

The Effects of Stress upon Coping and Eating Behaviours

by

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This is to certify that this thesis contains no material which has been accepted for the award of another higher degree or graduate diploma in any university and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except when due reference is made in the text of the thesis.

Signed.....

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Literature Review

Stress, Coping and Eating Behaviours in Adolescence

Abstract

Causes of stress for adolescents include school transition, interpersonal difficulties, separation and death, and excessive homework and pressures from peers and adults. Adolescents cope with stress in various ways. Coping is a means of restoring the equilibrium and varies according to the nature of the concern. Coping strategies commonly used by adolescents include relaxing, working, solving the problem and participating in physical activity. Contradictory findings exist on whether adolescents also utilise negative avoidance strategies such as eating, drinking alcohol and smoking cigarettes. What is known, however, is that young people have greater stress levels than adults and less effective and fewer coping strategies.

Stress can have a significant effect upon eating behaviour. This is a concern as it may be a risk factor in the development of eating disorders and obesity. Knowledge about how people make decisions with regard to food choices can provide invaluable information in the promotion of nutrition and in the prevention of diseases. Ajzen-Fishbein's Theory of Reasoned Action gives an understanding of dietary motivation.

Research on stress induced eating is contradictory. Some studies support the notion that stress results in an increase in eating whilst other studies report a reduction in eating and no change in eating behaviour. Two theories purport to explain stress-induced eating: the General Effect model and the Individual Differences model. The former proposes that stress causes physiological changes which, in turn, result in an increase in eating. The latter theory proposes that some individuals will increase their food intake as a result of stress whereas others will not. The literature indicates that further research is

needed in this area to explain how individuals cope with stress and how stress affects eating behaviour.

The nature and causes of stress in adolescence

What is stress?

There is no simple definition of stress. There are, however, a number of conceptualisations of stress. One view is that stress involves a significant change in one's environment or life situation, for instance, death and separation (Yeaworth, York, Hussey, Ingle, & Goodwin, 1980). Another approach is that stress is a product of an interaction between the individual and the environment whereby the individual cognitively appraises the environment and assesses his/her ability or resources to deal with the demands of the environment (Lazarus & Folkman, 1984). It is, therefore, viewed as a dynamic process and not as a static event (Folkman & Lazarus, 1985). Alternatively, there is the perception that there is a number of different levels of stress such as daily hassles; chronic, enduring life strain; and major life events (Compas, Orosan, & Grant, 1993). Stress is also seen as a reaction to external and internal stimuli resulting in physiological and behavioural responses which affect the handling of everyday situations and activities (Spillman, 1990).

The transactional model devised by Lazarus and Folkman (1984) describes stress as an interactive process between the individual and the environment. The theory holds that stress occurs when individuals perceive that the demands of the situation are greater than their coping resources.

There are two components of cognitive appraisal, primary and secondary. These appraisals operate interdependently (Folkman & Lazarus, 1985). The primary appraisal involves an assessment of the degree of threat, challenge or harm-loss. Secondary

appraisal involves an analysis of one's coping resources. In other words, it is not the situation itself which produces stress but rather the individual's perception of his/her inadequate coping resources to deal with the situation. Individuals with limited coping skills are more susceptible to becoming stressed whereas those with a broad range of coping skills perceive the situation as a mild form of disturbance and, thus, find it less stressful (Allen & Hiebert, 1991). There is, however, limited research to support this theoretical relationship.

Stress is also perceived to consist of various dimensions. Compas (1992, cited in Compas et al, 1993) refers to three broad categories: generic/normative stress, severe acute stress and severe chronic stress. Generic stress incorporates daily hassles and events such as a transition to a new school. Severe acute stress is a reaction to events that are traumatic and cause a significant degree of personal distress and anxiety as well as some disruption to one's life. It includes serious injuries, death and separation. Chronic stress refers to stress that is ongoing, for instance, poverty, violence, racism, sexism and parental psychopathology. Adolescents may or may not experience all levels of stress.

Stress in adolescence

Many assume that because adolescence is a period of dramatic physical and psychological change that all adolescents have difficulty in coping with the change from childhood to adulthood. The demands of schooling are an additional source of stress for adolescents (Jones, 1993). These experiences are, however, different for each adolescent. Some young people find the transition from childhood to adolescence a

stressful period in their lives whereas others cope well with the transition. The inability to cope with stress has implications for the development of psychological distress and psychopathology such as depressive moods, syndromes and disorders (Compas et al, 1993), increased anxiety and school absence (Swearingen & Cohen, 1985) which, in turn, affects the functioning of the family and the wider community (Frydenberg & Lewis, 1993a).

What situations do adolescents find stressful? Marital separation and death cause the most stress for adolescents and adults (Yeaworth et al, 1980). Other areas of stress that have been identified in adolescence include the transition periods from primary school to secondary school and from high school to work, (Garton, 1986, 1987; Hallinan & Hallinan, 1991; Hirsch & Rapkin, 1987; Mertin, Haebich, & Lokan, 1989; Sylva, 1994), family difficulties, failure, criticism and conflict in school, excessive homework and pressure from peers and adults (Fanshawe & Burnett, 1991; Mates & Allison, 1992; Tyszkowa, 1990; Yeaworth et al, 1980;). Situations which affect an individual's self-esteem, values, self-image and interpersonal relationships also cause stress (Tyszkowa, 1990).

Parents can be a source of stress as well as a source for coping (Shulman, 1993). Examples of parents causing stress are their lack of availability to their children, the restrictions and the expectations they place upon children. Parents are also a source of support for coping with stress. They provide the young with additional information, advice and a sympathetic ear to listen to their concerns.

Stress and coping

Coping

What is meant by coping? The term coping refers to the management of stress and the handling of various demands with which one is confronted. According to Lazarus and Folkman's (1984) transactional theory, coping involves the interaction between the individual and the environment as it is through coping that an individual overcomes a disturbed individual-environment relationship. They believe that focusing upon change highlights how individuals cope with stress (Folkman & Lazarus, 1985). Furthermore, coping is affected by an individual's perception of the environment as well as his/her characteristics such as the level of reactivity of the nervous system, intelligence and self esteem (Tyszkowa, 1990).

Frydenberg and Lewis (1993b) view coping as a set of cognitive and affective actions. Coping is regarded as a means of restoring the equilibrium which has been temporarily lost and as removing turbulence. Shulman (1993) describes coping as a "condition when an individual effectively regulates his/her own behaviour, emotion and motivational orientation during stress" (p.268).

Pearlin and Schooler (1978), cited in Mates and Allison(1992), define coping as "the things that people do to avoid being harmed by life strains" (p.463) They postulate that coping responses can be conceptualised in three ways:

1. Coping responses that change the stressful situation, that is, attempts have been made to eliminate or reduce the stress.

2. Coping responses that change the meaning of the stressful situation, that is, through the use of cognitive restructuring one changes one's perception of the stressful situation.
3. Stress management coping responses which include diversionary activities.

Adolescents' coping responses can be conceptualised into two categories: emotion-focused coping strategies and problem-focused coping strategies (Lazarus & Folkman, 1984; Compas et al, 1993). Emotion-focused coping entails dealing with how one feels about the problem, that is, reducing the negative feelings. This may be achieved through relaxation, wishful thinking, emphasising the positive, involvement in diversionary activities and tension reduction strategies and seeking support from others (Folkman & Lazarus, 1985). This form of coping is acquired and its usage is increased during childhood and adolescence (Compas et al, 1993). Older adolescents, for instance, utilise more tension reduction strategies to cope with stress than younger adolescents (Frydenberg & Lewis, 1993b).

Problem-focused coping, on the other hand, involves the mechanisms for dealing with the problem, that is, problem solving and seeking additional information in order to reach a solution to the problem. Strategies that may be utilised include the acquisition of new skills, motivational change and reducing ego involvement (Lazarus & Folkman, 1984). Poor problem solving skills have been shown to result in adjustment problems (Compas, Malcarne, & Fondacaro, 1988). It is believed that problem-focused coping behaviours are acquired through observational learning (Compas et al, 1993).

Women and men utilise different emotion-focused coping strategies. Women focus upon their negative thoughts, feelings and emotions as well as the reason for those

emotions which, in turn, exacerbates and prolongs depression. Men, on the other hand, distract themselves from their emotions by involving themselves in diversionary activities (Nolen-Hoeksema, 1991). They seek to elicit control over their environment. It has also been proposed that women may have greater stress levels than men because they respond to stress by using emotion-focused, ruminative coping (Compas et al, 1993). One reason for the use of emotion-focused coping over problem-focused coping is that women may perceive that the situation is unchangeable. It has also been proposed that non-interpersonal events that are controllable in nature (e.g., exam performance) will evoke the use of problem-focused coping whereas interpersonal events that are less controllable (e.g., conflicts with family or peers) will result in the use of emotion-focused coping (Compas et al, 1993).

Individuals may use both problem-focused coping and emotion-focused coping in dealing with stress. Both forms of coping can facilitate or impede each other. Folkman and Lazarus (1985) found that prior to the commencement of an examination students utilised problem-focused coping strategies in conjunction with emotion-focused coping, *emphasising the positive*. During the waiting period for examination results students mainly used *distancing*, an emotion-focused strategy. Waiting for an examination is a period of time when there are few options and change is unlikely. This research supports the notion that problem-focused strategies are used when change is possible and emotion-focused strategies are used where the individual perceives the environment as unchangeable. This study also reveals that individual differences exist in cognitive appraisal, emotional reactions and, in turn, the use of coping responses. Further

exploration is needed to investigate individual differences in coping and to examine whether certain styles of coping can be categorised into emotion-focused and problem-focused coping behaviours.

Recent research rejects the conceptualisation of coping behaviour as emotion-focused and problem-focused. Frydenberg and Lewis (1991a) believe coping is more usefully conceptualised as functional and dysfunctional coping styles. They performed factor analyses on the 18 distinct coping strategies of the Adolescent Coping Scale (ACS) in order to investigate their interrelationships. These 18 areas of coping include *seeking social support, focus on solving the problem, work hard and achieve, worry, invest in close friends, seek to belong, wishful thinking, social action, tension reduction, not coping, ignore the problem, self blame, keep to self, seek spiritual support, focus on the positive, seek professional help, seek relaxing diversions and physical recreation*. They found that these 18 areas can be reduced to three main styles of coping. These are *dealing with the problem, referring to others for assistance and non-productive coping*. The former two are considered to be adaptive, functional and effective modes of coping, whilst the latter is dysfunctional. They believe that the conceptualisation of coping as 18 strategies and three main coping styles is beneficial particularly if the checklist is utilised in the context of the classroom, in counselling sessions and in future research.

There has been a shift in focus in the literature and in research of a person's inability to cope (Seligman, 1987 cited in Frydenberg & Lewis, 1991a) to a person's competence in coping (Folkman & Lazarus, 1985; Frydenberg & Lewis, 1991b, 1993b). One cannot, however, ignore theories of maladaptive coping behaviour. Addressing both

adaptive and maladaptive coping serves the purpose of producing awareness and assists in resolving complex problems. For instance, it is essential that key players within society are aware of a link between stress and eating so that programs may be implemented within the community in order to combat the risk of personal health problems such as obesity and to avoid economic cost to the community. Knowledge of adolescents' adaptive and maladaptive coping strategies is also essential in terms of the provision of educational programs and support.

