Coping, Personality, and Resilience in Emerging Adults

by

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A Thesis Submitted to
Saint Mary's University, Halifax, Nova Scotia
in Partial Fulfillment of the Requirements for
the Degree of Honours Psychology, B.A.

April, 2014 Halifax, Nova Scotia

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Date: 26th of April 2014

Abstract

The research on resilience is largely focused on its development in children, workers in high-stress jobs, and ill or injured persons. However, relatively little is known about its relationship with coping mechanisms and personality. The present study focused on the relationship between personality traits, specific coping mechanisms, broad coping styles, exercise type and frequency, and resilience in a sample of 221 university students aged 18 to 25 years old. Measures included the General Health Questionnaire, Connor Davidson Resilience Scale, COPE Inventory, Mini IPIP, and Academic Self-Efficacy Scale. A hierarchical linear regression revealed that neuroticism, extraversion, and conscientiousness were significant personality predictors of resilience and acceptance, turning to religion, and avoidant coping were the strongest coping predictors of resilience, although the latter was an inverse relationship. In terms of specific coping mechanisms, the strongest correlations were planning, positive reinterpretation, active coping, and behavioural disengagement. This study highlights the factors that are most strongly associated with resiliency in emerging adults, such as problem-focused coping mechanisms, positive reinterpretation of stressful events, having a social network, and not giving up in times of difficulty. The results emphasize the importance of utilizing effective coping mechanisms that address the source of the stress, maintaining a positive attitude, and persevering.

Keywords: Coping, Stress, Resilience, Exercise, Emerging adults, Personality

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Coping, personality, and resilience in emerging adults

The diversity of coping mechanisms and styles available are easily observed on a university campus, which is a milieu rife with stress. As a university student, individuals must cope with large workloads, constant pressure in the form of multiple assignments, papers, group projects, and presentations at once, as well as fierce competition to obtain scholarships, distinctions, and awards. They also must stand out from the diploma-bearing crowd of applicants come time to apply for jobs after graduation with a dazzling resume chock-full of diverse and unique experiences. This means that university students must cope effectively with intense amounts of stress regularly or risk doing poorly due to their inability to manage their stress levels. This is simply the reality of today's university student. Even those that manage their time very wisely, plan ahead, and schedule everything must still face high levels of stress because, at times, the pressure to succeed can be extraordinary.

Some students simply ignore the source of their stress until they can't anymore, such as those that wait until a deadline is imminent before beginning an assignment. Some individuals plan every minute of every day in order to complete their work on time and make every attempt to foresee and address potential stressors prior to the actual manifestation of stress. Others seek support from friends of family in the form of venting their frustrations or feelings in order to feel better and cope with stress. These scenarios illustrate some of the broad styles of coping that this population might utilize to cope with their stress. Coping is clearly an integral part of the university experience, but there is another key concept that also plays a role in the university experience for this population: resilience.

Why is resilience research in emerging adults important?

Resilience research seems to focus primarily on its development in children, the ill, and the injured (Herbert, Manjula, & Philip, 2013). The focus is rarely on adults, even though this is generally the longest stage of an individual's life. Also, there are many more traumatic events in an adult's life (i.e. death of a parent, loss of a job, loss of a friend, aging, debt, chronic stress, etc.) than in a child's life (Campbell-Sills, Cohan, & Stein, 2006). It's very important to understand how adults bounce back from these traumas and remain healthy, functioning adults.

Emerging adulthood is a new period of life between adolescence and adulthood, and is therefore understudied as a group (Arnett, 2007). They are usually divided into the adolescent and adult groups, even though they belong in neither. It is particularly important to understand resilience in these individuals because they face so many challenges in this period of life, and are at a very high risk of developing a mental illness during this time (Asberg, Bowers, Renk, & McKinney, 2008). They also face relationship dissolution, identity crises, high levels of stress, and other kinds of adversity, which means they must learn how to cope with these very difficult situations and try to garner important life lessons from them. Understanding how these individuals bounce back from hardship has clear implications for mental health and general well-being, and for this reason it is very important to study resilience in this population is. Additionally, it is important to understand how coping mechanism selection relates to an individual's level of resilience, as coping skills can be learned and teaching effective coping skills to emerging adults may help reduce stress (Folkman & Moscowitz, 2004). In sum, it's important to understand the factors that bolster and undermine resilience in emerging

adults to help eliminate those barriers to resilience and encourage strategies that foster resilience.

Emerging adulthood, stress and coping, personality and coping, and resilience will be respectively reviewed in the literature. There will be a brief section on the Toughness model (Dienstbier, 1989) in order to illustrate the relationship between exercise and stress. Following this, the hypotheses of this study will be presented along with their respective rationales. Next will be an explanation of the methods, namely the participants, scales, and the procedure. Finally, the results of the study will be presented, followed by a discussion. In conclusion, limitations of the study and suggestions for future research will be examined.

Literature Review

Emerging adults: What and who are they?

Emerging adulthood did not exist 50 years ago (Arnett, 2010). It is a relatively period of life that encompasses the time between 18 and 25 years of age. In 1970, individuals in this age range were considered adults, were generally married and had kids, and worked the job that they would have for the rest of their lives (Arnett, 2001). This could not be farther from the truth today: 18 to 25 year olds are several years away from marriage, are generally pursuing an education in university or college, often live with their friends, and change jobs often (Arnett, 2001, 2010). According to Arnett (2001), this change has been brought on by the invention of birth control, more relaxed standards of sexual morality, a higher number of years dedicated to education, the perception of adulthood by those entering it, and women's roles in society. People get married and have kids later in life, and spend more time establishing themselves as individuals through

identity exploration (Arnett, 2001, 2000; Schwartz, Côté, & Arnett, 2005). In sum, society has evolved. This period of emerging adulthood was proposed because it was now necessary to name this time previously known as the transition to adulthood; it was now long enough to be considered a life stage (Arnett, 2007).

There has been continual disagreement among researchers as to the correct terminology that should be used to classify individuals aged 18-to-25 years old. Terms such as "young adult" and "extended adolescence" have been used. However, these labels fail to describe this dynamic, changeable period of life and its unique challenges (Arnett, 2013, 2000). A review of these terms, their origins, and why they are inappropriate to describe this age group will follow.

There are 5 key features of emerging adulthood: identity exploration, instability, self-focus, feeling in-between, and endless possibilities (Arnett, 2013). This is a volatile period of life that is distinct from childhood, adolescence, and adulthood; it is characterized by independence from the mandated activities of childhood and adolescence, such as education, but is also not yet adulthood, as there are no responsibilities such as work or family roles yet in the emerging adult's life (Arnett, 2000, 2001; Schwartz, Côté, & Arnett, 2005). Emerging adults have yet to decide who they are; they are at a point in their lives where they have the opportunity to try on different identities and decide which one they like best. They explore possibilities in love by becoming involved with different people to discover what they want out of a long-term partner, and in work by trying several different academic or career-oriented paths to decide what they want out of work (Arnett, 2013, 2001). Emerging adults are not tied down to any one career, often no longer live with their parents and have the freedom to

choose what they wish to do with their lives (Arnett, 2000). They are at a point where they are just beginning to lay the foundation for their adult life and must now decide what that life will look like (Arnett, 2013). They often began thinking of a career or field in which they would like to work in late adolescence and are beginning to take steps towards this career path. In adolescence, any job held by the individual was often of a temporary nature; it was meant to provide money for activities with friends, or other leisurely pursuits (Arnett, 2013, 2001). Emerging adults want to instead obtain careers that are long-lasting with money earned going towards education, rent, food, or saving for the future. As for love, individuals at this stage have the freedom to become involved with various kinds of people to determine what kind of partner they ultimately want. In this day and age, there is often a decade between high school ending and "settling down", both in terms of love (marriage) and work (career). Emerging adults are free to enjoy themselves without necessarily making any sort of commitment. In the past, this was not possible as individuals were expected to settle down shortly after high school, therefore eliminating the age of identity exploration (Arnett, 2013, 2001).

