Exploring Optimistic and Pessimistic Attributions in Depression-Specific Mood

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Submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

Deakin University
September, 2004
I certify that the thesis entitled:

Exploring Optimistic and Pessimistic Attributions in Depression-Specific Mood

submitted for the degree of:

Doctor of Philosophy

is the result of my own work and that where reference is made to the work of others, due acknowledgment is given.

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Acknowledgments

My appreciation, gratitude, and heartfelt thanks go my supervisor, Dr Robyn Miller, whose help, advice, and support I have needed and greatly valued. Robyn provided the clear insight and guidance that ensured my adherence to theory, research, and logic. Without Robyn’s assistance and encouragement I may not have completed this research.

Sincere thanks go to my family who have put up with me and supported me through some tiring and frustrating times. In spite of my complaints, they have encouraged me after minor successes and distracted me by showing that there is life outside of the PhD. Special thanks to my husband John for his moral, domestic, and social support. Other family member, including Nicky, Mick, Ben, Vicki, Annabelle, Lewis, Walter, Sienna, and Lola, have provided pleasurable times and joy.

I have also appreciated the friendship of my fellow post-graduate students. Our days in the “dungeon” working together were a mixture of pleasure and pain for us all. The shared experience has given us a strong bond. I will miss those times, but know that we will follow each other’s futures with great interest. Of these people, special thanks to Merrilyn, Nic, and Ben who were always supportive and ready for a quick lunch and chat to break up the day.

Thanks also to the staff at the School of Psychology, Deakin University, who provided kind words, support, advice, and help whenever it was needed. Without the inspiration from lecturers obtained throughout my studies I would not have considered embarking on my PhD. Particular thanks go to the administrative staff who always willingly and happily provided assistance.

I will always value the kind help of my extended family, friends, and strangers who helped enormously by answering my questionnaires, and in some cases helped distribute them. Without this valuable assistance this research could not have been undertaken.
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Abstract

Cognitive theories of depression include maladaptive thinking styles as depressive vulnerabilities. The hopelessness theory of depression (Abramson, Metalsky, & Alloy, 1989) particularly implicates stable and global attributions for negative events as influences upon depression. Positive event attributions are considered less influential, yet they have shown equal predictiveness to negative event attributions for depression-specific mood. Previous research has provided equivocal results largely because of cross-sectional design and modest psychometric properties of the measures. The present research aimed to: create a new instrument to measure optimistic and pessimistic attributions; test the relatedness of attributions for positive and negative events; and, clarify relationships of the scales with optimism and mood. Three studies were undertaken, all of which used structural equation modeling. Two cross-sectional studies, using 342 and 332 community participants respectively, developed and validated the Questionnaire of Explanatory Style (QES). A final longitudinal study with 250 community participants tested the predictive validity of the QES. Overall, six scales were developed, three of which were optimistic and three of which were negative. The scales were acceptable to community samples and had adequate psychometric properties. The optimistic scales were attributions for positive events and the negative scales were attributions for negative events rather than pessimistic scales. Cross-sectional results indicated that only one of the negative scales weakly directly predicted depression-specific mood, but all predicted general psychological distress. By contrast, the optimistic scales were more directly predictive of depression-specific mood, particularly the Positive Disposition scale. Longitudinal results indicated that two of the optimistic scales were the most important QES predictors of depression-specific mood two months later. The optimistic scale Positive Disposition appears most central to the prediction of both concurrent and subsequent depression-specific mood. The scale content represents explanations for positive events that are internal and stable characteristics. These may be construed as personal competencies to bring about positive outcomes. This scale is closely allied to measures of optimism. Findings affirm the importance of optimistic attributions to the understanding of depression-specific mood and provide a productive focus for therapeutic intervention and future research.
Chapter 1
Introduction: Thesis Overview

1.1 Thesis Overview

Cognitive theories of depression include maladaptive thinking styles as depressive vulnerabilities. The reformulated learned helplessness theory (Abramson, Seligman, & Teasdale, 1978), hopelessness theory (Abramson, Metalsky, & Alloy, 1989), and the conceptualisation of optimistic and pessimistic explanatory styles (Peterson, 1991) strongly emphasise an internal, stable, and global attributional style for negative events as a depressive vulnerability. The focus is particularly on stable and global explanations, with internal attributions said to influence depression only indirectly. Positive event attributions are also considered to play a lesser role in depression than are negative event attributions. Consequently most recent research has focused on stable and global attributions for negative events. Explanatory style as a cognitive vulnerability to depression has received considerable support (e.g., Sweeney, Anderson, & Bailey, 1986).

However, inconsistencies and problems with research into explanatory style have produced equivocal results, in part because of research design and psychometric problems with the measures used. Existing explanatory style measures have been criticised as having poor reliabilities, structural shortcomings, and being unacceptable to some respondents (e.g., Carver, 1989; Hawkins, 1998). Additionally, some depression measures that were used to develop attributional measures are now said to measure negative affect rather than depressed mood (L. A. Clark & Watson, 1991). Negative affect covers many mood states including distress, fear, hostility, and nervousness.

Problems with the measurement of explanatory style, together with inconsistent research findings in the past, indicate a need to produce a new measure of explanatory style to clarify the relationships between depressive vulnerabilities, resilience, and mood. A new measure of explanatory style could expand existing knowledge of the constituent causal attributional dimensions for positive events and negative events in relation to optimistic explanatory style and pessimistic explanatory style.

The current research aims to ameliorate shortcomings in existing measures of explanatory style and to fill gaps in current knowledge regarding the
conceptualisation of explanatory style in relation to mood. The primary purpose of this research is to examine the nature of explanatory style and optimism in relation to depression-specific mood. In so doing, a secondary purpose is to produce a new measure of explanatory style. The paper poses a number of questions that the research process seeks to answer:

1. Based on problems with the measurement of explanatory style, can a new measure be produced to ameliorate these shortcomings?
2. Can factors be formed for each of the extremities of the three attributional dimensions?
3. What are the constituents of an optimistic/pessimistic explanatory style in terms of positive and negative event attributional dimensions?
4. Do optimistic and pessimistic explanatory factors form a bipolar construct?
5. Do optimistic and pessimistic explanatory styles display similar relationships with optimism, depression-specific mood, general psychological distress, and anxiety-specific mood?
6. Do optimistic and pessimistic explanatory styles predict future depression-specific mood in response to stressors?

1.2 Chapter Summaries

The present chapter provides an overview of the thesis that investigates the roles of optimistic and pessimistic attributions as cognitive resilience and vulnerability in relation to depression-specific mood. It outlines the contents of each study within the thesis.

The second chapter outlines the theoretical and empirical background for the thesis. The reformulated learned helplessness and hopelessness theories of depression, that relate cognitive resilience and vulnerability to depression, are described. The historical bases of explanatory style in relation to depression are then identified. Next examined is research evidence supporting and disputing explanatory style as a vulnerability to depression-specific mood. Finally, the formulation of optimism as resilience to depression and links between explanatory style and optimism are outlined.

The third chapter provides an overview of the methodological issues for explanatory style research. It presents a description and brief evaluation of the current measures and measurement techniques available to assess explanatory style. A critique of the measurement of mood using self-reports is also provided.
The fourth chapter introduces the first study of the thesis, including a rationale for a new measure of explanatory style that can adequately test reformulated learned helplessness theory of depression and hopelessness theory of depression. Study One then develops and tests a new measure of explanatory style designed to identify the related attributional dimensions of internality, stability, and globality within a framework of higher-order positive event attributions and negative event attributions. These two higher-order styles are construed as forming a bipolar relationship for an overall explanatory style. The best items from the new measure are selected using exploratory and confirmatory factor analyses. The structure of the new scales is tested with structural equation modeling and validated against measures of optimism, depression-specific mood, and general psychological distress.

The measure is reported to yield six factors, three of which are loosely related positive event factors and three are negative event factors. However, the proposed higher-order constructs for the event types, and for an overall explanatory style are not evident. The validity results provide some evidence of an inverse relatedness between the positive event and the negative event constructs. The content, structure, and validity of the explanatory style measure are discussed. Modifications and additions required to improve the new measure are then foreshadowed.

The fifth chapter provides the second study of the thesis. Study Two further develops the new questionnaire of explanatory style. This study examines the possibility of obtaining an optimistic factor for negative events that comprises behavioural attributions. More specifically the study aims to identify, for positive and negative events, dispositional attributions that are internal and stable, behavioural attributions that are internal and unstable, and global attributions. Although clear measures of dispositional and global attributions for positive and negative events result, due to the format of the measure, the behavioural scales contain internal and stable (nor unstable) attributions. Therefore no optimistic measure for negative events is possible.

The measure yields six scales, three for positive events that measure optimistic attributions, and three for negative events that measure pessimistic attributions. Some evidence of relatedness between the optimistic and pessimistic scales is shown. The structure of the new scales is tested with structural equation modeling and validated against measures of optimism, depression-specific mood, and
general psychological distress. The content, structure, and validity of the explanatory style measure are discussed.

The sixth chapter provides the second part of Study Two of the thesis and continues investigating the construct validity of the new measure. It compares the new measure with another attributional style measure that is most used for research into attributional style. Additionally, the relationships of the existing and new attribution measures are compared for mood and optimism. Some evidence of construct validity for the new measure is provided both in relation to the existing attributional style measure and in the comparison results.

The seventh chapter provides the third and final study of the thesis. Study Three further examines the reliability and validity of the QES using both cross-sectional and short-term longitudinal methodologies. The roles of the new explanatory style scales in relation to optimism, pessimism, depression-specific mood, and anxiety-specific mood are explored. The ability of the QES scales to predict future depression levels, especially in response to stressors, is also evaluated.

This study demonstrates a replicated internal factor structure for each scale and for the entire measure, indicating that the measure maintains factorial validity across different samples. Three positive event scales are deemed optimistic scales, three negative event scales are deemed negative scales and all are trait-like measures. One optimistic scale merges with an optimism measure and is central to the prediction of depression-specific mood. Varying evidence of construct validity are apparent between the scales but all scales display discriminant validity. Two optimistic scales predict subsequent depression-specific mood after controlling for initial depression-specific mood and intervening stress. The remaining four scales show considerable overlaps with initial depression-specific mood and with stress. None of the six scales interact with stress to predict later depression-specific mood. The scales are presented and the findings discussed in relation to research and theory.

The final chapter of the thesis, Chapter 8, summarises the results of the research relative to the objectives of the thesis and discusses the results of the three studies in relation to prior theory and research. The integrated discussion of the results focuses on the theoretical, clinical, and methodological implications of the findings. During the discussion, the unique contribution made to the field by the research is also appraised. The limitations of the research and future directions for research are identified. Finally, conclusions are drawn from the research.
Chapter 2

Theoretical Basis for Depressive Vulnerability and Resilience

2.1 Overview of Depressive Vulnerability and Resilience

Of the many theories of depression, the cognitive vulnerability theories of reformulated learned helplessness (Abramson et al., 1978), and hopelessness (Abramson et al., 1989) are still undergoing investigation. Both theories propose a role for causal attributions as cognitive vulnerability factors for depression. Research has generally linked a depressive attributional style with depressed mood (Robins, 1988; Sweeney et al., 1986). By contrast to depressive vulnerability, some personality factors may provide resilience to depression. Optimism provides protection to people with a predisposition to depressed mood (L. A. Clark, Watson, & Mineka, 1994) and recently there has been a move toward positive psychology that examines the factors that make life worth living and help people in the face of adversity (Seligman & Csikszentmihalyi, 2000).

2.2 Attributional Style as a Vulnerability to Depressed Mood

Depressive vulnerabilities are enduring characteristics of people that make them susceptible to depression. Abramson et al. (1978) proposed a cognitive model that associates attributional styles with depression. In this model, the predisposition for depression is attributional style, a tendency to attribute causes for bad events in ways that increase vulnerability to depression. A degree of consistency in the types of causes that people give across different events is expected. This consistency creates an individual’s attributional style. The concept of attributional style was introduced in the reformulation of the learned helplessness model of depression by Abramson et al.

2.2.1 The learned helplessness model of depression.

The learned helplessness model of depression was formulated by Maier and Seligman (1976) after earlier animal studies found that an inability to act or control one event affected performance in later controllable situations (Overmier & Seligman, 1967; Seligman & Maier, 1967). First, dogs were exposed to an inescapable electric shock. Later, the dogs showed profound deficits in problem solving, motivation, and emotion when placed in a comparable situation that they could terminate by crossing a simple barrier. Therefore, after being unable to control one situation, the animals became helpless and did not attempt to act in later
situations that they could control. They were said to have learned that outcome was independent of the responses they made and this led to future expectations of helplessness.

The behaviours associated with learned helplessness were also displayed by humans (Hiroto, 1974). One group was subjected to a pretreatment of an inescapable, aversive and loud noise. When they later received a controllable noise in a two-way shuttlebox, they tended to make no attempt to control the noise. A second group who received no pretreatment escaped the noise readily. Hiroto concluded that inescapability led to an expectation that reinforcement is independent of response in people. These effects of learned helplessness were found to transfer to cognitive and instrumental tasks (Hiroto & Seligman, 1975).

Although learned helplessness research was initially conducted within a behaviourist framework, the lack of motivation and the interference with the ability to learn were later explained by Seligman (1975) in cognitive terms. He linked the motivational, cognitive, and emotional effects of helplessness with the persistence, generality, and intensity of depressive symptoms.

2.2.1.2 The reformulation of the learned helplessness theory of depression.

The learned helplessness model of depression could not however account for the motivational, cognitive, and emotional effects of helplessness, for the self-esteem losses that accompanied uncontrollability, or for the propensity of people with depression to believe that their actions would fail. An explanation was also required for why depressed people should blame themselves for failure in a situation over which they had no control. These anomalies prompted the reformulation of the learned helplessness theory. The reformulated theory of helplessness (Abramson et al., 1978) included causal attributions about events. Attributions are peoples’ explanations for the causes of events.

Learned helplessness theory postulated that the expectation of uncontrollability would determine depressive symptoms. Reformulated learned helplessness theory drew a distinction between objective non-contingency, that a response will not elicit a desired outcome, and subjective non-contingency, the perception that a response will not elicit a desired outcome (Peterson & Seligman, 1987). Reformulated learned helplessness theory uses the concept of subjective non-contingency regarding outcomes to expand the role of uncontrollable events in depression. The uncontrollable events of interest are those events with a low
probability of producing a desired outcome or a high probability of producing an aversive outcome (Abramson et al. 1978). Only these uncontrollable events were thought to be sufficient to cause depressed affect. Uncontrollable events can be either good or bad, with failure argued to form a subset of bad outcomes (Abramson et al.). Abramson et al. recognised that failure must be seen from the individual’s perspective.

The emphasis of the reformulated learned helplessness theory has shifted from uncontrollability per se to bad events (Peterson & Seligman, 1987). Bad events are conceptualised as a subset of uncontrollable events. When a bad event has occurred, clearly nothing done by the person prevented it from happening. The event was therefore uncontrollable (Peterson & Seligman). Abramson et al. (1978) argued that although the motivational, cognitive and self-esteem deficits found in depression result from uncontrollability, the affective deficits result from the expectation that bad outcomes will occur. Causal attributions affect whether or not a past uncontrollable event is expected to recur in the future.

Abramson et al. (1978) argued that when a bad event occurs, people ask “why?” and they give an explanation. The explanation or attribution that they give for the bad event will determine the parameters of their helplessness deficits. That is, their reaction to the explanation that they give constitutes a risk factor to depression. The explanations people make about bad events are thought to influence the degree of control that people feel they have. The explanations also have implications for expectations about the consequences of events (Abramson et al.) and expectations about other types of events (Alloy, Peterson, Abramson, & Seligman, 1984).

In the reformulated learned helplessness theory, Abramson et al. (1978) argued that depression-prone people are susceptible to perceiving negative events as due to certain causes: Causes are internal (something about themselves) rather than external (something about other people or the situation); stable (likely to recur in similar situations) rather than unstable (transient); and, global (affecting other aspects of their lives) rather than specific (limited to one event or event type). Abramson et al. assigned consequences to the three dimensions of attributional style that provided explanations for variations in the self-blame, intensity, persistence, and generality often found in learned helplessness. If explanations for bad events are internal, due to something about “me”, then self-blame occurs leading to loss of self-esteem. A large effect on self-esteem is likely to increase the intensity of the depressive reaction. A
stable explanation, that the cause is likely to recur in similar situations in the future, is linked to the chronicity of helplessness. Stable-unstable explanations affect the length of time of the reaction to a bad event. A stable attribution for a bad event will produce depressive symptoms across a long period whereas an unstable attribution will produce symptoms that are short-lived. Finally, a global explanation reflects the belief that the cause of the bad event will affect other areas of life. Globality is linked to the pervasiveness of the depressive effect into other types of events. A global explanation for one bad event will flow on to explanations for events in other areas of life.

It is worth noting that an attribution is argued to predict expectations about the consequences of one bad event on future outcomes, and that these expectations determine whether helplessness deficits will occur (Peterson & Seligman, 1984). Therefore, a stable expectation of helplessness will be present even after time has elapsed and a global expectation will be present in different situations at a given point in time.

The internal-external dimension was conceptualised in terms of personal versus universal helplessness (Abramson et al., 1978). Abramson et al. argued that universal helplessness occurs in situations where no one can exert control. That is, the situation remains unchanged by any response. When there is a belief that an outcome is unlikely for anyone, an external attribution is made. Personal helplessness occurs in situations where the helpless individual believes that relevant others can elicit desired outcomes but he/she cannot. When there is a belief that an outcome is unlikely only for oneself, an internal attribution is made. Because outcomes are unrelated to responses for both universal and personal helplessness, expectations that actions will not produce desired outcomes occur for both. The cognitive and motivational deficits evident in depression therefore occur for both personal and universal helplessness. However, only personal helplessness is characterised by the lowered self-esteem also evident in depression. People believing themselves to be universally helpless make external attributions for failures. By contrast, people believing themselves to be personally helpless make internal attributions for failures. In summary, internal attributions occur when individuals see outcomes as more or less likely to happen to them than to others. External attributions occur when people consider outcomes as likely for themselves as for relevant others. The use of internal-external attributions rather than personal-universal helplessness has dominated
research literature because internal-external attributions provide a better reflection of the depressed person’s focus (Peterson, Maier, & Seligman, 1993).

The stable-unstable dimension was conceptualised to explain why helplessness deficits go away after debriefing when people learn that no one could have succeeded at the task at which they had failed (Abramson et al., 1978). When failure was due to task difficulty, the cause provided only transient implications. Some causes have stable, long lasting, or recurrent implications while other causes have unstable, short-term or intermittent implications.

The global dimension was conceptualised to explain how an expectation of uncontrollability can generalise across new situations (Abramson et al., 1978). Helplessness deficits that occur for many different situations are described as global and those that occur for few situations are specific. Global attributions affect expectations about future response-outcome relationships in different situations and have generalised implications. Abramson et al. provided examples of global attributions. One example, a student doing poorly in a mathematics examination ascribes the cause to a lack of intelligence, a global explanation that affects not only mathematics examinations but also performance in other types of examinations and other areas of his life, such as work and achievement. In a second example, the student ascribes the cause as being poor at mathematics. In this case, helplessness deficits will occur only in new situations with mathematics and will not cause the same amount of generalised helplessness as in the first example.

Depression-prone people have a depressive attributional style that has implications not only for failure but also for the evaluation of success. Although Abramson et al. (1978) made no specific claims regarding attributions for positive events, they noted that depressed people attribute positive events to external, unstable, and specific causes. They suggested that the expectation of response-outcome independence for positive events could contribute indirectly to depressive vulnerability when loss occurs. When positive events occur due to perceived external, unstable, and specific causes, people learn that they have no control over the good outcome. If there is a subsequent non-attainment of a desired outcome, the depressive effect will be increased because of the feelings of helplessness produced.

2.2.1.3 Historical bases of reformulated learned helplessness theory.

Abramson et al. (1978) based their conceptualisation of attributions on prior research and theory generated by Heider’s (1958) naive psychology. Heider theorised
that people make sense of behaviour by interpreting the causes of events. Attributions therefore play a central role in the way people attempt to predict and control their lives. Expectations arising from attributions influence peoples’ future behaviour. Heider distinguished between internal or dispositional attributions and external or situational attributions. This internal-external distinction became incorporated into the reformulated learned helplessness theory (Peterson et al., 1993).

The self-efficacy construct identified by Bandura (1977) also influenced Abramson et al.’s (1978) theory. Bandura identified self-efficacy as influential on expectancies about future success or failure. Self-efficacy is a belief that a given response will lead to a particular outcome. Bandura distinguished between two separate expectancy sources, self-efficacy and outcome. Self-efficacy expectancies involve personal effectiveness and are therefore internal. By contrast, outcome expectancies involve environmental contingencies and are therefore external.

Other influences on Abramson et al. (1978) came from Jones and Davis (1965), Kelley (1967), and Weiner (1972) who developed Heider’s theory into attribution theories. These theories generally consider that internality is defined by the self-other dichotomy rather than Abramson et al.’s inside the self and outside the self dichotomy. Rotter’s (1966) internal and external locus of control included the notion that perceptions of causality depend on who one believes has control in a situation. Causal explanations and locus of control are similar in that both are cognitive constructs that explain behaviour in relation to actions and outcomes which influence mood (Peterson et al., 1993). The difference between them is that locus of control concerns the nature of rewards and punishments and causal explanations are judgements about the causes of events. Peterson et al. argued that one might consider that one has control in a given situation (i.e., an internal locus of control), but also judge that the cause of the situation is outside oneself (i.e., an external attribution). Additionally, locus of control does not differentiate positive events from negative events but instead combines internal locus for both positive and negative events. Therefore formulations of control and attributions do not reflect the same constructs.

The stable-unstable dimension of attributional style derived from Weiner’s (1972) extension of attribution theory. Weiner argued that stable-unstable attributions for behaviour influence the predictability of future events. Stable causes make future events more predictable. Weiner classified luck attributions as external, unstable; ability attributions as internal, stable; effort attributions as internal,
unstable; and task difficulty attributions as external, stable; thereby treating the dimensions of internality and stability as somewhat independent of each other. Abramson et al. (1978) and Weiner shared in common the conceptual association of internality with self-esteem and of stability with changes in expectancy of success or failure. They likewise both ascribed affective reactions such as helplessness to such expectancies. Weiner also influenced the distinction between failure and uncontrollability found in the attributional reformulation of learned helplessness theory and that was discussed earlier.

The globality dimension of attributional style was based on Kelley’s (1967) concept of distinctiveness (Peterson et al., 1993). Kelley argued that people make attributions based on patterns of behaviour that they logically connect when a cause and effect happen together. The three variables of distinctiveness, consistency, and consensus are then used to attribute causality as either situational or dispositional. Reformulated learned helplessness theory conceptualised the global-specific dimension to reflect generalisation and discrimination for the causes of events in the same way that Kelley formulated it (Peterson et al.).

More recently, the term attributional style has been abandoned by many in favour of the term explanatory style. Peterson and Seligman (1984) and Peterson, Buchanan, and Seligman (1995) argue that attributional style is too broad a term whereas the term explanatory style denotes the paramount role of causal attributions in depressive vulnerability. Both terms, attributional style and explanatory style, will be used interchangeably in this research to reflect the continuing use of both terms.

Despite general acceptance for the three attributional dimensions, Jackson and Larrance (1979) argued that internality was the only fully defined attribution dimension in relation to helplessness. They considered that internality has antecedents defined in terms of Kelley’s (1967, 1973) concept of consensus information. Jackson and Larrance argued that Abramson et al. explained the antecedents of stability and globality in circular terms. Helplessness was defined as chronic or stable if a person was helpless in the past, and as global if a person is helpless in many situations (Jackson & Larrance). This criticism was accounted for in the hopelessness theory of depression that is discussed next.

### 2.2.1.4 The hopelessness theory of depression.

Abramson, Alloy, and Metalsky (1988) reviewed prior research on learned helplessness theory and argued that researchers had not accounted for the causal
relationships leading to depression, or the heterogeneity among depressive disorders. They developed the hopelessness theory of depression because of perceived shortcomings in the articulation of the role of learned helplessness in depression (Abramson et al., 1988, 1989). Abramson et al. (1989) argued that the reformulated learned helplessness theory presented an attributional account of helplessness with only a brief outline of the implications of the theory for depression. Specifically, the diathesis-stress and causal mediation components of the reformulated learned helplessness theory were implied but not explicitly articulated. To answer these shortcomings the hopelessness theory of depression was developed (Abramson et al., 1989). This theory offers a cognitive diathesis-stress model of depression wherein those vulnerable to depression may have one or more of three elements proposed for the diathesis. The cognitive diathesis consists of a vulnerable attributional style, inferred negative consequences, and inferred negative self-characteristics that, when combined with a stressful event can lead to feelings that one cannot act to change the situation and to subsequent hopelessness depression. The lower a person’s diathesis, the stronger the stress needed for hopelessness depression to ensue.

In the hopelessness theory of depression, a theory-based subtype of depression, hopelessness depression is hypothesised. Hopelessness depression has emotional and motivation symptoms including: retarded initiation of voluntary responses, sad affect, apathy, lack of energy, difficulty concentrating, psychomotor retardation, suicidal ideation, and at times lowered self-esteem, dependency, and pessimism (Abramson et al., 1989). Additionally, hopelessness is a symptom of hopelessness depression that also has causal status. Although helplessness is necessary for hopelessness, negative outcome expectancy is also necessary. According to hopelessness theory, attributional style should predict individual differences in mood and symptom reactivity (Alloy, Just, & Panzarella, 1997). However, although attributional style contributes to depression it is neither necessary nor sufficient to cause depression (Abramson et al.).

Hopelessness theory modifies the influence of attributional style on depression, emphasising the role of stable and global attributions for negative events. Negative events include the non-attainment of highly desired positive outcomes (Abramson et al., 1989). Consequently, the focus of hopelessness theory is generally on negative events. Although positive event attributions are not accorded the same
importance in the aetiology of depression, Abramson et al. posit a role for positive event attributions in recovery from depression. Hopelessness theory suggests that attributions for positive events to stable and global causes, that imply positive consequences and positive characteristics are likely to increase positive mood in response to good events and provide opportunities for hopefulness, thereby leading to positive mood and recovery.

2.2.1.5 Positive event attributions in relation to negative event attributions.

A common finding is that positive event attributions and negative event attributions are separate, unrelated constructs (Corr & Gray, 1996; Hawkins & Miller, 2003; Hull & Mendolia, 1991; Reno & Halaris, 1989; Tripp, Catano, & Sullivan, 1997; Yee, Edmondson, Santoro, Begg, & Hunter, 1996). The two attributional styles also display different correlations with personality dimensions. Corr and Gray found that positive event attributions shared little variance with the three personality factors from the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975) whereas high negative event attributions related to low Extraversion, high Neuroticism and high Psychoticism. Additionally, Ilardi and Craighead (1999) found that even in the absence of depression, negative event attributions formed part of a trait-like Axis II personality pathology forming “odd/eccentric”, “dramatic/erratic”, and “anxious/fearful” personality clusters. Yet, positive event attributions were not related to a measure of Axis II personality disorders (Ilardi & Craighead).

By contrast, Haugen and Lund (1998) found that positive event attributions and negative event attributions showed the opposite pattern of relationships with seven personality factors, suggesting a degree of inverse relatedness between the two attributional types. Positive event attributions were positively correlated to self-esteem (both global and academic), to success motivation, self-efficacy, and defensiveness, but negatively correlated to failure avoidance motivation. Negative event attributions showed the opposite pattern of relationships.

2.2.2 Research Evidence for Attributions in Relation to Depressed Mood

Research into cognitive vulnerabilities to depression has produced mixed results. In reviews of previous research, Coyne and Gotlib (1983) found only equivocal support for attributional models whereas Peterson and Seligman (1984) examined previous research including cross-sectional, longitudinal, naturalistic,
laboratory, and case studies to conclude that a depressive attributional style was associated with depressive symptoms. Around the same time, Brewin (1985) concluded that there was support for symptom, coping, and recovery attributional models but not for onset and vulnerability attributional models. Later, in a meta-analysis of research that had used the ASQ or similar measures, Sweeney et al. (1986) found that attributions for negative events and, to a lesser extent, attributions for positive events were associated with depression. The relationship was independent of subject type, event type, and measure used.

Gladstone and Kaslow (1995) examined 28 studies involving a total of 7500 young subjects (8-18 years) to find that both positive and negative event attributional styles and depressive symptoms were clearly related. Additionally, Joiner and Wagner (1995) examined 27 studies using a total of more than 4000 young subjects (6-18 years) to find that attributional style and depressed mood were clearly related. However, a clear diathesis-stress element in the relationship between attributional style and depression was not supported. Abramson, Alloy, and Hogan (1997) later recommended that congruence between the vulnerability, stress, and specific theory-based subtypes of depression were needed to adequately test diathesis-stress interactions.

Robins (1988) pointed out that inconsistent findings for the relationship between attributions and depression were largely due to low statistical power. He noted that studies with high statistical power, using large samples, all reported significant relationships between depression and attributional style. Later, in a review of extant research, Robins and Hayes (1995) argued that inconsistent results were due to small sample sizes and low reliabilities in the measures used. They further argued that the cross-sectional design used in many studies oversimplifies the relationship between attributional style and depression.

Longitudinal designs usually better demonstrate attributional vulnerability to depression. For example, in a large longitudinal study, the Temple-Wisconsin Cognitive Vulnerability to Depression project, Alloy et al. (1999) used a prospective high-risk methodology. Results were based on scores on the Cognitive Style Questionnaire (Abramson, Metalsky, & Alloy, 1999) and a measure of Beck’s depressive vulnerability (Beck, 1967, 1976), the Dysfunctional Attitudes Scale (Weissman, 1979) for a high-risk group (top quartile) and a low-risk group (lowest quartile). Prospective assessments every 6 weeks for 2 years, and then every 16
weeks for the following 3 years showed a greater lifetime prevalence of major depressive disorder, minor depressive disorder, and hopelessness depression in the high-risk group.

Explanatory style was conceptualised by Abramson et al. (1978) as a trait that is not totally consistent but is evident over many events (Peterson et al., 1995). The trait-like properties of explanatory style have received some support (e.g., Voelz, Walker, Pettit, Joiner, & Wagner, 2003). However, explanatory style is modifiable by events and also modifies events. Peterson et al. (1983) showed this modification effect through research of therapy sessions. A client used internal, stable, and global causes for negative events prior to an increase in depressed affect, and used external, unstable, and specific causes prior to a reduction in depressed affect. Additionally, explanatory style has also shown state-like properties (Coyne & Gotlib, 1983). For example, the attributional style-depression relationship becomes stronger as the duration of depression increases (Tracy, Bauwens, Martin, Pardoen, & Mendlewicz, 1992).

Although some research reports that attributions for positive events are as strongly related to depression as are attributions for negative events (e.g., Hawkins & Miller, 2003), most research reports that attributions for positive events generally have much weaker associations with depression than attributions for negative events (Peterson et al., 1982; Sweeney et al., 1986). The latter finding suggests that peoples’ explanations for their failures are more relevant to depression than are attributions for their successes. Peterson and Seligman (1984) proposed that people tend to question causes more when they are obstructed. They argued that because all people think more about the causes of bad outcomes, those with and without depression would have greater disparity in these attributions. However, although depressed people are more biased in negative event attributions, they demonstrate less bias in positive event attributions (McDermut, Haaga, & Bilek, 1997). McDermut et al. suggested that people with and without depression expect different types of events. Thus people with depression expect negative events, search less for explanations, and thereby give more biased attributions. People with depression are argued to focus more on explanations for positive events, as these are less expected, resulting in more realistic attributions for these events (McDermut et al.).

As a consequence of lack of theoretical underpinning for positive event attributions in depression and their apparently lesser effects on depression, research
often only measures negative event attributions (e.g., Atlas, Fassett, & Peterson, 1994; Kwon, 1999; Luten, Ralph, & Mineka, 1997; Metalsky, Halberstadt, & Abramson, 1987). Nevertheless, many researchers continue to include positive event attributions in their depression research, particularly when examining their role in recovery. Needles and Abramson (1990) found that people with self-enhancing attributions for positive events were more likely to regain hope and experience improved recovery from depression when positive events occur. Likewise, Johnson, Crofton, and Feinstein (1996) found that positive event attributions and the experience of positive events predicted decreases in hopelessness and depression. Later, Johnson, Han, Douglas, Johannet, and Russell (1998) found that positive event attributions mediate the relationship between learned helplessness and depressive symptoms. Furthermore, Voelz, Haeffel, Joiner, and Wagner (2003) found that positive event attributions interact with negative event attributions to predict decreases in hopelessness in depressed adolescents.