Coping behaviours used by adolescents

Adolescents cope with stress in a variety of ways which, in turn, affects their individual development. Those with adequate coping resources and responses report less stress (Allen & Hiebert, 1991). Coping strategies which are used regularly by adolescents include relaxing, working, solving the problem and involvement in physical recreation. (Frydenberg & Lewis, 1993b). Use of various substances such as drugs, alcohol and cigarettes as well as diversionary tactics such as involvement in sports, listening to music, playing an instrument, going out with friends, watching television and eating are ways adolescents deal with stress. Rebellious responses such as deliberately ignoring the rules or resorting to violence are also utilised (Mates & Allison, 1992). These coping responses serve, however, only as temporary measures and do not directly assist the individual in dealing with the source of the problem.

Fanshawe and Burnett (1991), in measuring school-related stressors, identified five areas of concern: examinations/worries about the future, concerns about the classroom environment, the authority and control elicited by schools and teachers, self-

management and organisation, relationships with others and self-esteem. Three areas were identified in response to coping with these stressors: Negative Avoidance, Positive Avoidance and Family Communication. Negative Avoidance refers to such activities as smoking cigarettes, drinking alcohol, eating, using drugs and expressing anger. Positive Avoidance is a means of reducing stress through the use of diversionary tactics such as relaxation or playing sport. Lastly, Family Communication refers to the ability to talk with family members about one's concerns in the hope of deriving solutions. The researchers found, unlike Mates and Allison (1992), that few adolescents resorted to negative avoidance mechanisms. This study focused, however, upon school-related stressors. It is possible then, that stressors external to school may encourage substance abuse. Considering the differences in methodologies used by Fanshawe and Burnett (1991) and Mates and Allison (1992) and the samples used, further research is needed in this area in order to confirm whether stressors external to school increase the likelihood of negative avoidance coping strategies like substance abuse.

More research is needed to determine whether coping styles are learned behaviours. Are adolescents' coping responses similar to those utilised by their peers and/or parents? Compas et al. (1993) claim that adolescents whose parents suffer from mental health problems experience difficulties in adjustment and may themselves develop adolescent psychopathology. This is possibly due to the adolescents' exposure to their experience of severe, chronic stress within their environment and to the exposure of maladaptive coping skills (Downey & Coyne, 1992). More studies are needed to establish similarities in coping between parents and their children.

Use of coping strategies

Adolescents have a number of preferred coping styles to deal with problems. Frydenberg and Lewis (1994) found coping strategies vary according to the nature of the concern. They examined three areas of concern: Achievement (employment, examinations and marriage), Social Issues (fear of nuclear war, Third World Issues and sexual equality) and Relationships (family, peers and friends and independence from parents). These concerns ranged from being within the individual's control to being far from the individual's realm of control. The most frequently used coping responses across all three concerns were Problem-Focused Responses, Wishful Thinking and Focusing Upon the Positive. Tyszkowa (1990) also found that adolescents tended to use coping strategies of a cognitive nature and wishful thinking. Similar coping patterns were revealed for Achievement and Relationship concerns whereas Social Issues problems were managed differently. This may be due to the fact that the former two concerns require similar coping styles. They are under the direct control of the individual whereas the latter is more distal.

Frydenberg and Lewis (1993b) research also found that the use of the coping responses, *tension reduction and self blame*, was minimal. These findings are contradictory to those found by Mates and Allison (1992) who found that eating, drinking and smoking were used often in order to reduce stress levels. Frydenberg and Lewis (1993b) did find, however, that tension reduction strategies were used more in the face of achievement concerns. Spillman (1990) found that eating increased for University students during examination periods. Further research is needed to examine more

specifically which tension reduction strategies are used by younger versus older adolescents.

Age, academic level, gender, self-esteem and coping

Differences not only occur between coping styles and different concerns but also between different ages, academic levels and gender. Self-esteem also has an impact on coping behaviour. With regard to differences in age levels, Allen and Hiebert (1991) claimed that children and adolescents have greater stress levels and less effective and fewer coping responses than adults. Older adolescents blame themselves for their difficulties and they also perceive their coping mechanisms as less adequate than younger adolescents (Allen & Hiebert, 1991; Frydenberg & Lewis, 1993b). This may be due to changes in the stressors faced by older adolescents rather than to the lack of coping skills. Stressors increase and become more complex with age (Tyszkowa, 1990). Some of these stressors faced by older adolescents may include part-time work, increased responsibility around the house, extra-curricular pursuits, increased amounts of homework and decision making and goal setting in order to achieve their future aspirations. However, these difficult situations decrease between the ages 16 and 18 years (Tyszkowa, 1990). Future research into various stressors and coping strategies of young and older adolescents would highlight further reasons for the difference in the effects of stress and highlight any differences in the use of coping styles between the age groups.

Adolescents' source of stress, coping ability and responses are also affected by an individual's academic ability. A study by Allen and Hiebert (1991) indicated that more able, academic students were able to cope with stress better than low ability, non-

academic students. This may be due to greater coping resources and responses resulting in lower stress levels and fewer symptoms of stress. Mates and Allison's (1992) study sought to investigate whether individuals of different academic levels experienced different stresses and utilised different coping responses. They identified a number of major sources of stress common to adolescents at all academic ability levels. These include parent/family, work/money and friends. Adolescents felt stressed when faced with conflicts with family and friends, pressure to conform, and lack of money to support themselves.

Adolescents with average to high academic levels also reported another two areas of stress, namely, school and sport. School and ability to achieve cause students considerable stress especially with regard to final grades, excessive homework, examinations, assignments and oral presentations (Kohn & Frazer, 1986; Michaud, Kahn, Musse, et al, 1990; Spillman, 1990). Mates and Allison (1992) reported that other stresses associated with school and sport are the high expectations of teachers and parents, pressure to perform, difficulties with teachers, strict rules and being able to manage time effectively.

Other categories of stress were reported by adolescents with lower ability. These were the categories *gangs/strangers* and *addiction/drugs*. These individuals felt a need to be part of a gang and expressed fear of being alone and being faced by a gang. They also felt the pressure from friends to smoke, drink alcohol and use drugs. This, in turn, resulted in conflicts with parents (Mates & Allison, 1992).

Mates and Allison (1992) obtained their data through the use of focus groups. In group discussions they noted differences between gender and academic ability in the extent of participation in group discussion. It is felt that this method of data collection may not be entirely reliable. One needs to consider the effects of collective behaviour and the notion of conformity which is, as pointed out in this study, significantly relevant during the period of adolescence. Adolescents in the groups may have expressed the *expected* or generally perceived stressful situations and the coping behaviours rather than their *actual* stresses and behaviours. It is possible that other real stresses for adolescents may not have been established.

Allen and Hiebert's (1991) research also supports the notion that there are gender differences in the experience of stress and in the ability to deal with stress. Understanding gender differences in stress and coping is one step forward in understanding differences between males and females with regard to the development of psychopathology (Compas et al, 1993). Female adolescents report a higher incidence of stress (Garton & Pratt, 1995) and greater stress symptoms (Gadzella, 1994). This is probably due to the fact that females experience more difficult situations than males (Tyszkowa, 1990) which may also be exacerbated by low self esteem (Abbott-Chapman, 1989). Their low self esteem may make them vulnerable to perceiving situations as stressful (Garton & Pratt, 1995). Research has shown, however, that female adolescents cope more effectively than male adolescents (Allen & Hiebert, 1991).

Males turn to physical recreation to alleviate stress (Allen & Hiebert, 1991; Frydenberg & Lewis, 1993b). They are more confident and self-directed than females

whereas females are more adept at self-disclosure and financial freedom (Allen & Hiebert, 1991). The latter are also more likely to seek social support, indulge in wishful thinking and use tension reduction strategies than males. The fact that females engage in wishful thinking does not, however, affect their ability to resolve their problems (Frydenberg & Lewis, 1993b). In addition, their use of tension reduction responses may be due to a belief that they are powerless and discriminated against. The females perceive a lack of empowerment. Males seek social support less than females because they feel it is socially unacceptable for males to ask for assistance (Shulman, 1993). They may also wish to establish independence and, therefore, do not perceive advice-seeking from others as a coping response.

The provision of separate programs for males and females is recommended in an attempt to broaden their coping skills (Allen & Hiebert, 1991). The programs should address the demands faced by each gender, assess the adequacy of coping skills and focus upon coping strategies to deal with those demands.

Self-esteem can have a large impact upon one's perception of stressful encounters and the management of such situations. Individuals with low self-esteem are predisposed to recognising stress and acknowledging its effects (Garton & Pratt, 1995). These individuals are also likely to withdraw from demanding situations, to utilise defensive coping skills and to leave interpersonal problems unresolved. If one has confidence in one's ability to cope then one is likely to cope more effectively with stress (Tyszkowa, 1990). It is proposed that the high self-esteem of individuals protects them from the effects of stress (Garton & Pratt, 1995). This contradicts Tyszkowa's (1990) claim that

individuals with high self-esteem also have difficulties in coping with stress. She states that they are likely to experience strong emotional reactions resulting in an inability to suppress anger. They also may experience difficulties with problem solving which, in turn, may affect organisational skills.

Close relationships with significant others, family and peers provide an additional coping source for adolescents. Such relationships enhance individuals' self-esteem and adaptive coping (Shulman, 1993). Thus, if one maintains a close, supportive network one is more likely to cope effectively with stressful encounters and to maintain a healthy self-concept.

Stress and eating

Stress, nutrition and exercise

Psychological stress can influence our food and nutritional intake (Posner, Leitner, & Lester, 1994). Our diet, in turn, can affect our quality of life and even our stress levels. A healthy diet, vitamin supplementation and aerobic exercise may improve our quality of life (Ussher, Dewberry, Malson, & Noakes, 1995). Many psychotherapists recognise the importance of nutrition and exercise in the health and psychological well being of individuals but rarely make recommendations to their clients in these areas. This may be due to the lack of knowledge in nutrition and exercise. When recommendations are made it may be an attempt to combat depression and to reduce anxiety (Burks & Keeley, 1989). Aerobic exercise has been shown to reduce blood pressure in low to moderately physically fit women in the face of psychosocial stress. Furthermore, it reduces the frequency and intensity of anxiety towards an interpersonal threat or

challenge (Rejeski, Thompson, Brubaker, & Miller, 1992). This highlights the benefits of coping with stress through regular exercise.

Food provides the body with essential nutrients. It also has a social and psychological role. Food choice is a reflection, to some extent, of our identity, that is, our beliefs, values and traditions (Crotty, 1988). The orthodox Jews do not, for instance, eat pork, bacon and ham, and prescribe 'kosher' foods. Our choice of food and the amount consumed is also influenced by our lifestyle (Wahlqvist, 1988). These lifestyle factors include socio-economic factors, occupation, circle of friends, education, involvement in recreational and physical activity, cigarette smoking and alcohol consumption. The availability of food is another factor which influences food choice.

Nutrition in adolescence

The dietary intake of adolescents is indeed of great interest as this is a period of rapid physical growth and development. It is a time when eating habits become entrenched and which follow into adulthood (Woodward et al., in press; Woodward et al., 1981). Adolescence is a period of time when individuals assert their independence. One area in which they may do this is through their eating behaviour, that is, their food choices, when and where they consume food (Dennison & Shepherd, 1995). Adolescents often eat away from home and generally snack on fast foods (Lifshitz, Tarim, & Smith, 1993). This can have a profound effect upon their health. Thus, this may also be an appropriate time to educate and subsequently modify, food choices of adolescents through the school curriculum.

