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AGE AND GENDER DIFFERENCES IN PERCEPTION OF CONTROL: IMPLICATIONS FOR DEVELOPMENT OF ANXIOUS AND DYSPHORIC MOOD

by

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Submitted in partial fulfillment of the requirements
for the degree Doctor Of Philosophy

at

Dalhousie University
Halifax, Nova Scotia
September 2000

DALHOUSIE UNIVERSITY

FACULTY OF GRADUATE STUDIES

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in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

Dated: August 11, 2000

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DALHOUSIE UNIVERSITY

DATE: September 13, 2000

AUTHOR: Margo C. Watt

TITLE: Age and Gender Differences in Perception of Control:
Implications for Development of Anxious and Dysphoric Mood

DEPARTMENT OR SCHOOL: Department of Psychology

DEGREE: Ph.D. CONVOCATION: October YEAR: 2000

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This thesis is dedicated to my mother, Isabel Watt.

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Abstract

The present study was designed to investigate age and gender differences in perception of control and the relations among perception of control and anxious and dysphoric mood. The study combined a mixed prospective and cross-sectional design that allowed assessment of children's affective responses to immediate and longer-term, laboratory- and naturally-occurring, stressors. A total of 335 students (61F / 50 M 8-year-olds; 69 F / 51 M11-year-olds; 60F / 44M 14-year-olds) participated in the study. In small groups of 3 to 5, the volunteer participants completed a questionnaire package consisting of the Revised Children's Manifest Anxiety Scale (RCMAS), Children's Depression Inventory (CDI) and Children's Hassles Scale (CHS). The Positive and Negative Affect Schedule for Children (PANAS-C), the experimental Judgement of Control task and Induced Failure Task, comprised of unsolvable block designs, were completed independently and in private.

The present study provides support for the Piagetian view that illusory contingency declines with age. Sensitivity to response probability and random outcomes were found to increase with age. Results replicate Alloy and Clements' (1992) finding that a higher perception of control confers protection from the negative effect of stress but appears to play a differential role for males and females. Higher control ratings were associated with greater perceived stress for males and lower perceived stress for females. Anxious and dysphoric moods were found to involve similar and realistic perceptions of control. No support was found for either a moderational or mediational role for control perception in the development of either anxiety or dysphoria. An increasing convergence of symptoms of anxiety and dysphoria with age was found for females but not males. Finally, the present study offers support for Nolen-Hoeksema and Girgus' (1994) model to explain gender differences in the development of anxious and dysphoric symptoms. Females were found to carry more predisposing vulnerability factors (i.e., perceived intensity of daily hassles) for dysphoria, but not for anxiety.

List of Abbreviations

Abbreviation	Term
ACV	Analysis of Covariance
APV	Analysis of Partial (residual) Variance
CDI	Children's Depression Inventory
CHS	Children's Hassles Scale
MRC	Multiple Regression/Correlation
NA	Negative Affect
PA	Positive Affect
PANAS-C	Positive and Negative Affect Schedule for Children
$P_{(A\|O)}$	Probability of action preceding outcome (necessity)
$P_{(O\|A)}$	Probability of outcome following action (sufficiency)
pr	partial correlation
RCMAS	Revised Children's Manifest Anxiety Scale

Acknowledgements

I would like to thank Dr. Peter McLeod at Acadia University for his unwavering support, encouragement, and good humour throughout the production of this thesis. His style of supervision provided me with the security to establish my research roots and the freedom to grow beyond them. I would also like to thank Dr. Sherry Stewart at Dalhousie University whose enthusiasm and passion for research proved infectious. Drs. McLeod and Stewart provide an exemplary model of what a good researcher and teacher should be. I am indebted to all the students, staff and faculty members of Dalhousie University's Department for creating such a positive and invigorating atmosphere for learning. Finally, I thank my family --- Hayley, Noah, Jim, Isabel, Allan, Larry and Wanda --- without whose love and support this would not have been possible. Thanks for helping me make it happen!

Introduction

The concept of control is an important construct with a long history in experimental and clinical psychology (for reviews see Peterson, 1980; Strickland, 1989). In psychology, control is commonly defined as the ability to personally influence events and outcomes in one's environment (Chorpita & Barlow, 1998). According to Gurin and Brim (1984), "The sense of control, inextricably linked developmentally to beliefs about causation, is fundamental to human life" (p.282). As a concept, control has been associated with striving for proficiency (Adler, 1930), an instinct to survive (Hendrick, 1943), a need for competence (White, 1959), and a desire for personal efficacy (deCharms, 1968). The need to effect control and to avoid the aversiveness of perceived uncontrollability appear to be major motivators of human behaviour (Averill, 1973; Lefcourt, 1973). Whereas the exercise of control can be healthy and adaptive (Miller, 1979; Compas, Banez, Malcarne, & Worsham, 1991), exposure to uncontrollable situations can have deleterious psychological effects (Seligman, 1975).

The ability to control an aversive stimulus has been found to be an important determinant of animals' (including humans') affective response to such stimuli (Miller, 1979). An individual is said to exert control if the probability of an outcome given his or her action is different than the probability of an outcome in the absence of a response (Clements, 1990). However, an individual need not possess effective control in order to reduce the aversiveness of a stimulus, rather, a subjective perception of control seems to be the operative factor (Alloy, Abramson, & Viscusi, 1981; Barlow, 1988). Indeed,

considerable research suggests that if a person believes that he or she has some control over a stressful event, then that person is less likely to be affected adversely by that event.

The amount of personal control perceived by an individual can have important consequences for his or her psychological (Taylor & Brown, 1988) and physical well-being (Reynaert et al., 1995). For example, Langer and Rodin (1976) demonstrated that mortality and morbidity rates declined significantly among nursing home residents when individuals were given at least some responsibility for their own care. Similarly, Bettleheim (1943) and Frankl (1953/1985) both noted increased mortality among concentration camp inmates who experienced feelings of helplessness or lack of control in reference to their situation. Victims of life threatening diseases, such as cancer and coronary disease, have been shown to be strongly affected by the amount of control they feel they have over the progress and outcome of their disorder (Meyerowitz, Williams, & Gessner, 1987). Perceived control has even been found to act as a buffer against the decrease in cellular immunity observed in major depression (Reynaert et al., 1995).

Developmental Differences in Perception of Control

A perception of control is an expectancy that an outcome is influenced either by one's own behaviour or factors beyond one's control (Coster & Jaffe, 1991). Theories of perceived control have centred on the constructs of locus of control (Lefcourt, 1981), causal attributions (Weiner, 1985), learned helplessness (Seligman, 1975), and self-efficacy (Bandura, 1986). Alternately, perceived control has been conceptualized along the dimensions of internal versus external locus of control and/or stable versus unstable

attributions; as being related to perceived lack of contingency between actions and outcomes (helplessness) and/or perceived confidence in one's ability to achieve desired outcomes (self-efficacy). Current conceptualizations consider perceived control to be less a trait-like dispositional factor (e.g., internal-external locus of control) and more a set of beliefs constructed from an individual's history of interacting with the environment (Skinner, 1995). Weisz (1983), for example, describes perceived control as including both the contingencies provided in the social and physical world and one's competence to operate them. Similarly, Skinner and colleagues (Chapman & Skinner, 1989; Skinner, Chapman, & Baltes, 1988) argue that perceived control involves expectancies about one's ability to obtain an outcome (control beliefs), generalized beliefs about how effective certain means are in obtaining a particular outcome (means-ends beliefs), and the individual's beliefs about the extent to which he or she possesses these means (agency beliefs). Generally, it is agreed that perceived control is the end product of the integration of several judgements including, for example, task difficulty, competence and contingency perception.

Contingencies are consistent, reliable, temporal relationships between events or between actions and outcomes. The ability to detect contingencies or covariations between environmental events is considered to be a major component of learning. According to Watson (1966), humans are predisposed to detect contingencies in their environment and to react adaptively to them. Watson's seminal research on infants' "contingency awareness" employed an experimental paradigm that included a mobile,

wired to a pressure-sensitive pillow, placed under an infant's head or feet. With this apparatus, Watson was able to compare the effects of contingent stimulation, noncontingent stimulation (in which the mobile turned independently of the infant's actions) and no stimulation (stationary mobile). Infants as young as eight weeks of age were found capable of detecting and responding to contingency. Moreover, infants in the contingent condition were 11% more behaviourally active relative to the control groups and, unlike control group infants, displayed positive emotional responses (laughing, cooing, etc.).

Watson's research stimulated a number of subsequent studies of contingency perception which confirmed the positive behavioural and emotional effects of contingent stimulation and the negative consequences of noncontingent stimulation (e.g., fussing, crying) (Finkelstein & Ramey, 1977; Watson, 1979). A commonly employed method of assessing contingency perception, in the laboratory setting, is the judgement-of-control task (Alloy & Abramson, 1979, 1982; Jenkins & Ward, 1965). A typical judgement-of-control task involves a subject being required to judge the extent to which performing some action (e.g., pressing a key) is the cause of a particular outcome (e.g., a flashing light, a change in an animated stimulus). Jenkins and Ward (1965), for example, presented subjects with a series of contingency problems in an instrumental learning situation. For each problem, subjects were given 60 discrete trials on which a choice between two responses (pressing 1 of 2 buttons) was followed by one of two possible outcomes (score or no score). All subjects received some problems in which responses and outcomes were

contingently related and other problems in which responses and outcomes were noncontingently related. Jenkins and Ward (1965) found a surprising lack of correspondence between judgements of control and actual contingency. Subjects' ratings of degree of control increased with the frequency of successful outcomes (i.e., score) whether success was contingent or non-contingent on the response-choice.

Humans often misjudge the degree of control they exert over environmental events. Although three-year-olds can use covariation information to make causal attributions (Shultz & Mendelson, 1975), children and even adults often believe they have some control over random events (Chan, Karbowski, Monty, & Perlmuter, 1986). This bias to overestimate personal control may serve to protect or enhance one's self-esteem, thereby maintaining positive affect (Koenig, Clements, & Alloy, 1992). Piaget (1976) recognized young children's tendency to overestimate the degree of contingency between outcomes and their own behaviour. After studying children's explanations for remote physical events (i.e., asking them questions about the causes of rain, wind, etc.), Piaget (1974) concluded that young children (less than 7 years) tend to consider only temporal contiguity in inferring causal relations among events. According to Piaget, young children do not reliably distinguish random from nonrandom occurrences; consequently, they overestimate the extent to which they control events. He believed that this overestimate of control declined as children matured.

Indeed, researchers have found evidence that illusory contingency (i.e., perceiving more contingency between events than is objectively probable) declines linearly with age

(Weisz, 1980) and that accuracy in contingency perception increases with age (Kaley & Cloutier, 1984). Weisz (1979, 1980) conducted a series of studies of children's judgements of contingency, both in the laboratory and in more natural settings (e.g., games of chance at a state fair). In the latter case, kindergarten and fourth-grade children drew cards blindly from a deck of cards to win chips. Afterward, they assessed the degree to which these noncontingent outcomes were contingent on variations in their behaviour. Weisz (1980) found that whereas kindergarteners perceived outcomes as contingent (i.e., related to competence factors such as practice, intelligence, and effort), fourth graders reliably recognized the outcomes as resulting from luck and downplayed the role of competence-related factors. However, fourth graders did not rule out the influence of competence factors entirely.

Indeed, whereas the findings indicated a decline in illusory contingency with age, children's susceptibility to mistaken perceptions of contingency appeared persistent. The Piagetian view of contingency perception seemingly contradicts the social learning perspective. The latter perspective would predict that, with age, children would become more competent and better able to perform many more tasks independently, therefore more apt to see themselves as capable of affecting outcomes (i.e., possessing more control). Indeed, in controlled laboratory research with adults, Langer (1977) found that illusory contingency was most pronounced when skill or competence cues were present; this suggests an association between competence cues and contingent outcomes, an association that would be expected to increase with experience and maturity. It seems

likely, then, that the power of competence cues to induce illusory contingency would increase as children develop. However, evidence supporting the prediction of social learning theorists has been equivocal and Piaget's evidence was primarily anecdotal. Indeed, very little controlled laboratory research has been done on the developmental course of contingency perception. The present study sought to remedy this neglect.

In order to make accurate assessments of contingencies two sources of information are required: the degree to which the response is *sufficient* for the outcome to occur and the degree to which the response is *necessary* for the outcome to occur. Sufficiency refers to the conditional probability (P) that a response or action (A) leads to an outcome (O) [$P_{(O|A)}$], whereas necessity refers to the conditional probability that an outcome was preceded by an action [$P_{(A|O)}$]. If an action is sufficient but not necessary for an outcome, then the probability of the outcome following the action [$P_{(O|A)}$] will be 1.0 but the probability of the action preceding the outcome [$P_{(A|O)}$] will be less than 1.0 since the outcome will occur occasionally in the absence of the response. For example, Symons and Moran (1994), found that maternal smiling in response to their infant's smiling, during face-to-face interactions, occurred with a probability of approximately .2 greater than expected by chance, a statistically significant difference. In other words, infant smiles could be considered *sufficient* for maternal smiles. On the other hand, if an action is necessary but not sufficient for an outcome, then $P_{(A|O)}$ will be 1.0 but the $P_{(O|A)}$ will be less than 1.0 since there will be instances when the action is not followed by the outcome. Maternal smiling, for example, is not restricted to those periods following a smile by their

baby. In other words, infant smiles are not *necessary* for maternal smiling as the probability of a mother's smile being preceded by a smile from their infant is not significantly different from that expected by chance. If an action is both necessary and sufficient for an outcome then both representations of contingency [$P_{(A|O)}$ and $P_{(O|A)}$] will be high and that response will exert complete control over the outcome (Watson, 1985). If gradations of necessity and sufficiency are considered (i.e., these components of contingency are measured along continual, rather than nominal scales), considerations of contingency perception become both more complicated and more ecologically valid.

Watson (1979) suggested that the relative contributions of necessity and sufficiency to a response-outcome contingency may have different effects on how otherwise equivalent contingencies are perceived. McLeod and Cain (1992) examined the relative influences of sufficiency (i.e., response probability) and necessity (i.e., random activity) on the control judgements of 10, 15, and 20-year-old subjects. Subjects were asked to judge the extent to which their key presses controlled a contingently responsive computerized animation. The sufficiency (20, 50, and 80% response probability) and necessity (necessary or unnecessary) of subject's actions were manipulated. McLeod and Cain (1992) found a developmental increase in sensitivity to response probability with the oldest group being most sensitive to this variable ($\underline{d}$ = .15). At the medium sufficiency (50% responsive) level, male subjects were significantly more confident in their judgements when their actions were unnecessary ($\underline{d}$ = .20).

In a subsequent study with younger subjects (5 to 15-year-olds), McLeod (1994) again found that the control judgements of the older children were more sensitive to changes in response probability than the control judgements of the younger children. Moreover, McLeod (1994) found males to be more sensitive to response probability levels than females. Similarly, a series of five experiments with university students showed subjects' judgements to be more directly influenced by the probability of their actions being responded to than whether or not their actions were necessary to cause change (McLeod, 1994).

Finally, Fuller and McLeod (1995) examined the perception of contingencies in groups of adolescent male learning disabled and non-disabled students. This study found normally achieving students to be more sensitive to changes in response probability and more aware of actual probability levels than the learning disabled students ($\underline{d} = .36$). However, both groups erroneously judged themselves to have more control when their actions were unnecessary for an outcome to occur than when their actions were necessary. Collectively, the research of McLeod and colleagues indicates that, with age, children become more accurate in their evaluations of contingent relations between events on a probabilistic computer display.

Control and Dysphoric Mood

Before proceeding, it is necessary to address an important definitional issue with respect to depression research in general. The term *depression* has variably been used to refer to a symptom (i.e., sadness), a syndrome (a constellation of signs and symptoms that

cluster together including sadness, negative self-concept, sleep and appetitive disturbances), and a nosologic disorder (a constellation of symptoms that meet diagnostic criteria for a psychiatric disorder) (Kendall, Hollon, Beck, Hammen, & Ingram, 1987). The fact that these three approaches to depressive phenomena have all been included under the general label of depression has led to confusion and miscommunication in the literature. In keeping with the recommendation made by Kendall et al. (1987), the present study, as indicated in the title, employs the term *dysphoria* when referring to subclinical or undiagnosed levels of depressive symptomatology.

Judgements of control are not determined solely by objective response-outcome contingency. Among adults, numerous factors, both dispositional and environmental, have been found to affect such judgements including: frequency of reward (Alloy & Abramson, 1979; Jenkins & Ward, 1965; Wright, 1962); desirability of outcome (Alloy & Abramson, 1979; Jenkins & Ward, 1965); skill-related factors such as competition (Langer, 1975); the sequence of controlled and uncontrolled instances (Langer & Roth, 1975); foreknowledge of outcome and choice (Wortman, 1975); social factors such as the presence or absence of an observer (Benassi & Mahler, 1985), and dysphoric mood (Alloy & Abramson, 1979).

Indeed, control is a central factor in most theories of depression. One of the most influential models of depression was provided by the learned helplessness theory (Seligman, 1975). Overmeir and Seligman (1967) coined the phrase, learned helplessness, to describe the motivational deficits exhibited by dogs exposed to uncontrollable

laboratory shocks. Seligman (1975) extrapolated these findings to humans, advancing a model of learned helplessness as an analog of depression. According to this model, depression could result when individuals perceived that important life events were beyond their control. Seligman (1975) described learned helplessness as a perception of noncontingency that leads an individual to believe that he or she has no means to escape from aversive situations. Seligman (1975) argued that each of the symptoms of learned helplessness — deficit in response initiation, negative cognitive set (difficulty learning that responses produce outcomes), time course (i.e., the effect goes away with the passage of time), lowered aggression, loss of appetite, and physiological changes (norepinephrine depletion and cholinergic overactivity) — had correlates in depression. According to Seligman (1975), learned helplessness and depression have parallel etiology, symptoms, treatments, and preventions.

Langer (1975) suggested that the illusion of control is the inverse of learned helplessness. In other words, whereas some people in certain situations will overestimate the extent to which they exert control over uncontrollable events (illusion of control), other people exposed to uncontrollable events develop an expectation that they do not control present events and will be unable to control subsequent events (learned helplessness). Langer found that when elements of skill (e.g., practice, competition, choice) are introduced into a situation in which events are uncontrollable, individuals will estimate their chances for success to be higher than objective probabilities would warrant.

Indeed, research has shown that people often perceive more control than they actually have (Langer, 1975). The phrase "illusion of control" refers to the phenomenon whereby individuals judge that they have control over outcomes that are, in fact, uncontrollable (Alloy & Abramson, 1979; Langer, 1975). Although an inaccurate reflection of reality, an illusion of control may serve a wide variety of cognitive, affective, and social functions. According to Taylor and Brown (1988): "the mentally healthy person appears to have the enviable capacity to distort reality in a direction that enhances self-esteem, maintains beliefs in personal efficacy, and promotes an optimistic view of the future" (p. 204).

Dysphoric individuals, on the other hand, appear not to distort reality in the same way as the mentally healthy but, instead, reveal a more realistic view of the world; a "sadder but wiser" perspective that has been referred to as "depressive realism" (Alloy & Abramson, 1979). In a series of four contingency learning experiments, Alloy and Abramson (1979) examined dysphoric and nondysphoric college students' abilities to detect contingency and noncontingency between their responses and outcomes. Subjects were presented with problems differing in degree of contingency between responses and outcomes and in the frequency of outcomes. Subjects could respond (by pressing a button) or not respond (by not pressing the button), and as a consequence of this choice, an outcome (e.g., onset of a green light) would or would not occur. In some problems, the outcome occurred frequently (e.g., on 75% of trials) and in other problems, it occurred infrequently (e.g., on 25% of trials). At the end of 40 trials, two conditional probabilities

were available – the probability that the green light appeared given a key press and the probability than the green light appeared in the absence of a key press. In contingent situations, the green light occurred more frequently with one response (key press or no key press) than with the other (i.e., 75-0, 75-25, or 75-50). In noncontingent situations, the green light occurred as often when subjects pressed as when they did not press the button (i.e., 75-75, 50-50, or 25-25).

Alloy and Abramson (1979) found that nondysphoric students' overestimated how much control they had over objectively uncontrollable events that occurred with high frequency (75-75) or that were desirable and associated with success (e.g., winning money). These same students were found to underestimate how much control they had over controllable events that were associated with failure (e.g., losing money). Dysphoric students, on the other hand, were found to be consistently more accurate (relative to nondysphoric peers) in judging the degree of contingency between their responses and outcomes in all experimental conditions. These findings led Alloy and Abramson (1979) to make the provocative claim that the "depressed are wiser" (in that their control judgements more accurately reflect the true degree of contingency between responses and outcomes) than their "nondepressed" counterparts.

In a study of the relations among learned helplessness, depressive symptomatology, and illusion of control, Alloy and Abramson (1982) found further evidence that dysphoric individuals make accurate judgements of noncontingency (i.e., "depressive realism"), however their findings were inconsistent with the cognitive deficit

proposed by learned helplessness. In this study, dysphoric and nondysphoric college students were exposed to controllable, uncontrollable, or no noises and were then asked to judge their control for one or two problems in which the outcome was objectively uncontrollable but associated with success or failure (winning or losing money). In direct contrast to the predictions of learned helplessness theory, nondysphoric subjects exposed to either uncontrollable or no noises showed a robust illusion of control by greatly overestimating their subsequent control over the outcome in the noncontingent-win problem, whereas nondysphorics exposed to controllable noises judged the noncontingency accurately. Dysphoric subjects gave accurate judgements of noncontingency, regardless of their prior experience. Alloy and Abramson (1982) suggested that nondysphorics are motivated to maintain or enhance self-esteem, whereas individuals with chronic, generalized expectations of no control (e.g., dysphorics) might be less apt to succumb to illusions of control.

In a replication and extension of Alloy and Abramson's 1979 study, Bryson, Doan, and Pasquali (1984) found no evidence that dysphoric mood influences judgements of control in noncontingent button-pressing tasks. The only mood effect that approached significance in their study was related to subjects' self-evaluations leading Bryson et al. (1984) to wonder whether the "depressed" are really wiser or less prone to illusions of control, or are just more prone to self-attributions of incompetence in certain contingency learning tasks. Bryson and colleagues (1984) suggested that studies of contingency detection could benefit from certain methodological modifications such as measuring

judgements of causality on a trial-by-trial basis.

Benassi and Mahler (1985) performed three studies that examined dysphoric and nondysphoric college students' perceptions of control over outcomes in a task similar to the one employed by Alloy and Abramson in their 1979 studies. The results of the three studies demonstrated that the depressive "realism" or "wisdom" commonly displayed by dysphoric subjects breaks down when subjects perform a contingency learning task in the presence of an observer. Ford and Neale (1985) also failed to find support for the postulated cognitive deficit in depressed subjects in a study in which subjects were exposed to a helplessness induction task and then asked to make judgements of the amount of control their responses exerted over a designated outcome (the onset of a light). Subjects in the induced helplessness condition actually made reliably higher and more accurate judgements of control than did subjects in the no-treatment group.

Finally, in a series of four studies comparing dysphoric and nondysphoric subjects, Vasquez (1987) found some support for a cognitive deficit as proposed by learned helplessness theory. Vasquez (1987) found that when the outcome was affectively neutral (i.e., the onset of a light) dysphoric subjects made accurate judgements of contingency, whereas nondepressed subjects showed (in noncontingent situations) a significant illusion of control. However, when stimulus specificity and valence of outcome was manipulated (e.g., negative and positive, self- and other-referent sentences), in noncontingent situations, dysphoric subjects overestimated judgements of contingency when the outcomes were negative self-referent sentences but were extremely accurate in their

judgements when the results were positive self-referent. In contrast, nondysphoric subjects judged contingencies accurately in the negative self-referent condition and revealed a tendency to overestimate in the positive self-referent condition. Neither group (dysphoric or nondysphoric) displayed errors in the other-referent condition.

Vasquez' (1987) findings indicate that, in some situations, dysphoric individuals will distort (by overestimating) their judgement of contingency. This contradicts both the assumption of learned helplessness theory concerning accurate judgement of contingency of dysphoric people in objective noncontingency situations and the results of Alloy and Abramson (1979, 1982) and Alloy et al. (1981) that suggested a cross-situational accuracy in the judgements of contingency made by dysphoric people. Nevertheless, Vasquez (1987) found the threshold of biasing in the judgements of contingency to be consistently lower in nondysphoric versus dysphoric subjects suggesting that the "positive cognitive set" (p.428) in nondysphoric people is more consistent than the negative one observed in the dysphoric subjects. Furthermore, it suggests that the "negative cognitive set" is a genuine cognitive bias as opposed to simply an absence of a positive cognitive bias.

