities. The sample consisted of 556 females and 380 males, who were aged between 10 and 16 years ( $M = 12.23$ ,  $SD = 1.78$ ) at the first survey time point in 2006. The ethnic breakdown of participants was 70% (652) New Zealand European, 21% (208) Maori, and 9% (86) identified with other ethnicities (predominantly Pacific Islands and Asian New Zealand).

Participants were recruited from 78 schools across New Zealand's North Island using a stratified random sampling approach. Schools were systematically targeted to ensure a diverse range of socio-economic status (SES) and geographical locations. Sixty one percent of schools were located in urban environments, 15% in suburban environments, and 14% in rural environments. In terms of SES, school deciles ranged from 1 to 10, with an average decile of 5.2, which is close to the national average. School deciles and the geographic locations of schools are considered a good approximation of the national average.

### Procedure

Adolescent and parental consent was obtained prior to the administration of the surveys. Ethical approval for the study was granted by the Victoria University School of Psychology Human Ethics Committee prior to data collection.

The YCP surveyed participants in 2006 (Time 1), 2007 (Time 2), 2008 (Time 3) and 2013 (Time 4). The survey was a 370-item questionnaire, which investigated the development of social connectedness in adolescence and related constructs and variables. The surveys representing Time 1 to Time 3 were completed by students at school using laptop computers. Research assistants and a teacher supervised the process and were available to



answer any questions. The surveys took approximately one hour to complete and each participant received a token reward upon completion. Participants were contacted by phone and email five years after the T3 data collection (see Appendix A and B), and were asked to participate in the survey for the final time point (Time 4). Most participants completed an online version of the survey, but a few individuals opted for the physical version of the survey. Depending on the participants' preference, surveys were either posted out for completion or a web address was provided via email to complete the survey online (see Appendix C). Time 4 surveys took approximately one hour to complete and participants received a \$20 voucher for taking part. Further information is available at the YCP survey website: <http://www.victoria.ac.nz/mckenzie-centre/research/youth-connectedness>.

## Measures

YCP survey data were used to obtain measures of family connectedness, school connectedness, maladaptive coping, adaptive coping, depression, anxiety, and resilience. See Appendix D for a list of scale items for all measures.

**Family connectedness.** The family connectedness scale contained 11 items pertaining to family cohesion, mutual family activities, and a sense of family identity. The family cohesion and mutual family activities subscales were adapted from the FACES-II measure (Olson, Portner, & Bell, 1982); example items include “my family/whanau ask each other for help” and “do you and your family/whanau have meals together.” Family identity contained two items generated specifically for the study, including “it means a lot to me to be a member of my family/whanau” and “we are proud to be members of our family/whanau.” All item responses were measured on a 5-point Likert scale ranging from 1 (*never/almost never*) to 5 (*always/almost always*) with higher scores indicating higher levels of family connectedness. Previous studies employing the family connectedness items from the YCP survey report adequate internal reliability, with Cronbach's alphas above .90 (e.g., Crespo, Kielpikowski,

Jose, & Pryor, 2010). The internal reliability of the complete family connectedness measure (with the inclusion of family identity) was also computed and will be reported in the results section.

**School connectedness.** The school connectedness scale contained seven items that represented student-teacher relationships, a sense of school respect and community, and relationships with classmates. The teacher relationship and sense of school community subscales were adapted from the Psychological Sense of School Membership scale (PSSM; Goodenow, 1993) and the School Connectedness Scale (SCS; Blum, McNeely & Rinehart, 2002); example items include “I feel that my teacher(s) respect me” and “I feel I am treated with as much respect as other students”. All item responses were measured on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), with higher scores indicating higher levels of school connectedness. The following item representing perceived relationships with classmates was generated specifically for the study: “how well do you get on with classmates”? This item was also measured on a 5-point Likert scale ranging from 1 (*not at all well*) to 5 (*really well*). The School Connectedness Scale has been found to display adequate internal reliability, with Cronbach’s alpha values above .85 (e.g., Jose & Pryor, 2010). The internal reliability of the complete school connectedness measure (including classmate relationships) was computed and will be reported in the results section.

**Maladaptive coping.** The maladaptive coping scale is made of measures of ruminative, avoidant and externalising coping strategies, which were adapted from existing coping scales. Rumination was measured using three items that were taken from the Ruminative Response Scale (RRS; Nolen-Hoeksema, Morrow, & Fredrickson, 1993) and items reflect the degree in which one identifies with a ruminative thinking style. Example items include “I think ‘I must have serious problems otherwise I wouldn't feel this way’” and “I think ‘there must be something wrong with me or I wouldn't feel this way.’” The use of

externalising coping strategies was measured using items from the previously described CCSS coping measure (Jose et al., 1998), with items reflecting aggressive ways of coping with distressful situations. Example items include “I get into fights or argue with people” and “I yell and scream.” Avoidance was measured using items taken from the Children's Coping Strategies Scale (CCSS; Jose, Cafasso, & D'Anna, 1994) with items reflecting the degree in which one avoids actively dealing with distress. Example items include “I avoid dealing with my problems” and “I avoid thinking about my problems.” Item responses for all maladaptive coping scales were measured on a 5-point Likert scale ranging from 1 (*never/almost never*) to 5 (*always/almost always*) with higher scores indicating a greater use of maladaptive coping strategies. Previous studies employing the above scales have found them to display adequate internal reliability, with Cronbach's alphas above .80 (e.g., Chua, Milfont, & Jose, 2014). Given that the above scales were used to form a maladaptive coping composite variable, the internal reliability of all three scale items together was tested and will be reported in the results section.

**Adaptive coping.** The adaptive coping component is constituted by the measures of problem-solving and perceived social support, which were both adapted from the Children's Coping Strategies Scale (CCSS; Jose, Cafasso, & D'Anna, 1994). The problem-solving scale contained three items that reflect one's perceived ability to take active steps to alter a distressing situation; example items include “I try to change the situation to fix the problem” and “I work on the problem in order to fix it.” The social support scale contained three items that reflect the degree in which one uses social support resources to overcome distressful situations; example items include “I talk to others about how I am feeling” and “It is easy for me to tell other people how I feel.” All item responses were measured on a 5-point Likert scale ranging from 1 (*never/almost never*) to 5 (*always/almost always*) with higher scores indicating a greater use of adaptive coping strategies. Previous studies have found the

problem-solving and social support subscales of the CCSS to show adequate internal reliability, with Cronbach alpha's above .70 and .80 respectively (e.g., Shelton & Harold, 2007). Given that the above scales were used to form an adaptive coping composite variable, the internal reliability of the problem-solving and social support scale items taken together was tested and will be reported in the results section.

**Depression.** Depression was measured using the Center for Epidemiologic Studies Depression (CESD) short form (CESD-10; Andresen, Malmgren, Carter, & Patrick, 1994), which measures perceived depressive symptomatology. Items reflect typical emotions and cognitions one may have when presenting with symptoms of depression; example items include "I got upset by things that don't usually upset me" and "I felt sad." Responses require participants to specify how often they have experienced symptoms in the past one or two weeks. Item responses were measured on a 4-point Likert scale ranging from 1 (*Less than a day*) to 4 (*five to seven days*), with higher scores indicating higher levels of depressive symptoms. The CESD-10 has been found to display adequate internal reliability, with Cronbach's alphas above .75 (e.g., Andresen et al., 1994; Mausbach, Roepke, Depp, Patterson, & Grant, 2009).

**Anxiety.** Anxiety was measured using an adapted version of the Beck Anxiety Inventory (BAI; Beck & Steer, 1990), which is a 21-item questionnaire that measures the severity of anxious symptoms in adults and adolescents. Items reflect typical cognitions and physical symptoms that are present during episodes of anxiety; example items include "fear of the worst happening" and "fear of losing control." Responses require participants to specify how much they have been bothered by symptoms in the past month. Item responses were measured on a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*severely – it bothered me a lot*), with higher scores indicating higher levels of anxiety. Previous studies

evaluating the BAI have found it to have adequate internal reliability with Cronbach's alphas consistently above .90 (e.g., Fydrich, Dowdall, & Chambless, 1992).

**Resilience.** Resilience was measured using a 10-item version of the Conner-Davidson Resilience Scale (CD-RISC-10; Campbell-Sills & Stein, 2007; Connor & Davidson, 2003), which measures one's ability to tolerate life experiences such as failure, change, and personal problems. Example items include "able to adapt to change" and "tend to bounce back after illness or hardship". Item responses were measured on a 5-point Likert scale ranging from 1 (*not true at all*) to 5 (*true nearly all the time*), with higher scores indicating higher levels of resilience. Previous studies employing the CD-RISC-10 have found it to display adequate internal reliability, with Cronbach's alphas above .90 (e.g., Hegberg & Tone, 2015).