Obesity is becoming an increasing concern in Australian society. Approximately 36.5% of Australian adults are obese (O'Dea, 1995). Men are more likely to be obese than women at every age (Australian Institute of Health & Welfare, 1994). Male adolescents have been found to consume more food and nutrients than female adolescents especially in the consumption of bread, meat and dairy products (Woodward, 1984; 1986). It has also been found that Catholic school boys consume more bread, cakes, desserts, citrus and berries than boys from state schools (Woodward, 1986). Furthermore, adolescents from well-educated, high-income families consume higher intakes of energy and nutrients (Woodward, 1984; 1986) and are more likely to adopt healthier eating patterns than disadvantaged groups (French, Perry, Leon, & Fulkerson, 1995; O'Dea, 1994). The disadvantaged are also more likely to be obese. Presumably this is because they do not have the income to purchase a wide variety of foods and they lack knowledge of the effects of nutrition on health. Further research is needed to support these assumptions.

Choices in food change with age, height and weight. Male adolescents progressively eat more as they become older. Female adolescents reduce the amount they eat, particularly cereals, cakes and desserts as their weight increases (Woodward, 1984; 1986). The reduced consumption of cereal foods affects female adolescents' calcium and iron intake which are below the Recommended Daily Allowance (RDA) (Woodward et al, 1981). It has been claimed that the desire for thinness is associated with inadequate calcium, retinol, iron and zinc intake and is currently more pronounced in boys than in girls (Gibbons, Wertheim, Paxton, et al, 1995). Adolescents appear to have a limited

knowledge of vitamin sources in food and the physiological effects of vitamins (Henderson & Woodward, 1991). A poor diet may affect the individual's ability to cope during periods of stress or it may result in poor physical and mental health, thus causing stress.

There is a difference between the sexes in the consumption of snacks. Male adolescents choose bread, milk or meat whereas female adolescents choose fruit or sweets (Woodward, 1984). In other words, male adolescents tend to snack on savoury type foods whereas female adolescents choose foods of a sweet nature. One would assume, therefore, that during stressful periods male adolescents would increase their consumption of savoury foods and female adolescents would increase their consumption of sweet foods. Research is needed, however, to support this claim.

The Theory of Reasoned Action

Knowledge about how people make decisions with regard to food choices provides invaluable information in the promotion of nutrition and in the prevention of diseases (Woodward et al. in press). Recent research in the area of nutrition and food choices has applied Ajzen-Fishbein's Theory of Reasoned Action to understand dietary motivations (Woodward et al. 1991).

This theory postulates that an individual's behavioural decision is affected by his/her attitude towards that behaviour and also the perception of social norms towards that behaviour (Ajzen and Fishbein, 1980). In the case of food choice, the personal attitude is identified as the degree of likeability for the food and/or its perceived healthiness. The reference groups for social norms are parents and friends. It has been

found that food intake is affected by its likeability (Dennison & Shepherd, 1995; Santich, 1994; Woodward, 1990; Woodward et al, 1991). If we like particular foods then we increase the consumption of those foods. Foods that are liked by adolescents include certain dairy products, bread and cereal items and snack items (Woodward et al, in press). Adolescents are asserting their own individual identity when they make their own food choices based on the food's likeability (Dennison and Shepherd, 1995).

Food choices made by friends also affect the frequency of personal usage of foods especially particular breakfast cereals, butter and snack foods such as meat pies, bread and hot chips. Particular foods may be viewed as healthy but this perception does not increase the consumption of those foods. Adolescents who make food choices due to perceived healthiness do so by avoiding consuming unhealthy foods like cakes, ice cream, soft drinks and hot chips (Woodward, 1990; Woodward et al, 1991; in press). If one wanted to modify eating behaviour through nutrition education one would, therefore, target the adolescent and focus upon strategies to resist peer pressure.

Parental usage also affects food choices. We tend to purchase and consume the same foods as our parents especially in regard to specific meat items and spreads. Parents' eating behaviour affects, therefore, the food decisions made by their offspring (Crotty, 1988; Woodward et al, in press). Children make decisions about food based on parental example and advice. These findings stress the importance of modeling in relaying appropriate eating behaviours and food choices. Adolescents are accepting parental control when their food choice is predominantly affected by parental usage. Nutritional promotions would, therefore, target parents in emphasising the influence of

diet on health in order to bring about modifications in food choices. It would also be valuable for the community to be aware of the importance of a nutritious diet in stress management.

Eating as a coping behaviour

Stress can lead to emotional and behavioural difficulties, including overeating. These dysfunctional eating patterns in coping with stress are of great concern as there are many nutritionally related health problems within Australia including obesity, heart disease, digestive disorders and cancer, alcohol abuse, diabetes mellitus and dental decay (Wahlqvist, Savage, & Lukito, 1995). These health problems are more prevalent in Aboriginals, the elderly, alcohol abusers, the unemployed and those who are socio-economically disadvantaged (Ruben & Walker, 1995; Sexton, Woodward, Gilbert, & Jamrozik, 1990; Wahlqvist, 1988).

There are, however, contradictory findings with regard to the relationship between stress and eating. Some studies indicate that stress results in a reduction in eating (Stone & Brownell, 1994) or in no changes in eating patterns (Bellisle, et al., 1990) while others indicate an increase in dietary intake (Spillman, 1990). The research in this area varies dramatically in terms of how stress is defined, whether stress is manipulated in the laboratory or observed naturally within the environment and whether the subjects are human or animals. The relationship between stress and eating is not a simple one and variables such as gender, restraint and food type also need to be considered (Grunberg & Straub, 1992).

Stress has a significant effect on eating behaviour (Grunberg & Straub, 1992), is possibly a risk factor in the development of eating disorders (Cattanach, Phil, Malley, & Rodin, 1988; Heatherton, Herman, & Polivy, 1991, cited in Stone & Brownell, 1994; Rosen, Compas, & Tacy, 1993) and is a major factor in obesity and weight gain (Melbin & Vuille, 1989 cited in Stone & Brownell, 1994). The risk factors in developing eating disorders include body dissatisfaction, low self esteem, high need for social approval, depression and a history of substance abuse, physical abuse or sexual abuse (French, Story, Downes, Resnick, & Blum, 1995). It has been reported that disordered eaters perceive more stress in their lives than "normal" eaters (Cattanach et al, 1988). This may result in a change in eating behaviour. Individuals may resort to binge eating as a form of comfort and to reduce anxiety. This, in turn, can have implications in the development of obesity. It is difficult, however, to distinguish if the weight gain can be attributed to overeating, lack of exercise or a change in metabolism (Stone & Brownell, 1994). Obesity has, in recent times, come to the fore as a major nutritional concern. The aetiology of the development of obesity is complex but researchers claim it is the result of a number of factors including physiological, genetic, psychological and social factors (Vigus, Tata, Judd, Bowyer & Evans, 1995).

Even an individual's perception of increased stress and workload during a highly stressful period results in an increase in total cholesterol and an increase in consumption of foods which elevate cholesterol levels (McCann, Warnick, & Knopp, 1990). This coincides with Michaud et al's (1990) findings that stress results in an increase in fat consumption which, in turn, elevates cholesterol levels.

The intensity and duration of stress may also influence eating. Individuals involved in natural disasters or trauma may not recognise when they are hungry and may reduce the amount they eat. This notion is consistent with the *fight or flight* model of stress which holds that the body prepares to protect itself by decreasing the flow of blood to the digestive system which suppresses the desire to eat. These life threatening stresses may, indeed, have different effects and consequences than the non life threatening stresses. The intensity of stress may also have different effects (Greeno & Wing, 1994).

Daily hassles can impact more upon one's psychological and physical well being than significant life events (Ruffin, 1993). Hassles refers to everyday transactions with the environment. They can vary in intensity according to an individual's personality, the number of hassles the individual encounters, and the meaning of the hassles to the individual. Australians' most common hassles include concerns about the future, misplacing or losing items, health of a family member, trouble relaxing and not getting enough sleep (Ruffin, 1993).

A major hassle for adolescents is the stress of schooling. Students attempt to cope with this stress through exercising and increasing their food intake particularly when the type of stress threatens self-esteem and is beyond the individual's control (Greeno & Wing, 1994; Heatherton & Baumeister, 1991; Spillman, 1990). Eating is, therefore, seen as a way of alleviating stress (Mates & Allison, 1992; Willenbring, Levine, & Morley, 1986).

Theories of stress-induced eating

A review of the literature indicates that there are two models of stress-induced eating: the General Effect model and the Individual Difference models. The General Effect model proposes that stress causes physiological change which invokes increased eating (Greeno & Wing, 1994). The General Effect model focuses primarily on research of stress-induced eating in animals. The animal research involved the use of hamsters and rats and utilised such stressors as tail pinching, handling, electric shock and isolation. The results of animal research portrays inconsistency in the effect of stress on eating behaviour. Greeno and Wing (1994) questioned in fact whether the stressors used in experiments genuinely represented a form of stress. One might also question whether stress research on animals has any significance for the human population and whether the results can be generalisable.

Bellisle et al. (1990) tested the hypothesis that stress has a general effect upon eating in the human population. They studied men hospitalised for a hernia operation, both prior to the operation and one month after the operation. An array of food was available and food was weighed before and after meals. There was no change in eating behaviour. This result may be due to the fact that the subjects were men. Would the results be similar if female subjects were used? Women have been found to increase their food intake under stress more so than men (Grunberg & Straub, 1992).

Michaud et al. (1990) studied the impact of an examination on eating behaviour. Students were requested to report their dietary intake on the day of an examination and on another day after the examination. On the day of the examination students increased

their overall energy intake and fat consumption. Specifically, females ate more and males opted for fat-containing foods. They also found that students with low energy intakes during the non stress period increased their intake during the stress period (examination day). On the other hand, students with high energy intakes on the non stress day showed a decrease in energy intake on the day of the examination. Michaud et al (1990) propose that stress caused a physiological change which affects the central nervous system and which resulted in a preference for foods containing fat.

The Individual Difference models hold that individual differences in learning history, attitudes and biology have a role in the effects of stress on eating behaviour. The models suggest that some individuals will increase their food intake when stressed whereas other individuals will show no change in food intake. Two models have been tested. The first compares obese subjects with normal weight subjects in order to determine whether these groups eat differently when faced with stress. It has been speculated whether obesity results from stress-induced eating (Greeno & Wing, 1994). There have been contradictory findings in this model.

Psychosomatic research postulates that obese individuals respond to stress as if it is hunger, by eating. Kaplan and Kaplan (1957) claim that the association between hunger and stress has been learned early in life. Overeating may develop through negative reinforcement, that is, eating is reinforced with the reduction or elimination of stress (Greeno & Wing, 1994). Robbins and Fray (1980) state that the effects of stress result in the individual paying more attention to external cues which tend to be food-related. They claim that these cues produce eating and cause metabolic changes in

anticipation of food. Slochower, Kaplan and Mann's (1981) research found that the stress of an examination resulted in an increase in eating in overweight female college students and a nonsignificant decrease was found in the eating of normal weight students. Overweight people increase their eating when anxious whereas normal-weight people reduce the amount they consume. Contradictory findings indicate, however, that individuals of normal weight consume foods that are high in calories when stressed whereas overweight individuals consumed low calorie food items (Willenbring, Levine, & Morely, 1986). Other findings highlight that obese subjects are not affected by stress whereas normal-weight subjects decrease their food consumption (Schachter, Goldman, & Gordon, 1968).