In a reformulation of Seligman's (1975) learned helplessness theory, Abramson, Seligman, and Teasdale (1978) retained an emphasis on perceived control. However, they argued that it is not uncontrollability per se but the attributions individuals make for a perceived noncontingency between actions and outcomes that are the proximal determinants of depression. More specifically, Abramson et al. (1978) proposed that a maladaptive attributional style involving the tendency to attribute noncontingent negative

events to internal, stable, and global causes predisposes an individual to dysphoric mood. Unfortunately, as the reformulated model evolved, the construct of uncontrollability was eclipsed by attributions and event valence. Researchers began relating the attributions individuals made for negative life events to dysphoric mood, without regard as to whether these negative events were attributed to controllable or uncontrollable factors. However, in a study of the relation among attributions for naturally occurring life events and the development of dysphoric mood, Brown & Siegel (1988) found that only when events were attributed to uncontrollable causes did internal, stable, and global attributions predict greater dysphoria.

More recently, Abramson, Metalsky, and Alloy (1989) proposed a revision of the reformulated model (Abramson et al., 1978) referred to as the hopelessness theory of depression. In contrast to symptom-based approaches, the hopelessness theory of depression is a theory-based approach to the categorization of a subset of the depressive disorders (Alloy & Clements, 1998). The hopelessness theory specifies a chain of distal (operate early in etiologic sequence) and proximal (operate relatively late) contributory causes hypothesized to culminate in a proximal sufficient cause of depression, namely hopelessness --- the expectation that highly desired outcomes will not occur or that highly aversive outcomes will occur coupled with an expectation that one is unable to change the likelihood of occurrence of these outcomes (Alloy & Clements, 1998). A sufficient cause is one that, once present, ensures manifestation of the set of symptoms (e.g., helplessness), as compared to a necessary cause, which is an etiologic factor that must be present in

order for a set of symptoms to occur.

In the hopelessness theory, all four attributional dimensions are considered crucial for understanding how negative life events may contribute to the formation of hopelessness. Individuals are theorized to make causal attributions as to their experienced noncontingency along the four orthogonal dimensions of: internal - external, stable - unstable, global - specific, and uncontrollable-controllable (Alloy, Kelly, Mineka, & Clements, 1990). The internality dimension describes whether the cause of an event is perceived as being related to self (internal) or to either other people or circumstances (external). The stability dimension involves whether the cause is perceived as being recurrent or enduring over time (stable) or more transient (unstable). The globality dimension involves whether the cause is perceived as affecting many outcomes across a wide range of situations (global) or few outcomes in few situation (specific) .

The fourth dimension -- controllability -- involves the person's perception of the degree to which the outcome can be influenced by his or her responses (Alloy et al., 1990). According to the hopelessness theory, dysphoric symptoms are more likely to occur when negative life events are perceived to be uncontrollable (i.e., independent of one' responses) than when they are judged to be controllable (Alloy et al., 1990; Wortman & Dintzer, 1978). Clements and Alloy (1998) have hypothesized that individual differences in perception of control styles may serve as a distal contributory factor that modulates people's control perception for particular negative life events. Some individuals may possess a greater tendency than others to perceive negative events as uncontrollable.

Individuals who exhibit the hypothesized depressogenic attributional and perception of control styles are considered more likely to attribute negative events to internal (i.e., negative characteristics about self such as being deficient or unworthy), stable (i.e., enduring), global (i.e., widespread) factors and to perceive these events as being uncontrollable. Consequently, these individuals are more likely to develop symptoms of hopelessness and, in turn, hopelessness depression (Alloy et. al., 1990). However, an individual need not exhibit all four styles to be vulnerable to hopelessness depression; each of the styles can increase vulnerability separately (Alloy & Clements, 1998).

Alloy et al. (1990; see also Clements, 1990) have suggested that certain perception of control styles, such as the illusion of control, may decrease vulnerability to depressive symptoms by reducing the likelihood of becoming discouraged or hopeless in the face of inevitable negative life events. Alloy and Clements (1992) tested this suggestion by examining whether individual differences in susceptibility to the illusion of control would predict differential vulnerability to depressive responses after both a laboratory failure and naturally occurring life stressors. Through a series of antecedent hierarchical regression analyses with a sample of 145 undergraduates, Alloy and Clements (1992) found a greater illusion of control to be an invulnerability factor, serving to protect individuals from increases in negative affect, discouragement, and depressive symptoms following both laboratory and natural stressors. An illusion of control (alone or in interaction with negative life events) uniquely accounted for 3% to 4% of the variance in negative affect, discouragement, and depressive symptoms. In contrast, a more realistic perception of

personal control (no illusion of control), appeared to be a vulnerability factor for depressive symtomatology in students following the experience of stressful events. Though small (3-4%), the stress-moderating effects of illusory control were reliably significant and somewhat impressive given that the illusion of control measure consisted of a single judgement of control on a single contingency task at one point in time. Nevertheless, until these findings are replicated, the small variances accounted for by the illusion of control may, in fact, be overestimates and their clinical significance remains in question.

Control and Anxious Mood

Whereas an illusion of control may serve to protect against dysphoric mood and realistic perceptions of control (i.e., no illusion regarding control) may increase one's vulnerability to depressive symptoms, an "illusion of uncontrollability" has been proposed as one of the major underlying characteristics of anxiety disorders (Barlow, 1988; Rapee, 1995). Current models of anxiety share an emphasis on the notion of perceived control, whether involving concepts of "mastery and controllability" (e.g., Barlow, Chorpita, & Turovsky, 1996) or "helplessness and hopelessness" (Alloy et al., 1990). Barlow's (1988) model, for example, emphasizes low perceptions of control as being a central construct in the psychology of panic disorder. Indeed, Sanderson, Rapee, and Barlow (1989) demonstrated that the likelihood of experiencing a panic attack in response to carbon dioxide inhalations can be markedly attenuated by providing panic disorder patients with an illusion of control.

Although a number of authors have stressed the importance of a perceived lack of control in anxiety (Barlow, 1988; Lang, 1985; Mandler, 1966), there are few relevant data. Nonetheless, a recent review of the literature by Chorpita and Barlow (1998) supports the contention that experience with lack of control plays an important role in the development of anxiety. For example, research with animals shows that the experience of uncontrollability can have a profound influence on the development of anxiety. More specifically, lack of control experiences can have negative effects on subsequent approach and exploratory behaviour in infant monkeys (see Mineka, Gunnar, & Champoux, 1986). In addition, research with adults shows that those who suffer from anxiety and depressive disorders tend to recall family environments that afforded them limited exercise of control over events (e.g., Parker, 1983). Chorpita, Brown, and Barlow (1998) investigated the relations among perceived control and attribution to family environment, negative affect, and clinical disturbance in a mixed clinical and nonclinical sample of 93 families and their children ranging in age from six to 15. Chorpita et al. (1998) hypothesized that the relationship between a parenting style characterized by elevated control (i.e., high protection and discouragement of autonomy) and a child's negative affect would be mediated by the child's perceived locus of control. Indeed, the findings suggested superior fit for the model in which the dimension of perceived control mediated between family environment and negative affect.

Chorpita and Barlow (1998) have suggested that perception of control style may initially operate as a mediator between stressful experience and anxiety in childhood but

then, over time, may come to moderate the expression of anxiety. A mediational role would suggest that stressful experiences affect control perception, which in turn contributes to the development of anxiety. A moderational role would suggest that stressful experiences interact with control perception to effect subsequent anxiety development. As a moderator variable, perception of control would affect the direction and/or strength of the relation between stressful experiences and anxiety. Whereas moderator variables specify when certain effects will hold, mediators account for the how and why such effects occur (Baron & Kenny, 1986). Chorpita and Barlow's suggestion would be consistent with findings from research on depression suggesting a mediational cognitive model for children (e.g., Cole & Turner, 1993) but consistent theoretical support for a moderational cognitive model in adults (e.g., Abramson et al., 1989). Indeed, Turner and Cole (1994) found that 8th-grade but not 4th-grade children demonstrated the moderational effects of cognition. Cognitive mediational versus moderational models will be discussed in more depth later.

Converging evidence from both the animal and human literature suggests that sufficient early experience with uncontrollable events may eventually lead to an increased generalized tendency to perceive or process events as not within one's control (see Chorpita & Barlow, 1998; Schneewind, 1995). In a review of the animal literature, Minor, Dess, and Overmier (1991), have argued that lack of control (i.e., the inability to influence events) is one of a number of pathways to fear and anxiety. According to Minor et al. (1991), extrinsic (environmental conditions such as lack of control) and intrinsic

(subject variables such as attributional style) modulators combine to either augment or attenuate the animal's baseline stress response.

Empirical support for the role of control in anxiety emanates primarily from the animal literature. A number of studies have implicated experience with uncontrollable events in the subsequent expression of stable anxious responding (Mowrer & Viek, 1954; Weiss, 1971), and whereas the study of learned helplessness was originally conceptualized as an analogue for human depression, it has come to be described as perhaps the most useful model of human anxiety (Barlow, 1988; Mineka, 1985; Mineka & Zinbarg, 1996). Overmier's and Seligman's (1967) original learned helplessness manipulation involved repeatedly exposing a dog to inescapable shock following which the dog would fail to escape in a different situation where escape was made possible. The failure to learn or perform appropriately in the transfer task was discovered to be a result of the uncontrollability, rather than the aversive nature, of the shock. Experiments with rats revealed similar evidence of induced helplessness. Interestingly, anti-anxiety drugs administered prior to exposure to uncontrollable stress have been shown to prevent subsequent learned helplessness effects in rats (Drugan, Ryan, Minor, & Maier, 1984). As compared to controllable shock, uncontrollable shock has been found to produce increased cortisol secretion and gastric ulceration in rats (Weiss, 1971). The loss of previous control over various aversive stimuli was found to provoke anxiety-like behaviours among a group of rhesus monkeys (Stroebel, 1969). Furthermore, monkeys raised in conditions allowing their control over appetitive versus aversive events were

found to habituate more quickly to novel stimuli, to demonstrate more exploratory behaviour, and to cope more effectively with separation from peers as compared to monkeys in no control conditions. What both the animal and human literatures attest to is that the tendency of events to subsequently trigger some analogue of anxiety or depression is, at least partially, dependent on the amount of control the organism experiences, or perceives to experience, over those events (Chorpita & Barlow, 1998).

Unlike most other psychological theories of depression or anxiety, the hopelessness theory explicitly addresses the issue of co-morbidity between anxiety and depression. According to Alloy et al. (1990), the relationship between anxiety and hopelessness depression depends on the interrelation among the three components of hopelessness: helplessness expectancy, negative outcome expectancy, and certainty of these expectations. The hopelessness theory postulates that an individual who expects to be helpless in controlling important future outcomes, but is unsure about his or her helplessness, will exhibit "pure" anxiety. If the person is uncertain of his or her helplessness, and believes that future control may be possible, he or she will experience both increased arousal and anxiety. The person will become more active, scan the environment for control-relevant cues, and make efforts toward gaining control. On the other hand, if the person becomes convinced of his or her helplessness, but is still uncertain about the future likelihood of important negative events (or lack of positive events), a mixed anxiety-depression syndrome will result. Arousal will decrease, the person will "give up" and become passive or immobilized, but will still worry and ruminate

about future outcomes. If the perceived probability of future negative outcomes becomes certain, then helplessness becomes hopelessness and anxiety should give way to a depressive syndrome characterized by despair, loss of interest, and potentially suicidality. Thus according to the hopelessness theory, or helplessness-hopelessness theory, the syndromes of anxiety and depression share an expectation of uncontrollability (and possibly a common perception of control style) but differ in their negative outcome expectancies (Alloy et al., 1990). As Darwin (1872/1965) observed: "If we expect to suffer we are anxious, if we have no hope of relief we despair" (p.176).

Cognitive Mediational and Moderational Models with Adults

The suggestion that a depressogenic attributional and/or perception of control style presents as a vulnerability factor to hopelessness depression when an individual confronts negative life events has been conceptualized as the *diathesis-stress* component of the hopelessness model (Alloy, Kayne, Romer, & Crocker, 1992; Clements & Alloy, 1998; Metalsky, Abramson, Seligman, Semmel, & Peterson, 1982; Metalsky, Haberstadt, & Abramson, 1987). The logic of a diathesis-stress model suggests that when confronted with the same negative life event (stress), people who display a generalized tendency to attribute negative events to internal, stable, global causes and to perceive these events to be uncontrollable (diathesis) are more likely to experience depressive symptoms than people who typically attribute negative events to external, unstable, specific causes which they perceive to be controllable. Moreover, in the absence of negative life events, people who exhibit the hypothesized attributional diathesis should be no more likely to experience

depressive symptoms than people who do not exhibit the hypothesized attributional diathesis.

Diathesis-stress models generally constitute moderator models (i.e., the strength and/or direction of a relation between two variables varies as a function of a third variable -- the moderator variable). In a moderator model of depression, the tendency to make particular attributions or commit cognitive errors (e.g., overgeneralization, selective abstraction, catastrophization, personalization, depressive realism) constitute moderator variables. Stress alone is not sufficient to evoke a depressive response and some individuals are more apt to respond with depression than are others (Cole & Turner, 1993). On the other hand, a mediational model is operative when one variable affects a second variable only indirectly, through an intermediate step or process, represented by a mediator variable. According to the hopelessness theory of depression, hopelessness constitutes a mediator variable that can account for the relationship between the diathesis-stress and the onset of depressive symptoms. According to Baron and Kenny (1986), "mediators explain how external physical events take on internal psychological significance" (p.1176). Mediational and moderational models are not considered to be mutually exclusive (Baron & Kenny, 1986).

In an initial test of the proposed diathesis-stress component of the hopelessness model, Metalsky et al., (1982) examined whether college students' attributional styles for negative outcomes at one point in time would predict the severity of their subsequent dysphoric mood reactions in the presence of a naturally occurring negative life event (i.e.,

receipt of a low grade on a class midterm examination). Results showed that the more internal or global students' attributional styles for negative outcomes were at Time 1, the more severe were their dysphoric mood reactions to receipt of a low midterm grade.

To test the causal mediation process proposed by the reformulated theory, Metalsky, Haberstadt, and Abramson (1987) examined whether the relation between the hypothesized attributional diathesis and "failure students" subsequent dysphoric mood responses to their low midterm grades was mediated by the particular attributions these students made for their low grades. Results showed that, whereas students' immediate dysphoric mood reactions were predicted solely by the outcomes they received on the class midterm exam, their enduring dysphoric mood reactions were predicted solely by the hypothesized Attributional Diathesis x Stress (i.e., outcome on midterm exam) interaction which uniquely accounted for 8.4% of the variance. In other words, students who were stable and global and students who were unstable and specific in their attributional styles for negative outcomes at Time 1 both became dysphoric in mood, to a comparable degree, immediately following receipt of the low midterm grade. However, two days following receipt of grade, students who were stable and global at Time 1 continued to exhibit a dysphoric mood response, whereas students who were unstable and specific at Time 1 had recovered completely from their initial dysphoric mood response. Consistent with a mediational process, the relationship between the attributional style of "failure students" and their enduring mood reactions was mediated by the particular attributions they made for their low midterm grades.

In a subsequent study of 152 adult subjects, Metalsky and Joiner (1992) were the first to test whether the cognitive diathesis x stress interactions contribute to dysphoric symptoms through the mediating role of hopelessness. The causal mediation component of the hopelessness theory posits that: (a) the diathesis-stress interaction contributes to the onset of hopelessness; (b) hopelessness, in turn, culminates in subsequent dysphoric symptoms; and (c) the diathesis-stress interaction does not account for variance in dysphoric symptoms beyond what is accounted for by hopelessness (i.e., does not have a direct effect independent of hopelessness). On the other hand, the theory does allow that hopelessness has a direct effect independent of the diathesis-stress interaction (Metalsky, Joiner, Hardin, & Abramson, 1993). Results showed that two of the three posited vulnerability factors --- cognitive diatheses related to cause and self, but not consequences --- were partially mediated by hopelessness providing some preliminary support for this aspect of the hopelessness theory. However, their failure to find complete mediation, and no mediation for consequences, led Metalsky and Joiner (1992) to speculate that the diathesis x stress interactions may contribute to onset of dysphoric symptoms through some additional factor or factors (Baron & Kenny, 1986). For example, it is possible that a particular perception of control style (e.g., depressive realism) similarly could serve as a distal diathesis that works in conjunction with attributional style and negative life events, culminating in hopelessness and, in turn, in dysphoric symptoms. Moreover, it is noteworthy, that the diatheses x stress interaction did not predict either state or trait anxiety, suggesting a specificity to dysphoric symptoms.

Again in 1993, Metalsky, Joiner, Hardin, and Abramson tested the diathesis-stress component of the hopelessness theory by examining whether a stable, global attributional style (attributional diathesis) would interact with the outcomes students received on a midterm examination (stress) to predict depressive reactions over the course of five days. Consistent with their earlier findings (Metalsky et al., 1987), students' immediate depressive reactions were predicted solely by the outcome they received on the examination. In contrast, attributional style interacted with failure on the examination to predict subsequent dysphoric reactions four days following receipt of a failure grade on the examination. Results supported the role of hopelessness in mediating the relationship between diathesis - stress (attributional diathesis - failure experience) and enduring dysphoric symptoms.

Cognitive Mediational and Moderational Models with Children

Cole and Turner (1993) were the first to compare models of cognitive moderation and mediation in explaining dysphoric mood in children. In a cross-sectional study of 356 children attending fourth, sixth, and eighth grades, Cole and Turner examined the mediational role of children's negative self-cognitions in the relation between positive and negative events and dysphoric mood. The mediational role of negative cognitions in the relation between adverse peer evaluations and dysphoria was also assessed. Finally, the moderational effects of attributional style and negative self-cognitions on these relations were examined. Cole and Turner (1993) found that attributional style and the tendency to make cognitive errors mediated the relationship between peer-rated competencies and self-

reported symptoms of dysphoria. The relation between positive and negative events and self-reported dysphoria was partially mediated by these same cognitive variables.

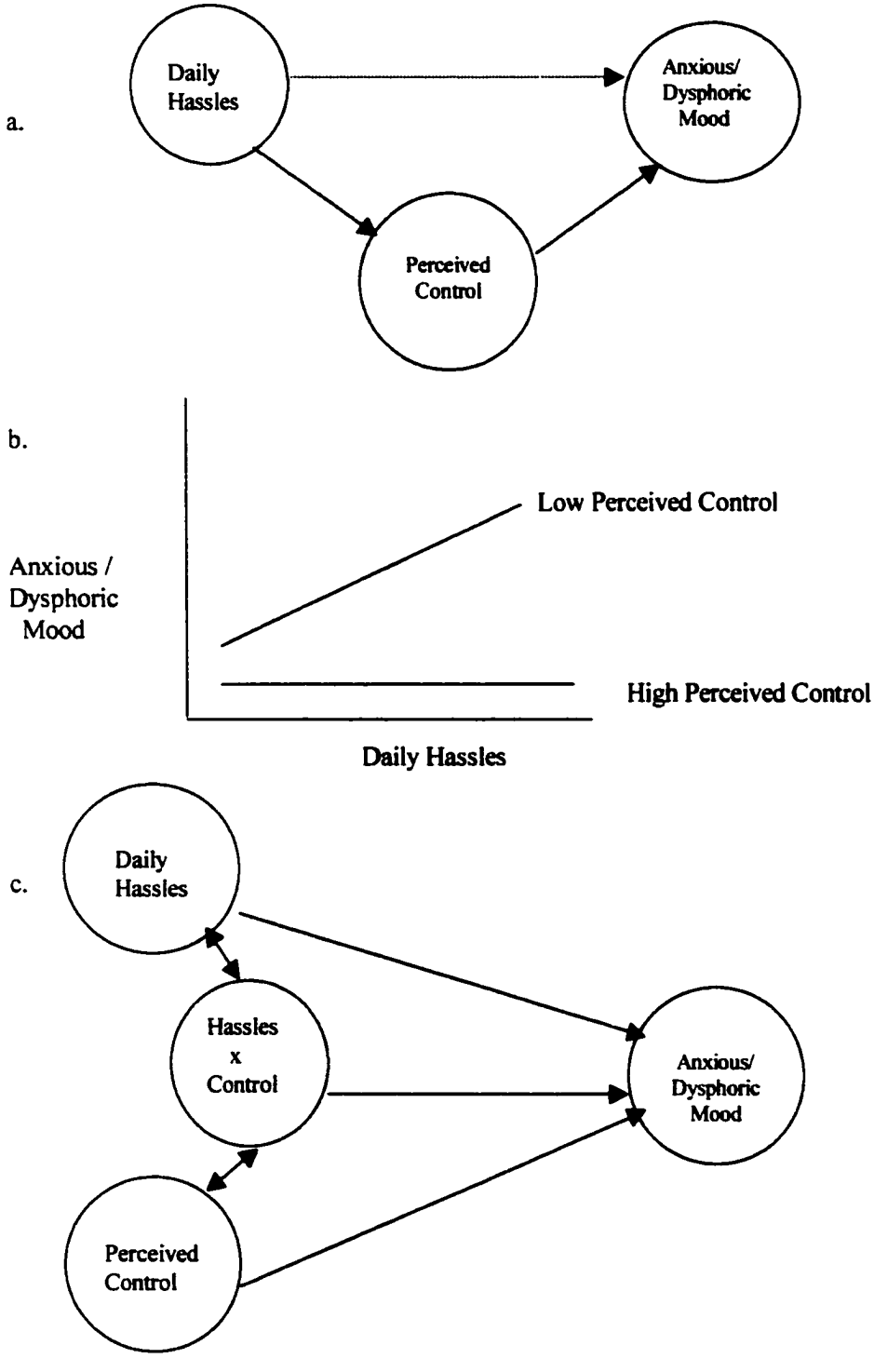
Little support emerged for a cognitive moderational model for this age range. Recall that a cognitive moderational model posits that a cognitive diathesis exists within the individual that enhances the likelihood that specific environmental events will produce a dysphoric response (Cole & Turner, 1993). In tests of four such models, Cole and Turner (1993) detected only one small and marginally significant interaction. Children's negative cognitive errors slightly moderated the relation between positive and negative events and self-reported dysphoric symptoms.

Support for a cognitive mediational model of childhood dysphoria raises important questions about the etiology and psychopathology of childhood depression; questions pertaining to the specificity of the model to depression, as well as the specificity of the mediator variables themselves. For example, current research suggests that depression and anxiety may be part of a more global dimension of negative affectivity (Kendall & Watson, 1989; Watson & Clark, 1984). In addition, the potential for other related variables (e.g., hopelessness or self-reported intensity of negative life events) to mediate the relationship between diathesis-stress and onset of depressive and/or anxious symptoms in children needs to be examined.

Noticeable by its absence from the empirical literature related to moderator and mediator models of depression, is an examination of the role of the fourth vulnerability factor posited by the hopelessness theory --- the uncontrollable-controllable dimension. To

date, only one study (Alloy & Clements, 1992) has examined perception of control style as a risk factor for depression and no study has examined perception of control style as a risk factor for anxiety. Moreover, the potential for a perception of control style to assume a cognitive mediational or moderational role in the development of these two disorders is untested. A general form of a cognitive mediational model of anxious or dysphoric mood is depicted in Figure 1(a). If negative life events (e.g., daily hassles) are perceived to be uncontrollable, an individual may develop a particular perception of control style (low or objectively accurate vs. illusory) which may increase their vulnerability to symptoms of anxiety or depression. A partial mediational model would include a direct path from hassles to dysphoria or anxiety, indicating that only some of the effect of hassles on dysphoria or anxiety is mediated by cognitive factors (i.e., perception of control style). Alternatively, a perception of control style may interact with environmental stressors. For example, Figure 1(b) depicts a cognitive moderational model expressed by an idealized regression plot. In this case, daily hassles may have a particularly strong anxious or dysphoric effect on children whose pre-established perception of control style places them at risk. On the other hand, children who possess an illusion of control may reveal no negative effect, or only a small negative effect, (represented by the flatter regression line) in response to adverse environmental conditions. The moderational model can also be represented in a path diagram as in Figure 1(c). Daily hassles and a low perception of control and an interaction term, their product, are exogenous variables with paths drawn to the endogenous variable, anxious/dysphoric mood.

Figure 1. Schematic representations of mediational (a) and moderational (b and c) models of relations between perceived control, daily hassles, and anxious / dysphoric mood. (Described in text page 43.)



Anxious and Dysphoric Mood

The relationship between anxious and dysphoric mood is controversial (cf. Watson & Kendall, 1989). Historically, the two syndromes --- anxiety and depression --- have been viewed as distinct diagnostic entities (e.g., DSM-II, DSM-III). However, recent data suggest a considerable degree of overlap between the two constructs. For example:self-report anxiety and depression scales are substantially correlated (typically correlations range between .50 and .80); and anxious and dysphoric symptoms tend to co- occur in-patients. Considerable overlap can also be seen at the diagnostic level and data indicate that there is a large group of mixed anxious-depressed patients who, for treatment purposes, must be distinguished from those with purer forms of anxiety and depression. Drug, family, and twin studies also suggest that at least some forms of anxiety and depression may share a common diathesis. For example, antidepressant drugs significantly reduce panic attacks and other anxiety-related symptoms, and family and twin studies suggest that depression and anxiety share a common genetic diathesis (see Watson & Kendall, 1989). The association between anxious and dysphoric symptomatology has led some researchers to suggest that they are variants of a single disorder. This unitary construct position argues for conceptualizing anxiety and dysphoria as representing a single continuum on the basis of overlapping symptomatology, clinical instability, and treatment specificity (e.g., Dobson, 1985). According to this view, anxiety and dysphoria share a common emotional, cognitive, and possibly genetic substrate, sometimes referred to as negative affectivity (Watson & Clark, 1984). Most clinicians and researchers,

however, continue to believe that the basic distinction is valid. The dual construct theory argues that anxiety and depression are best conceptualized as separate, although sometimes co-occurring, disorders (cf. Lonigan, Carey, & Finch, 1994). According to this view, depression and anxiety can be distinguished by the the patient's affective, cognitive, family, and historical experiences, and possibly even by the associated kinds of interventions that are effective (see Cole, Truglio, & Peeke, 1997).