2.2.3 The Role of Optimism as a Resilience to Depressed Mood

Research has proposed not only the concept of depressive vulnerability such as attributional style, but also the notion of depressive resilience. Optimism is said to provide resilience to depression (L. A. Clark et al., 1994) and contributes to psychological wellbeing (Chang, 1998; Schweizer, Beck-Seyffer, & Schneider, 1999; Taylor & Brown, 1988; Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000). Optimists generally have positive expectations about outcomes whereas pessimists have negative expectations (Scheier & Carver, 1985). Low levels of optimism have been associated with increased self-criticism and self-blame and to decreases in self-confidence and perceived control that reduce effort and motivation to solve problems (Lyubomirsky, Tucker, Caldwell, & Berg, 1999). Peterson (2000) also argued that optimism is not merely a cognitive characteristic but includes emotional and motivational components.

From a health psychology perspective, Taylor (1983) used the term “illusory optimism” to refer to peoples’ positive beliefs about the future. Examples are that “good outcomes are more likely than bad” or that “more good things will happen to oneself than to others”. Taylor found that such beliefs are psychologically beneficial in helping people who are faced with threatening events, enabling them to assert control or to change their perceptions. Gibbons and McCoy (1991) identified these beliefs as self-illusions. Self-illusions constitute a positive bias in self-referent
information processing. Although there is an assumption that well-adjusted people are free of illusions, research contradicts this view (Alloy & Abramson, 1988; Taylor & Brown, 1988). Well-adjusted people tend to display illusory optimism whereas depressed individuals are more realistic in their interpretations (Alloy & Abramson; Taylor & Brown). Therefore depressed individuals may be free from optimistic illusions. The absence of optimistic illusions is said to lead to decreased motivation and persistence, factors highlighted by Seligman (1975) in learned helplessness.

Several researchers have merged common elements from psychoanalytic and cognitive theory, proposing that self-enhancement processes are associated with principalisation (Koenig, Clements, & Alloy, 1992; Margo, Greenberg, Fisher, & Drewan, 1993; S. Smith, 2001). In conjunction with Kwon (1999), these researchers have suggested that self-enhancements act as defense mechanisms against depression.

S. Smith (2001) adapted Wallston’s (1994) conceptualisation of cautious optimists (realists who work to ensure success), using cognitive and psychoanalytic concepts to produce his conceptualisation of defensive optimism. S. Smith also used Gleser and Ihilevich’s (1969) defense mechanism of principalisation in formulating “Defensive” optimists. Defensive optimists split off and repress threatening content from affect by, for example, using truisms to describe life. Thus when a bad event occurs a truism such as “every cloud has a silver lining” is used to ward off depressive affect.

2.2.4 Attributional Style and Optimism

Attributions are described as causal explanations that affect expectations about future events (Abramson et al., 1978). The influence of attributional style on mood is argued to be largely due to the effect of attributional style on expectations about the probabilities of future negative events (Peterson & Seligman, 1984). Peterson (2000) argued that an optimistic explanatory style reflects beliefs about agency, or how goals will be achieved. Carver and Scheier (1981) conceived dispositional optimism and pessimism as generalised expectancies for favourable and unfavourable outcomes respectively, as part of their behavioural self-regulation theory. Scheier and Carver (1985) construed optimism as a stable personality characteristic that affects the way people respond to difficulties in their lives. They proposed that expectations of success cause people to make efforts to attain their goals whereas expectations of failure result in a reduction or cessation in efforts to
attain goals. A person’s expectation of a particular outcome determines the general type of emotion or mood they experience; optimism leads to positive affect.

In their review of the research comparisons of optimism and explanatory style, Gillham, Shatté, Reivich, and Seligman (2001) concluded that little is known about the relationship between optimism and causal explanations. Several authors have made conceptual links between dispositional optimism and attributional style including that both derive, to a degree, from expectancies (Carver & Gaines, 1987; Scheier & Carver, 1992), and that both reflect individual differences in facing life demands (Peterson & Bossio, 1991). Optimism has been found to mediate relationships between positive event attributions and depression, and to partially mediate relationships between negative event attributions and depression (Hawkins & Miller, 2003; Hull & Mendolia, 1991). However, correlations between attributional style and optimism are usually not strong (Ahrens & Haaga, 1993; Scheier & Carver). In relation to defensive optimism, research by Kwon and Lemon (2000) has found that attributional style and defense maturity have interactive effects in relation to depressive symptoms. Furthermore, high levels of defense maturity were identified as mediating the relationship between negative attributional style and depressive symptoms.

Having reviewed the theory and research findings for explanatory style, the following chapter will describe the various measures developed to assess explanatory style. The chapter also includes a review of the problems associated these measures.
Chapter 3

Methodological Issues relating to Explanatory Style Research

Although there is strong agreement that attributional style and personality factors are strong predictors of mood, the measurement of attributional style has presented problems in the past. Measurement generally fails to yield the three theoretically defined and independent dimensions of attributional style (Arntz, Gerlsma, & Albersnagel, 1985; Cutrona, Russell, & Jones, 1985, Higgins, Zumbo, & Hay, 1999). Moreover, when these dimensions are measured, poor internal consistency reliabilities are generally obtained (Carver, 1989).

Another methodological issue for research on depressive vulnerability is that many past measures of depression, used for validation purposes, actually measure negative affect, a general psychological distress factor associated with anxiety and depression (L. A. Clark & Watson, 1991). A questionnaire intended to tap a vulnerability specific to depression is best validated using a depression-specific measure. However, most measures of attributional style were developed using measures now known to largely measure negative affect.

3.1.1 Measuring Attributional Style

Measures of attributional style are based on the premise that depression-prone individuals explain events differently to those not prone to depression. Attributions for depression-prone people will tend to be internal, stable, and global for negative events, and external, unstable, and specific for positive events.

3.1.1.1 The Attributional Style Questionnaire.

The Attributional Style Questionnaire (ASQ), the most commonly used measure of attributional style, was produced by Peterson et al., (1982) using the extant attributional theory and research. The questionnaire requires respondents to generate causes for 12 hypothetical events, half of them positive and the rest negative. An example of a positive item is “You become rich. Write down one major cause.” and a negative event is “You go out on a date and it goes badly. Write down one major cause.” Of the 12 events, half are affiliation related and half are achievement related. After a cause is given for an event, the cause is then rated for internality, stability, and globality. The ASQ yields internality, stability, and globality scales together with general attributional style scores, one for positive and one for negative events. Some attributional style research has also combined scores
by subtracting positive event attributions from negative event attributions or has used scales consisting only of negative events.

3.1.1.2 Other questionnaires using the ASQ format.

Most attributional style research has used the ASQ or derivatives of the ASQ that use the ASQ format. These measures include the Expanded ASQ (Peterson & Villanova, 1988), the Academic ASQ (Peterson & Barrett, 1987), the Occupational ASQ (Furnham, Sadka, & Brewin, 1992), and the Extended ASQ (Metalsky et al., 1987). The Expanded ASQ excludes all of the ASQ positive events and increases the number of negative events to 24. The Academic ASQ consists of 12 negative academic events and the Extended ASQ has 12 negative events, six achievement and six interpersonal in nature.

The Cognitive Style Questionnaire (Abramson et al., 1999) is an extended version of the ASQ containing 12 positive and 12 negative events, half of which are interpersonal and half achievement in nature, with relevance to university students. In addition to the stability and globality dimensions of the ASQ, respondents rate the consequences and the self-worth implication of the events. The Balanced Attributional Style Questionnaire (BASQ; Feather & Tiggemann, 1984) contains eight positive items describing events with positive outcomes and eight items describing the same events but with negative outcomes. Half of the events are achievement and half are affiliation related. Respondents provide a cause for each event and rate the causes on the dimensions of internality, stability, globality, and importance.

The Real Events Attributional Style Questionnaire (REASQ; Norman & Antaki, 1988) also uses the ASQ format. The REASQ contains general events taken from life by asking respondents to provide four negative events from their own lives, two social and two achievement related. For example, “briefly describe any one negative social event (something that made you feel bad in some way) that has happened to you”. Causes are then rated on the dimensions of internality, stability, globality, and importance.

The Attribution for Internal Events Scale (AIES; Gannon, Stevens, & Rhodes, 1994) contains 12 hypothetical biological circadian rhythm events, six positive and six negative. An example is “you have been feeling particularly healthy lately”. Similarly to the ASQ, respondents provide the most likely reason for the events and
rate the causes on the three dimensions of internal-external, global-specific, and control-lack of control.

The Internal, Personal and Situational Attributions Questionnaire (IPSAQ; Kinderman & Bentall, 1996) contains 16 positive and 16 negative social situations described in the second person. An example is “A friend thinks you are interesting”. As with the ASQ, respondents write down the most likely cause. Causes are then rated as internal, personal (to do with another person), or situational. Scores on these three dimensions are obtained by summing each for negative and positive events. In addition, an externalizing bias score is obtained by subtracting internal attributions for negative events from those for positive events and a personalizing bias score by dividing the number of personal attributions by the sum of both personal and situational attributions for negative events.

The Attributions for Recent Life Events Questionnaire (ARLEQ; Johnson et al., 1998), also based on the ASQ, obtains the attributions for the cause of the most positive event and the most negative event experienced by the respondent over the past week. The dimensions of internality, stability, globality, and importance are added separately for the negative and the positive event to obtain two scores. The Attributional Style Questionnaire for Previous Life Events (ASQPLE) was also developed by Johnson et al. and rates the most positive and most negative life events to have occurred during the past year, the past 10 years, and childhood.

The ASQ was adapted for general use by Dykema, Bergbower, Doctora, and Peterson (1996). This simplified questionnaire contains 12 negative events with easy instructions and clear item wording. The causes are self-generated as in the ASQ but are rated on the stable and global dimensions only.

3.1.1.3 Problems with the ASQ and similar measures.

Low reliabilities of the subscales have often been a problem with the ASQ. Nunnally and Bernstein (1994) considered that reliabilities of .70 are adequate for research scales. In their meta-analytical review of studies using the ASQ or similar measures, Sweeney et al. (1986) reported average reliabilities for internality, stability, and globality for negative events of .52, .58, and .52, respectively and for positive events of .40, .67, and .66 respectively. Negative event internality consistently provides low reliabilities. Hull & Mendolia (1991) obtained a reliability of .27 for ASQ Negative Internality in their first sample of 140 undergraduates.

Some researchers have attempted to improve reliabilities by using measures with
increased item numbers but with limited success. Joiner and Metalsky (1999), using the 12 negative item Extended ASQ, obtained internal consistency reliabilities of .55 and .60 for the internality subscale in two samples. Similarly, Peterson and Villanova (1988) achieved barely adequate internal consistency ($r = .66$) for their 24-item Internality subscale of the Expanded ASQ.

Despite defining three separate dimensions of attributional style and providing some discrimination of the three dimensions for negative events, the ASQ does not clearly differentiate the dimensions of internality, stability, and globality for positive events (Peterson et al., 1982). Rather, for positive events the three dimensions coalesce. The authors of the ASQ recommended adding the dimensional subscales for each event-type to improve reliabilities and simplify calculations unless the differential properties of the dimensions are of particular interest (Peterson et al.). Combining the subscales does considerably improve reliability (Sweeney et al., 1986). Many researchers have subsequently combined the dimensions of internality, stability, and globality in their research (e.g., Cutrona, 1983; Peterson & Barrett, 1987). Research into hopelessness theory tends to use a generality measure that combines stability and globality for negative events (e.g., Houston, 1995; Metalsky, Joiner, Hardin, & Abramson, 1993; Metalsky & Joiner, 1992). However, Carver (1989) questioned the efficacy of combining the dimensions of internality, stability, and globality to increase conceptual simplicity and reliability as is often done in attributional research. He argued that conceptual and empirical clarity is lost in this process. Information must be lost when the dimensions are not examined separately and misleading or erroneous conclusions may be formed. Carver questioned why the reliability should increase dramatically when the dimensions are added together if the ASQ subscales form theoretically separate and different dimensions. However, although the dimensions have separate defined roles for depression, the reformulated learned helplessness theory stated that causes high on all three dimensions are implicated for depression, and therefore combining the dimensions is theoretically acceptable.

Combining the individual dimensions of the ASQ may be justified if attributional style is a latent variable (Carver, 1989). That is, the separate dimensions may provide imperfect measures of a higher order latent variable that underlies the concept of interest. Hawkins and Miller (2003) and Hull and Mendolia (1991) found evidence that the dimensions of the ASQ do form two higher order latent constructs,
namely positive event attributional style and negative event attributional style. However, the specification of the latent variable models in both cases was not totally consistent with reformulated learned helplessness theory due to an interrelation of globality attributions across positive and negative events (Hawkins & Miller; Hull & Mendolia). In two separate samples Hull and Mendolia found that although the globality dimensions for positive and negative events were significantly related to their respective latent variables of positive events and negative events, they also shared significant variance with each other. Hawkins and Miller obtained similar results. Moreover, positive event globality was found to have small effect sizes with positive event attributions (Hawkins & Miller) and with depression (Sweeney et al. 1986). Hull and Mendolia’s attempts to specify a model with a separate globality factor were unsuccessful. This led them to conclude that researchers interested in the globality dimension should develop improved indicators unique to globality.

Using factor analysis, the ASQ also provided poor overall factor structure according to Arntz et al. (1985) and Cutrona et al. (1985). These researchers found only weak evidence for the theoretical ASQ dimensions. Additionally, Furnham et al. (1992) and Joiner and Rudd (1996) found that negative event attributions formed two factors one for internality alone and the second for stability and globality together. Arntz et al. also found that negative event globality and stability formed one factor. Similarly, Haugen and Lund (1998) obtained three factors from their Academic ASQ. These factors were combined internality, stability, and globality causes for positive event attributions, combined globality and stability causes for negative events, and finally internality causes for negative events. Negative event globality and stability had only a small, non-significant relationship with negative event internality. Some researchers have dropped the internality dimension of attributional style from their research (e.g., Dykema et al. 1996). Additionally, Hewitt, Foxcroft, and MacDonald (2004, in press) found that confirmatory factor analysis supported interrelatedness for the ASQ negative event Internality, Stability, and Globality constructs. However, the relationship of Stability and Globality with each other was much stronger (.70) than their relationships with Internality (.52 & .45 respectively).

Some of the events posed by the ASQ form factors of their own, consisting of their respective internal, stable, and global ratings (Arntz et al., 1985). Arntz et al. consequently suggested that there is either a problem with the ASQ format or that the concept of cross-situational attributional styles should be questioned. Likewise,
Bagby, Atkinson, Dickens, and Gavin (1990) found little cross-situational consistency in attributional style. Additionally, some causes carry with them implicit ratings. For example, causes for failure relating to dispositional characteristics such as lack of ability are generally internal, stable, and global whereas causes relating to effort, such as not working hard, may be internal, but unstable and specific. Therefore, the types of events and causes used in a measure can determine how the rating dimensions might coalesce. It may be possible to extract three independent dimensions for positive and negative events by changing and improving the way that events and causes are framed.

Events posed by the ASQ have been criticised as insufficiently severe to represent the types of events that elicit clinical levels of depression (Brewin, 1985; Hammen, 1985; Robins & Hayes, 1995). The ASQ has also been criticised as measuring situational or event factors (the effects of the given event) rather than the causal factors that it was designed to measure because of its format and the types of events used (Arntz et al., 1985; Cutrona et al., 1985; Higgins et al., 1999). Situational covariance within the item sets of the ASQ indicate that each item event stem generates variance above and beyond the person’s attributional style (Hewitt et al., 2004, in press; Higgins et al.). These researchers found that some events provide a stronger contextual influence than do other events.

Attributional causes such as ability, effort, task difficulty, and luck rated by respondents do not always concur with the theoretically prescribed dimensions and dimensional ratings on the ASQ are not always as predicted (Kranz & Rude, 1984). For example, Kranz and Rude found that only 51% of respondents identified ability as a stable cause and 48% considered it a global cause. Further, only 50% of respondents rated task difficulty as an external cause. In addition, when Kranz and Rude examined causes and attributional dimensions separately, causes and dimensions were found to contribute independently to depression and appear to be separate constructs.

One final problem with the ASQ and other measures using the ASQ format is that they require considerable time to complete (Lynd-Stevenson, 1995, 1996; Winefield, Tiggemann, & Smith, 1987). Lynd-Stevenson (1996) reported that some unemployed adults refused to complete the ASQ because they found it too time consuming. Another problem with the ASQ format is that it requires considerable cognitive effort to complete (Dykema et al., 1996; Hawkins, 1998). The time and
effort required for completion makes the ASQ problematic for use with the general population. The ASQ was developed using undergraduate samples (Peterson et al., 1982) who are highly literate and often complete questionnaires as part of their course requirements. Student samples therefore have several advantages over general population samples including the cognitive capacity and motivation to complete the ASQ.

**3.1.1.4 Questionnaire formats that differ to the ASQ format.**

In addition to the ASQ and its derivatives, there are other questionnaires of explanatory style that use different formats such as forced-choice questionnaires. The most commonly used forced-choice questionnaire of attributional style is the Children’s Attributional Style Questionnaire (CASQ; Seligman et al., 1984) sometimes referred to as the KASTAN. The CASQ contains 48 items with 16 questions for each of the three causal dimensions, internal, stable, and global. Half of the events are good and half are bad events. All events are relevant to a child’s life and experiences. Each item provides two possible causes on one dimension while holding the other two dimensions constant. The CASQ is both easy to complete and easy to code. However, the CASQ produces very poor internal consistency reliability for the individual subscales (less than .60), as well as for the negative event composite (.45 and .48), for a community sample of 1,710 adolescents aged 14 - 18 years (Andrews, Lewinsohn, Hops, & Roberts, 1993).

A second forced-choice scale, developed Reivich and Seligman, is the 48-item Forced-choice ASQ (Reivich, 1995; Seligman, 1991). The Forced-choice ASQ consists of 24 positive and 24 negative events. Respondents choose the most likely of two causes provided for each event. Each item measures one of the three explanatory style dimensions while holding the other two dimensions constant. For example, “A friend thanks you for helping him/her through tough times” is followed by the options (a) “I enjoy helping him/her through tough times” and (b) “I care about people”. Option (a) is specific, and option (b) is global. For both options the internal and stable dimensions remain the same. Although the format is clear, simple and respondents express no difficulty in understanding and completing the questionnaire, Reivich reported that some subjects were frustrated by the choices provided to the extent that they wrote in their own causes or else left out some items. Reivich reported that the Forced-choice ASQ remains a work in progress.
A third forced-choice measure is the Measure of Attributional Style (MAS; Kwon, P., personal communication, August 14, 2000; Kwon & Whisman, 1992) that contains 26 hypothetical negative events with a choice of four causes on the dimensions of internality and generality. Generality is a composite of the stable and global dimensions. An example of a situation is “You have been looking for a job unsuccessfully for several weeks”. Two of the four response choices are, “You do not have much to offer as a job applicant” (high internality and high generality) and “Business has been unusually slow in your town the past few weeks” (low internality and low generality). Kwon (1999) argued that the globality and stability dimensions are usually highly correlated and therefore best measured as one generality dimension. He used the generality dimension alone as a measure of attributional style because he argued that generality is the most important dimension in hopelessness theory. The generality dimension of the MAS yielded good reliability (.74) from a sample of 147 undergraduates. However, the MAS does not measure all attributional dimensions separately or measure positive event attributions.

A final forced-choice questionnaire, that also does not separate the attributional dimensions, is the Attributional Style Assessment Test, (ASAT; C. A. Anderson, Horowitz, & French, 1983). The ASAT has 10 success and 10 failure events, half of each are interpersonal and the rest not. There are six attributional response choices, strategy, ability, effort, trait, mood, and other circumstances (external, beyond control). A situation is described, for example, “You have just attended a party for new students and failed to make any new friends”, and six alternative reasons are provided. An example of a strategy response is “I used the wrong strategy to meet people”. Respondents select the best reason to explain the situation for them. Reliabilities within the six attributional categories were modest, ranging from .34 to .56 for a sample of 304 undergraduates (C. A. Anderson et al.).

Other methods of assessment include the Multidimensional-Multiattributional Causality Scale (MMCS; Lefcourt, von Baeyer, Ware, & Cox, 1979) that also does not separate the attributional dimensions. The MMCS presents two scales, one with 24 affiliation items and the other with 24 achievement items. Half of the items on each scale are successes and half are failures. The MMCS was designed as a locus of control measure that generated separate internality and externality scores. Respondents endorse their level of agreement with statements that include an event and a given cause. Causes include ability, effort, context (external), or luck causes.
For example, an achievement item with an ability cause is “I feel that my good grades reflect directly on my academic ability”. An affiliation item with a context cause is “Some people seem predisposed to dislike me”. Reliabilities range from modest to good (.61 to .77) for a sample of 241 undergraduates (Lefcourt et al.).

A covert method for measuring attributional style that has been used successfully is the Pragmatic Inferences Task (PIT; Winters & Neale, 1985). The PIT contains a paragraph scenario in which both internal and external causes for the events described are provided. Participants answer four multiple choice questions relating to factual, non-causal information as well as to causal inferences about the situation. The PIT yielded modest to acceptable reliabilities, .59 for success events and .69 for failure events, in a sample of 32 psychiatric outpatients and 16 controls aged 18 to 65 years (Winters & Neale). The PIT is particularly useful with psychiatric patients when defensiveness is a factor of interest. Winters and Neale found that depressive attributions could be detected in a recovered depressive sample using the PIT whereas previous research had failed to find an effect. Krstev, Jackson, and Maude (1999) used the PIT to examine covert attributions in early psychosis patients and found evidence of defensiveness. However, PIT-measured covert attributions were significantly related to verbal IQ. The sensitivity of the PIT to verbal intelligence limits its validity for general population use.

In summary, although there are many self-report measures of explanatory style, they all have shortcomings as adequate instruments for measuring depressive vulnerability and resilience. Problems with explanatory style measures include low reliabilities yielded for the separate attributional dimensions, poor factor structure for the combined attributional dimensions, or failure to extract measures of the separate attributional dimensions. A problem specific to forced-choice explanatory style measures is that insufficient options may be provided to satisfy the respondents’ needs. Furthermore, some explanatory style measures do not include positive event attributional subscales, and some measures include only a specific range of events. Finally, most commonly used explanatory style measures require time and cognitive effort from respondents.

### 3.1.1.5 Alternatives to questionnaires for measuring attributional style.

An alternative method of establishing attributional style is by the examination of the content of verbal or written material. Peterson, Luborsky, and Seligman (1983) used a content analysis of verbatim explanations (CAVE) to ascertain the
attributational style of a person in psychiatric therapy. They were able to associate mood changes with preceding depressive attributions. The CAVE method has proven successful in identifying attributional style (Colligan, Offord, Malinchoc, Schulman, & Seligman, 1994) but requires a large amount of written or verbal material as well as trained judges to code responses. This method is time consuming and requires considerable effort from both the respondent and the judges. CAVE is therefore not suitable for community and clinical samples with more than a small number of subjects.

In an attempt to address these shortcomings, Schulman, Castellon, and Seligman (1989) simplified the CAVE by performing a content analysis of responses supplied by subjects to the ASQ questions. Judges trained for a week in applying the three attributional dimensions then performed the content analysis. Lynd-Stevenson (1995) further developed the CAVE method by using content analysis of responses (CAR) to the ASQ causes provided using the ASQ format. The responses in his research were of only two or three words thereby minimizing the cognitive and time burdens on participants. Although the CAR format was readily accepted by subjects and was successfully used for unemployed adults (Lynd-Stevenson), it still required that several judges be trained to code responses. The training of judges is time consuming and the rating process requires time and effort. Furthermore, Schulman et al. concluded that judges’ ratings of causal dimensions may not be as accurate as the test-takers and that the ASQ may have better validity than the CAVE in predicting depression.

3.1.2 Issues in the Measurement of Attributional Style

Although reformulated learned helplessness theory describes attributions and the implications they have for depression, some situations dictate the explanations made (Peterson & Seligman, 1984). The most obvious examples are weddings and funerals. In these cases, the events are the primary determinants of the causal attributions given for them. These explanations are described as being reality driven. At other times, people rely on their habitual style to explain events.

People offer causal explanations even when they are not asked to, and especially in response to negative and unexpected events (Wong & Weiner, 1981). Schlenker and Britt (1996) recommended that attributional style ratings are more valid when people make them concerning events that they experience themselves than when they make them for events that others experience. Furthermore, people
with depression make less optimistic attributions for themselves when they experience a negative event than they make for others who experience the same event (Schlenker & Britt).

3.2.1 Issues in the Validation of Explanatory Style Measures

3.2.1.1 The measurement of depression.

One of the problems in researching attributional style as a vulnerability to depression occurs when self-report measures of depression are used for validation purposes. The ASQ was partly developed and validated using self-report measures of depression. As depression and anxiety disorders are often comorbid, with only about half of depression and anxiety patients displaying pure depression or anxiety symptoms (Lovibond & Lovibond, 1995), self-report measures of depression often also index anxiety (Coyne & Whiffen, 1995).

The tripartite model of depression and anxiety (L. A. Clark & Watson, 1991) groups the symptoms of depression and anxiety into three components. The first component is negative affect, which covers general distress in both depression and anxiety. Second is positive affect, which is specific to depression. Third is physiological arousal, which is unique to anxiety. The tripartite model has received considerable support (T. A. Brown, Chorpita, & Barlow, 1998; Lerner et al., 1999), but is not without critics such as D. D. Burns and Eidelson (1998) who found that non-specific depression and anxiety symptoms did not form a clear negative affect factor.

The two dimensions of positive affect and negative affect are thought to encompass cognitive, behavioural, biological and affective systems (L. A. Clark et al., 1994). Positive affect reflects enthusiasm, activity, and alert behaviour (Watson, Clark, & Tellegen, 1988; Watson & Tellegen, 1985). People low in positive affect tend to be sad, lethargic, dull, flat, disinterested, unenthusiastic, and to have reduced cognitive capacity (L. A. Clark et al.; Watson & Tellegen). Positive affect has negative correlations with measures of depressive symptoms but is generally unrelated to anxiety symptoms. Positive affect is linked both theoretically and empirically with depression (L. A. Clark et al.).

Negative affect incorporates many mood states including distress, fear, hostility, and nervousness (Watson & Tellegen, 1985). Negative affect represents a relatively enduring and pervasive predisposition to experience negative mood. In a
review of research, Watson and Clark (1984) found that high negative affect was associated with poor health and psychophysiological problems. They also found that people high in negative affect were more likely to have increased distress, across situations and at all times, even in the absence of obvious stress. Negative affect also includes aspects of self-concept, with people high in negative affect tending to be more self-critical, negatively focused, self-disclosing, and to have a greater need for social approval and association (L. A. Clark & Watson, 1991). Additionally, negative affect has also been associated with pessimism, low self-esteem, and a general dissatisfaction with life (L. A. Clark et al., 1994).

The positive and negative affective systems are overlapping but separate, with moderate correlations found between them (MacLeod, Byrne, & Valentine, 1996). Positive affect associates with approach behaviour, hope, and expectancies for positive outcomes as one construct; negative affect associates with avoidance behaviour, worry, and expectancies for negative outcomes as a second construct (MacLeod et al.).

Problems have arisen in distinguishing depression from anxiety when using self-report mood measures as evidenced by high correlations between self-report depression and anxiety scales (L. A. Clark et al., 1994; L. A. Clark & Watson, 1991). Moreover, much of the research undertaken using the ASQ over many years has also used the Beck Depression Inventory (BDI; Beck, Ward, Mendelsohn, Mock, & Erbaugh, 1961) and other scales that have high correlations with negative affect (Watson & Clark, 1984). Watson and Clark (1984) examined intercorrelations from previous research for eighteen existing self-report measures of depression, anxiety, neuroticism, ego, social desirability, and adjustment. They argued that twelve of the tests had such high correlations with each other that they could be considered measures of negative affect. Watson and Tellegen (1985), using factor analysis, reanalysed nine previous mood studies to find that two dominant factors, namely positive and negative affect, consistently emerged. The findings indicated that the BDI and many other self-report depression measures cover a broad range of symptoms that represent general distress. Because the BDI measures negative affect rather than pure depression, past research using the BDI as a depressed mood measure should be viewed as measuring negative affect and therefore the associated results may require reinterpretation. Positive affect is negatively correlated with measures of depression and, because it is not related to measures of anxiety, positive
affect is considered a specific measure of depressed mood (L. A. Clark & Watson; Jolly, Dyck, Kramer, & Wherry, 1994).

Watson et al. (1988) developed a brief measure of mood, the Positive and Negative Affect Schedule (PANAS) based on the two-factor affect model of Watson and Tellegen (1985). The PANAS is a more specific measure of depressed mood than are previous measures, including the BDI, and can help clarify research into depression. Positive affect and negative affect are treated as distinct dimensions based on pure markers. This independence is confirmed by low to moderate correlations between the two scales. The two scales are internally consistent, have excellent convergent and discriminant validity (Watson et al.), and also display good levels of temporal stability over a six-year period (Watson & McKee Walker, 1996).

In an attempt to cover the broad range of core depression and anxiety symptoms and to create anxiety and depression scales with maximal discrimination, Lovibond and Lovibond (1995) produced the Depression Anxiety Stress Scales (DASS). The DASS is a 42-item instrument that consists of three scales of 14 items each. The DASS scales have good alpha reliabilities and convergent validity with other similar scales (T. A. Brown, Chorpita, Korotitsch, & Barlow, 1997; Lovibond & Lovibond). The Depression scale (DASS-D) measures aspects of depression including hopelessness, dysphoria, anhedonia and lack of interest. The Anxiety scale (DASS-A) measures facets such as autonomic arousal, skeletal musculature effects and situational anxiety. The Stress scale (DASS-S) measures nervous arousal, difficulty relaxing, and being easily upset or agitated. Lovibond and Lovibond also provided a 21 item short version of the DASS, the DASS-21.

In a comparison of the DASS and the DASS-21, using psychiatric patients and non-clinical volunteers, Antony, Bieling, Cox, Enns, and Swinson (1998) found similar internal consistency and concurrent validity for both measures. Consistent with the tripartite model, the DASS-D proved unique to depression and low positive affect, the DASS-A proved unique to anxiety and physical hyperarousal, and the DASS-S measured both depression and anxiety features. Clara, Cox, and Enns (2001) obtained similar results using a psychiatric sample of 439 predominantly depressed adults. Clara et al. also found that the 21-item version of the DASS yielded a better factor structure than the 42-item version.

Results of past research into the relationship between cognitive vulnerabilities and mood measures have been varied and difficult to integrate. This is partly because
the development of mood measures that successfully isolate depression has been relatively recent. As a result, much of the research linking depressive vulnerabilities to depressed mood actually link the vulnerabilities to negative affect or psychological distress instead. The vulnerabilities need to be examined in relation to positive affect to more properly assess depressed mood. Therefore, appropriate mood measures are the PANAS or DASS that can isolate general negative affect from positive affect or depression-specific mood.

A further issue for the self-reported measurement of depression is that reported high levels of depression in research may not necessarily meet a clinical diagnosis of depression. Coyne (1994) maintained that results from research on analogue samples that have not received a formal diagnosis of a depressive disorder should be interpreted with caution. However, Lewinsohn, Solomon, Seeley, and Zeiss (2000) did not find a depressive symptom threshold. Rather, they found that there was a continuum of symptoms for both self-report and interview-based reports. Moreover, other authors such as Flett, Vrendenburg, and Krames (1997), Cox, Enns, Borger, and Parker (1999), and Enns, Cox, and Borger (2001) argued that analogue samples and self-report measures can be useful in depression research.

3.2.1.2 Explanatory style in relation to Positive Affect and Negative Affect.

The ASQ and its derivatives have provided associations with negative mood (Tiggemann, Winefield, Winefield, & Goldney, 1991) and anxiety-specific mood (Corr & Gray, 1996; Dowd, Claiborn, & Milne, 1985; Ganellen, 1988; Ralph & Mineka, 1998; Rodriguez & Pehi, 1998). In their review of research Bell-Dolan and Wessler (1994) concluded that although research findings relating to attributional style and anxiety yielded mixed results, there was an association between attributional style and anxiety.

Research using the ASQ and the PANAS has consistently found that negative event attributions predict negative affect. However, findings relating to the prediction of positive affect have been varied. Metalsky and Joiner (1992) found that negative event attributions in conjunction with negative life events, occurring over a 10-week period, were associated with changes in positive affect. By contrast, Ahrens and Haaga (1993) found that only positive event attributions were linked to positive affect whereas only negative event attributions were linked to negative affect. Ralph and Mineka (1998) likewise found an association between negative event attributions and negative affect. However, they found no association between negative event
attributions and positive affect. Using structural equation modeling, Hawkins and Miller (2003) found that whereas both positive event attributions and negative event attributions both had links with positive affect, negative event attributions alone also had a link with negative affect.