### Statistical Analyses

**Treatment of missing data.** EM (Expectation-Maximisation) imputation (Dempster, Laird, & Rubin, 1977) was employed to impute and estimate missing data values. Missing values made up 1% of the dataset and the EM analysis indicated that these data were missing completely at random.

**Descriptive statistics.** Means and standard deviations were calculated to obtain an averaged total scale score for family connectedness, school connectedness, adaptive coping, maladaptive coping, depression, anxiety, and resilience. Cronbach's alpha analyses were also employed to determine the internal reliability of the items within each scale. Alpha values  $\geq .70$  were considered to yield an acceptable level of reliability. Pearson correlation coefficients were also run between the family and school connectedness variables, the adaptive and maladaptive coping variables, and the psychological outcome variables (depression, anxiety, and resilience) to test the strength and direction of these relationships. IBM SPSS Statistics 20 (2011) was used for all descriptive and reliability analyses.

**Growth curve model analyses.** Growth curve models were then employed using maximum likelihood estimation to examine the rate of change in family and school connectedness from Time 1 to Time 3. The growth curve models specified an intercept value, which represented the initial level of family and school connectedness at Time 1, and a slope value, which represented the rate of change in family and school connectedness across the three time points. The models were then used to test whether the intercept and slope values would predict psychological outcome variables at Time 4. These analyses thus allowed us to examine how changes in family and school connectedness from Time 1 to Time 3 predicted levels of psychological maladjustment and resilience at Time 4. For all growth curve models, model fit indices were employed to evaluate their goodness-of-fit to the data (Hu & Bentler, 1998). The indices used included: the comparative fit index (CFI; Bentler, 1990), the nonnormed fit Index (NNFI; Bentler & Bonett, 1980), the standardized root mean squared residual (sRMR; Hu & Bentler 1999), and the root mean square error of approximation (RMSEA; Marsh, Balla, & Hau, 1996). An adequate model fit was determined by CFI values being equal to or greater than .95, NNFI values being .90 or greater, RMSEA values being .06 or less, and the sRMR value being equal to or less than .08 (Browne & Cudeck, 1993; Hu & Bentler, 1999). Chi-square statistics ( $\chi^2$ ) and degrees of freedom ( $df$ ) were also calculated to assess the models' goodness-of-fit. Smaller  $\chi^2$  values are preferred and indicate that the data fit the model well (Thompson, 2013). The  $\chi^2$  ratio ( $\chi^2/df$ ) was also computed for further confirmation of a satisfactory model fit. Ratio values close to 2 indicate a good model fit (Byrne, 2001).

**Mediation analyses.** Mediation analyses were then carried out to test whether adaptive and maladaptive coping strategies at Time 3 mediated the relationship between family and school connectedness at Time 1 and depression, anxiety, and resilience at Time 4. The mediation models included family and school connectedness as independent variables,

and maladaptive and adaptive coping strategies as mediators on the three dependent variables of depression, anxiety, and resilience. The models also included gender and age as covariates.

The software package Analysis of Moment Structures (AMOS) version 20 (Arbuckle, 2011) was used for all the growth curve and mediation analyses.

## Results

### Reliability Analyses

Cronbach's alpha analyses were employed to test the internal consistency of the scales used in the study. These analyses indicated that each scale manifested adequate internal consistency, with all scales yielding alphas  $> .80$ . Table 1 reports the results of these analyses.

Table 1

*Cronbach's Alpha Values for each Scale used in the Study*

Scale	$\alpha$
T1 Family Connectedness	.90
T1 School Connectedness	.85
T2 Maladaptive Coping	.83
T2 Adaptive Coping	.84
T3 Maladaptive Coping	.85
T3 Adaptive Coping	.85
T4 Depression	.87
T4 Anxiety	.86
T4 Resilience	.87

### Descriptive Statistics

Means, standard deviations, and zero-order correlations of the key variables examined are presented in Table 2. The means for family connectedness, school connectedness, adaptive coping, and resilience were moderate to high (3.25 to 3.89 out of 5), and the means for depression, anxiety, and maladaptive coping were low to moderate (1.87, 1.55, and 2.12 out of 5, respectively). This pattern of results suggests that, overall, participants functioned well and felt reasonably well connected to their families and school.



Table 2

*Means and Correlation Coefficients for all Variables*

Scale	T1 FC	T1 SC	T2 MC	T2 AC	T3 MC	T3 AC	T4 D	T4 A	T4 R
T1 SC	.44								
T2 MC	-.27	-.23							
T2 AC	.33	.30	-.26						
T3 MC	-.26	-.23	.63	-.24					
T3 AC	.29	.33	-.24	.54	-.30				
T4 D	-.14	-.14	.11	-.17	.14	-.15			
T4 A	-.07*	-.07*	.19	-.11	.25	-.06	.39		
T4 R	.18	.12	-.16	.21	-.15	.16	-.34	-.29	
<i>M</i>	3.89	3.73	2.01	3.16	2.12	3.25	1.87	1.55	3.69
<i>SD</i>	.72	.76	.60	.80	.67	.79	.69	.52	.60

*Note:* T1 FC = Time 1 Family Connectedness; T1 SC = Time 1 School Connectedness; T2 MC = Time 2 Maladaptive Coping; T2 AC = Time 3 Adaptive Coping; T3 MC = Time 3 Maladaptive Coping; T3 AC = Time 3 Adaptive Coping; T4 D = Time 4 Depression; T4 A = Time 4 Anxiety; T4 R = Time 4 Resilience.

\* $p < .05$ ; All other  $ps < .01$ .

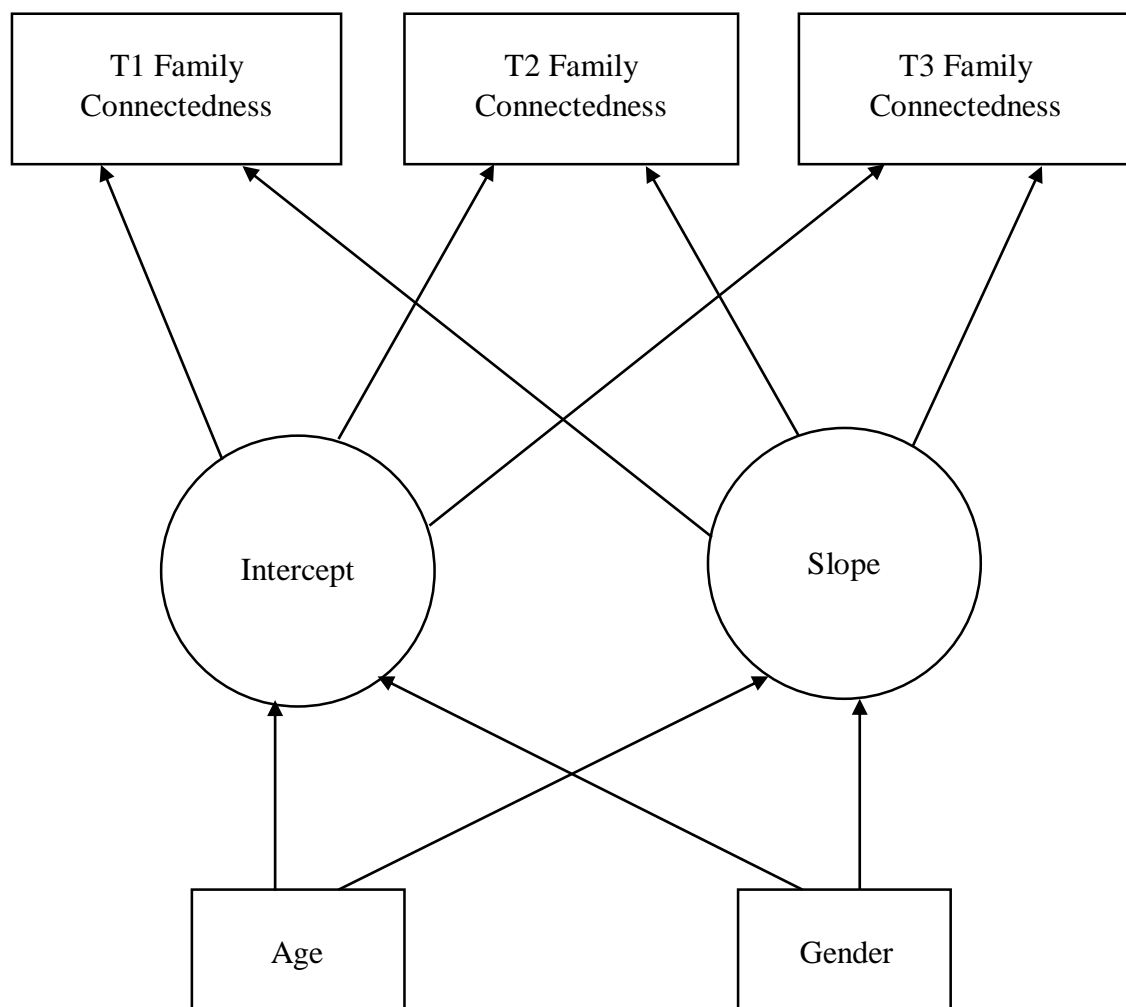
As expected, higher levels of family connectedness and school connectedness at Time 1 were positively correlated with resilience at Time 4, and negatively correlated with depression and anxiety at Time 4. These relationships were weaker than expected, which may be in part due to the passage of time (about 7 years) between survey points. Also as expected, Time 1 family connectedness and Time 1 school connectedness were positively related to Time 3 adaptive coping, and negatively related to Time 3 maladaptive coping. These relationships were of moderate strength. These correlation results suggest that, overall, connections to the family and school environments in early adolescence might have had a positive impact on psychological adjustment in emerging adulthood, which supports Hypothesis 1.