Watson and colleagues (Clark & Watson, 1991; Watson & Clark, 1984; Watson & Tellegen, 1985) have proposed a model that integrates these two positions. In 1984, Watson and Clark reviewed a large number of self-report measures intended to assess constructs such as anxiety, dysphoria, and neuroticism and found all of these measures were highly intercorrelated. Watson and Clark suggested that these assessment devices were, in part, measures of the same construct: negative affectivity, and they proposed that anxiety and depression could be seen as clinical states that both involve a high degree of negative affectivity. In a later review of the literature on the two disorders, Clark and Watson (1991) concluded that a tripartite structure could best explain the overlapping and distinct features of anxious and depressive disorders. The tripartite model postulates that anxiety and depression consist of a general distress factor (negative affectivity or NA) that is shared by both types of disorders, a specific depression factor characterized by anhedonia or low positive affectivity (PA), and a specific anxiety factor characterized by physiological hyperarousal. More recently, Mineka, Watson, and L. A. Clark (1998) have proposed an integrative hierarchical model of anxiety and depression wherein NA is seen

as a pervasive higher order factor that is common to both the mood and anxiety disorders and is primarily responsible for the overlap among these disorders. In addition, each disorder also includes a unique component that differentiates it from all the others. For instance, anhedonia and the absence of PA are believed to comprise the specific, unique component of depression, whereas anxious arousal assumes a more limited role as the specific component of panic disorder (see Brown et al., 1998).

Negative affectivity (NA) refers to a broad general factor of emotional distress that includes moods such as anxiety, fear, sadness, anger, and guilt. NA can be thought of as a temperamental sensitivity to negative stimuli. It is considered to be a stable and heritable trait dimension (Watson & Clark, 1984; Watson & Tellegen, 1985). Individuals high in NA experience a broad range of negative moods but also a broad range of non-mood characteristics such as negative cognitions, somatic complaints, negative appraisals of self and others, and diverse personality features (see Clark, Watson, & Mineka, 1994). Research indicates that NA scores appear to reflect the current influence of state affect and residual effects of depressive episodes but they also tap, in part, an underlying vulnerability-invulnerability dimension that affects both the likelihood of the development of depression and the chronicity of its course should it develop (Clark et al., 1994). High NA is considered common to both anxiety and dysphoria.

Parallel to NA, positive affectivity (PA) is considered to be a stable, heritable, and highly general temperamental dimension that includes such primary traits as positive emotionality, energy, affiliation, and dominance. Persons high in PA tend to feel joyful,

enthusiastic, energetic, friendly, bold, assertive, proud, and confident, whereas those low in PA tend to feel dull, flat, disinterested, and unenthusiastic (Clark et al., 1994). Several lines of evidence suggest that low PA is closely linked to depression. Data tend to suggest that PA affects both the course of depression and is affected by the experience of depression, but it is not clear whether high or low PA acts as an invulnerability or vulnerability factor. Whereas depression appears to involve the combination of high NA and low PA, anxiety appears to involve high NA with PA not playing a salient role (see Finch, Lipovsky, & Casat, 1989; Watson & Kendall, 1989). NA and PA are considered useful constructs for understanding the distinctive and overlapping features of anxiety and depression (Kendall & Watson, 1989), although some (e.g., Watson & Tellegen, 1985) have suggested that the two disorders might be better distinguished if depression measures included more items tapping low PA and anxiety measures had more items reflecting high NA.

Developmental Differences in Anxious and Dysphoric Mood

The effect of age on the correlation between anxious and dysphoric mood is not clear. Some empirical evidence suggests an increasing correlation between symptoms of anxiety and depression with age (Dobson, 1985; Kendall, Kortlander, Chansky, & Brady, 1992). Children with co-morbid anxiety and depressive disorders tend to be older and more symptomatic than their anxious-only or depressed-only counterparts. Moreover, anxiety symptoms usually predate the depressive symptoms (see Brady & Kendall, 1992; Kendall, Kortlander, Chansky, & Brady, 1992). On the other hand, developmental theories

suggest that emotional and cognitive constructs associated with symptoms of depression and anxiety should differentiate with age. For example, Weiner and Graham (1988) proposed that emotions become more specific and outcome dependent with development, in part because children's increasingly sophisticated attributions give shape to a previously undifferentiated set of feeling states.

Cole et al. (1997) compared the correlations between dysphoric and anxious symptoms for samples of third (n = 280) and sixth grade (n = 211) nonclinic children. The younger children revealed an extremely high correlation (r = .93) between the anxious and dysphoric factors, suggesting that the dimensions of anxiety and depressive symptomatology were indistinguishable and could be regarded as a single entity. On the other hand, among the older children the anxious and dysphoric constructs showed some evidence of differentiation although they remained highly correlated (r = .85), providing possible support for the tripartite model. According to the tripartite model, negative affectivity accounts for the shared variance between depression and anxiety. However, other aspects of depression and anxiety exist that are not explained by each other nor by negative affectivity. It has been suggested that, whereas the common entity of negative affectivity may be genetically driven, the unique aspects of depression and anxiety may derive from environmental factors (Kendler, Neale, Kessler, Heath, & Eaves, 1992). Assuming that environmental factors require more time to take effect, this could explain the finding of developmental separation of the dimensions of anxiety and depression.

Gender Differences in Anxious and Dysphoric Mood

No discussion of anxious and dysphoric mood would be complete without consideration of gender differences in the two disorders. Most studies of preadolescent children either find that there are no gender differences in rates of depression or that boys are somewhat more likely to be depressed than girls. Sometime around the ages of 13 to 14, however, girls begin to show higher rates of depression than boys (Nolen-Hoeksema & Girgus, 1994). In a longitudinal study of 6th - 12th -grade children, Petersen, Sarigani, and Kennedy (1991) found no gender differences in dysphoric mood before 8th grade, differences began to emerge in 8th grade (13-14 years old), and significant gender differences were found in 12th grade, with girls showing higher scores than boys. Other studies have sometimes found higher levels of dysphoric symptoms in girls than in boys in children as young as 12 years of age and have consistently found gender differences in 14-year-olds (Girgus, Nolen-Hoeksema, & Seligman, 1989, 1991; Kandel & Davies, 1986). Thus, existing evidence indicates that, by age 13 or 14, girls are much more likely than boys to have these symptoms. This greater female rate of depression then holds true for every adult age group except the elderly (Nolen-Hoeksema, 1990).

Nolen-Hoeksema and Girgus (1994) have proposed and evaluated three logical models for how gender differences in depression might develop in early adolescence (i.e., between the ages of 11 and 15). According to Model 1, the causes of depression are the same for girls and boys, but these causes become more prevalent in girls than in boys in early adolescence. For example, there is some evidence that boys endorse more

instrumental traits than girls as early as 6th grade and that the gender difference increases with age (Galambos, Almeida, & Peterson, 1990). According to Model 2, there are different causes of depression in girls and boys, and the causes of girls' depression become more prevalent than the causes of boys' depression in early adolescence. For example, Angold, Costello, Erkanli, & Worthman (1999) have found evidence that negative affect is associated with higher levels of androgens and estrogen in adolescent versus preadolescent girls. According to Model 3, girls are more likely than boys to carry risk factors for depression --- personality characteristics or behavioural style --- even before early adolescence, but these risk factors lead to depression only in the face of challenges (e.g., social, hormonal) that become more prevalent in early adolescence. Nolen-Hoeksema and Girgus (1994) reviewed the evidence that specific etiological factors account for the emergence of gender differences in depression to evaluate and compare the three models. Based on available evidence, they concluded that Model 3 is best supported by existing studies and holds the most promise for explaining the emergence of gender differences in depression. According to Nolen-Hoeksema and Girgus, the greater prevalence of pre-existing risk factors for depression in girls, in combination with the greater number of social and biological challenges that girls face beginning in early adolescence, leads to the emergence of substantial gender differences in depression.

It has been suggested that one of these pre-existing risk factors may be females' tendency to perceive low control over important events (Radloff, 1975). There is evidence to suggest that girls perceive more stress in their lives than boys (Burke & Weir, 1978),

although there is no evidence of a gender difference in number or type of stressful life events occurring in the lives of boys and girls (Goodyer, Kolvin, & Gatzanis, 1986). Research does indicate, however, that girls may be more likely to experience severe mood disturbances than boys as a consequence of similar recent undesirable events (Goodyer, 1990).

The emergence of gender differences in depression has been more extensively researched than gender differences in anxiety disorders. Evidence exists, however, to suggest that similar gender differences extend to anxiety disorders. Offord, Boyle, and Szatmari (1987) noted a much higher prevalence of "emotional disorder" (4.9%) for adolescent girls (12 to 16 years of age) than for adolescent boys on an emotional disorder scale which reflected elements of anxiety, mood, and obsessive-compulsive preoccupation. In one of the few community-based studies that used well-defined diagnostic criteria, Kashani et al. (1987) found similar prevalence rates for psychiatric disorders for both sexes, but remarkably, three times higher rates for depressive and anxiety disorders in 14- to 16-year-old female adolescents (13% versus 3%). Lewinsohn, Hops, Roberts, Seeley, and Andrews (1993), employed a clinical interview with a nonclinical adolescent sample and found that females were more likely to be diagnosed with a depressive or anxiety disorder than were males. In a cross-sectional study of high school seniors, Casper, Belanoff, and Offer (1996) found that female adolescents, regardless of race, reported significantly higher levels of emotional distress, in particular depressed mood and anxiety, than did male adolescents.

In a test of Clark and Watson's (1991) tripartite model of anxiety and depression with a sample of 428 Grade 10 students, Inderbitzen and Hope (1995) found that, in comparison to males, adolescent females reported 12% higher levels of anxious and 2% higher levels of dysphoric symptoms. According to the tripartite model, various combinations of the components of anxiety and depression yield four distinct syndromes: specific anxiety, specific depression, co-morbid depression and anxiety, and mixed anxiety-depression. Specific anxiety is characterized by high physiological hyperarousal, high NA, but little or no indication of anhedonia (i.e., low PA). Specific depression involves low PA, high NA, but few or no symptoms of physiological hyperarousal. Co-morbid depression and anxiety involves simultaneous elevations in NA and physiological hyperarousal with low PA Mixed anxiety-depression is characterized by high NA but low-to-moderate levels of both PA and physiological hyperarousal. Mixed anxiety-depression is really a high NA syndrome; individuals who obtain elevations on either or both of the specific components of anxiety and depression would be excluded from this category (Katon & Roy-Byrne, 1991; Zinbarg et al., 1994). The mixed anxiety-depression syndrome has been designated in DSM-IV's appendix as a diagnostic category deserving of further study.

In an analysis of diagnoses based on the Structured Clinical Interview for DSM-III-R (SCID) for a large consecutive series of patients (n = 1, 051) seen at the Center for Cognitive Therapy, Ochoa, Beck, and Steer (1992) reported finding gender differences (2:1 female to male ratio) in co-morbid depression and anxiety but not "specific" (i.e.,

"pure") depression. A later study by Joiner and Blalock (1995) used the tripartite model to examine whether gender differences in adult depression could be accounted for by the overlap of depression with anxiety and negative affectivity. They found that the proportion of women versus men was significantly higher in the categories of co-morbid depression and anxiety and mixed anxiety-depression, but not in either of the categories of "specific" depression or anxiety.

Summary of the Literature

To summarize, an individual's perception of how much control they exert over environmental stimuli can have important implications for both their physical and mental well-being. Control perception involves the integration of several judgements including perception of contingencies --- covariations between environmental events. In order to make accurate assessments of contingencies two sources of information are required: the degree to which an action is *sufficient* for an outcome to occur and the degree to which an action is *necessary* for the outcome to occur. Although contingency perception has played a prominent role in the study of infants' social and cognitive development (e.g., Symons & Moran, 1994; Watson, 1979), very little research has examined its developmental course nor its parameters of sufficiency and necessity. Some evidence suggests that children's perception of control style changes with age with the illusory contingency of early childhood being replaced by more realistic perceptions of control. This may reflect an increasing sensitivity to contingency parameters across childhood. However, other evidence suggests that illusory contingency increases with age.

Perceived control is not founded solely on objective response-outcome contingency but, among adults at least, has been found to be affected by numerous factors including dysphoric mood. Indeed control is a central factor in most theories of depression, however since the reformulation of the learned helplessness model (Abramson et al., 1978) the construct of control has been largely ignored in the research literature. Alloy and Clements (1992) did find an illusion of control to confer some resiliency in the face of dysphoric symptoms. Moreover, an illusion of uncontrollability has been posited as a risk factor for anxiety (Chorpita & Barlow, 1998). The relationship between anxious and dysphoric mood is controversial and the effect of age on the correlation between symptoms of anxious and dysphoric mood is not clear.

It has been suggested that a perception of control style may act as a moderator in the development of anxious and dysphoric mood or, perhaps, as a mediator between environmental stressors and the development of negative affect. Moreover, it has been suggested that one of the risk factors predisposing females to higher rates of negative affect (both anxious and dysphoric) than males may be perception of control style. Females have revealed a tendency to perceive low control over important events (Radloff, 1975) and to perceive more stress in their lives, though not necessarily more stressful life events, than boys (Burke & Weir, 1978; Goodyer et al., 1986).

The Present Study

The present study sought to address five important research questions: (1) What is the developmental course of perceived control? (2)What are the relative contributions of

the parameters of contingency --- sufficiency and necessity --- to judgements of control? (3) Does an illusion of control confer some protection from negative affect following stress? (4) What is the role of perceived control in the development of negative affect --- anxious and dyphoric mood? (5) What role, if any, does perceived control play in the development of gender differences in anxious and dysphoric mood?

Hypothesis #1: It was predicted that consistent with the Piagetian view, young children would be more apt to overestimate the extent to which they control events, as compared to older children. Illusory control was expected to decline with age.

Hypothesis #2: It was predicted that subjects' sensitivity to the parameters of contingency perception (i.e., necessity and sufficiency) would increase with age indicating an increasing ability to accurately evaluate contingencies and make causal attributions of their environment. Consistent with Fuller and McLeod's (1995) findings, it was predicted that when their actions were unnecessary to produce an outcome, subjects would judge themselves to have more control than when their actions were necessary. It was also predicted that males would display greater sensitivity to the parameters of sufficiency and necessity than females as reported by McLeod (1994).

Hypothesis #3: It was predicted that subjects' with a high versus low illusion of control would be less likely to: (a) experience negative affect after the laboratory failure in Session 1; (b) experience daily hassles that occur over the 1-month interval as stressful; and (c) show an increase in anxious or dysphoric symptoms in Session 2 after the occurrence of natural stress-inducing daily hassles. In regards to this third hypothesis, it was thought that

an illusion of control would mediate the intensity of stress induced by the occurrence of daily hassles so that a child with a high illusion of control would be less likely to show anxious or dysphoric symptoms than a child with no illusion of control in response to similar levels of life stressors.

Hypothesis #4: In line with the diathesis-stress component of the hopelessness theory, it was predicted that control judgements (diathesis) would interact with negative life events (stress) to predict dysphoric symptoms at Session 2 (i.e., cognitive moderational model). Consistent with the symptom constellation posited by hopelessness theory and the findings of earlier studies (e.g., Metalsky & Joiner, 1992), it was predicted that the diathesis-stress effect would be specific to dysphoric symptoms.

Hypothesis #5: It was predicted that control style and stress interaction would predict onset of dysphoric symptoms through the mediating role of hopelessness represented in the present study by subject's ratings of the intensity of their daily hassles (i.e., cognitive mediational model). Alternatively, the potential for perception of control to mediate the relationship between stressor and dysphoric affect alone (i.e., without a diathesis-stress interaction) was also tested.

Hypothesis #6: It was predicted that subjects with high levels of anxious and/or dysphoric symptomatology would display a similar expectation of uncontrollability (helplessness) but that dysphoric subjects only would display an expectation of negative outcomes (hopelessness) as suggested by their reported intensity, but not frequency, of daily hassles.

Hypothesis #7: It was predicted that a temporal relationship between anxious and dysphoric symptomatology would be suggested by the frequency of symptom reporting by different age groups. More specifically, it was predicted that younger students would report more anxiety symptoms than older students and that older students would report more dysphoric and/or combined anxious-dysphoric symptomatology than younger subjects. This would be consistent with evidence that a developmental separation of the dimensions of anxious and dysphoric mood occurs at or about puberty (see Brady & Kendall, 1992; Kendall et al., 1992).

Hypothesis #8: It was predicted that girls would perceive themselves to have less control and more stress (as measured by frequency of daily hassles) than boys, but not necessarily more stressful life events (as measured by intensity of daily hassles). This prediction is consistent with a model proposed by Nolen-Hoeksema and Girgus (1994) to account for gender differences in negative mood.

Method

Participants

Participants in this study were recruited from seven schools within a rural northern Nova Scotia school district. These schools were comprised of a largely homogeneous population of students from white, middle class backgrounds and of Scottish-English descent. Parental permission forms were distributed to all students in Grades 3, 6, and 9 within these schools. The positive response rate was 43% yielding a sample of 335 students [61F / 50 M Grade 3's, age mean (and standard deviation) = 8.5 (0.5); 69 F /

51M Grade 6's, age M (SD) = 11.3 (0.5); 60F / 44M Grade 9's, age M (SD) = 14.6 (0.6)] who participated in the study. Of these, only one student was unavailable for Session 2 testing (attrition = 0.3%), leaving a final sample of 334 students who completed both sessions. The age range was selected for three reasons: first, it encompasses a period of dramatic cognitive development wherein perceptions of control have been found to change; secondly, a period of dramatic pubertal development which may have important implications for gender differences in negative affectivity; and thirdly, it includes two of the age groups employed in a recent investigation by Cole et al. (1997) of correlations between anxious and dysphoric mood thereby allowing comparison with Cole et al.'s findings.

Experimental Tasks

Judgement of Control Task (Contiception; McLeod & Spence, 1995). Subjects' perception of control styles were assessed in Session 1 by means of the computer program, Contiception. Contiception is a DOS-based program which allows the experimenter to independently set the probabilities associated with the extent to which subjects' actions are necessary and sufficient (the two components of contingency) to cause a change in an animated display. The display, presented on a microcomputer, consisted of a coloured disc moving in a circular path around the centre of the screen at a rate of approximately one revolution every four seconds. Judgements of control over computer-presented stimuli using this program have been examined in other populations, such as depressed college students (Benassi & Mahler, 1985), learning disabled

adolescents (Fuller & McLeod, 1995), and women in transition from abusive relationships (Orava, McLeod, & Sharpe, 1996).

In the present study, the experimental protocol consisted of ten trials each of 45 seconds duration (see Table1). The first trial served as subjects' practice trial. In this trial, sufficiency (i.e., the probability with which an action [a keypress] will cause an outcome [a change in direction – clockwise or counter-clockwise - of the disc] was set at $P_{(O|A)} = .50$ (i.e., 50% of keypresses would alter direction of the disc), and necessity (i.e., the extent to which actions must precede outcomes; presence or absence of random outcomes) was set at $P_{(A|O)} < 1.0$ (i.e., random outcomes occurring with a mean inter-outcome interval of 8 seconds). A subsequent trial of identical parameters occurred randomly in the series of experimental trials and served as a reliability check on the practice trial. The two were found to correlate significantly ($r = .13$, $p < .05$). In subsequent trials, sufficiency and necessity were manipulated across the randomly ordered series of blocked trials: 2 trials at $P_{(O|A)} = 0$ and $P_{(A|O)} < 1.0$; 2 trials at $P_{(O|A)} = 0$ and $P_{(A|O)} = 1.0$; 2 trials at $P_{(O|A)} = 1.0$ and $P_{(A|O)} < 1.0$; and 2 trials at $P_{(O|A)} = 1.0$ and $P_{(A|O)} = 1.0$ (see Table 2). At the end of each trial, the subject was asked to judge on a 0-10 scale the degree of control their responses (pressing vs. not pressing the key) exerted over the direction of the circle's movement. In making their judgements, students were given the following instructions: "On a scale of 0 to 10, how much control do you feel you had over changes in direction of the green dot with 10 meaning total control and 0 meaning no control at all. You must consider or think

Table 1. Design used for assessing contingency perception using the computer task Contiception.

Trial type and number	**Sufficiency** response probability		**Necessity** random (non-responsive) outcomes
Practice Trial (n = 1)	$\underline{P}_{(O\|A)} = 0.5$		$\underline{P}_{(A\|O)} < 1.0$ (random outcomes occur with a mean inter-outcome interval of 8s)
Experimental Trials (n = 8) 2 of each (2x2) possible combination, randomly ordered	$\underline{P}_{(O\|A)} = 0.0$	*or*	$\underline{P}_{(A\|O)} = 1.0$ (no random outcomes)
	$\underline{P}_{(O\|A)} = 1.0$		$\underline{P}_{(A\|O)} < 1.0$ (random outcomes occur with a mean inter-outcome interval of 8s)
Reliability Check (n = 1) Replication of practice trial (randomly inserted among experimental trials)	$\underline{P}_{(O\|A)} = 0.5$		$\underline{P}_{(A\|O)} < 1.0$ (random outcomes occur with a mean inter-outcome interval of 8s)

about 4 different possibilities: 1) did the green dot change direction every time you pressed the key? or 2) were there times you pressed the key and the green dot did not change direction? 3) did the green dot ever change direction on its own, when you had not pressed the key? or 4) did the green dot ever not change when you had not pressed? [Note: These four possibilities represent the four cells of a 2 x 2 contingency table: (a) action / outcome, (b) action / no outcome, (c) no action / outcome, (d) no action / no outcome.]For example, if every time you pressed the key, the green dot changed direction, and it never changed direction unless you pressed the key, that would be a 10 or total control. If the green dot never changed direction when you pressed the key and/or it changed direction on its own all the time, then that would be 0 control. However, if it seemed like half the time you pressed the key the green dot changed direction and half the time it changed on its own or did not change, that would be a 5 or medium control. You can say any number from 0 to 10 depending on how much control you felt you had." In order to equate the amount of information available to subjects across trials, subjects were encouraged to press the key approximately the same number of times in each trial. To assist with this, a counter at the top of the computer screen displayed the number of key presses made during each trial.

In the present study, the non-spontaneous Contiception trials (i.e., $\underline{P}_{A|O} = 1.0$) were used as control trials to check on subjects' understanding of the task. For example, if a subject judged his or her control to be less than five in the necessary and sufficient condition (objective control = 10), or more than five in the unnecessary and insufficient

condition (objective control = 0), then the subject's reporting was attributed to a lack of understanding or random responding and their (n = 13) control scores were not included in subsequent analysis. Of particular interest to the present investigation, were the trials where subjects' actions were unnecessary for changes to occur ($\underline{P}_{(A|O)} < 1.0$) (i.e., presence of random outcomes). These were considered to be the best means of discriminating students' subjective control because, from a normative point of view, twice as much information (i.e., all four cells of the 2 x 2 contingency table) must be considered in making the judgement.

Reliability studies on the Contiception task with older subjects have found 2-week test-retest reliabilities of 0.85 for all trials and 0.87 for spontaneous change trials (McLeod, unpublished). Although no validity data is currently available on Contiception, judging contingencies from probabilistic computer displays is a standard approach with some variation between labs. The complexity and flexibility provided by the Contiception program in allowing for the manipulation of contingency parameters (necessity and sufficiency) permits the assessment of imperfectly contingent events which are more reflective of real-life situations, thereby enhancing the ecological validity of the task. Furthermore, it is noteworthy that the relations between spontaneous changes and judgements of control, including age effects, using the Contiception program have been replicated several times by McLeod and colleagues (McLeod & Cain, 1992; McLeod, 1994; Fuller & McLeod, 1995).

Induced Failure Task. Following the judgement-of-control task in Session 1, subjects were given two unsolvable block design problems. The designs were taken from the Block Design section of the Weschler Intelligence Scale for Children - Revised (Weschler, 1974) and modified to make them unsolvable. Block designs have been found to be more useful in inducing failure (i.e., subjects less likely to catch on that the designs are rigged to be unsolvable) than other commonly used unsolvable problems (Alloy & Clements, 1992). At the end of Session 1, subjects were asked to respond to two questions as a manipulation check: "On a scale of 0 to 10, with 0 being terrible and 10 being terrific, how well do you think you did on the block design problems?" and "Do you think you could solve the block design problems given additional time?"

Measures

Judgement of Control Scale. After each of the Contiception trials, subjects were asked to rate the degree of control their responses (pressing vs. not pressing) exerted over the change in direction of the circle on a Judgement of Control Scale marked off in single units with extreme values of 0 and 10 and an intermediate value of 5. The extreme values were labeled "no control" and "total control", respectively, with the 5 point labeled "medium control." Subjects were briefed on the concept of control and what they should consider in making their judgement as described above.

Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978, 1994). The RCMAS was specifically designed to assess the level and nature of anxiety in children and adolescents from ages six to 19 years. It consists of a 37-item self-

report questionnaire which yields five scores including: Total Anxiety; three anxiety subscales: Physiological Concerns, Worry/Oversensitivity, and Social Concerns; and a Lie subscale designed to detect acquiescence, social desirability, or the deliberate faking of responses. The items are dichotomous (i.e., yes/no) and are scored by summing the number of "yes" responses. Total scores range from 0 to 28 with higher scores representing greater anxiety. Current literature reveals the RCMAS to be the most widely used measure of childhood anxiety and conceptually distinct from the CDI (Lonigan, Carey, & Finch, 1994; Chorpita, Albano, and Barlow, 1998). It has demonstrated reliability across different gender, racial, and age groups (Reynolds & Paget, 1983). Reynolds and Richmond (1994) report internal consistency coefficients ranging from .56 to .80 across 11 age groups for its three subscales and above .80 for the total score. Indicative of its validity as a measure of chronic anxiety, the RCMAS has been reported to correlate highly with the State-Trait Anxiety Inventory for Children (STAIC) Trait scale (r = .85) but not the STAIC-State scale (r = .24) (Reynolds & Richmond, 1994). Students completed the RCMAS at both Sessions 1 and 2.

Children's Depression Inventory (CDI; Kovacs, 1981, 1992). The CDI is a reliable and well-validated 27-item self-report measure designed to assess cognitive, behavioural, and affective symptoms of depression. The CDI is a modification of the Beck Depression Inventory designed for use with preadolescent and adolescent children. Each item consists of three statements of different severity, and the child is asked to select one statement that best describes how he/she has been feeling for the past two weeks. Items are scored from

0 to 2 (2 = most severe), and the sum of all item scores is the total CDI with a possible range of 0 to 54. Higher scores on the CDI indicate more depressive symptoms. For the present study, the item pertaining to suicidal ideation was dropped, therefore, the highest possible score was 52. Dropping this item was consistent with the request of school officials who felt that the item might cause concern in the children and their parents. The CDI is the most widely used measure of childhood depressed affect with demonstrated reliability and validity (Lonigan et al., 1994; Saylor, Finch, Spirito, & Bennett, 1984). Internal consistency coefficients of .94 and .80 have been reported for normal and clinical samples, respectively (Saylor et al., 1984). Kovacs (1981) reported adequate internal consistency and 1-month test-retest reliabilities (.86 and .72, respectively) for the scale as a whole. CDI scores are moderately correlated (r =.54) with clinician ratings of children's levels of depression (Kazdin, 1981). Factor analyses by Carey, Faulstich, Gresham, Ruggiero, and Enyart (1987) identified a three-factor structure for the CDI in a nonreferred (control) sample of students. These factors were labeled Depressed Affect, Oppositional Behaviour, and Personal Adjustment. Cronbach's alphas for the subscales have been reported to range from .69 to .77 (see Cole & Turner, 1993). Cronbach's alphas for the full CDI and subscales in the present study are presented in Table 3. Students completed the CDI at both Sessions 1 and 2.

Children's Hassles Scale (CHS; Kanner, Feldman, Weinberger, & Ford, 1987). The CHS consists of a list of 25 hassles (i.e., everyday unpleasant events) covering the areas of family, school, friends, and play in children's lives. Children are asked to check

which hassles occurred in the last month and to rate whether the event "didn't feel bad," "felt sort of bad," "felt very bad," or "didn't happen." Three summary scores can be generated from the CHS: (a) frequency - a simple count of the number of hassles which occurred in the last month, yielding a score that can range from 0 to 25; (b) frequency of bad hassles - the number of hassles rated as either "sort of bad" or "very bad" yielding a score that again can range from 0 to 25; and (c) total intensity - the sum of the weights for items endorsed as occurring. Since weights can range from 1 (didn't feel bad) to 3 (felt very bad), a total intensity score has a possible range from 0 to 75.

Evidence suggests that hassles play a prominent role in the etiology of a wide range of physical and emotional disorders. When compared with major life events scores, for example, hassles scores have been found to be better predictors of both psychological and somatic symptomatology (Kanner, Coyne, Schaefer, & Lazarus, 1981). Indeed, in most cases the unique variance accounted for by hassles has been greater than that accounted for by major life events (see Rowlison & Felner, 1988).

Positive and Negative Affect Schedule for Children (PANAS-C; Laurent, Catanzaro, Potter, & Joiner, 1996). The PANAS-C is a child measure of positive affect (PA) and negative affect (NA) modeled after Watson, Clark, and Tellegen's (1988) PANAS. The PANAS-C includes a 9-item PA scale (the extent to which a person feels enthusiastic, active, and alert) and a 10-item NA scale (the extent to which a person experiences subjective distress such as anger, disgust, guilt, and fear). An absence of PA denotes anhedonia, which Clark and Watson (1991) argue distinguishes depression from

anxiety. In contrast, NA is viewed as nonspecific. The scale consists of a number of words that describe different feelings and emotions. Subjects are asked to indicate to the extent to which they have felt this way for a prescribed period of time which, for the present study was "at the present moment." The PANAS-C was administered at two time points: immediately after completing the questionnaire package and immediately following the induced-failure task.

The PANAS-C has demonstrated similar psychometric properties to Watson et al.'s (1988) PANAS. Alpha coefficients of .90 and .93 for the NA scale have been found for school and inpatient samples, respectively; alpha coefficients of .90 and .94 for the PA scale were obtained for the same samples (Laurent et al., 1996). The PANAS-C scales have also demonstrated good convergent and discriminate validity. The PA scale has been found to negatively correlate with the CDI , whereas the NA scale positively correlates with the CDI. Correlations among the PANAS-C scales and anxiety (e.g., STAIC-T) and depression measures in school samples are very similar to those found by Watson et al. (1988) in their sample of college students and employees using the PANAS (e.g., $\underline{r}$ = -31 versus $\underline{r}$ = - .35 for the anxiety - PA measures, and $\underline{r}$ = .64 versus $\underline{r}$ = .58 for the depression - NA measures).

Procedure

Session 1. Written parental consent was required before a student could participate in the study. At Session 1, students for whom parental consent had been obtained were apprised of the ethical considerations of the study (e.g., voluntary participation and

confidentiality) and asked to sign a personal consent form. Subjects completed questionnaire packages consisting of RCMAS, CDI, and CHS in small groups of 3-5. However, the PANAS-C, computer and induced-failure tasks were completed individually and in private.

Subjects were asked to complete the questionnaires in the order presented and were encouraged to be open and honest in their responding. Efforts were made to ensure individuals' privacy within the small groups. Instructions were given for each questionnaire and repeated as required to ensure understanding. The questionnaires were read to the Grade 3 (8-year-old) students. After completing the package of questionnaires - RCMAS, CDI, CHS - all but one of the students returned to class and testing continued on an individual basis. The individual student was asked to complete the PANAS-C with explicit instructions to "describe how you are feeling right at this moment" and was then seated in front of the microcomputer. The Judgement-of-Control task and Judgement of Control Scale were explained and a practice trial was provided. When it was clear that the student understood the task, he/she was permitted to proceed.

Following the Judgement of Control task, students were administered the unsolvable block design problems. They were given two black and white designs and a set of nine black and white blocks. They were asked to put the blocks together to form each of the designs. The designs and time-to-completion varied among grades in order to equalize the challenge among each age group. Grade 3 students were given three minutes to complete each of two designs. Grade 6 (11-year-old) students were afforded three

minutes, as well, but were given harder designs to complete. Grade 9 (14-year-old) students were given the same designs as the Grade 6's but were allowed 90 seconds to complete. It was explained to the students prior to this task that the experimenter could not comment on either the task or their performance. Immediately upon finishing the block design task, students were asked to complete a second PANAS-C and asked to report on how they were feeling "right at the moment" with instructions not to be concerned about whether their answers were similar to or different from their answers on the earlier PANAS-C. Finally, they were given the two manipulation check questions: (1) "On a scale of 1 to 10,with 1 being terrible and 10 being terrific, how would you rate your performance on the block design task?" and, (2) "Do you think you could solve the block design problems given additional time?" Subjects were then excused from Session 1 and reminded that the experimenter would return in one month's time to conduct Session 2.

Session 2. Testing resumed approximately one month after Session 1 (range = 30-35 days). A 4-week interval was chosen to minimize underreporting of negative life events that may occur with longer time intervals (Monroe, 1982). At Session 2, participants were asked to complete the RCMAS, CDI and CHS with the same instructions as in Session 1.They were also asked to complete the CHS for events that had occurred during the 1-month interval between Session 1 and 2. Students were debriefed and thanked for their participation.

Results

Manipulation Check

Most subjects (98%) took the maximum time allowed on each block design which suggests that they were not aware that the designs were rigged to be impossible. Consistent with this interpretation, the majority of subjects (71%) responded "yes" to the question "Do you think you could solve the block design problems given additional time?"; another 8% responded "maybe" or "don't know" to the same question, and 21% said "no". Of the "no" respondents, approximately one-half (n = 36) explained that they replied "no" because they considered themselves incapable of solving the designs, not because they thought the designs were unsolvable. The remainder of the "no" respondents (n = 34) indicated that they considered the designs to be impossible. Consequently, these subjects were excluded from further analyses leaving a total of 301 subjects (56F / 46M 8-year-olds, 64 F / 46M 11-year-olds, and 55F / 35M 14-year-olds). Given that most subjects believed that the block designs were potentially solvable but were unable to solve them, they tended to rate their performance as average or below average on a scale of 0 ("terrible") to 10 ("terrific") [$M(SD) = 4.9\ (2.1)$]. Thus, it appears that the unsolvable block designs served as an adequate short-term stressor or failure experience. There were no significant age or gender differences ($F(2, 295) = .52$, $p = .60$ and $F(1, 295) = .95$, $p = .39$, respectively) in response to the manipulation check.

Means, Standard Deviations, and Reliability Data

Means, standard deviations, and coefficient alpha reliabilities (Cronbach, 1951) for all measures are presented in Table 2. Mean judgements of control for the four trials wherein subjects' actions were unnecessary for changes to occur [i.e., $P_{(A|O)} < 1.0$] ranged from 1.7 to 9.5 with a grand sample mean (M) and standard deviation (SD) of 5.4 (1.6). There were significant differences between subjects' RCMAS ($t(300) = 8.2$, $p < 0.001$), CHS-F ($t(300) = 3.8$, $p < 0.001$), and CHS-I ($t(300) = 2.0$, $p < 0.05$) scores at Session 1 and Session 2, and between subjects' PA ($t(300) = 8.2$, $p < 0.001$) scores at Time 1 and Time 2. In each case, Session 1 scores were higher than Session 2 scores. There were no significant differences in CDI and NA scores between the two collection times. These data correspond to the norms for these age groups published elsewhere (Finch, Saylor, & Edwards, 1985; Smucker, Craighead, Craighead, & Green, 1986).

The cut-off scores used in determining clinical significance of CDI and RCMAS scores were consistent with those employed by other researchers (see Cole & Turner, 1993; Kovacs, 1992; Reynolds & Richmond, 1994). Approximately 10% (n = 31) of the total sample scored at or above 19 on the RCMAS; 9% (n = 27) scored at or above 19 on the CDI; and 4.6% (n = 14) scored at or above these levels on both measures. Relatively "pure" elevated categories were calculated for anxious, dysphoric, and combined groups. The "pure anxious" group consisted of those subjects scoring high (>19) on the RCMAS and relatively low (<19) on the CDI (n = 17). Similarly, the "pure dysphoric" group consisted of those subjects who scored high on the CDI (> 19) and

Table 2. Means, standard deviations, and Cronbach alpha reliabilities for all measures (N = 301).

Measure	M	SD	Range	Cronbach α
Judgement of Control	5.3	1.5	0-10	.67
Session 1 RCMAS Total	9.4	6.1	0-28	.84
Session 2 RCMAS Total	7.4	6.4	0-27	.88
Session 1 CDI	7.7	6.9	0-35	.88
Session 2 CDI	7.5	7.8	0-43	.90
Session 1 CHS-F	11.5	5.2	0-28	.86
Session 2 CHS-F	10.6	5.7	0-25	.88
Session 1 CHS-I	13.7	12.6	0-75	_
Session 2 CHS-I	12.3	15.2	0-75	_
Time 1 PANAS-PA	27.3	8.6	9-45	.88
Time 2 PANAS-PA	24.1	9.3	9-45	.86
Time 1 PANAS-NA	13.8	5.8	5-44	.86
Time 2 PANAS-NA	14.2	5.4	9-38	.82

Note. RCMAS = Revised Children's Manifest Anxiety Scale, CDI = Children's Depression Scale, CHS-F = Children's Hassles Scale-Frequency, CHS-I = Children's Hassles Scale-Intensity PANAS-PA = Positive and Negative Affect Schedule for Children - Positive Affect, PANAS-NA = Positive and Negative Affect Schedule for Children – Negative Affect

relatively low (< 19) on the RCMAS (n = 17). These groups are only "relatively" pure in that the "pure" anxious group scored higher than average on the CDI and, similarly, the "pure" dysphoric group scored higher than average on the RCMAS. The "combined" group consisted of those subjects scoring high (> 19) on both the RCMAS and CDI (n = 15).

Prior to further analyses being conducted, data transformations were performed on those variables revealing non-normal distributions. Square root transformations were performed on Session 1 and Session 2 RCMAS, CDI and CHS-Intensity; logarithm transformations were performed on Time 1 and Time 2 NA. Data transformations performed on the remaining variables (i.e., CHS-F and PA) did not appear to stabilize the variances or improve the shape of the distributions so raw scores were used. Readers should note that throughout the remainder of the dissertation text, references to RCMAS, CDI, CHS-Intensity, and NA scores refer to transformed, not raw data, scores.

Correlational Analyses

Table 3 displays the zero-order correlations for all study variables relevant to the tests of hypotheses. Due to the large number of correlations, it was necessary to use Bonferroni familywise error corrections. The following probabilities are based on Bonferroni corrections. RCMAS and CDI scores were positively correlated (r = .63). The PA and NA scales of the PANAS-C were negatively correlated although the correlation was not significant following Bonferroni correction. Between measures, RCMAS and CDI scores correlated strongly and positively with NA scores (RCMAS: r = .48 and

Table 3. Pearson correlations of study variables for all subjects (N = 301).

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Judgement of Control	_												
2. Session 1 - RCMAS Total	.03	_											
3. - CDI Total	-.06	.63***	_										
4. - CHS Frequency	-.14	.39***	.43***	_									
5. - CHS Intensity	.03	.51***	.48***	.73***	_								
6. PA1	.20	-.12	-.27***	-.17	-.10	_							
7. PA2	.28***	-.07	-.18	-.22**	-.07	.71***	_						
8. NA1	.02	.48***	.61***	.48***	.47***	-.16	-.06	_					
9. NA2	-.02	.46***	.43***	.46***	.46***	-.14	-.17*	.70***	_				
10. Session 2 - RCMAS Total	-.02	.76***	.66***	.40***	.47***	-.14	-.14	.41***	.44***	_			
11. - CDI Total	-.03	.57***	.82***	.40***	.48***	-.23***	-.17	.54***	.41***	.68***	_		
12. - CHS Frequency	-.16*	.33***	.45***	.71***	.59***	-.13	-.17	.35***	.36***	.41***	.47***	_	
13. - CHS Intensity	.06	.39***	.36***	.45***	.66***	-.01	-.01	.37***	.37***	.48***	.46***	.57***	_

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

Note. Asterisks indicate significance following Bonferroni correction for a familywise error rate of .05.

Judgement of Control scores are based on the four experimental trials with random outcomes (P(A|0) < 1.0).

CDI: r =.61). RCMAS scores correlated negatively but not significantly with PA scores (RCMAS: r = -.12). CDI scores correlated both negatively and significantly with PA scores (CDI: r = -.27). Although the correlation between PA and CDI attained significance and was stronger than the correlation between PA and RCMAS, the difference between the two correlations failed to attain statistical significance by Fisher's transformation (z = 1.75, n.s.). Similarly, the correlations between NA and CDI versus NA and RCMAS did not differ significantly (z = 1.5, n.s.). Mean judgements of control for the four trials wherein subjects' actions were unnecessary for changes to occur [i.e., $P_{(A|O)} <$ 1.0] correlated significantly with PA scores (r = .28) and frequency of hassles (r = .16). However, when age was controlled for, only the correlation between PA and control ratings retained significance (r = .16, $p < .05$), higher control ratings being related to more positive affect.

Tables 4, 5, and 6 present the means and standard deviations for all independent and dependent variables used in the study at Sessions 1 and 2 by age and gender, both separately and combined.

Session 1 Analysis. To examine age and gender differences on the seven primary measures (i.e., Judgement of Control, RCMAS, CDI, CHS-Frequency and -Intensity, PANAS-PA and -NA) at Session 1, a two-way MANOVA was conducted. Significant multivariate main effects were found for both age ($F(14, 620) = 12.52$, $p < 0.001$) and gender ($F(7, 278) = 4.33$, $p < 0.001$). The multivariate test of the interaction between age

and gender was also significant ($F(14, 620) = 2.38$, $p < 0.001$).

Univariate tests revealed significant age effects for control judgements ($F(2, 282) = 43.29$, $p < 0.001$), CDI ($F(2, 282) = 4.69$, $p < 0.01$), CHS-Frequency ($F(1, 282) = 19.22$, $p < 0.001$), PA ($F(2, 282) = 3.25$, $p < 0.05$) and NA ($F(2, 282) = 3.72$, $p < 0.05$). Follow-up pairwise comparisons of age groups (using Tukey's correction for familywise Type 1 error) revealed that 8-year-olds reported significantly more control than 11-year-olds who, in turn, reported significantly more control than 14-year-olds. Eight-year-olds reported significantly fewer symptoms of dysphoria than 14-year-olds, fewer daily hassles and more positive affect than either the 11- or 14-year-olds. Eleven-year-olds reported less negative affect than 14-year-olds (see Table 4). Univariate tests revealed significant gender effects for control judgements ($F(1, 282) = 3.98$, $p < 0.05$), RCMAS ($F(1, 282) = 10.41$, $p < 0.001$), and CHS-Intensity ($F(1, 282) = 6.36$, $p < 0.01$). Females reported significantly more control, more symptoms of anxiety, and greater intensity of hassles at Session 1 than did males (see Table 5).

The significant multivariate interaction effect between age and gender was attributable to CDI scores ($F(2, 282) = 2.99$, $p < 0.05$), CHS-Intensity ($F(2, 282) = 4.42$, $p < 0.01$), and PANAS-NA ($F(2, 282) = 3.96$, $p < 0.05$). A closer examination of these interactions revealed that girls reported fewer depressive symptoms than boys at age eight but more depressive symptoms than boys at ages 11 and 14. Whereas girls and boys reported similar intensity of daily hassles and negative affectivity at the younger ages, girls reported significantly greater intensity of hassles and negative affectivity than boys at age

Table 4. Means and standard deviations of study variables at Session 1 and Session 2 by age.

	Session 1			Session 2		
Variable	8-year-olds N = 101 M (SD)	11-year-olds N = 110 M (SD)	14-year-olds N = 90 M (SD)	8-year-olds M (SD)	11-year-olds M (SD)	14-year-olds M (SD)
Judgement of Control (0-10)	6.4[a] (1.5)	5.1[b] (1.4)	4.5[c] (1.5)	— —	— —	— ---
RCMAS Total (0-28)	10.6 (6.6)	8.6 (6.0)	9.2 (5.3)	7.3 (7.1)	6.8 (5.7)	8.3 (6.1)
Physiological Arousal (0-10)	4.2 (2.5)	3.1 (2.2)	3.2 (2.2)	3.2 (2.7)	2.6 (2.1)	3.0 (2.2)
Worry/Oversensitivity (0-11)	4.0 (3.2)	3.3 (2.8)	3.8 (2.5)	2.4 (3.1)	2.4 (2.8)	3.1 (2.9)
Social Concerns (0-7)	2.4 (1.9)	2.2 (2.0)	2.2 (1.8)	1.8 (2.0)	1.8 (2.0)	2.2 (2.1)
Lie (0-9)	3.2 (2.5)	1.9 (2.3)	0.9 (1.5)	2.6 (2.4)	1.2 (1.8)	0.9 (1.5)
CDI Total (0-52)	6.5[a] (6.3)	7.4 (7.3)	9.1 (6.9)	6.1[a] (7.7)	7.2 (8.0)	8.9[b] (7.5)
CHS Frequency (0-25)	9.2[a] (5.5)	12.2[b] (4.3)	13.2[b] (5.1)	7.6[a] (5.2)	11.3[b] (5.1)	13.2[c] (5.3)
CHS Intensity (0-75)	12.5 (13.4)	13.8 (11.1)	15.0 (13.0)	10.8 (13.6)	12.3 (17.3)	13.5 (12.8)
PA1 (9-45), PA2 (10-50)	29.3[a] (8.9)	26.4[b] (7.9)	26.4[b] (8.8)	28.9[a] (9.1)	22.0[b] (8.7)	21.3[b] (8.0)
NA1 (9-45), NA2 (10-50)	13.6 (5.5)	12.8[a] (4.5)	15.1 (7.2)	13.5 (5.7)	13.9 (4.8)	15.3 (5.9)

Note. Means in the same row with different superscripts differ at a minimum $p < .05$.

Table 5. Means and standard deviations of study variables at Session 1 and Session 2 by gender.

	Session 1				Session 2			
	Males N = 127		Females N = 174		Males		Females	
Variable	M	(SD)	M	(SD)	M	(SD)	M	(SD)
Judgement of Control (0-10)	5.2[a]	(1.7)	5.5[b]	(1.6)	—	—	—	—
RCMAS Total (0-28)	8.0[a]	(4.9)	10.5[b]	(6.6)	6.1[a]	(5.5)	8.5[b]	(6.7)
Physiological Arousal (0-10)	3.1[a]	(2.1)	3.8[b]	(2.5)	2.5[a]	(2.3)	3.2[b]	(2.4)
Worry/Oversensitivity (0-11)	2.9[a]	(2.4)	4.4[b]	(3.0)	1.8[a]	(2.4)	3.3[b]	(3.1)
Social Concerns (0-7)	2.1	(1.7)	2.4	(2.1)	1.8	(1.9)	2.0	(2.2)
Lie (0-9)	2.1	(2.4)	2.0	(2.2)	1.6	(2.1)	1.5	(2.1)
CDI Total (0-52)	7.0	(6.4)	8.0	(7.3)	6.7	(7.4)	7.8	(8.1)
CHS Frequency (0-25)	11.6	(5.0)	11.5	(5.4)	10.5	(5.6)	10.8	(5.7)
CHS Intensity (0-75)	11.7	(10.4)	15.3	(13.7)	11.1[a]	(16.7)	13.2[b]	(13.1)
PA1 (9-45), PA 2 (10-50)	28.1	(8.9)	26.8	(8.3)	25.3[a]	(9.4)	23.1[b]	(9.0)
NA1 (9-45), NA2 (10-50)	13.1	(4.7)	14.3	(6.5)	13.8	(4.5)	14.5	(6.1)

Note. Means in the same row with different superscripts differ at a minimum $p < .05$

Table 6. Means and Standard Deviations of Study Variables at Session 1 and Session 2 by Age and Gender

	Session 1						Session 2					
	8-year-olds		11-year-olds		14-year-olds		8-year-olds		11-year-olds		14-year-olds	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
N =	46	54	46	64	36	55	46	54	46	64	36	55
Variable	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)
P-O-C (0-20)	24.9(6.0)	26.0(5.9)	19.6(6.0)	20.8(5.1)	17.3(5.8)	18.9(6.0)						
RCMAS (0-28)	8.7(5.7)	12.1(6.9)*	7.9(5.2)	9.1(6.5)	7.4(3.4)	10.5(6.0) *	6.3(6.5)	8.2(7.5)	5.2(4.5)	8.0(6.2) *	6.7(5.3)	9.5(6.5) *
PA (0-10)	3.6(2.3)	4.6(2.6)	3.0(2.2)	3.2(2.2)	2.6(1.6)	3.6(2.5)	2.7(2.7)	3.5(2.7)	2.4(2.1)	2.8(2.1)	2.4(1.9)	3.5(2.3)
WO (0-11)	3.0(2.7)	4.9(3.2)	2.7(2.4)	3.7(3.0)	2.9(2.0)	4.6(2.7)	1.8(2.6)	2.9(3.3)	1.3(1.9)	3.3(3.0)	2.3(2.6)	3.8(3.0)
SC (0-7)	2.1(1.9)	2.7(2.0)	2.2(1.8)	2.2(2.1)	2.0(1.4)	2.4(2.0)	1.7(2.0)	1.8(2.0)	1.6(1.7)	1.9(2.2)	2.1(1.9)	2.3(2.2)
Lie (0-9)	3.4(2.6)	3.0(2.4)	1.9(2.3)	1.8(2.2)	0.8(1.3)	1.1(1.6)	2.8(2.6)	2.3(2.3)	1.2(1.8)	1.2(1.8)	0.7(1.1)	1.0(1.7)
CDI (0-52)	7.7(7.6)	5.5(4.8) *	6.5(6.6)	8.0(7.7)	6.8(4.3)	10.7(8.0)*	7.4(9.1)	5.0(6.2)	6.3(7.2)	7.8(8.4)	6.5(5.2)	10.7(8.4) *
CHS - F (0-25)	9.3(4.9)	9.2(5.9)	12.7(4.4)	11.8(4.2)	12.8(5.1)	13.5(5.1)	8.0(5.4)	7.4(5.1)	11.7(5.6)	11.0(4.8)	12.1(5.0)	13.9(5.5)
CHS – I (0-75)	12.4(11.9)	12.6(14.6)	12.6(9.5)	14.7(12.2)	10.0(9.5)	18.7(14.0) *	11.4(13.4)	10.3(13.8)	10.1(11.9)	12.5(11.2)	8.9(9.7)	16.8(13.8)*
PA1 (9-45)	29.0(9.8)	29.5(8.2)	27.9(8.0)	25.2(8.0)	27.3(9.0)	25.7(8.5)						
PA2 (10-50)							29.6(9.0)	28.3(9.2)	23.3(9.3)	20.9(8.1)	22.6(8.4)	20.4(7.7)
NA1 (9-45),	13.9(6.0)	13.3(5.1)	12.7(4.0)	12.9(4.8)	12.9(3.4)	16.8(8.6) *						
NA2 (10-50)							13.5(4.9)	13.5(6.3)	14.0(4.4)	13.8(5.0)	13.9(4.1)	16.3 (6.7)*

Note. Asterisks indicate gender difference significant at a minimum $p < .05$.