The second model examines the eating patterns of restrained eaters versus unrestrained eaters during periods of stress. The term 'restrained eaters' refers to individuals who monitor their food intake closely to the point where they restrict their dietary intake in order to avoid becoming overweight. Individuals who control their eating have been reported to increase their eating during stressful periods whereas individuals who do not attempt to control their eating are not affected by stress. In particular, negative affect or intense emotions trigger overeating in restrained eaters but has no effect upon unrestrained eaters (Cools, Schotte, & McNally, 1992; Greeno & Wing, 1994; Herman & Polivy, 1975; Schotte, Cools, & McNally, 1990). Restrained eaters are significantly different to unrestrained eaters in terms of body weight with restrained eaters having a greater body mass. This is due to diet rather than lack of

physical activity. The weight gain in restrained eaters occurs mostly in women rather than men (Klesges, Isbell, & Klesges, 1992).

Individual differences have also been proposed between males and females in the effects of stress on eating behaviour. Women are more likely than men to increase their food consumption during periods they perceive as stressful, eating twice the amount of sweet food (Greeno & Wing, 1994; Grunberg & Straub, 1992). Men eat less when stressed and consume more when unstressed. Contradictory findings indicate, however, that men consume more food goods containing fat than women when faced with a stressful situation (Michaud et al, 1990). In short, women tend to select sweet foods during periods of stress whereas men are likely to consume fatty foods. More research is needed in this area to investigate adolescent food choices under stress and to examine any differences between the sexes.

It has been proposed that the sex differences in eating behaviours may be confounded by the notion of restraint rather than purely indicating a main effect of sex (Grunberg & Straub, 1992). Women are more vulnerable to stress-induced eating because they are more conscious about restraining their eating habits more than men.

Foods consumed during periods of stress

Certain foods that have an element of attractiveness are reported as a source of comfort during periods of stress. These include foods high in carbohydrates, salt, fat and sugar. Willenbring, Levine and Morely (1986) claim that it is the high caloric food that is consumed during periods of stress as well as periods of boredom. The texture of food

also influences its consumption, for instance, stressed individuals tend to prefer food that is crunchy in texture.

Sex differences have been found in the intake of food when stressed. Men consume pizza, soft drinks, milk, ice cream, lollies, pasta, fruit and popcorn whereas women mainly consume large quantities of soft drinks and lollies especially chocolate, when feeling stressed (Spillman, 1990). These findings contrast with those of Michaud et al's (1990) who report that students who face a stressful school event, e.g., an examination, do not overeat sweets or foods containing 'empty calories'.

There is also an age difference in types of foods consumed when stressed. Younger individuals prefer salty foods over sweet foods (Willenbring et al, 1986). It would be interesting to investigate whether adolescents consume more salty foods than sweet foods and if a sex difference occurs in food choice. Eating patterns, in the face of stress, may change over time.

Conclusions and implications

The review of the literature indicates that stress, the perception of one's inability to deal with the demands of the situation, results in the use of various coping behaviours. Coping is a means of restoring the equilibrium and varies according to the nature of the concern. Common coping strategies used by adolescents include relaxing, solving the problem and participating in exercise. Research indicates contradictory findings as to whether adolescents utilise tension reduction strategies to deal with stress. Tension-reduction strategies include: eating, smoking cigarettes, drinking alcohol, using drugs and expressing anger. Research conducted by Fanshawe and Burnett (1991) found that few

adolescents resorted to the use of tension reduction strategies. Mates and Allison (1992) found, however, that adolescents use tension reduction strategies to cope with stress. Frydenberg and Lewis's (1993b) research found that the use of tension reduction strategies was minimal but when they were used they were used more by older adolescents than younger adolescents and in the face of achievement concerns, that is, school related concerns. It is essential that further research be conducted in this area so that appropriate interventions may be implemented to combat the risk of personal health problems and, in turn, to avoid an economic cost to the community. Knowledge of the use of non-productive coping strategies such as tension reduction strategies is also important in terms of the provision of appropriate educational programs.

One particular concern is the increasing incidence of obesity in Australia. The review of the literature indicates that stress can affect our eating behaviour which, in turn, affects our quality of life. The eating behaviour of adolescents is of interest as this is a period of physical growth and development. It is also a time when eating habits become entrenched. It is, therefore, important to establish whether eating is a means of alleviating stress.

Minimal research exists which investigates eating as a coping response to stress, particularly in adolescence. The research that does exist examines predominantly the relationship between stress and food intake in both animals and adults. Furthermore, it highlights contradictory findings regarding the effects of stress on eating behaviour. Studies report a reduction in eating, no change in eating and an increase in eating as a

result of stress. It is possible, therefore, that specific stressors affect eating behaviour in different ways.

An exploration of various stressors and their impact on eating behaviour is needed in order to determine which stressors result in increased eating. A useful study would be to examine the effects of stress on coping and eating behaviour of adolescents. Stress is thought to be an important antecedent to eating disorders and adolescents are a group who may be at risk for eating disorders. A major hassle for adolescents is the stress of schooling. Thus, a study which focuses on the effects of a school transition on eating behaviour would have practical applications for devising interventions which promote adaptive and functional coping strategies and would provide invaluable information in the area of nutrition and the prevention of nutritionally related diseases.

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Empirical Study

**The effects of a school transition on coping and eating
behaviour in early and late adolescence**

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Abstract

Adolescence is a period in which young people develop physically, cognitively, emotionally and begin to establish self identity. Adolescents face a number of pressures including the demands of school, the emergence of sexuality, influence of peers and increased responsibility. Adolescents cope with stress in various ways. Coping strategies commonly employed by adolescents to deal with stress include relaxing, solving the problem, participating in exercise, eating and using various substances such as alcohol and cigarettes.

School transition may cause stress. This transition involves a physical move to a different location, new and different teachers, students, subjects and increased demands including organisation and responsibility. This study investigated the effects of school transition on eating and coping behaviour in relation to the variables of gender, age and school type. A repeated measures design was used.

A total of 175 Grade 7 and Grade 11 students who made a school transition were administered two questionnaires, the Adolescent Coping Scale and the Questionnaire on Health and Behaviour during weeks 3 or 4 (the school transition period) of the school year and 7 to 8 weeks later (the post school transition period). Throughout the study the Grade 7 population was classified as younger adolescents where as the Grade 11 students were characterised as older adolescents.

The school transition period was referred to as the stressful period and the post transition period was known as the non-stressful period. In the stressful period, adolescents responded to questions on the Adolescent Coping Scale by reflecting upon

how they were coping with changing school and changing grades. Adolescents were also requested to examine their eating behaviour over the week. This enabled the assessor to establish what coping and eating behaviours adolescents were utilising in relation to the school transition. In the non stressful period, adolescents were asked, in responding to questions on the Adolescent Coping Scale, to reflect upon how they deal with their concerns in general. Eating behaviours were also examined in order to establish whether there are differences between the stressful (school transition) and non-stressful period (post school transition).

Results indicated that the school transition affects dietary intake, in particular sugar and fat intake. Adolescents, particularly those from the Catholic school system, consumed higher levels of fat and sugar during the school transition period. No significant difference was found between the stressful period (school transition) and the non-stressful period (post school transition) in salt and fat consumption.

It was also found that non-productive coping strategies were used during the non-stressful period by older adolescents and Catholic college students. It was recommended that further research be conducted to establish the effects of the school transition on eating and coping behaviour.

Introduction

Adolescence is considered to be a stressful period in terms of physical and cognitive development, development of self-identity, increased responsibility, the emergence of sexuality, peer pressure and the demands of schooling. Stress is defined as an incongruous relationship between the individual and the environment (Lazarus & Folkman, 1984). The transactional model of stress holds that it is not the encounter that produces stress; rather it is the individual's appraisal of the inadequacy of his or her resources for dealing with the situation that causes stress (Argyle, 1992; Folkman & Lazarus, 1985; Lazarus & Folkman, 1984). Thus individuals with few coping resources are vulnerable to becoming stressed whereas those with extensive coping resources are able to cope with the demands of the situation more easily (Allen & Hiebert, 1991)

One encounter, in particular, that may cause anxiety and concern is the transition from primary school to secondary school (Cotterell, 1979; 1982; Eccles, Midgley, Wigfield, & Buchanan et al, 1993; Garton, 1986; 1987; Hallinan & Hallinan, 1992; Hirsch & Rapkin, 1987; Mertin, Haebich, & Lokan; Sylva, 1994). This transition also heralds the end of childhood and the beginning of adolescence, a time of mental, emotional and physical growth. This stressor involves a physical move to a different location, new and different students, teachers and subjects, rotating classrooms and different demands for organisation, responsibility and the maintaining of a set standard of work (Garton, 1986). Eccles et al. (1993) claim that negative psychological effects occur when there is a mismatch between school and the adolescents' needs. This Stage Fit Environment Theory proposes that students who are in an environment that does not suit their needs

will show a decline in motivation, poor relationships with teachers and an increase in behavioural problems.

Cotterell (1982) postulated that there are three main concerns in the transition from primary to high school: coping with a new environment, unclear expectations of teachers and other students, and lastly, anxieties about bullying. The latter anxiety may increase specially if students know older students at the high school with whom they had had negative experiences in primary school. Students who come from smaller primary schools (<100 students) also exhibit greater fears in making the transition to high school (Hallinan & Hallinan, 1992).

In examining sex differences in primary students' perceptions of high school, Garton (1987) found that girls are more concerned with becoming lost as they move from classroom to classroom. Boys, on the other hand, are concerned with school rules, following a timetable, being taught by strict, critical and authoritarian teachers, having to face boring school work and being bullied by older students. Boys also perceive the high school environment as a threat (Mertin et al, 1989). Hirsch and Rapkin (1987) found that girls showed an increase in depression as a result of the transition period whereas boys were unaffected by the change.

A great deal of emphasis has been placed on the transition from primary to high school and many schools have implemented programs to assist students cope with the change. There is limited research that examines the transition from high school to college. In Tasmania, colleges are separate educational institutions for Grades 11 and 12. One questions whether adolescents making the transition from high school to college

experience the same sorts of difficulties as students progressing from primary school to high school. What coping strategies are commonly used in order to deal with this transition? Further research is needed to answer these questions so that appropriate interventions can be implemented if necessary in order to assist adolescents to make a smooth transition.

Limited research exists on investigating coping strategies utilised during school transitions. What we do know, however, is that individuals cope with stress in complex ways. Coping is the means of dealing with the demands of the situation through cognitive and behavioural strategies (Frydenberg & Lewis, 1991a). Adolescents deal with stress in a number of ways. Frydenberg and Lewis (1991a) identified three styles of coping. These are *solving the problem*, *referring to others for assistance* and *non-productive coping*. The former two are considered to be adaptive, functional and affective modes of coping, whilst the latter is dysfunctional.

Frydenberg and Lewis (1994) claim that coping behaviours can be situation specific varying according to the level of stress. Frydenberg and Lewis (1994) found that the use of *tension reduction* and *self blame*, both non-productive coping styles, were rarely utilised but in the face of achievement concerns (employment, examinations and school related concerns) *tension reduction* and *focusing upon the positive*, increased. School transition is associated with an increase in tension reduction strategies. It is expected, therefore, that more non-productive coping strategies will be utilised during the school transition than in the non-stressful period.