### **Adolescent Trajectories of Family Connectedness and School Connectedness**

Growth curve modelling was employed to examine change in family and school connectedness across time. Figure 1 depicts an example of the family connectedness model. As the model demonstrates, the intercept and slope values were estimated from the connectedness scores at all three time points. Age and gender covariates were also estimated for each model to covary out their influences.

**Family connectedness trajectories.** The family connectedness model displayed an adequate model fit ( $\chi^2(5) = 13.89, p = .020, \chi^2/df = 2.78, NNFI = .988, CFI = .994, sRMR = .007, RMSEA = .043$ ). Results from the model are presented in Table 3. The intercept was found to be significant ( $4.42, p < .001$ ); indicating that adolescents reported healthy connections to their families at Time 1. However, contrary to Hypothesis 2 and previous research, the slope was found to be nonsignificant (slope = .027,  $p = .568$ ), suggesting that for the sample at large, adolescent connections to their families did not decline across time. Age was found to be a significant negative predictor of the intercept ( $-.31, p < .001$ ), but not the slope ( $p = .952$ ), suggesting that younger adolescents at Time 1 were more connected to their

families than older adolescents. The relationship between gender and the intercept was nonsignificant ( $p = .998$ ), indicating that gender did not have a bearing on Time 1 levels of family connectedness. However, interestingly, gender was found to be a significant predictor of the slope ( $-.22, p < .001$ ). Given the size of the gender to slope coefficient, and the fact that the family connectedness slope itself was nonsignificant, post hoc analyses were conducted to further elucidate the effect of gender on the slope. These results will be reported after the following section on the school connectedness trajectory.



*Figure 1.* Growth curve model demonstrating how family connectedness was measured across the time points. The slope value represents the rate of change in family connectedness across time, and the intercept represents initial average levels of family connectedness. The model also depicts age and gender as covariates. *Note:* Error terms were omitted for clarity of presentation.

Table 3

*Slope Values, Intercept Values, and their Relationship with Covariates*

	Intercept	Slope	Intercept on Age	Intercept on Gender	Slope on Age	Slope on Gender
FC	4.42***	.03	-.31***	.00	-.01	-.22***
SC	4.12***	.01	-.31***	.08*	.10*	-.14**

Note: FC = Family Connectedness; SC = School Connectedness. \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ .

**School connectedness trajectories.** The school connectedness model also displayed an adequate model fit ( $\chi^2(5) = 7.57, p = .182, \chi^2/df = 1.51, NNFI = .995, CFI = .997, sRMR = .006, RMSEA = .023$ ). Results from the model are presented in Table 3. The intercept was found to be significant (4.12,  $p < .001$ ), indicating that adolescents displayed high levels of school connectedness at Time 1. Unexpectedly, and in contrast to Hypothesis 2 and previous research, the slope was found to be nonsignificant (slope = .013,  $p = .823$ ); this result suggests that adolescent connections to school may have not declined across the school years for the whole sample. Age was found to be a significant negative predictor of the intercept (-.31,  $p < .001$ ), suggesting that younger adolescents at Time 1 reported higher levels of school connectedness compared to older adolescents. Age was also found to be a positive predictor of the slope (.10,  $p = .043$ ), suggesting that older adolescents displayed more change in levels of connectedness over time, however, the amount of change was slight. Gender was found to be a weak positive predictor of the intercept (.08,  $p = .033$ ), suggesting that females reported higher levels of school connectedness at Time 1 compared to males. As with family connectedness, the relationship between gender and the slope was also significant (-.14,  $p = .004$ ). Exploratory post hoc analyses examining the impact of gender on the school connectedness slope were also carried out and will be reported below.

**Effect of Gender Differences on Family and School Connectedness Trajectories**

Two-group growth curve models were used to examine the effect of gender on the family and school connectedness slopes. For these models, the sample was divided into a female group ( $n = 566$ ) and a male group ( $n = 380$ ), which were then subjected to growth curve analyses in the same manner as described above. The models for both family connectedness ( $\chi^2(9) = 16.98, p = .050, \chi^2/df = 1.89, NNFI = .993, CFI = .994, sRMR = .014, RMSEA = .031$ ) and school connectedness ( $\chi^2(9) = 11.74, p = .228, \chi^2/df = 1.30, NNFI = .996, CFI = .997, sRMR = .015, RMSEA = .018$ ) displayed adequate model fits. The gender-specific results from each model follow.

**Male group.** The family connectedness model demonstrated that males were well connected to their families at Time 1 (intercept = 4.21,  $p < .001$ ) and that this connection did not decline across the three time points (slope =  $-.03, p = .533$ ). The school connectedness model demonstrated that males were well connected to the school environment at Time 1 (intercept = 3.96,  $p < .001$ ), and that this connection also did not change across the three time points (slope  $-.03, p = .645$ ). These results taken together suggest that male adolescents were well connected to both their family and school early in adolescence, and that these connections remained reasonably stable throughout the adolescent period.

**Female group.** The family connectedness model demonstrated that females were more highly connected than males to their families at Time 1 (intercept = 4.56,  $p < .001$ ). Interestingly, and in contrast to the male group, this connectedness was found to decline across the three time points (slope  $-.15, p < .001$ ). These findings (see Figure 2) suggest that although females are more connected to their families early in adolescence than males, they gradually became less connected across the adolescent period compared to males.

The school connectedness model demonstrated that females were also more connected than males to the school environment at Time 1 (intercept = 4.49,  $p < .001$ ). As

with the family connectedness model, females also displayed a significant decline in school connectedness across the three time points (slope =  $-.16$ ,  $p = .002$ ). These results (see Figure 3) suggest that female adolescents were initially more highly connected to the school environment than males, and that their connectedness to school decreased across the adolescent period relative to males.

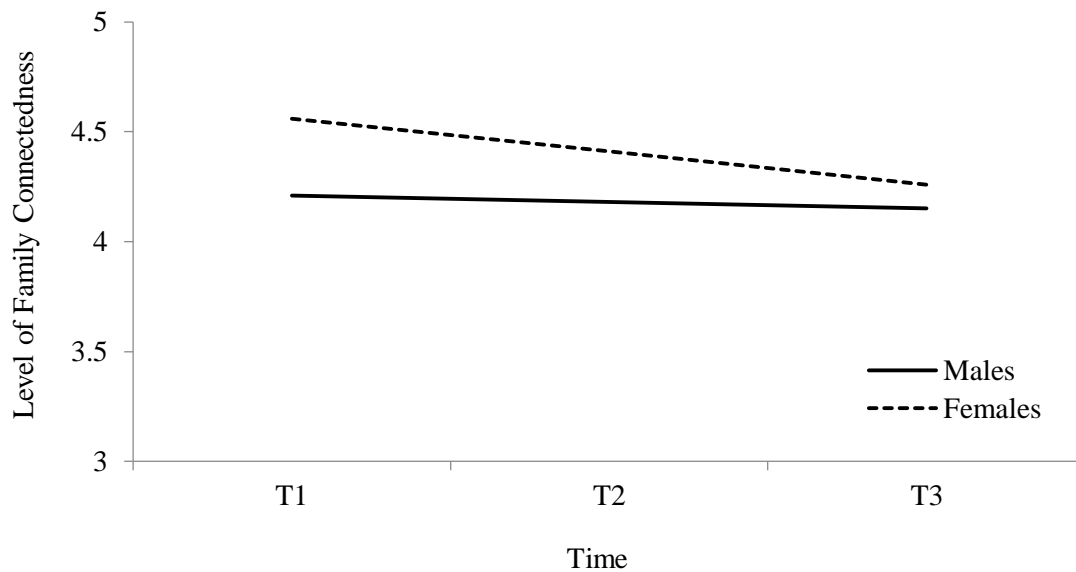


Figure 2. A line graph depicting the family connectedness trajectory for males and females across adolescence