14 (see Figures 2, 3, 4).

Session 2 Analyses. To examine age and gender differences on the six primary measures at Session 2 (i.e., RCMAS, CDI, CHS-Frequency and -Intensity, PANAS-PA and -NA), a two-way MANOVA was conducted. Significant multivariate main effects were again found for both age ($F(12, 646) = 11.23$, $p < 0.001$) and gender ($F(6, 323) = 5.06$, $p < 0.001$). However, the multivariate test of the interaction was not significant ($F(12, 646) = 1.64$, n.s.). Univariate tests revealed a significant age effect for CDI ($F(2, 328) = 5.62$, $p < 0.01$), CHS-Frequency ($F(2, 288) = 29.12$, $p < 0.001$), PANAS-PA ($F(2, 288) = 25.21$, $p < 0.001$) and NA ($F(2, 288) = 3.42$, $p < 0.05$). Pairwise comparisons of age groups (using Tukey's correction for familywise Type 1 error) revealed a significant difference between 8-year-olds and 14-year-olds in CDI and NA scores with older students reporting more symptoms of dysphoria and negative affectivity than younger students. There was a significant difference among all ages in CHS-Frequency reporting with Frequency levels increasing with age. Eight-year-olds reported significantly more positive affectivity than either 11- or 14-year-olds who did not differ significantly in PA levels (see Table 5). The gender main effect was significant for RCMAS ($F(1, 288) = 12.88$, $p < 0.001$), CHS-Intensity ($F(1, 288) = 6.66$, $p < 0.01$), and PA ($F(1, 288) = 4.20$, $p < 0.05$). Girls reported significantly more anxious symptoms, greater intensity of daily hassles, and less positive affect than boys (see Table 6).

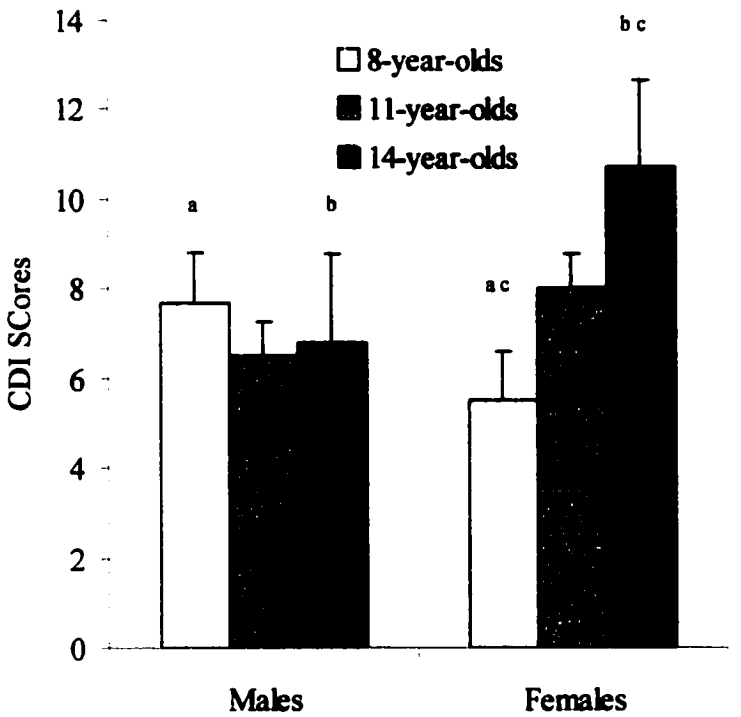


Figure 2. Scores on the Children's Depression Inventory (CDI) for males and females across all age groups. Bars denote standard errors. [a] indicates significance at $p < .05$; [b] indicates significance at $p < .01$; [c] indicates significance at $p < .001$.

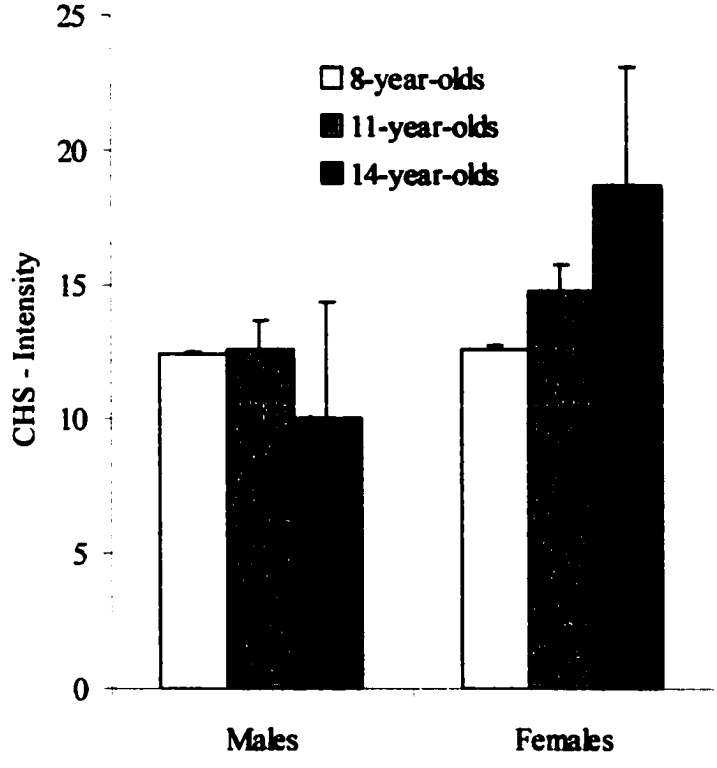


Figure 3. Children's Hassles Scale - Intensity scores for males and females across all age groups. Bars denote standard errors.
[b] indicates significant difference at $p < .01$.

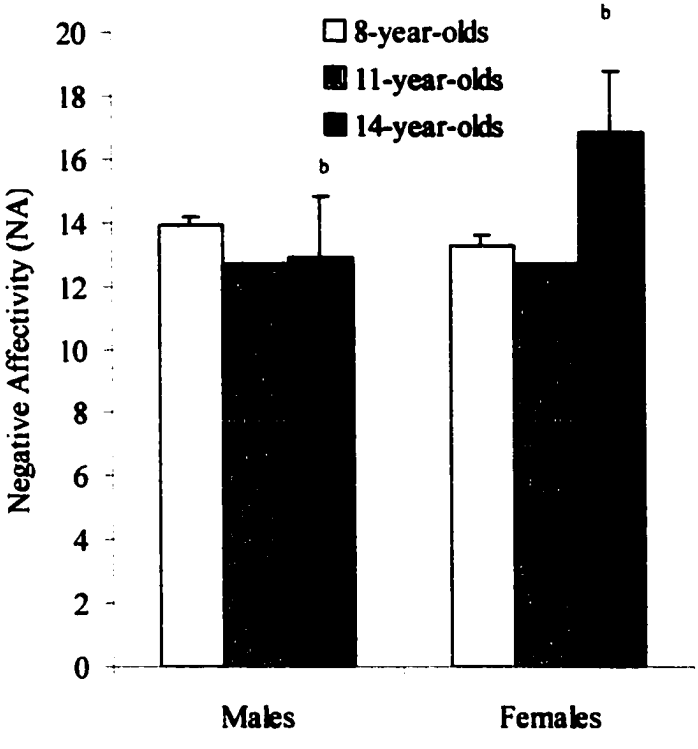


Figure 4. Negative affectivity (NA) scores for males and females across all age groups. Bars denote standard errors. [a] indicates significant difference at $p < .05$; [b] indicates significance at $p < .01$.

Hypothesis #1

In terms of the developmental course of control perception, it had been predicted that illusory control would decline with age. Consistent with predictions, results showed a significant difference in control judgements (i.e., average of subjective ratings of control across experimental trials) across age levels (F (2, 285) = 43.29, $p < 0.001$) with 8-year-olds reporting significantly ($p < .001$) more control than 11-year-olds who, in turn, reported significantly ($p < .05$) more control than 14-year-olds (M (SD) = 6.4 (1.5), 5.1 (1.4), and 4.5 (1.5), respectively). In fact, 11-year-old students' subjective ratings of control more closely approximated objective parameters than the other two age groups with 8-year-olds tending to overestimate the amount of control they exercised, and 14-year-olds tending to underestimate their control. The absence of a significant interaction between age and gender indicated that males and females showed a similar decline in control judgements with age with male means (and standard deviations) from youngest to oldest subjects being 6.2 (1.5), 5.0 (1.5), and 4.5 (1.5) and female equivalent scores being 6.5 (1.4), 5.2 (1.2), and 4.7 (1.5).

Hypothesis #2:

Contingency Judgement Analyses.

It had been predicted that subjects' sensitivity to the parameters of contingency perception (i.e., necessity and sufficiency) would increase with age. To test this prediction a contingency judgement analyses was conducted. Since the judgement of control task employed in the present study (i.e., Contiception; McLeod & Spence, 1995) uses random

algorithms to generate probabilistic responses, it was necessary to test for possible differences between groups in the outcome of these procedures before formal data analyses were conducted. In order to ensure that there were no group differences in actual response probability levels received by subjects, a 2 (gender) x 3 (age group) x 2 (necessity: presence or absence of random changes) x 2 (sufficiency: response probability) factorial MANOVA was conducted on actual responsiveness data. Age and gender were the between-subjects factors and necessity and sufficiency were the within-subjects factors. No significant main effects or interactions were found, indicating that all ages and both genders received equal levels of contingency experience.

To further ensure that the actual contingencies did not differ between groups, the analysis was repeated using the normative index of contingency, delta p [$\Delta P = \underline{P}_{(O/A)} - \underline{P}_{(O/A)}$]; the difference in the probability of an outcome (O) given a preceding action (A) and that outcome in the absence of the action (-A) as the dependent variable.[1] No

To further ensure that the groups did not differ in the amount of information they received prior to making their control judgements. A 2 (gender) x 3 (age group) x 2 (necessity) x 2 (sufficiency) factorial MANOVA was conducted on key press frequency. No significant main effects or interactions involving were found, indicating that the groups of interest presses the key approximately equally across trials and thereby made their judgements of control based on equal amounts of information.

Perceived Control Ratings

To test for age and gender differences in sensitivity to changes in contingency, a 2 (gender) x 3 (age group) x 2 (sufficiency) x 2 (necessity) factorial MANOVA was performed on judgements of control. Significant main effects were found for sufficiency ($F(1, 284) = 815.8$, $p < 0.001$) and necessity ($F(1, 284) = 7.57$, $p < 0.01$), as well as the significant effects for groups were found.interaction between these two variables ($F(1, 284) = 199.3$, $p < 0.001$). With respect to sufficiency, students perceived more control when response probability (sufficiency) was set at $P_{(O|A)} = 1.0$ [M(SD) = 8.68 (1.37)] as compared to when response probability was set at $P_{(O|A)} = 0$ [M(SD) = 1.68 (1.55)]. In other words, students perceived themselves to have more control at the higher versus lower response probability. Consistent with predictions, there was a significant interaction between response probability and age ($F(2, 284) = 13.48$, $p < 0.01$) with older subjects being more sensitive to changes in response probability than younger subjects (Figure 5). Judgements of control ratings for older subjects more accurately reflected the actual response probability level than did younger subjects' judgements of control, rendering lower judgements when response probability was zero [Ms(SDs) = 2.59, 1.42, and 1.06 for 8-, 11-, and 14-year-olds, respectively] and higher judgements when response

1. Delta p calculations were based on a time unit of one second for determining the frequency of P(O/A). Whereas this is an arbitrary time unit, it has been used by others (Wasserman,1990). For a brief discussion of this see McLeod & Spence (1995).

probability was one [Ms(SDs) = 8.37, 8.68, and 9.01 for 8-, 11-, and 14-year-olds, respectively]. There was no significant interaction between response probability and gender ($F(1, 288) = .07$, n.s.).

Also consistent with predictions, there was a significant main effect for necessity ($F(1, 284) = 7.57$, $p < 0.01$) with subjects, on average, perceiving more control when key-presses were *unnecessary* as compared to *necessary* [M(SD) = 5.06 (0.93) vs. 5.30 (1.98) for necessary and unnecessary trials, respectively]. In other words, subjects perceived significantly more control when objectively there was a weaker contingent relation between their key presses and changes in the display (i.e., objectively they had less control). In fact, random outcomes were found to inflate control judgements at low response probabilities [M(SD) = 2.98 (2.08) vs. M(SD) = .38 (1.0)] but diminish control judgements at high response probabilities (M(SD) = 7.6 (1.9) vs. 9.7 (.85) (see Figure 6). The differences are statistically significant ($p < .001$) and are consistent with the findings of Watt & McLeod (1996) and Tennen, Drum, Gillen, and Stanton (1982) though not easily explained by current theories of human control judgement.

There was a significant interaction between necessity and age group ($F(2, 284) = 32.92$, $p < 0.001$) with older subjects being more sensitive to random changes in stimulus direction than younger subjects (Figure 7). With increasing age, there was a significant increase in subjects' control judgements when actions were necessary [Ms(SDs) = 4.95, 5.02, and 5.22 for 8-, 11-, and 14-year-olds, respectively]. When actions were not necessary, however, control judgements decreased with age [Ms(SDs) = 6.38, 5.08, and

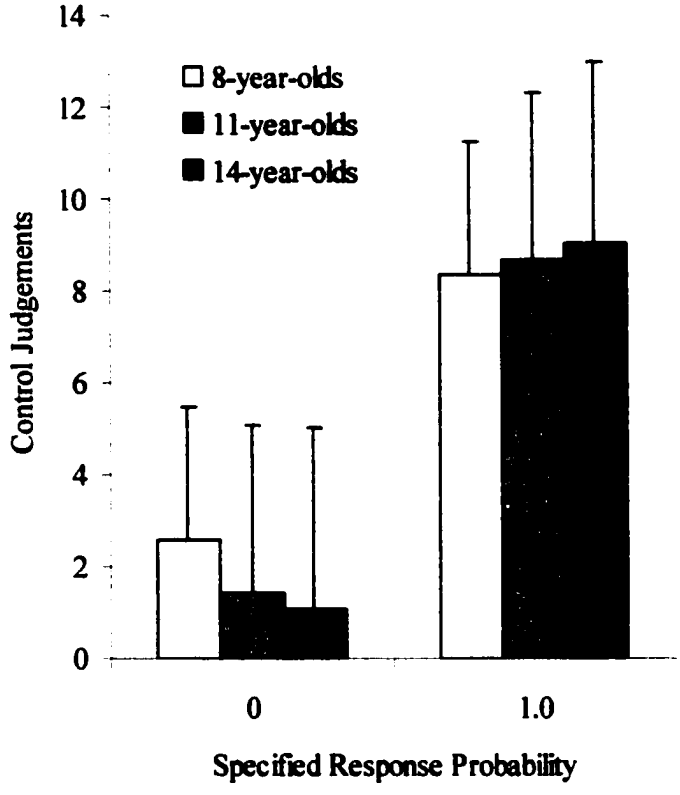


Figure 5. Perceived control ratings for all age groups at each response probability. Bars denote standard errors.

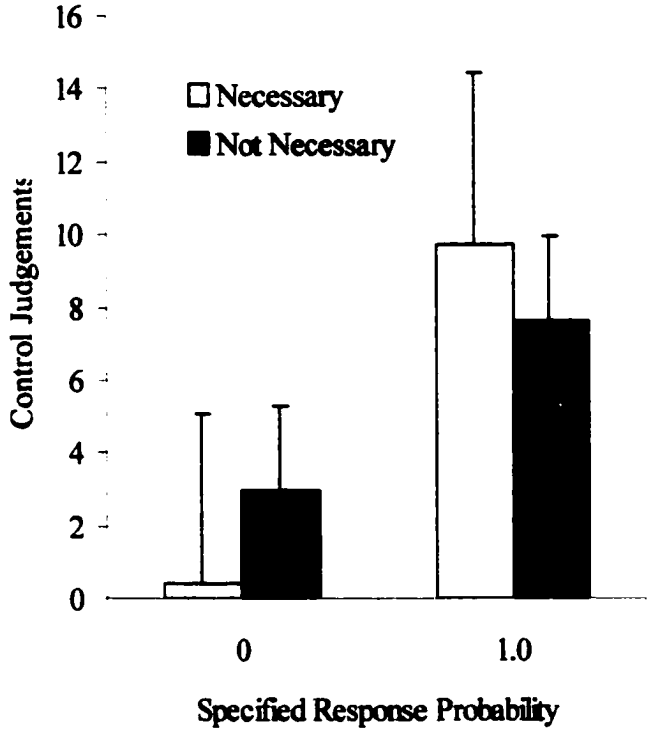


Figure 6. Interaction between necessity (presenceor absence of random outcomes) and sufficiency (response probability) for all subjects. Bars denote standard errors. Asterisks denote significant difference at $p < .001$.

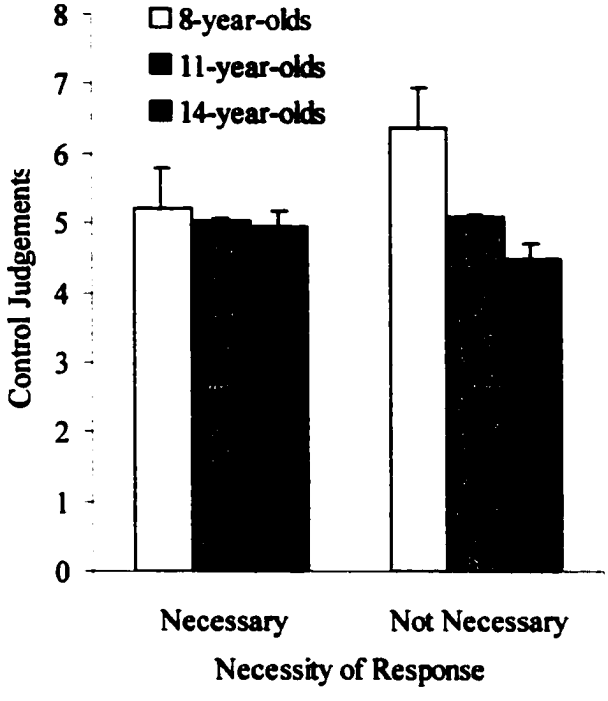


Figure 7. Perceived control ratings for all age groups when responses are necessary (without random outcomes) and not necessary (with random outcomes). Bars denote standard errors.

4.48 for 8-, 11-, and 14-year-olds, respectively]. Older subjects' judgements of control were thus more consistent with the effect of necessity on objective contingencies. There was no significant interaction between necessity and gender ($F(1, 284) = .27$, n.s.).

Hypothesis #3:

Affective Responses to Laboratory Stressor.

It had been predicted that subjects with a high versus low illusion of control would be less likely to experience an increase in negative affectivity following laboratory- and naturally-occurring stressors. All subjects who performed the unsolvable block designs and believed the task could be solved were assumed to have experienced similar stress (i.e., failure to solve). Consistent with Alloy and Clements' (1992) approach, an antecedent hierarchical multiple regression was conducted to test whether susceptibility to an illusion of control (i.e., elevated judgements of control) would predict students' immediate mood reactions to the induced failure experience independent of their initial anxiety and depression levels. It was hypothesized that the greater the students' illusion of control in Session 1, the less likely they would be to: (i) show reduced positive and increased negative affect on the PANAS-C after failure on the unsolvable block design problems; (ii) rate daily hassles as intense and/or uncontrollable on the CHS at Session 2; and (iii) show increases in anxious or dysphoric symptoms at Session 2 after the occurrence of unpleasant events during the month before that session.

To test the hypothesis that subjects with a high versus low illusion of control would be less likely to experience negative affect after the laboratory failure in Session 1, the post-task PANAS-C (both PA and NA) scores were regressed on pre-task PANAS (PA and NA) and Session 1 RCMAS and CDI scores in Step 1 and on Judgement of Control scores in Step 2 using hierarchical multiple regression analysis. A similar analysis was conducted to test the second hypothesis that subjects with a high versus low illusion of control would be less likely to experience daily hassles that occur over the 1-month interval as stressful. In order to examine the predictive effects of judgements of control independent of concurrent depressive and anxious symptoms, Session 1 RCMAS and CDI scores will be controlled for in testing these first two hypotheses. To test the third hypothesis that subjects with a high versus a low illusion of control would be less likely to show an increase in anxious or depressive symptoms in Session 2 after the occurrence of natural stress-inducing daily hassles, Session 2 RCMAS and CDI scores were regressed on Session 1 RCMAS and CDI scores (Step 1), and on Judgement of Control scores and Session 2 CHS frequency scores (Step 2), and on Judgement of Control x CHS frequency interaction (Step 3). As demonstrated by Alloy and Clements (1992), this method provides a conservative test of the hypotheses because it considers only incremental effects over and beyond the contribution of all previously entered variables. In other words, predictive variance shared between the theoretical predictors of interest (e.g., perceived control) and the background variables (Session 1 scores on RCMAS, CDI, pre-task PANAS-C) gets attributed entirely to the background variables. Similarly, predictive variance shared

among the theoretically relevant predictors (e.g., perceived control, daily hassles, and the interaction) is attributed to any previously entered predictors (i.e., the separate coefficients for judged control and daily hassles rather than the interaction between them).

Pre-task PANAS-C subscale scores (i.e., PA and NA) and Session 1 RCMAS and CDI scores were entered first into the regression equation, followed by the entry of Judgement of Control scores. The results of the regression are displayed in Table 7. As expected, pre-task PA scores were highly significant predictors of post-task PA scores as indicated by positive partial correlations ($pr = .71$, $p < .001$). Neither Session 1 RCMAS nor CDI scores were found to predict Time 2 PA scores significantly (pr's = .03 and .01, n.s., respectively). However, after controlling for pre-task PA, RCMAS, and CDI scores, Judgement of Control scores provided significant additional predictive increments to PA scores ($pr = .22$, $p < .001$). Similarly, pre-task NA scores were highly significant predictors of post-task NA scores ($pr = .69$, $p < .001$). Session 1 RCMAS ($pr = .12$, $p < .01$), but not CDI ($pr = -.02$, n.s.), scores also significantly predicted Time 2 NA scores. In this case, Judgement of Control scores did not significantly improve the prediction of post-task NA scores after controlling for pre-task NA, RCMAS, and CDI scores ($pr = .06$, n.s.). These findings indicate that, regardless of subjects' pre-task levels of anxiety and/or dysphoria, the higher their judgements of control (i.e., illusion of control), the higher was their positive affect (PA) following the induced failure task. Students' judgements of control were not related, however, to their post-task levels of negative affectivity (NA) (see Figure 8).

Table 7. Hierarchical regression to predict Time 2 PA and NA scores

		Time 2					
		PA Scores			NA Scores		
	Predictor	β	pr	R^2	β	pr	R^2
	PA/NAat Time 1	.71***	.71***		.69***	.69***	
	RCMAS at Session 1	.02	.03		.13**	.12**	
	CDI at Session 1	.00	.01		-.03	-.02	
Step 1				.51***			.53***
	Control	.16***	.22***		-.04	-.06	
Step 2				.02***			.00
	Summary			.53***			.53***

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

Note. N = 287 (14 cases deleted due to missing data). RCMAS = Revised Children's Manifest Anxiety Scale, CDI = Children's Depression Scale, PANAS-PA = Positive and Negative Affect Schedule for Children - Positive Affect, PANAS-NA = Positive and Negative Affect Schedule for Children – Negative Affect.