Individual differences exist in coping with stress. This reflects individual differences in emotion, differences in cognitive appraisal of the situation and in the coping mechanisms used to overcome or alleviate stress (Folkman & Lazarus, 1985). Individual differences also exist in dealing with stress in terms of age and gender. Older adolescents perceive that their coping skills and resources are less effective than younger adolescents (Allen & Hiebert, 1991). Younger adolescents also blame themselves for their difficulties (Frydenberg & Lewis, 1993b). Stressors increase and become more complex with age (Tyszkowa, 1990). Some of these stressors faced by older adolescents may include part time work, increased responsibility around the house, extra-curricular pursuits, increased amounts of homework and pressure to make decisions about their future. More research is needed to examine various stressors and coping strategies of young and older adolescents in order to establish whether there are differences in the effects of stress and in the usage of coping styles between the age groups.

There are also gender differences in the experience of stress and in the ability to deal with stress. Female adolescents report a higher incidence of stress (Garton & Pratt, 1995) and greater stress symptoms (Gadzella, 1994). It has been found, however, that female adolescents cope more effectively with stress than male adolescents (Allen & Hiebert, 1991). Female adolescents seek social support, engage in wishful thinking and use tension reduction strategies. Males are more likely to participate in exercise to alleviate stress (Allen & Hiebert, 1991; Frydenberg & Lewis, 1993b).

Coping strategies that are commonly used by adolescents include relaxing, working, solving the problem and involvement in physical recreation (Fanshawe &

Burnett, 1991; Frydenberg & Lewis, 1993b). Other coping strategies include the use of various substances such as alcohol, drugs and cigarettes, involvement in diversionary tactics such as eating, watching television, playing sport, going out with friends and shopping (Mates & Allison, 1992). Contradictory findings exist in whether a majority of adolescents utilise negative avoidance strategies such as smoking cigarettes, drinking alcohol, eating, using drugs and expressing anger to cope with the demands of difficult situations and everyday living. Fanshawe and Burnett (1991) found that few adolescents use these coping strategies whereas Mates and Allison (1992) found that a majority of students use these as means of coping even though they serve as a temporary measure and do not directly assist the individual in dealing with the source of the problem. It is expected that older adolescents will utilise more non-productive coping strategies, such as eating, drinking alcohol and smoking cigarettes, than younger adolescents. Furthermore, one would expect more male adolescents than female adolescents to deal with stress using the latter two negative avoidance strategies.

Stress is thought to be an important antecedent to eating disorders and adolescents are a group who may be at risk for eating disorders. Stress-induced eating is considered to be a non-productive coping strategy or a negative avoidance strategy (Fanshawe & Burnett, 1991). Research by Woodward (1984; 1986) shows that female adolescents reduce the amount they consume as their weight increases. It is expected, therefore, that female adolescents will be more vulnerable to stress-induced eating because they are more conscious about restraining their eating habits than males (Grunberg & Straub, 1990).

Male adolescents have been found to snack on savoury type foods whereas female adolescents chose foods of a sweet nature (Woodward, 1984; 1986). It is expected, therefore, that male adolescents will show an increase in fat and salt consumption during a stressful period whereas female adolescents will increase their sugar intake. These predictions are also consistent with the research findings of Greeno and Wing (1994), Grunberg and Straub (1992) and Michaud, Kahn, Musse, Burlet, et al. (1990).

The Catholic school system comprises a strong social network with the Church, parish, parents and their children. These individuals share the same beliefs and values about the role of education. The State school system, on the other hand, is very pluralistic and lacks the unification of the Catholic system which holds a central belief (Anderson, 1992; Clark & Ramsay, 1988). It is expected that students in Catholic systems will use adaptive coping strategies when faced with stress because of their supportive network. Furthermore, one would also expect students from the State school system to utilise non-productive coping strategies more often than students from the Catholic school system. It is predicted that they will, for instance, more frequently use and consume alcohol and cigarettes than students from the Catholic system.

With regard to the effects of stress upon eating it is expected that students from the Catholic system will increase their sugar, fat and salt intake. Adolescents from various socio-economic backgrounds have been found to have different food choices (Woodward, 1984; 1986). Specifically, Woodward (1986) found differences between school types in dietary intake with male adolescents from the Catholic school system consuming more food than male adolescents from the State school system. In this

particular study, it is predicted that Catholic students will consume higher levels of sugar, fat and salt than State school students.

There is limited research examining stress-induced eating in adolescence. The research that does exist focuses on stress-induced eating in animals or adults. These studies have contradictory findings with some research indicating a reduction in eating (Stone & Brownell, 1994) or in no changes in eating patterns (Bellisle, Louis-Sylvestre, Linet, Rocaboy, Dalle, et al, 1990) while others indicate an increase in dietary intake (Spillman, 1990).

The current study seeks to investigate the effects of school transitions upon eating and coping behaviour of adolescents examining such variables as gender, age and school type. It aims to investigate what coping styles are utilised during a stressful period, the school transition, in comparison with a non-stressful period, the post school transition. It also examines differences between school types, that is, Catholic schools versus State schools in the effects of stress upon eating and coping behaviour.

Hypotheses

It is expected that :

(1) there will be differences in dietary intake between schools and from Time 1 to Time 2. Higher intakes of sugar, fat and salt will be recorded in Time 1 than Time 2 especially by students from the Catholic school system.

(2) there will be a gender difference in dietary intake only during the stressful period. It is expected that female adolescents will consume higher sugar intakes than

male adolescents whereas male adolescents will show a higher level of fat and salt consumption than female adolescents during the stressful period.

(3) there will be a difference in coping styles between the stressful period (Time 1) and the non-stressful period (Time 2).

(4) non-productive coping strategies will be utilised more often at Time 1 than Time 2.

(5) older adolescents and students from the State school system will utilise more non-productive coping strategies than younger adolescents and students from the Catholic school system.

(6) older adolescents will use more specific non-productive strategies such as cigarette and alcohol usage than younger adolescents. It is expected that this will be more pronounced in male adolescents than female adolescents.

(7) there will be a gender difference in the participation of formal exercise. It is expected that male adolescents will participate in physical recreational activities more often than female adolescents.

Method

Participants

Four schools within southern Tasmania were approached and agreed to participate in this study. These schools included a Catholic college, a Catholic high school, a State college and a State high school. A total of 175 students who had recently made a transition from Grade 6 to 7 and from Grade 11 to 12 participated in this study. Of these, 93 students from Grade 7, and 82 college students were administered two

questionnaires on two occasions, the school transition (stressful period) and the post-school transition (non-stressful period). The Grade 7 students were referred to as younger adolescents and the Grade 11 students were classified as older adolescents.

Materials

Adolescent Coping Scale. This scale was devised by Frydenberg and Lewis (1993) and is used for both research and clinical purposes to establish adolescents' coping behaviour. It consists of a short form and a long form both of which focus upon general stress and specific stress. In this study the short form was used. This form consists of an 18-item scale using a 5 point Likert-type scoring system where 1 represents *Doesn't apply or don't do it* and 5 represents *Used a great deal*. The short form accommodates the general form and specific form in one document. The specific form measures responses to a nominated concern, in this case, changing schools/changing grades and the general form focuses on how individuals cope with stress in general.

The items in the scale represent 18 coping strategies. These are: *seeking social support, focusing upon solving the problem, working hard, worrying, investing in close friends, seeking to belong, wishful thinking, not coping, tension reduction, social action, ignoring the problem, self blaming, keeping to self, seeking spiritual support, focusing on the positive, seeking professional help, seeking relaxing diversions and physical recreation*. Frydenberg and Lewis (1993) found that these 18 coping strategies can be reduced to three main styles of coping. These are *dealing with the problem, referring to others for assistance* and *non-productive coping*. The former two are considered to be

adaptive, functional and effective modes of coping, whilst the latter is considered dysfunctional.

Questionnaire on Health and Behaviour. A questionnaire was devised in order to establish adolescents' eating habits and health behaviours during stressful versus non-stressful periods. In particular, there was an emphasis upon the examination of adolescents' salt, fat and sugar intake. Questions were selected from various published questionnaires and modified so that they were age appropriate. These included the Western Australian Child Health Survey (Zubrick, Silburn & Garton, 1993), the Short Fat questionnaire (Dobson, Blijevens, Alexander et al, 1993), the Sodium Intake checklist (Millar & Beard, 1988), and the Canadian Survey of Health Behaviours: A Multi national Study (Social Program Evaluation Group Queen's University at Kingston, 1990).

The Canadian Survey of Health Behaviours: A Multi-national Study consists of 62 items such as "How often do you smoke tobacco at present?". The questionnaire contained a key with numbers denoting a specific response, 0 = "I do not smoke", 1 = "Every day", 2 = "At least once a week, but not every day and 3 = "Less than once a week". Questions 4, 5, 12-16, 23-25 were taken from the Canadian Survey of Health Behaviours: A Multi-national Study.

The Western Australian Child Health Survey is a survey about health and behaviour. It was established in order to develop better health education and health services for young people. Participants were requested to tick a box that best reflected their health behaviour. An example of an item from the Western Australian Child Health Survey is "How do you think of yourself?" Responses were as follows: 1 = "Very

underweight”, 2 = “Slightly underweight”, 3 = “About the right weight”, 4 = “Slightly overweight” and 5 = “Very overweight”. Questions 10 and 11 were extracted from the Western Australian Child Health Survey.

The Short Fat Questionnaire consists of 17 items. Respondents are required to answer questions about the number of times a particular food is eaten per week and the various cooking methods used. An example of a questionnaire item is: “How many times a week do you chips or french fries?”. A choice must be made from five answers which are, in turn, ranked from 0-4 with 0 representing “Never” and 4 representing “Six or more times a week”. An overall score is obtained. Questions 26-27 and 31-42 came from the Short Fat questionnaire.

The Sodium Intake Checklist consists of 21 items. Respondents are required to count the number of times certain foods have been eaten in the previous three days. Examples of items are: “Food with salt added at the table” and “Yeast vegetable extract such as Vegemite, Promite or Marmite”. Ratings are from 0-8 or more times. An overall score is obtained. Questions 28-30 were modified questions from the Sodium Intake Checklist. There was a substantial amount of overlap between the Sodium Intake Checklist and the Short Fat questionnaire. The questions that were used in the final questionnaire were those that revealed foods with high fat and salt content and were foods that would be consumed by adolescents, that is, they were accessible and appealing to adolescents. Questions 23, 24, 34, 35 and 38 were items denoting sugar-containing foods, questions 28-36 and 39 represented foods containing fat and questions 26, 27, 29, 31- 42 assessed salt intake. Adolescents were required to circle the answer which best

indicated the number of times particular foods were consumed in a week where 1 represented *Six times or more* and a larger number represented *Never*. Each of these was totalled to give a total for fat, salt and sugar consumption.

The questions relating to salt, fat and sugar consumption were also modified so that they were similar to the format utilised by the Short Fat questionnaire. This was to ensure that there was consistency in the style of the questionnaire.

Participants in the study were required to answer 42 questions about various behaviours such as cigarette, alcohol, vitamin supplement use and frequency, and the number of times particular food items are eaten per week. The number of answers for each question varied from question to question. Participants were requested to circle the response which best reflected their health and eating behaviours. Other questions such as demographic details, use of tuckshop/canteen, consumption of vitamin supplements and those relating to school transitions were incorporated into the final questionnaire.

Ethical clearance and approval from the University Ethics Committee and Department of Education and Arts was obtained prior to the commencement of the investigation.

Experimental Design

A repeated measures 2 x 2 x 2 design (Time x Eating/Coping behaviour x Gender/Age/School) was employed. Subjects were surveyed on two occasions. The initial survey was administered in Weeks 3 and 4 of the school year (the stressful period). The second survey was administered approximately seven to eight weeks after the initial administration (the non-stress period). The dependent variables included the dietary

behaviour responses, coping strategies and responses to stress. The independent variables are gender, age and school type.