3.3 Summary

The reformulated learned helplessness theory of depression proposes that particular attributional styles constitute depressive vulnerability (Abramson et al., 1978). Abramson et al. postulated that attributional styles are created by the use of particular causal explanations on three dimensions; internal-external, stable-unstable, and global-specific. Research has generally supported attributional styles as vulnerabilities to depression (e.g., Peterson & Seligman, 1984; Sweeney et al., 1986). Researchers using community samples criticised the most used measure of attributional style (ASQ) because it required more time and cognitive effort than many people were prepared to invest (e.g., Dykema et al., 1996). Additionally, the dimensional subscales of the ASQ consistently produced inadequate internal consistency reliabilities (Hull & Mendolia, 1991; Sweeney et al., 1986) and the ASQ often failed to provide the factor structure outlined in reformulated learned helplessness theory (Arntz et al., 1985; Cutrona et al., 1985, Hawkins, 1998).

In addition to depressive vulnerabilities, optimism is said to provide depressive resilience (Scheier & Carver, 1985). Optimism has been found to mediate relationships between positive event attributions and depression, and to partially mediate relationships between negative event attributions and depression (Hawkins, 1998; Hull & Mendolia, 1991).

Many depressive vulnerability measures, including the ASQ, were validated using the BDI. Additionally, the BDI has often been used in depressive vulnerability research but is now considered an inappropriate measure of depression because it largely measures negative affect or general psychological distress, rather than to measure depression-specific mood (L. A. Clark & Watson, 1991; Watson & Clark, 1984; Watson et al., 1988). To adequately test the validity of self-report explanatory style measures, measures of depression-specific mood are required.
4.1.1 Introduction and Rationale

4.1.1.1 Overview.

Research has generally linked a depressive explanatory style with depressed mood in both adults and children (Gladstone & Kaslow, 1995; Joiner & Wagner, 1995; Robins, 1988; Robins & Hayes, 1995; Sweeney et al., 1986). Formulations that incorporate explanatory style as a depressive vulnerability such as the reformulated learned helplessness theory (Abramson et al., 1978), the conceptualisation of optimistic and pessimistic explanatory styles (Peterson, 1991; Peterson & Seligman, 1987; Seligman & Schulman, 1986), and the model of hopelessness depression (Abramson et al., 1989), focus on causal explanations made for negative events. This study examined both positive and negative event attributions as well as optimism in relation to depressed mood.

Explanatory style is said to have three theoretical attributional dimensions: internality, stability, and globality. A pessimistic explanatory style consists of internal, stable, and global attributions for negative events and the inverse attributions for positive events (Peterson et al., 1995). This proposition suggests an inverse relationship between positive and negative event attributions but research usually finds the two are independent. Therefore, whether positive and negative event attributions are inversely related or independent requires examination. In the present study, attributions were studied, with a newly created measure, using the framework of pessimistic explanatory style. The new measure was needed to obtain ratings for both internal and external causes. Current measures allow only for ratings to be either internal or external. However, to test for a bipolar relationship between internal and external attributions, ratings of both types need to be examined together. The new measure was also needed to evaluate the contribution to pessimistic explanatory style from each of the attributional dimensions of internality, stability, and globality for both positive and negative events. The relationships of the new measure with optimism and mood also require examination to provide evidence of construct validity for the explanatory style measures.
4.1.1.2 Explanatory style in theories of depressive vulnerability.

The reformulated learned helplessness theory proposes that depression-prone people attribute negative events to internal, stable, and global causes (Abramson et al., 1978). Reasoning from the reformulated learned helplessness theory of depression, the conceptualisation of a pessimistic explanatory style in relation to depression was adopted by some researchers (Peterson & Bossio, 1991; Peterson & Seligman, 1987; Seligman & Schulman, 1986). A pessimistic explanatory style consists of internal, stable, and global attributions for negative events. An optimistic explanatory style in relation to depression was conceptualised as the bipolar opposite of pessimistic explanatory style: external, unstable, and specific attributions for negative events (Seligman & Schulman). Pessimistic explanatory style is self-blaming for negative events whereas optimistic explanatory style avoids blame by externalising the cause.

Subsequent hopelessness theory offers a similar proposition about explanatory style but emphasises the stable and global aspects of causes because these are said to represent the global pessimism induced by negative events (Abramson et al., 1989). Global pessimism reflects the view that the causes of bad events will always be present in the future and will affect many areas of life. The importance of the internal dimension to attributions is reduced in hopelessness theory. Internal explanations for negative events are argued to indirectly affect depression via their implications for personal characteristics such as self-worth. The formulations of explanatory style in the above theories all focus exclusively on the attributions made for negative events.

Empirically, research supports explanatory style for both positive events and negative events as vulnerabilities to depression. However, explanatory style for negative events generally provides stronger effects on depression than does explanatory style for positive events (Sweeney et al., 1986). Yet the role of causal explanations for positive events has never been clearly articulated in the reformulated learned helplessness, hopelessness, or pessimistic explanatory style theories. In their initial reformulated learned helplessness model, Abramson et al. (1978) made no specific prediction about differences in attributions for positive and negative events. Abramson et al. referred to prior research showing that depressives tend to make external, specific, and less stable attributions for success. Abramson et al. also recommended a depression-reducing therapy to change attributions for success from
external, unstable, and specific to internal, stable, and global attributions. Seligman, Abramson, Semmel, and von Baeyer (1979) later clearly stated that depression-prone people would attribute positive events to external, unstable, and specific causes.

Seligman, one of the authors of the reformulated learned helplessness theory of depression, later stated that an assumption in the formulation of explanatory style was that positive and negative events would be examined separately (Peterson et al., 1995). Peterson et al. clarified Abramson et al.’s formulation by contrasting the internal dimension of attributions with Rotter’s (1966) locus of control. Rotter combined the internal dimension across positive and negative events distinguishing this internal dimension from a similarly combined external dimension across positive and negative events. By contrast, the reformulated learned helplessness theory did not combine the internal dimension across positive and negative events (Peterson et al.) and treated positive and negative events as separate. Despite this clarification, Peterson et al. suggested that research findings of independence for positive and negative events were not clearly understood. This conclusion suggests a lack of clear theoretical support for independent positive and negative event attributional styles. Peterson et al. further stated that the correlates of explanatory style for positive events would tend to oppose those for negative events, suggesting an inverse relationship between positive and negative event attributions. The Abramson et al. model and the Peterson et al. clarification therefore appear to predict a strong negative association between the three dimensions of attributions for positive events and those for negative events. This predicted association raises the issue of whether causal attributions for positive and negative events should be inversely related rather than independent.

As a consequence of Peterson et al.’s (1995) argument for an inverse relationship between attributions for positive and negative events, optimistic and pessimistic explanatory styles each gain an additional set of defining attributions made for positive events. Internal, stable, and global attributions for positive events should reflect an optimistic explanatory style, namely that one has been, and can in the future be, responsible for good events that will affect many areas of one’s life. Likewise, external, unstable, and specific attributions for positive events may be considered a pessimistic explanatory style, namely that one has not been, and will not in the future be, responsible for positive events in one’s life. Further, the causes will
affect only specific areas of one’s life. A pessimistic explanatory style for positive events implies that one lacks the ability to bring about and benefit from positive experiences. The consequence may well be feelings of powerlessness.

The foregoing review raises issues that merit investigation. The relationship between positive and negative event attributions requires further clarification because it is unclear whether attributions for the opposing event types are independent or inversely related. In order to test Peterson et al.’s (1995) contention of inverse relationships between attributions for positive and negative events in relation to a pessimistic explanatory style, a measure is required that allows people to differentiate between internal and external causes, stable and unstable causes, and global and specific causes, to freely create a preferred style from the constituent dimensions. It is clear that any given cause must lie on a continuum between stable and unstable because a cause cannot be stable and at the same time unstable. Although the same logic applies to the global and specific continuum, the internal and external dimensions are an exception. A cause can be both internal and external at the one time. For example, the cause “I was lucky” requires an external component to provide the good fortune but can also contain an internal component of the belief that one is a lucky person. An ability to measure a person’s position on internal causes and on external causes in the single measure should reveal the existence of a pessimistic explanatory style that contains high levels of internal and low levels of external attributions for negative events and the inverse for positive events. The existence of an optimistic explanatory style, the bipolar opposite of a pessimistic explanatory style, whereby people make external, unstable, and specific attributions for negative events also requires supporting evidence. A measure that provides ratings for all six properties of internal, external, stable, unstable, global, and specific will allow for the testing of the positive and negative event constituents of a pessimistic explanatory style. The next section will examine existing measures of explanatory style to ascertain if a suitable measure is available that can isolate internal, stable, and global as well as external, unstable, and specific explanatory styles for both positive and negative events.

4.1.1.3 Measurement and constituents of explanatory style.

Several methods have been used to assess depressive explanatory style. The most common is a self-report questionnaire, the ASQ (Peterson et al., 1982). The ASQ contains six positive and six negative events for which respondents provide the
most likely causes. Causes are self-rated on a 7-point scale for the dimensions of Internal-External, Stable-Unstable, and Global-Specific. Respondents nominate their own likely causes for given events. The ASQ was developed to help clarify the attributional component of learned helplessness but has since been used in hopelessness theory research and to compare optimistic explanatory style with pessimistic explanatory style. Explanatory style as it pertains to hopelessness theory is usually researched by selecting only the ASQ dimensions of Stable-Unstable and Global-Specific for negative events (e.g., Abela & Seligman, 2000).

Peterson et al. (1982) developed the ASQ format to be compatible with the reformulated learned helplessness theory of Abramson et al. (1978). Specifically, Abramson et al. stated that ascribing internal, stable, and global causes for negative events constitutes a depression-prone attributional style. Furthermore, supplying causes for rating such as effort, ability, task difficulty, and luck as was done in prior attributional research was inadequate because given causes do not always directly map the three attributional dimensions of internal, stable, and global. Additionally, dimensional ratings are subjective because individuals provide differing dimensional ratings for the same cause (Peterson et al.). In response to these points, Peterson et al. designed the ASQ with a format that allowed individuals to provide their own causes for events and then to ascribe their own dimensional interpretations to their nominated causes. Positive event attributions were included in the ASQ based on prior research (Peterson et al.). For example, Seligman et al. (1979) found that depressed people attributed good events to external and unstable causes.

The concepts of optimistic and pessimistic explanatory style would suggest an inverse relationship between attributions for the two event types, but the ASQ has yielded strong empirical support for the independence of positive and negative event attributional constructs (Hawkins, 1998; Hull & Mendolia, 1991). Both studies obtained two independent higher-order latent constructs, namely positive event attributional style and negative event attributional style. However, these latent constructs were not totally independent because the Global subscales for positive and negative events shared a common element. Hull and Mendolia modelled for this commonality by covarying the error terms for the two measures, implying that positive and negative globality shared unique variance that was not related to attributional style. By contrast, Hawkins removed the Positive Globality subscale from her model because it provided too low a contribution to the positive event
attributional construct. Moreover, positive event globality was found to have small effect sizes with depression (Sweeney et al. 1986). Hull and Mendolia’s attempts to specify a model with a separate globality factor were unsuccessful. This led them to conclude that researchers interested in the globality dimension should develop improved indicators unique to globality.

In addition to questions about the independence of positive and negative event attributions, questions remain about the independence of attributions for the three causal dimensions of internality, stability, and globality that were stipulated in the reformulated learned helplessness theory by Abramson et al. (1978). Abramson et al. stated that internal and stable and global attributions are usually orthogonal to each other and the authors initially assigned a different role to each of the dimensions. In response to negative events, internal explanations were argued to predict loss of self-esteem, stable explanations to predict the length of depression, and global explanations to predict the pervasiveness of the depressive reaction into other areas of life (Abramson et al.). However, the authors of the ASQ recommended using composite positive event and negative event attributional style measures to improve reliabilities (Peterson et al., 1982). The use of these ASQ composites is somewhat at odds with Abramson et al.’s position. Optimistic and pessimistic explanatory styles are usually measured as low and high levels respectively of composite ASQ Stable and Global for negative events by researchers (Peterson et al., 1995).

Although few researchers use the causal dimensions as independent predictors in their research, some limited support for the separate roles of the internal, stable, and global dimensions exists. For example, Tennen and Herzberger (1987) found that only Internal attributions for negative events were associated with reduced self-esteem as predicted. Yet External, Unstable, and Specific attributions for positive events were likewise associated with reduced self-esteem, thereby challenging the specificity of self-esteem to the internal dimension. Eaves and Rush (1984) found that only Stable attributions for negative events reduced from depression to remission as predicted. Yet contrary to predictions, only Global attributions were related to duration of depression. Alloy et al. (1984) showed that when undergraduate students with Global attributions for failure failed in one situation, their later performance in both similar and different situations diminished. Likewise when students with Specific attributions for failure failed in one situation,
they showed diminished performance in similar situations only. These findings support the role of globality in generalising causes to other areas of life. However, Alloy et al. reported results only for the global dimension of attributions and consequently the uniqueness of their results to the global dimension alone remains unknown.

Contrasted with support for the separate roles of the causal dimensions, support has also been found for inter-relatedness between the three causal dimensions. An example is that the dimensions generally combine into higher-order attributional style latent variables (Hawkins, 1998; Hull & Mendolia, 1992). Moreover, Arntz et al. (1985) and Cutrona et al. (1985) found only weak evidence for the separation of the three ASQ causal dimensions. Instead, the events posed by the ASQ formed factors of their own. For example the Internal, Stable, and Global ratings for the event “you become rich” formed a single factor. Due to the lack of clear independent dimensional structure, Arntz et al. suggested that there is either a problem with the ASQ format, or that the concept of cross-situational attributional styles should be questioned.

Abramson and Seligman, two authors of the reformulated learned helplessness theory of depression, were also involved in the development of the ASQ. Yet there appears to be some contradiction between their theory and the subsequent structure of the ASQ. Nevertheless, the ASQ was initially presented as an exploratory tool with no definitive statement on the composition of the final measurement scores. The lack of a specific scoring protocol implies that the authors were open to alternative possibilities regarding causal dimensional compositions and relationships.

Although much research has successfully used the ASQ, or its derivatives, to find that attributional style is a risk factor for depression (Sweeney et al., 1986), the ASQ has some psychometric shortcomings. The psychometric problems with the ASQ include rather low reliabilities for the subscales (Sweeney et al.). The use of composites to improve reliabilities was supported by Sweeney et al. who found that a composite of positive event subscales and a composite of negative event subscales resulted in a marked increase in average reliabilities. Attempts to improve the measurement of attributional style have led to many derivatives of the ASQ that use the same format but with varying numbers and types of events, such as the Expanded ASQ (Peterson & Villanova, 1988) and the Extended ASQ (Metalsky et al., 1987).
However, the internal consistency of the negative event Internality subscale for these measures remained modest.

A further problem with the ASQ and measures with a similar format is the difficulty encountered by respondents. ASQ completion requires considerable cognitive effort (Dykema et al., 1996) and time (Lynd-Stevenson, 1995) to complete. Thus use of the ASQ with community samples, especially poorly educated or unmotivated respondents, can be problematic.

Other methods of assessing explanatory style that do not use the ASQ format include the use of content analysis of explanations, such as CAVE, (Peterson et al., 1983) which uses naturally occurring explanations for events provided by people. Verbal or written material is rated by trained judges on the dimensions of internality, stability, and globality. CAVE responses are often complex, time consuming to score, require two or more judges, and there is evidence that judges may not be as accurate as respondents in scoring the attributorial dimensions (Schulman et al., 1989). Forced-choice questionnaires have also been produced to simplify the measurement of attributional style in general population samples. One example is the Forced-choice ASQ (Reivich, 1995; Seligman, 1991). Unfortunately this questionnaire, although easier to complete, was frustrating for participants because the range of causes given did not always include the ones that the respondents required. This resulted in items being left out or incorrectly completed (Reivich). A second forced-choice measure is the MAS (Kwon & Whisman, 1992) that has been successfully used in several studies (e.g., Kwon, 1999; Kwon & Laurenceau, 2002). The MAS provides support for researcher-rated causes; the obtained dimensions have been successfully used to predict depressed mood (Kwon). Unfortunately the MAS contains only negative event items.

In spite of the range of measures for attributional style, a measure of positive and negative event attributions that provides good psychometric properties and is both easily completed and scored appears not yet available. Therefore a new measure that will ameliorate the shortcomings of extant measurement techniques is merited. Additionally, a measure that can provide separate ratings for both internal and external causes for positive and negative events is necessitated for a comprehensive investigation into optimistic and pessimistic explanatory styles.

Problems found with the reliability and structure of the ASQ may be due to the ASQ format. The ASQ only frames the event, leaving the respondent to nominate
the cause. The generated causes elicited by the ASQ events may determine
whether the three rating dimensions will coalesce. Some causes appear to offer
predetermined associations between dimensions. For example, dispositional causes
for failure such as lack of ability are generally internal, stable, and global whereas
causes relating to effort, like not working hard, may be internal, but unstable and
specific. Thus the lexical properties of the nominated cause may largely determine
the dimensional ratings. However, it is questionable whether the array of causes
available in the language offers equivalent proportions for each possible permutation
of the causal dimensions. For example, it is difficult to provide many causes that are
internal, unstable, yet global.

A measure that allows respondents to produce both internal and external
ratings is required to test whether these two components of the internality dimension
are bipolar opposites. The ASQ format assumes either high internal or high external
causes will be supplied. Moreover, the dependence or independence of the
attributional dimensions still requires further evaluation, because although the
reformulated learned helplessness theory predicts separate roles for each of the
attributional dimensions in relation to depression, research usually uses dimensional
composites or finds latent constructs that combine the three dimensions.

4.1.1.4 Issues in the validation of a new measure of explanatory style.

A further problem with the nature of the ASQ occurs because it was
developed and validated using a particular measure of depression, the BDI (Beck et
al., 1961). This instrument is now considered to largely measure negative affect
(Watson & Clark, 1984). Thus, the BDI measures the general distress features
common to both depression and anxiety. Research supporting the ASQ subscales as
vulnerabilities to depression may actually show the ASQ subscales as vulnerabilities
to general psychological distress. By contrast, a uniquely defining feature of
depression is anhedonia, the inverse of which is a separate construct termed positive
affect (L. A. Clark & Watson, 1991). Positive affect displays a relationship to
depression but not anxiety, and has low to moderate correlations with negative affect
(L. A. Clark & Watson). Positive affect is defined by enthusiasm, activity and alert
behaviour; people low in positive affect are sad, lethargic, and flat (Watson et al.,
1988). It can be concluded that a questionnaire intended to represent a specific
vulnerability to depression but not anxiety is best developed and validated using a
measure of positive affect rather than the BDI.
Two measures that were developed to discriminate depression from general psychological distress are the PANAS and the DASS (L. A. Clark & Watson; Lovibond & Lovibond, 1995). The present study will use the PANAS, Positive Affect scale, and the DASS depression scale, DASS-D, to provide evidence of convergent validity with depressed mood for the new explanatory style questionnaire. The PANAS, Negative Affect scale, and the DASS stress scale, DASS-S, will be used for measures of general psychological distress that are reasonably distinct from depressed mood.

Research findings generally show that attributional style for positive events is less important as a depressive vulnerability factor than attributional style for negative events (Sweeney et al., 1986). However, this research generally has used the BDI or similar measures to assess depression. Thus, findings may be more applicable for general distress. By contrast, Hawkins (1998) used measures of Positive Affect and Negative Affect to model the relationships between attributional style and mood. The resultant model is shown in Figure 1. Hawkins found that Positive Event Attributions had as strong a relationship with Positive Affect or anhedonia as did Negative Event Attributions.

![Figure 1. Hawkins’s (1998) final model for Positive Affect and Negative Affect.](image)

**Note.** **p < .01, ***p < .001.**
A positive event attributional style may therefore be as important a factor for depression as a negative event attributional style. In Hawkins’s (1998) model, Negative Event Attributions also displayed a relationship with Negative Affect. Thus a depressive negative event attributional style appears to operate as a vulnerability factor for both specific depression and general psychological distress.

Hawkins (1998) also found that the relationships of both attributional styles with Positive Affect were mediated by Optimistic Bias. Optimism is said to provide resilience to depressed mood by affecting the way people respond to difficulties and their expectations about the future (Scheier & Carver, 1985). Optimism also contributes to psychological wellbeing (Peterson & Bossio, 1991; Taylor & Brown, 1988; Taylor et al., 2000). The moderate positive relationship between positive event attributional style and optimism supports positive event attributional style as a depressive resilience factor. This view extends the posited role for stable and global positive event attributions as enhancing the recovery from depression (Johnson et al., 1996, 1998; Needles & Abramson, 1990; Voelz, Haeffel et al., 2003).

To test the validity of the optimistic and pessimistic explanatory styles in the present study, a measure of optimism will be included. The Defensive Optimism scale (DO) of the Depressive Vulnerability and Resilience Scales (DVRS) was reported by its author to provide a measure of optimism that uniquely predicted depressed mood but was unrelated to general psychological distress (S. Smith, 2001). S. Smith (1994) also found that optimistic bias was a significant unique predictor of depression as measured by the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1971). Hawkins (1998) added that DOS measured optimism mediated relationships between attributions and positive affect.

Peterson et al. (1995) treated optimistic and pessimistic explanatory styles as the inverse of each other. This conceptualisation of optimistic and pessimistic explanatory styles assumes a strong relatedness between attributions for positive and negative events. However, some research using the ASQ finds an independence of positive and negative event attributions. Furthermore, treating optimistic and pessimistic explanatory styles as independent is in accord with optimism researchers such as Myers and Steed (1999) who extracted separate optimism and pessimism constructs using a measure of dispositional optimism. Nevertheless, other researchers such as Scheier, Carver, and Bridges (1994) find that optimism and pessimism form one bipolar construct. It should be noted that although optimism and explanatory
style are related, there are fundamental differences between them. Optimistic and pessimistic explanatory styles refer to one’s ascribed causes for events and the nature of these causes. Dispositional optimism and pessimism refer to one’s view of life and expectations about the future. Therefore, explanatory style derives from past events and experiences whereas optimism relates to one’s present view of life as well as future expectations.

Research has suggested that both positive event attributions and negative event attributions form part of a network of relationships comprising depressive resilience, depressive vulnerability, Positive Affect, and Negative Affect (Hawkins, 1998). However, the separateness of the dimensions of internality, stability, and globality said to comprise attributional style is in doubt based on their contributions to higher-order attributional style constructs (e.g., Hawkins, Hull & Mendolia, 1991). The exception is Positive Global that did not contribute strongly to the positive events attributional construct. The combining of attributional dimensions into separate event styles may be due to the measurement instruments and techniques currently in use to assess attributional style. For example, people may access specific memories for rating events in the ASQ rather than revealing their generalised attributional style. This possibility may be why Arntz et al. (1985) questioned the concept of a cross-situational attributional style as measured by the ASQ. Alternatively, the dimensions may naturally coalesce within an attributional style because people may have a tendency to produce causes that are naturally linked on the dimensions.

Additionally, because of the independence of positive event attributions and negative event attributions in relation to depressed mood found in past research (e.g., Hawkins, 1998), the bipolar arrangements for individual dimensions of the positive and negative constructs has not been examined. When considering a vulnerability or resilience factor for depressed mood as opposed to general psychological distress, the evidence implicates positive event attributions as an important construct. Explanatory style has not yet been tested as a combination of both positive and negative event dimensions forming a single pessimistic explanatory style. The constituent elements of optimistic-pessimistic explanatory style and their relationships with depressed mood merit further exploration.
4.1.2 A New Measure of Explanatory Style

To help determine whether there is a single bipolar explanatory style or two independent styles, one for positive events and one for negative events, a new measure of explanatory style is required and will be developed in the present study. The new measure aims to examine relationships between the three causal dimensions of internality, stability, and globality and to also improve on the psychometric properties of extant instruments.

In a new measure of explanatory style, the use of hypothetical events with hypothetical causes may be advantageous. Metalsky and Abramson (1981) recommended the use of hypothetical events to maximise attributional consistency because hypothetical events require people to use their generalised beliefs. Generalised beliefs form part of the semantic memory, a joint constituent with episodic memory of long-term memory (Tulving, 1972). General and abstract concepts and meanings are stored in the semantic memory whereas specific, concrete events or experiences are stored in episodic memory. Semantic memories are argued to be more easily accessed than are episodic memories because they contain more links and interconnections within the memory than do single episodic memories (Fiske & Taylor, 1991). Additionally, depression relates to automatic information processing and reduced levels of information processing (D. A. Clark, Beck, & Alford, 1999). Therefore, hypothetical events that tap generalised abstract concepts may better elicit a generalised attributional style than would real life events that tap specific episodic memories.

Further, Peterson (1995) contends that a generalised attributional style is not tapped by a reality driven event such as a funeral because such an event carries with it an implicit causal explanation. This author argued that to measure attributional style, general consistent explanations are required rather than explanations that are determined by the event. An example of an explanation that is determined by the event is a funeral. A funeral is always caused by someone’s death and thus is reality driven. Hypothetical ordinary events are probably less susceptible than real and remarkable events to event-driven causal explanations. Another reason for excluding specific real-life events from a measure of attributional style is that attributions for specific events have shown instability (Hill & Larsen, 1992), shifting from external to internal with the passage of time. The purpose of a new measure of explanatory style is to measure a generalised and hence stable and consistent style.
A large range of life domains, such as interpersonal, achievement, financial, and health areas, can provide events that are representative of the types of everyday occurrences that people experience and for which they habitually attribute causes. Findings of variability in the number and complexity of attributions (Flett, Pliner, & Blankstein, 1989) provided by people points to the efficacy of providing many samples of behaviour (responses) to allow for a selection of the best representation of the attributional factors. To tap attributional style, events should be clearly good or bad and directly affect the respondent (Peterson, 1995). Peterson also specified that uncontrollable or unexpected events would best yield information about attributional style. This is because learned helplessness is argued to develop in the context of uncontrollable events whereby people learn that a response does not influence the outcome. However, identifying events as clearly uncontrollable is difficult. The best solution may be to pose events as simply occurring without embellishments. Lacking a context, the respondent may regard the event as unexpected because it merely happens.

Internal and external causes will be generated to examine whether high ratings for one causal type (e.g., internal) are related to low ratings for the other (e.g., external). Both positive and negative events will be provided with some causes that are internal and others external to examine whether internal and external causes are related across event types. Although internal causes involve one’s dispositions, characteristics, and behaviours, and external causes involve other people and circumstances, the selection of internal and external causes is not always clear-cut. Considerations for the selection of causes for the everyday events posed in the new questionnaire include Weiner’s (1983) argument that task characteristics (e.g., the difficulty of a mathematics problem) although generally regarded as external, might also be rated internal. This may be due to the interaction of ability (e.g., person is poor at mathematics) and task difficulty (e.g., the mathematical problem is perceived as easy but still cannot be completed). In addition, task characteristics may induce people to believe that they can (or cannot) perform the task, and high ability or high effort might reduce the effects of external task characteristics (Weiner). Thus some causes do not remain consistently internal or external. However, Weiner’s comments relate to specific real-life event attributions that do not necessarily tap attributional style. For hypothetical events, providing many varied causes that are categorised as
generally internal and external should ensure that specific real-life event characteristics do not override attributional style.

The items in the new measure will provide internal or external causes for rating. Further items built around the same causes will be framed ambiguously for rating stability and globality dimensions. The item wording will indicate one-off events with the cause framed in the past tense to suggest a temporary nature because the event is not ongoing. The questionnaire format will include discrete sections for internality, stability, and globality items, each with its own set of instructions to further isolate the three dimensions.

Given a range of internal and external causes, respondents will rate how likely the given cause is for a specified event if it happened to them. Thus the intention is to focus on the internal-external dimension in one set of items. This approach permits the separation of internal from external causes and allows for respondents to rate both internal causes and external causes as likely. Likewise, respondents will then rate how often the cause will occur in the future for the given event. Thus the intention is to focus on the stable-unstable dimension in one set of items and permit the separation of stable from unstable causes. Finally, respondents will rate the number of life domains that are affected by the given cause. Thus the intention is to focus on the global-specific dimension in one set of items and permit the separation of global from specific causes. The stability and globality sets of items will have the response options, rarely to often and few areas to many areas respectively, similar to those provided in the ASQ.

4.1.3 Aims

4.1.3.1 General aim.

The general aim of this research is to explore the role of attributions and optimism in depression. This research will adopt the position that positive and negative event attributional styles are related, and that the dimensions of internal, stable, and global are interrelated. This study will test these relationships. Research has shown that positive event attributions, negative event attributions, and optimism form part of a network of relationships comprising depressive vulnerability, depressive resilience, positive affect, and negative affect (Hawkins, 1998). However, there are uncertainties regarding the structure for attributional style. The theory appears to suggest independence between positive event attributions and negative
event attributions but at the same time stipulates inverse relationships between the dimensions for the two event types. At another level, theory suggests independence of internality, stability, and globality attributions but at the same time stipulates that the three dimensions form a depressive attributional style for negative events. Moreover, the three dimensions for negative events were found to form a single latent construct. Furthermore, the contributions of positive and negative event attributions to a higher-order pessimistic explanatory style require exploration. Problems with the measurement of both explanatory style and depressed mood have been identified and therefore relationships between explanatory style and depressed mood also require further investigation.

4.1.3.2 Specific aim.

The specific aim of the present study is to develop and test a new measure of explanatory style, the Questionnaire of Explanatory Style (QES). The new explanatory style measure is designed to yield ratings for internal and external causes. The QES is also designed to provide subscales for the three theoretically defined attributional dimensions of internal, stable, and global, together with their bipolar opposites, for both positive events and negative events. Of the resultant twelve subscales, the six subscales of Negative Internal, Negative Stable, Negative Global, together with bipolar related subscales, Negative External, Negative Unstable, and Negative Specific are intended to form a pessimistic negative event attributions construct. The remaining six subscales of, Positive External, Positive Unstable, Positive Specific, together with bipolar related subscales, Positive Internal, Positive Stable, and Positive Global, are intended to form a pessimistic positive event attributions construct. The negative event attributions construct and the positive event attributions construct should display a strong positive relationship and contribute to a single pessimistic explanatory style construct. Further, pessimistic explanatory style is proposed to contain optimistic explanatory style as its bipolar opposite in a single construct.

It is anticipated that the items with internal causes will be rated as stable and global and that the items with external causes will be rated as unstable and specific. Such ratings are in line with the proposition that, for negative events, a pessimistic explanatory style consists of internal, stable, and global explanations and an optimistic explanatory style consists of external, unstable, and specific explanations.
The QES is designed to be easy to complete and score and to provide improved internal consistency reliability over existing measures.

4.1.4 Hypotheses and Questions that will be addressed by the Research

The present research hypothesises that the QES, a new explanatory style questionnaire, can identify a pessimistic explanatory style that contains both negative event and positive event attributions. As well, subscales will measure the related domains of internal, external, stable, unstable, global, and specific. The position adopted is that of testing related constructs. The hypothesised structural equation model for confirming the internal structural validity of the final questionnaire is shown in Figure 2. For each depicted model, ovals represent latent constructs and rectangles represent measured variables. The absence of a line between components implies that there is no hypothesised association or direct effect. The three subscales of internal, stable, and global for negative events and their bipolar opposite subscales of external, unstable, and specific for negative events will form one latent variable, negative event attributions. The three subscales of external, unstable, and specific for positive events and their bipolar opposite subscales of internal, stable, and global for positive events will form another latent variable, positive event attributions. It is anticipated that negative event attributions and positive event attributions will form one higher-order latent construct, pessimistic explanatory style as shown in Figure 2. Pessimistic explanatory style and optimistic explanatory style are represented as one bipolar construct.
**Figure 2.** The proposed constituents of explanatory style as measured by the QES.

At the broader level, it is anticipated that the QES construct of pessimistic explanatory style will display the same relationships to other depression-related constructs as Hawkins (1998) previously obtained with the ASQ measure, negative event attributions, and a measure of optimism. Figure 3 represents these relationships in a proposed structural model. First, Pessimistic Explanatory Style will form from related negative and positive event attributional constructs. Second, Pessimistic Explanatory Style will generate Optimistic Bias. Third, Pessimistic Explanatory Style will generate Depressed Mood. This link is indirect, via Optimistic Bias. The positioning of Optimistic Bias in the model conceptualises Optimistic Bias as a mediating variable in the relationship between explanatory style and Depressed Mood. Fourth, Pessimistic Explanatory Style will also generate Negative Mood. Finally, Optimistic Bias will generate Depressed Mood but not Negative Mood.
Figure 3. Proposed relationships of explanatory style with optimism and mood.