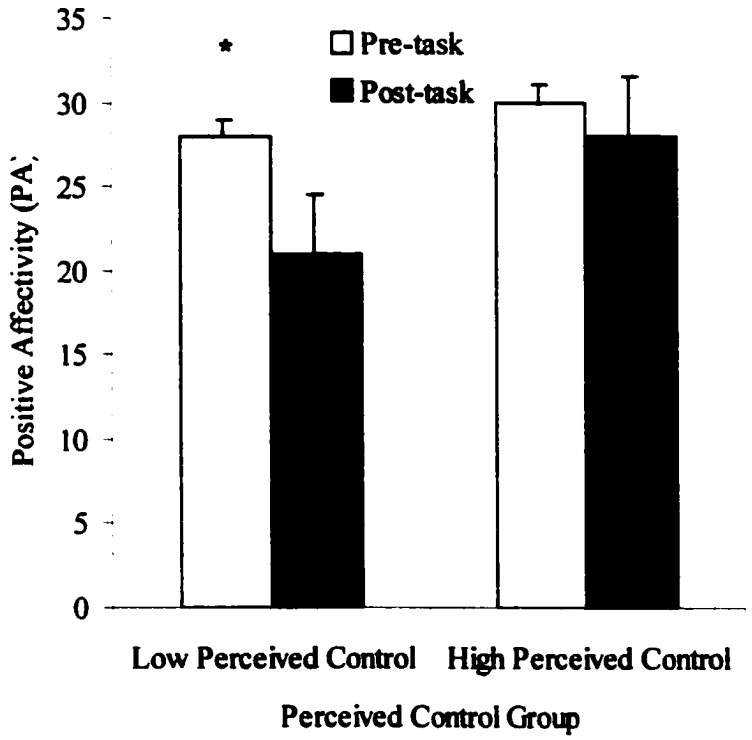


Figure 8. Pre-task and post-task positive affectivity (PA) scores for low perceived control and high perceived control groups. Bars denote standard errors. Asterisk indicates significant difference at $p < .01$.

In order to examine the magnitude of the protective effect of high judgements of control, residualized pre- and post-task PA and NA change scores were calculated for subjects with high (≥7) and low ≤4) judgements of control (i.e., mean judgements of control for the four trials wherein subjects' actions were unnecessary for changes to occur [i.e., $\underline{P}_{(A|O)} < 1.0$] ± 1SD). Low perception of control subjects experienced relatively large decrease in positive affect following failure on the block design task as compared to high perception of control subjects (Residualized change scores: 0.6 vs. 0.2) but a similar increase in negative affect (Residualized change scores: 0.09 vs. 0.05)

Affective Responses to Naturally Occurring Stressors.

To test whether students' Judgement of Control scores would predict how intensely they rated daily hassles that occurred over the 1-month interval between Sessions 1 and 2, an antecedent hierarchical regression analysis was conducted with Session 2 CHS-Intensity as the dependent measure (see Table 8). Session 2 CHS-Frequency, Session 1 RCMAS and CDI scores were entered first into the regression equation, followed by Judgement of Control scores. As expected, Session 2 CHS-Frequency significantly predicted CHS-Intensity at Session 2 ($pr = .58$, $p < .001$). Session 1 RCMAS ($pr = .28$, $p < .001$), but not CDI ($pr = .12$, n.s.), scores also had significant predictive value. After controlling for Session 2 CHS-Frequency, and Session 1 RCMAS and CDI scores, Judgement of Control scores provided significant additional predictive increments to CHS-Intensity scores ($pr = .19$, $p < .01$). Interestingly, as indicated by the positive partial correlations, higher illusions of control were related to higher intensity ratings of

Table 8. Hierarchical regression to predict Session 2 CHS-Intensity Scores.

	Predictor	Session 2 CHS-Intensity Scores β	pr	R^2
	CHS-Frequency at Session 2	.58***	.58***	
	RCMAS at Session 1	.24***	.28***	
	CDI at Session 1	.11	.12	
Step 1				.38***
	Control	.13**	.19**	
Step 2				.02**
	Summary			.40***

***p < 0.001; **p < 0.01; *p < 0.05.

Note. RCMAS = Revised Children's Manifest Anxiety Scale, CDI = Children's Depression Scale. CHS = Children's Hassles Scale

daily hassles; a finding that subsequent analysis showed to be accounted for by gender (see Table 11).

To test whether students' Judgement of Control scores would predict an increase in anxiety and depression at Session 2 as a result of stress-inducing hassles, two further antecedent hierarchical regression analyses were conducted (see Table 9). In the first regression analysis, RCMAS ($\underline{pr}$ = .77, $\underline{p}$ < .001) and CDI ($\underline{pr}$ = .17, $\underline{p}$ < .001) scores at Session 1, and CHS-Frequency scores ($\underline{pr}$ = .19, $\underline{p}$ < .001) at Session 2 significantly predicted RCMAS scores at Session 2 After controlling for the previous variables, Judgement of Control scores provided no additional significant predictive value ($\underline{pr}$ = -.04, n.s.).

In the second regression analysis (Table 10), Session 1 CDI ($\underline{pr}$ = .81, $\underline{p}$ < .001), but not RCMAS scores ($\underline{pr}$ = .09, n.s.), significantly predicted Session 2 CDI scores. CHS-Frequency scores added significantly to the prediction of Session 2 CDI scores (pr = .23, p < .001). Again, after controlling for the previous variables, Judgement of Control scores contributed no significant predictive value (pr = .02, n.s.). Similar multiple regression analyses conducted separately for gender revealed interesting differential effects for males and females in their affective responses to naturally occurring, but not laboratory, stressors. Males' judgements of control significantly predicted how intensely they rated daily hassles that occurred over the 1-month interval between Sessions 1 and 2, after frequency of those hassles and both subjects' anxious and dysphoric symptomatology at Session 1 were statistically controlled for (Table 11). Higher control ratings were

Table 9. Hierarchical regression to predict Session 2 RCMAS Scores.

	Predictor	Session 2 RCMAS Scores β	Session 2 RCMAS Scores pr	R^2
	RCMAS at Session 1	.77***	.77***	
	CDI at Session 1	.18***	.17***	
	CHS-Frequency at Session 2	.18***	.19***	
Step 1				.64***
	Control	-.04	-.04	
Step 2				.00
	Summary			.64***

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

Note. RCMAS = Revised Children's Manifest Anxiety Scale, CDI = Children's Depression Scale. CHS = Children's Hassles Scale

Table 10. Hierarchical regression to predict Session 2 CDI Scores.

	Predictor	β	Session 2 CDI Scores pr	R^2
	CDI at Session 1	.81***	.81***	
	RCMAS at Session 1	.07	.09	
	CHS-Frequency at Session 2	.17***	.23***	
Step 1				.70***
	Control	.02	.02	
Step 2				.00
	Summary			.70***

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

Note. RCMAS = Revised Children's Manifest Anxiety Scale, CDI = Children's Depression Scale. CHS = Children's Hassles Scale

Table 11. Hierarchical regression to predict Session 2 CHS - Intensity scores for males only.

	Predictor	Session 2 CHS - Intensity Scores β	pr	R^2
	CHS-Frequency at Session 2	.39***	.39***	
	CDI at Session 1	.16	.16	
	RCMAS at Session 1	.14	.12	
Step 1				.19
	Control	.19*	.21*	
Step 2				.03*
	Summary			.22*

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

Note. RCMAS = Revised Children's Manifest Anxiety Scale, CDI = Children's Depression Scale. CHS = Children's Hassles Scale

related to higher intensity ratings. Females' judgements of control did not significantly predict how intensely they rated daily hassles that occurred over the 1-month interval, however there was a trend toward females' control judgements providing additional predictive value ($p < 0.08$) with higher control judgements being related to lower intensity ratings (Table 12). Males' control ratings significantly predicted dsyphoric mood scores at Session 2 after controlling for Session 1 anxious and dysphoric mood scores (Table 13). Again, the results defied expectations in that the higher the control scores, the higher the dysphoric mood scores. Although females' control ratings did not provide significant predictive value, they were in the expected direction (i.e., the higher the control ratings the lower the depression scores) (Table 14). Neither males' nor females' control ratings predicted anxiety scores at Session 2.

Hypothesis # 4:

Test of the Cognitive Moderational (Diathesis-Stress) Model

It was predicted that the interaction of control judgements and negative events would predict both anxious and dysphoric symptoms at Session 2. To test perception of control as a diathesis-stress component of the hopelessness model of depression, a setwise hierarchical multiple regression procedure, analysis of partial (residual) variance (APV) was employed. This approach, as described by Cohen and Cohen (1983, pp.402-422), has been used by others (e.g., Metalsky & colleagues, 1987; 1992; 1993) to test hypothesized attributional diatheses and causal mediation processes explicated in the hopelessness theory. APV is, in fact, a generalization of analysis of covariance (ACV). ACV is a special

Table 12. Hierarchical regression to predict Session 2 CHS - Intensity scores for females only.

	Predictor	Session 2 CHS - Intensity Scores β	pr	R^2
	CHS-Frequency at Session 2	.75***	.75***	
	CDI at Session 1	.28***	.37***	
	RCMAS at Session 1	.29***	.31***	
Step 1				.66***
	Control	-.10	-.16	
Step 2				.01
	Summary			.66***

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

Note. RCMAS = Revised Children's Manifest Anxiety Scale, CDI = Children's Depression Scale. CHS = Children's Hassles Scale

Table 13. Hierarchical regression to predict Session 2 CDI Scores for males only.

	Predictor	β	Session 2 CDI Scores pr	R^2
	CDI at Session 1	.77***	.73***	
	RCMAS at Session 1	.02	.04	
	CHS-Frequency at Session 2	.19***	.26***	
Step 1				.70***
	Control	.10*	.18	
Step 2				.01*
Summary				.71***

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

Note. RCMAS = Revised Children's Manifest Anxiety Scale, CDI = Children's Depression Scale. CHS = Children's Hassles Scale

Table 14. Hierarchical regression to predict Session 2 CDI scores for females only.

	Predictor	β	Session 2 CDI Scores pr	R^2
	CDI at Session 1	.71***	.66***	
	RCMAS at Session 1	.09	.12	
	CHS-Frequency at Session 2	.11*	.17*	
Step 1				
	Control			.68***
Step 2		-.03	-.06	.00
Summary				.68***

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

Note. RCMAS = Revised Children's Manifest Anxiety Scale, CDI = Children's Depression Scale. CHS = Children's Hassles Scale

case of setwise multiple regression/correlation (MRC) which proceeds hierarchically as follows: With Y as the dependent variable, a set of IVs that represents covariates (set A) is entered in the first step, to which is then added another set of variables (set B) carrying the group-membership information. The requirement of homogeneity of regression between groups is assessed by adding in the third step the A x B product set; if the null hypothesis for the A x B interaction is found acceptable, the analysis in the second step using sets A and B is interpreted as an analysis of covariance (ACV), which is then understood as being an assessment of the relationship between Y*A and B*A (Cohen & Cohen, 1983).

The logic and procedure of APV is exactly the same as that for ACV except that in APV, either quantitative or nominal research factors (or combinations thereof) may be used as set B. Cohen and Cohen (1983) describe APV as: "a highly general method for the study of partial (residualized) variance that may use any type(s) of research factors as covariates and any type(s) of research factors whose covariate-adjusted effects are of interest" (p.246). APV involves a set of covariates being entered into the regression equation first, followed by entry of a set or sets of research factors of interest. In the special case of a simple pre-post design in which the dependent measure is a post-score measure of a given variable and the covariate set consists of a single pre-score measure of the same variable, APV may be used to predict residual change scores (i.e., scores reflecting change from pre-score to post-score measures adjusted for subjects' pre-score status).

Consistent with Cohen and Cohen's (1983) advisement, the Session 1 CDI was entered into equation first, followed by entry of the control judgements and CHS-Frequency main effect (Step 2), and finally the critical control judgements x CHS-Frequency interaction (Step 3) (see Table 15). Neither CHS-Frequency nor control judgements predicted residual changes in CDI scores from Session 1 to Session 2 (pr = .09, n.s.; and pr = .03, n.s., respectively). More integral to the hopelessness theory, the posited control x CHS-Frequency interaction did not significantly predict residual changes in RCMAS scores from Session 1 to Session 2 (pr = .04, n.s.).

The diathesis-stress model was also tested for its ability to predict anxiety symptoms at Session 2. In a similar fashion, the Session 1 RCMAS was entered into the equation first, followed by entry of the control judgements and CHS-Frequency main effect set (Step 2), and finally the critical control judgements x CHS-Frequency interaction (Step 3) (see Table 16). The CHS-Frequency had a main effect independent of control judgements in predicting residual changes in RCMAS scores from Session 1 to Session 2 (pr = 0.11, $p < 0.05$). In contrast, the effect of control judgements, independent of CHS-Frequency was not significant (pr = -0.06, n.s.). Again, the posited control x CHS-Frequency interaction did not significantly predict residual changes in RCMAS scores from Session 1 to Session 2 (pr = 0.04, n.s.).

Table 15. Perception of control, frequency of hassles, and interaction predicting residual changes in CDI scores from Session 1 to Session 2.

Order of Entry in Set	Predictors In Set	F for Set	t for within-set Predictor	df	pr
1.	Session 1 CDI	575.38***		1, 287	.82***
2.	Main effect variables	192.94***		3, 284	.78***
	Control		.54	1, 287	.03
	CHS-Freq		1.53	1, 287	.09
3.	Control X CHS-Freq	2.14		1, 287	.04

***p < 0.001; **p < 0.01; *p < 0.05
Note. CDI = Children's Depression Scale. CHS = Children's Hassles Scale.

Table 16. Perception of control, frequency of hassles, and interaction predicting residual changes in RCMAS scores from Session 1 to Session2.

Order of Entry in Set	Predictors In Set	F for Set	t for within-set Predictors	df	pr
1.	Session 1 RCMAS	420.78***		1, 287	.77***
2.	Main effect variables	143.75***		3, 284	.73***
	Control		-1.00	1, 287	-.06
	CHS-Freq		1.92*	1, 287	.11*
3.	Control X CHS-Freq	2.71		1, 287	.04

***p < 0.001; **p < 0.01; *p < 0.05
Note. RCMAS = Reynolds Children's Manifest Anxiety Scale; CHS = Children's Hassles Scale.

Hypothesis #5:

Test of the Cognitive Mediational Model

A given variable is said to function as a mediator to the extent that it accounts for the relation between the predictor and the criterion (Baron & Kenny, 1986). Because no support was found for this specific application of the diathesis-stress model in that there was no significant effect of the posited control x CHS-Frequency interaction in predicting either CDI or RCMAS scores at Session 2, it was not reasonable to test the mediational model as proposed by the hopelessness theory (i.e., hopelessness mediating the relationship between the interaction of the diathesis-stress and the onset of dysphoric symptoms). However, it remained possible that a single variable, such as perceived control, could mediate the relationship between stressor(s) and the development of dysphoric and/or anxious symptomatology. To test this possibility, the present study employed the recommendations of Baron and Kenny (1986) as to how to conduct mediational analyses. The mediational model tested involved perception of control as a potential mediator of the relationship between frequency of daily hassles and symptoms of psychopathology. Following Baron and Kenny's reasoning, if perception of control (or hopelessness) mediates the relationship, then the following conditions should hold: (a) the independent variable (CHS-Frequency) must affect the proposed mediator (control judgements); (b) CHS-Frequency must affect the dependent variable (i.e., CDI and/or RCMAS scores); and (c) the proposed mediator must affect CDI and/or RCMAS scores. Baron and Kenny (1986) distinguish between partial and complete mediation. In the case

of partial mediation, the effect of the independent variable on the dependent variable would be reduced by the presence of the mediator but would continue to serve as a significant predictor. In the case of complete mediation, the independent variable would no longer serve as a significant predictor after the effects of the mediator variable are removed.

In the present set of analyses, no support was found for the mediating role of the perception of control variable. At step 1, CHS-Frequency was found to have an effect on perception of control ($t = 2.72$, $p < .01$). At step 2, CHS-Frequency was found to affect both CDI ($t = 9.19$, $p < .001$) and RCMAS ($t = 7.39$, $p < .001$) scores. At step 3, perception of control scores failed to predict either CDI ($t = .58$, n.s.) or RCMAS ($t = .41$, n.s.) scores, thereby effectively concluding the lack of a mediational role for perception of control.

Hypothesis # 6:

It had been predicted that subjects with high levels of anxious and dysphoric symptomatology would display similar perception of control styles as suggested by the helplessness-hopelessness model. It was expected that subjects with high levels of anxious and/or dysphoric symptomatology would display a similar expectation of uncontrollability (i.e., low control or helplessness) but that only dysphoric subjects would display an expectation of negative outcomes as suggested by their reported frequency and intensity of daily hassles. However, the "pure" anxious and dysphoric groups displayed significantly different control perceptions ($t(32) = 2.41$, $p < 0.05$) with the anxious group reporting

higher control ratings than the dysphoric group [M(SD) = 5.7 (1.3) vs. M(SD) = 5.0 (1.3), respectively]. Contrary to expectations, the control perceptions of both groups conformed to objective parameters rather than appearing low. Consistent with predictions, "pure dysphoric" subjects reported significantly more daily hassles than "pure anxious" subjects [$t(32) = -1.96$, $p < 0.05$; M(SD) = 16.2 (3.8) vs. M(SD) = 12.5 (6.7)], respectively] but not greater intensity of daily hassles than their anxious counterparts [$t(32) = -.72$, n.s.; M(SD) = 25.8 (12.9) vs. M(SD) = 21.8 (18.7), respectively]. The combined anxious-dysphoric group reported significantly greater frequency [$t(30) = -2.7$, $p < .01$; M(SD) = 17.9 (4.7)] and a trend for greater intensity [$t(30) = -1.88$, $p < .07$; M(SD) = 30.2 (16.2)] of negative life events as compared to the "pure anxious" group. However, there were no significant differences between the combined anxious-dysphoric and "pure dysphoric" groups for either frequency [$t(30) = -1.56$, n.s.] or intensity [$t(30) = -1.39$, n.s.] of daily hassles. Control judgements for the combined anxious-dysphoric group did not differ significantly from either the "pure" anxious or dysphoric groups (t's(30) =.74 and -.49, respectively).

Limited support for the tripartite model of anxious and depressive symptomatology emerged in the present study. As described earlier, the tripartite model postulates that anxiety and depression consist of a general distress factor (negative affectivity) that is shared by both types of disorders, a specific depression factor characterized by anhedonia or low positive affectivity, and a specific anxiety factor characterized by physiological hyperarousal. An examination of the two "pure" groups (elevated scores on either

depression or anxiety measure only) and the one combined group (elevated scores on both measures) in the present study revealed a pattern of results somewhat inconsistent with the tripartite model as outlined by Clark and Watson (1991). For example, all three groups reported greater than average (i.e., sample average) physiological arousal and negative affectivity (NA), however only the co-morbid group revealed lower than average positive affectivity. The "pure dysphoric" group reported greater NA than the "pure anxious" group but lower physiological arousal than either of the other two groups. As expected, the "pure" anxious group reported the highest physiological arousal of the three groups, however this group also reported the highest PA and the lowest NA of all three groups. Subjects who reported both high anxious and high dysphoric symptomatology appeared to fit the co-morbid, as opposed to the mixed anxiety-depression, criteria as outlined by Clark and Watson (1991). This group reported the highest NA scores and the lowest PA scores of any group.

RCMAS scores correlated significantly with negative affect (NA) ($\underline{r}$ = .43) but not positive affect (PA) ($\underline{r}$ = -.12) following Bonferroni familywise correction. On the other hand, CDI scores correlated significantly with both NA ($\underline{r}$ = .58) and PA ($\underline{r}$ = -.27) scores following Bonferroni familywise correction. These findings are consistent with the findings of others (see Watson & Kendall, 1989; Compas, Ey, and Grant, 1993).

Hypothesis #7:

Figure 9 represents differences in frequency of 8-, 11-, and 14-year-olds in each of the high symptomatology groups --- anxious, dysphoric, and combined. There were no

significant age differences in the proportion of participants classified as either "pure dysphoric" (n = 5/15, 4/15, 6/15 for 8-, 11- and 14-year-olds, respectively; $X^2 = 0.40$, n.s.) or "combined" groups (n = 3/15, 7/15, 5/15, respectively; $X^2 = 1.60$, n.s.) but there was a significant age difference in the proportion of participants classified as "pure anxiety" (n = 12/17, 4/17, 1/17, respectively; $X^2 = 11.41$, $p < 0.001$) with significantly more 8-year-olds reporting elevated anxiety scores than either 11- or 14-year-olds.

Figure 10 represents differences in frequency of males and females in each of the high symptomatology groups --- anxious, dysphoric, and combined. When "pure" elevated categories were calculated, females were disproportionately represented in both the "pure" anxious (i.e., RCMAS ∃19 and CDI ‹19: n = 14/17 or 82%, $X^2 = 7.1$, $p < 0.01$) and "combined" groups (n = 12/15 or 80%, $X^2 = 5.40$, $p < 0.02$) but there were no gender differences in the proportion of participants classified as being in the "pure" dysphoric group (RCMAS < 19 and CDI∃19: n = 8/15 or 53%, $X^2 = .07$, n.s.).

In contrast to Cole et al. 's (1997) findings, the present study revealed an increasing correlation between anxious and dysphoric symptoms with age. Although 8-year-old students revealed a high correlation between symptoms of anxiety and dysphoria ($r = 0.51$), 11-year-olds revealed a higher correlation ($r = 0.71$) and 14-year-olds a higher correlation still ($r = 0.77$). The incidence of combined anxiety and dysphoria (i.e., RCMAS≥ 19 and CDI ≥ 19) did not vary by age ($X^2 = 1.45$, n.s.) but did vary by gender ($X^2 = 4.54$, $p < 0.05$) with girls being disproportionately represented in the combined group (80%). The "pure anxious" group (i.e., RCMAS ≥19 and CDI < 19) varied

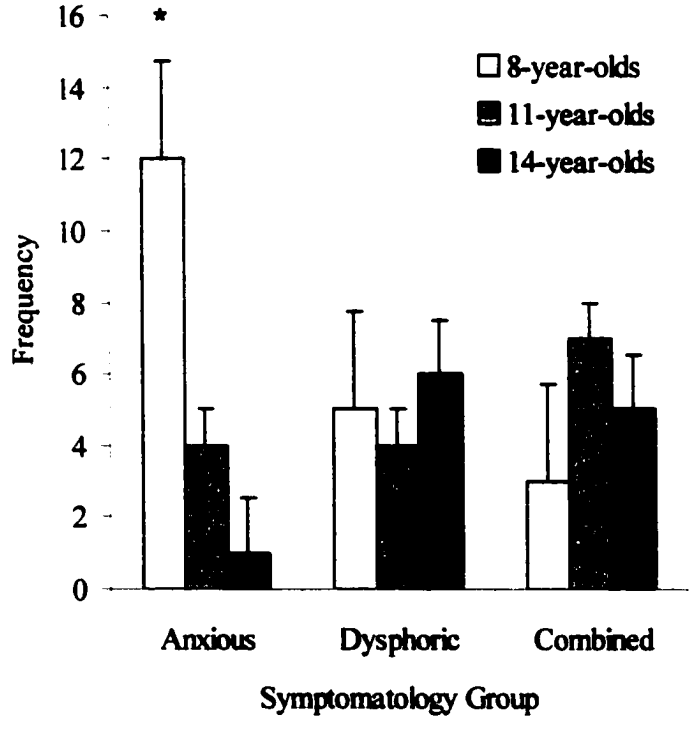


Figure 9. Differences in frequency of age groups in high anxious, high dysphoric, and combined symptomatology groups. Bars denote standard errors. Asterisks denote a significant age difference at $p < .01$.

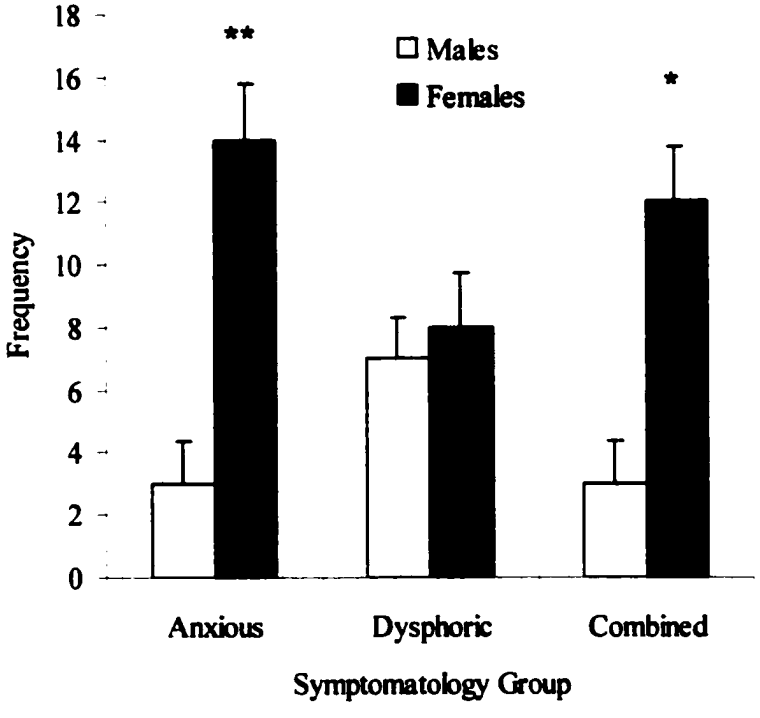


Figure 10. Differences in frequency of males and females in high anxious, high dysphoric, and combined symptomatology groups. Bars denote standard errors. **denote significant gender difference at $p < .01$; * denotes significance at $p < .05$.

significantly by both age ($X^2 = 12.64$, $p < 0.002$) and gender ($X^2 = 14.73$, $p < 0.001$). Eight-year-olds (70%) and females (82%) represented the preponderance of subjects in the "pure" anxious group. In contrast, there were no significant age or gender differences in the "pure" depressive group (i.e., CDI ≥ 19 and RCMAS < 19) ($X^2 = 1.13$, n.s. and $X^2 = 0.39$, n.s., respectively).