Procedure

The initial administration of the questionnaires took place in Weeks 3 and 4 of the school year to Grade 7 and Grade 11 college students. Both the Adolescent Coping Scale and the Questionnaire on Health and Behaviour were administered. Participants were informed that the questionnaires aimed to establish adolescents' attitudes and behaviours with regard to their health. Confidentiality was assured.

Parental permission was obtained for the younger adolescents to participate in the study. Procedures were outlined to students and confidentiality was maintained by allocating each student an identification number.

The researcher gave the instructions for the rating of the Specific Short Form of the Adolescent Coping Scale. Students were asked to complete the demographic details preceding the scale and were asked to complete the statement "My main concern is....." with changing school/changing grades. They were requested to reflect upon the concern, changing school/changing grades when rating their responses.

On completion of the Adolescent Coping Scale, the Questionnaire on Health and Behaviour was administered. Students were asked to answer the questions in an honest manner. They were also requested, with the food-related questions, to give responses that best reflected how and what they had eaten over the week.

Seven to eight weeks after the initial questionnaire administration, the General Short form of the Adolescent Coping Scale and the Questionnaire on Health and

Behaviour were readministered to the same students. In contrast to the preceding administration session, students were not requested to reflect upon a specific concern; rather they gave their responses in relation to how they deal with their concerns and worries in general.

Results

All analyses were performed using SPSS for Windows. Questionnaire responses were recoded where necessary prior to the analyses, for instance, questions 23-42 were converted so that the greater numbers represented the more negative health behaviour. Grade 7 students were aged 11-14 years and they were classified as younger adolescents. Grade 11 students' age range was from 15-18 years, and they are in this thesis referred to as older adolescents. Totals were calculated for fat, salt and sugar intake for Time 1 and Time 2. Three styles of coping were also computed from the Adolescent Coping Scale responses. They were *solving the problem*, *non-productive coping* and *reference to others*.

Multivariate Analyses of Variance (MANOVA) were performed on the totals for fat, sugar and salt intake, the three main styles of coping: *reference to others*, *solving the problem* and *non-productive coping*, alcohol usage, consumption of alcohol to the point of intoxication, cigarette usage and exercise participation from Time 1 to Time 2. One-way Analysis of Variance (ANOVA) were conducted on total fat and salt consumption, the use of non productive coping strategies, the consumption of alcohol to the point of intoxication and cigarette usage at Time 1 and Time 2. T-tests for paired samples were performed on specific non productive coping strategies from the Adolescent Coping

Scale for Time 1 and Time 2. The Pearson Chi-Square analysis was conducted on cigarette usage. Descriptive statistical techniques, when appropriate, were also conducted on responses. Analyses addressed the issue that stress, namely the school transition, affects sugar, fat and salt intake. Further analyses were carried out to examine the effects of stress on other health behaviours such as drinking and smoking, exercise and coping behaviour. Consideration was given to the effects of school type, gender and age.

Differences in dietary intake between schools from Time 1 to Time 2

A MANOVA revealed that there were no statistical significances from Time 1 to Time 2 in salt and fat consumption. There was, however, a significant difference between Time 1 and Time 2 between schools in sugar consumption (Wilks Lambda = .91, $F = 2.27$, $p < 0.05$). The means indicate a higher sugar intake at Time 1 for students from the Catholic system as well as the State college and a higher sugar intake for students from the State high school at Time 2 (see Table 1). At Time 1, students from the Catholic college had the highest sugar intake levels. At Time 2, however, students from the State high school had the highest sugar intake levels. Students from the State college had the lowest sugar intake levels at both Time 1 and Time 2 (see Table 1).

Table 1

Means and Standard Deviations for Total Sugar Intake Levels at Time 1 and Time 2 for School Type.

School Type	Time 1		Time 2	
	Mean	Standard Deviation	Mean	Standard deviation
State high school	14.69	4.14	15.43	3.56
	(N=34)		(N=29)	
State college	13.41	3.51	13.15	2.76
	(N=44)		(N=35)	
Catholic college	16.35	2.96	15.27	3.23
	(N=37)		(N=35)	
Catholic high school	15.49	3.39	14.43	3.79
	(N=56)		(N=55)	

Although there was no significant difference from Time 1 to Time 2 in fat consumption, in terms of school type a one-way ANOVA indicated a significant difference between schools in fat consumption at Time 1, $F(3,159) = 3.18, p < 0.05$ (see Table 2). A Student Newman-Keuls post hoc test with the significance level set at .05 indicated that students from the Catholic college had greater fat intake levels than the students from the remaining schools and that students from the Catholic high school had greater fat intake levels than students from the State college. Thus, students from the Catholic system had greater levels of fat intake than students from the State college system.

Table 2

Means and Standard Deviations of Fat Consumption for School Type at Time 1.

School Types	Mean	Standard Deviation
State high school	41.46	8.1
	(N=32)	
State college	38.21	7.6
	(N=38)	
Catholic college	42.81	6.2
	(N=37)	
Catholic high school	42.23	7.0
	(N=56)	

Gender differences in dietary intake

There were no significant gender differences from Time 1 to Time 2 in fat, sugar and salt consumption. A one-way analysis of variance revealed, however, a gender difference at Time 1 with sugar intake levels. Male adolescents consumed more sugar at Time 1 than female adolescents, $F(1,169) = 5.45, p < 0.05$ (see Table 3).

Table 3

Means and Standard Deviations of Sugar Intake for Gender at Time 1.

Gender	Mean	Standard Deviation
Male	16.00 (N=61)	3.61
Female	14.68 (N=110)	3.50

A gender difference also exists at Time 1 with fat intake levels. A one-way analysis of variance revealed that male adolescents consumed more fat at Time 1 than female adolescents, $F(1,161) = 7.80, p < 0.05$ (see Table 4).

Table 4

Means and Standard Deviations of Fat Intake for Gender at Time 1.

Gender	Mean	Standard Deviation
Male	43.37 (N=59)	6.68
Female	40.09 (N=104)	7.50

Differences in coping styles between Time 1 and Time 2

Non-productive coping strategies

No significant differences were found between Time 1 and Time 2 in the use of non-productive coping strategies with regard to school type, gender and age. Significant differences were, however, found between older adolescents and younger adolescents, as revealed by a one-way analysis of variance, in the use of *non-productive coping* strategies at Time 2, $F(1,152) = 5.96, p < 0.05$ (see Table 5). Older adolescents were more likely to use *non-productive coping* strategies to deal with stress in general.

Table 5

Means and Standard Deviations for the use of Non Productive Coping Strategies for Age at Time 2.

Age	Mean	Standard Deviation
Younger adolescents	21.38	5.74
	(N=84)	
Older adolescents	23.46	4.61
	(N=70)	

A one-way analysis of variance also revealed that at Time 2 there was a significant difference between schools in the use of *non-productive coping* strategies, $F(3,150) = 4.58, p < 0.05$ (see Table 6). The Student Newman-Keuls post hoc test with significance level < 0.05 revealed that the significant difference exists between the Catholic college

and the remaining schools. Students from the Catholic college used *non-productive coping* strategies more often than students from the other schools at Time 2.

Table 6

Means and Standard Deviations for the use of Non Productive Coping Strategies for School Type at Time 2.

School Types	Mean	Standard Deviation
State high school	23.40	4.61
	(N=30)	
State college	23.86	4.56
	(N=35)	
Catholic college	23.06	4.70
	(N=35)	
Catholic high school	20.26	6.03
	(N=54)	

Specific non-productive coping strategies from the Adolescent Coping Scale were examined in order to test for significant differences between Time 1 and Time 2. T-tests for paired samples indicated a significant difference between Time 1 and Time 2 in the following non-productive coping strategies: worry; worry about what will happen to me: $t(69) = 2.04, p < 0.05$, wishful thinking; wish a miracle would happen: $t(69) = 3.82, p < 0.05$ and tension reduction; find a way to let off steam; for example cry, scream, drink, take drugs: $t(69) = 4.11, p < 0.05$. The means indicate that these non-productive coping

strategies were used predominantly at Time 2 than Time 1. The non-productive coping strategy that was used the most frequently at Time 1 was worrying whereas at Time 2 students employed wishful thinking strategies (see Table 7).

Table 7

Frequencies for Specific Non-Productive Coping Strategies from the Adolescent Coping Scale

Non Productive Coping Strategies	Time 1		Time 2	
	Mean	Standard Deviation	Mean	Standard Deviation
Worry	2.98 (N=175)	1.38	3.21 (N=156)	1.24
Wishful Thinking	2.75 (N=175)	1.47	3.45 (N=158)	1.37
Tension Reduction	2.25 (N=175)	1.31	2.63 (N=158)	1.25

Reference to others

Analyses were also performed on coping behaviours. A MANOVA indicated that there was a significant school difference between Time 1 and Time 2 in the use of the coping strategy, *reference to others* (Wilks Lambda = .77, $F = 6.56$, $p < 0.05$). The results indicated that high school students tended to use this coping strategy more than the college students (See Table 8). The results also indicated that Catholic high school

students used the coping strategy, *reference to others*, more than students from the remaining schools at Time 1 and Time 2. The Catholic college students, on the other hand, were the least likely to seek assistance from others for their concerns at both Time 1 and Time 2. The high school students and the students from the Catholic college increased their use of the coping strategy, *reference to others*, at Time 2. The State college students, however, referred to others for assistance with their concerns more at Time 1 than Time 2.

Table 8

Means and Standard Deviations for School Type by use of the Coping Strategy, Reference to Others, at Time 1 and Time 2

School Types	Time 1		Time 2	
	Mean	Standard Deviation	Mean	Standard Deviation
State high school	11.18	2.36	11.69	2.20
	(N=34)		(N=31)	
State college	11.34	2.41	10.31	2.51
	(N=40)		(N=33)	
Catholic college	9.21	3.04	9.26	2.87
	(N=38)		(N=35)	
Catholic high school	11.46	1.75	11.75	1.41
	(N=58)		(N=55)	

Solving the problem

A MANOVA also showed that there was a significant difference between school types from Time 1 to Time 2 in the use of the coping strategy, *solving the problem* (Wilks Lambda = .77, $F = 5.09$, $p < 0.05$). The results indicate that this coping strategy was used more by the college students at Time 1 and by the high school students at Time 2 (see Table 9). The results also indicate that this strategy is used more by the high school students than the college students at Time 1 and Time 2. The Catholic college students were the least likely to use this coping strategy at Time 1 whereas the State college students were the least likely to use the *problem solving* strategy at Time 2.

Table 9

Means and Standard Deviations for School Type by use of the Coping Strategy, Solving the Problem, at Time 1 and Time 2

School Type	Time 1		Time 2	
	Mean	Standard Deviation	Mean	Standard Deviation
State high school	19.02 (N=29)	1.41	19.51 (N=29)	1.64
State college	17.53 (N=35)	1.97	16.97 (N=30)	2.18
Catholic college	17.10 (N=33)	1.88	17.09 (N=32)	1.92
Catholic high school	18.73 (N=43)	2.12	19.16 (N=43)	1.72

Use of specific non-productive strategies

Analyses were also conducted on the specific negative avoidance strategies of alcohol consumption frequency, consumption of alcohol to the point of intoxication and cigarette use that were incorporated into the Questionnaire on Health and Behaviour. A MANOVA showed a significant difference between schools in the frequency of alcohol consumption (Wilks Lambda = .84, $F=4.58$, $p < 0.05$) from Time 1 to Time 2 (see Table 10). Overall, State college students drank alcohol more frequently than students from the

remaining schools. At Time 2, Catholic college students increased their alcohol usage. Overall, college students drank alcohol more often than high school students.