Note. DO = Depressive Vulnerability and Resilience Scales, Defensive Optimism Scale; DASS-D = Depression Anxiety Stress Scales-21, Depression Scale; DASS-S = Depression Anxiety Stress Scales-21, Stress Scale; PA = Positive and Negative Affect Schedule, Positive Affect items; NA = Positive and Negative Affect Schedule, Negative Affect items.
Method

4.2.1 Participants

Participants were a convenience sample of Australian men and women recruited from the general population who volunteered to complete the questionnaires on request and without payment. Participants came from urban, regional, and rural areas in the states of Victoria, the Australian Capital Territory, and Queensland. Approximately half of the participants were directly recruited by the researcher from Deakin University campuses in Melbourne and Geelong, Victoria. The remaining half were recruited by the researcher’s family and friends using the “snowball” recruitment technique (Costa & McRae, 1985) whereby those participants who were directly recruited by the researcher went on to recruit their friends and family members as participants. A total of 700 questionnaires were distributed, however a response rate could not be estimated because the number of prospective participants who received a questionnaire is unknown.

Participants with missing mood or personality measures were excluded from the final sample which consisted of 342 subjects with an age range of 18 to 75 years and a mean age of 36.07 years ($SD = 12.53$). The 228 females had an age range of 18 to 72 years and a mean age of 35.33 years ($SD = 12.11$). The 114 males had an age range of 18 to 75 years and a mean age of 37.56 years ($SD = 13.16$).

4.2.2 Measures

Two personality measures and two mood measures were used in this study. The personality inventories comprised the Questionnaire of Explanatory Style (QES) and the Defensive Optimism Scale of the DVRS (DO; S. Smith, 1994). The mood measures were the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) and the Depression, Anxiety and Stress Scales-21 (DASS; Lovibond & Lovibond, 1995).

4.2.2.1 Questionnaire of Explanatory Style.

The QES was designed to provide an improved measure of explanatory style that isolated the three theoretically defined attributional dimensions of internality, stability, and globality for positive and negative events. The initial scale construction was based on information from existing literature and research; an inspection of the content of existing attributional style measures; recommendations regarding the
content analysis of verbatim explanations; and causes generated by participants in a previous study using the ASQ (Hawkins, 1998).

In total an initial pool of 144 items was generated, 48 for each of the three major dimensions. The 48 items for each major dimension were put in their own discrete section of the questionnaire. Thus the QES (Appendix A) contained three sets of 48 statements for rating. The first set of items were for rating the likelihood for oneself of internal and external causes, the second were for rating the stability, and the third were for rating the globality of those causes for oneself.

First, 48 common events were identified. Half of these events were positive and half were negative. Examples are “You feel better than usual” and “You sleep poorly” respectively. A possible cause was then allocated to each event. Half of the causes were internal “you looked after yourself” and half were external “you were woken by a loud noise”. The resulting items for the internal-external dimensions of positive and negative events formed four sets. There were 12 positive events with internal causes, for example, “You feel better than usual because you looked after yourself”. There were 12 positive events with external causes for example, “You finish your work ahead of schedule because someone helped you”. There were 12 negative events with internal causes for example, “You make a mistake because you were careless”. Finally, there were 12 negative events with external causes, for example, “You sleep poorly because you were woken by a loud noise”. A very good inter-rater reliability Kappa coefficient of .84 was obtained for the internal and external ratings. The same 48 events and causes were reworded to form items for the stability subscales. For example, “In future when you make mistakes, it will be because of carelessness”. The same 48 causes were then reworded again to form items for the globality subscales. For example, “When you are careless, how many areas of your life suffer?”

The internal and external set of causes required respondents to rate whether a given cause was a likely reason for the event described if it happened to them. Ratings were on a 5-point scale ranging from 1 = highly unlikely to 5 = highly likely. The stability section required respondents to rate how often the given cause would occur in their own future for the situation described. Ratings were on a 5-point scale with 1 = rarely to 5 = very often. The globality section required respondents to rate the number of areas of their life that are affected by a given cause. Ratings were on a 5-point scale from 1 = very few to 5 = nearly all areas.
4.2.2.2 DVRS Defensive Optimism Scale.

The Defensive Optimism Scale (DO; S. Smith, 1994) provides a measure of optimistic bias intended to specifically assess resilience to depressed mood. The measure has three filler items and five scale items, for example “It is a true saying that every cloud has a silver lining”. Items are rated on a 5-point scale ranging from 1 = strongly disagree to 5 = strongly agree. Responses to the optimism items are summed to yield a total score with higher scores representing greater optimistic bias.

The DO had solid internal consistency reliability with alpha coefficients of .70 and .72 for younger and older community samples (S. Smith, 2001). The DO had a moderate correlation with positive affect of .28 for a younger sample, mean age 20 years, and .46 for an older sample, mean age 41 years (S. Smith). The DO was found to mediate relationships between the ASQ scales and PANAS Positive Affect by Hawkins (1998).

4.2.2.3 Positive and Negative Affect Schedule.

The PANAS (Watson et al., 1988) consists of two 10-item scales: Positive Affect and Negative Affect. The PANAS was used to distinguish two distinctive dimensions: pure depressed mood (Positive Affect) and depressed plus anxious mood (Negative Affect). Respondents rated the extent to which they experienced twenty mood descriptors on a 5-point scale ranging from 1 = very slightly/not at all to 5 = very much. The time period chosen for the rating was “the past week” to permit valid comparisons with other research.

The Positive Affect and Negative Affect scales have very high internal consistencies, with coefficient alpha values of .88 for Positive Affect and .85 for Negative Affect (Watson et al., 1988). Test-retest reliabilities for an eight week interval were .48 for Positive Affect and .42 for Negative Affect. Both scales of the PANAS have excellent convergent validity with similar measures, and high discriminant validity with unrelated measures of mood (Watson et al.). For example, using the Hopkins Symptom Checklist (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974), a measure of general distress and dysfunction, Watson et al. obtained a high correlation with Negative Affect of .74 and a low correlation of -.19 with Positive Affect.
4.2.2.4 Depression, Anxiety and Stress Scales.

The 21-item version of the DASS (Lovibond & Lovibond, 1995) consists of three seven-item scales designed as relatively pure measures of depression, anxiety, and stress (Lovibond, 1998). Respondents indicate the degree to which each of the 21 symptom statements apply to them over the past week on a 4-point scale (0 = not at all and 3 = most of the time).

The DASS scales have very high internal consistencies, with coefficient alpha values of .94, .87, and .91 respectively for the depression, anxiety, and stress scales (Antony et al., 1998). The DASS was found to be a valid measure of depression, anxiety and stress when compared to other well-used measures (Antony et al.).

4.2.3 Procedure

Many participants were directly recruited from the researcher’s family, friends, acquaintances, and from students and staff at Deakin University campuses in Victoria, Australia. Other participants were recruited by the researcher’s family and friends using the “snowball” recruitment technique whereby these participants who were directly recruited by the researcher went on to recruit their friends and family members as participants. Participants were given a plain language statement, questionnaire and a reply-paid envelope to Deakin University, Melbourne Campus. The plain language statement clearly stated the aims of the research, gave examples of the questions, and informed participants about the availability of results. The questionnaire was completed at a time and place chosen by the participant and took about 30 minutes to complete.

The questionnaire began with the demographic variables of age and sex followed in order by the PANAS, DO, QES, and DASS. A copy of the plain language statement and the questionnaires used in the present study appear in Appendix A. The completed questionnaires formed the data collected at the Deakin University Melbourne Campus for analysis by the researcher. The treatment of participants was in accordance with the ethical standards of the National Statement on Ethical Conduct in Research Involving Humans (1999). A copy of the ethics approval for this study also appears in Appendix A.
Results

The QES was developed and tested with the aims of producing a measure of explanatory style that would be acceptable to the general population, and of clarifying the dimensions of explanatory style in relation to mood. A further aim was that the QES would produce a reliable and valid measure of pessimistic explanatory style. It was anticipated that items would form the attributional dimensions of internal, stable, and global together with their bipolar opposites, for both positive events and negative events. Further, the positive event attributions and negative event attributions were proposed to load onto a single pessimistic explanatory style construct.

Exploratory factor analysis was used for data reduction, initial item selection, and to examine the underlying factor structure of the initial 144-item measure, the QES. Factor analyses were conducted using SPSS 9.0.1. The extent to which the obtained factor structure adequately represented the covariation among items was examined using confirmatory factor analysis. Confirmatory factor analysis was performed using AMOS 4 (Arbuckle, 1997). The analyses then used structural equation models to examine the relationships between the explanatory style scales, optimism, and mood. This modeling was also conducted with AMOS 4. A two-stage procedure described in Hair, Anderson, Tatham, and Black (1995) and J. C. Anderson and Gerbing (1988) was used to first estimate the measurement model. The measurement model was then fixed, and the structural model was estimated. This two-stage procedure allowed the removal of subscales that did not represent a latent construct of interest and thus maximised the interpretability of the final model (Hair et al.).

In total, six models were evaluated. First, the theoretically defined measurement model for optimistic explanatory style was applied to the factors obtained from the current data and evaluated. Next, the theoretically defined measurement model for pessimistic explanatory style was applied to the factors obtained from the current data and evaluated. Then, separate measurement models were estimated for explanatory style and for mood. The model building approach as described by J. C. Anderson and Gerbing (1988) was next used to develop three structural models, each of which was then evaluated. The first structural model addressed the direct relationships between the explanatory style factors and Positive Affect (representing inverse depressed mood). Negative Mood was then added to an
expanded model and direct hypothesised relationships with the explanatory style factors were tested. Finally, an overall structural model with Optimistic Bias mediating the relationships between explanatory styles and Positive Affect was assessed. This overall hypothesised model was previously presented in Figure 3.

4.3.1 Summary Descriptives

Several random missing values were replaced using the Estimated Mean (EM) missing value analysis method provided in SPSS. Means and standard deviations were then calculated for each measure and are presented in Table 1. Most results are comparable to those obtained by other researchers. The DASS results were slightly higher than those obtained by Antony et al. (1998) for their non-clinical group of 49 volunteers. Antony et al. obtained a Depression mean value of 2.12 ($SD = 3.64$) and a Stress mean value of 3.51 ($SD = 3.78$). Differences between the means obtained for the present sample may be explained by the small size of the Antony et al. non-clinical sample and the selection criteria that they used. Participants were screened and excluded if any history of major psychopathology was found. The DO mean and standard deviation matched those obtained by S. Smith (2001) for a student sample of 303 participants who had a mean value of 17.43 ($SD = 3.30$). The PANAS results were similar to those obtained by Watson et al. (1988) during schedule development. Watson et al. obtained a Positive Affect mean value of 33.3 ($SD = 7.2$) and a Negative Affect mean value of 17.4 ($SD = 6.2$) for the rated time frame of “past few days” for a sample of 1002 participants.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Scale Range</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>DASS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>0-21</td>
<td>3.73</td>
<td>4.09</td>
</tr>
<tr>
<td>Stress</td>
<td>0-21</td>
<td>6.21</td>
<td>4.08</td>
</tr>
<tr>
<td>DO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defensive Optimism</td>
<td>5-25</td>
<td>17.69</td>
<td>3.12</td>
</tr>
<tr>
<td>PANAS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Affect</td>
<td>10-50</td>
<td>32.58</td>
<td>6.97</td>
</tr>
<tr>
<td>Negative Affect</td>
<td>10-50</td>
<td>18.92</td>
<td>6.74</td>
</tr>
</tbody>
</table>

Note. $N = 342$, DO = Depressive Vulnerability and Resilience Scales; PANAS = Positive and Negative Affect Schedule; DASS = Depression, Anxiety and Stress Scales; on every scale, higher values indicate more of the characteristic.

Gender differences in the mood and optimism scales were tested with a multivariate analysis of variance. There was no significant difference between males
and females on the combined QES scales $F(5, 342) = 1.87, p = .10$. It was thus deemed acceptable to combine data for females and males.

### 4.3.2 Exploratory Factor Analyses of the Questionnaire of Explanatory Style

A 144-item questionnaire, the QES, was under development for this study. It was proposed that the questionnaire would yield twelve scales. Six of these scales were intended as measures of vulnerability to depressed mood, termed pessimistic explanatory style. These scales were the Negative Internal, Negative Stable, and Negative Global scales for negative events and the Positive External, Positive Unstable, and Positive Specific scales for positive events. The remaining six scales were intended as measures of resilience to depressed mood, termed optimistic explanatory style. These scales were the Positive Internal, Positive Stable, and Positive Global scales for positive events and the Negative External, Negative Unstable, and Negative Specific scales for negative events. Exploratory factor analysis was deemed the appropriate first step in the development of the new scale because the aim was to evaluate whether the items would form the intended structure.

Three separate exploratory factor analyses were initially performed for each causality dimension of the QES, namely internality, stability, and globality. These separate factor analyses ensured that the ratio of participants to items was in excess of 5:1. For each of the item sets, the ratio of 7:1 achieved for a total sample of over 100 was sufficient to ensure that reliable correlations were obtained (Gorsuch, 1983). It was anticipated that the initial sets of exploratory factor analyses would reduce the number of items considerably so that an adequate ratio of participants to items would remain when all three sections of the QES were analysed together. The factorability of R was examined using a correlation matrix, producing Kaiser-Meyer-Olkin measures of sampling adequacy of greater than .6 for each of the three analyses. Significant Bartlett’s Tests of Sphericity also confirmed that each factor analysis could proceed because the hypothesis that the population correlation matrix was an identity matrix was rejected in each case.

For the three sets of items, initial extraction of factors showed no evidence of singularity or extreme multicollinearity. Factor analysis was undertaken following Reise, Waller, and Comrey’s (2000) recommendation to start by overestimating the number of factors and Thompson and Daniel’s (1996) recommendation to examine solutions of different extraction methods to the point that trivial and redundant
factors emerge. A trivial factor is one with less than three substantively loading items of greater than .3. Factor numbers for each category were decided on the basis of three features: Horn’s (1965) parallel analysis that provided an eigenvalue cut-off value of 1.82; the pattern of decrements or breaks in the scree plots; and, a levelling off in the percentage of variance explained in the initial extractions. To this end, a series of principal component and maximum likelihood analyses with varimax, direct oblimin (delta = 0.00 – 0.50), promax (k = 4), and equamax rotations were performed to test for the internal structure of the three item sets. Item selection was based on two criteria. Substantive items with loadings of greater than .30 were retained. Ambiguous items that loaded on more than one factor with a difference of less than .20 were discarded.

Exploratory factor analysis was first performed on the internality set of 48 items proposed to include two bipolar subscales, Positive Event Internality, and Negative Event Internality. For both the principal component and the maximum likelihood factor solutions, the rotation methods produced similar results in terms of how the items clustered. The most interpretable factor analysis of the internality scale was produced using a seven-factor maximum likelihood solution with a direct oblimin rotation. The direct oblimin rotation was selected because it simplified the pattern more than did the other solutions.

However, the factor content showed some clustering by item event rather than by item cause. Items were intended to cluster by the internality or externality of the cause but two factors consisted of items with similar event content. Items containing events such as “you worry about your work” and “you don’t have enough money for emergencies” clustered together in a factor concerning threats to personal security even though one event had an internal cause and the second had an external cause. As this section of the QES was meant to display the likelihood of internal causes and of external causes, the items that were clearly rated for likelihood of an event category were discarded. After also discarding low-loading and ambiguous items, a new series of exploratory factor analyses were performed on the remaining 15 items. The most interpretable analysis was obtained from a four-factor principal component solution with varimax rotation. The resulting factors comprised positive event internal cause items (e.g., “You work for less time than usual because you were efficient”), positive event external cause items (e.g., “You have fun at a family get-together because everyone was friendly”), and two sets of negative internal cause
items. One reflected negative affective causes (e.g., “You are angry because you let a rude remark upset you”), and the other involved negative dispositions (e.g., “You make a mistake because you are careless”). No factor comprising negative external causes was formed.

Exploratory factor analysis was next performed on the 48 items rated for stability and proposed to yield two scales: Positive Event Stability and Negative Event Stability each containing internal and external causes. For both the principal component and the maximum likelihood factor solutions, the rotation methods produced similar results in terms of how the items clustered. The four-factor varimax solution provided the clearest interpretation of the data. Two factors contained positive event items, one had internal causes (e.g., “In future when you win games, it will be because you are clever”), the second had external causes (e.g., “In future when you are very active, it will be because of increases in family commitments”). The other two factors contained negative event items. One had internal causes (e.g., “In future when a social engagement goes badly, it will be because of your inability to relax”) and the second had external causes (e.g., “In future when you are in a bad mood it will be because of transport delays”). After poor items were discarded, the final four-factor solution obtained for the stability set of items contained 23 items.

Exploratory factor analysis was next performed on the 48 items rated for globality and proposed to yield two scales, Positive Event Global and Negative Event Global. For both the principal component and the maximum likelihood factor solutions, the rotation methods produced similar results in terms of how the items clustered. A three-factor principal component analysis with promax rotation provided the clearest interpretation of the data. One factor contained positive event causes and had a mixture of internal and external causes (e.g., “When someone is generous to you, how many areas of your life benefit?”). The other two factors contained negative event causes. One had mainly external causes (e.g., “When someone delays you, how many areas of your life suffer?”) and the other had entirely internal causes (e.g., “When you are too lazy to do anything, how many areas of your life suffer?”). After poor items were discarded, the final three-factor solution contained 29 items.

Next, the 67 items retained from the factor analyses of each section of the QES were pooled for a combined factor analysis. Exploratory factor analysis was therefore performed at the item level for the combined eleven factors yielded from the best solutions for the internality, stability, and globality sets of items. For both
the principal component and the maximum likelihood factor solutions, the rotation methods produced similar results in terms of how the items clustered. A six-factor principal component analysis with promax rotation provided the most interpretable solution. The final solution after poor items were discarded contained 41 items. In the unrotated solution, the first factor accounted for 14.94% of the variance, followed by the other five factors accounting for 8.90%, 6.23%, 5.25%, 4.95%, and 4.37% of the total variance.

As can be seen from Table 2, Factor 1 consists of ten positive events with external and internal causes that clustered on the basis of how many areas of life benefited by others being generous, doing something enjoyable, and enjoying the surroundings. Factor 1 was therefore called Positive Global. Factor 2 consists of seven negative event items with internal causes reflective of negative emotional states such as personal tension, interpersonal sensitivity, and apprehension, rated as likely and stable or as unlikely and unstable. Factor 2 was therefore called Negative Internal and Stable Affect. Factor 3 consists of eight positive event items with internal causes reflective of positive characteristics such as efficiency, successfulness, and diligence, rated as likely and stable or as unlikely and unstable. Factor 3 was therefore called Positive Internal and Stable. Factor 4 consists of six negative events caused by negative internal characteristics such as absent-mindedness, carelessness, and low motivation, rated as likely and stable or as unlikely and unstable. Factor 4 was therefore called Negative Internal and Stable. Factor 5 consists of six negative external causes that clustered on the basis of how many life areas suffered when experiencing delays and other minor irritations. Factor 5 was therefore called Negative Global. Factor 6 consists of four positive events with external causes reflective of family issues such as increased family commitments and the behaviour of family, rated as likely and stable or as unlikely and unstable. Factor 6 was therefore called Positive External and Stable. The final six subscales shown in Table 2 were used in the structural equation modeling process that formed the next phase of analysis, namely confirmatory factor analysis.
<table>
<thead>
<tr>
<th>Factor</th>
<th>Item</th>
<th>Scale Alpha</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
<th>Factor 5</th>
<th>Factor 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1: Positive Global</td>
<td>When someone is generous to you, how many areas of your life benefit?</td>
<td>.87</td>
<td>.79</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>When you do something really enjoyable, how many areas of your life benefit?</td>
<td></td>
<td>.78</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td></td>
<td>When you enjoy your surroundings, how many areas of your life benefit?</td>
<td></td>
<td>.72</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>When someone else is happy, how many areas of your life benefit?</td>
<td></td>
<td>.72</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td></td>
<td>When you are lucky, how many areas of your life benefit?</td>
<td></td>
<td>.71</td>
<td>-.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>When you are successful at something important to you, how many areas of your life benefit?</td>
<td></td>
<td>.70</td>
<td>-.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>When others make you do something enjoyable, how many areas of your life benefit?</td>
<td></td>
<td>.69</td>
<td>-.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>When you start a new job or activity, how many areas of your life benefit?</td>
<td></td>
<td>.62</td>
<td>-.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>When someone wants your help, how many areas of your life benefit?</td>
<td></td>
<td>.57</td>
<td>-.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>When you know that you have been careful, how many areas of your life benefit?</td>
<td></td>
<td>.55</td>
<td>-.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Factor 2: Negative Internal and Stable Affect</td>
<td>In future when you get angry, it will be because you let rude remarks upset you.</td>
<td>.76</td>
<td>-.</td>
<td>.72</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>In future when a social engagement goes badly, it will be because of your inability to relax.</td>
<td></td>
<td>-.</td>
<td>.70</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>You go out socially and it goes badly because you were unable to relax.</td>
<td></td>
<td>-.</td>
<td>.69</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>You are angry because you let a rude remark upset you</td>
<td></td>
<td>-.</td>
<td>.65</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>You are nervous because of anxiety about forthcoming events</td>
<td></td>
<td>-.</td>
<td>.60</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>In future when you are nervous, it will be because of anxiety about forthcoming events.</td>
<td></td>
<td>-.</td>
<td>.59</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>You feel bored because you were too lazy to do anything</td>
<td></td>
<td>-.</td>
<td>.47</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Factor 3: Positive Internal and Stable</td>
<td>In future when you work for less time than usual, it will be because of your efficiency.</td>
<td>.74</td>
<td>-</td>
<td>-</td>
<td>.77</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>You work for less time than usual because you were efficient.</td>
<td></td>
<td>-</td>
<td>-</td>
<td>.66</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>In future when you win games, it will be because you are clever.</td>
<td></td>
<td>-</td>
<td>-</td>
<td>.64</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>In future when you feel like celebrating, it will be because of your success at things that are important to you.</td>
<td></td>
<td>-.</td>
<td>.20</td>
<td>.58</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>In future when friends laugh at your funny stories, it will be because you tell them well.</td>
<td></td>
<td>-.</td>
<td>-.</td>
<td>.55</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Factor 3 Continued

<table>
<thead>
<tr>
<th>Item</th>
<th>Scale</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>In future when you exercise more often, it will be because you manage your time well.</td>
<td>-</td>
<td>.55</td>
</tr>
<tr>
<td>In future when you are excited, it will be because of new jobs or activities.</td>
<td>-</td>
<td>.49</td>
</tr>
<tr>
<td>You exercise more often because you managed your time well.</td>
<td>-</td>
<td>.45</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factor 4. Negative Internal and Stable .74</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>In future when you lose things, it will be because of your absent-mindedness.</td>
<td>.81</td>
</tr>
<tr>
<td>In future when you make mistakes, it will be because of carelessness.</td>
<td>.81</td>
</tr>
<tr>
<td>You lose something because you were absent-minded.</td>
<td>.73</td>
</tr>
<tr>
<td>You make a mistake because you are careless.</td>
<td>.70</td>
</tr>
<tr>
<td>In future when you are not keeping up with your paperwork, it will be because you cannot be bothered.</td>
<td>.21</td>
</tr>
<tr>
<td>You are not keeping up with your paperwork because you couldn’t be bothered</td>
<td>.35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factor 5. Negative Global .73</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>When someone delays you, how many areas of your life suffer?</td>
<td>.74</td>
</tr>
<tr>
<td>When you are delayed by traffic/transport, how many areas of your life suffer?</td>
<td>.71</td>
</tr>
<tr>
<td>When you are woken by a loud noise, how many areas of your life suffer?</td>
<td>.67</td>
</tr>
<tr>
<td>When someone you know doesn’t notice you, how many areas of your life suffer?</td>
<td>.55</td>
</tr>
<tr>
<td>When you keep a secret for someone, how many areas of your life suffer?</td>
<td>.20</td>
</tr>
<tr>
<td>When your friends aren’t going out, how many areas of your life suffer?</td>
<td>.45</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factor 6. Positive External and Stable .69</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>In future when you are very active, it will be because of increases in family commitments.</td>
<td>.74</td>
</tr>
<tr>
<td>You are very active because your family commitments have increased.</td>
<td>.71</td>
</tr>
<tr>
<td>In future when you have fun at family gathering, it will be because everyone is friendly.</td>
<td>.70</td>
</tr>
<tr>
<td>You have fun at a family get-together because everyone was friendly.</td>
<td>.64</td>
</tr>
</tbody>
</table>

4.3.3 Confirmatory Factor Analysis and Measurement Model Evaluation

Various statistics exist for assessing the adequacy of both confirmatory factor analysis models and structural models (Bollen, 1989). Choice of goodness-of-fit
statistics varies because different statistics are best suited to different sample sizes, number of parameters estimated, or the desirability of parsimony (Tabachnick & Fidell, 1996). Structural equation modeling research usually provides statistics for at least three different goodness-of-fit measures, a convention followed by the present study that provides four different goodness-of-fit measures. These statistics indicated whether the hypothesised model was an acceptable representation of the data.

The four goodness-of-fit statistics were selected: the likelihood ratio chi-square statistic ($\chi^2$), the chi-square to degrees of freedom ratio ($\chi^2/df$), the root mean square error of approximation (RMSEA), and the incremental fit index (IFI; Bollen, 1989). The $\chi^2$ measure is the most generally reported measure of model fit. An associated probability value greater than .05 signifies a good fitting model. However, the $\chi^2$ measure should not be considered in isolation because it is sensitive to both sample size and the degrees of freedom in the model and can lead to the rejection of too many models (Raykov, 1998). Tabachnick and Fidell (1996) recommend the $\chi^2/df$ as a good general measure of model fit. A $\chi^2/df$ measure of less than 2.0 indicates a good fitting model. The RMSEA is currently considered one of the most informative indices of model fit (Byrne, 2001). The RMSEA takes into account the error of approximation in the population, has a less stringent requirement on $\chi^2$, and is sensitive to the number of parameters in the model. The RMSEA also provides an estimate that is unbiased by model complexity (Arbuckle, 1997). In the present research, the upper bound of .06 suggested by Hu and Bentler (1999) is adopted as representing good fit. A less stringent cut-off of .08, as suggested by Browne and Cudeck (1993), is used to indicate acceptable fit. Finally, the IFI measure penalises for estimation of too many paths. It is now recommended as one of the best methods for evaluating model fit (Gerbing & Anderson, 1993). The IFI measure takes a value between 0.0 and 1.0. An IFI value greater than 0.90 is considered to represent good fit (Tabachnick & Fidell, 1996). For each depicted model, ovals represent latent constructs, rectangles represent measured variables, and circles represent error terms. The absence of a line between components implies that there is no hypothesised association or direct effect. In all analyses the significance level for path loadings was set at $p < .05$. 
4.3.4 Confirmatory Factor Analysis of the QES

The hypothesised measurement model was not analysed due to the discrepant results from exploratory factor analysis. Internal and stable sets of items had coalesced in the factors and thus could not be examined as separate constructs. Also the global factors comprised different core events and causes to those for the internal-stable factors. The internal, stable, and global dimensions therefore were not available for any given cause in the manner proposed by the reformulated learned helplessness theory. However, separate attributional subscales for negative events and for positive events were yielded by the QES: Negative Internal and Stable; Negative Internal and Stable Affect; Negative Global; Positive Internal and Stable; Positive External and Stable; and Positive Global. Thus many of the proposed elements of pessimistic explanatory style were obtained by factor analysis.

An evaluation of the internal structure of the 41-item QES was conducted in two stages. The first stage of measurement model assessment, confirmatory factor analysis, was applied to the constituent items for each scale on an individual basis. During the second stage of measurement model assessment, proposed relationships between scales and scale combinations were investigated.

In confirming the measurement models for the six scales, item retention in the scales was based upon two criteria: significant loading coefficients (similar to factor loadings) and the goodness-of-fit indices described earlier. Each scale was tested using maximum likelihood estimates. In specifying each model, the latent construct variance was set at 1.00 so as to assign a metric to the model. The AMOS (Arbuckle, 1997) program produces the factor loadings and factor score weights for all items in each model. It should be noted that factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings. Reliabilities of the latent constructs and percentage of variance explained in the latent constructs were calculated according to the formulae provided by Bollen (1989). All goodness-of-fit indices presented in the following sections represent the best possible model solutions, although they do not always reach acceptability on all four measures of model fit.
4.3.4.1 Positive Global.

Exploratory factor analysis results indicated that the Positive Global scale had 10 items. Through the measurement model assessment process this number was reduced to five. Loading coefficients for constituent items are presented in Table 3.

Table 3

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>When someone is generous to you, how many areas of your life benefit?</td>
<td>.76</td>
<td>.33</td>
</tr>
<tr>
<td>When someone else is happy, how many areas of your life benefit?</td>
<td>.76</td>
<td>.31</td>
</tr>
<tr>
<td>When you are lucky, how many areas of your life benefit?</td>
<td>.76</td>
<td>.31</td>
</tr>
<tr>
<td>When you are successful at something important to you, how many areas of your life benefit?</td>
<td>.54</td>
<td>.14</td>
</tr>
<tr>
<td>When you do something really enjoyable, how many areas of your life benefit?</td>
<td>.61</td>
<td>.10</td>
</tr>
</tbody>
</table>

Note. Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

All loading coefficients were significant at \( p < .01 \). The scale returned the following goodness-of-fit statistics, \( \chi^2(4, N = 342) = 6.67, p = .15, \chi^2/df = 1.67, \) RMSEA = .04, IFI = .99, meeting the four fit criteria. This factor explained 48% of the variance in the constituent items and yielded a strong construct reliability of .83.

4.3.4.2 Negative Internal and Stable Affect.

Exploratory factor analysis results indicated that the Negative Internal and Stable Affect scale had seven items. Through the measurement model assessment process this number was reduced to four. Loading coefficients for constituent items are presented in Table 4. All loading coefficients were significant at \( p < .01 \). The scale returned the following goodness-of-fit statistics, \( \chi^2(1, N = 342) = .41, p = .52, \chi^2/df = .41, \) RMSEA = .00, IFI = .99, meeting the four fit criteria. This factor explained 37% of the variance in the constituent items and yielded a sound construct reliability of .70.
Table 4  
*Loading coefficients for the Negative Internal and Stable Affect scale of the QES in a General Population Sample of 342 Adults*

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>In future when you are nervous, it will be because of anxiety about forthcoming events.</td>
<td>.67</td>
<td>.36</td>
</tr>
<tr>
<td>In future when you get angry, it will be because you let rude remarks upset you.</td>
<td>.63</td>
<td>.32</td>
</tr>
<tr>
<td>In future when a social engagement goes badly, it will be because of your inability to relax.</td>
<td>.61</td>
<td>.31</td>
</tr>
<tr>
<td>You are nervous because of anxiety about forthcoming events</td>
<td>.51</td>
<td>.11</td>
</tr>
</tbody>
</table>

*Note.* Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

4.3.4.3 *Positive Internal and Stable.*

Exploratory factor analysis results indicated that the Positive Internal and Stable scale had eight items. Through the measurement model assessment process this number was reduced to four. Loading coefficients for constituent items are presented in Table 5. All loading coefficients were significant at $p < .01$. The scale returned the following goodness-of-fit statistics, $\chi^2 (2, N = 342) = .14, p = .52, \chi^2/df = 1.99, \text{RMSEA} = .05, \text{IFI} = .99$, meeting the four fit criteria. This factor explained 39% of the variance in the constituent items and yielded a sound construct reliability of .70.

Table 5  
*Loading coefficients for the Positive Internal and Stable scale of the QES in a General Population Sample of 342 Adults*

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>In future when you work for less time than usual, it will be because of your efficiency.</td>
<td>.88</td>
<td>.81</td>
</tr>
<tr>
<td>You work for less time than usual because you were efficient.</td>
<td>.58</td>
<td>.15</td>
</tr>
<tr>
<td>In future when you feel like celebrating, it will be because of your success at things that are important to you.</td>
<td>.49</td>
<td>.13</td>
</tr>
<tr>
<td>In future when you win games, it will be because you are clever.</td>
<td>.45</td>
<td>.12</td>
</tr>
</tbody>
</table>

*Note.* Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.
4.3.4.4 **Negative Internal and Stable.**

Exploratory factor analysis results indicated that the Negative Internal and Stable scale had six items. Through the measurement model assessment process this number was reduced to three. Loading coefficients for constituent items are presented in Table 6. All loading coefficients were significant at $p < .01$. The scale produced a saturated model with zero degrees of freedom indicating that the number of measured variables equalled the number of paths estimated. Therefore goodness-of-fit statistics could not be estimated. This factor explained 54% of the variance in the constituent items and yielded a sound construct reliability of .77.