The life of an emerging adult is wrought with instability; they make decisions, revise them, and then revise again (Arnett, 2013, 2001). As they explore their identities and try new things, they may realize that they are not well-suited to what they are doing. Emerging adulthood is a time of anxiety and uncertainty because nothing it settled; they don’t know where their explorations and choices will lead them to (Arnett, 2001). As a result, they will move on to something else, whether it is another job, another academic program, or another relationship. Therefore, emerging adults may change fields several times before settling upon the one in which they plan to work. The same can be said of

their relationships. The best way to characterize this instability is the constant changing of address; as different paths are taken, they move from place to place to accommodate their new plans for their life (Arnett, 2013, 2000). This appears to be the only characteristic emerging adults have in common: their living arrangements are unstable and very changeable (Arnett, 2013).

Self-focus is not negative in every situation. In this case, it is a positive aspect, as being self-focused permits emerging adults to develop life skills, such as making healthy, stable decisions on their own, learning to be self-sufficient, and deciding on the direction of their lives, both in terms of relationships and a career (Arnett, 2001; Nelson et al., 2007). They have complete control over their decisions. Oftentimes, they haven't yet established a career, so they aren't required to answer to a boss that they will have for many years to come. Everything is temporary which enables emerging adults to cut out and add new pieces to their life as their plans change. However, this may cause the adults in their lives to describe them as “slackers” or “selfish” because they believe the emerging adults simply don’t want to grow up or take on responsibilities (Arnett, 2007b, 2010). This is not the case, these individuals do want to grow up and take on responsibilities, they simply don’t want to do it *now* (Arnett, 2001, 2007a, 2010). To many emerging adults, taking on responsibility means the end of exploration so they choose to search for their identity prior to making any commitments that would interfere with this goal (Arnett, 2007a, 2007b).

Emerging adults are named thus because they are neither children nor adults; they feel too old to be children, but haven't reached adulthood because they're still figuring out their life (Arnett, 2000). 60% of emerging adults answered "yes and no" when asked if

they're an adult (Arnett, 2013). They answered "no" because they have yet to reach the milestones associated with adulthood: accepting responsibility for yourself, making independent decisions, forming mature relationships, and becoming financially independent (Arnett, 2013, 2000; Nelson et al., 2007). Although many of them will have reached one or two of these milestones, it is rarely until these individuals have reached all of them and have begun their career or have taken steps towards obtaining a career that they feel like adults.

Possibilities are endless for emerging adults. They have made no commitments, and are only as limited as they want to be. They can decide to pursue an education in a subject of their choice, can travel as far as their funds will permit, can select whatever career they like, pick all their own friends and decide where to live. Their options are open in a way that is unlikely to happen again in their lives as they are not tied to any relationship, location, or career (Arnett, 2013).

Emerging adults are not in a period of "late adolescence". Adolescents are often still going through puberty, almost uniformly live at home with one or both parents, are not legally responsible for themselves, and are still attending mandatory educational institutions (Arnett, 2013, 2001). Emerging adults are also not "young adults". This designation implies that they have reached adulthood, a statement with which many individuals in this age range would disagree (Arnett, 2001). It is also unclear who is considered a young adult. Oftentimes, older teenagers, meaning those aged 16 to 18 years old are called young adults, yet they are firmly still adolescents. Those in their 30s are generally considered adults, both by themselves and by society, but this transition is often recent. Should they then be called young adults? The term young adult merely creates

confusion while being inappropriate for the individuals in question, those in their late teens and early to mid-twenties (Arnett, 2013, 2001).

In short, this is a relatively new period of life that has only appeared over the last 20 years (Arnett, 2000). It is very important to understand the particular nuances and challenges these individuals face in order to understand the context within which they utilize coping mechanisms, demonstrate resilience, and express their personality.

Stress and coping

In its early stages, stress and coping research was very psychodynamic-oriented. However, with Lazarus' book, *Psychological Stress and the Coping Process* (1966), the cognitive appraisal era in stress research truly began (Carver, 1995, p.xi). Lazarus and Folkman (1984) have defined stress as "a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (p.21). In other words, stress occurs when an individual encounters a situation or task they don't feel capable of handling at that time. This appraisal is done cognitively and determines whether or not an event is stressful, why it is stressful (i.e. short or long-term severe consequences), and the intensity of the stress (Lazarus & Folkman, 1984; Lazarus, 1966). Cognitive appraisals are further divided into two stages: primary and secondary appraisal. Although these terms imply temporal order as well as an order of importance, this is not the case. Both types of appraisal can occur simultaneously or in "reverse order". Primary appraisal involves classifying a situation or outcome into one of three categories: irrelevant, benign-positive, or stressful. The category of irrelevant appraisals includes situations where there is no impact on an individual, meaning the individual can disregard the related information as

it carries no weight for them personally (Lazarus & Folkman, 1984; Lazarus, 1966). Benign-positive appraisals are those entirely positive appraisals characterized by joy and happiness that are untouched by doubt, fear, or apprehension (Lazarus & Folkman, 1984). These are very rare because even some of the most stereotypically joyous events, such as motherhood or marriage, are tinged with doubt and apprehension. Lastly, there are stress appraisals. This category is divided into three classifications: harm/loss, threat, and challenge.

Lazarus and Folkman (1984) differentiate between these three classifications in terms of positive/negative perceptions and temporal indicators. Harm/loss appraisals occur when an individual perceives that damage has already been done to them, whether it is physical, emotional, or social. It also carries additional negativity through the threat of future harm due to this loss (i.e. a university student expelled from university for poor performance may have difficulty re-entering academia in the future) (Lazarus, 1966). All in all, this is a past and/or present negative event with potential for future harm. Threats occur when "harms or losses that have not yet taken place but are anticipated" and involve emotions such as fear, anger, and anxiety (Lazarus & Folkman, 1984, p.32-33). Therefore, these events are future negative events. Despite the negative connotations of a threat, it does have one benefit: it has not yet happened but is expected. Because of the expectation of harm, individuals can clearly anticipate and attempt to remedy the problem or make preparations for the day when the event occurs. An employee that saves all their paycheques and searches for another job prior to their being laid off due to cutbacks would be an example of this. The third primary appraisal classification is challenge. These transpire when we anticipate positive outcomes, such as gain or growth, and are

characterized by eagerness and excitement. Although challenges and threats are different, they are not entirely separate and do overlap. They can also occur simultaneously. A prime example would be a young researcher who is collaborating with a senior researcher and who anticipates a significant published article, but if the young researcher performs poorly, they may lose the esteem of the senior researcher, and as a result, the collaboration.

Secondary appraisal involves assessing the situation and the options an individual has in dealing with said situation (Lazarus, 1966). It requires an assessment of *outcome expectancy*, which is the belief that performing a specific action will achieve a certain outcome, and *efficacy expectation*, which means that an individual believes they are capable of performing that specific action necessary to achieve the desired outcome (Bandura, 1977). This complicated appraisal is, at its core, an assessment of coping options (Lazarus, 1966). As defined by Lazarus and Folkman (1984), coping is "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person", and is therefore process-oriented (p.141). It is an active, conscious process; it is the way that individuals manage a stressful situation and its associated emotions (Zeidner & Saklofske, 1996).

In essence, cognitive appraisal classifies a stressful event into the harm/loss, challenge, or threat category through primary appraisal and determines what coping mechanisms are available and their efficacy in that situation.

Over time, research has generated over a hundred different models of coping. Researchers have long debated how each category is structured, whether coping is

proactive, disengaged, optimistic, or problem-focused. However, a recent meta-analysis by Connor-Smith and Flaschbart (2007) has organized coping into a hierarchical structure. They have described this structure as organized into two main categories: engagement and disengagement coping. The former encompasses all coping strategies which aim to actively fix the problem causing the stress or modify the emotional fallout due to the stress. The latter is quite the opposite; it includes those strategies such as denial, behavioral, mental, and alcohol-drug disengagement, which aim to actively or passively avoid the stressor and any feelings as a result of the stressor (Carver, Scheier, & Weintraub, 1989). On the next tier, under engagement coping, is primary and secondary control coping. Primary control, which is further divided into problem-focused and emotion-focused coping, involves strategies aimed at doing something concrete about the problem or the resulting distress, respectively, and secondary control is about adaptation to stress, which includes strategies such as acceptance. To see a visual representation of this hierarchical structure, see Figure 1.