Table 10

Means and Standard Deviations for frequency of alcohol usage between School Type from Time 1 to Time 2

School Type	Time 1		Time 2	
	Mean	Standard Deviation	Mean	Standard Deviation
State high school	4.13	1.02	4.36	1.03
	(N=34)		(N=32)	
State college	3.55	1.05	3.46	1.09
	(N=44)		(N=35)	
Catholic college	3.43	1.07	3.29	1.02
	(N=38)		(N=35)	
Catholic high school	4.25	0.88	4.05	0.88
	(N=57)		(N=56)	

Consumption of alcohol to the point of intoxication

No significant differences were found between Time 1 and Time 2 in the consumption of alcohol to the point of intoxication in relation to school type, age or gender. A one-way ANOVA indicated, however, that female adolescents were more

likely than male adolescents to consume alcohol to the point of intoxication at Time 1, $F(1,172) = 5.80, p < 0.05$ (see Table 11).

Table 11

Means and Standard Deviations for Consumption of Alcohol to the point of Intoxication for Gender at Time 1.

Gender	Mean	Standard Deviation
Male	4.38 (N=61)	1.14
Female	3.85 (N=113)	1.49

Older adolescents were more likely to drink alcohol until they reach intoxication levels than younger adolescents at Time 1: $F(1,172) = 89.61, p < 0.05$ and Time 2: $F(1,156) = 71.41, p < 0.05$.

Table 12

Means and Standard Deviations for the Consumption of Alcohol to the point of Intoxication for Age at Time 1 and 2.

Age	Time 1		Time 2	
	Mean	Standard Deviation	Mean	Standard Deviation
Younger adolescents	4.80	.52	4.84	.50
	(N=92)		(N=88)	
Older adolescents	3.17	1.56	3.39	1.52
	(N=82)		(N=70)	

A significant difference also occurred between schools in the amount of alcohol consumed at Time 1: $F(3,170) = 30.50, p < 0.05$ and at Time 2: $(F(3,154) = 24.93, p < 0.05)$. The Student Newman-Keuls post hoc test with significance level <0.05 level revealed that students from the colleges were more likely to consume alcohol to the point of intoxication than students from the high schools at both Time 1 and Time 2. The means indicate that students from the State college consumed alcohol to the point of intoxication more often than students from the Catholic college (Table 13).

Table 13

Means and Standard Deviations for Consumption of Alcohol to the point of Intoxication for School Type at Time 1 and Time 2.

School Type	Time 1		Time 2	
	Mean	Standard Deviation	Mean	Standard Deviation
State high school	4.62 (N=34)	.70	4.78 (N=32)	.55
State college	3.09 (N=44)	1.48	3.17 (N=35)	1.50
Catholic college	3.26 (N=38)	1.67	3.60 (N=35)	1.52
Catholic high school	4.91 (N=58)	.34	4.86 (N=56)	.48

Cigarette Usage

Analyses were also performed on the dependent variable, cigarette use. The Pearson Chi Square analysis indicated that a majority of students do not smoke, $\chi^2 = (3, N = 174) = 34.26, p < 0.05$. A one-way ANOVA revealed that older adolescents smoke more frequently than younger adolescents at Time 1: $F(1,167) = 17.3445, p < 0.05$ and Time 2: $F(1,153) = 8.8170, p < 0.05$ (see Table 14). Table 14 indicates that the lower the mean is the more frequently adolescents smoke.

Table 14

Means and Standard Deviations for the Frequency of Cigarette Smoking for Age at Time 1 and 2.

Age	Time 1		Time 2	
	Mean	Standard Deviation	Mean	Standard Deviation
Younger adolescents	3.78	.58	3.74	.60
	(N=87)		(N=85)	
Older adolescents	3.16	1.26	3.31	1.15
	(N=82)		(N=70)	

A significant difference also existed between the schools in cigarette use at Time 1: $F(3,165) = 7.78, p < 0.05$ and Time 2: $F(3, 151) = 4.74, p < 0.05$ (see Table 15). At Time 1, the Student Newman-Keuls post hoc test with significance level < 0.05 revealed that students from the State college smoke more than students from the other schools. At Time 2, there was, however, only a significant difference between the State college and the Catholic high school. The State college students smoked significantly more than students from the Catholic high school. Once again the lower the mean represents the higher cigarette usage.

Table 15

Means and Standard Deviations for the Frequency of Cigarette smoking for School Type at Time 1 and Time 2.

School Type	Time 1		Time 2	
	Mean	Standard Deviation	Mean	Standard Deviation
State high school	3.63	.79	3.53	.82
	(N=32)		(N=30)	
State college	2.95	1.36	3.14	1.26
	(N=44)		(N=35)	
Catholic college	3.39	1.10	3.49	1.01
	(N=38)		(N=35)	
Catholic high school	3.87	.39	3.85	.40
	(N=55)		(N=55)	

Female adolescents were also more likely to smoke cigarettes more frequently than male adolescents at Time 1, $F(1,167) = 5.18, p < 0.05$ (see Table 16). Likewise, the lower the mean indicates a higher frequency of cigarette smoking.

Table 16

Means and Standard Deviations for the Frequency of Cigarette Smoking for Gender at Time 1.

Gender	Mean	Standard Deviation
Male	3.72 (N=60)	.76
Female	3.35 (N=109)	1.12

Participation in physical exercise

Finally, another coping strategy that is often utilised by adolescents is participation in physical recreation. A MANOVA revealed a significant difference between schools in the amount of exercise performed outside school from Time 1 to Time 2 (Wilks Lambda = .89, $F = 2.53$, $p < 0.05$). The means indicate that there was an increase in exercise participation for high school students at Time 2 and for college students at Time 1 (see Table 17). Students from the State high school participated in more exercise than students from the remaining schools at both Time 1 and Time 2. At Time 1, students from the Catholic high school had the lowest mean for exercise participation whereas at Time 2 students from the State college participated in the least physical activity.

Table 17

Means and Standard Deviations for frequency of exercise participation from Time 1 to Time 2 between School Types

School Type	Time 1		Time 2	
	Mean	Standard Deviation	Mean	Standard Deviation
State high school	4.59	0.72	4.65	0.77
	(N=30)		(N=30)	
State college	4.22	0.84	3.51	1.0
	(N=36)		(N=30)	
Catholic college	4.21	1.19	4.11	1.14
	(N=33)		(N=32)	
Catholic high school	4.03	1.20	4.24	0.93
	(N=44)		(N=44)	

Discussion

This study was concerned with investigating the effects of stress on eating behaviour particularly on fat, sugar and salt intake and also on coping behaviour. In general, no significant differences were found between the stressful period, school transition, and the non stressful period in terms of fat and salt consumption and the use of non-productive coping strategies.

Differences in dietary intake between schools

The findings indicated higher sugar intake levels during the stressful period than the non stressful period especially for students from the Catholic school system. This finding supports the hypothesis that students from the Catholic system would have higher sugar intakes than students from the State school system during the stressful period than the non stressful period. Although there were no significant findings between the stressful period and the non stressful period in terms of fat consumption, a significant difference was found between schools during the stressful period with fat intake levels, as students from the Catholic system were found to consume greater levels of fat during the stressful period than students from the State system. Woodward's (1986) study also revealed school differences but this was limited to male adolescents. He found that male adolescents from Catholic schools ate more than the male adolescents from the State schools. The findings of higher fat and sugar consumption in adolescents from the Catholic system than the State system confirm Woodward's (1984) results that adolescents from different socio-economic status differ in their consumption of food. One can, therefore, draw the conclusion that adolescents from the Catholic system have a

different dietary intake than students from the State system during stressful periods. A subcultural difference exists in dietary intake between the adolescents in the two school systems with those in the Catholic school system consuming more fat and sugar and probably less of the healthier food options during the stressful periods than adolescents from the State school system.

Gender differences in dietary intake

There was no support for a gender difference between the stressful period and the non stressful period. The results are, therefore, not in accord with Greeno and Wing (1994), Grunberg and Straub (1992) and Michaud, et al's (1990) findings. However, the findings do indicate a gender difference during the stressful period in sugar and fat consumption. Male adolescents were found to have higher sugar and fat consumption levels than female adolescents during the stressful period. As proposed by Mertin et al (1989) male adolescents may perceive the new school environment as a threat which, in turn, results in higher intakes of sugar and fat. Foods high in fat and salt provide a source of comfort for male adolescents during the stressful period (Spillman, 1990). Female adolescents were not found to be more vulnerable to stress-induced eating due to their restraining eating habits as found by Grunberg and Straub (1990).

Differences in coping styles between the stressful period and the non-stressful period

Non-productive coping strategies

In terms of the use of coping strategies no significant difference was found in the use of the non-productive coping style from the stressful period to the non stressful period for school type, gender and age. There was, however, a significant age and school difference during the non stressful period. Older adolescents and students from the Catholic college were found to use non-productive coping strategies more than students from the remaining schools to deal with stress in general.

These results take one step further Allen and Hiebert's (1991) findings that older adolescents perceive themselves as having less effective coping skills and resources than younger adolescents. Not only do older adolescents perceive their coping strategies as less effective but they use coping strategies which are less effective. Non-productive coping strategies do not assist the individual in dealing with the source of the problem. Tyszkowa (1990) claimed that stressors increase and become more complex with age. From these findings it may be reasonable to assume that the use of non-productive coping strategies also increases with age, particularly in adolescence.

Reference to others

The use of the coping style, *reference to others*, was also analysed and high school students used this strategy more than college students both during the stressful period and the non stressful period. State college students showed a greater use of *seeking assistance from others* during the stressful period whereas the remaining students showed greater use of this coping strategy when faced with stress in general. The State

college was quite large, the students may have initially sought assistance with regard to orientation issues such as class choice, the location of classes and timetabling. Catholic high school students were the most likely to refer to others to assist them with their concerns whereas the Catholic college students were the least likely to refer to others for assistance. The inclination for Catholic college students not to seek support and assistance from others may result in increased stress levels and greater use of non productive coping strategies.

Solving the problem

The use of the coping style, *solving the problem*, was analysed and high school students also used this strategy more than college students both during the stressful period and the non stressful period. College students increased, however, the use of the coping style, *solving the problem*, during the stressful period whereas the high school students increased their use of problem solving skills during the non stressful period. College students may utilise problem solving strategies in dealing with specific sources of stress. High school students, on the other hand, deal with stress in general by attempting to solve the problem.

Use of specific non-productive coping strategies

Specific non-productive strategies such as alcohol consumption to the point of intoxication and cigarette use were examined. The results indicated that although a majority of students reported that they did not smoke those that did smoke more frequently were the older adolescents. Furthermore, female adolescents were more likely than male adolescents to smoke cigarettes more frequently. This was unexpected. One

reason for the higher cigarette usage for female adolescents may be due to using cigarettes as a means of controlling eating behaviour. This proposal would, however, need further investigation.

It was also found that State college students consumed more alcohol and smoked more frequently than students from the other schools. The consumption of alcohol may be affected by adolescents financial situation, thus those with part time work may indulge in alcohol more often. This difference may also reflect subcultural lifestyle differences in particular differences in socio-economic status. However in all cases, further research is needed to support these claims.