Table 6
**Loading coefficients for the Negative Internal and Stable scale of the QES in a General Population Sample of 342 Adults**

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>In future when you make mistakes, it will be because of carelessness.</td>
<td>.90</td>
<td>.78</td>
</tr>
<tr>
<td>You make a mistake because you are careless.</td>
<td>.64</td>
<td>.17</td>
</tr>
<tr>
<td>In future when you lose things, it will be because of your absent-mindedness.</td>
<td>.63</td>
<td>.15</td>
</tr>
</tbody>
</table>

*Note.* Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

4.3.4.5 **Negative Global.**

Exploratory factor analysis results indicated that the Negative Global scale had six items. Through the measurement model assessment process this number was reduced to four. Loading coefficients for constituent items are presented in Table 7. All loading coefficients were significant at $p < .01$. The scale returned the following goodness-of-fit statistics, $\chi^2 (2, N = 342) = .97, p = .62, \chi^2/df = .48$, RMSEA = .00, IFI = 1.00, meeting the four fit criteria. This factor explained 42% of the variance in the constituent items and provided a construct reliability of .71.
Table 7
Loading coefficients for the Negative Global scale of the QES in a General Population Sample of 342 Adults

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>When you are delayed by traffic/transport, how many areas of your life suffer?</td>
<td>.75</td>
<td>.55</td>
</tr>
<tr>
<td>When someone delays you, how many areas of your life suffer?</td>
<td>.69</td>
<td>.41</td>
</tr>
<tr>
<td>When you are woken by a loud noise, how many areas of your life suffer?</td>
<td>.51</td>
<td>.23</td>
</tr>
<tr>
<td>When someone you know doesn’t notice you, how many areas of your life suffer?</td>
<td>.50</td>
<td>.20</td>
</tr>
</tbody>
</table>

Note. Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

4.3.4.6 Positive External and Stable.

Exploratory factor analysis results indicated that the Positive External and Stable scale had four items. Through the measurement model assessment process this number was reduced to three. Loading coefficients for constituent items are presented in Table 8. All loading coefficients were significant at \( p < .01 \). The scale produced a saturated model with zero degrees of freedom indicating that the number of measured variables equalled the number of paths estimated. Therefore goodness-of-fit statistics could not be estimated. This factor explained 44% of the variance in the constituent items and yielded a relatively sound construct reliability of .68.

Table 8
Loading coefficients for the Positive External and Stable scale of the QES in a General Population Sample of 342 Adults

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>In future when you are very active, it will be because of increases in family commitments.</td>
<td>.82</td>
<td>.60</td>
</tr>
<tr>
<td>You are very active because your family commitments have increased.</td>
<td>.68</td>
<td>.27</td>
</tr>
<tr>
<td>In future when you have fun at family gathering, it will be because everyone is friendly.</td>
<td>.41</td>
<td>.14</td>
</tr>
</tbody>
</table>

Note. Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.
4.3.5 Measurement and Structural Equation Models

Prior to the validation of the QES constructs by assessing their relationships with mood and optimism, measurement models for the QES and for mood were assessed. Testing the associations of the relevant measures allowed for the measurement models to be set before proceeding to structural models. This process allows for the incremental expansion of a model and aids interpretability (Hair et al., 1995).

4.3.5.1 Measurement models for the QES and mood.

To reduce the number of measured variables and thus paths requiring estimation in subsequent models, each QES factor obtained through confirmatory factor analysis was converted into a congeneric latent variable. A congeneric latent variable is a composite of the weighted items contained in a measure. Congeneric latent variables allow for the unequal contributions of individual items to their latent construct (Holmes-Smith & Rowe, 1994). Further, the use of congeneric latent variables provides a means of data reduction that supplies valid, reliable, composite variables allowing for the reliabilities and error variances to be fixed in structural equation models (Holmes-Smith & Rowe). Factor score weights were applied to each constituent item and summed to create each congeneric latent variable. Optimistic Bias and the mood measures Positive Affect, Negative Affect, DASS-D, and DASS-S were also calculated as the composite of their weighted items. The factor score weights for optimism and the mood measures were obtained from measurement model analyses of their respective constituent items.

In assessing the hypothesized measurement model for pessimistic explanatory style, and mood, one path loading was set at 1.00 so as to assign a metric to each model because each latent construct was measured by more than one variable. Later, when one latent construct was defined by one congeneric variable, the path loading and error variance were set to enable model identification. Based on the scale reliability, standard deviation and variance, the path loading and error term were calculated and set for each congeneric variable in accordance with Holmes-Smith and Rowe (1994). Consequently, in some of the models the intercorrelations between constructs were the only paths estimated. Measurement model assessment was carried out in an exploratory fashion because although the hypothesised models were
based on theory, the measures obtained for positive and negative events were not as comprehensive as predicted.

An evaluation of the internal structure of the resulting 23-item QES was conducted using measurement model analysis of the five latent constructs. First, the two-factor structure of the two positive event attributional constructs was tested using the two scales of Positive Internal and Stable, and Positive Global. Second, the three-factor structure of the three negative event attributional constructs was tested using the three scales of Negative Internal and Stable, Negative Internal and Stable Affect, and Negative Global. The independence of positive event and negative event attributions was next examined. The QES scale, Positive External and Stable was not included in the measurement or structural modeling analyses because it yielded a low number of items with a modest reliability that explained a relatively low percentage of variance in the construct.

4.3.5.2 Data preparation and assumptions.

All variables to be used in the measurement and structural equation modeling processes were screened for univariate and multivariate outliers prior to analyses. Fourteen univariate outlier scores on eight of the variables (Positive Global, Negative Global, Negative Internal and Stable Affect, Negative Internal and Stable, Positive Internal and Stable, DASS-S, DASS-D, and Negative Affect) were recoded back to acceptable limits. There were three multivariate outliers above the $p < .001$ cutoff criterion recommended by Tabachnick and Fidell (1996). The first was a 23-year old male with very high DASS-D and DASS-S scores and low DO and Negative Internal and Stable Affect scores. The second was a 27-year old female with high DASS-D and Negative Internal and Stable Affect scores but with a very low DASS-S score. The third was a 25-year old male with high scores on DASS-S, Negative Affect, and Positive Affect. Data for these respondents was removed from further analysis.

Gender differences in the QES scales were tested with a multivariate analysis of variance. There was a significant difference between males and females on the combined QES scales $F(6, 339) = 4.12, p = .001$. However, when the results for the scales were considered separately, none of the differences reached statistical significance using a Bonferroni adjusted alpha level of .003. It was thus deemed acceptable to combine data for females and males.

The two distribution assumptions required by AMOS (Arbuckle, 1997) are the independence of observations and multivariate normality. The former assumption
was met but not the latter. The variables DASS-S, and Negative Affect were
moderately skewed and DASS-D had strong skew. Because multivariate normality
could not be assumed, an asymptotic distribution free (ADF) estimation method of
SEM was employed for models that included these variables. This estimation method
allows for the use of non-normal data. The ADF estimation method requires large
sample sizes, but Holmes-Smith and Rowe (1994) advise that the ADF method can
be effectively used on samples as low as 200 with 12 measured variables or less.
Sample size of 339 for the present study was therefore adequate and also above the
desirable 10:1 ratio between the number of participants and the number of
parameters estimated (Kline, 1998).

4.3.5.3 Model estimation.

All measurement model analyses for the QES were based on a covariance
matrix and used maximum likelihood estimates. Measurement model analyses for the
mood measures and structural model estimations were based on a covariance matrix
and used ADF estimation. The correlations underpinning the structural equation
models are presented in Table 9. All model diagrams presented in the results show
standardised parameter estimates. The adequacy of the following measurement and
structural models was assessed using the four fit indices ($\chi^2$, $\chi^2/df$, RMSEA, IFI)
described earlier.
Table 9
Correlations between Measured Variables used in the Hypothesised Structural Model

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Positive Internal and Stable</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Positive Global</td>
<td>--</td>
<td>.16**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Positive External and Stable</td>
<td>.12*</td>
<td>.14*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Negative Global</td>
<td>.14**</td>
<td>.31**</td>
<td>.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Negative Internal and Stable Affect</td>
<td>.10</td>
<td>.12*</td>
<td>.10</td>
<td>.27**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Negative Internal and Stable</td>
<td>.10</td>
<td>.06</td>
<td>.03</td>
<td>.14*</td>
<td>.32**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. DASS Depression</td>
<td>-.06</td>
<td>.09</td>
<td>-.06</td>
<td>.24**</td>
<td>.38**</td>
<td>.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. DASS Stress</td>
<td>.03</td>
<td>.13*</td>
<td>-.03</td>
<td>.29**</td>
<td>.42**</td>
<td>.15*</td>
<td>.62**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. DO Optimism</td>
<td>.14*</td>
<td>.10</td>
<td>.22**</td>
<td>-.14*</td>
<td>-.32**</td>
<td>-.07</td>
<td>-.37**</td>
<td>-.38**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. PANAS Positive Affect</td>
<td>.11*</td>
<td>.08</td>
<td>.06</td>
<td>-.16**</td>
<td>-.26*</td>
<td>-.09</td>
<td>-.47**</td>
<td>-.31**</td>
<td>.34**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. PANAS Negative Affect</td>
<td>.02</td>
<td>.09</td>
<td>-.07</td>
<td>.27**</td>
<td>.37**</td>
<td>.07</td>
<td>.52**</td>
<td>.60**</td>
<td>-.30**</td>
<td>-.25**</td>
<td></td>
</tr>
</tbody>
</table>

Note. $N = 339$, DASS = Depression, Anxiety and Stress Scales, DO = Depressive Vulnerability and Resilience Scales, Defensive Optimism Scale, PANAS = Positive and Negative Affect Schedule.

*p < .05. **p < .01.
4.3.5.4 Measurement models for the QES.

The positive event attributions model was assessed to determine the relationship between the proposed constituent measures. Of the measures in the initial model as shown in Figure 2, only Positive Internal and Stable and Positive Global were obtained through factor analysis from the QES. A model testing Positive Internal and Stable and Positive Global as joint measures of a single positive event attributions construct was tested but revealed that the two measures each loaded at less than .50 onto the construct. Therefore the measures did not cohere into one latent positive event attributions construct. The two measures, Positive Internal and Stable and Positive Global were subsequently tested as separate latent constructs and the relationship between them was evaluated. Figure 4 shows a small but definite inter-relatedness between the two constructs, Positive Internal and Stable and Positive Global. The resulting model was a saturated model with zero degrees of freedom and therefore fit measures were not generated.

![Figure 4](image-url)

**Figure 4.** Measurement model of positive event explanatory style constructs.

*Note.* PINST = Positive Internal and Stable, PGLO = Positive Global. All parameter estimates are standardised. **p < .01.

Next, the negative event attributions model was assessed to determine the relationship between the proposed constituent measures. Of the measures in the initial model as shown in Figure 2, only Negative Internal and Stable, Negative Internal and Stable Affect, and Negative Global were obtained through factor analysis from the QES. A model testing these three as joint measures of a single negative event explanatory style construct was tested. Results revealed that two of the measures, Negative Internal and Stable and Negative Global each loaded at less than .50 onto the construct. Therefore two of the negative event attributions measures
did not cohere into one latent construct with Negative Internal and Stable Affect. Rather, Negative Internal and Stable Affect dominated the construct with a loading of .80. The three measures were subsequently tested as separate latent constructs and the relationships between them were evaluated. Figure 5 shows small to moderate levels of inter-relatedness between the three constructs. The resulting model was a saturated model with zero degrees of freedom and thus fit measures were not generated.

Figure 5. Measurement model of negative event explanatory style constructs.

*Note.* NGLO = Negative Global, NISA = Negative Internal and Stable Affect, NIST = Negative Internal and Stable. All parameter estimates are standardised. *p < .05, ***p < .001.

Explanatory style measurement model building was continued in an exploratory fashion. The five explanatory style constructs were merged to examine the independence of the positive and negative event measures. The initial merged measurement model provided poor fit. Limited alterations to the models were deemed acceptable based on theoretical considerations (Bollen, 1989). An examination of the modification indices revealed a relationship between Negative Global and the two positive event constructs, Positive Internal and Stable, and Positive Global. The proposed link between the two global constructs mirrored a Globality link found in previous research (Hawkins, 1998; Hull & Mendolia, 1992) that, coupled with the proposed link to Positive Internal and Stable, possibly reflected previously identified problems in the theoretical underpinning of global
attributions. Figure 6 shows the resulting model that contains all of the positive event and negative event attributions constructs.

![Diagram of explanatory style constructs]

Figure 6. Final merged explanatory style constructs.

Note. PINST = Positive Internal and Stable, PGLO = Positive Global, NGLO = Negative Global, NISA = Negative Internal and Stable Affect, NIST = Negative Internal and Stable. All parameter estimates are standardised. *p < .05, **p < .01, ***p < .001.

The final model returned the following goodness-of-fit statistics, $\chi^2 (4, N = 339) = 9.09, p = .06, \chi^2/df = 2.27$, RMSEA = .06 (.00 - .12), IFI = .95 indicating good fit on three of the four fit measures. No relationship between constructs was sufficiently large to justify the assumption of higher-order explanatory style constructs. However, there was evidence of weakly linked clusters for the separate positive event and negative event attributions although Negative Global linked positively to both styles. In summary, measurement analyses yielded five latent constructs from the QES. No higher-order constructs were identified.

4.3.5.5 Mood measurement.

The mood measures were hypothesized to form two latent constructs, Depressed Mood and Negative Mood. Positive Affect and DASS-D were expected to
constitute Depressed Mood; Negative Affect and DASS-S were expected to constitute Negative Mood. Although no covariance between Depressed Mood and Negative Mood was hypothesized, a link was included to allow estimation of the model and to confirm that Depressed Mood and Negative Mood were independent constructs. The resulting model is shown in Figure 7.

![Diagram of mood measurement model](image)

Figure 7. Measurement model for mood.

*Note.* DASS-D = Depression Anxiety and Stress Scales, Depression scale, DASS-S = Depression Anxiety and Stress Scales, Stress scale. All parameter estimates are standardised. ***$p < .001$.

The mood measurement model returned the following excellent goodness-of-fit statistics, $\chi^2 (1, N = 339) = .11$, $p = .74$, $\chi^2/df = .11$, RMSEA = .00 (.00 - .10), IFI = 1.00. Figure 7 indicates that Depressed Mood would be better labelled as Positive Mood because Positive Affect loads positively, and DASS-D loads negatively, onto the construct. Further, Depressed Mood and Negative Mood were more strongly associated than anticipated. The strong association suggested that the Depressed Mood construct was not independent of general psychological distress as required for the validation of explanatory style. Measures that maximized discrimination between the two mood types were required. Therefore another model was examined in which each measure represented a single latent construct. The separation of each measure allowed assessment of their individual relationships.
Figure 8 shows the revised model of mood measures. This model identified the strength of the relationships between the mood measures and was a fully saturated model that provided no goodness-of-fit indices. Figure 8 indicates that Depressed Mood has stronger relationships with Stress and with Negative Affect than it had with Positive Affect.

![Diagram showing mood measurement model](image)

**Figure 8.** Mood measurement model using separate latent constructs for each measure.

*Note.* DASS-D = Depression Anxiety and Stress Scales, Depression scale, DASS-S = Depression Anxiety and Stress Scales, Stress scale. All parameter estimates are standardised. ***$p < .001$. 

Yet DASS-D was intended as a second depression-specific measure separate to general psychological distress, an intention challenged by the evidence. It was thus decided to drop the DASS-D measure from the Depressed Mood latent construct. The resulting mood measurement model is shown in Figure 9.

The mood measurement model depicted in Figure 9 returned no goodness-of-fit statistics because it was fully saturated. In keeping with the aim of separating depressed mood from general psychological distress, the Figure 9 measurement model offers acceptable discrimination between Positive Affect, an index of depression-specific mood, and Negative Mood, an index of general psychological
distress. Therefore mood was measured using Positive Affect and Negative Mood in the subsequent QES validation process.

\[ \text{Positive Affect} \rightarrow 0.93 \rightarrow \text{Positive Affect} \]
\[ \text{Negative Affect} \rightarrow 0.68 \rightarrow \text{Negative Mood} \]
\[ \text{DASS-S} \rightarrow 0.87 \rightarrow \text{Negative Mood} \]
\[ -0.39^{***} \]

*Figure 9. Final mood measurement model.*

*Note.* DASS-S = Depression Anxiety and Stress Scales, Stress scale. All parameter estimates are standardised. \(***p < .001.\)

### 4.3.6 Validation of the QES

The final five QES subscales shown in Figure 6 were used in the structural equation models that framed the next phase of analysis, validation. The first stage of this process was to validate the QES latent constructs as predictors of depressed mood using Positive Affect as an inverse index of depression-specific mood. Next, Negative Mood was added to the validation model. Finally, Optimistic Bias was added to the validation model, mediating the relationships of QES constructs with Positive Affect. Associations between QES constructs found in the final measurement model were retained throughout the validation process to ensure the integrity of the measurement model.

#### 4.3.6.1 Validation of the QES with Positive Affect.

The following step of the validation process, adding Positive Affect to the QES constructs, was performed to test each explanatory style latent variable as a predictor of Positive Affect. The resulting model is shown in Figure 10.
Figure 10. Initial validation model for the five QES constructs with Positive Affect.

Note. PINST = Positive Internal and Stable, PGLO = Positive Global, NGLO = Negative Global, NISA = Negative Internal and Stable Affect, NIST = Negative Internal and Stable, PA = Positive Affect. All parameter estimates are standardised. *p < .05, ***p < .001.

The validation model Figure 10 returned the following excellent goodness-of-fit statistics, $\chi^2 (4, N = 339) = 6.25, p = .18, \chi^2 / df = 1.56, \text{RMSEA} = .04 (.00 - .10), \text{IFI} = .97$. The combined QES factors explained 20% of the variance in Positive Affect. The negligible direct effect of Negative Internal and Stable on Positive Affect, coupled with the substantial covariance between the two negative internal stable constructs, suggests that Negative Internal and Stable may influence Positive Affect indirectly via Negative Internal and Stable Affect. It was considered theoretically justifiable that Negative Internal and Stable might influence mood via the more emotionally vulnerable construct. Therefore, an amended model was tested in which Negative Internal and Stable Affect mediated the influence of Negative Internal and Stable on mood and returned the following poor goodness-of-fit statistics, $\chi^2 (6, N = 339) = 20.20, p = .00, \chi^2 / df = 3.37, \text{RMSEA} = .08 (.05 - .13), \text{IFI} = .83$. An examination of modification indices indicated that Negative Global also
provided an indirect effect on mood via Negative Internal and Stable Affect. This is theoretically justified because the pervasiveness of negative causes could well have links to depressed mood via emotional vulnerability. A final model in which Negative Internal and Stable Affect mediates both Negative Internal and Stable, and Negative Global, is presented in Figure 11.

**Figure 11.** Final QES validation model with Positive Affect.

*Note.* PINST = Positive Internal and Stable, PGLO = Positive Global, NGLO = Negative Global, NISA = Negative Internal and Stable Affect, NIST = Negative Internal and Stable, PA = Positive Affect. All parameter estimates are standardised. *p < .05, **p < .01, ***p < .001.

The validation model in Figure 11 returned the following excellent goodness-of-fit statistics, $\chi^2 (5, N = 339) = 3.60, p = .61, \chi^2 / df = 0.72, \text{RMSEA} = .00 (.00 - .06), \text{IFI} = 1.02$. It is noted that in some cases, values greater than 1.00 can be obtained for incremental or comparative fit indices and may indicate an over-specified model. In this instance the model was not considered over-specified because the included pathways were not theoretically or empirically trivial. This model provided improved fit over the previous model. The QES factors together explained 19% of the variance in Positive Affect and the two negative constructs
explained 25% of the variance in Negative Internal and Stable Affect. The positive event explanatory constructs were positive predictors of Positive Affect and are therefore identified as optimistic factors. The negative event explanatory constructs were negative predictors of Positive Affect and are therefore identified as pessimistic factors. In the absence of a higher-order bipolar pessimistic explanatory style, the constructs are best described separately as either optimistic explanatory factors or pessimistic explanatory factors.

4.3.6.2 Validation of the QES with Positive Affect and Negative Mood.

The next step in the validation process was the addition of Negative Mood to the validation model to establish discriminant validity. The QES constructs should predict Positive Affect (depression-specific mood) more strongly than Negative Mood if they genuinely represent depressive resiliences and vulnerabilities. The hypothesized mood model in Figure 3 proposed positive event attributions and negative event attributions as contributors to a single pessimistic explanatory style construct that predicted both positive and negative mood states. Against predictions, higher-order explanatory style constructs for positive event attributions and negative event attributions were not obtained from the QES. Optimistic explanatory style, as the bipolar opposite of pessimistic explanatory style, would have had a negative association with Negative Affect if all constructs were related. Having failed to support a related model, the optimistic and pessimistic factors were treated as independent (based on the previous findings). The mood validation model was consequently based on the findings of Hawkins (1998) with the ASQ shown in Figure 1. In this model, Positive Event Attributions was independent of Negative Event Attributions and had no effect on Negative Affect. The current study had established that Negative Internal and Stable Affect mediated the effect of Negative Internal and Stable on Positive Affect. It was thus reasoned for the mood validation model that Negative Internal and Stable Affect would also mediate the effect of Negative Internal and Stable on Negative Mood. Additionally, the significant covariance between the mood constructs displayed in Figure 9 was represented as a covariance between the residuals of Positive Affect and Negative Mood because endogenous latent variables cannot be directly covaried. Figure 12 shows results for the addition of Negative Mood to the validation process.
Figure 12. Validation model of QES constructs with Positive Affect and Negative Mood.

Note. PINST = Positive Internal and Stable, PGLO = Positive Global, NGLO = Negative Global, NISA = Negative Internal and Stable Affect, NIST = Negative Internal and Stable, PA = Positive Affect, NA = Negative Affect, DASS-S = Depression Anxiety and Stress Scales, Stress scale. All parameter estimates are standardised. *p < .05, **p < .01, ***p < .001.

The mood validation model Figure 12 returned the following excellent goodness-of-fit statistics, $\chi^2 (13, N = 339) = 7.74, p = .86$, $\chi^2 / df = 0.60$, RMSEA = .00 (.00 - .03), IFI = 1.04. It is noted that in some cases, values greater than 1.00 can be obtained for incremental or comparative fit indices and may indicate an over-specified model. In this instance the model was not considered over-specified because the included pathways were not theoretically or empirically trivial. Figure 12 explained 19% of the variance in Positive Affect and 41% of the variance in Negative Mood. The QES predicted depressed mood to a lesser degree than it did general psychological distress and therefore discriminant validation for the QES was lacking. Nevertheless, as anticipated, the optimistic explanatory factors did not predict Negative Mood (general psychological distress), but were modest predictors
of Positive Affect (depressed mood). Additionally, the pessimistic explanatory factors were strong predictors of general psychological distress and also provided moderate negative relationships with depression-specific mood. Figure 12 was accepted as the final model for the QES prediction of mood.

4.3.6.3 Validation of the QES with mood and Optimistic Bias.

In line with the postulation of reformulated learned helplessness theory that attributions affect depression via expectancies about future events (Abramson et al., 1978) and with past research that optimism mediates the effect of explanatory style in relation to depressed mood (Hawkins, 1998), optimism was predicted to mediate the effects of QES constructs on depressed mood. The final step in the validation process was the inclusion of Optimistic Bias as a mediating factor for the explanatory factors in the prediction of Positive Affect as shown in Figure 13.

Figure 13. Validation model of the QES with mood and Optimistic Bias.

Note. PINST = Positive Internal and Stable, PGLO = Positive Global, NGLO = Negative Global, NISA = Negative Internal and Stable Affect, NIST = Negative Internal and Stable, PA = Positive Affect, NA = Negative Affect, DASS-S = Depression Anxiety and Stress Scales, Stress scale. All parameter estimates are standardised. *p < .05, **p < .01, ***p < .001.
Optimistic Bias was added to the model last so that effects of the QES on mood could be clarified and examined in isolation first. The validation model Figure 13 returned the following excellent goodness-of-fit statistics, $\chi^2 (20, N = 339) = 27.91, p = .11, \chi^2 / df = 1.40$, RMSEA = .03 (.00 - .06), IFI = .95. The QES constructs together with Optimistic Bias explained 28% of the variance in Positive Affect. The QES constructs explained 56% of the variance in Negative Mood, 22% of the variance in Negative Internal and Stable Affect, and 48% of the variance in Optimistic Bias. The QES constructs were better predictors of optimism than direct predictors of depressed mood. A comparison of this model to the previous model shows that the inclusion of optimism in the model improved the amount of variance explained in depressed mood from 18% to 28%. The model also improved the amount of variance explained in general psychological distress from 41% to 56% even though optimism displayed no direct effect on general psychological distress. Figure 13 represented the final validation model for the QES in the present study and showed that all explanatory style constructs are mediated by optimism in their links to depression-specific mood.
Discussion

The present study aimed to explore the roles of attributions and optimism in depressed mood through the development of a new instrument yielding measures of pessimistic explanatory style. Although positive event attributional factors and negative event attributional factors were yielded by the QES, at a broad level higher-order constructs were not obtained for positive event attributions and negative event attributions, nor was there sufficient relatedness to yield a single pessimistic explanatory style. In total, five scales with adequate psychometric properties were confirmed from the original QES items. Of these, two were positive event scales measuring optimistic factors and three were negative event scales measuring pessimistic factors. One further positive event scale was obtained, but not confirmed as an acceptable optimistic factor. The obtained QES scales were then validated in relation to depressed mood. Five scales provided measures of depressive resilience or depressive vulnerability, two were optimistic factors and three were pessimistic factors. The QES scales had relationships with depressed mood, optimism, and general psychological distress that provided some support for their validity.

The interpretation of the results will proceed in two stages. The first stage will build-up through the three levels of structure of the QES that were obtained in the present study. The first level of structure concerns the attributional causal dimensions obtained. The second level involves QES factors in relation to their contribution to positive event attributions and negative event attributions. The third level looks at the overall structure of explanatory style as measured by the QES, particularly whether the structure represents a bipolar arrangement. The second stage of interpretation will examine the QES explanatory style factors in relation to optimism and mood. Wider implications of the findings will then be discussed, as will the limitations of the current study. Future research directions indicated by the findings will also be considered and used to inform the second study of this thesis.

4.4.1 The QES Structure and Content

4.4.1.1 The QES attributional factors and their content.

The final exploratory analysis produced six factors, four of which combined internality and stability items, namely Positive Internal and Stable, Positive External and Stable, Negative Internal and Stable Affect, and Negative Internal and Stable. The QES did not provide separate internality and stability dimensions as intended.
The remaining two factors Positive Global and Negative Global did confirm that the globality dimension was separate from the internality and stability dimensions.

Regarding the internality dimension alone, an internal explanatory style was measured in the QES by having participants rate the likelihood of a specified internal cause being the cause of a given event. The present study found that internal attributions were more likely to form explanatory factors than were external attributions. The QES yielded three internal scales compared to only one inadequate positive external scale and did not yield a negative external explanatory factor at all. Thus an optimistic factor of external attributions for negative events was not yielded by the QES as proposed. This proposal was based on reasoning of an inverse relatedness to the consistency of giving internal causes for negative events (Peterson et al., 1995).

The QES failed to obtain the three separate bipolar dimensions of internality, stability, and globality. This was partly due to the melding of internality and stability items. The likely reason for this was that an incorrect wording strategy was employed in the QES. Agreeing that a cause is likely for a situation suggests that it is also considered stable, that is, likely to occur again for that situation. The wording of the internality and stability sections encouraged a similar rating strategy across these dimensions. Consequently, three internal and stable attributional constructs were produced by the QES. One was an optimistic factor for positive events and two were different types of pessimistic factors for negative events. The three scales will be briefly outlined in turn.

The Positive Internal and Stable scale contained causes relating to efficiency and accomplishment, similar to ability attributions. The Negative Internal and Stable scale contained causes relating to carelessness and absentmindedness, similar to ability attributions. Much attributional research has focused on ability attributions as the paramount form of negative internal and stable attributions (Weiner, 1983). Yet Weiner proposed that ability attributions were not the only class of internal stable attributions. The present study supported Weiner by yielding a second class of internal stable attributions, Negative Internal and Stable Affect, that contained causes relating to anxiety and emotional upset. These causes were thus more emotional in composition than the ability attributions.

The QES also yielded two globality factors that were not meshed with the internality and stability factors. Thus support was provided for separateness of this
dimension. Results match those previously found for Positive Global (Hawkins, 1998; Hull & Mendolia, 1991) but not for Negative Global. It usually provides strong associations with Negative Stable (Hawkins; Hull & Mendolia). The optimistic factor, Positive Global, contained internal and external causes rated as affecting many areas of life. Examples of the positive causes rated for globality were the generosity of others; and, being successful. The second globality factor, the pessimistic factor, Negative Global, contained only external causes rated as affecting many areas of life. Examples of the negative causes rated for globality were being delayed by traffic/transport; and, being woken by a loud noise.

4.4.1.2 QES factors in relation to positive and negative event attributions.

Testing the relatedness of the attributional event types, positive and negative events, was another aim of the study. As shown in Figure 2 of the introduction, three subscales and their three bipolar opposites were intended to provide measures of positive event attributions, and three subscales and their three bipolar opposites were intended to provide measures of negative event attributions. However, it was difficult to examine positive and negative event attributions in this context because higher-order event-type constructs were not yielded. Rather, for negative events two separate sets of internal and stable causes that differed to those represented in the global scale were obtained. There were no sets of the same causes rated as internal, stable, and global to enable direct comparison. The same was the case for positive events.

The anticipated results were that negative internal causes that were rated as likely would also be rated as global, whilst negative external causes that were rated as unlikely would also be rated as specific. Inverse findings were expected for positive events. However, the QES global constructs, Positive Global and Negative Global did not consist of positively loading internal items and inversely loading external items. Positive Global contained a mix of internal and external causes, all positively loading on the factor. Negative Global causes were all external. The failure of the QES to provide globality constructs consisting of only internal causes requires explanation. One possibility is that a pure globality measure has been provided by the QES that can stand alone regardless of the other two dimensions.
4.4.1.3 The overall structure of the QES.

The QES was devised for the purpose of testing the relatedness of the three attributional dimensions of internal-external, stable-unstable, and global-specific with each dimension in a bipolar arrangement. Positive relationships between internal, stable, and global attributions, that were the inverse of the positively related external, unstable, and specific attributions, were proposed. In turn, positive event attributions and negative event attributions were intended to contribute to one pessimistic explanatory style construct. However, the overall structure of the QES provided no evidence of a higher-order positive event attributional style, negative event attributional style, or pessimistic explanatory style. Rather, loosely related groups of optimistic factors and pessimistic factors were obtained.

Amongst the optimistic factors, Positive Global displayed a small association with Positive Internal and Stable. Thus Positive Global and Positive Internal and Stable were only weakly related, providing inadequate evidence for a single higher-order construct construed as optimistic explanatory style. Amongst the pessimistic factors, Negative Global displayed a relationship both with Negative Internal and Stable Affect and Negative Internal and Stable to form a moderately cohesive network. However, associations were not sufficiently strong to form a higher-order pessimistic explanatory style construct.

Although the globality dimension divided into optimistic and pessimistic factors, there was a moderate positive relationship between the two global constructs. An examination of a scatterplot showed that people tended to rate causes as consistently moderate on both global measures. An inverse relationship between the two global scales was expected following Peterson et al.’s (1995) argument of an inverse relationship between positive event attributions and negative event attributions. Additionally, the globality dimension as described in reformulated learned helplessness theory reflects the generalisability of a cause to many areas of life or its cross-situational consistency. The QES wording for the globality section may be the reason that the predicted relationship was not obtained. The ratings “how many areas of life benefit/suffer?” as a result of a particular cause suggest that QES globality may also measure the general emotional consequences of the cause. Therefore, the QES rating, although similar to the ASQ globality rating, may be tapping more than it was intended to. The positive association between the globality
constructs supports this contention, but requires replication before conclusions can be drawn.

Nevertheless, an association between positive and negative global has also been previously identified using the ASQ (e.g., Hawkins, 1998, Hull & Mendolia, 1991). It was thought that the separation of the global items into a discrete section of the QES would allow for more accurate measurement of global attributions. First, the global ratings were made for causes alone without corresponding events, in an attempt to remove confounds that may be due to events. Second, separate rating instructions thought to yield accurate global attributions and specific to the globality dimension were used.

Additionally, and unlike previous research, Negative Global was also modestly and positively associated with Positive Internal and Stable. People who rated negative causes as more likely to affect other areas of life were also more likely to rate ability causes as likely for positive events. It may be that globality does not operate as predicted by the theory.

In the reformulated learned helplessness theory of Abramson et al. (1978), and the concepts of optimistic explanatory style and pessimistic explanatory style of Peterson and Seligman (1987) and Peterson (1991), predictions were made about pessimistic and optimistic explanatory styles. The present results failed to support certain aspects of the theory. Rather than yielding one bipolar pessimistic explanatory style, separate QES optimistic and pessimistic factors were obtained. Some consisted of combined internal and stable causal attributions, and others of separate global causal attributions. These provided some evidence for relatedness of the dimensions. However, the results were inconclusive due to potential problems in the QES wording and format. Therefore no conclusions could be drawn regarding the bipolarity of optimistic and pessimistic explanatory styles from the structure obtained.