According to Carver et al. (1989), problem-focused coping is comprised of active coping (taking direct action), planning (creating a strategy on how to best address the problem), suppression of competing activities (putting aside other thoughts and activities to concentrate on the problem), restraint (waiting for the best time to address the problem), and seeking social support for instrumental reasons (looking for help or advice on dealing with the problem). Emotion-focused coping includes strategies such as seeking social support for emotional reasons (talking about how you feel), focus on and venting of emotions (venting one's emotional distress), and positive reinterpretation of events growth (seeking a "silver lining" in a difficult situation). There has been some

disagreement about the categorization of the latter, as some, such as Connor-Smith and Flaschbart (2007), believe it belongs in secondary control strategies that aim to adapt to stress. However, Lazarus and Folkman (1984) believe it belongs in emotion-focused coping and I agree. It is more appropriate to think of problem- and emotion-focused coping as complementary categories rather than distinct entities, because one can facilitate the other (Carver & Connor-Smith, 2010). For example, using problem-focused coping can solve the problem and minimize the emotional fallout from the stressor, thereby utilizing both categories in a complimentary manner. Avoidant coping incorporates mechanisms such as alcohol-drug disengagement (consuming drugs or alcohol to distract oneself from thinking about the problem), denial (acting as though an event has not occurred), mental disengagement (participating in other activities in order to avoid thinking about the stressor), and behavioural disengagement (giving up).

According to Zeidner and Saklofske (1996), coping has eight goals: "resolution of the conflict or stressful situation, reduction of physiological and biochemical reactions, reduction of psychological distress, normative social functioning, return to prestress activities, well-being of self and others affected by the situation, maintaining positive self-esteem, and perceived effectiveness" (p.508). Although there are diverse coping styles, such as the three mentioned above, the goals remain constant. However, when it comes to attaining these goals, the efficacy of these styles varies based on the controllability of stressor (Wethington & Kessler, 1991). In the case of a controllable stressor, people appear more likely to utilize problem-focused coping as they can actively attempt to remedy the situation. In the instance of an uncontrollable stressor, such as the death of a loved one, individuals tend to employ emotion-focused coping strategies, as

there is truly nothing about the situation they can control, save their own emotions (Folkman & Moscowitz, 2004).

Personality and coping

Personality is key when trying to understand an individual and their choices; it colours nearly everything they do, including how they cope. But first: What is personality? It is a long-term stable pattern of "thoughts, feelings, and behaviours over time and across situations" (Connor-Smith & Flaschbart, 2007, p. 1080; Coulston et al., 2013; Roberts, Lejuez, Krueger, Richards, & Hill, 2012; Lazarus, 1963). One of the most prominent models of personality is the Big 5 model, or Five-factor model, which is the one used in this study (Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005). It is comprised of 5 traits: Openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Openness to experience is a much-disputed trait, but the general consensus appears to be that this trait encompasses creativity, curiosity, flexibility, imagination, and intellect (Connor-Smith & Flaschbart, 2007; Carver & Connor-Smith, 2010). Conscientiousness is a global trait that is comprised of persistence, achievement orientation, self-discipline, a hardworking nature, orderliness, and reliability (Connor-Smith & Flaschbart, 2007; Carver & Connor-Smith, 2010; Roberts et al., 2012). Extraversion is seen the tendency of an individual to display "positive emotionality, sociability, assertiveness, high activity levels" (Connor-Smith & Flaschbart, 2007, p.1082), and be talkative, warm, and fun-loving (Coulston et al., 2013). Agreeableness is the trait that most strongly influences one's ability to maintain relationships and combines "trust, altruism, compliance, and tender-mindedness" (Connor-Smith & Flaschbart, 2007,

p.1083) as well as empathy, friendliness, and helpfulness (Carver & Connor-Smith, 2010). Lastly, there is neuroticism, which is also called emotional stability. This is the tendency to become distressed or upset and includes feeling unpleasant feelings, being self-conscious, and reacting physically to stress (Connor-Smith & Flaschbart, 2007; Coulston et al., 2013).

It has already been established in the literature that personality indirectly influences coping, and this is done in three ways: stress exposure, stress reactivity, and situational demands (Connor-Smith & Flachsbart, 2007; Vollrath, 2001; Murberg, 2009). An individual's personality influences the kind of stress an individual is exposed to (e.g. interpersonal, financial, health) and how they evaluate stressors, meaning their personality traits will dictate whether they appraise events as threats or challenges (Kramer, 2010). For example, more neurotic individuals are more likely to appraise events negatively and as beyond their coping resources, will likely experience more interpersonal stress, and are more likely to self-blame (Carver & Connor-Smith, 2010; Coulston et al., 2013).

Resilience

Resilience literature began with studies of “invulnerable” children, meaning children who could easily withstand life’s adverse events (Dyer & McGuinness, 1996; Masten, 2001). Eventually “resilience” replaced the word “invulnerable” and the study of resilience began (Herbert et al., 2013). Resilience is a very new construct; in fact, over four-fifths of the articles which focus on this topic have been published in the last 10 years alone (Friborg et al., 2005). Due to its contemporary nature, there is a division between researchers as to what constitutes resilience and how to define it. Currently,

there appears to be two general models that delineate resilience: trauma-recovery and everyday resilience. Trauma-recovery resilience is concerned with recovery from extreme adversity, such as poverty, severe illness, abuse, and torture (DiCorcia & Tronick, 2011). However, more and more, there is a focus on everyday resilience, such that any individual is capable of exhibiting resilience and becoming resilient (Bonanno, 2004; Masten, 2001). Everyday resilience is defined in many ways, but the most salient definition comes from DiCorcia and Tronick (2011) who put forth the Everyday Stress Resilience Hypothesis: “Resilience can be thought of as a process of regulating and coping with everyday life stressors. The more experience one has successfully regulating everyday life stressors, the more prepared the individual is for greater challenges” (p.1599). This seems to reflect the past successes component of resilience more than the entire construct, and is therefore lacking the consideration of influences such as personality factors, specific skills and predisposition (Campbell-Sills et al., 2006). All things considered, resilience is a multidimensional construct. This study will utilize the definition of resilience provided by Werner (1993): “[Resilience is] successful adaptation following exposure to stressful life events and an individual’s capacity for transformation and change” (as cited in Herbert et al., 2013, p.81). This is a dynamic, changeable construct that depends on an individual’s life circumstances and may fluctuate over time (Rutter, 1987; Luthar, Cicchetti, & Becker, 2000).

Bonanno (2004) provides a clear distinction between recovery and resilience. Namely, recovery involves demonstrating some level of psychopathology after some sort of trauma has occurred, followed by a period of adjustment that can last days to years before returning to normal, pre-trauma levels of functioning. According to several

researchers, resilience means maintaining normal levels without showing signs of psychopathology (Scali et al., 2012; Bonanno, 2004). On the whole, resilience is more than simply recovering from an adverse event; it is positive growth and adaptation as the result of disruption (Richardson, 2002).

A primary focus of resilience research has been to determine the qualities that make an individual resilient. Researchers compiled a list of qualities that include: faith, optimism, adaptability to change, tolerance of negative affect, patience, action oriented approach, sense of humour, realistic sense of control, past successes, strengthening effect of stress, self-efficacy, personal or collective goals, close, secure attachment to others, engaging the support of others, recognition of limits to control, commitment, positive social orientation, and viewing change or stress as a challenge or opportunity (Connor & Davidson, 2003; Friborg et al., 2005). Over time, they have also determined the existence of certain protective factors, which are situations or attributes that facilitate resilience (Dyer & McGuinness, 1996). Rutter (1985) describes how protective factors differ from positive experiences: they are not necessarily positive experiences, are not necessarily observable when stressors are not present, and can be experiences or qualities, not necessarily one or the other. He suggests that protective factors can also be undesirable as well as desirable qualities; it depends very much on the situation.