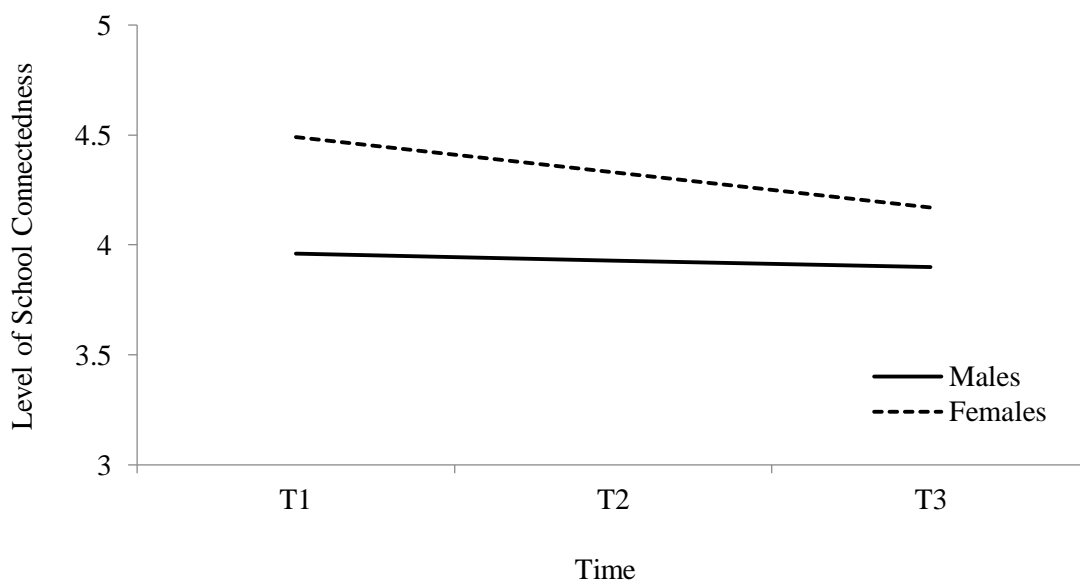


Figure 3. A line graph depicting the school connectedness trajectory for males and females across adolescence

## Family and School Connectedness Trajectories and their Association with Outcome

### Variables

Growth curve modelling was also used to examine the associations between family and school connectedness trajectories and outcome variables (i.e., resilience, depression, and anxiety). Given that the family and school connectedness trajectories were only statistically significant for females, the analyses between trajectories and outcome variables were performed using only female data. All models displayed an adequate model fit with NNFI and CFI above .90, sRMRs less than .08, RMSEAs less than .06, and  $\chi^2/\text{degrees of freedom}$  ratios close to 2. All model fit indices are presented in Table 4.

Table 4

*Model Fit Indices for Growth Curve Models Examining Trajectories and Outcome Variables*

	$\chi^2(df)$	$\chi^2/df$	CFI	NNFI	RMSEA	sRMR
FC-D	18.02 (13)	1.39	.99	.99	.02	.02
FC-A	19.36 (13)	1.49	.99	.99	.02	.01
FC-R	28.70 (13)	2.20	.98	.98	.03	.03
SC-D	13.22 (13)	1.02	1.00	1.00	.00	.01
SC-A	18.61 (13)	1.43	.99	.99	.02	.01
SC-R	22.17 (13)	1.71	.99	.98	.02	.03

*Note:* FC-D = Family Connectedness on Depression; FC-A = Family Connectedness on Anxiety; FC-R = Family Connectedness on Resilience; SC-D School Connectedness on Depression; SC-A = School Connectedness on Anxiety; SC-R = School Connectedness on Resilience.

Contrary to Hypothesis 3, no significant relationship was found between changes in levels of family connectedness (i.e., the slope) and any of the three outcome variables, suggesting that the gradual decline in family connectedness across adolescence for girls may not be predictive of psychological adjustment outcomes in emerging adulthood.

With regard to the exploratory analysis on the school connectedness trajectory, significant relationships were found between declines in female perceptions of school

connectedness and two of the outcome variables. Decreases in levels of anxiety were significantly related to this decline ( $-.18, p = .010$ ), as were increases in resilience ( $.14, p = .034$ ). The relationship between declines in female perceptions of school connectedness and reductions in depressive symptoms approached significance ( $-.11, p = .091$ ). Taken together, these findings suggest that the gradual disconnection by girls from the school environment had a positive effect on later psychological outcomes. Results of these models are presented in Table 5.

Table 5

*Associations between Family and School Connectedness Trajectories and Outcome Variables*

	T4 D	T4 A	T4 R
FC-Slope	-.34	-.24	.28
SC-Slope	-.11 <sup>+</sup>	-.18**	.14*

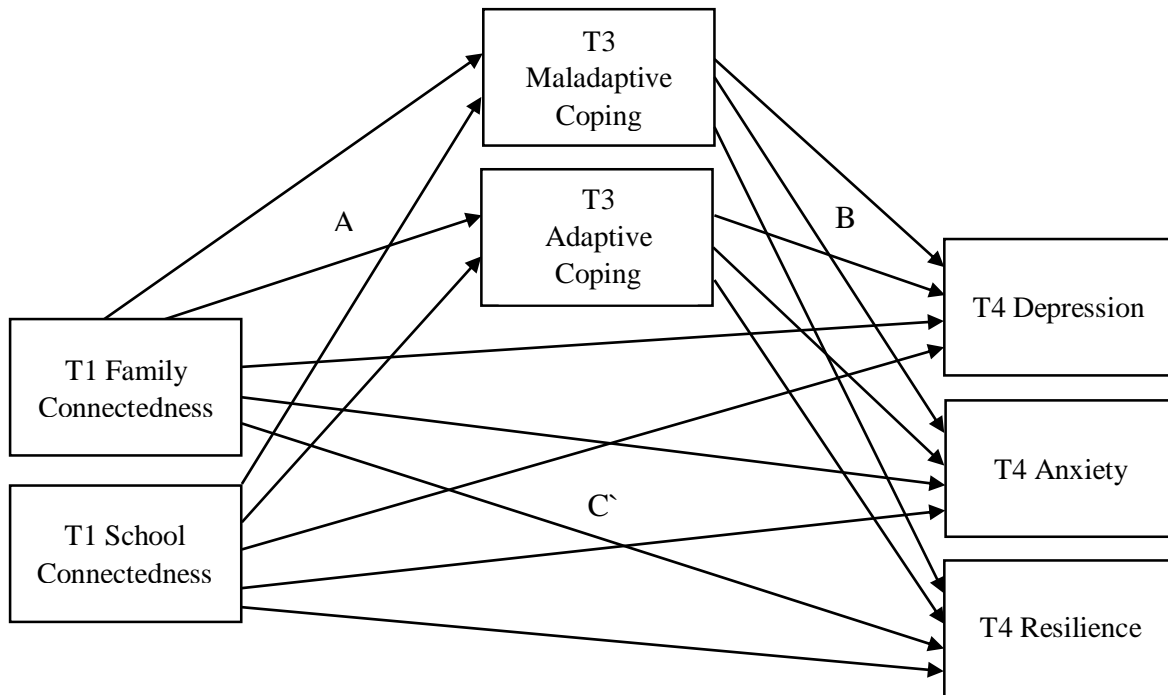
*Note:* FC = Family Connectedness; SC = School Connectedness; T4 R = Time 4 Resilience; T4 D = Time 4 Depression; T4 A = Time 4 Anxiety. \*\* $p < .01$ ; \* $p < .05$ ; + $p < .10$

### **The Mediating Role of Coping Strategies in the Relationship between Family and School Connectedness and Subsequent Psychological Outcome Variables**

A longitudinal mediation model was used to examine whether adaptive and maladaptive coping strategies mediated the relationships between family and school connectedness on the one hand, and depression, anxiety, and resilience on the other hand. See Figure 4 for a visual depiction of this model. As the model depicts, the  $a$  paths in the mediation analysis were estimated between Time 1 independent variables (family connectedness and school connectedness) and Time 3 mediating variables (adaptive coping and maladaptive coping), the  $b$  paths were estimated between Time 3 mediating variables and Time 4 dependent variables (depression, anxiety, and resilience), and the  $c'$  ( $c$  prime) paths were estimated between Time 1 independent variables and Time 4 dependent variables. It is



important to note that the Time 2 and Time 3 mediating variables were residualised in the analysis, and were labelled as ‘Time 3 estimates’ here. Gender and age covariates on all variables in the model were also estimated. Tables 6, 7, and 8, and the following paragraphs report the results of the mediation analyses.



*Figure 4.* A mediation model depicting the direct and indirect effects of family connectedness and school connectedness on depression, anxiety, and resilience, mediated by maladaptive and adaptive coping strategies. *Note:* Gender and age covariates, error terms, and Time 2 coping strategies (residualised with Time 3) were omitted for clarity of presentation.