Participation in physical exercise

Physical recreation is a commonly used coping strategy by adolescents (Fanshawe & Burnett, 1991; Frydenberg & Lewis, 1993b). There was no evidence to support the hypothesis that male adolescents would participate more often in physical activity. However, a school difference was found in exercise participation from the stressful period to the non stressful period. College students showed a higher exercise participation rate during the stressful period than the non stressful period while high school students increased their participation in formal exercise during the non stressful period. These results may be due to the fact that many high school students participate in organised school sports whereas college students may be involved in more outside school activities such as independent clubs or they may initiate their own exercise regime. Thus, during the stressful period the organised school sports may not have commenced resulting in a

lowered exercise participation rate for high school students. However, further research would need to be conducted in order to investigate this further.

Overall State high school students participated in more exercise than students from other schools during the stressful period and the non stressful period. Catholic high school students participated the least in exercise during the stressful period whilst the State college students had the lowest participation rate during the non stressful period. Perhaps a reason for this school difference is that the different school communities may have varying degrees of parental support for organised physical activity. A future area of research may be to investigate the effects of parental involvement in organised exercise on their children's exercise participation.

Summary of the study

This study supports Folkman and Lazarus' (1985) notion that there are individual differences in coping with stress which is reflective of differences in emotion, appraisal of the situation and coping strategies. In particular, students from the different schools reacted differently to stress and deal with stress in diverse ways.

Overall these results support the notion that stress results in a change in eating behaviour. During the stressful period, the school transition, there were higher sugar and fat intakes. These results are consistent with Spillman's (1990) findings that foods high in salt, fat and sugar will be consumed when individuals are stressed, except that in this study no significant results were found for salt consumption.

In conclusion, the school transition has an effect upon adolescents' sugar and fat intake. Adolescents, particularly those from the Catholic school system, consumed higher

levels of fat and sugar during the school transition period. No significant difference was established between the school transition and the non stressful period in terms of fat and salt consumption. It is possible that no difference existed between the stressful period and the non stressful period in fat and salt consumption because the transition period may not have been perceived as stressful.

On the other hand, the results may have been affected by the Port Arthur massacre. On the 28th April 1996, 35 people were killed by a gunman at Port Arthur and 19 were injured. Due to the fact that Tasmania is a very small and close community the incident affected a great number of people. The incident also impacted upon the mood and emotions of the whole Australian community resulting in changes to gun legislation. It would, therefore, be feasible to claim that the Port Arthur massacre heightened general stress levels. This, in turn, may have resulted in the absence of significant differences in fat and salt consumption from the stressful period to the non stressful period. The findings also indicated that non-productive coping strategies were used during the non stressful period by older adolescents and Catholic college students.

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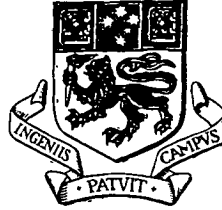
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CONSENT FORM

I, _____ (state name) have been fully informed of the procedures involved in this study conducted by Miss Larissa Lagerewskij and Dr Alison Garton from the Department of Psychology. I hereby consent for my child _____ (state child's name) to participate in this study.

I am aware that the study involves an examination of adolescents attitudes and behaviour regarding various health issues. I understand that my child will be required to complete a number of questionnaires of which all information obtained will be strictly confidential.

I agree for my child to participate in this investigation and I understand that he/she may withdraw at any time without prejudice.

I agree that research data gathered for the study may be published provided that my child cannot be identified as a subject.

Signed _____

Date _____

Researcher: Miss Larissa Lagerewskij

Supervisor: Dr Alison Garton

Contact Number: 294090 (Work) 202237 (University)

Questionnaire on health and behaviour

This is a questionnaire to find out more about you and how you think and feel about various health issues. It will assist me in establishing the attitudes and behaviours of adolescents with regard to their health.

It would be appreciated, therefore, if you could answer the questions in an honest manner. All responses to questions will remain confidential, that is, your parents, your teachers and your classmates will NOT at any stage become aware of the responses you have given.

Please read each question carefully and circle the most appropriate answer. **ONLY CIRCLE ONE RESPONSE FOR EACH QUESTION.**

On completion of this questionnaire please place it into the folded Adolescent Coping Scale Questionnaire, raise your hand and the questionnaire will be collected.

Height: _____ cm

Weight: _____ kg

What is your father's (or stepfather's) job? Please write down exactly what he does. For example: car mechanic, teacher, truck driver, dentist, farmer, salesman.

What is your mother's (stepmother's) job? Please write down exactly what she does. For example: housewife, doctor, factory worker, secretary, taxi driver, teacher.

1. Do you have a part time job?

- (1) Yes
- (2) No

2. How many schools have you attended during your primary and secondary school years?

- (1) More than three schools.
- (2) Three schools.
- (3) Two schools
- (4) Remained at just one school.

3. Have you transferred to this school/college this year?

- (1) Yes
- (2) No

4. In your opinion, what do your teachers think about your work at school?

- (1) Very good
- (2) Good
- (3) Average
- (4) Below average

5. How do you feel about school?

- (1) I like it a lot
- (2) I like it a little bit
- (3) I don't like it very much
- (4) I don't like it at all

6. Do you use the tuckshop at your school?

- (1) Yes
- (2) No

If you answered No please answer the following question. If you answered Yes please go onto question 8.

7. Why don't you use the tuckshop?

- (1) It does not offer the chocolates, cakes and ice creams that I like.
- (2) I'm trying to save money.
- (3) The food isn't healthy enough.

8. How often do you use the tuckshop?

- (1) More than three times a week.
- (2) Three times a week
- (3) Twice a week.
- (4) Once a week.
- (5) Not very often.
- (6) Not at all.

9. Do you take any vitamin supplements/tablets?

- (1) No
- (2) Yes

10. How do you think of yourself?

- (1) Very underweight
- (2) Slightly underweight
- (3) About the right weight
- (4) Slightly overweight
- (5) Very overweight

11. Which of the following are you trying to do?

- (1) I am not trying to do anything about my weight
- (2) Gain weight
- (3) Lose weight
- (4) Stay the same weight

12. Have you ever smoked a cigarette, cigar or pipe?

- (1) Yes
- (2) No

13. How often do you smoke at present?

- (1) Every day
- (2) At least once a week, but not every day
- (3) Less than once a week
- (4) I do not smoke

14. Have you ever tasted an alcoholic drink (e.g. beer, wine, liquor such as gin, vodka or rum)?

- (1) Yes
- (2) No
- (3) Don't know

15. At present, how often do you drink beer, wine or liquor? Include those times when you only drink a small amount.

- (1) Every day
- (2) Every week
- (3) Every month
- (4) Less than once a month
- (5) Never

16. Have you ever had so much alcohol that you were really drunk?

- (1) More than 10 times
- (2) 4-10 times
- (3) 2-3 times
- (4) Once
- (5) Never

17. Do you exercise outside school or participate in school-organised activities after school or on the weekends?

- (1) No
- (2) Yes

If you answered yes, please answer the following question. If you answered no, please continue on to question 19.

18. How often do you exercise outside school or in school-organised activities after school or on the weekends?

- (1) Once a month
- (2) Once a fortnight
- (3) Once a week
- (4) Twice a week
- (5) Three times or more than three times a week.

19. What kinds of activities are you likely to perform during your spare time?

- (1) Play sport
- (2) Attend concerts, the cinema or go to parties
- (3) Go to the museum, art gallery or library
- (4) Visit friends, listen to music or watch TV
- (5) Go out for a meal in a hotel or restaurant
- (6) Make or buy and eat snack foods (eg Macdonalds, KFC, pizza or fish and chips) with a group of friends or by oneself.

20. Do you eat breakfast?

- (1) No
- (2) Yes

21. Do you eat lunch?

- (1) No
- (2) Yes

22. Do you eat dinner?

- (1) No
- (2) Yes

23. How many times have you eaten sweets/lollies/fudge/boiled lollies/jubes this week?

- (1) Six times or more
- (2) Three to five times
- (3) Once or twice
- (4) Less than once
- (5) Never

24. How many times have you had a soft drink (e.g., coke, fanta, sprite) or a drink containing sugar (e.g., juices, Oasis, Frutopia, cordial) this week?

- (1) Six times or more
- (2) Three times to five times
- (3) Once or twice
- (4) Less than once
- (5) Never

25. How much coffee/tea (not including herbal teas or decaffeinated coffee) have you consumed this week?

- (1) Six times or more
- (2) Three times to five times
- (3) Once or twice
- (4) Less than once
- (5) Never

26. How often do you eat fried food ie., food coated with batter or breadcrumbs?

- (1) Six times or more a week
- (2) Three times to five times a week
- (3) Once or twice a week
- (4) Less than once a week
- (5) Never

27. How often do you add butter, margarine, oil or sour cream to vegetables, cooked rice or spaghetti?

- (1) Six times or more a week
- (2) Three times to five times a week
- (3) Once or twice a week
- (4) Less than once a week
- (5) Never

28. How often do you add salt to your food?

- (1) Six times or more a week
- (2) Three times to five times a week
- (3) Once or twice a week
- (4) Less than once a week
- (5) Never

29. How often do you eat pies, pasties or sausage rolls?

- (1) Six times or more a week
- (2) Three times to five times a week
- (3) Once or twice a week
- (4) Less than once a week
- (5) Never

30. How often do you use the following spreads: vegemite, promite or marmite?

- (1) Six times or more a week
- (2) Three times to five times a week
- (3) Once or twice a week
- (4) Less than once a week
- (5) Never

31. How many times a week do you eat sausages, salamis, ham, bacon or hamburgers?

- (1) Six times or more a week
- (2) Three times to five times a week
- (3) Once or twice a week
- (4) Less than once a week
- (5) Never

32. How do you spread butter/margarine on your bread?

- (1) Thickly
- (2) Medium
- (3) Thinly
- (4) Don't use butter or margarine

33. How many times a week do you eat chips or french fries?

- (1) Six times or more a week
- (2) Three times to five times a week
- (3) Once or twice a week
- (4) Less than once a week
- (5) Never

34. How often do you eat pastries, cakes, sweet biscuits or croissants?

- (1) Six times or more a week
- (2) Three times to five times a week
- (3) Once or twice a week
- (4) Less than once a week
- (5) Never

35. How many times a week do you eat chocolate, chocolate biscuits or sweet snack bars?

- (1) Six times or more a week
- (2) Three times to five times a week
- (3) Once or twice a week
- (4) Less than once a week
- (5) Never

36. How many times a week do you eat potato chips, corn chips or nuts?

- (1) Six times or more a week
- (2) Three times to five times a week
- (3) Once or twice a week
- (4) Less than once a week
- (5) Never

37. How often do you eat cream?

- (1) Six times or more a week
- (2) Three times to five times a week
- (3) Once or twice a week
- (4) Less than once a week
- (5) Never

38. How often do you eat ice-cream?

- (1) Six times or more a week
- (2) Three times to five times a week
- (3) Once or twice a week
- (4) Less than once a week
- (5) Never

39. How many times a week do you eat cheese/dips?

- (1) Six times or more
- (2) Three times to five times
- (3) Once or twice
- (4) Less than once
- (5) Never

40. What type of milk do you drink?

- (1) Condensed milk
- (2) Flavoured milk
- (3) Full cream milk
- (4) Reduced fat milk
- (5) Skim milk

41. How much of the skin on your chicken do you eat?

- (1) Most or all of the skin
- (2) Some of the skin
- (3) None of the skin/ I am a vegetarian

42. How much of the fat on your meat do you eat

- (1) Most or all of the fat
- (2) Some of the fat
- (3) None of the fat/ I am a vegetarian

Thank you very much for your co-operation