One such protective factor is the presence of a stable, close relationship. It enables an individual to satisfy their need for human closeness and contact, and mitigates other negative influences in their life (Rutter, 1985). Another interesting factor is the emotional distance created in the face of an uncontrollable difficult situation. When there is absolutely no action an individual can take to solve the problem, and they cannot

escape this situation, creating distance is essential. This provides an interesting relationship with avoidant coping and demonstrates its utility as well as its contribution to resilience. This example also illustrates the use of an undesirable quality (e.g. emotional distance) as a protective factor.

Moreover, protection in the context of resilience does not lie in the avoidance of difficult situations, but rather in successfully managing them (Rutter, 1987). Resilience can be explained with several anecdotes, such as training for a marathon (e.g. incremental training) or receiving a vaccination. Essentially, the message is that by effectively handling smaller challenges, an individual will develop a tolerance to difficulty that is increased over time; self-efficacy will also increase which will further the individual's perception of their ability to manage future stress.

Resilience is neither static nor unattainable. Instead, it is a fluid concept that changes along with life circumstances and can be achieved by nearly any individual. It simply requires a positive outlook, effort and commitment, faith, and utilizing an opportunistic outlook on adversity as a time for positive growth and adaptation (Connor & Davidson, 203; Richardson, 2002).

Exercise and the toughness model

The Toughness model, which has its beginnings in Richard Dienstbier's 1987 study on catecholamine training effects, outlines a physiological model that operates on the premise that "all physiological systems are strengthened through use" and "intermittent stress over time causes some physiological changes that promote effective coping" (Dienstbier, 1989, p. 849). The changes associated with this model are "increased central nervous system (CNS) catecholamine capacity, lower peripheral

catecholamine base rates but increased capacity and responsivity with severe or prolonged stressors, an increased tissue-specific sensitivity (greater blood glucose response to a given amount of catecholamine in aerobically fit individuals), and finally, a delay or suppression of pituitary-adrenal-cortical responses" (Dienstbier, 1989, p.850, 1991). Catecholamines are dopamine, epinephrine (adrenaline), and norepinephrine (noradrenaline), which are produced by the adrenal glands atop the kidneys. These are very important as they are secreted when the "fight-or-flight" response is activated as a result of stress. These changes would result in three positive changes in the individual: the ability to tolerate stress successfully, meaning being able to cope with stress and not develop a mental illness as a result of it, positive performance in contexts that an individual would appraise as stressful or challenging, and emotional stability, meaning low levels of neuroticism (Dienstbier, 1989, 1991). These positive changes would likely make a significant difference in the immune system functioning of the individual, as physical and psychological responses to stress play a role in how well the immune system is able to fight off threats to the body (Dienstbier, 1989, 1991). He proposes various "toughening manipulations", which would achieve the desired effect of physiological toughening, such as aerobic exercise and exposure to cold, however, for the purpose of this study, the focus will be primarily on aerobic exercise (Dienstbier, 1989; Dienstbier & Zillig, 2009).

This success of this model is contingent upon several factors. The duration of each training session must exceed a minimum of 30 minutes, with a preference for 45 minutes or longer. Longer duration sessions are more beneficial for research because only then is an individual's current CNS' catecholamine capacity evident (Dienstbier, 1989).

In conjunction with this, there must be rest periods between training sessions to facilitate recovery of the individual's catecholamine levels and stress levels, meaning the physiological stress caused by exercise must be intermittent, punctuated by periods of rest (Dienstbier, 1989; Dienstbier & Zillig, 2009). Maintaining chronically elevated catecholamine rates is detrimental to the individual as it is associated with poor psychological adjustment and health problems (Dienstbier, 1991).

One important caveat to note is that there are different neuroendocrine responses to disparate types of difficult tasks or situations (Dienstbier, 1989). The important factor in predicting the neuroendocrine response is how an individual appraises a situation: Is it difficult? Do I have the resources to effectively navigate this situation? If I do not, will a poor outcome represent a threat to something that I value? The answers to these questions will determine if the individual is operating within a challenge or threat mindset. If the individual is operating within a challenge mindset, the individual's neuroendocrine system is more likely to secrete catecholamines; if operating within a threat/loss mindset, they are more likely to secrete cortisol, as the body typically does during times of fear or distress (Dienstbier, 1989, 1991). High cortisol base rates have the potential to be quite detrimental as they are associated with anorexia, depression, anxiety, and neuroticism; ideally, base rates for cortisol are low and remain low when dealing with stressful or challenging situations (Dienstbier, 1991).

"Toughening up" is considered a positive development by virtue of the resulting appraisals of difficult situations as operose but surmountable obstacles as opposed to stressful circumstances which the individual lacks the resources to successfully manage (Dienstbier, 1989, 1991). As a result of this, tough individuals will likely seek out

challenging situations, which will make them even tougher; there appears to be a reciprocal relationship between toughening up and seeking out challenges (Dienstbier, 1989, 1991). Moreover, such individuals will likely remain calm in stressful situations and will therefore be more emotionally stable as they are less likely to have "strong negative emotional reactions" in response to stressful situations (Dienstbier, 1991, p.93). When situations arise that do stress them out, they are able to quickly return to base rates once the stressful event has concluded (Dienstbier, 1991; Dienstbier & Zillig, 2009).

Hypotheses

Hypothesis 1. Problem-focused coping will be positively correlated with conscientiousness and resilience. This is expected because conscientious individuals are more able to engage in planning and remain determined in their pursuit to resolve a problem (Connor-Smith & Flaschbart, 2007). They are also very hardworking individuals which means they are less likely to avoid issues and more likely to address the issue directly. It is also likely that problem-focused coping will be strongly correlated with resilience as this style of coping requires actively remedying a problem, which over time would result in resilience as an individual is better able to deal with stressful situations and bounce back more easily.

Hypothesis 2. Problem-focused coping will be negatively correlated with neuroticism. More neurotic individuals are less able endure negative emotions and will therefore utilize other coping styles rather than try to eliminate the cause of stress.

Hypothesis 3. Avoidant coping and emotion-focused coping will both be positively correlated with neuroticism. As mentioned previously, more neurotic individuals will find managing unpleasant emotions more difficult, and will therefore

attempt to ameliorate their state of mind through emotion-focused coping or avoid the issue utilizing avoidant strategies

Hypothesis 4. Resilience will be positively correlated with academic self-efficacy and psychological well-being. Resilient individuals are perceived as psychologically more healthy, and are considered to be more efficacious as they can more readily bounce back from difficult situations over time, therefore increasing their belief in their ability to complete tasks, such as academic tasks in the university setting of this study.

Hypothesis 5. Individuals who exercise at least twice a week will be more resilient than individuals who do not exercise on a regular basis. It is hypothesized that individuals who exercise will be more resistant to stress and better equipped to deal with their problems because their stress levels will be lower. Therefore, they will be more resilient as they will be happier, healthier individuals who are able to more quickly bounce back from difficult life events.

Method

Participants

The final sample included 221 psychology undergraduate students of a mid-sized university in Nova Scotia. All participants were aged 18-25 years old with a mean age of 20.39 (SD = 1.93). The sample was comprised of 76% females (n = 168) and 24% males (n = 53). Participants were asked their ethnicity; however, participants demonstrated a lack of understanding as to what is considered race and what is considered ethnicity. As a result, responses include a mix of ethnicity and race. Participants self-identified as Aboriginal (n = 3), African (n = 1), African-Canadian (n = 1), African-American (n = 1),

African/Asian (*n* = 1), Albanian (*n* = 1), Arab (*n* = 5), Asian (*n* = 8), Bahamian (*n* = 1), Black (*n* = 10), Canadian (*n* = 15), Caucasian (*n* = 152), Caucasian/Aboriginal (*n* = 3), Caucasian/Vietnamese (*n* = 1), Chinese (*n* = 2), Ethiopian (*n* = 1), European (*n* = 1), Filipino (*n* = 1), Indian (*n* = 2), Japanese (*n* = 1), Latina (*n* = 1), Lebanese (*n* = 2), Pakistani (*n* = 1), Saudi Arabian (*n* = 1), South Asian (*n* = 1), Vietnamese (*n* = 1), and West Indian (*n* = 1).