**Depression.** In support of Hypothesis 4a, the indirect effect of maladaptive coping in the relationship between family connectedness and depression was found to be statistically significant (standardised total indirect effect =  $-.005$ ,  $se = .003$ , 95% CI  $[-.013, -.001]$ ,  $p = .027$ ). Adaptive coping was also found to significantly mediate this relationship (standardised total indirect effect =  $-.006$ ,  $se = .004$ , 95% CI  $[-.015, -.001]$ ,  $p = .021$ ), which also supports Hypothesis 4a.

Unexpectedly, and counter to Hypothesis 4b, the indirect effect of maladaptive coping within the relationship between school connectedness and depression was nonsignificant,

however there was a trend in the expected direction (standardised total indirect effect =  $-.003$ ,  $se = .003$ , 95% CI  $[-.011, .001]$ ,  $p = .080$ ). The mediating role of adaptive coping in the relationship between school connectedness and depression proved to be statistically significant (standardised total indirect effect =  $-.013$ ,  $se = .006$ , 95% CI  $[-.027, -.002]$ ,  $p = .014$ ), which supports Hypothesis 4b.

Based on these results, mediation by maladaptive coping accounted for 6% of the total effect between family connectedness and depression, and did not account for any of the total effect between school connectedness and depression. Adaptive coping strategies accounted for 8% of the total effect between family connectedness and depression, and 16% of the effect between school connectedness and depression. These findings indicate that higher levels of family connectedness during adolescence predicted a decrease in the use of maladaptive coping strategies, which in turn, predicted a reduction in depressive symptoms in adulthood. In addition, greater family and school connectedness in adolescence predicted an increase in the use of adaptive coping strategies, which in turn, predicted a reduction in depressive symptoms in adulthood.

**Anxiety.** As expected, and in support of Hypothesis 4c, the indirect effect of maladaptive coping in the relationship between family connectedness and anxiety was found to be statistically significant (standardised total indirect effect =  $-.011$ ,  $se = .005$ , 95% CI  $[-.022, -.002]$ ,  $p = .024$ ). In contrast to Hypothesis 4c, the prediction that adaptive coping strategies would also mediate this relationship was unsupported (standardised total indirect effect =  $.001$ ,  $se = .002$ , 95% CI  $[-.002, .007]$ ,  $p = .315$ ).

In contrast to Hypothesis 4d, the indirect effect of maladaptive coping in the relationship between school connectedness and anxiety was found to be nonsignificant, although a trend in the expected direction was found (standardised total indirect effect =  $-.008$ ,  $se = .005$ , 95% CI  $[-.018, .002]$ ,  $p = .110$ ). In the same fashion, adaptive coping did not

significantly mediate this relationship (standardised total indirect effect = .003,  $se = .004$ , 95% CI [-.005, .011],  $p = .453$ ), which is also in contrast to hypothesis 4d.

Based on these results, mediation by maladaptive coping accounted for 45% of the total effect between family connectedness and anxiety, and did not account for any of the total effect between school connectedness and anxiety. Adaptive coping strategies did not account for any of the variance in all anxiety pathways. The single significant finding indicates that adolescents who reported higher levels of family connectedness were less likely to use maladaptive coping strategies, and consequently were less likely to experience symptoms of anxiety in early adulthood.

**Resilience.** In support of Hypothesis 4e, the indirect effect of maladaptive coping in the relationship between family connectedness and resilience was significant (standardised total indirect effect = .005,  $se = .003$ , 95% CI [.001, .012],  $p = .020$ ). Adaptive coping was also found to significantly mediate this relationship (standardised total indirect effect = .006,  $se = .003$ , 95% CI [.001, .014],  $p = .022$ ), which also supports Hypothesis 4e.

In contrast to Hypothesis 4f, the indirect effect of maladaptive coping in the relationship between school connectedness and resilience was nonsignificant, however there was a trend in the expected direction (standardised total indirect effect = .003,  $se = .002$ , 95% CI [.000, .010],  $p = .061$ ). As expected, and in support of Hypothesis 4f, adaptive coping significantly mediated the relationship between school connectedness and resilience (standardised total indirect effect = .013,  $se = .006$ , 95% CI [.004, .026],  $p = .010$ ).

Based on these results, mediation by maladaptive coping accounted for 4% of the total effect between family connectedness and resilience, and did not account for any of the total effect between school connectedness and resilience. Adaptive coping strategies accounted for 5% of the relationship between family connectedness and resilience, and 43% of the relationship between school connectedness and resilience. These results suggest that higher

levels of family connectedness during adolescence predicted a decrease in the use of maladaptive coping strategies, which, in turn, predicted increased resilience in emerging adulthood. Further, greater family and school connectedness in adolescence predicted an increase in the use of adaptive coping strategies, which in turn, predicted increased resilience in emerging adulthood.

Table 6

*Direct and Indirect Effects of Family Connectedness and School Connectedness, Mediated by Coping Strategies, on Depression*

Independent Variable	Mediating Variable	Dependent Variable	Total Effect	Direct Effect	Indirect Effects	95% CI	Sig.
Family Connectedness	Maladaptive	Depression	-.075	-.064 (SE = .034)	-.005 (A * B) (A = -.058, B = .082)	[-.013, -.001]	.027
	Adaptive	Depression			-.006 (C * D) (C = .079, D = -.070)	[-.015, -.001]	.021
School Connectedness	Maladaptive	Depression	-.077	-.061 (SE = .032)	-.003 (A * B) (A = -.041, B = .082)	[-.011, .000]	.080
	Adaptive	Depression			-.013 (C * D) (C = .181, D = -.070)	[-.027, -.002]	.014

*Note:* A = Family Connectedness to Maladaptive Coping; B = Maladaptive Coping to Outcome Variable; C = Family Connectedness to Adaptive Coping; D = Adaptive Coping to Outcome Variable.

Table 7

*Direct and Indirect Effects of Family Connectedness and School Connectedness, Mediated by Coping Strategies, on Anxiety*

Independent Variable	Mediating Variable	Dependent Variable	Total Effect	Direct Effect	Indirect Effects	95% CI	Sig.
Family Connectedness	Maladaptive	Anxiety	-.024	-.014 (SE = .025)	-.011 (A * B) (A = -.058, B = .194)	[-.022, -.001]	.024
	Adaptive	Anxiety			.001 (C * D) (C = .079, D = .018)	[-.002, .007]	.315
School Connectedness	Maladaptive	Anxiety	-.025	-.020 (SE = .024)	-.008 (A * B) (A = -.041, B = .194)	[-.018, .002]	.110
	Adaptive	Anxiety			.003 (C * D) (C = .181, D = .018)	[-.005, .011]	.453

*Note:* A = School Connectedness to Maladaptive Coping; B = Maladaptive Coping to Outcome Variable; C = School Connectedness to Adaptive Coping; D = Adaptive Coping to Outcome Variable.

Table 8

*Direct and Indirect Effects of Family Connectedness and School Connectedness, Mediated by Coping Strategies, on Resilience*

Independent Variable	Mediating Variable	Dependent Variable	Total Effect	Direct Effect	Indirect Effects	95% CI	Sig.
Family Connectedness	Maladaptive	Resilience	.112	.101 (SE = .030)	.005 (A * B) (A = -.058, B = -.081)	[.001, .012]	.020
	Adaptive	Resilience			.006 (C * D) (C = .079, D = .070)	[.001, .014]	.022
School Connectedness	Maladaptive	Resilience	.030	.014 (SE = .028)	.003 (A * B) (A = -.041, B = -.081)	[.000, .010]	.061
	Adaptive	Resilience			.013 (C * D) (C = .181, D = .070)	[.004, .026]	.010

*Note:* A = School Connectedness to Maladaptive Coping; B = Maladaptive Coping to Outcome Variable; C = School Connectedness to Adaptive Coping; D = Adaptive Coping to Outcome Variable.

### Discussion

The extant literature has provided clear evidence for a relationship between family and school connectedness during adolescence and positive psychological outcomes (e.g., Markson & Fiese, 2000; Resnick et al., 1997; Shochet et al., 2006). The literature has also described normative declines in these connections over the adolescent period (Baer, 2002; Wang & Dishion, 2012), and has associated these declines with concurrent measures of psychological adjustment (e.g., Way et al., 2007). However, little is known about how declines in adolescent connections to the family and school affect long-term psychological outcomes. Further, the mechanisms by which adolescent connections to the family and school predict later psychological outcomes are also largely unexplored. The goals of the present study were thus four-fold: 1) to replicate previously demonstrated relationships between family and school connectedness and positive psychological outcomes; 2) to replicate the previously found declines in family and school connections across the adolescent period; 3) to investigate the relationship between declines in adolescent family and school connectedness and indicators of psychological adjustment in emerging adulthood (i.e., depression, anxiety, and resilience); and 4) to determine whether maladaptive or adaptive coping strategies displayed in adolescence help explain the relationship between family and school connectedness and later adjustment outcomes.