4.4.2 A Comparison of the QES and ASQ Content and Structure

The present study adopted a format whereby given causes were rated independently on each of the three dimensions of internality, stability, and globality. Equal numbers of internal and external causes for rating were supplied. The QES enabled respondents to assess and judge a range of possible internal and external causes on all three dimensions. The QES format also allowed for an independence of internal and external causes. By contrast, with the ASQ, if a respondent generates
many causes as internal then a commensurate lack of information for external causes will result. The ASQ format also assumes that people will provide only one major cause for any given event.

In the QES development, exploratory factor analysis was used to determine the relevant dimensions formed by ratings for the array of causes provided. By contrast, the ASQ totals all of the ratings for each dimension. Therefore the constituent items contained within each dimension are specified. The scoring of ASQ, whereby internal/external ratings are combined to form a single construct, forces a bipolar dimension of internality. The QES yielded two internal scales for negative events. Although the two internal scales were moderately related, they functioned as discrete factors. The current research also failed to obtain a bipolar internal/external scale or an independent external scale, thus challenging the bipolar assumption implicit in the ASQ.

An attempt was made to separate the internality and stability dimensions in the QES by making internal causes ambiguous on the stability dimension (by wording the cause in the past tense) and by using separate instructions and sections for each set of ratings. Yet the QES results indicate a coalescence of internal and stable items for the same valence event type. Therefore, the assumption of separate internal and stable QES scales was not supported.

The QES did not provide the highly correlated stable and global dimensions for negative events that have been found in the past by many researchers using the ASQ (e.g., Peterson & Villanova, 1988) and argued in hopelessness theory (Abramson et al., 1989). Further, Corr and Gray (1996) found, at item level, that negative events produced two independent factors, one consisting of internal attributions and the second of stable and global attributions combined. Kwon (1999) also argued that the stable and global dimensions form a generality dimension of attributions that he measured using the MASQ forced-choice questionnaire with generality causes chosen as both stable and global. Thus Kwon forced a linking of stable and global. Generality attributions were not found using the QES. This may be due to the strong linkages formed between the internal and stable dimensions using the QES and also by the two different negative internal stable styles found for the QES. These relate differently to globality. Thus certain internal and stable items may show more cohesiveness with globality than do others. The ASQ may also tap elements within internality that are not strongly associated with globality. Krantz and
Rude (1984) found that for both ability and effort causes, slightly more respondents rated them as specific rather than global. The present results likewise showed that ability and effort causes provided weaker links to Negative Global than did affect causes. In addition, the QES separated out the globality dimension from internality and stability by removing the event stems from the items and using only the causes. Thus unlike the ASQ, the QES format allowed for an independent globality dimension that was not tied to the same events as the internality and stability dimensions.

For positive events, the ASQ produces pairings of the internality and stability dimensions while the globality dimension is less highly associated (Hawkins, 1998; Hull & Mendolia, 1991). Likewise, for positive events, the QES produced strong interrelatedness between internal and stable dimensions, while the globality dimension was less highly associated. Therefore the QES produced similar findings for positive event attributions to the ASQ.

The format of the QES aimed to minimise the effects of events on the causal dimensional ratings by providing common events. The ASQ has been criticised as measuring situational or event factors (the effects of the given event) rather than the causal factors that it was designed to measure, because of its format and the events used (Arntz et al., 1985; Cutrona et al., 1985; Higgins et al., 1999). Situational covariance within the item sets of the ASQ mean that each item event stem generates variance above and beyond the person’s attributional style (Higgins et al.). Higgins et al. found some events provide a stronger contextual influence than other events. The QES also contained some events that were found to provide a stronger contextual influence than other events. The QES development process allowed for the removal of such items. This process ensured that variance due to the influence of events was minimised.

Events posed by the ASQ have been criticised as insufficiently severe to represent the types of events that elicit clinical levels of depression (Brewin, 1985; Hammen, 1985; Robins & Hayes, 1995). Robins and Hayes argued that there was little evidence that the ASQ measured actual attributions (causes provided for real past events) rather than hypothetical attributions (causes provided for hypothetical events), especially for depressed people. However, Robins and Hayes did concede that the more recent forms of the ASQ such as the Expanded ASQ and the Extended ASQ that provide additional items and improved reliability have produced
associations with attributions made for naturally-occurring bad events in a person’s past (e.g., Peterson & Villanova, 1988). The QES shows that extreme events are not necessary to elicit explanatory style factors. The QES contains hypothetical everyday events that are even more mundane in nature than events in the ASQ.

4.4.3 The Reliability of the QES

The internal consistency reliabilities of the QES subscales ranged from acceptable to very good (.68 - .83). Reliabilities of .70 and above are considered adequate for research purposes (Nunnally & Bernstein, 1994). Reliabilities for the QES are substantially higher than those generally obtained for the ASQ. The exploratory and confirmatory factor analytical processes in this study allowed for scale construction of the most representative items for each factor and scale, thereby improving reliability. The two separate internal negative scales produced by the QES, if combined, as in the ASQ, would reduce the cohesiveness and thus, reliability of the factor. Previous research has not distinguished different forms of internal attributional styles for negative events. This may explain why low internal consistency reliabilities for the ASQ have been found for the negative internality dimension in past research (Sweeney et al., 1986).

The reliability results from the present study show that internal and stable causes for events form strong factors for both positive and negative events. This outcome supports variability in the concept of personal dispositions and characteristics as important causal determinants. Both globality scales also provided strong factors supporting variability in the way that people attribute cross-situational properties to some causes.

4.4.4 Implications of QES Findings on the Measurement of Explanatory Style

The present study indicates that the QES format yields theoretically interesting constructs that are worth continued development. Largely independent optimistic factors and pessimistic factors were obtained using the QES, some of which consisted of personal characteristics or dispositions. These are causes for which people can take credit or blame themselves. Results also indicated that people tend to produce optimistic and pessimistic factors involving the pervasiveness of the effects of causes. A further indistinct factor obtained from the QES was Positive External and Stable that showed family causes as important in the generation of positive events. Other causes, for example, external situational causes, did not form
cohesive factors and thus were not obtained from the QES and question the value of retaining the present format to measure external causes.

4.4.5 Validity of the QES in Relation to mood and Optimistic Bias

In assessing the validity of the QES, it was anticipated that relationships of QES constructs with Positive Affect would index relationships with depressed mood because Positive Affect taps depression-specific mood (L. A. Clark & Watson, 1991). Further, Optimistic Bias was proposed to mediate the influences of explanatory styles upon depressed mood in the final structural equation model.

Negative Affect was a characteristic of both depression and anxiety at the mood and symptom levels that was not specific to depression (L. A. Clark & Watson, 1991). Similarly, stress measured by DASS-S was not depression-specific (Lovibond & Lovibond, 1995). The two negative mood measures were therefore treated as indices of general psychological distress. The Positive Affect (depression-specific) and Negative Mood measures used for validation purposes were chosen to discriminate depressed mood from general psychological distress and the association between the two in the present study, as shown in Figure 9, was moderate and confirmed that Negative Mood taps some depression-related content.

The following discussion will address the hypothesised relationships for the QES, optimism, and mood. The QES relationships with depressed mood, general psychological distress, and optimism will be discussed separately in later sections. The convergent validity of the QES was evaluated in relation to Optimistic Bias, Positive Affect, and Negative Mood as shown in the Figure 3 predictive model. As the QES factors did not form two higher-order latent constructs, one for positive events and one for negative events, interpretation of the mood validation model requires interpretation with this in mind. QES factors formed weakly linked clusters for positive events and for negative events with no strong inverse associations between the clusters, and thus no evidence of a bipolar optimistic/pessimistic explanatory style. The content of the clusters suggested that those for positive events were optimistic factors and those for negative events were pessimistic factors. These factors were not styles per se, rather fragments of styles. As hypothesised, the optimistic factors and the pessimistic factors either directly or indirectly generated Optimistic Bias. The generation of Optimistic Bias was through a pattern of positive and negative associations that would be expected of an inverse relationship between the positive and negative event clusters. The optimistic factors had positive
relationships with Optimistic Bias and the pessimistic factors had negative relationships with Optimistic Bias. Although the QES factors did not provide this inverse pattern of relationships between themselves, they did in relation to Optimistic Bias. Additionally, the optimistic factors and the pessimistic factors generated Positive Affect indirectly via Optimistic Bias. The pessimistic factors also directly generated Negative Mood, either directly or indirectly through their companion pessimistic factors, but the optimistic factors did not provide the predicted inverse influences on Negative Mood.

Discriminant validity was assessed by comparing predictions in Figure 3 with the mood model, Figure 12, to examine the comparative prediction of Positive Affect and Negative Mood by the QES factors and Optimistic Bias. As hypothesised, Optimistic Bias had no effect on Negative Mood and the pessimistic factors had positive relationships with Negative Mood. The pessimistic factors were better predictors of Negative Mood than of Positive Affect. The results demanded a shift from a related model for the QES factors to an independent model. Consequently, unlike the pessimistic factors, the optimistic factors predicted Positive Affect and not Negative Mood. In terms of depressed mood, four QES scales, Positive Internal and Stable, Negative Internal and Stable Affect, Positive Global, and Negative Global were directly predictive whereas the fifth QES scale, Negative Internal and Stable, was indirectly predictive.

In the present study, the optimistic factors can be conceptualised as depression-resilient attributions. Attributing good events as due to internal and stable characteristics, or attributions that the causes for good events generalise across many areas of life, provide resilience to depressed mood. The pessimistic factors can be conceptualised as depression-prone attributions. Attributing bad events as due to internal and stable characteristics, or attributions that the causes for bad events generalise across many areas of life, provide vulnerability to depressed mood.

The depression-prone pessimistic factor, Negative Global, contained unstable and external causes rated as affecting many areas of life. Item content represented minor irritations such as being delayed by others or being woken by a loud noise, that occur reasonably often in life. That depression-prone people would consider such transitory irritations to affect many areas of their lives provides an interesting insight into explanatory style.
4.4.5.1 Issues arising from the validation of the QES.

Strong links between the internality and stability dimensions for both optimistic factors and pessimistic factors were evident in three of the validated QES scales. These are disposition or ability type attributions, in Weiner’s (1972) conceptualisation of attributions and were argued by Weiner to play an important role in depression. The coupling of the internal and stable dimensions together with the failure of the present study to yield a negative events external factor, suggests that differences on the stability dimension may be of more interest than differences on the internality dimension. Weiner (1983) similarly argued that stability attributions were paramount in relation to depression. Internal and stable attributions for negative events have been shown as pessimistic factors in the present study. Since external attributions failed to provide optimistic factors in the present research, internal and unstable attributions for negative events need to be examined as possible optimistic factors in relation to depression.

Although the hopelessness theory of depression largely discounted the importance of positive events in the aetiology of hopelessness depression (Abramson et al., 1988, 1989), the present study validated the inclusion of both positive and negative events in the QES. The two optimistic factors and three pessimistic factors represented relatively independent constructs in the QES. The weak clustering together of the optimistic factors (positive event) and the pessimistic factors (negative event) provides some support for past research (Haugen & Lund, 1998; Hawkins, 1998; Hull & Mendolia, 1991) that found separate positive event and negative event attributions constructs. No evidence that the optimistic and pessimistic clusters were the inverse of each other was obtained for the QES structure. However, the current research found evidence of inverse pathways for optimistic and pessimistic factors to depressed mood. Although both clusters of factors predicted depressed mood, pessimistic factors also predicted general psychological distress. This suggests that optimistic and pessimistic factors may be basically different rather than the inverse of each other.

4.4.5.2 Optimism and explanatory style in relation to depressed mood.

In the final model, the only direct predictor of depression-specific mood was Optimistic Bias. Higher levels of Optimistic Bias led to higher levels of Positive Affect, or lower levels of depression-specific mood. Optimistic Bias measures a
belief in positive thinking and making the best of things, whereas Positive Affect measures the extent of positive emotions experienced, such as enthusiasm, pride, and determination. Using similar measures to the present research, past research has also found that optimism correlated with positive affect (e.g., Hawkins, 1998; Marshall, Wortman, Kusulas, Hervig, & Vickers, 1992; S. Smith, 2001). Marshall et al. used the LOT to measure dispositional optimism and the PANAS to measure mood, whereas Hawkins used the DO and the PANAS, so the two optimism measures appear similar. The present finding for optimism and depression also supports the propositions by Taylor and Brown (1988) and Alloy and Abramson (1988), that a positive bias is present in non-depressed people and absent in depressed people. Present findings are also consistent with Taylor et al. (2000) who argued that normal perceptions consist of a positive sense of self and of personal control that is often unrealistically optimistic. These positive resources buffer against unpleasant realities and aid in recovery from adverse events (Taylor et al.).

Four QES factors exerted indirect effects on Positive Affect that were mediated by Optimistic Bias. This finding supports Hawkins (1998) and Hull and Mendolia (1991) who also found a mediational role for optimism in relationships between attributions and depression. Also supported were Carver and Scheier (1981) and Scheier and Carver (1985) who conceptualised attributions as the bases for optimism that in turn mediated the relationship between attributions and psychological adjustment.

4.4.5.3 Explanatory style and optimism in relation to Negative Mood.

Negative Mood is considered to index general psychological distress and findings showed that only the negative event pessimistic cluster required paths to Negative Mood. This finding supports Ahrens and Haaga (1993) and Ralph and Mineka (1998) who found that pessimistic explanatory style predicted Negative Affect. The finding also implies some independence of the optimistic factors from the pessimistic factors.

In line with the prediction made in Figure 3, Optimistic Bias was related to Positive Affect but not to Negative Mood. Optimistic Bias was unrelated to general psychological distress representing a resilience factor that is specific to depressed mood. Findings therefore support previous research (Hawkins, 1998; Marshall et al., 1992; S. Smith, 2001) that also found that optimism predicts depressed mood but not general psychological distress.
4.4.5.4 Relationships between explanatory factors and Optimistic Bias.

The two QES optimism factors and two QES pessimism factors proved to be significant direct predictors of Optimistic Bias. Another pessimistic factor (Negative Internal and Stable) indirectly predicted Optimistic Bias. In addition to its direct effect, Negative Global also had an indirect effect on optimism. As predicted, high levels of the QES optimism factors led to high levels of Optimistic Bias whereas high levels of QES pessimistic factors led to low levels of Optimistic Bias. Thus, although the QES factors were relatively independent constructs, some evidence of an inverse relatedness for optimistic and pessimistic factors was obtained from the QES effects on optimism. Support was also obtained for Hawkins (1998) and for Hull and Mendolia (1991) who showed using the ASQ, that both positive and negative event attributional styles had direct effects on optimism. Therefore, the QES measures behaved similarly to the ASQ in relation to optimism.

The findings suggest that attributions do affect peoples’ outlook on life. Internal and stable attributions about good events, such as being a good worker, increase optimism. If one attributes positive outcomes as due to one’s own characteristics or efforts and likely to recur, or as causing good outcomes in other areas of life, one tends to view life in positive terms. Preceding an optimistic attitude that “life is what you make it” and “every cloud has a silver lining” is a sense of personal control to bring about positive events.

Internal and stable attributions for bad events, such as attributing one’s mistakes to one’s carelessness, reduce optimism. If one explains negative outcomes as due to oneself and likely to recur, then an optimistic outlook is difficult to maintain and helplessness may ensue. Blaming oneself for bad outcomes is most likely associated with feelings of incompetence and worthlessness, which in turn reduce one’s ability to have any sense of control over avoiding misfortune. Self-blame represents an absence of optimism and optimistic illusions as described by Taylor (1983). An optimistic attitude taps the illusions of control, proposed by Taylor and Brown (1988), through which people believe they have unrealistic control over, or change their perceptions of, a negative event in order to avert negative feelings. Additionally, global attributions about one bad event (e.g., being delayed) generalising to many areas of life, also reduce optimism. Such attributions cannot be linked to self-blame. However, they do reduce the sense of control over avoiding misfortune. This perceived lack of control reduces optimism.
Although Positive External and Stable was dropped from the SEM analysis because of poor psychometric properties, the correlational evidence indicated that high external and stable attributions for positive events, such as supportive family relationships were related positively to high levels of optimism (but not mood). This finding suggests that a sense of family support may be influential in engendering a positive outlook. Positive External and Stable also had small but significant relationships with the other two QES optimistic factors.

4.4.6 Summary of QES in Relation to Mood

The QES pessimistic factors and optimistic factors were independent at a structural level but showed some evidence of inverse relatedness in their effects on Positive Affect. However, the differential effect for the pessimistic and optimistic factors on Negative Mood suggests an independence of the two clusters. The QES pessimistic factors assumed a central role in the obtained model with effects on Positive Affect and on Negative Mood. Thus the pessimistic factors emerged as highly informative vulnerability constructs for both depressed mood and anxious mood. By contrast, the QES optimistic factors were related to Positive Affect only, thus providing resilience measures that were specific to depressed mood and indirectly predicted it via optimism.

4.4.7 The Measurement of Depressed Mood

It was proposed that positive mood be measured by Positive Affect and inverse DASS-D, and that negative mood be measured by Negative Affect and DASS-S. Positive mood was conceptualised as the inverse of depression-specific mood and negative mood as an index of general psychological distress. However, the DASS scales were highly interrelated and did not sufficiently distinguish the two mood states. Although Lovibond and Lovibond (1995) developed the DASS to separately measure core depression, anxiety, and stress symptoms, the separation of depression and stress scales was not confirmed in the present study. The DASS-D scale had a strong relationship with Positive Affect but had even stronger relationships with DASS-S and Negative Affect. The latter relationships are clarified upon examination of DASS-D item content. The items included elements of inertia, self-deprecation, and sad affect that are noted as common to general psychological distress by L. A. Clark and Watson (1991). Other DASS-D items were depression-specific such as anhedonia, hopelessness, and devaluation of life. Past research has
also obtained strong associations between DASS-D and DASS-S using the 21-item DASS measure. For example, Antony et al. (1998) obtained a correlation of .57 and Clara et al. (2001) obtained a correlation of .60 between DASS-D and DASS-S.

Findings of the current study were that the PANAS scales of Positive Affect and Negative Affect were distinct and relatively independent constructs with a small association to each other. Additionally, the DASS-S scale produced a low association with Positive Affect. The combination of Negative Affect and DASS-S to form Negative Mood, and the use of Positive Affect to measure inverse depressed mood, provided the best discrimination of depressed mood and general psychological distress. Therefore these measures were used to validate the QES.

4.4.8 The Suitability of the Questionnaire of Explanatory Style for General Use

Over 300 participants in the current study successfully completed the QES without supervision or additional instructions. Completed questionnaires were returned from the general population without financial inducements, indicating that the QES was accessible and acceptable to respondents. This finding was in contrast to reports of the ASQ by Dykema et al. (1996) who found that respondents needed supervision in its completion and that some respondents had problems with the concept of cause. Furthermore, Lynd-Stevenson (1995, 1996) reported that community and clinical respondents usually lacked the time or motivation to complete the ASQ.

The QES was also easy to score because ratings formed the direct input and no reverse coding was required. Score totals were then simply summed to represent increasing amounts of a particular attributional style. The ease of scoring provides an advantage for the QES over attributional style measurement techniques that are also easy for respondents, such as the CAVE technique. The CAVE technique requires several trained judges to score, as well as evidence for inter-rater reliability.

4.4.9 Limitations of the Present Study

Some interpretative limitations apply to the structural modeling technique. The influence of constructs that were not specified in the model cannot be discounted. An effect may be predicated by an unknown variable. Furthermore, causal relationships between variables can only be inferred if they are theoretically justified. In the present study, theoretical justification for a causal relationship is provided by the reformulated learned helplessness theory of depression. This study
demonstrates significant relationships between the variables, a necessary, but not a sufficient condition for establishing causal relationships.

The generalisability of the current research findings to a clinical population is unknown because the subjects in the present study who reported high levels of depression or psychological distress may not necessarily meet a clinical diagnosis of depression. Coyne (1994) maintained that results from research on analogue samples should be interpreted with caution. However, Lewinsohn et al. (2000) found no depressive symptom threshold, and that depression was best regarded as a continuum. Moreover, other authors such as Flett et al. (1997), Cox et al. (1999) and Enns et al. (2001) argued that analogue samples and self-report measures can be useful in depression research. Despite these findings, the issue of whether self-report results for depressed mood generalise to clinical depression remains contentious, and a cautious interpretation of the present research is required.

An additional shortcoming specific to the internal and stable scales is that some event and cause items were represented twice within the one factor with different rating types. In all of the internal and stable factors at least one of the items was rated once for internality and again for stability. For example, the Positive Internal and Stable scale contained the items “You work for less time than usual because you were efficient” and “In future when you work for less time than usual, it will be because of your efficiency.” This feature may have artificially inflated the reliability of some factors. Further development of the QES is therefore required to increase breadth within each of the constructs represented.

4.4.10 Future Research

Although the QES measures obtained in the present study have provided insights into the independence or relatedness of the structure of optimistic and pessimistic explanatory styles, the measure clearly requires further development. Findings did not support inverse relationships between optimistic and pessimistic explanatory styles nor did they support the higher-order constructs that are implied by the ASQ scoring arrangement. The QES format in the present study caused a melding of the internality and stability dimensions that provided effective internal and stable measures of both optimistic and pessimistic factors in relation to depression. As the QES format produced only one weak scale with external causes, external cause items will be omitted from future scale development. The exception
will be that some external causes rated for globality will remain in the global factors yielded in the present study.

In past research and the current study, internal and stable or dispositional attributions for negative events were found to predict depressed mood. Together with the failure to obtain an external factor for negative events, this suggests that the stability dimension may be of greater relevance to depression. Therefore, internal and unstable attributions for negative events may provide the opposite predictions in relation to depressed mood. Internal and unstable attributions may yield an optimistic factor for negative events and may help to clarify the nature of explanatory styles in relation to depressed mood.

### 4.4.11 Conclusion

The present study designed and developed the QES, a new measure of attributional style that yielded five valid scales with adequate reliabilities. The internality and stability dimensions combined to form the factors Positive Internal and Stable, Negative Internal and Stable Affect, and Negative Internal and Stable. The globality dimension was separated into two positively related and reliable factors, Positive Global and Negative Global. Reformulated learned helplessness theory would predict these factors to consist of internal and stable causes. Contrary to this expectation, the causes that were rated as having global effects were generally external causes. A sixth scale, Positive External and Stable was not confirmed as a psychometrically adequate measure.

The QES did not produce the proposed higher-order positive event attributions and negative event attributions constructs. Rather, loosely cohesive sets of optimistic positive event factors and pessimistic negative event factors were obtained. Also, the optimistic factors and pessimistic factors yielded by the QES were not inversely related and consequently did not contribute to a single pessimistic explanatory style. Rather, each scale produced its own independent construct.

The QES constructs were identified as optimistic factors and pessimistic factors in relation to depressed mood. All QES factors generated optimism, and generated depressed mood indirectly via optimism. Additionally, the pessimistic factors generated general psychological distress. The optimistic factors did not predict general psychological distress and displayed good discriminant validity by predicting only depressed mood. By contrast the pessimistic factors, as predicted, did not discriminate between mood states. The optimistic and pessimistic factors
provided some evidence of inverse relatedness in their relationships with depressed mood and optimism.

The current research supported the development of the QES as a method of measuring optimistic and pessimistic factors that was acceptable to the general public. Further development for the measure was flagged including the exclusion of the external cause items and the inclusion of internal and unstable cause items to the scales produced. Findings from the present study were inconclusive about the interrelatedness of the theoretical causal dimensions between positive event attributions and negative event attributions. The factoring together of the internal and stable attributional dimensions in the QES questions the veracity of separating the internal and stable dimensions. The findings raised the possibility that a better way of measuring the internal and stable dimensions using the QES format may be by comparing internal and stable with internal and unstable attributions.
CHAPTER 5

Study 2A: Further Development and Validation of the QES

5.1.1 Introduction and Rationale

5.1.1.1 Overview.

Development of the scale in Study 1 provided five valid QES constructs comprising two optimistic factors and three pessimistic factors. At the dimensional level internal and stable attributions merged together for positive event attributions and for negative event attributions. Together, these dimensions showed some independence from the global dimensions. No evidence was found for an optimistic factor consisting of negative events with external causes and the positive event factor with external causes was psychometrically inadequate. Therefore externality as a causal dimension proved largely irrelevant to the measurement of explanatory factors within the QES. At the broader level, the inverse relationship predicted for positive event attributions and negative event attributions was not obtained. Rather, negative event attributions formed clusters of loosely related pessimistic factors and positive event attributions formed clusters of loosely related optimistic factors. However, in relationships with mood and optimism the optimistic factors yielded effects that were the inverse of those yielded by the pessimistic factors. This finding provided some evidence of an inverse relatedness between the optimistic and pessimistic explanatory factors. Thus, some support was provided for both independence and inter-relatedness between the optimistic and pessimistic explanatory factors, but the results were inconclusive.

Study 1 provided the initial development phase for the QES and flagged directions for improvement. First, the number of items that contribute to the existing scales will need increasing to broaden the life domains covered because the scales obtained in Study 1 were restricted to one or two domains. For example, Positive Internal and Stable covered only achievement attributions. Second, the majority of factors obtained in Study 1 were internal and stable. Some theoretical and empirical evidence supports a distinction between internal and stable versus internal and unstable attributions in the association with depression (Weiner, 1983). In Study 1, internal and stable attributions for negative events operated as clear vulnerability factors in relation to depression. In other research, internal and unstable attributions provided resilience to depression (Peterson, Schwartz, & Seligman, 1981). The
previous QES did not explicitly assemble internal and unstable causes for rating. Therefore, in the current study, internal and unstable causes will be developed and compared to internal and stable causes to help clarify these components of optimistic and pessimistic explanatory styles.

5.1.1.2 Stability attributions in relation to depressed mood.

Although the QES yielded valid optimistic factors and pessimistic factors, the final structure of the QES was not as predicted. The QES was designed to measure both extremes of the three causal dimensions of internal-external, stable-unstable, and global-specific but measured largely the internal, stable, and global causal extremes. No negative event construct with external causes was yielded from the QES and the positive event external cause construct was psychometrically inadequate. Additionally, the internal and stable items factored together. Taken together, findings that external causes were largely irrelevant to depressed mood and that the internal and stable dimensions merged suggested that it would be productive to examine internal causes that differed on the stability dimension.

Weiner et al., (1971) argued that stability not internality primarily determined changes in expectancies about the future. Thus, the issue is not whether the cause is perceived as a personal characteristic but whether the cause is considered likely to happen again for the same situation in the future. In turn, expectancies about the future were argued to determine whether depression will occur (Weiner, 1972). The same argument was used by Abramson et al. (1978) in reformulated learned helplessness theory whereby expectancies determine whether helplessness deficits will occur. Weiner termed internal and stable attributions, dispositional attributions. Weiner argued that dispositional attributions were related to depressed mood because of their impact on expectancies. He drew a distinction between dispositional and behavioural attributions. Weiner proposed that behavioural attributions are internal and unstable, for example, failure caused by a lack of effort. Behavioural attributions do not play an important role in depressed mood because they do not tend to affect expectancies about the future.

The independent causal properties of stability have not been universally supported. Wimer and Kelley (1982) conducted a study of attributional dimensions and found that causes that were rated as stable were also usually rated as internal. External causes such as the difficulty of the task involved were usually scored as unstable. Wimer and Kelley concluded that if the cause affected the person, the
person rated it as stable even when a stable rating was not necessarily an objective rating for the cause.

For negative events, dispositional attributions as opposed to behavioural attributions have displayed different relationships with depression in past research. Janoff-Bullman (1979) found that depressed mood was related to dispositional self-blame. Victims attributing the cause of rape to personal traits such as being a weak person were more likely to experience depression than those who attributed the incident to a controllable personal behaviour such as walking home alone. Janoff-Bullman found that negative reactions to traumatic events were reduced if victims used behavioural attributions that allowed them to believe that the event could be avoided in the future. Janoff-Bullman proposed that by using such attributions, victims retained a feeling of control over their lives.

Peterson, et al. (1981) also found that, for negative events, depressive symptoms were positively associated with dispositional attributions such as stupidity but inversely associated with behavioural attributions such as physical actions. Participants rated behavioural attributions as more controllable than dispositional attributions. Tennen, Affleck, and Gershman (1986) also found that behavioural attributions provided people with a feeling that they could behave differently in the future to circumvent misfortune. Tennen et al. found that behavioural attributions for severe perinatal complications, such as engaging in strenuous activity, provided a small positive association with positive mood. Similarly, J. D. Brown and Siegel (1988) found that adolescents who attributed their most upsetting prior life event to behavioural (strategy, effort) causes experienced lower levels of depression than did those who attributed the event to dispositional (ability, trait) causes. Only when events were attributed to uncontrollable causes did J. D. Brown and Seigel find that internal, stable, and global causes predicted depression. C. A. Anderson, Miller, Riger, Dill, and Sedikides (1994) examined the attributions of two samples of undergraduates, one using the ASAT (described in Chapter 3) and the second using items from the ASAT, ASQ, and Balanced ASQ (described in Chapter 3). Findings were that, for negative events, behavioural attributions were inversely related to depression and dispositional attributions were positively related to depression. They also found that each of the two attributional types uniquely predicted depression.

Others have found that internal attributions for negative events were related to depression only when they were stable as well (Eschen & Glenwick, 1990; Zautra,
Guenther, & Chartier, 1985). Stoltz and Galassi (1989) similarly found that depressed people made more dispositional attributions for negative events than did non-depressed people and that non-depressed people made more behavioural attributions for negative events than did depressed people.

In relation to optimism, Weiner, Nierenberg, and Goldstein (1976) found that stability and not internality was related to expectancies of success. In relation to pessimism, C. A. Anderson (1983) selected character-style attributors who tended to make dispositional attributions for negative events, and compared them to behavioural-style attributors who tended to make strategy and effort attributions for negative events. The character-style attributors had lower expectancies of success in an experimental interpersonal task and lower motivational levels than did the behavioural-style attributors. Thus a person with a dispositional explanatory style was more prone to pessimism than one with a behavioural explanatory style.

Reasoning from the evidence presented for negative events, dispositional attributions for positive events should lead to optimism because of the implication that one deserves good fortune and self-congratulations. Behavioural attributions for positive events should also lead to optimism because they imply that one’s efforts can produce desired outcomes or create opportunities. Therefore, both types of positive event attributions should form optimistic factors.

5.1.1.3 Methodological issues and resulting changes to the QES.

To some extent, the QES format in Study 1 may have encouraged an association between the internal and stable dimensions. For example, once a respondent rated a cause as a likely reason for a given situation, the respondent was also likely to rate the cause as likely to recur for that same situation. Alternatively, the clustering together of the internal and stable dimensions as dispositional attributions may evidence a natural link between these two dimensions. The clustering together of the internal and stable dimensions supports Wimer and Kelley’s (1982) finding that stable causes are usually internal. The development of the QES will continue in the present study by amending the internality and stability sections of the QES. Items with external causes will be removed from the QES. A set of dispositional items with causes that are both internal and stable, some from Study 1 and some new items will be included. In addition, a set of behavioural items with causes that are both internal and unstable will be constructed and included. Further,
the globality factors produced in Study 1 will be retained in the new questionnaire because they produced reliable factors.

Dispositional causes and behavioural causes will be used to test the stability dimension as a determinant of optimistic and pessimistic factors. Research evidence showed that dispositional explanations for negative events were implicated as pessimistic factors and behavioural explanations for negative events were implicated as optimistic factors because of inverse links to depression (Janoff-Bullman, 1979; Peterson et al., 1981). Little difference will be expected between dispositional explanations for positive events and behavioural explanations for positive events because both are expected to predict optimism.

The successful items from the factors obtained in Study 1 will be kept in the QES. Where the same event and cause pairs were rated twice, once for internality and once for stability, within one factor, the item will be reworded as one dispositional cause item. In addition, new items will be written with causes aimed to clearly differentiate dispositional attributions from behavioural attributions. The item wording for dispositional attributions and behavioural attributions will contain two sentences. The first sentence describes the event that “you happen” to experience. In keeping with Janoff-Bullman (1979) and Peterson et al. (1991) the dispositional causes will be expressed in the present tense as a state that the person “has” or “is” to indicate the ongoing nature of the cause. The behavioural causes will be expressed in the past tense as actions that the person “did” and will include a temporal restriction such as, “at the time” or “that day”.

Additional globality items will be added to the successful items retained from Study 1. The number of globality items will increase to 20 for positive events and 20 for negative events. The new causes for the globality section will be taken from the newly created dispositional and behavioural causes. As a result, most globality causes will be internal but some globality causes will be external because the Positive Global and Negative Global items from Study 1 will be retained.