Participants were asked their GPA, with the average response being 3.15 (*SD* = 0.649). Responses for the 189 participants that responded to this question had a range of 1.50 to 4.30. The average GPA for males (*n* = 45) was 2.99 (*SD* = 0.70) and the average for females (*n* = 143) was 3.19 (*SD* = 0.63).

Participants were questioned about their exercise habits. 27.5% said they do not exercise (n = 61), 72.5% said they do exercise (*n* = 161). Of those that indicated that they do exercise, 28 reported that they exercise daily, 9 reported that they exercise six times a week, 20 reported that they exercise five times a week, 19 reported that they exercise four times a week, 33 reported that they exercise three times a week, 30 reported that they exercise twice a week, 17 reported that they exercise once a week, 4 reported that they exercise once every two weeks, and 1 reported that they exercise once a month. Those that replied saying they do exercise were asked to indicate their primary source of exercise. The results indicated that running/jogging was the most popular form (*n* = 60), followed by weightlifting (*n* = 32), walking (*n* = 26), yoga (*n* = 8), basketball (*n* = 5), dancing (*n* = 7), martial arts (*n* = 2), hockey (*n* = 4), biking (*n* = 3), horseback riding (*n* = 1), rowing (*n* = 1), soccer (*n* = 2), squash (*n* = 1), swimming (*n* = 2), curling (*n* = 1), non-specified sports (*n* = 1), non-specified cardio (*n* = 4), and physical labour (*n* = 1).

Measures

General Health Questionnaire (GHQ; Padron et al., 2012)

The 12-item GHQ is a self-report questionnaire used to assess psychiatric disorders in non-psychiatric clinical settings (Padron et al., 2012). It was designed by Goldberg for use with an adult population and is also commonly used as a health questionnaire (Padron et al., 2012).

It is three-dimensional and measures anxiety and depression, (items 2,5,6,9), anhedonia and social dysfunction (items 1,3,4,7,8,12), and loss of confidence or self-esteem (items 10,11). The items on the scale are categorized as either positively or negatively worded, with six items in each category. Positively-worded items referred to health, while negatively-worded items referred to disease. An example of the latter would be: "Been feeling unhappy or depressed?" Negative items were scored on a 4-point Likert scale and ranged from 1 to 4, with 1 being "Not at all" and 4 being "Much more than usual". An example of a positively-worded item would be: "Been able to enjoy your normal day-to-day activities?" Responses were on a 4-point Likert scale and ranged from 1 to 4, with 1 being "Much less than usual" and 4 being "More than usual". The overall score ranges from 12 to 48. Scores over 24 were considered a cause for concern.

Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003)

The 25-item scale was developed with three goals in mind: to develop a valid and reliable measure of resilience, to establish typical resilience scores in the general and

clinical population, and to assess the changes in resilience in response to drug therapy treatment in a clinical population (Connor & Davidson, 2003).

Examples of items: “Tend to bounce back after illness or hardship” and “Think of self as strong person”. Responses are on a 5-point Likert scale: "Not true at all" (0), "Rarely true" (1), "Sometimes true" (2), "Often true" (3), and "True nearly all of the time" (4). Scoring is done by adding the value of each question together, with a minimum possible score of 0 and a maximum score of 100; the higher the score, the higher the resilience levels.

The participant instructions were as follows: “Read the statements and select the answer that reflects how true this statement is for YOU. Remember your answers are completely anonymous and confidential.”

COPE Inventory (Carver, Weintraub & Scheier, 1989)

The 53-item scale is a self-report questionnaire used to assess how individuals generally cope with stressful situations.

It was designed by Carver, Weintraub, and Scheier (1989) to incorporate 13 conceptually distinct scales. These scales include: Active coping, planning, suppression of competing activities, restraint coping, seeking social support for instrumental reasons, seeking social support for emotional reasons, positive reinterpretation and growth, acceptance, turning to religion, focus on and venting of emotions, denial, behavioral disengagement, mental disengagement, and alcohol-drug disengagement. Each subscale includes 4 items, with the exception of alcohol-drug disengagement, which only has 1 item.

Participant instructions were as follows:

> "We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. This questionnaire asks you to indicate what *you* generally do and feel when *you* experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you *usually* do when you are under a lot of stress (Carver et al., 1989)."

The subscales are not strongly intercorrelated, however those strategies seen as adaptive (active coping, planning, suppression of competing activities, restraint, positive reinterpretation and growth, and seeking out of social support for instrumental reasons) are related. The same pattern is observed with maladaptive strategies (denial, behavioral disengagement, mental disengagement, focus on and venting of emotions, and alcohol-drug disengagement). The overall Cronbach's alpha was 0.86.

Examples of items include "I try to come up with a strategy about what to do", "I discuss my feelings with someone", and "I drink alcohol or take drugs, in order to think about it less".

Participants responded on a scale of 1 ("I usually don't do this at all"), 2 ("I usually do this a little bit"), 3 ("I usually do this a medium amount"), and 4 ("I usually do this a lot"). Each scale had a minimum score of 4 and a maximum score of 16, with the exception of alcohol-drug disengagement, which has a minimum score of 1 and a maximum score of 4.

Mini IPIP (Donnellan, Oswald, Baird & Lucas, 2006)

This 20-item scale is used to measure personality. The 20-item scale was developed with three goals in mind: develop a short form personality scale with at least 4 items per subscale, have empirically distinct scales for each trait, and shorten an existing useful measure (Donnellan et al., 2006).

Responses on a 7-point Likert scale are “Strongly disagree”, “Disagree”, “Somewhat disagree”, “Neither agree nor disagree”, “Somewhat agree”, “Agree”, and “Strongly agree”. Scoring is done by adding together the value of the responses in one category to form a score for each personality trait. The minimum score for each category is 4; the maximum score is 28. The participant instructions were as follows: “Select the answer that most accurately reflects who YOU are. Remember that all your answers are entirely confidential and anonymous.”

Examples of items: “I have frequent mood swings”, “I am relaxed most of the time”, and “I like order”. Items 6,7,8,9,10,15,16,17,18,19 and 20 are reverse-scored.

Cronbach's alpha for the overall Mini IPIP scale is α =0.61.

Academic Self-Efficacy Scale (Zajacova, Lynch & Espenshade, 2005)

This modified 19-item scale is used to measure academic self-efficacy and stress. It was developed by Zajacova, Lynch and Espenshade (2005) for use with a college student population.

Participants were asked to rate how confident they are that they could successfully perform tasks related to higher education, such as writing papers and asking questions in

class. They rated their confidence level on an 11-point Likert scale, with 0 being "Not at all confident" and 10 being "Extremely confident".

Scoring required adding the scores of each question, meaning adding the numerical response (number from 0 to 10) to the item, with a minimum possible score of 0 and a maximum score of 190.

The original scale had 27 items, however only 19 items were used. Items 6, 7,12,15,19,21,23,27 were excluded because they covered college life (e.g. "Making friends at school", "Having enough money", etc.) versus academic self-efficacy, which was the construct being measured in this study.

Procedure

Participants were recruited through the university's online bonus point system which allowed them to view ongoing studies and select those in which they would like to participate. Once this study was chosen and participants had signed up, they were redirected to Qualtrics, which was the online study platform used. They were asked to read an informed consent form outlining the type of study conducted, duration, location, information collected, potential risks, benefits, security measures, compensation, etc. They had the option of providing their informed consent or refusing to provide it by exiting the questionnaire window. Only when consent was given were participants able to continue to the questionnaire.