As found previously, higher levels of family and school connectedness during adolescence predicted increases in psychological adjustment in emerging adulthood. Contrary to prediction, however, it was also found that levels of family and school connectedness did not decline over time for the whole sample. However, after investigating gender differences, levels of both family and school connectedness were found to decline for females, but not for males. The decline in levels of family connectedness for adolescent females did not predict psychological adjustment in emerging adulthood, however, consistent with predictions, the



decline in levels of school connectedness predicted two of the three psychological adjustment indicators (anxiety and resilience). Finally, greater family and school connectedness displayed early in adolescence was found to predict changes in coping strategies over time, which, in turn, predicted increases in psychological adjustment in emerging adulthood. These findings are discussed in more detail below.

### **Associations between Family and School Connectedness and Outcome Variables**

With regard to the first goal, it was expected that connectedness to family and school environments during adolescence would be associated with better psychological outcomes in emerging adulthood. This hypothesis was based on the wealth of theoretical and experimental literature supporting such an outcome (e.g., Boutelle, Eisenberg, Gregory, & Neumark-Sztainer, 2009; Shochet et al., 2006). As expected, Pearson correlations indicated that greater family and school connectedness early in adolescence were associated with reductions in symptoms of anxiety and depression and increases in resilience later in emerging adulthood. Depression and anxiety appeared to be equally related to both family and school connectedness, which highlights the importance of both environments in protecting against maladaptive outcomes (Resnick et al., 1997). Although resilience was associated with both family and school connectedness, it was found to be more closely linked with family connectedness, suggesting that the family environment has a greater impact than the school on the development of resilience in young people (Brooks, 2006). Overall, the above findings were consistent with previous literature (e.g., Czyz, Liu, & King, 2012, Eisenberg et al., 2004; Joyce & Early, 2014; Osterman, 2000) and satisfied the study's goal of replicating associations noted in previous literature.

### **Adolescent Trajectories of Family Connectedness and School Connectedness**

The second goal of the current study was to replicate previous findings that demonstrate a normative decline in family and school connectedness trajectories across the

adolescent period. Growth curve models were constructed to examine these trajectories. It was hypothesised that adolescents would gradually diminish their connections from the family and school environments across the study's time period. This pattern was hypothesised for two reasons: firstly, previous research has consistently found declines across both environments (e.g., Baer, 2002; Wang & Dishion, 2012); and secondly, such findings are theoretically grounded in the literature on adolescent autonomy development (e.g., Blos, 1967; Eccles & Midgely, 1989).

Unexpectedly this hypothesis was unsupported for the whole sample; the findings showed that adolescent connections to the family and school remained relatively stable across time. One explanation for this finding could be due to the relational nature of the survey items. The items tapped explicit perceptions of social-relational bonds, whereas disconnections from these environments might have occurred at a more implicit level that the survey failed to assess (e.g., an emotional distancing from these environments; see Conger & Ge, 1999). Another explanation for this general result was found due to unexpectedly significant covariances identified between gender and the family and school connectedness slope values. These results prompted a post hoc gender-specific analysis to investigate the nature of this gender difference. A discussion of these findings is presented below, and given that gender-specific predictions were not made at the beginning of the current study, the discussion begins with a brief literature review.

### **Gender-specific trajectories of family connectedness and school connectedness.**

***Brief literature review.*** Only a limited number of studies have investigated the impact of gender on family connectedness trajectories, and findings thus far have been inconclusive. For example, two studies found that perceived family connectedness declined across time for both males and female adolescents (e.g., Crespo et al., 2010; Pomerantz et al., 2009). Another study found that feelings of responsibility to parents decreased across time for

male adolescents, but not for females (Pomerantz et al., 2011). A fourth study found that parent-adolescent conflict increased at a greater rate in females, compared to males (e.g., De Goede et al., 2009). The only consistent finding found in the family connectedness literature is that family connectedness appears to be more important to female adolescents, compared to male adolescents (e.g., Avison & McAlpine, 1992; Boutelle et al., 2009; De Goede et al., 2009; McKeown et al., 1997).

Although still in its infancy, the literature examining gender and school connectedness trajectories is more conclusive. Several studies have found that adolescent perceptions of school connectedness decline at a greater rate for females, compared to males. For example, greater rates of decline have been found for female perceptions of school bonding (Hawkins et al., 2001), school engagement (Simons-Morton, & Chen, 2009), and school climate (Way et al., 2007). On the other hand, some studies have reported no difference in school connectedness trajectories between genders (e.g., Wang & Dishion, 2012). With respect to overall school connectedness levels, the literature also demonstrates that females report higher overall levels of school connectedness, compared to males (e.g., Simons-Morton & Chen, 2009; Wang & Dishion, 2012; Way et al., 2007; Whitlock, 2006).

The research base described above offers some preliminary conclusions about the role of gender within family and school connectedness trajectories. However, further research is required before any valid conclusions can be drawn.

***Findings from the current study.*** Two-group (male and female) growth curve models were constructed to examine the effect of gender on the family and school connectedness trajectories. As stated above, it was predicted that a significant difference in slope values between males or females would be found due to the significant covariance identified between the slope and gender. When gender was split into separate groups, the analyses showed that connections to both the family and school declined over time for females (i.e.,

the slopes were significant and negative). However, for males, connections to the family and school did not change (i.e., the slopes remained flat and nonsignificant). The significant findings for females are consistent with findings from some previous research (e.g., Baer, 2002; Wang & Dishion, 2012). In terms of family connectedness, one explanation for the steeper decline seen with females is the earlier pubertal development found in females (Ablassi, 1998); the onset of puberty is known to both accelerate autonomy development (Beyers & Goossens, 1999) and increase the frequency and intensity of parent-adolescent conflicts (Collins & Laursen, 2004). Conversely, the later onset and longer duration of puberty in males (Ablassi, 1998) may have contributed to the lack of change in connectedness for male participants. It is possible that the three year time period where family connectedness was measured was not long enough to capture any significant change for males.

With regard to the school connectedness trajectory, a possible explanation for the gender difference is that, relative to males, interpersonal relationships at school become more and more difficult for females (Orenstein, 1994). For example, several researchers have noted that, after reaching puberty, females experience more sexual harassment and stressful relationships at school compared to males (Llewellyn, Rudolph, & Roisman, 2012; Orenstein, 1994; Young, Grey, & Boyd, 2009), which may contribute to an increasing dissatisfaction with the school environment (Orenstein, 1994; Way et al., 2007).

In addition to the findings that relate to connectedness over time, the two-group models also found that, compared to males, females reported higher overall initial levels of both family connectedness and school connectedness, which is consistent with the research outlined above. Interestingly, females' levels of connectedness were still greater than males even after the declines in connectedness were observed over three years. The research literature offers several explanations for this finding. For example, with regard to family

connectedness, Surrey's (1985) self-in-relation theory posits that healthy female development is contingent on emotional connections to other family members, a theory that has been supported by several researchers (e.g., Avison & McAlpine, 1992; Gilligan, 1982). Females are also thought to be more strongly influenced by parental relationships (Geuzaine, Debry, & Liesens, 2000), attribute more meaning to family connectedness (Avison & McAlpine, 1992), and have a greater relationship orientation, compared to males (Gilligan, 1982). In terms of school connectedness, it is thought that female students are more likely to receive favourable treatment from teachers compared to male students. For example, teachers have been reported to believe that female students are more hardworking, and perceive themselves as having better relationships with female students (Suarez-Orozco & Qin-Hilliard, 2004). Further, research has found that female students believe they have greater opportunities for classroom decision making, and perceive school rules as being more consistent and fair, compared to males (Way et al., 2007).

In sum, it appears that different dimensions of family and school connectedness become more or less important for males and females over time, and that gender differences (both biological and social) interact with these dimensions to further change levels of connectedness. Although preliminary explanations have been posited, further research is required to better understand the mechanisms by which gender impacts perceptions of the self in relation to family and school environments.

### **Family and School Connectedness Trajectories and their Associations with Outcome Variables**

The third goal of the present study was to examine the relationship between adolescent trajectories of family and school connectedness and reported levels of psychological adjustment in emerging adulthood. Growth curve models were employed for these analyses, and the slope values were correlated with Time 4 outcome variables. This

investigation was restricted to the female data only, given that the growth trajectories were nonsignificant when males were included. Employing the hypothesis that was used in the original model with both males and females, it was expected that the decline in female connections to the family environment would predict reductions in depression and anxiety and increases in resilience in emerging adulthood. This prediction was based on the findings that a gradual disconnection from the family during adolescence is normative and associated with better psychological outcomes (Baer, 2002; Steinberg, 2001). With regard to the school connectedness trajectory, given that the available research has only examined declines in school connectedness and psychological outcomes concurrently (e.g., Wang & Dishion, 2012; Way et al., 2007), the current study's investigation was novel as it sought to determine whether there were long-term psychological benefits linked to declining levels of school connectedness.