With respect to the finding that girls were disproportionately represented in the combined group, further data exploration revealed that, in fact, the correlation between anxiety and dysphoria scores increased significantly across ages for females (8-year-olds, $r = 0.53$; 11-year-olds, $r = 0.76$; 14-year-olds, $r = 0.81$) but decreased across ages for males (8-year-olds, $r = 0.69$; 11-year-olds, $r = 0.62$; 14-year-olds, $r = 0.46$). The correlation between anxiety and dysphoria scores for 8-year-old females was significantly less than the correlation between anxiety and dysphoria scores for either 11-year-old or 14-year-old females ($z = 2.14$, $p < .05$ and $z = 2.72$, $p < .01$, respectively). There was no significant difference between the correlation between anxiety and dysphoria scores for 11-year-old and 14-year-old females ($z = 0.69$, n.s.). For males, the differences between the correlations across the three age groups did not attain significance with z scores equalling 0.57 for 8- and 11-year-olds, 1.34 for 8- and 14-year-olds, and 1.00 for 11- and 14-year-olds. In other words, the relationship between symptoms of anxious and dysphoric mood appeared to strengthen significantly with age for females as compared to males, undoubtedly contributing to females' disproportionate representation in the combined group (12/15 or 80%). For males, however, the strength of the association between the

two types of symptoms decreased with age suggesting a divergence or developmental separation of the dimensions of anxiety and dysphoria consistent with the findings of Cole et al. (1997), although the findings were not significant.

The present study revealed a significant difference between 8-year-old males and females in terms of anxiety reporting $t = 1.88$, $p < 0.05$) with females reporting more anxiety than males. This difference not evident at either age 11 or 14.

Hypothesis #8:

Finally, it had been predicted that control perceptions would play a role in the development of gender differences in anxious and dysphoric mood. More specifically, it had been predicted that girls would perceive themselves to have less control and more stress (as measured by frequency of daily hassles) than boys, but not necessarily more stressful life events (as measured by intensity of daily hassles). Nolen-Hoeksema and Girgus (1994) proposed an additive model of gender differences in depression which suggested that preadolescent females carry more risk factors (e.g., behavioural style) which, when combined with the social and biological challenges of adolescent development (e.g., negative life events, puberty), contribute to increased rates of depressive symptomatology. An individual's perception of control style may function as a behavioural risk factor for negative affect (depression and/or anxiety). Nolen-Hoeksema's and Girgus' (1994) model suggests that girls carry more predisposing factors for anxiety and depression than boys (e.g., perception of control style, perception of stressors) that, in combination with a greater number of social (i.e., daily hassles) and biological challenges

(e.g., puberty) facing girls in early adolescence, place them at risk for depression.

To test Nolen-Hoeksema and Girgus' model, one would ideally employ a longitudinal design that follows individuals from before the gender difference emerges into middle adolescence or later. Alternatively, one could employ a cross-sectional design which tests age cohorts before and after the timing of the gender difference as was done in the present study (i.e., comparing 8-year-olds and 14-year-olds). As described by Wichstrom (1999), who used a similar approach in examining the role of intensified gender socialization in the emergence of gender difference in depressed mood during adolescence, support for such an additive developmental model requires that four criteria be met: (a) there be no gender difference in proposed causal factors (e.g., perception of control, perceived intensity of daily hassles) before the timing of gender differences in anxious and/or dysphoric mood; (b) gender differences in causal factors emerge at same time, or immediately preceding, the timing of gender difference in anxious and/or dysphoric mood; (c) causal factors correlate with anxious and/or dysphoric mood; and (d) the gender difference in anxious and/or dysphoric mood be substantially reduced or even removed when the causal factors are controlled.

In respect to the aforementioned criteria required to support an additive developmental model of gender differences the following conditions were met: (a) no gender differences in proposed causal factors (i.e., perception of control, perceived intensity of daily hassles) were found before the timing of gender differences in mood. A gender difference in dysphoric mood was found with girls reporting fewer dysphoric

symptoms than boys at age eight but significantly more dysphoric symptoms than their male counterparts by age 14. [Indeed, 14-year-old girls reported almost three times the number of dysphoric symptoms reported by 8-year-old females.] No significant gender difference was found in anxiety scores. (b) Whereas no gender difference was found for either of the proposed causal factors (i.e., perception of control, perceived intensity of daily hassles) prior to the emergence of the gender difference in dysphoric symptomatology, a gender difference in perceived intensity of hassles ($t = -3.49$, $p < 0.001$) emerged concomitantly with the gender differences in dysphoric affectivity. (c) Intensity of hassles, but not control perception, correlated significantly with CDI scores (Session1 $r = .48$, $p < 0.01$; Session 2 $r = .36$, $p < 0.01$). (d) Finally, when intensity of hassles was controlled for, the gender difference in dysphoria was effectively removed.

To summarize, these findings provide some support for Nolen-Hoeksema and Girgus' (1994) model. Recall that Nolen-Hoeksema and Girgus (1994) proposed that girls carry more predisposing factors for anxiety and dsyphoria than boys that, in combination with a greater number of social (i.e., daily hassles) and biological challenges (e.g., puberty) facing girls in early adolescence, place them at risk for depression. Interestingly, although males and females differed significantly in their perception of the intensity of the hassles they experienced, they did not differ significantly in the number of daily hassles reported. In other words, males and females experienced a similar frequency of daily stressors however females perceived these stressors to be more intense than did their male counterparts. Indeed, results indicate that with age, females come to perceive the hassles

they experience as being more potent than do males. Perception of control style was not found to play a role in the emergence of gender differences in depressed affect and, whereas perceived control was associated with frequency of hassles, it was not associated with perceived intensity of hassles.

Discussion

The present study investigated age and gender differences in control perception, as well as the relations among control perception, anxious and dysphoric mood in a non-clinical sample of school children. Of particular interest to the present investigation was the developmental course of control perception including the relative contributions of the contingency parameters of sufficiency and necessity to control perception; the role of perceived control in the development of negative affect (anxious and dysphoric) including the potential for a high versus low illusion of control to confer protection from negative affect following stress; and the role of perceived control, if any, in the emergence of gender differences (circa puberty) in anxious and dysphoric mood.

Developmental Course of Perceived Control

It had been predicted that younger children would be more apt to overestimate the extent to which they exerted control over stimulus changes in the judgement of control task but that older subjects would reveal less illusory control. Indeed, a significant difference was found between the three age groups of children in their perceptions of control with younger children perceiving themselves to have significantly more control than older children and significantly more control than was objectively possible.

Students' reports of subjective control over changes in the computer stimulus converged with objective control parameters between ages eight and 11, then appeared to diverge between ages 11 and 14 suggesting the existence of a nonlinear relationship between the two variables (i.e., age and perceived control). In other words, whereas the illusory control of the 8-year-olds yielded to the more realistic (i.e., conforming with the objective control parameters) judgements of the 11-year-olds, the 14-year-olds appeared to assume an illusion of non-control. This was an unexpected finding and one not previously discussed in the literature. It is not clear why students would become increasingly conservative in their estimate of the amount of control they exercised over the stimulus. Among adults a bias toward illusory control is believed to serve the purpose of maintaining or promoting one's self-esteem and a bias toward more realistic perceptions of control has been associated with dysphoric mood. What purpose (or penalty) perceiving less control, than is objectively possible, would serve among adolescents is not clear. Further research on the developmental trajectory of perceived control with adjacent age groups is required in order to determine how far such a trend would extend or whether an illusory non-control would plateau out and children's judgements become more realistic thereafter.

Contingency Perception

The decline in illusory control with age coincided with children's increasing accuracy in evaluating the contingencies between their actions and outcomes in the judgement of control task. It had been predicted that sensitivity to the parameters of

contingency perception (i.e., the necessity and sufficiency of responding) would increase with age. Subjects in the present study revealed increasing sensitivity to response probability (i.e., sufficiency) with age. The control ratings of older subjects, as compared to younger subjects, more accurately reflected actual response probabilities. In addition, older subjects displayed greater sensitivity to the parameter of necessity (i.e., presence or absence of random outcomes) than younger subjects. That is to say, older children were more perceptive of random changes in the display and adjusted their judgements of control accordingly (i.e., to be more consistent with the objective parameters of control).

The present study replicated Fuller and McLeod's (1995) finding that when actions (i.e., key presses) were *unnecessary* to produce an outcome, subjects judged themselves to have more control than when their actions were *necessary* to produce an outcome. In other words, under some conditions (i.e., when pressing the key was not necessary for a change in stimulus direction to occur), subjects perceived themselves to have more control when objectively they possessed less control. Moreover, in the presence of random outcomes, subjects displayed an elevated perception of control when response probability was low and a diminished perception of control when response probability was high. This finding is not easily accounted for by any simple heuristic for contingency judgements (McLeod, 1994) and suggests an illusory effect that contrasts with subjects' otherwise increased accuracy in contingency perception. Nevertheless, the fact that older subjects seemed less susceptible to the illusory effect than younger subjects suggests that development may play a role.

Appreciating the necessity of a response is not relevant in determining the sufficiency of actions to produce a response (McLeod and Cain, 1992). Knowing the extent to which you can get something *when you want it* is not the same as knowing the extent to which *you control the occurrence of an event.* In the former condition, the recognition of either contingency parameter (i.e., sufficiency or necessity) would suffice, whereas the latter requires that both necessity and sufficiency be taken into account. With this in mind, the findings of the present study suggest that with age comes the advantage of being better able to identify how much control you exert over environmental events. One would expect this developmental "edge" to confer an advantage in navigating one's environment, enhancing one's effectiveness to deal with environmental stressors and to maximize one's full potential.

The finding that illusory control declines with age is consistent with the Piagetian view that young children tend to overestimate the amount of control they exert over their environment. Consistent with Piaget's (1976) assertion, the younger children were less reliable in distinguishing between random and nonrandom events and, as a result, tended to overestimate the degree of contingency between their behaviour and subsequent outcomes. The findings indicate that, with age comes increasing ability to accurately evaluate the contingencies operating between events and to judge the amount of control one exerts over these events. These findings concur with those of other researchers (e.g., Kaley & Cloutier, 1984; Weisz, 1980) who also found evidence that illusory contingency declines and accuracy in control perception increases with age.

High versus Low Illusions of Control

It had been predicted that subjects with a high versus low illusion of control would be less likely to experience an increase in negative affectivity (or a decrease in positive affectivity) following either laboratory- or naturally-occurring stressors. Indeed, regardless of their pre-task levels of anxious and/or dysphoric symptoms, students who displayed a high versus low illusion of control experienced less of a decline in positive affect following the laboratory stressor and reported lower intensity ratings of daily hassles or natural stressors than did students with low perceived control. This represents a replication of Alloy and Clements (1992) finding that an illusion of control acts as an invulnerability factor, serving to protect individuals from decreases in positive affect immediately following stress.

Judgement of control scores, however, did not predict an increase in either anxious or dysphoric symptoms as a result of stress-inducing hassles over a 1-month period as had been predicted. Alloy and Clements' (1990) found an illusion of control to act as a protective mechanism against both immediate negative mood reactions to laboratory stressors and later onset depressive symptoms following the occurrence of negative life events. In contrast, the findings of the present study suggest that, whereas a high perception of control may serve to protect one from the immediate effects of an acute stressor, it does not appear to protect the individual from longer-term sequelae such as the effects of daily hassles over a one-month period. Such a finding could be interpreted as providing some support for the proposed role of perceived control as a distal versus

proximal contributory factor in the development of negative affectivity (Clements & Alloy, 1998) For example, in the short term, perceived control may attenuate the negative effects of acute stressors but contribute to the development of more chronic or persistent negative affectivity (e.g., anxious and/or dysphoric symptomatology) only through the accumulation of experiences with such stressors.

Some interesting research findings support this contention. For example, in an investigation of the role of perceived control in immunological reactivity among males following an acute interpersonal stressor, Brosschot, Godaert, Benschop, Olff, Ballieux, and Heijnen, (1998) found that subjects perceiving high control over the experimental stress situation showed an increase in immune system response cells (e.g., B and T lymphocytes) relative to control subjects and subjects perceiving low control. The latter group, on the other hand, showed a stressor-induced decrease in the number of T helper cells indicative of a compromised immune response. The authors concluded that perceived uncontrollability of a stressor appears to have immuno-modulating effects over and above those of the stressor per se. They suggest that a high number of daily stressors may produce the same effects as repeated exposure to uncontrollable conditions and that part of these effects may be mediated by the perception of uncontrollability. Similarly, Bolstad and Zinbarg (1997), in an investigation of the relations among sexual victimization, posttraumatic stress disorder symptoms, and generalized perception of control in a sample of female undergraduates, found that perceived control was diminished for women who had experienced childhood sexual abuse on multiple occasions as compared to those who

had experienced childhood sexual abuse on one occasion. These findings support the hypothesis proposed by Foa, Zinbarg, and Olasov-Rothbaum (1992) and echoed by others (e.g., Kushner, Riggs, Foa, & Miller, 1992), that regular experience with uncontrollable and unpredictable events leads to expectations of future uncontrollability and unpredictability. The above findings suggest that it is the experience of multiple stressors, rather than isolated stressors, that compromises one's perception of control (and the protection that high perceived control may confer) thereby elevating one's risk for negative affectivity. Operating in this manner, perception of control could be considered a pathoplastic variable (see Clark, Watson, & Mineka, 1994); a variable that modifies the course or expression of a distress disorder without necessarily having a direct etiological role. It has been suggested that pathoplastic variables may play a role in shaping the environment in ways that contribute to the maintenance of disorder (Clark et al., 1994; Wachtel, 1994).

The results of the present study showed that, on average, younger students reported higher perceived control and fewer hassles than older students for whom the reverse was true (i.e., lower perceived control and more hassles). With age, perceptions of control decreased while, at the same time, experiences of stress increased. This too is consistent with Brosschot et al.'s (1998) suggestion that it is the increased exposure to stress (e.g. number of daily stressors) that effectively compromises one's perception of control and the protective capabilities thereof. However, as will be discussed later, the relation between perceived control and exposure to stress appears to vary according to

mood and gender.

Perception of Control in the Development of Anxious and Dysphoric Mood

Of interest to the present study had been the potential for perception of control to assume a mediational and/or moderational role in the development of anxious and dysphoric symptomatology. Chorpita and Barlow (1998) suggested that perception of control could operate as a mediator between stressful experience and anxiety in childhood and then, over time, come to moderate the expression of anxiety. Clements and Alloy (1998) thought that individual differences in perception of control styles could modulate people's control perceptions for negative life events. Dysphoric symptoms are considered more likely to occur when negative life events are perceived to be uncontrollable (i.e., independent of one's responses) than when they are judged to be controllable. Metalsky and colleagues (1987) found that, whereas the stressful event itself predicted an immediate dysphoric mood reaction, it was the interaction between attributional style (diathesis) and stressful event that contributed to more enduring dysphoric symptoms.

It had been predicted that, in line with the diathesis-stress component of the hopelessness theory of depression, that control judgements (diathesis) would interact with negative life events (stress) to predict dysphoric symptoms (cognitive moderational model). Consistent with earlier findings (e.g., Metalsky & Joiner, 1992), it was expected that the diathesis-stress effect would be specific to dysphoric as opposed to anxious symptoms. In line with the mediation component of the hopelessness theory, it was predicted that the control style and stress interaction would predict dysphoric symptoms

through the mediating role of hopelessness represented in the present study by subjects' ratings of the intensity of their daily hassles (cognitive mediational model).

The present study found no support for either a mediational or moderational role for perception of control style in the development of either anxious or dysphoric symptoms. There was no evidence that the relations between negative life events and negative affectivity were either a function of students' perception of control style (moderational role) or that perception of control style could account for the relationship between the diathesis-stress and onset of anxious and/or dysphoric symptoms (mediational role). Indeed, in contrast to Metalsky et al.'s (1987) findings, perception of control styles predicted students' immediate affective response to stress but played no identifiable role in the expression of negative affect, either anxious or dysphoric, longer term. At odds with the diathesis-stress component of helplessness-hopelessness theory, perception of control did not interact with negative life events to predict either anxious or dysphoric mood. These findings are contrary to hypotheses but are consistent with some recent investigations (e.g., Swendsen, 1997, 1998).

Whereas the findings of the present study are not consistent with perception of control style operating as a diathesis in the development of negative affectivity, the findings are not entirely inconsistent with the proposed distal contributory role for perceived control in the helplessness-hopelessness model of depression. Whereas perceived control may not assume a direct etiological role in the development of anxious and/or depressive symptomatology, it may still influence the course or expression of these

symptoms. For example, one's perception of control style may influence the attributions he or she makes for negative events which, in turn, contributes to the development of negative affectivity. Another suggestion is that personality and environmental factors may be linked in such a way that personality characteristics contribute to the creation of stressful or problematic environments (Wachtel, 1994).

For example, Hammen (1991) proposed that the relationship between stress and depression is bidirectional in nature. As compared to normal controls and women with medical illness, Hammen (1991) found that unipolar depressed women experienced more dependent events (i.e., events that occurred, at least in part, as a result of the individual's own actions) but not independent events (i.e., fateful events such as deaths). Hammen (1991) argued that individuals with depression may actually contribute to the occurrence of some life stressors by constructing stressful circumstances and environments, thereby fueling a self-perpetuating cycle of stress and depression. Subsequent research with adolescents (Daley et al., 1997) appears to support Hammen's (1991) contention. In a 2-year longitudinal study of a community sample of 134 adolescent women, Daley et al. (1997) reported that women who received a diagnosis of depression in Year 1 experienced greater levels of dependent, but not independent, stress than did women with no disorder in Year 2. The present study did not distinguish between daily hassles in regards to whether the hassles could be construed as being dependent or independent events, however this appears to be area worthy of further investigation.

It had been predicted that subjects with high levels of anxiety and/or dysphoria would display similar expectations of uncontrollability (i.e., low control or helplessness) but that only dysphoric subjects would display an expectation of negative outcomes as suggested by their reported frequency and intensity of daily hassles. In fact, the pure anxious group reported significantly higher perceived control than either the pure dysphoric or combined groups, although the control perceptions of all groups were more realistic (i.e., conformed to objective parameters) than diminished. This finding contradicts the suggestion that an "illusion of uncontrollability" underlies anxiety disorders (Barlow, 1988; Rapee, 1995), however it is not entirely inconsistent with the postulates of the hopelessness theory. Recall that, according to the hopelessness theory, if an individual expects to be helpless in controlling future outcomes, but is unsure about his or her helplessness, he or she will exhibit "pure" anxiety. If the person is uncertain of his or her helplessness, and believes that future control may be possible, he or she will experience both increased arousal and anxiety. Moreover, the person will become more active, scan the environment for control-relevant cues, and make efforts toward gaining control. This latter proposition could account for the higher control ratings among the anxious group in the present study. The hopelessness theory goes on to say that if the person becomes convinced of his or her helplessness, but is still uncertain about the future likelihood of important negative events (or lack of positive events), a mixed anxiety-depression syndrome will result. Arousal will decrease, the person will "give up" and become passive or immobilized. If the perceived probability of future negative outcomes becomes certain,

then helplessness becomes hopelessness and anxiety should give way to a depressive syndrome characterized by despair, loss of interest, and hopelessness. Again, consistent with hopelessness theory, there was no significant difference between the dysphoric and combined groups in control perception.

Consistent with predictions, the dysphoric group reported greater frequency, though not intensity, of daily hassles than did the anxious group. The measure of subjects' reported intensity of daily hassles in the present study was intended to capture the essence of the hopelessness construct as delineated by the helplessness-hopelessness model (Alloy et al., 1990). The conventional definition of hopelessness is an expectation that highly desired outcomes will not occur or that highly aversive outcomes will occur and a perception that nothing can be done to alter the outcome (i.e., a feeling of helplessness) (Metalsky & Joiner, 1992). According to Alloy et al. (1990), helplessness is a necessary, but not sufficient, component of hopelessness and, in order for hopelessness to develop, helplessness must be accompanied by a high degree of certainty that negative outcomes will occur. Whereas self-reports of hassles intensity may not directly assess certainty of future negative outcomes, it seemed reasonable to expect that subjects who report a high degree of hassles intensity are more predisposed to a sense of foreboding and despair than subjects who report a low degree of hassles intensity. Nonetheless, the dysphoric group in the present study did not rate the intensity of their daily hassles any greater than the anxious group is consonant with Hammen's (1991) and Daley et al.'s (1997) findings that individuals with depression may construct stressful events or circumstances that can

perpetuate their dysphoric mood.

The present study provided only limited support for the tripartite model of anxious and dysphoric symptomatology. Indeed, an examination of the two "pure" groups (elevated scores on either depression or anxiety measure only) and the one combined group (elevated scores on both measures) revealed a pattern of results somewhat inconsistent with the tripartite model as outlined by Clark and Watson (1991). For example, the tripartite model would predict that the pure dysphoric group should have the lowest PA (i.e., anhedonia would be greatest in this group) and that the pure anxious group should have higher NA than the pure dysphoric group because of the very large nervousness, tension, and worry features of NA. However, in the present study, the pure dysphoric group did not have lower PA, and they had higher NA than the pure anxious group. In addition, in contrast to the predictions of the tripartite model, high physiological arousal was found for all three groups --- anxious, dysphoric, and combined --- and not the pure anxious group only. On the other hand, consistent with the findings of other studies, anxiety was highly correlated with NA but not PA. Dysphoria, on the other hand, correlated significantly with both NA and PA. This finding supports the central role of PA as a component of dysphoric affect and a distinguishing characteristic between anxiety and dysphoria. Whereas both anxious and dyphoric individuals may experience NA, anxious individuals may enjoy positive emotions (e.g., happiness, pride, contentment) whereas dysphoric individuals are more apt to suffer anhedonia.

Finding that anxious and dysphoric subjects tend to accurately assess, rather than overestimate, their ability to control outcomes is consistent with the literature indicating that elevated perceptions of control are associated with emotional health and well-being. However, finding that the majority of subjects in the present study tended to perceive the magnitude of their control accurately was more surprising. This result may, in fact, reflect the demands of the task employed to assess subjects' perceptions of control. In an examination of the illusion of control phenomenon, Thompson, Armstrong, and Thomas (1998) have proposed that individuals employ a control heuristic to judge the extent to which they can control an outcome; that is to say, they rely on judgements of how much they intend the outcome and the degree of connection between their action and the outcome to assess their control. According to Thompson and colleagues (1998), when the focus is on personal influence, such as judging control over achieving success, individuals use the control heuristic and illusions of control are the norm. However, when individuals are focused on figuring out the probabilities of various outcomes or assessing various options in the situation, the control heuristic is not used and accuracy in judgements prevails. For example, in an actual contingency situation, participants' estimates of the conditional probabilities were very close to the actual probabilities (Vasquez, 1987). The explicit instructions provided subjects in the present study may have served to focus their attention on evaluating the contingencies operating in the situation and, thereby, contributed to their accuracy in judgements of control. Thompson et al. (1998) discuss neither the potential effect of age or gender on the use of the control heuristic. Given the

findings of the present study, this would appear to be an area worthy of investigation.

Age and Gender Differences in Anxious and Dysphoric Mood

It was predicted that a temporal relationship between anxious and dysphoric symptomatology would be indicated by the frequency of symptom reporting across age groups. Some research suggests that the symptoms of anxiety tend to anticipate the emergence of depressive symptoms. Some studies have found the symptoms of the two disorders to converge with age (e.g., Dobson, 1985), whereas others have found a divergence of symptoms with age (Cole et al., 1997). Cole et al. (1997) found that the dimensions of anxiety and dysphoria were indistinguishable and could be regarded as a single entity among third graders but appeared to differentiate by sixth grade. Cole et al. (1997) thought their findings were consistent with a unified construct model for younger children and a dual or tripartite model for older children.

In contrast to Cole et al. 's (1997) findings, the present study found an increasing convergence between anxious and dysphoric symptomatology with age. However, a closer examination of this finding revealed that it applied to female students only. In contrast, male students revealed an increasing, albeit not significant, divergence of anxious and dysphoric symptoms with age. Consistent with the findings of others (e.g., Inderbitzen & Hope, 1995; Ochoa et al.; 1992), the present study found girls to be disproportionately represented in both the "pure" anxious and combined groups. Indeed, among the "pure" anxious group, 8-year-olds (70%) and females (82%) represented the preponderance of subjects. There were no significant age or gender differences in the "pure" dysphoric

group.