Participants were asked several demographic questions: age, gender, ethnicity, current GPA, and exercise habits. The demographic questions were left open to the participant to answer what they wish, however, the answers to the questions regarding exercise were not. Participants were asked if they exercised, yes or no. If they responded

yes, they were then asked how often they exercise and what their primary source of exercise was. The options in response to the question regarding how often a participant exercises were: daily, six times a week, five times a week, four times a week, three times a week, twice a week, once a week, once every two weeks, and once a month. The options in response to the question regarding their primary source of exercises were: running/jogging, weightlifting, martial arts, dancing, walking, yoga, or other. If their primary source was not listed, they were to click “other” and specify in an open-ended format.

Participants were asked to respond to five questionnaires in a fixed order: GHQ, Connor-Davidson Resilience Scale, COPE Inventory, Mini IPIP, and the Academic Self-Efficacy Scale. Questionnaires were ordered based on the importance of their results. Answers were not required in order to continue to the next questionnaire; only the informed consent required an answer before being able to continue.

Upon completion of the entire questionnaire, participants were shown a feedback letter. This letter outlined the general purpose of the study, a reiteration of the participant’s anonymity, a description of the methods for dissemination of results, and a crisis hotline number should the participant feel any discomfort or anxiety as a result of their participation.

Once this stage is reached, the researcher assigns bonus points based on the level of completion of the questionnaire. All responses are anonymous as participants are assigned a survey ID upon signing up for the study, which is then used as their participant code, effectively making their data anonymous.

Results

Scale aggregation and missing data

Due to the multitudinous nature of the scales in this study, it was necessary to aggregate certain scales into composites. Therefore, the *COPE* inventory was combined into five categories which consisted of two coping mechanisms that did not fit into any broad coping category (turning to religion, acceptance), and three coping categories comprised of avoidant focused coping (alcohol-drug disengagement, mental disengagement, behavioural disengagement, denial), problem-focused coping (active coping, suppression, restraint, planning, seeking social support for instrumental reasons), and emotion-focused coping (seeking social support for emotion reasons, venting of emotions, and positive reinterpretation of events). Turning now to missing data, several participants failed to complete all scale items. These unanswered items appeared to be at random, and no more than 15% of the items of each scale remained blank. To help mitigate the potential for lost data, the aggregated score for each scale was created using the mean of the items to which the participant did respond for each participant, meaning the means were created using the participant's own responses.

Correlational analyses

Correlations between problem-focused coping, conscientiousness, and resilience. It was hypothesized that problem-focused coping would be positively correlated with conscientiousness and resilience, which was supported. Conscientiousness was positively correlated with problem-focused coping as a category, $r = .213$, $p < .01$, as well as the majority of coping mechanisms within that category: active coping, $r = .216$, $p < .01$,

suppression of competing activities, $r = .225$, $p < .01$, planning, $r = .262$, $p < .01$. Neither restraint nor seeking social support for instrumental reasons was significantly correlated with conscientiousness, $r = .108$, p > .05, and $r = -.031$, $p > .05$. A summary of the key correlations can be found in Table 1.

Correlation between problem-focused coping and neuroticism. As hypothesized, problem-focused coping as a category was negatively correlated with neuroticism, $r = -.198$, $p < .01$. Neuroticism was also negatively correlated with each coping mechanism within the problem-focused category: active coping, $r = -.235$, $p < .01$, suppression, $r = -.136$, $p < .05$, planning, $r = -.214$, $p < .01$. Neither restraint nor seeking social support for instrumental reasons was significantly correlated with neuroticism, $r = -.106$, p > .05, and $r = -.025$, $p > .05$.

Correlations between emotion-focused coping, avoidant coping, and neuroticism. As hypothesized, neuroticism was positively correlated with emotion-focused coping as a category, $r = .238$, $p < .01$, as well as avoidant coping as a category, $r = .363$, $p < .01$. Neuroticism also appears to have an interesting relationship with several coping mechanisms within each coping category. In terms of emotion-focused coping strategies, neuroticism has a positively significant relationship with venting emotions, $r = .555$, $p < .01$, no relationship with seeking social support for emotional reasons, $r = .130$, $p > .05$, and a significant negative relationship with positive reinterpretation of events, $r = -.274$, $p < .01$. However, when it comes to avoidant coping, neuroticism is significantly positively correlated to every coping mechanism within that category: alcohol-drug disengagement, $r = .250$, $p < .01$, mental disengagement, $r = .394$, $p < .01$, behavioural disengagement, $r = .313$, $p < .01$, and denial, $r = .144$, $p < .05$.

Correlation between academic self-efficacy, psychological well-being, and resilience. As anticipated, resilience was significantly positively correlated with academic self-efficacy, $r = .507$, $p < .01$, as well as psychological well-being (GHQ), $r = .547$, $p < .01$.

Correlation between exercise and resilience. It was proposed that a higher frequency of exercise would result in higher resilience scores among those exercising individuals. However, this hypothesis was not supported. There was but a negligible difference between the groups' resilience scores. Group 1, which was the low frequency group, consisted of those that exercised once a month, once every two weeks, and once a week. The mean resilience score was 2.50 ($SD = .40$). Group 2, which was the medium frequency group, was composed of individuals that exercised two, three, or four times a week. The mean resilience score was 2.62 ($SD = .46$). Group 3, which was the high frequency group, consisted of those that exercised five, six, or seven times a week. The mean resilience score was 2.70 ($SD = .44$). Group 4, which was the no-exercise group, had a mean resilience score of 2.44 ($SD = .55$).

Coping, personality, and resilience

Although not originally hypothesized, it became clear through once statistical analysis had begun that coping style and mechanism choice appear to have an effect on resilience that is above and beyond any personality-level variable. In order to support this supposition, a hierarchical linear regression was conducted using the aggregated scales for emotion- and problem-focused coping, and avoidant coping, as well as the scales for turning to religion and acceptance, followed by the big 5 personality traits. Personality

variables were entered first as Step 1 (openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism) and coping categories and extra coping mechanisms not accounted for by the broad categories were entered in Step 2 (problem-focused, emotion-focused, and avoidant coping, as well as turning to religion, and acceptance). As can be seen in Table 2, the initial supposition was supported, coping does account for significant variance in resilience above and beyond personality, $\Delta R^2 = .16$ for Step 2, and both coping and personality are significant predictors of resilience, $F(10, 210) = 28.82$, $p < .001$, and $F(5, 215) = 30.92$, $p < .001$, respectively. In particular, neuroticism, extraversion, and conscientiousness were significant personality predictors of resilience and acceptance, turning to religion, avoidant coping, emotion-focused coping, and problem-focused coping were the strongest coping predictors of resilience. However, of the three styles, avoidant coping was the strongest predictor of resilience, although it was an inverse relationship.

As evidenced by the correlation matrix in Table 1, several predictors were highly correlated. However, collinearity statistics demonstrated that they were within the limits appropriate for this test (e.g. VIFS < 10, tolerances > 0.10; Campbell-Sills, Cohan, & Stein, 2006).

Discussion

The purpose of this study was to evaluate the relationship between personality traits, specific coping mechanisms, broad coping styles, exercise type and frequency, and resilience. In particular, the aim was to analyze these variables in order to determine if there are any strong predictors of resilience among them. Results showed strong support

for nearly every hypothesis, meaning that resilience has a strong relationship with coping, personality, psychological well-being, and self-efficacy in an academic setting.

Conscientiousness and problem-focused coping were positively correlated, which seems quite logical because conscientious individuals are hardworking, well-organized, and diligent, meaning they are in possession of the ideal task-oriented personality characteristics (Costa & McCrae, 1992). Achievement striving is a facet of conscientiousness that will make problem-focused coping the general ideal coping style for conscientious individuals because this style provides them with a sense of mastery over the stressor (Roberts et al., 2012). Resilience also demonstrated a significant relationship with problem-focused coping. Individuals that utilize this coping style are required to face their stressors and try to actively solve their problems, which would enable them to develop and ameliorate their self-efficacy, particularly in the wake of adversity (Campbell-Sills et al., 2006).