Contrary to predictions and previous research, no significant relationships were found between the decline in levels of family connectedness and any of the three psychological outcome variables. In other words, the study found that the normative decline in family connectedness during adolescence did not have any effect on subsequent levels of depression, anxiety, and resilience in emerging adulthood for females. One explanation for this finding can be attributed to the items selected for the family connectedness scale. Within the research literature, many different facets have been used to make up measures of family connectedness (e.g., Olson et al., 2001; Sieving et al., 2001). It is possible that changes in other areas of family connectedness (e.g., family conflict, family adaptability, and family relationship quality) are more important to long-term psychological adjustment compared to the dimensions of family connectedness that were included in the current study (i.e., family cohesion, mutual family activities, and family identity). Another explanation is due to the multidimensional nature of the family connectedness scale. It is also possible that declines in

the individual dimensions of family connectedness shared differential relationships with the study's outcome variables. For example, declines in family cohesion and mutual activities may be more closely related to psychological adjustment, compared to declines in family identity. Such differential relationships have been found other studies; for example, Kliever and Kung (1998) found that family cohesion, family adaptability, and family routines moderated the relationship between stress and child internalising behaviours, but family adaptability and perceived parental support did not. Future research should further examine the mechanisms by which different dimensions of family connectedness relate to psychological adjustment.

In terms of the school connectedness trajectory, as expected, the decline in levels of school connectedness was found to be significantly related to decreases in levels of anxiety and increases in levels of resilience. In contrast, the relationship between school connectedness and depression did not reach statistical significance, however a weak inverse relationship ( $p = .091$ ) was identified, which suggests that declines in school connectedness for girls were predictive of reductions in depression. These findings suggest that the gradual disconnection from the school environment by girls may have a protective effect against psychological maladjustment (i.e., anxiety and depression) in emerging adulthood. The disconnection also appears to have a promotive effect in that it may encourage the development of resilience in female adolescents as they move into emerging adulthood. These findings are of special interest given that, as mentioned above, previous research has predominantly found links between declines in school connectedness and concurrent indicators of maladjustment (e.g., Way et al., 2007). The findings also make theoretical sense given what the literature tells us about connections to other social environments. For example, contrary to the findings from the current study, adolescents belonging to cohesive families that promote independence and allow for a disconnection from the family

environment, are known to accrue better psychological outcomes (Steinberg, 2001). In a similar manner, it appears that although high levels of school connectedness are important in fostering healthy adolescent development (Resnick et al., 1997; Shochet, Dadds, Ham, & Montague, 2006), the eventual separation from the school environment may also play an important role in determining psychological adjustment in adulthood.

### **Family and School Connectedness, Coping Strategies, and Psychological Adjustment**

The findings so far have highlighted the importance of connections to both the family and school environments during adolescence, and the relationship between these connections and psychological adjustment outcomes in adulthood. The final goal of the current study was to determine whether and how maladaptive and adaptive coping strategies might explain the relationships between family and school connectedness and subsequent psychological adjustment. Coping strategies were chosen as a potential mediator given their well-established connections to both environmental contexts and psychological wellbeing (Nolen-Hoeksema, 1991).

A mediation model was constructed for this analysis, in which Time 3 coping efforts were posed as possibly mediating the relationships of Time 1 family and school connectedness on Time 4 depression, anxiety, and resilience. It was predicted that adolescents who reported higher levels of family and school connectedness would subsequently engage in less maladaptive coping and more adaptive coping, and consequently experience better psychological adjustment outcomes in emerging adulthood.

When maladaptive coping was examined as a mediator, significant relationships were found for all of the family connectedness pathways. As expected, greater family connectedness during adolescence predicted a reduction in the use of maladaptive coping strategies (i.e., rumination, avoidance, and externalisation), which in turn, predicted reductions in symptoms of depression and anxiety, and increases in resilience in emerging



adulthood. This result supports findings from previous research (e.g., Caples & Barrera, 2006; Ruijten et al., 2011; Skeer et al., 2011) and is congruent with the literature on emotion- and avoidant-oriented coping responses (Endler & Parker, 1990; Michl et al., 2013). Contrary to predictions, no significant relationships between maladaptive coping and any of the school connectedness pathways were found. However, a trend in the expected direction in the pathway from school connectedness to resilience ( $p = .061$ ) was found, which provides partial support of Hypothesis 4f and confirms this relationship as worthy of re-evaluation in future research.

In terms of adaptive coping, significant mediations were found between family and school connectedness and two of the three outcome variables (depression and resilience), which partially support research predictions. The results suggest that adolescents who reside in supportive family environments are more likely to increase the use of adaptive coping strategies (i.e., problem solving and seeking social support) when faced with personal difficulties, and subsequently are more likely to be resilient in emerging adulthood while also being less likely to experience symptoms of depression. Similarly, the results also suggest that a supportive school environment may encourage adolescents to problem solve and use social support during times of distress, which in turn, seems to promote resilience and be protective against the onset of depression in emerging adulthood. These results also agree with findings from previous literature (e.g., Calvete, 2007; Seeds et al., 2010) and are consistent with the literature on task-oriented coping responses (Endler & Parker, 1990; Frydenberg & Lewis, 2009).

In sum, the above mediation findings are in agreement with a growing literature base that highlights the role of coping in the relationship between social environments and psychological adjustment (Hilt et al., 2013; Schwartz et al., 2008; Seeds et al., 2010; Swogger et al., 2011). They are also consistent with the wealth of literature that links reductions in

maladaptive coping and increases in adaptive coping to better psychological outcomes (Frydenberg & Lewis, 2009; Michl et al., 2013).

### **Implications and Future Directions**

The current study's findings highlight various theoretical and practical implications that are worthy of discussion. Firstly, on a general note, the results add to the accumulating literature that emphasises the importance of the family and school environments in shaping healthy development in young people. These findings also have implications for policy and clinical treatment decisions relating to child and adolescent mental health. Particularly, it is important that social welfare policies aim to ensure families are able to provide supportive environments for children and adolescents, and that health education policies ensure adolescent needs are met within the school environment (e.g., health promoting school frameworks; WHO, 1996). The findings also signal the need to include both the family and school systems in treatment plans for children and adolescents with mental health difficulties (e.g., Henggeler & Borduin, 1990).

Secondly, the results support the literature that has found that family and school connections become less important for adolescents over time (e.g., Baer, 2002; Loukas et al., 2009). Specifically, the results provide interesting insights into the role that gender has on these connections, and offer a platform for future research to investigate these differences further. Further, the finding that females reported consistently higher levels of family and school connectedness than males (even after the significant declines were observed) has implications for how best to include systemic factors in mental health interventions for male and female adolescents.

Thirdly, to our knowledge, no other studies have looked at the predictive relationships from declines in school connectedness to long-term psychological adjustment. The significant mediation results identified in the current study both adds to the current literature base and

opens up new avenues of research in this area. For example, future research could investigate how declines in the different dimensions of school connectedness (e.g., teacher understanding, teacher respect, school pride, and school respect) predict later psychological adjustment outcomes. In a practical sense, these findings also suggest that treatment plans for adolescent mental health difficulties may benefit from including a school component earlier in adolescence, with the focus shifting toward other areas of social connectedness (e.g., peer, work, or community connections) in the later stages of adolescence.

Lastly, the results also demonstrated that the family and school environments affect psychological adjustment differently, which is consistent with the theoretical literature (e.g., Bronfenbrenner, 1977; 1979) and has practical treatment implications. For example, the mediation results emphasise the importance of both the family and school in the socialisation process of children and adolescents, in particular the role that parents and teachers play in modelling effective coping responses (Berk, 2009; Pianta, 1999). Practically, the findings suggest that family interventions aimed at increasing psychological wellbeing in adolescents should aim to both reduce emotion- and avoidant-oriented coping responses (i.e., rumination, avoidance, and externalising behaviours) and increase task-oriented approaches (i.e., problem solving and social support).

### **Limitations**

Although care was taken to ensure this research was methodologically sound, there are a number of limitations that are worth mentioning. Firstly, the measures used relied solely on self-reports from participants, which raises issues relating to self-presentation biases. In addition, given the young age of many of the participants (especially at Time 1), there may have been differences in the level of understanding of items across participants.

With respect to the variables selected for the study, it should be noted that the family and the school are not the only social contexts important for adolescents. Other social

environments, such as peers and the community, are also likely to influence psychological adjustment for this sample. Further, the study only assessed one group of mediating variables (i.e., coping strategies), which limited the explanatory power of the mediation analysis; there are likely numerous other variables that also explain why and how family and school connectedness relate to psychological adjustment.