The specific changes to the QES will be as follows. The QES will be reduced from three to two sections. One section will contain the combined dispositional and behavioural items and the second section will contain the globality items. In total, six sets of items will be included in the QES. Three sets of items will contain positive events and three sets will contain negative events. These will comprise Positive
Disposition, Positive Behaviour, and Positive Global, Negative Disposition, Negative Behaviour, and Negative Global.

In summary, the QES internal and stable factors for both positive events and negative events will be retained and expanded. The two globality factors will also be retained and expanded. Moreover, two factors of internal and unstable causes, one for positive events and the second for negative events will be added to the QES.

5.1.1.4 Issues in the validation of the QES

In Study 1, the DASS scales were included as mood validation measures for the QES. However, contrary to expectations, the DASS scales were highly interrelated and did not sufficiently distinguish depression-specific mood from general psychological distress. The DASS-D scale had strong relationships with Positive Affect, DASS-S, and Negative Affect and therefore will not be used to validate the QES in the present study. As Positive Affect was relatively independent of Negative Affect and DASS-S, these latter two scales were combined to form Negative Mood. Positive Affect was used as an inverse measure of depression-specific mood. This arrangement provided the best discrimination of general psychological distress from depression-specific mood from the available measures.

Structural equation modeling was used for mood measurement in Study 1 and therefore results may have capitalised on chance associations within the single data set. It was thus necessary to replicate the measurement model for mood with a different sample. Consequently, the present study continued to use the PANAS and the DASS to validate the QES. This allowed for the further examination of the measurement model for mood.

The single optimism measure used in Study 1, Defensive Optimism, provided a valid mediator for QES constructs in relation to depressed mood. However, Defensive Optimism was more recently found to work in conjunction with a second subscale Self-Satisfaction to form a stronger construct in relation to depressed mood (S. Smith, 2001). S. Smith used the research and theory relating to the concepts of self-deception (Gur & Sackeim, 1979; Roth & Ingram, 1985; Sackheim & Gur; 1978), self-illusion (Gibbons & McCoy, 1991), and self-enhancements (Koenig et al., 1992; Margo et al., 1993) to formulate the Self-Satisfaction scale of the DVRS. The Self-Satisfaction scale combined with Defensive Optimism to form Positive Bias, a measure of resilience to depressed mood that was largely unrelated to general psychological distress. Positive Bias provides improved psychometric properties over
the two single constructs, Defensive Optimism and Self-Satisfaction, and therefore was included in the QES validation process.

It is anticipated that the retained and expanded factors will continue to function in the same way as was previously established in Study 1. Negative Disposition should be similar to Negative Internal and Stable Affect from Study 1. Therefore, Negative Global will provide a direct effect on Negative Disposition. Positive Disposition should be similar to Positive Internal and Stable from Study 1. The two new factors, Positive Behaviour and Negative Behaviour are aimed to be measures of optimistic attributions and therefore should provide similar links to those provided by Positive Disposition and Positive Global. As was found in Study 1, all explanatory factors should provide direct effects on optimism that is now measured by Positive Bias. Positive Bias will mediate all relationships with depressed mood. Additionally, pessimistic factors will generate Negative Mood with Negative Disposition partially mediating Negative Global in its effect on Negative Mood (following Study 1).

5.1.2 Aims

5.1.2.1 General aim.

The general aim of the present study is to explore the roles of dispositional attributions, behavioural attributions, and global attributions to depression. Study 1 showed that positive event attributions operated as optimistic factors and negative event attributions operated as pessimistic factors in relation to depressed mood. However, no optimistic factor for negative events was obtained. This study will examine the possibility of obtaining an optimistic factor for negative events that comprises behavioural attributions.

Although at the QES structural level Study 1 produced little evidence of bipolarity between the optimistic and pessimistic factors, evidence of bipolarity between the optimistic and pessimistic factors in relation to optimism and mood was obtained. Further development of the QES is aimed to provide more evidence of relatedness between the optimistic and pessimistic factors. The separation of optimistic and pessimistic factors for negative event attributions is designed to show clear bipolarity at both the QES structural level and in relation to depressed mood.
5.1.2.2 Specific aim.

The specific aim of the present study is to further develop and test the QES. The QES will contain six scales. Four scales are proposed as optimistic factors, Positive Disposition (internal and stable causes), Positive Behaviour (internal and unstable causes), Negative Behaviour (internal and unstable causes), and Positive Global. Two scales are proposed as pessimistic factors, Negative Disposition (internal and stable causes) and Negative Global. Further, the redeveloped QES measure will be used to investigate optimistic factors and pessimistic factors in their relationships with depressed mood. In the process, the psychometric properties of the QES will also be tested. The QES will be validated in relation to measures of optimism, general psychological distress, and depressed mood.

5.1.3 Hypotheses and Questions that will be Addressed by the Research

The present study hypothesises that the QES will isolate four optimistic factors and two pessimistic factors. The hypothesised relationships between the explanatory factors, and of the explanatory factors with optimism and mood, are depicted in Figure 14. First, the optimistic factors will form interrelated but separate constructs based on findings from Study 1. For the two pessimistic factors, Negative Global will provide a direct effect on Negative Disposition. The globality factors will have a moderate positive association. Second, all explanatory factors will generate Positive Bias. The positioning of Positive Bias in the model conceptualises Positive Bias as a mediating variable in the relationship between attributions and depressed mood. Third, the optimistic factors and pessimistic factors will generate Positive Affect indirectly via Positive Bias. Fourth, pessimistic factors will generate Negative Mood with Negative Disposition partially mediating Negative Global in its effect on Negative Mood (following Study 1). Fifth, Positive Bias will generate Positive Affect but not Negative Mood. Finally, at a broad level, depressed mood will be measured by the inverse of Positive Affect. General psychological distress will be measured by Negative Mood, using the combined measures Negative Affect and DASS-S.
Figure 14. Proposed relationships between explanatory factors, optimism, and mood.

Note. DASS-S = Depression Anxiety Stress Scales – 21, Stress Scale.
Method

5.2.1 Participants

Participants were a convenience sample of Australian men and women recruited from the general population who volunteered to complete the questionnaires on request and without payment. Participants came from urban, regional, and rural areas of Victoria, the Australian Capital Territory, and Queensland. Approximately half of the participants were directly recruited by the researcher from Deakin University campuses in Melbourne and Geelong, Victoria. The remaining half were recruited by the researcher’s family members and friends using the “snowball” recruitment technique (Costa & McRae, 1985), whereby these participants who were recruited by the researcher went on to recruit their family members and friends as participants. A total of 700 questionnaires were distributed, however a response rate could not be estimated because the number of prospective participants who received a questionnaire is unknown.

Participants consisted of 332 subjects with an age range of 18 to 72 years and a mean age of 33.60 years ($SD = 13.50$). The 234 females had an age range of 18 to 65 years and a mean age of 32.55 years ($SD = 12.89$). The 92 males had an age range of 18 to 72 years and a mean age of 36.33 years ($SD = 14.69$). Eight participants, four males and four females, with missing mood measures were included in the QES confirmatory analyses but were excluded from subsequent analyses.

5.2.2 Measures

Two personality measures and two mood measures were used in this study. The personality inventories comprised the QES (Hawkins, 2000) and the DO and SS scales of the DVRS (S. Smith, 2001). The mood measures were the PANAS (Watson et al., 1988) and the DASS (Lovibond & Lovibond, 1995).

5.2.2.1 Questionnaire of Explanatory Style.

In total, an initial pool of 88 items was generated, including 17 valid items selected from the factors obtained from Study 1, so that a given cause was represented only once (in Study 1, some causes were represented and rated twice, once for internality and once for stability). The first section of the QES, the stability section, contained a total of 48 events. Half of these events were positive and half were negative. Examples are “You happen to feel fortunate” and “You happen to be angry” respectively. A possible cause was then allocated to each event. Half were
internal and stable, “you have a bad temper”, and half were internal and unstable, “at the time you were angry about something”. The resulting items for internality and stability formed four sets. There were 12 positive events with internal and stable causes, for example, “You happen to sleep well. Is it because you are a sound sleeper?” There were 12 positive events with internal and unstable causes, for example, “You happen to win a game. Is it because at the time you were focused on the game?” There were 12 negative events with internal and stable causes, for example, “You happen to annoy a friend. Is it because you are an inconsiderate person?” There were 12 negative events with internal and unstable causes, for example, “You happen to have a bad night out. Is it because at the time you are unable to relax?” The stability scales required respondents to rate whether a given cause was a likely reason for the described event happening to them. Ratings were on a 5-point scale ranging from 1 = highly unlikely to 5 = highly likely. An example of a negative event with an internal and unstable cause is “You happen to get behind with your paperwork. Is it because just lately you can’t be bothered?” A very good inter-rater reliability Kappa coefficient of .78 was obtained for the stable and unstable ratings.

The second section, the globality section, contained a total of 40 items. Half contained positive events and half contained negative events. Examples are “you do something enjoyable” and “you lose track of time” respectively. The globality scales remained in the same format as Study 1 with only the item content of the unreliable items changed. Although the external dimension was dropped from the first section of the QES the globality scales produced in Study 1 contained many external causes and these were retained in the present QES. There were 10 positive internal causes, for example, “you do something clever”. There were 10 positive external causes, for example, “others make you do something enjoyable”. There were 10 negative internal causes, for example, “you happen to embarrass yourself”. There were 10 negative external causes, for example, “you are delayed by traffic or transport”. The globality scales required respondents to rate the number of areas of their life that were affected by a given cause. Ratings were on a 5-point scale from 1 = very few to 5 = nearly all areas. An example is “When you make a good decision, how many areas of your life benefit?”

In summary, the QES was proposed to yield six scales. The six resulting scales were Positive Disposition (internal stable), Positive Behaviour (internal
unstable), Positive Global, Negative Disposition (internal stable), Negative Behaviour (internal unstable), and Negative Global, as shown in Appendix B.

5.2.2.2 Depressive Vulnerability and Resilience Scales.

The DVRS is a recently developed measure that contains two scales measuring positive or optimistic bias, construed as a resilience to depressed mood. The DO scale has eight items consisting of five scale items, for example “It is a true saying that every cloud has a silver lining”, and three filler items. Items are rated on a 5-point scale ranging from 1 = strongly disagree to 5 = strongly agree. Responses to the DO items are summed to yield a total score with higher scores representing greater defensive optimism. The SS scale consists of five items, for example “It would be difficult for anyone to dislike me”. Items are rated on a 5-point scale ranging from 1 = strongly disagree to 5 = strongly agree. Responses to the SS items are summed to yield a total score for the scale with higher scores representing greater self-satisfaction. The two scales are summed to yield a measure for Positive Bias.

The DO scale had solid internal consistency reliability with alpha coefficients of .70 and .72 for younger and older community samples (S. Smith, 2001). The DO was found to mediate relationships between the ASQ scales and PANAS Positive Affect by Hawkins (1998). The SS scale had modest internal consistency reliability with alpha coefficients of .57 and .49 for younger and older community samples (S. Smith, 2001). The combined DO scale and SS scale, Positive Bias, had moderate correlations with positive affect of .37 for a younger sample, mean age 20 years, and of .46 for an older sample, mean age 41 years (S. Smith).

5.2.2.3 Positive and Negative Affect Schedule.

The PANAS (Watson et al., 1988) consists of two 10-item scales: Positive Affect and Negative Affect. The PANAS was used to distinguish two distinctive dimensions: pure depression-specific mood (Positive Affect) and depressed plus anxious mood (Negative Affect). Respondents rated the extent to which they experienced twenty mood descriptors on a 5-point scale ranging from 1 = very slightly/not at all to 5 = very much. The time period chosen for the rating was “the past week” to permit valid comparisons with other research.

The Positive Affect and Negative Affect scales had very high internal consistencies, with coefficient alpha values of .88 for Positive Affect and .85 for Negative Affect (Watson et al., 1988). Test-retest reliabilities for an eight-week
interval were .48 for Positive Affect and .42 for Negative Affect. Both scales of the PANAS have excellent convergent validity with similar measures, and high discriminant validity with unrelated measures of mood (Watson et al.). For example, using the Hopkins Symptom Checklist (Derogatis et al., 1974), a measure of general distress and dysfunction, Watson et al. obtained a high correlation of .74 with Negative Affect and a low correlation of -.19 with Positive Affect.

5.2.2.4 Depression, Anxiety and Stress Scales.

The 21 item version of the DASS (Lovibond & Lovibond, 1995) consisted of three seven-item scales designed as relatively pure measures of depression, anxiety, and stress (Lovibond, 1998). Respondents indicated how much each of the 21 symptom statements applied to them over the past week on a 4-point scale, 0 = not at all and 3 = most of the time.

The DASS scales had very high internal consistencies, with coefficient alpha values of .94, .87, and .91 respectively for the depression, anxiety, and stress scales (Antony et al., 1998). The DASS depression, anxiety, and stress scales were found to be a valid measure of depression, anxiety and stress respectively when compared to other well-used measures (Antony et al.). However, Study 1 found that DASS-D was not adequately depression-specific yielding covariances of .71 and .60 with DASS-S and Negative Affect respectively.

5.2.3 Procedure

Many participants were directly recruited from the researcher’s family, friends, acquaintances, and from students and staff at Deakin University campuses in Victoria, Australia. Other participants were recruited by the researcher’s family and friends using a “snowball” recruitment technique whereby these participants who were directly recruited by the researcher went on to recruit their family members and friends as participants. Participants were given a plain language statement, questionnaire and a reply-paid envelope to Deakin University, Melbourne Campus. The plain language statement clearly stated the aims of the research, gave examples of the questions, and informed participants about the availability of results. The questionnaire was completed at a time and place chosen by the participant and took about 30 minutes to complete.

The questionnaire began with the demographic variables of age and sex followed in order by the PANAS, DO, SS, QES and DASS. A copy of the plain
language statement and questionnaires used in the present study appear in Appendix B. The completed questionnaires form the data collected at the Deakin University Melbourne Campus for analysis by the researcher. The treatment of participants was in accordance with the ethical standards of the National Statement on Ethical Conduct in Research Involving Humans (1999). A copy of the ethics approval for this study also appears in Appendix B.
Results

The QES was further developed and tested in the present study with the general aim of exploring the roles of dispositional attributions, behavioural attributions, and global attributions in relation to depression. Behavioural attributions for negative events were proposed to form an optimistic factor. Additionally, the QES was proposed to produce reliable and valid optimistic factors and pessimistic factors that would enable the examination of the relatedness of them.

Confirmatory factor analysis was used to examine the extent to which the factor structure adequately represented the covariation among items for each factor within the 88-item measure, the QES. Data preparation and correlational analyses were conducted using SPSS 10. Confirmatory factor analysis was performed using AMOS 4 (Arbuckle & Wothke, 1999). The analyses then used structural equation models to examine the relationships between the explanatory factors, optimism, and the mood measures. Structural modeling was also conducted with AMOS 4. A two-stage procedure described in Hair et al. (1995) and J. C. Anderson and Gerbing (1988) was used to first estimate the measurement models for the QES, mood, and Optimism/ Pessimism. The measurement models were then fixed, and the structural model was estimated. This two-stage procedure allowed the removal of items that did not represent a latent construct of interest and thus maximised the interpretability of the final model (Hair et al.).

In total, eight models were evaluated. First, the constituent items for each of the six explanatory latent constructs were confirmed as contributing significantly to the measurement of respective constructs. Second, a measurement model of associations between the QES factors was evaluated to assess relationships. Then, the hypothesised measurement model for the QES with a direct effect from Negative Global to Negative Disposition was tested. During this stage of the analyses there was a move from a covariance model of associations between scales to a directional link from Negative Global to Negative Disposition. Next, separate measurement models were estimated for Positive Bias, and for the mood measures. Then a model building approach described by J. C. Anderson and Gerbing (1988) was used to develop three structural models, each of which was then evaluated. The first structural model addressed the direct relationships between the explanatory factors and Positive Mood (the inverse of depression-specific mood). During this stage of the analyses there was an additional move from covariances between Positive
Disposition and other scales to directional links between Positive Disposition and all factors. Negative Mood (general psychological distress) was then added to an expanded model and direct hypothesised relationships with the explanatory factors were tested. Finally, an overall structural model with Positive Bias mediating the relationships between explanatory factors and Positive Mood was assessed. This overall hypothesised model was previously presented in Figure 14.

5.3.1 Summary Descriptives for the Validation Measures

Several random missing values were replaced using the EM missing value analysis method provided in SPSS. Means and standard deviations were then calculated for each measure and are presented in Table 10. Results for the Positive Affect, Negative Affect, DASS-D, DASS-S, and DO were comparable to those obtained in Study 1 that were presented in Table 1. The SS means and standard deviations matched those obtained by S. Smith (2001) for a student sample of 303 participants who had mean values of 13.82 (SD = 3.03).

Gender differences in the mood and optimism scales were tested with a multivariate analysis of variance. There was a significant difference between males and females on the combined scales $F(6, 332) = 2.40, p = .03$. However, when the results for the scales were considered separately, none of the differences reached statistical significance using a Bonferroni adjusted alpha level of .003. It was thus deemed acceptable to combine data for females and males.

Table 10
Means and Standard Deviations for Measured Variables used in the Hypothesised Structural Models

<table>
<thead>
<tr>
<th>Measure</th>
<th>Scale Range</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>DASS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>0-21</td>
<td>4.13</td>
<td>4.41</td>
</tr>
<tr>
<td>Stress</td>
<td>0-21</td>
<td>6.11</td>
<td>4.25</td>
</tr>
<tr>
<td>DVRS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defensive Optimism</td>
<td>5-25</td>
<td>17.86</td>
<td>2.95</td>
</tr>
<tr>
<td>Self-Satisfaction</td>
<td>5-25</td>
<td>14.68</td>
<td>3.28</td>
</tr>
<tr>
<td>PANAS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Affect</td>
<td>10-50</td>
<td>33.30</td>
<td>7.15</td>
</tr>
<tr>
<td>Negative Affect</td>
<td>10-50</td>
<td>19.42</td>
<td>7.15</td>
</tr>
</tbody>
</table>

Note. $N = 332$, DVRS = Depressive Vulnerability and Resilience Scales; PANAS = Positive and Negative Affect Schedule; DASS = Depression, Anxiety and Stress Scales; on every scale, higher values indicate more of the characteristic.
5.3.2 Confirmatory Factor Analysis and Measurement Model Evaluation

It was proposed that the 88-item QES would yield six scales. Two of these scales, Negative Disposition and Negative Global, were intended as pessimistic factors. The remaining four scales, Positive Disposition, Positive Behaviour, Negative Behaviour, and Positive Global, were intended as optimistic factors.

An evaluation of the internal structure of the QES was conducted in two stages. The first stage of measurement model assessment, confirmatory factor analysis, was applied to the constituent items for each scale. This permitted the testing of the proposed content for each of the six scales. During the second stage of measurement model assessment, proposed relationships between scales and scale combinations were investigated. In confirming the measurement models for the six scales, item retention in the scales was based upon two criteria: significant loading coefficients (similar to factor loadings) and the goodness-of-fit indices described in Study 1 ($\chi^2$, $\chi^2/df$, RMSEA, IFI).

Each scale was tested using maximum likelihood estimates. In specifying each model, the latent construct variance was set at 1.00 so as to assign a metric to the model. The AMOS (Arbuckle & Wothke, 1999) program produces the factor loadings and factor score weights for all items in each model. It should be noted that factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings. Reliabilities of the latent constructs and percentage of variance explained in the latent constructs were calculated according to the formulae provided by Bollen (1989). All goodness-of-fit indices presented in the following sections represent the best possible model solutions, although they do not always reach acceptability on all four measures of model fit. In all analyses the significance level for path loadings was set at $p < .05$.

5.3.2.1 Positive Global.

It was initially proposed that the Positive Global scale would consist of 20 items. Through the measurement model assessment process this number was reduced to ten. Loading coefficients for constituent items are presented in Table 11. All loading coefficients were significant at $p < .01$. The scale returned the following goodness-of-fit statistics, $\chi^2 (30, N = 332) = 39.76, p = .11, \chi^2/df = 1.33$, RMSEA = .03, IFI = .99, meeting three of the four fit criteria. This factor explained 48% of the variance in the constituent items and yielded a strong construct reliability of .90.
Table 11

Loading coefficients for the Positive Global scale of the QES in a General Population Sample of 332 Adults

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>When you do something enjoyable, how many areas of your life benefit</td>
<td>.74</td>
<td>.13</td>
</tr>
<tr>
<td>When you do something clever, how many areas of your life benefit</td>
<td>.74</td>
<td>.13</td>
</tr>
<tr>
<td>When you concentrate well on something, how many areas of your life benefit</td>
<td>.72</td>
<td>.15</td>
</tr>
<tr>
<td>When you make an effort, how many areas of your life benefit</td>
<td>.72</td>
<td>.09</td>
</tr>
<tr>
<td>When you do a good deed, how many areas of your life benefit</td>
<td>.70</td>
<td>.11</td>
</tr>
<tr>
<td>When you happen to be efficient, how many areas of your life benefit</td>
<td>.70</td>
<td>.08</td>
</tr>
<tr>
<td>When you are successful at something important to you, how many areas of your life benefit</td>
<td>.69</td>
<td>.08</td>
</tr>
<tr>
<td>When you have worked hard on a project, how many areas of your life benefit</td>
<td>.67</td>
<td>.10</td>
</tr>
<tr>
<td>When you make a good decision, how many areas of your life benefit</td>
<td>.65</td>
<td>.07</td>
</tr>
<tr>
<td>When others make you do something enjoyable, how many areas of your life benefit</td>
<td>.62</td>
<td>.01</td>
</tr>
</tbody>
</table>

Note. Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

5.3.2.2 Negative Global.

It was initially proposed that the Negative Global scale would consist of 20 items. Through the measurement model assessment process this number was reduced to ten. Loading coefficients for constituent items are presented in Table 12. All loading coefficients were significant at $p < .01$. The scale returned the following goodness-of-fit statistics, $\chi^2 (29, N = 332) = 33.60, p = .25, \chi^2 / df = 1.16$, RMSEA = .02, IFI = .99, meeting three of the four fit criteria. This factor explained 31% of the variance in the constituent items and yielded a strong construct reliability of .82.
Table 12  
*Loading coefficients for the Negative Global scale of the QES in a General Population Sample of 332 Adults*

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>When you lose track of the time, how many areas of your life suffer?</td>
<td>.64</td>
<td>.10</td>
</tr>
<tr>
<td>When you have a bad dream, how many areas of your life suffer?</td>
<td>.63</td>
<td>.13</td>
</tr>
<tr>
<td>When you are delayed by traffic or transport, how many areas of your life suffer?</td>
<td>.58</td>
<td>.07</td>
</tr>
<tr>
<td>When you happen to be careless, how many areas of your life suffer?</td>
<td>.58</td>
<td>.07</td>
</tr>
<tr>
<td>When you are unable to finish something at work, how many areas of your life suffer?</td>
<td>.57</td>
<td>.09</td>
</tr>
<tr>
<td>When you keep a secret for someone, how many areas of your life suffer?</td>
<td>.55</td>
<td>.08</td>
</tr>
<tr>
<td>When you happen to embarrass yourself, how many areas of your life suffer?</td>
<td>.54</td>
<td>.08</td>
</tr>
<tr>
<td>When you get a bad cold, how many areas of your life suffer?</td>
<td>.51</td>
<td>.05</td>
</tr>
<tr>
<td>When you accidentally suffer minor injuries, how many areas of your life suffer?</td>
<td>.50</td>
<td>.06</td>
</tr>
<tr>
<td>When you happen to be tense, how many areas of your life suffer?</td>
<td>.46</td>
<td>.03</td>
</tr>
</tbody>
</table>

*Note.* Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

**5.3.2.3 Positive Disposition.**

It was initially proposed that the Positive Disposition scale would consist of twelve items. Through the measurement model assessment process this number was reduced to seven. Loading coefficients for constituent items are presented in Table 13. All loading coefficients were significant at $p < .01$. The scale returned the following goodness-of-fit statistics, $\chi^2 (12, N = 332) = 5.73, p = .93, \chi^2 / df = .48$ RMSEA = .00, IFI = 1.02 (In some cases values greater than 1.00 can be obtained for incremental or comparative fit indices and may indicate an over-specified model. In this instance the model was not considered over-specified because the included pathways were not theoretically trivial.). The model meets all four fit criteria. This factor explained 27% of the variance in the constituent items and yielded a relatively sound construct reliability of .69.
Table 13
Loading coefficients for the Positive Disposition scale of the QES in a General Population Sample of 332 Adults

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>You happen to feel content. Is it because you are a positive person?</td>
<td>.76</td>
<td>.33</td>
</tr>
<tr>
<td>You happen to feel like celebrating. Is it because you have a great life?</td>
<td>.63</td>
<td>.19</td>
</tr>
<tr>
<td>You happen to have fun at a family get-together. Is it because you are fun to be with?</td>
<td>.55</td>
<td>.16</td>
</tr>
<tr>
<td>You happen to feel very relaxed. Is it because you are an easy-going person?</td>
<td>.54</td>
<td>.14</td>
</tr>
<tr>
<td>You happen to feel fortunate. Is it because you are a lucky person?</td>
<td>.33</td>
<td>.05</td>
</tr>
<tr>
<td>You happen to sleep very well. Is it because you are a sound sleeper?</td>
<td>.33</td>
<td>.04</td>
</tr>
<tr>
<td>You happen to make your friends laugh. Is it because you have a good sense of humour?</td>
<td>.28</td>
<td>.03</td>
</tr>
</tbody>
</table>

Note. Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

5.3.2.4 Negative Disposition.

It was initially proposed that the Negative Disposition scale would consist of twelve items. Through the measurement model assessment process this number was reduced to six. Loading coefficients for constituent items are presented in Table 14. All loading coefficients were significant at $p < .01$. The scale returned the following goodness-of-fit statistics, $\chi^2 (9, N = 332) = 17.07, p = .05$, $\chi^2 / df = 1.90$, RMSEA = .05, IFI = .98, meeting three of the four fit criteria. This factor explained 34% of the variance in the constituent items and yielded a sound construct reliability of .71.
Table 14

Loading coefficients for the Negative Disposition scale of the QES in a General Population Sample of 332 Adults

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>You happen to be in a bad mood. Is it because you are easily annoyed?</td>
<td>.87</td>
<td>.38</td>
</tr>
<tr>
<td>You happen to be angry. Is it because you have a bad temper?</td>
<td>.75</td>
<td>.21</td>
</tr>
<tr>
<td>You happen to argue with other family members. Is it because you are argumentative?</td>
<td>.58</td>
<td>.09</td>
</tr>
<tr>
<td>You happen to annoy a friend. Is it because you are an inconsiderate person?</td>
<td>.37</td>
<td>.06</td>
</tr>
<tr>
<td>You happen to lose faith in a friend or family member. Is it because you are unforgiving?</td>
<td>.34</td>
<td>.04</td>
</tr>
<tr>
<td>You happen to feel lonely. Is it because you are not popular?</td>
<td>.33</td>
<td>.05</td>
</tr>
</tbody>
</table>

Note. Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

5.3.2.5 Positive Behaviour.

It was initially proposed that the Positive Behaviour scale would consist of twelve items. Through the measurement model assessment process this number was reduced to five. Loading coefficients for constituent items are presented in Table 15. All loading coefficients were significant at \( p < .01 \). The scale returned the following goodness-of-fit statistics, \( \chi^2 (5, N = 332) = 4.17, p = .53, \chi^2/df = .83, \) RMSEA = .00, IFI = 1.01 (In some cases values greater than 1.00 can be obtained for incremental or comparative fit indices and may indicate an over-specified model. In this instance the model was not considered over-specified because the included pathways were not theoretically or empirically trivial). The model meets all four fit criteria. This factor explained 21% of the variance in the constituent items and yielded a modest construct reliability of .56.
Table 15

Loading coefficients for the Positive Behaviour scale of the QES in a General Population Sample of 332 Adults

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>You happen to prepare a meal for friends and they compliment you. Is it because this day you make an effort preparing the food?</td>
<td>.54</td>
<td>.36</td>
</tr>
<tr>
<td>You happen to be smiled at by an attractive stranger. Is it because at the time you are smiling?</td>
<td>.48</td>
<td>.30</td>
</tr>
<tr>
<td>You happen to really like your work. Is it because just now you feel in control?</td>
<td>.45</td>
<td>.26</td>
</tr>
<tr>
<td>You happen to win a game. Is it because at the time you are really focused on the game?</td>
<td>.42</td>
<td>.24</td>
</tr>
<tr>
<td>You happen to exercise. Is it because that day you feel energetic?</td>
<td>.35</td>
<td>.15</td>
</tr>
</tbody>
</table>

*Note.* Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

5.3.2.6 *Negative Behaviour.*

It was initially proposed that the Negative Behaviour scale would consist of twelve items. Through the measurement model assessment process this number was reduced to seven. Loading coefficients for constituent items are presented in Table 16. All loading coefficients were significant at $p < .01$. The scale returned the following goodness-of-fit statistics, $\chi^2 (14, \ N = 332) = 9.85, \ p = .77, \ \chi^2/df = .70, \ RMSEA = .00, \ IFI = 1.03$ (In some cases values greater than 1.00 can be obtained for incremental or comparative fit indices and may indicate an over-specified model. In this instance the model was not considered over-specified because the included pathways were not theoretically or empirically trivial). The model meets all four fit criteria. This factor explained 15% of the variance in the constituent items and yielded a modest construct reliability of .55.
Table 16
*Loading coefficients for the Negative Behaviour scale of the QES in a General Population Sample of 332 Adults*

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>You happen to be treated rudely. Is it because at the time you are angry about something?</td>
<td>.46</td>
<td>.13</td>
</tr>
<tr>
<td>You happen to tell a lie. Is it because at that moment you are too embarrassed to tell the truth?</td>
<td>.46</td>
<td>.11</td>
</tr>
<tr>
<td>You happen to have a bad night out. Is it because at the time you are unable to relax?</td>
<td>.45</td>
<td>.11</td>
</tr>
<tr>
<td>You happen to get behind with your paperwork. Is it because just lately you can’t be bothered?</td>
<td>.40</td>
<td>.08</td>
</tr>
<tr>
<td>You happen to feel nervous. Is it because at the time you are anxious about a forthcoming event?</td>
<td>.33</td>
<td>.09</td>
</tr>
<tr>
<td>You happen to miss a social engagement. Is it because at this time you are too tired to go out?</td>
<td>.31</td>
<td>.06</td>
</tr>
<tr>
<td>You happen to worry about the future. Is it because just then you remembered some outstanding expenses?</td>
<td>.30</td>
<td>.06</td>
</tr>
</tbody>
</table>

*Note.* Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

The reliabilities and factor loadings for items in the Positive Behaviour and Negative Behaviour scales are modest and suggest that further development is required to improve reliability. In summary, four of the scales, Positive Global, Negative Global, Positive Disposition, and Negative Disposition yielded strong factors. The remaining two scales, Positive Behaviour and Negative Behaviour, yielded weaker factors.

### 5.3.3 Measurement and Structural Equation Models

Prior to the validation of the QES constructs by assessing their relationships with mood and optimism, measurement models for the QES and for mood were assessed. Testing the associations of the measures allowed for the measurement models to be set before proceeding to structural models. This process allows for the stepwise building of a model and aids interpretability (Hair et al., 1995).

#### 5.3.3.1 Measurement models for the QES, optimism, and mood.

To reduce the number of measured variables and thus paths requiring estimation in subsequent models, each QES factor obtained through confirmatory factor analysis was converted into a congeneric latent variable. A congeneric latent
variable is a composite of the weighted items contained in a measure. Congeneric latent variables allow for the unequal contributions of individual items to their latent construct (Holmes-Smith & Rowe, 1994). Further, the use of congeneric latent variables provides a means of data reduction that supplies valid, and reliable composite variables, allowing for the reliabilities and error variances to be fixed in structural equation models (Holmes-Smith & Rowe). Factor score weights were applied to each constituent item and summed to create each congeneric latent variable. Positive Bias and the mood measures Positive Affect, Negative Affect, DASS-D, and DASS-S were also calculated as the composite of their weighted items. The factor score weights for Positive Bias and for the mood measures were obtained from measurement model analyses of their respective constituent items.

In assessing any construct measured by more than one variable, the path loading of one measure was set at 1.00 so as to assign a metric to the construct because each latent construct was measured by more than one variable. Later, when one latent construct was defined by one congeneric variable, in accordance with Holmes-Smith and Rowe (1994), the path loading and error variance were calculated using the scale reliability, standard deviation, and variance. The obtained path loading and error term values were then applied to each variable to enable model identification. Consequently, in some of the models the intercorrelations between constructs were the only paths estimated. Measurement model assessment was carried out in an exploratory fashion based on past research and theory because the new scale content had not previously been tested in a measurement model.