Neuroticism demonstrated a negative relationship with problem-focused coping. Neurotic individuals are characterized by their vulnerability to anxiety, depression, and impulsiveness, traits which are counterproductive when attempting to take an active approach to coping. As a result of these characteristics, individuals high in neuroticism are more likely to utilize avoidant and emotion-focused coping. In particular, this personality trait demonstrates positive correlations with all the coping mechanisms characterized by avoidance. Due to their tendency to perceive distress more often than others, these individuals will likely avoid their problems to reduce their distress, or vent their feelings to minimize feelings of distress. Both of these strategies appear maladaptive

in the majority of situations where the stressor can be addressed due to their tendency to aggravate the issue (Zeidner & Saklofske, 1996).

Resilience demonstrated a strong positive relationship with both academic self-efficacy and psychological well-being. This result was anticipated because resilient individuals are characterized by their self-efficacy, tolerance of negative affect, and optimism, all of which contribute to positive mental and physical health outcomes (Connor & Davidson, 2003; Richardson, 2002; Scali et al., 2012). As well, resilient individuals are less likely to develop a mental illness following adversity due to their ability to adapt and grow (Bonanno, 2004; Campbell-Sills et al., 2006; Richardson, 2002).

Resilience scores were not significantly different between the exercise frequency and type conditions. There was a negligible difference between the frequency groups (high, medium, low). This was a surprising result because according to the Toughness model, the high exercise group should have had a higher mean resilience score than the low or no exercise group due to the higher frequency of training (Dienstbier, 1989). As a result of the lack of significance between resilience and exercise frequency, the relationship between exercise type and resilience was assessed. There was also a lack of significance.

Coping does not happen in a vacuum; it is a part of a "complex, dynamic stress process" that involves both the individual, the environment, and the relationship between them" (Folkman & Moscowitz, 2004, p. 748). As such, it cannot be evaluated without taking personality factors into account. Resilience is much the same; personality factors must be considered when discussing this dynamic construct. Extroversion is clearly a

strong predictor of resilience because it enables individuals to perceive a higher level of social support due to their larger than average social support network; it would act as a protective factor to life's adverse events (Hooberman, Rosenfeld, Rasmussen, & Keller, 2010). The assertiveness component of extraversion also makes seeking out help (social support seeking for instrumental reasons) much easier because they would feel comfortable in social situations, including asking for help (Herbert et al., 2013). Moreover, the facet of extraversion that covers positive affect would likely aid in an individual’s ability to demonstrate resilience. Bonanno (2004) suggests that demonstrating positive emotions following a loss and maintaining social contact promotes resilience; these will likely be made easier for individuals high in extroversion as they will likely be able to perceive a “bright side” in most situations and interpret difficulty as an opportunity for growth. Conscientiousness likely demonstrated a positive relationship with resilience for reasons similar to those mentioned above that pertain to the relationship between problem-focused coping and conscientiousness. An interesting study by Campbell-Sills et al. (2006) has even found that once task-focused coping is accounted for, conscientiousness is no longer a significant predictor of resilience. Neuroticism exhibited a strong negative relationship with resilience, a result which was entirely expected as this relationship has been well-established in the literature (Friborg et al., 2005; Campbell-Sills et al., 2006). As mentioned previously, individuals high in neuroticism are more prone to developing a mental illness, experiencing negative emotions, and experiencing psychological distress (Costa & McCrae, 1992). This puts them at odds with the construct of resilience which “embodies the personal qualities that

enable one to thrive in the face of adversity"; this is something an individual high in neuroticism would have extreme difficulty achieving (Connor & Davidson, 2003, p.76).

Acceptance, turning to religion and the three broad coping styles were all significant predictors of resilience. Acceptance involves accepting that a stressor or event has occurred rather than denying its existence and is considered an adaptive coping mechanism (Carver et al., 1989). This would be particularly important in the context of a significant adverse event that cannot be changed, such as a sexual assault or natural disaster (Carver et al., 1989); a resilient individual recognizes the limits of control they have (Connor & Davidson, 2003). Turning to religion correlates with resilience as resilient individuals are characterized by their having faith, although not necessarily in God (Connor & Davidson, 2003). Many religious and resilient individuals have faith that positivity will re-enter their lives once an adverse event is over, the recipient of that faith is the only difference (Richardson, 2002).

Although all three coping styles were significant predictors of resilience, they were not equally predictive. Avoidant coping was the most significant predictor, followed closely by emotion-focused and then problem-focused coping. Avoidant coping likely displayed such a strong relationship with resilience because all of its associated coping mechanisms were inversely correlated with resilience. This seems quite logical as they all center on escape and avoidance through distractions such as TV, movies, or drugs and alcohol, or on giving up. This is quite the opposite of resilience which centres on self-efficacy, commitment, optimism, and an action oriented approach to adversity (Connor & Davidson, 2003). This also explains why problem-focused coping is associated with resilience, as they both emphasize an action oriented approach to dealing with adverse

events (Connor & Davidson, 2003; Zeidner & Saklofske, 1996; Hooberman et al., 2010). However, utilizing problem-focused coping in every situation is not adaptive. In certain situations, such as is the case of torture survivors, taking an action-oriented approach to distress is not useful; it is important to be mindful of coping flexibility, that is to say using different coping mechanisms in different situations (Hooberman et al., 2010).

Emotion-focused coping had the most interesting relationship with resilience. Two of its coping mechanisms, seeking social support for emotional reasons and positive reinterpretation of events, have a positive relationship with resilience and one of them, focus on and venting of emotions, has a negative relationship with resilience. The most interesting correlation here pertains to positive reinterpretation of events because it overlaps with resilience in that resilient individuals see stress as a challenge or opportunity and have an optimistic view on things (Connor & Davidson, 2003). An interesting finding by Wethington and Kessler (1991) shows that positive reinterpretation can at times be maladaptive. They go on to say that positivity without action is detrimental to the individual's functioning; therefore simply viewing events in a more positive light is not sufficient to be considered resilient.

Although there have been similar studies on this topic in the past 10 years, this study is unique in its focus on emerging adults, as well as the inclusion and discussion of specific coping mechanisms and their relationship with resilience. Likewise, the addition of a biological perspective on resilience in this population contributes to the knowledge of exercise on resilience, as well as some methodological issues to consider in the future. These specific foci address some significant gaps in the literature pertaining to emerging adults as a population of study.

Limitations

This study was conducted on psychology undergraduate students of a mid-sized university, which means it was a convenience sample and is therefore not a representative sample of all emerging adults. It would be best to include those attending other post-secondary institutions, such as college or applied programs, those in the working world, as well as the unemployed. Turning to coping, the coping inventory used, *COPE*, is retrospective in nature, meaning it requires participants to reflect on coping strategies they have used in the past, which could introduce error due to the fallibility of human memory (Folkman & Moscowitz, 2004). The coping inventory is also only used to assess general coping strategies, which means each coping mechanism was studied separately, making it impossible to determine if individuals used more than one strategy at a time, or if a combination of strategies would be more effective in any one situation. Likewise, only the concept of everyday resilience was assessed, making it infeasible to determine if learning and growth as the result of a traumatic experience, such as living through a war or a natural disaster, would have an impact on the efficacy of the coping mechanisms that were significant in this study. As for exercise, participants were asked about the type of exercise they do as well as the frequency at which they partake in these activities. It may be beneficial in the future to assess these habits by asking about participants' exercise habits for the past 14 days to minimize self-serving bias and acquire details such as the frequency, type, duration, and intensity of their physical activity.