Freud (1926/1959) may have been the first to notice a developmental progression from anxiety to depression with prolonged anxiety states often ending in depression. The results of the present study appear consistent with the notion that a developmental progression occurs from anxious to depressive symptomatology. The finding of younger subjects and females being disproportionately represented among the "pure" anxious group is consistent with the results of a recent study by Lewinsohn, Gotlib, Lewinsohn, Seeley, & Allen, (1998). Lewinsohn et al. (1998). investigated gender differences in anxiety in a large sample of adolescents some of whom met the criteria for an anxiety disorder. Lewinsohn et al. (1998) found a preponderance of females among current and recovered anxiety disorder cases. Retrospective accounting indicated that this female preponderance emerges early in life and that, by age six, females are twice as likely to have experienced an anxiety disorder than are males (Lewinsohn et al.,1998). The gender difference in Lewinsohn et al.'s study persisted in both anxiety symptoms and anxiety diagnoses after psychosocial variables were controlled for suggesting that gender differences in vulnerability to anxiety cannot be explained entirely by differing social roles and experiences in adolescence. Indeed, the authors suggest that their findings are more consistent with a genetic versus environmental explanation for female vulnerability to anxiety. Whereas the present study found females to be disproportionately represented in the "pure" anxious group, overall 8-year-old males reported more symptoms of anxiety than 8-year-old females although the gender difference did not hold across the older age

groups. Nevertheless, the findings of the present study could be seen to support the idea that genetics may account for anxiety in young females (and/or males), whereas environmental stressors and/or maturational differences in factors such as control perception, may contribute to the later rise of dysphoric and/or anxious-dysphoric symptoms.

Lewinsohn et al. (1998) found no difference in level of anxiety symptoms between female and male adolescents who had not experienced a diagnosable episode of anxiety disorder. This latter finding is consistent with those of others (e.g., Compas et al., 1997) who have found the effects of gender on individual psychological traits in the general population to be typically small to moderate in magnitude as compared to clinical samples. However, the most consistent finding in both the clinical and nonclinical literature, is the large gender difference in symptoms of dysphoric or mixed anxious and dysphoric mood (Compas et al., 1997; Silverstein, Caceres, Perdue, & Cimarolli, 1995). Studies consistently report higher rates of dysphoric symptomatology among females than males with the typical 2:1 female:male prevalence ratio emerging at around age 12 (Girgus et al., 1991; Kandel & Davies, 1986). Most studies of preadolescent children find either that there are no gender differences in rates of dysphoria or that preadolescent boys are somewhat more likely to be dysphoric than girls. For example, in a study of dysphoric symptoms in elementary school children, Nolen-Hoeksema, Girgus, and Seligman (1991) found that boys consistently showed higher levels of symptoms than the girls through age 12. The findings of the present study are consistent with the literature. Girls reported

significantly fewer dysphoric symptoms than boys at age eight but significantly more dysphoric symptoms than boys by age 14.

In respect to control judgements, subjects who more closely approximated the clinical criteria for depressive disorder (i.e., "pure" dysphoric group) reported lower perceived control than subjects in the "pure" anxious group providing some support for the depressive realism hypothesis. However, the control judgements of both groups were more accurate (i.e., consistent with objective contingency parameters) than not.

Nolen-Hoeksema and Girgus (1994) have proposed three basic models for how the gender difference in dysphoria might emerge. According to Model 1, the causes of depression are the same in girls and boys but become more prevalent in girls than in boys in early adolescence. According to Model 2, there are different causes of depression in girls and boys and the causes of girls' (but not boys') depression become more prevalent in early adolescence. Finally, Model 3 suggests that girls are more likely to carry risk factors for dysphoric mood that, coupled with increased stressors in adolescence, result in dysphoria.

The present study tested Nolen-Hoeksema's and Girgus' (1994) third model of gender differences expecting that girls would be found to carry more predisposing factors (e.g., low perceived control, high perceived intensity of daily hassles) for symptoms of anxiety and dysphoria than boys. It was thought that these predisposing factors could, in combination with a greater number of social challenges (i.e., frequency of daily hassles) and biological challenges (e.g., puberty) in early adolescence, increase females' risk for

anxious and dysphoric mood. Prior to the emergence of gender differences in negative mood in the present study, no gender differences were found for any of the proposed causal factors (i.e., perceived control, perceived intensity of daily hassles). A gender difference did emerge, however, in perceived intensity of daily hassles concomitant with the gender differences in anxious and dysphoric symptomatology. Fourteen-year-old girls reported significantly greater intensity of hassles than their male counterparts although there was no difference in the reported frequency of hassles experienced by the two groups.

The findings of the present study appear to support Nolen-Hoeksema's and Girgus' (1994) third model. Whereas girls and boys in the immediate post-pubertal years experienced a similar number of daily hassles, girls perceived these hassles as being more potent than did males; in turn, girls reported more dysphoric and anxious mood than their male cohorts. This could suggest the presence of pre-existing dispositional factors (in this case, a perceptual style) in girls that places them at risk for negative affectivity when confronted with the challenges of early adolescence. Boys and girls experienced a similar number of hassles, but females perceived these hassles as being significantly more intense than did males. Similar findings have been reported by others (e.g., Kanner et al., 1987).

The fact that frequency of stress-inducing hassles increased similarly for both males and females with age appears to contradict Models 1 and 2, as proposed by Nolen-Hoeksema and Girgus (1994), both of which proposed that causal factors for dysphoria increase in adolescence for females. However, an alternative explanation is possible. For

example, according to Nolen-Hoeksema's and Girgus' (1994) Model 1, increasing gender differentiation in socialization pressures can lead girls and boys to adopt personality characteristics deemed appropriate for their gender, a process called gender intensification (Hill & Lynch, 1983). Nolen-Hoeksema and Girgus (1994) contend that the two personality differences between men and women that may emerge as adolescents conform to gender roles and that are the most likely precursors of the gender difference in depression are: women's dependence on others for self-esteem and women's lack of assertiveness, including low expectations of control. Although a significant gender difference in perception of control did not emerge in accordance with the predictions of Model 3, interesting gender differences in perceived control were revealed following post hoc analyses and will be discussed below.

It was remarkable that females' scores on the dysphoria measure doubled from ages eight to 14, while males' scores actually declined. Control judgements decreased significantly for both males and females over the same time period. Further analyses with the high versus low illusion of control groups showed that females were disproportionately represented (62%) in the high control group although the chi-square analysis failed to attain statistical significance ($p < 0.07$). Interestingly, for males, a high perception of control was associated with higher dysphoria scores, whereas for females, a low perception of control was associated with higher dysphoria scores. These findings raise the question as to whether control perceptions could play a differential role in the development of dysphoric affect for males and females. To examine this question more

closely, analyses were conducted separately by gender and, indeed, revealed differential effects for males and females in their affective responses to naturally occurring stressors. The amount of control perceived by males significantly predicted how intensely they rated daily hassles that occurred over the 1-month interval between Sessions 1 and 2 with higher control being associated with higher intensity. The intensity of their ratings was independent of the frequency of the hassles and their earlier ratings of anxious and dysphoric mood. Females' perception of control did not significantly predict how intensely they rated daily hassles although there was an indication that, for females, higher control judgements were related to lower intensity ratings.

Males', but not females', control ratings significantly predicted dysphoric mood at Session 2 after controlling for Session 1 dysphoria and anxiety scores. Again, results defied expectations in that the higher the degree of control perceived by males, the higher were their dysphoria scores. For females, the association between perceived control and dysphoric mood was in the expected direction (i.e., higher control ratings associated with lower depression scores). Neither males' nor females' control ratings predicted anxiety scores and no gender differences in affective responses to laboratory stressors were found.

Recall that Nolen-Hoeksema's and Girgus' first model of gender differences in depression, proposes that the same factors cause depression in girls and boys, but these factors become more prevalent in girls than in boys in early adolescence. The process of gender intensification (Hill & Lynch, 1983) conforms to Model 1 insofar as girls would be more prone to depression than boys as they adopt their gender-linked personality

characteristics, personality characteristics linked to the feminine gender role considered to be more depressogenic than those linked to the masculine gender role (Nolen-Hoeksema & Girgus, 1994).

The findings of the present study suggest that whereas the amount of control girls and boys judge themselves to possess does not change as they proceed into adolescence, the significance of perceived control appears to change for males and females as they navigate the transition from childhood to adolescence. For males, accurate control perceptions appear to be more adaptive, affectively speaking, whereas for females elevated control perceptions appear to provide some buffering from the effects of environmental stressors. It appears that females' relative sense of illusory control may protect them from the adverse effects of stress and the development of dysphoric affect, at least in the short term. In contrast, for males, more accurate control perceptions may serve to reduce their susceptibility to the effects of stress and dysphoria.

What is not clear is why an illusion of control would be more adaptive for females whereas accuracy in control perceptions would be more adaptive for males. One could evoke an evolutionary explanation to suggest that it is the consequence of males' and females' varying role prescriptions. For example, if one accepts that females do not compete for control and tend to exert less control over their environment then an illusory sense of control may be preferable to none. However, if males prefer to compete for control, it would be important for a male to be able to accurately assess the contingencies operating in his environment. Why should females' perceptions of control increase their

risk for negative affectivity in adolescence? It is possible that, when confronted with the various social and biological challenges of adolescence, it may be harder for females to maintain an illusion of control than it is for males to become more accurate in judging control, thereby placing females at increased risk for dysphoric reactions to stress as compared to males. Obviously, further research is required to better elucidate the relations between these variables in the development of gender differences in negative affectivity.

The fact that girls and boys reported a similar frequency of daily hassles but that girls described the hassles as being more intense is also consistent with the widely held belief that girls are more willing to report negative or vulnerable feelings than are boys. Moreover, it is possible that the process of gender intensification simply leads to girls becoming more comfortable with emotional expression than boys. Studies of adolescents and adults, however, have shown that the gender differences in depression cannot be accounted for by the reporting biases of males and females (for reviews, see Nolen-Hoeksema, 1987, 1990). Indeed, an exhaustive review of the effect of gender on the prevalence of depression conducted by Weissman and Klerman (1977) concluded that the difference in prevalence rates for men and women was neither a reporting artifact nor sampling error.

The significance of the findings of this study for both males and females is underscored by the fact that individuals who manifest elevated levels of negative affectivity are at increased risk for recurrent depressive problems in adulthood (e.g., Harrington, Fudge, Rutter, Pickles, & Hill, 1990). The significance of the findings is

particularly salient for females who are at increased risk to suffer from depressive disorder and its negative sequelae. In a study designed to explore the social consequences of psychiatric disorders, Gotlib, Lewinsohn, and Seeley (1998) reported that, for young women, depression during adolescence was associated with an increased likelihood of early marriage and subsequent diminished marital satisfaction. These two consequences of adolescent depression have themselves been related to problematic functioning such as limited economic resources, heavier child-care burdens, and more restricted educational attainment (see Gotlib et al., 1998).

Limitations

In interpreting the findings of the present study, both conceptual and methodological limitations deserve attention. Conceptually, investigating the uncontrollable-controllable dimension in isolation from the other attributional dimensions of internality, stability, and globality, while appropriate for testing the reformulated learned helplessness model, may not be as appropriate for testing the hopelessness theory which specifies that it is the combination of dimensions that should contribute to anxious and/or dysphoric mood. Secondly, the current study employed a mixed prospective and cross-sectional design, yet the underlying theory (helplessness-hopelessness) is causal. Although the statistical models tested are consistent with the theory, more rigorous testing would require a longitudinal design. Thirdly, anxious and dysphoric mood were measured by children's self-report only. Although the measures were highly reliable ones and research has shown that children can accurately report on their depressive affect (Kazdin,

1994), multiple informants, such as teachers and parents, and clinical interviews are preferrable approaches. Also, Session 2 measures of daily hassles and anxious and dysphoric symptoms were collected concurrently in the present study. As a result, there is no way to be certain that the daily hassles reported by children actually preceded the development of anxious and dysphoric symptoms. Future research would benefit from the use of a more purely prospective design with assessments conducted at more than two time points.

The stress-moderating effects of high perceived control obtained in the present study were statistically significant but small. High judgements of control accounted for a unique 2% of the variance in both positive affect and intensity of hassles scores. Although the magnitude of the variances is small, it is consistent with the findings of Alloy and Clements (1992). Indeed, the consistency in results across the two studies suggests that, whereas high perceived control may provide only limited protection against negative affect following stress, it appears to be a reliable factor.

Failure to find support for either a mediational or moderational role for control perceptions in the development of negative affectivity could reflect a methodological shortcoming of the present study; namely, the use of perceived intensity of hassles ratings as an index for subjects' expectation of negative outcomes or hopelessness. Whereas elevated ratings of intensity of daily hassles does not necessarily imply a sense of hopelessness, it was assumed that someone who perceives hassles as being more intense might also be inclined to experience a heightened sense of despair or foreboding in the

face of stress than someone who perceives hassles less intensely. The lack of significant results in the present study could reflect an error in that assumption.

Another methodological concern is the use of the computer program, Contiception (McLeod & Spence, 1995), as a measure of control. Although the use of computer-presented stimuli in the assessment of control perception is not new, Contiception represents a new approach to the study of the heuristics people use in evaluating the degree to which they control events. Advantages of using Contiception include its flexibility in allowing for the manipulation of the parameters of contingency (necessity and sufficiency) and the fact that subjects' judgements of control involve their interacting with the display in real time. Although this flexibility allows for the assessment of imperfectly contingent events which are more reflective of real-life situations and in this sense are more ecologically valid, the task itself is quite artificial. Indeed, the judgement of control in real life situations may not map onto the judgement of control in such contrived laboratory situations. However, since we are not yet able to model the algorithm(s) used in making the simplest of contingency judgement, performance on a simple contingency task represents one, and perhaps the best, approach (see Mercier, Sweet, & Cheng, 1992). Certainly, the Contiception program has demonstrated its utility in previous developmental studies (e.g., McLeod, 1994), as well as studies with learning disabled adolescents (Fuller & McLeod, 1995) and abused women (Orava et al., 1996).

Finally, the use of analogue samples in investigations of psychopathology is always controversial. The controversy has been particularly salient in the depression literature

where the presumption of continuity between subclinical and clinical depression has been challenged by some researchers (see Kendall et al., 1987; Coyne, 1994) and defended by others (see Vredenburg, Flett, & Krames, 1993). At the centre of the debate is whether comparisons can be drawn between the correlates of mild depression in nonclinical samples and those of severe depression in clinical samples. Kendall et al. (1987) recommended that high-scoring subsamples in studies with undiagnosed samples and a single measure of affect (e.g., BDI) be referred to as *dysphoric* rather than *depressed.* The present study has attempted to follow Kendall's recommendation. However, as Haaga and Solomon (1993) suggest:

> basing a study on depression theory, noting as a limitation uncertain generalizability to clinical depression, and identifying the subjects as dysphoric rather than depressed is less than ideal. Instead, Haaga and Solomon (1993) propose four more defensible responses including one that seems appropriate for the present study; namely that if a study concerns a possible predisposing factor to major depression, and if it can be assumed that subdiagnosable but elevated levels of depressive symptoms suggest proneness to depression (a viable supposition; Lewinsohn, Hoberman, & Rosenbaum,1988), then mildly symptomatic people selected from a nonclinical sample are *ideal* subjects, preferable to those who already have major depression (p. 321).

The present study represents an important contribution to the research literature. It is only the second study, to date, to examine perception of control style as a risk factor for dysphoria and the first to examine perception of control style as a risk factor for anxiety. The potential for a perception of control style to assume a cognitive mediational or moderational role in the development of these two disorders had never before been tested. Significant findings of the present study included that children's perceptions of control became more accurate with age as children revealed greater sensitivity to the parameters underlying contingent events. Greater perceived control was found to confer some protection from the negative effect of immediate but not longer-term stress.

Anxious and dysphoric moods appeared to involve similar realistic perceptions of control, with anxious mood associated with higher perceived control. No support was found for either a mediational or moderational role for perception of control in the development of anxious and/or dysphoric symptomatology. However, the role of control in the development of anxious and dysphoric mood appeared to be different for males and females. A significant gender difference was found in the convergence of anxious and dysphoric symptomatology over time indicating that for females, but not males, the risk for co-morbidity increases with age.

Finally, students' perceptions of their daily hassles, though not perceptions of control, were implicated in the development of gender differences in dysphoric symptoms as proposed by Nolen-Hoeksema and Girgus (1994). With age, females are more apt to report dysphoric symptomatology than males. Nevertheless, females were not

disproportionately represented in the "pure" dysphoric group but were overly represented in both the "pure anxious" and combined groups. Results of the present study suggest that symptoms of anxiety may precede the emergence of dysphoric symptoms. Anxious and dysphoric symptoms appear to follow different temporal paths for males and females; diverging with age in the former, converging with age in the latter.

Appendix A

PANAS – C

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you are **feeling this way <u>right now</u>**. Use the following scale to record your answers.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

_____ sad	_____ joyful
_____ excited	_____ afraid
_____ upset	_____ delighted
_____ happy	_____ lonely
_____ nervous	_____ lively
_____ cheerful	_____ guilty
_____ scared	_____ energetic
_____ proud	_____ mad
_____ miserable	_____ active

_____ blue

PA .....

NA .....

Appendix B

"What I Think and Feel"
(RCMAS)

Here are some sentences that tell how some people think and feel about themselves. Read each sentence carefully. Circle the word "Yes" if you think it is true about you. Circle the word "No" if you think it is *not* true about you. Answer every question even if some are hard to decide. Do not circle both "Yes" and "No" for the same sentence. There are no right or wrong answers. Only you can tell us how you think and feel about yourself. Remember, after you read each sentence, ask yourself **"Is it true about me?"** If it is, circle **"Yes."** If it is not, circle, **"No."**

1. I have trouble making up my mind	Yes	No
2. I get nervous when things do not go the right way for me ...	Yes	No
3. Others seem to do things easier than I can	Yes	No
4. I like everyone I know.....	Yes	No
5. Often I have trouble getting my breath	Yes	No
6. I worry a lot of the time	Yes	No
7. I am afraid of a lot of things	Yes	No
8. I am always kind	Yes	No
9. I get mad easily	Yes	No
10. I worry about what my parents will say to me	Yes	No
11. I feel that others do not like the way I do things	Yes	No
12. I always have good manners	Yes	No
13. It is hard for me to get to sleep at night	Yes	No
14. I worry about what other people will think about me	Yes	No
15. I feel alone even when there are people with me	Yes	No
16. I am always good	Yes	No

17. Often I feel sick in my stomach ..... Yes No
18. My feelings get hurt easily ..... Yes No
19. My hands feel sweaty ..... Yes No
20. I am always nice to everyone ..... Yes No
21. I am tired a lot ..... Yes No
22. I worry about what is going to happen ..... Yes No
23. Other people are happier than I ..... Yes No
24. I tell the truth every single time ..... Yes No
25. I have bad dreams ..... Yes No
26. My feelings get hurt easily when I am fussed at ..... Yes No
27. I feel someone will tell me I do things the wrong way ..... Yes No
28. I never get angry ..... Yes No
29. I wake up scared some of the time ..... Yes No
30. I worry when I go to bed at night ..... Yes No
31. It is hard for me to keep my mind on my schoolwork ..... Yes No
32. I never say things I shouldn't ..... Yes No
33. I wiggle in my seat a lot ..... Yes No
34. I am nervous ..... Yes No
35. A lot of people are against me ..... Yes No
36. I never lie ..... Yes No
37. I often worry about something bad happening to me ..... Yes No

PA Score ..... / 10

W/O Score ..... / 11

SC Score ..... / 7

Total Score ..... / 28

L Score ..... / 9

Appendix C

CD Inventory

Kids sometimes have different feelings and ideas. This form lists the feelings and ideas in groups. From each group, pick **ONE** sentence that describes you best for the past **TWO WEEKS**. After you pick a sentence from the first group, go on to the next group. There is no right or wrong answer. Just pick the sentence that best describes the way that you have been recently. Put a check mark (✓) in the box next to the sentence that you pick. Remember pick out the sentences that describe your feelings and ideas in the past **TWO WEEKS**.

1. ☐ I am sad once in a while
   ☐ I am sad many times.
   ☐ I am sad all the time.

2. ☐ Nothing will ever work out for me
   ☐ I am not sure if things will work out for me.
   ☐ Things will work for me O. K.

3. ☐ I do most things O. K.
   ☐ I do many things wrong.
   ☐ I do everything wrong.

4. ☐ I have fun in many things.
   ☐ I have fun in some things.
   ☐ Nothing is fun at all.

5. ☐ I am bad all the time.
   ☐ I am bad many times.
   ☐ I am bad once in a while.

6. ☐ I think about bad things happening to me once in a while.
   ☐ I worry that bad things will happen to me.
   ☐ I am sure that terrible things will happen to me.

7. ☐ I hate myself.
   ☐ I do not like myself.
   ☐ I like myself.

8. ☐ All bad things are my fault.
   ☐ Many bad things are my fault.
   ☐ Bad things are not usually my fault.

9. ☐ I feel like crying everyday.
   ☐ I feel like crying many days.
   ☐ I feel like crying once in a while.

10. ☐ Things bother me all the time.
    ☐ Things bother me many times.
    ☐ Things bother me once in a while.

11. ☐ I like being with people.
    ☐ I do not like being with people many times.
    ☐ I do not want to be with people at all.

12. ☐ I cannot make up my mind about things.
    ☐ It is hard to make up my mind about things.
    ☐ I make up my mind about things easily.

13. ☐ I look O. K.
    ☐ There are some bad things about my looks.
    ☐ I look ugly.

14. ☐ I have to push myself all the time to do my schoolwork.
    ☐ I have to push myself many times to do my schoolwork.
    ☐ Doing schoolwork is not a big problem.

Remember, describe how you have been in the past two weeks.

15. ☐ I have trouble sleeping every night.
    ☐ I have trouble sleeping many nights.
    ☐ I sleep pretty well.

16. ☐ I am tired once in a while.
    ☐ I am tired many days.
    ☐ I am tired all the time.

17. ☐ Most days I do not feel like eating.
    ☐ Many days I do not feel like eating.
    ☐ I eat pretty well.

18. ☐ I do not worry about aches and pains.
☐ I worry about aches and pains many times.
☐ I worry about aches and pains all the time.

19. ☐ I do not feel alone.
☐ I feel alone many times.
☐ I feel alone many times.

20. ☐ I never have fun at school.
☐ I have fun at school once in a while.
☐ I have fun at school many times.

21. ☐ I have plenty of friends.
☐ I have some friends but I wish I had more.
☐ I do not have many friends.

22. ☐ My school work is alright.
☐ My schoolwork is not as good as before.
☐ I do very badly in subjects I used to be good in.

23. ☐ I can never be as good as other kids.
☐ I can be as good as other kids if I want to.
☐ I am just as good as other kids.

24. ☐ Nobody really loves me.
☐ I am not sure if anybody loves me.
☐ I am sure that somebody loves me.

25. ☐ I usually do what I am told.
☐ I do what I am told most times.
☐ I never do what I am told.

26. ☐ I get along with people.
☐ I get into fights many times.
☐ I get into fights all the time.

The End
Thanks for filling out this form.

Score ..... / 52

Appendix D
Children's Hassles Scale

Here is a list of things that children sometimes feel bothered or upset about. We want to know if any of these things have happened to you during the **LAST MONTH** and how you felt about them. Circle one number for each question.

	Didn't Happen	Didn't Feel Bad	Felt Sort of Bad	Felt Very Bad
1. Kids at school teased you	0	1	2	3
2. You had to clean up your room	0	1	2	3
3. You were punished for something you didn't do	0	1	2	3
4. You got punished when you did something wrong	0	1	2	3
5. Your pet died	0	1	2	3
6. Your best friend didn't want to be your best friend anymore	0	1	2	3
7. Your mother or father wasn't home when you expected them	0	1	2	3
8. You lost something	0	1	2	3
9. Your mother or father got sick	0	1	2	3
10. Your mother or father was mad at you for getting a bad school report	0	1	2	3
11. Your teacher was mad at you because of your behaviour	0	1	2	3
12. Your schoolwork wad too hard	0	1	2	

13. You got into a fight with another kid	0	1	2	3
14. You didn't do well at sports	0	1	2	3
15. You had to go to bed when you didn't feel like it	0	1	2	3
16. Your mother or father didn't have time to do something with you	0	1	2	3
17. You didn't know the answer when the teacher called on you	0	1	2	3
18. When the kids were picking teams you were one of the last ones to be picked	0	1	2	3
19. Your mother or father were fighting	0	1	2	3
20. Your mother or father forgot to do something they said they would do	0	1	2	3
21. You felt bored and wished there was something interesting to do	0	1	2	3
22. Your bothers or sisters bugged you	0	1	2	3
23. You didn't like the way you looked and wished you could be different (e.g., taller, stronger, better-looking)	0	1	2	3
24. Another kid could do something better than you could	0	1	2	3
25. You didn't have enough privacy (a time and place to be alone) when you wanted it	0	1	2	3

Frequency (f) ..... / 25

Total Intensity ..... / 75

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