Another limitation comes from using a nonclinical sample for the study. This choice meant that perceptions of psychological maladjustment/adjustment were examined, rather than assessing the effects of family and school connectedness on individuals with a clinical diagnosis. Conclusions drawn relating to psychological treatment implications should thus be interpreted cautiously. Finally, given that participants identified predominantly as Pakeha (70%), the generalisability of results to more diverse populations is limited.

## **Conclusions**

The current study investigated the relationship between family and school connectedness during adolescence and psychological adjustment outcomes in emerging adulthood. The four key findings were: that connections to the family and school predicted better psychological outcomes; that family and school connectedness declined across adolescence for females, but not for males; that the disconnection from the school environment shared a relationship with later psychological adjustment; and that maladaptive and adaptive coping strategies differentially mediated the relationship between family and school connectedness and later adjustment outcomes. In general, these findings support previous social connectedness research, but they also extend the existing literature base in some important ways. Namely, the results provide new evidence of the importance of the family and school environments on psychological adjustment, and the mechanisms by which these environments influence adjustment outcomes.

The family and school are pertinent areas of research within the fields of social connectedness and adolescent development. The current study adds to this research base, offers directions for future research, and provides practical policy and treatment implications for child, adolescent, and family mental health.

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## Appendix A

*Recruitment Email*

DATE

Dear NAME,

About six years ago (from 2004 to 2007) you participated in the Youth Connectedness Project led by Associate Professor Paul Jose from Victoria University of Wellington. At that time, you and your parents provided us with contact details so that we could get back in touch with you if we decided to continue this project. We have received further funding, and we are in the process of re-contacting everyone who previously participated in this study so that we can continue the study.

The Youth Connectedness Project has allowed us to gain invaluable insight into how young people view their lives and how these views can change over the course of a few years. The information you provided is still providing us with useful findings about youth development. Now that you are older, we thought that it would be important to find out how you are getting on, and learn more about how your lives have changed since our last survey.

If you would like to continue participating in the YCP, please indicate your interest by clicking the YES link below, and we will send you the link for the online survey in the coming months to your nominated email address. If you are not interested in being contacted further, please indicate this preference by clicking the NO link below.

If you participate in this follow-up on-line survey (which will take about 45-60 minutes), we will give you either a \$20 voucher of your choice. In addition, you will be entered into a prize draw. The winner of the first prize can choose between a 32GB iPad 4 or a 16GB iPhone 5 (\$1000 value). In addition we will give away three 32GB iPod Touches (\$459 value) and five \$200 New World supermarket vouchers.

[Link for YES](#)[Link for NO](#)

Thank you again for your support and participation in the Youth Connectedness Project.

## Appendix B

### *Recruitment Phone Call Scripts*

#### **For participants**

Hi \_\_\_\_, this is \_\_\_\_ calling on behalf of the Youth Connectedness project, a survey you completed in school about 5 years ago.

Do you have time to speak with me for a minute?

We're just following up people that took the survey 5 years to see if they'd like to take part in a 1 hour follow up survey which we will email to you in the next month. This survey is online and can be completed in your own time. You'll receive a \$20 voucher of your choice and go into a draw to win prizes like an iphone 5.

If you're interested, give me your email address and when the survey is ready we'll email it out to you to complete in your own time.

If voicemail: if you're interested, feel free to give us an email or a text with your email address. You can email us at youthconnectednessproject@gmail.com, or text through your email to 022 320 9612. Thanks for your time

#### **For Parents and alternative contacts**

Hi \_\_\_\_, this is \_\_\_\_ calling on behalf of the Youth Connectedness project, a survey your specify relationship and name completed at school about 5 years ago.

Do you have time to speak with me for a minute?

We're calling you because this number was provided as an alternative way for us to get in touch with \_\_\_\_.

(Only if details were provided at all): We've tried contacting him/her but the contact info we received 5 years ago isn't working anymore.

Is there any possibility you can give us an email address or contact number for \_\_\_\_ so that we can ask if they would like to participate in a follow up study?

If voicemail: if you could please give us a call back on 04 463 5401, or send a text with their name, and either cell phone number or email to 022 320 9612, that would be great. Thanks for your time

## Appendix C

*Invitation to Time 4 Survey Email*

29th November 2013

Dear NAME,

We would like to invite you to participate in the fourth part of the Youth Connectedness Project.

Thank you for your patience while we prepared the Youth Connectedness Project Survey over the past few months. **Your unique pass code is PASSCODE.** You will need to enter this at the beginning of the survey.

Link to survey: [http://vuw.qualtrics.com/SE/?SID=SV\\_8fb8wBm1MB3ymfH](http://vuw.qualtrics.com/SE/?SID=SV_8fb8wBm1MB3ymfH)

Before you begin the survey please be aware that completing it will probably take about 60 minutes. You will be able to leave it temporarily unfinished and return to it later to complete it, but please know that you must do so on the same computer. In other words, you cannot link to the survey from two different computers.

To show our appreciation for your time in completing this survey, you will be able to choose a \$20 voucher of your choice once you have finished the survey. If you are living overseas, please email us at [youthconnectednessproject@gmail.com](mailto:youthconnectednessproject@gmail.com) to request your voucher of choice.

In addition, if you complete the survey by the 15<sup>th</sup> of December, you will also be entered into a prize draw, so make sure you do the survey by then to be in the draw to win. The winner of the first prize can choose between a 32GB iPad 4 or a 16GB iPhone 5 (\$1000 value). In addition, we will give away three 32GB iPod Touches (\$459 value) and five \$200 New World or Countdown supermarket vouchers.

You will receive the \$20 voucher and go into the draw only if you finish the survey. Individuals who do not complete the survey will be reminded to finish it, and upon its completion, will receive compensation.

Thank you again for your support and participation in the Youth Connectedness Project.

Paul Jose  
Associate Professor of Psychology  
School of Psychology  
Victoria University of Wellington  
Wellington 6012  
04-463-6035 (office phone)  
[paul.jose@vuw.ac.nz](mailto:paul.jose@vuw.ac.nz)



## Appendix D

*Scale Items for each Measure***Family Connectedness**

1. For my family/whanau spending time together is very important
2. We can easily think of things to do together as a family/whanau
3. My family/whanau likes to spend free time together
4. My family/whanau ask each other for help
5. We like to do things just as a family/whanau
6. It means a lot to me to be a member of my family/whanau
7. We are proud to be members of our family/whanau
8. Do you and your family/whanau have meals together
9. Do you and your family/whanau spend time going out together (e.g. To the movies)
10. Do you and your family/whanau have holidays together
11. Do family/whanau members watch you play sport or perform in other areas

**School Connectedness**

1. I feel I am treated with as much respect as other students
2. I like going to school/kura
3. I feel proud about my school
4. I feel that my teacher(s) respect me
5. My teacher(s) understand me
6. I always get an opportunity to talk with my teachers(s)
7. How well do you get on with classmates

**Maladaptive Coping**

1. I think "I must have serious problems otherwise I wouldn't feel this way" (rumination)
2. I think "there must be something wrong with me or I wouldn't feel this way" (rumination)
3. I think "why can't I handle this" (rumination)
4. I go somewhere I can be alone to think about why I feel this way (rumination)
5. I get into fights or argue with people (externalisation)
6. I yell and scream (externalisation)
7. I hurt somebody that does not have anything to do with the problem (externalisation)
8. I avoid dealing with my problems (avoidance)
9. I avoid my problems (avoidance)
10. I avoid thinking about my problems (avoidance)

**Adaptive Coping**

1. I try to change the situation to fix the problem (problem solving)
2. I work on the problem in order to fix it (problem solving)
3. I do something to fix the problem (problem solving)
4. I talk to others about how I am feeling (social support)
5. It is easy for me to tell other people how I feel (social support)
6. I find someone to talk to about my problems (social support)

**Depression**

1. I got upset by things that don't usually upset me
2. I was happy
3. I felt sad

4. I enjoyed life
5. I could not stop feeling bad, even when others tried to cheer me up
6. I felt hopeful about the future
7. I felt lonely
8. I felt depressed
9. I felt that everything I did was an effort

**Anxiety**

1. Fear of losing control
2. Unable to relax
3. Difficulty breathing
4. Fear of the worst happening
5. Fear of dying
6. Scared
7. Heart pounding or racing
8. Indigestion or discomfort in abdomen
9. Nervous
10. Sweating (not due to heat or exercise)

**Resilience**

1. Adapts to change
2. Can deal with whatever comes
3. Tries to see humorous side of problems
4. Thinks: 'Coping with stress can strengthen me'
5. Tends to bounce back after illness or hardship
6. Can achieve goals despite obstacles
7. Can stay focused under pressure
8. Not easily discouraged by failure
9. Thinks of self as a strong person
10. Can handle unpleasant feelings