Future Research

With regards to coping, there should be a focus on the use of coping mechanisms in a specific situation rather than focusing on general coping tendencies. Consequently, this will permit the assessment of context-specific coping, which is very important when determining efficacy as it depends in part on context (Carver & Connor-Smith, 2010; Erickson, Feldman, & Steiner, 1997; Whitty, 2003; Folkman & Moscowitz, 2004; Wethington & Kessler, 1991). As far as the relationship of other variables to coping goes, there should be a focus on stress intensity, controllability, and duration. This will likely affect the coping strategies used and will provide useful information in the case of unresolvable, chronic stress, such as illness, work stress, and caretaking. Furthermore, responses to multiple stressors over time ought to be studied to help determine how people's personalities influence their coping mechanism choices and whether or not they change strategies when their initial choice is ineffective (Carver & Connor-Smith, 2010). With regards to exercise, it should be studied as a coping mechanism. It is possible that it was not a significant predictor of resilience in this case because it is in fact a coping mechanism. Finally, the relationship between specific facets of personality traits (e.g. gregariousness in extraversion) and specific coping mechanisms (e.g. seeking instrumental support in seeking support category) ought to be evaluated, as this may change the coping mechanisms utilized and the correlations between personality traits and coping mechanisms.

Conclusion

These results are clinically as well as statistically significant. By clarifying those personality traits and specific coping mechanisms that correlate strongly with resilience, clinicians will be able to encourage clients to utilize their social networks for emotional reasons and remain positive in the face of adversity while also taking action to reduce distress through active strategies like planning and active coping. Therefore, clinicians have the ability to help their clients develop and boost their resilience through the development of effective coping skills in therapy as well as encouraging them to adopt an opportunistic view on adversity in the sense that these are moments to learn and grow as people.

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Figure 1

Coping hierarchy (Carver et al., 1989; Connor-Smith & Flaschbart, 2007)

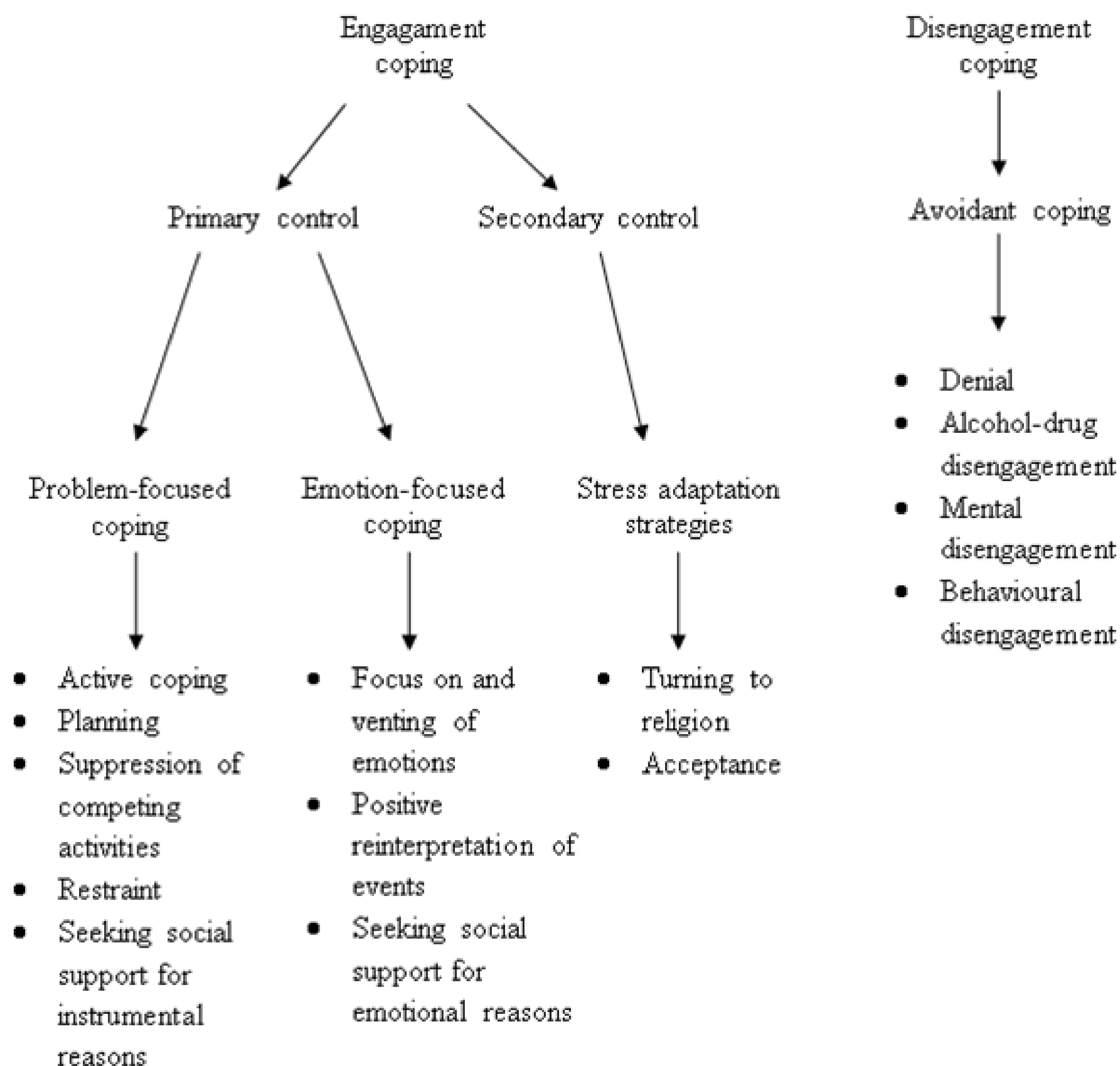

Table 1

Correlation matrix

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1.GHQ	(.89)	.55**	.06	.18**	-.32**	.38**	-.01	.18**	.35**	-.04	-.54**	.05	.01
2.Resilience		(.91)	.19**	.47**	-.35**	.51**	.17**	.27**	.39**	.60	-.51**	.27**	.17*
3.EmoFocus			(.80)	.41**	.20**	.15*	.03	-.08	.21**	.24**	.24**	.16*	.10
4.ProbFocus				(.85)	-.13	.35**	.13	.21**	.20**	.01	-.20**	.31**	.10
5.AvoidFocus					(.86)	-.37**	-.17*	-.25**	-.07	-.17**	.36**	.03	.20**
6.AcadSelfEfc						(.82)	.15*	.34**	.13	.18**	-.35**	.21**	-.03
7.OpenToExp							(.60)	.04	.02	.31**	-.10	.03	-.07
8.Conscien								(.65)	.01	-.01	-.11	.01	.06
9.Extraversion									(.84)	.13*	-.16*	-.02	-.04
10.Agreeable										(.76)	.08	-.05	-.15*
11.Neurot											(.68)	-.08	-.10
12.Accept												(.71)	.03
13.TurnToRel													(.94)

Note. Alpha values are in parentheses on the diagonal

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

Table 2

Hierarchical Linear Regression: Personality and Coping as Predictors of Resilience

	b	*SE* b	*β*
Step 1			
(Constant)	2.12	.226	
Agreeableness	.006	.026	.013
Extraversion	.113	.019	.320***
Conscientiousness	.095	.023	.215***
Neuroticism	-.184	.023	-.423***
Openness to Exp	.052	.026	.112*
Step 2			
(Constant)	1.271	.270	
Agreeableness	-.014	.024	-.029
Extraversion	.095	.017	.268***
Conscientiousness	.064	.021	.146**
Neuroticism	-.153	.023	-.351***
Openness to Exp	.038	.022	.082
Acceptance	.151	.041	.174***
Turning to Religion	.079	.026	.142**
Avoid-focus C	-.047	.012	-.210***
Problem-focus C	.031	.013	.135*
Emotion-focus C	.059	.019	.181*

Note. R^2 = .42 for Step 1, R^2 = .58 for Step 2; ΔR^2 = .42 for Step 1 and .16 for Step 2 (*ps* $< .001$).

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

Table 3

Resilience scores by exercise frequency

Exercise Freq	Mean Res. Score
Hi	2.6993
Med	2.6186
Lo	2.4980
None	2.4405

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