An evaluation of the internal structure of the resulting 40-item QES was conducted using measurement model analysis of the six latent constructs. First, the hypothesised associations between the optimistic and pessimistic factors were tested. Second, the model for the explanatory factors in relation to Positive Mood was tested. Then, Negative Mood was introduced into the model. Finally, DO and SS were introduced as joint measures of Positive Bias intended to mediate the effects of all QES factors on Positive Mood.

5.3.3.2 Data preparation and assumptions.

Eight participants with missing mood items were removed from the data set at this point. The data for the remaining 324 participants were used in subsequent analyses. All variables to be used in the measurement and structural equation modeling process were screened for normality and univariate outliers prior to
analyses. Fifteen univariate outlier scores on eight of the variables (DASS-D, DASS-S, Positive Disposition, Negative Disposition, Positive Behaviour, Negative Behaviour, Negative Affect, DO) were recoded back to acceptable limits. There were three multivariate outliers above the $p < .001$ cut-off criterion recommended by Tabachnick and Fidell (1996). The first was a 31-year old male with very high levels of Negative Affect, DASS-D, and Optimistic Bias. The second was a 42-year old female with very high Negative Affect, DASS-S and moderate Optimistic Bias. The third was a 42-year old female with moderately high levels of Negative Affect, Positive Affect and DASS-D, with low levels of Optimistic Bias. Data for these three respondents was removed from further analyses, leaving 321 participants in subsequent analyses.

Gender differences in the QES scales were tested with a multivariate analysis of variance. There was no difference between males and females on the combined QES scales $F(6, 321) = 0.48, p = .87$. Therefore data for males and females were combined.

The two distribution assumptions required by AMOS4 (Arbuckle & Wothke, 1999) are the independence of observations and multivariate normality. The independence of observations assumption was met, but in testing for univariate normality of the distributions, DASS-S was identified as moderately skewed and DASS-D and Negative Affect were identified as having strong skew. Because multivariate normality could not be assumed, an asymptotic distribution free (ADF) estimation method of SEM was employed for models using these variables. This estimation method allows for the use of non-normal data. The ADF estimation method requires large sample sizes, but Holmes-Smith and Rowe (1994) advise that ADF can be effectively used on samples as low as 200 with 12 measured variables or less. Sample size of 321 for the present study was adequate and above the desirable 10:1 ratio between the number of participants and the number of parameters estimated (Kline, 1998).

### 5.3.3.3 Model estimation.

All measurement model analyses for the QES were based on a covariance matrix and used maximum likelihood estimates. Measurement model analyses for the mood measures and structural model estimations were based on a covariance matrix and used ADF estimation. The correlations underpinning the structural equation models are presented in Table 17.
Table 17

Correlations between Measured Variables used in the Structural Models

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. QES Positive Global</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. QES Negative Global</td>
<td>.44**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. QES Positive Disposition</td>
<td>.22**</td>
<td>-.18**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. QES Negative Disposition</td>
<td>-.11*</td>
<td>.19**</td>
<td>-.34**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. QES Positive Behaviour</td>
<td>.29**</td>
<td>.06</td>
<td>.28**</td>
<td>-.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. QES Negative Behaviour</td>
<td>-.04</td>
<td>.22**</td>
<td>-.28**</td>
<td>.39**</td>
<td>.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. DASS Depression</td>
<td>-.03</td>
<td>.35**</td>
<td>-.49**</td>
<td>.34**</td>
<td>-.13*</td>
<td>.34**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. DASS Stress</td>
<td>.05</td>
<td>.44**</td>
<td>-.40**</td>
<td>.42**</td>
<td>-.10*</td>
<td>.34**</td>
<td>.71**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. DVRS Positive Bias</td>
<td>.25**</td>
<td>-.10</td>
<td>.64**</td>
<td>-.36**</td>
<td>.22**</td>
<td>-.27**</td>
<td>-.49**</td>
<td>-.37**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. PANAS Positive Affect</td>
<td>.20**</td>
<td>-.13*</td>
<td>.43**</td>
<td>-.24**</td>
<td>.18**</td>
<td>-.29**</td>
<td>-.59**</td>
<td>-.39**</td>
<td>.40**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. PANAS Negative Affect</td>
<td>-.10</td>
<td>.22**</td>
<td>-.31**</td>
<td>.35**</td>
<td>-.09*</td>
<td>.35**</td>
<td>.61**</td>
<td>.63**</td>
<td>-.36**</td>
<td>-.37**</td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 321, QES = Questionnaire of Explanatory Style, DASS = Depression, Anxiety and Stress Scales, DVRS = Depressive Vulnerability and Resilience Scales, PANAS = Positive and Negative Affect Schedule.
*p = < .05. **p = < .01.
All models presented in the results show standardised parameter estimates. The adequacy of the following measurement and structural models was assessed using the four fit indices ($\chi^2$, $\chi^2/df$, RMSEA, IFI) described in Study 1.

### 5.3.3.4 Measurement models of the QES.

Hypothesised relationships between the QES latent constructs were examined in a measurement model. For reasons of simplicity, intercorrelations between the measures were examined rather than including the directional pathways established by Study 1. It was considered that the optimistic factors would interrelate and that the pessimistic factors would interrelate and that a moderate association between Positive Global and Negative Global would also be obtained. Figure 15 shows the resulting measurement model.

![Figure 15. Hypothesised measurement model for the QES.](image)

**Note.** PDIS = Positive Disposition, PBEH = Positive Behaviour, PGLO = Positive Global, NGLO = Negative Global, NDIS = Negative Disposition, NBEH = Negative Behaviour, *p < .05, **p < .001.
The measurement model shown in Figure 15 returned the following goodness-of-fit statistics, $\chi^2(7, N = 321) = 52.59, p = .00$, $\chi^2/df = 7.51$, RMSEA = .43 (.10 - .18), IFI = .74, meeting none of the four fit criteria and indicating poor fit to the data. The nonsignificant paths were removed consecutively from the smallest path to the largest to ensure that the removal of smaller paths did not elevate the larger paths to significance. First, the association between Negative Behaviour and Positive Global was removed. Next, the association between Positive Disposition and Negative Behaviour was removed. Subsequent to the removal of these two paths, the association between Negative Global and Negative Disposition increased to reach significance but the association between Positive Behaviour and Negative Behaviour diminished below significance and was removed. Limited alterations to the models were deemed acceptable based on theoretical considerations (Bollen, 1989). A look at the modification indices greater than four suggested that additional covariances would improve model fit. The recommended covariances were for Negative Behaviour with the pessimistic factors Negative Global and Negative Disposition. An examination of the item content of Negative Behaviour revealed a pessimistic factor. Thus links between Negative Behaviour and the two pessimistic constructs were considered justified The addition of these two paths produced an improved but poor model fit.

Another look at the modification indices greater than four suggested that additional covariances would further improve model fit. The recommended covariances were for Positive Disposition with the two original pessimistic factors Negative Global and Negative Disposition and with the newly identified pessimistic factor Negative Behaviour (this path was removed earlier because it was nonsignificant). An examination of the item content of Positive Disposition revealed a general optimistic self-characterisation that likely behaved in a theoretically similar manner to optimism by mediating the effects of the other attributional factors on mood. Therefore links between Positive Disposition and all other attributional constructs were considered justified. Up to this point, the positive event and negative event attributional factors had remained relatively separate clusters except for the globality measures. This independence dissolved with identification of Positive Disposition as a more general factor. The model with the removed and additional associations is displayed in Figure 16.
**Figure 16.** Final measurement model for the QES.

*Note.* PDIS = Positive Disposition, PBEH = Positive Behaviour, PGLO = Positive Global, NGLO = Negative Global, NDIS = Negative Disposition, NBEH = Negative Behaviour, ***p < .001.

The measurement model shown in Figure 16 returned the following goodness-of-fit statistics, $\chi^2 (5, N = 321) = 10.67, p = .07, \chi^2 / df = 2.05, \text{RMSEA} = .06 (.00 - .11), \text{IFI} = .97$, meeting three of the four fit criteria and indicating good fit to the data. Positive Disposition displayed relationships with all other attributional factors. Also, Negative Behaviour and Negative Disposition displayed a strong positive association. Compared to Study 1, there were more cross-over associations between the positive event attributions and negative event attributions.

**5.3.3.5 Mood measurement.**

The mood measures were examined to confirm the models obtained in Study 1. Figure 17 depicts the individual mood measures contributing to separate, but related latent constructs.
Figure 17. Measurement model for mood.

Note. DASS-D = Depression, Anxiety and Stress Scales, Depression Scale, DASS-S = Depression, Anxiety and Stress Scales, Stress Scale, ***p < .001.

The mood measurement model was a saturated model returning no goodness-of-fit indices. Consistent with Study 1, Figure 17 indicates that DASS-D has a stronger relationship with DASS-S and Negative Affect than it has with Positive Affect. A confirmation of the final measurement model for mood to be used to validate the QES is shown Figure 18.

Figure 18. Final mood measurement model.

Note. DASS-S = Depression, Anxiety and Stress Scales, Stress Scale, ***p < .001.
The mood measurement model depicted in Figure 18 returned the following goodness-of-fit statistics, $\chi^2 (2, N = 321) = 3.11, p = .21, \chi^2/df = 1.55, \text{RMSEA} = .04 (.00 - .13), \text{IFI} = .99$, meeting all of the four fit criteria and indicating excellent fit to the data. The association between Positive Mood and Negative Mood was similar in strength to that obtained in Study 1.

5.3.4 Validation of the QES

The final six QES subscales shown in Figure 16, and the final mood model shown in Figure 18, were used in the structural equation models that framed the next phase of analysis, validation. The QES measurement model indicated that Negative Behaviour was not an optimistic factor as expected but a pessimistic factor. Therefore Negative Behaviour was repositioned in the subsequent validation models to reflect its status as a pessimistic factor. The first stage of this process was to validate the QES latent constructs as predictors of depressed mood using Positive Affect as an inverse index of depression-specific mood, Positive Mood. All hypothesised direct and indirect effects on Positive Mood were examined. Next, Negative Mood was added to the validation model. Finally, Positive Bias was added to the validation model, mediating the relationships of QES constructs with Positive Affect. Associations between QES constructs found in the final measurement model were retained throughout the validation process to ensure the integrity of the explanatory factors measurement model.

5.3.4.1 Validation of the QES with Positive Mood.

Following Study 1, the position of Negative Disposition in the current model conceptualises it as mediating the relationships of the other pessimistic factors, Negative Global and Negative Behaviour, with mood. Thus the covariance between Positive Disposition and Negative Disposition was now represented as a direct path from Positive Disposition to Negative Disposition. A model of the reverse path yielded a nonsignificant path loading. The resulting validation of the QES with Positive Mood is shown in Figure 19.
Figure 19. Initial validation model for QES constructs with Positive Mood.

Note. PDIS = Positive Disposition, PBEH = Positive Behaviour, PGLO = Positive Global, NGLO = Negative Global, NDIS = Negative Disposition, NBEH = Negative Behaviour, PA = Positive Affect, **p < .01, ***p < .001.

The validation model shown in Figure 19 returned the following goodness-of-fit statistics, $\chi^2 (6, N = 321) = 4.77, p = .57$, $\chi^2 /df = 0.80$, RMSEA = .00 (.00 - .06), IFI = 1.00, meeting all of the four fit criteria and indicating excellent fit to the data. All nonsignificant paths to Positive Affect were removed from the model consecutively from the smallest path to the largest to ensure that the removal of smaller paths did not elevate the larger paths to significance. This process resulted in only one significant direct effect on Positive Mood, namely from Positive Disposition. The resulting validation model with Positive Mood is depicted in Figure 20.
The second validation model shown in Figure 20 returned the following goodness-of-fit statistics, $\chi^2 (10, N = 321) = 6.25, p = .79$, $\chi^2 /df = 0.62$, RMSEA = .00 (.00 - .04), IFI = 1.02, meeting all of the four fit criteria and indicating excellent fit to the data. It is noted that in some cases, values greater than 1.00 can be obtained for incremental or comparative fit indices and may indicate an over-specified model. In this instance the model was considered over-specified because of the included path from Negative Global to Negative Disposition that was empirically trivial. However, this path was retained to ensure the integrity of the QES measurement model. The combined constructs explained 33% of the variance in Positive Mood. The model shows that none of the explanatory factors provided direct effects on Positive Mood beyond the effect of Positive Disposition. Thus, Positive Disposition was implicated as an optimistic factor that mediated relationships with depressed mood in the same manner that Negative Disposition mediated relationships with
Negative Mood in Study 1. A model testing Positive Disposition as mediating the effects of other explanatory factors on Positive Mood is shown in Figure 21.

![Figure 21](image-url)

Figure 21. Third validation model for the QES with Positive Mood.

Note. PDIS = Positive Disposition, PBEH = Positive Behaviour, PGLO = Positive Global, NGLO = Negative Global, NDIS = Negative Disposition, NBEH = Negative Behaviour, PA = Positive Affect, \(*p < .05, **p < .01, ***p < .001.\)

The validation model shown in Figure 21 returned the following goodness-of-fit statistics, \(\chi^2 (10, N = 321) = 6.25, p = .79, \chi^2 / df = 0.63, \) RMSEA = .00 (.00 - .04), IFI = 1.02, meeting all of the four fit criteria and indicating excellent fit to the data. It is noted that in some cases, values greater than 1.00 can be obtained for incremental or comparative fit indices and may indicate an over-specified model. In this instance the model was considered over-specified because of the included path from Negative Global to Negative Disposition that was empirically trivial. However, this path was retained to ensure the integrity of the QES measurement model. The combined constructs explained 33% of the variance in Positive Mood.
5.3.4.2 Validation of the QES with Positive Mood and Negative Mood.

The next step of the validation process was the addition of Negative Mood to the validation model to establish discriminant validity. Negative Behaviour has been identified as a pessimistic factor therefore direct and indirect paths for Negative Behaviour will follow those for Negative Global. The predicted direct effects of pessimistic factors on Negative Mood and indirect effects on Negative Mood mediated by Negative Disposition, hypothesised in Figure 14 were tested. The resulting model is shown in Figure 22.

Figure 22. Validation model for the QES with Positive Mood and Negative Mood.

Note. PDIS = Positive Disposition, PBEH = Positive Behaviour, PGLO = Positive Global, NGLO = Negative Global, NDIS = Negative Disposition, NBEH = Negative Behaviour, PA = Positive Affect, **p < .01, ***p < .001.

The validation model shown in Figure 22 returned the following goodness-of-fit statistics, $\chi^2(19, N = 321) = 36.86, p = .01, \chi^2/df = 1.94, \text{RMSEA} = .05 (.03 -.08), \text{IFI} = .94$, meeting three of the four fit criteria and indicating acceptable fit to the data. The combined constructs explained 31% of the variance in Positive Mood,
and 51% of the variance in Negative Mood. The optimistic factors did not
directly predict Negative Mood. There were no nonsignificant paths for removal and
the modification indices provided no theoretically acceptable paths for improvement
of the model.

5.3.4.3 Validation of the QES with mood and Positive Bias.

Prior to the inclusion of the resilience measure, Positive Bias, as a mediator in
associations between the QES constructs and Positive Mood, an examination of the
Positive Bias construct in relation to Positive Disposition was undertaken. Positive
Disposition had already formed a mediating construct for other explanatory factors in
relation to depressed mood in a similar manner to optimism in Study 1. Study 1
showed that Optimistic Bias mediated relationships of explanatory style constructs
with Positive Affect. Similarly, Hawkins (1998) and Hull and Mendolia (1992) also
found a role for optimism as a mediator in relationships of explanatory style with
depressed mood. Examination of the items content of Positive Disposition in Table 13
revealed that Positive Disposition represented a form of general optimistic self-
characterisation. Positive Disposition reflects a belief that good things happen
because the person is positive. The optimism construct, Positive Bias similarly
reflects a belief the person looks on the bright side of life. The content of the two
constructs has much in common.

5.3.4.4 Measurement of Positive Bias.

The possibility that Positive Disposition may combine with Positive Bias as a
joint measure of optimism was examined. Figure 23 shows a confirmatory factor
analysis of the Positive Disposition and Positive Bias constructs.
Figure 23. Confirmatory factor analysis of Positive Disposition and Positive Bias.

Note. PD = Positive Disposition, DO = Defensive Optimism Scale, SS = Self Satisfaction Scale, ***p < .001.

The confirmatory model Figure 23 returned the following goodness-of-fit statistics, $\chi^2 (109, N = 321) = 142.19, p = .02, \chi^2/df = 1.30$, RMSEA = .03 (.01 - .04), IFI = .97, meeting three of the four fit criteria and indicating acceptable fit for
the data. The strong association between the two constructs of .89 revealed that these measures should be included as joint measures of a single optimism construct. Therefore Positive Bias may be regarded as equivalent to Positive Disposition in mediating some attributional factors in their effects on Positive Mood. Following findings of Marshall et al. (1992) and Study 1 that optimism and pessimism have different relationships to mood, optimism was expected to be related to positive affect and pessimism was expected to be related to negative affect. A model showing the new construct Optimism composed of Positive Disposition and Positive Bias as mediating the effects of the behavioural and globality factors on Positive Mood was tested. The resulting model is shown in Figure 24.

![Figure 24. QES and Optimism validation model with mood.](http://example.com/figure24.png)

*Note.* PDIS = Positive Disposition, PBEH = Positive Behaviour, PGLO = Positive Global, NGLO = Negative Global, NDIS = Negative Disposition, NBEH = Negative Behaviour, PB = Positive Bias, PA = Positive Affect, NA = Negative Affect, DASS-S = Depression, Anxiety, and Stress Scales, Stress scale, *p < .05, **p < .01, ***p < .001.
The mood validation model shown in Figure 24 returned the following goodness-of-fit statistics, $\chi^2 (26, N = 321) = 44.36, p = .01, \chi^2/df = 1.71$, RMSEA = .05 (.02 - .07), IFI = .94, meeting three of the four fit criteria and indicating acceptable fit to the data. Figure 24 explained 29% of the variance in Positive Mood and 57% of the variance in Negative Mood. The model showed that the addition of Positive Bias provided no improvement in the prediction of Positive Mood but a slight indirect improvement in the prediction of Negative Mood. As Optimism is a newly formed construct, it was deemed acceptable to remove nonsignificant paths to Optimism from the model. Therefore the path from Negative Global to Optimism was removed from the model and the resulting model is shown in Figure 25.

Figure 25. Final validation model with mood.

Note. PDIS = Positive Disposition, PBEH = Positive Behaviour, PGLO = Positive Global, NGLO = Negative Global, NDIS = Negative Disposition, NBEH = Negative Behaviour, PB = Positive Bias, PA = Positive Affect, NA = Negative Affect, DASS-S = Depression, Anxiety, and Stress Scales, Stress scale, **$p < .01$, ***$p < .001$. 
The mood validation model Figure 25 returned the following goodness-of-fit statistics, $\chi^2 (27, N = 321) = 44.67, p = .02, \chi^2 / df = 1.65$, RMSEA = .05 (.02 - .07), IFI = .94, meeting three of the four fit criteria and indicating acceptable fit to the data. Figure 25 explained 29% of the variance in Positive Mood and 57% of the variance in Negative Mood. The modification indices indicated that no further improvement to the model was necessary. Positive Disposition and Positive Bias provided equal contributions to Optimism. As expected, the optimistic factor Positive Disposition affected Positive Mood, and the pessimistic factors Negative Disposition, Negative Behaviour, and Negative Global affected Negative Mood. Positive Behaviour, Positive Global, and Negative Behaviour all affected Positive Mood indirectly via Optimism. Optimism and Negative Behaviour each provided a moderate indirect effect on Negative Mood via Negative Disposition.
Discussion

The present study aimed to further explore the roles of attributions and optimism in depressed mood through the continued development of a new instrument that yields optimistic explanatory factors and pessimistic explanatory factors. A further aim was to develop behavioural attributional measures for positive and negative events and to compare these with dispositional attributional measures in relation to depressed mood. The behavioural scales did not successfully measure internal and unstable causes, rather measuring internal and stable causes. In total, six scales were developed three each for positive events and negative events. These were expected to comprise four optimistic factors and two pessimistic factors. This expectation was largely confirmed, however the proposed optimistic factor, Negative Behaviour, operated as a pessimistic factor. The QES therefore comprised three positive event scales that were construed and confirmed as optimistic factors, and three negative event scales, two that were construed as and confirmed as pessimistic factors, and one that was construed as an optimistic factor but confirmed as a pessimistic factor.

The obtained QES scales were validated in relation to optimism and mood. All explanatory factors were predicted to directly influence Positive Bias and this was the case for the behavioural and globality scales. However, Positive Disposition formed with Positive Bias to form the construct of Optimism, and rather than influencing Optimism as predicted, Negative Disposition was influenced by Optimism. Although not specifically hypothesised, evidence of bipolar relatedness for the dispositional measures at the measurement level was found. All scales provided valid measures of either depressive resilience or vulnerability to general psychological distress.

The current study extended the development of the QES and added to knowledge regarding the nature of attributional style. The interpretation of the results will proceed in two stages. The first stage will examine the content and the two levels of structure of the QES that were obtained in the present study. The first level of structure relates to the constituent items of the individual explanatory factors that were obtained. The second level of structure looks at the overall relationships between the six explanatory factors. The second stage of discussion will examine QES explanatory factors in relation to optimistic attributions, pessimistic attributions, optimism, and mood. Wider implications of the findings will then be discussed, as
will the limitations of the current study. Future research directions indicated by the findings will also be considered and used to inform future studies of this research.

5.4.1 The QES Content, Structure, and Reliability

The QES comprised Positive Disposition, Negative Disposition, Positive Behaviour, Negative Behaviour, Positive Global, and Negative Global in a 45-item questionnaire. Therefore the aim of providing six scales was achieved in the present study. However, the aim of producing behavioural scales with content of internal and unstable attributions was not achieved. Furthermore, the overall structure of the QES revealed that Negative Behaviour did not provide an optimistic factor for negative events as postulated. Rather, Negative Behaviour displayed an inverse effect on Positive Disposition and a strong positive effect on Negative Disposition evidencing it as a pessimistic factor.

On face value, the behavioural scales contained items that reflected behaviours. However, for the causes to be unstable, they must be unlikely to recur for the same event in the future. Negative Behaviour items consisted of causes such as being angry about something specific, embarrassed by the truth, and unable to relax at the time. These items reflected a perceived inability to control negative behaviours. Positive Behaviour items consisted of causes such as making an effort, smiling, and being focused at the time. Thus, Positive Behaviour reflected attempts and efforts to ensure that good events would occur. However, because the behavioural scales were moderately associated with the dispositional scales, it appears unlikely that genuine instability of the causes was captured in these scales.

An examination of the QES format used to measure the behavioural items may help explain why the behavioural scales measured stable causes. In asking people to rate whether or not a given cause was likely for a given event, it is understandable that if people rate a cause for the event as likely for them now, then that cause must also be likely for the event in the future. Therefore, responses represented peoples’ ongoing perceptions of their behaviours. Moreover, the inclusion of the wording “at the time” and “just then” that was intended to evoke one off events and thereby infer instability did not do so. The wording failed to override the dispositional nature of causes such as “being angry” or “making an effort” when they were rated as likely reasons for bad and good events occurring respectively. Therefore the QES format may have introduced an unanticipated problem and failed to measure unstable causes. As a result, the behavioural causes were treated as stable.
Evidence that for Negative Behaviour, respondents treated the unstable causes as stable was consistent with Weiner’s (1985) observation that in some cases people may regard causes objectively rated as behaviours by researchers as ongoing dispositions. Thus people may rate a seemingly unstable cause as likely to occur for a certain type of event because they regard the behaviour as a personal characteristic. For example, rating “being angry at the time” as a likely cause for rude treatment from others implies that some people may regard anger as a personal disposition. The consistent linking of internal and stable causes in the QES dispositional and behavioural factors lends support to Wimer and Kelley (1982) who found a constant linking of internal and stable dimensions. They found that if people perceived that a cause affected them, they rated it as stable even if the cause was objectively unstable. Also supported was the research of Eschen and Glenwick (1990) and Zautra et al. (1985) who found that negative event internal attributions were related to depression only when they were stable as well. The proposition that internal unstable causes for negative events were optimistic explanations based on the findings of past research (C. A. Anderson et al., 1994; J. D. Brown & Siegel, 1988; Janoff-Bullman, 1979; Peterson et al., 1981; Tennen et al., 1986), could not be adequately tested in the present study, because no internal and unstable measure for negative events was obtained.

Positive Disposition items consisted of causes such as being a positive person, fun to be with, and easy-going. Positive Disposition represented a perceived ability to bring about positive outcomes due to self-enhancing characteristics and therefore to construe one’s self as a positive person. Negative Disposition items consisted of causes such as being easily annoyed, bad tempered, and unpopular. Negative Disposition represented a pattern of self-blame for negative events due to negative self-concepts.

The final structure of the QES as shown in the measurement model Figure 16, unexpectedly provided a central role for the optimistic scale, Positive Disposition in relation to all other scales. Positive Disposition had associations with all QES scales. The model also provided strong evidence of bipolarity between Positive Disposition and the two pessimistic scales, Negative Behaviour and Negative Disposition that was supportive of Peterson et al.’s (1995) suggestion of an inverse relatedness between optimistic and pessimistic explanatory styles. This finding was unexpected because evidence to support bipolarity was not found in Study 1 or in previous
research using the ASQ (e.g., Hawkins & Miller, 2003; Hull & Mendolia, 1991). These researchers found independence between positive event attributions and negative event attributions. The current findings may be due to the item content of the optimistic factor and the pessimistic factors that were from positive aspects of self-enhancing concepts and negative aspects of self-concepts respectively.

The findings of past research that positive event attributions and negative event attributions were separate constructs can now be explained in terms of the causes that were rated in that research. Differences between the present Positive Disposition and Study 1 Positive Internal and Stable are evident in the causal content of the items. Positive Internal and Stable yielded an ability-related scale with causes such as efficient, clever, and successful. These items were included within the current items but were not part of the confirmed Positive Disposition construct. In the present study, Positive Disposition provided a more general self-enhancing scale and this clearly underpinned its associations with other QES scales and near bipolarity with Negative Disposition that also had general self-concept content. That evidence supporting bipolarity between positive event attributions and negative event attributions using the ASQ has not been found in previous research is likely because of the ASQ format. The ASQ allows respondents to provide their own causes for the stipulated events. Similar positive or negative self-concept causes will not necessarily be provided as causes for events. The more diverse causes provided for the ASQ therefore lessen the chances of obtaining bipolar attributions for positive and negative events.

Positive Global consisted of mainly internal causes such as doing something enjoyable, being clever, and concentrating well, that had the capacity to affect a range of life areas. Negative Global consisted of mainly internal causes such as losing track of time and having a bad dream that had the capacity to affect a range of life areas. As expected, the globality factors displayed moderate positive associations with each other and with their behavioural counterparts of the same valence. Examining the reason for the positive association between the globality factors, a scattergram showed that the data points tended to cluster toward the middle and lower half of the distribution. Therefore, people exhibited a tendency to say that both positive and negative causes have the capacity to affect a few life areas, perhaps indicating that people were non-committal about the range of effects of the causes.
The moderate positive association between the globality factors displayed in the present study replicated associations found in the previous study and in prior research using the ASQ (Hawkins & Miller, 2003; Hull & Mendolia, 1991). Once again, an inverse relatedness between the two globality factors that would be expected from theory (Abramson et al., 1978; Peterson et al., 1995) was not obtained. This supports the contention from Study 1 that QES globality may be tapping the emotional consequences of the cause rather than, or as well as, the capacity of the causes to affect a range of life areas.

The internal consistency reliabilities of the QES scales ranged from poor to very good (.55 -.90). Reliabilities of .70 are considered adequate for research purposes (Nunnally & Bernstein, 1994). Therefore the scales Positive Global, Negative Global, Negative Disposition, and Positive Disposition provided good reliabilities, with Positive Disposition just below .70. The scales of Positive Behaviour and Negative Behaviour failed to provide adequate reliabilities with both providing reliability alphas less than .60. Poor reliabilities provided by both the behavioural scales may indicate a lack of cohesiveness amongst the constituent items that may have been due to the QES format. Additionally, these were new scales and did not contain the intended content. Reliabilities of the globality QES scales in the present study were high and in line with Study 1. Also in line with Study 1, the global scales provided higher reliabilities than the dispositional scales.

5.4.2 The Validity of the QES in Relation to Mood and Positive Bias

5.4.2.1 Measurement of Positive Mood and Negative Mood.

The first step in the validation process was to establish an appropriate measurement model for mood. As in Study 1, the present study found an association between the two mood measures (shown in Figure 18) confirming that Negative Mood taps some depression related content.

The structure of the DASS in conjunction with the PANAS that was found in Study 1 was replicated in the present study. Again, DASS-Depression provided stronger associations with Negative Affect and DASS- Stress than with Positive Affect. As in Study 1, DASS-Depression was therefore considered to lack discrimination as a measure of depressed mood that was distinct from general psychological distress. Positive Mood was measured by Positive Affect alone and subsequently the inverse of Positive Mood was equated with depressed mood. Once
again there was a moderate association between Positive Mood and Negative Mood, indicating some overlapping content in the two measures.

The interpretation of results requires examination of the direct effects, indirect effects, and associations in the structural model of mood. The mood model Figure 25, was a composite of the effects on both Positive Mood (inverse effects on depressed mood; L. A. Clark & Watson, 1991) and Negative Mood (general psychological distress), and Positive Bias. The final model, Figure 25, reinforced the linkages shown, and also supported the absence of links where they were not predicted.

5.4.2.2 QES relationships with Positive Mood.

The convergent validity of the QES in relation to Positive Mood was evaluated with reference to the predictions made in the hypothesised model, Figure 14. It was expected that all QES factors would predict Positive Mood directly and then when Positive Bias was added to the model, they would predict Positive Mood indirectly via Positive Bias. However, through the process of building the Positive Mood model in Figures 19 to 21, Positive Disposition was identified as the only direct significant predictor of Positive Mood. The remaining five QES scales, added no direct influence on depressed mood beyond that exerted by Positive Disposition.

Positive Disposition was paramount in relation to depressed mood, identifying people resilient to depressed mood as those who were likely to attribute good events to dispositions such as being a positive person, having a great life, and being fun to be with. Positive Disposition was evidenced as a form of optimism and as a resilience to depressed mood in line with the conceptualisation of optimistic explanatory style containing internal and stable attributions for positive events (Peterson et al., 1995). The importance of Positive Disposition was not anticipated, but it was later clarified to be a similar measure to Positive Bias. Positive Bias was proposed to mediate relationships of attributions with depressed mood in the hypothesised model. Therefore relationships for Positive Disposition with other attributional scales and depressed mood were similar to those predicted for Positive Bias and in keeping with predictions.

The final structure for the QES concerning the directionality of effects rather than covariances was embedded in the Positive Mood validation model, Figure 21, and successfully conceptualised Positive Disposition and Negative Disposition as mediating optimistic and pessimistic constructs in relation to the behavioural and
globality constructs. It further showed that all QES factors except Negative Disposition generated Positive Disposition. Therefore globality and behavioural factors influenced the formation of optimistic dispositional attributions. Positive Disposition along with Negative Behaviour directly, and Negative Global indirectly, generated Negative Disposition. Interestingly, Positive Disposition directly affected Negative Disposition rather than in the opposite. This effect provided evidence of causality in that a greater extent of Positive Disposition optimistic attributions caused a reduction in Negative Disposition pessimistic attributions. This finding has implications for the reduction of pessimistic attributions as being best attained through increasing optimistic attributions.

In the present study, Positive Global and Negative Global offered little additional effects on depressed mood beyond the effects that they exerted onto the dispositional and behavioural constructs. The finding that Positive Global offered little in relation to depressed mood supports Hawkins and Miller (2003) who also found that positive global, as measured by the ASQ, added little to the measurement of attributional style. This finding also supports Positive Global as a similar construct to ASQ positive global. Displaying no direct effects on depressed mood, the globality scales were also only weakly mediated by Positive Disposition in their effects on depressed mood. Results may be in line with Eschen and Glenwick (1990) who found that global attributions only correlated with depressed mood when they were also stable. Furthermore, stability has been identified as the most central feature for depressive attributions by Weiner et al. (1971). As Negative Global and Positive Global derive from causes that appear largely unstable for example, doing something enjoyable or losing track of time, this feature may have reduced their relationships with depressed mood.

The behavioural scales were mediated by Positive Disposition in their effects on depressed mood, evidencing Positive Behaviour as resilience to depressed mood and Negative Behaviour as vulnerability to depressed mood. People resilient to depressed mood were likely to attribute good events to behaviours such as making an effort, smiling, and feeling in control at the time. People who were likely to attribute bad events to behaviours such as being momentarily angry, embarrassed by the truth, and unable to relax were vulnerable to depressed mood. These behaviours actually operated as weaker sets of the dispositions.
Contrary to predictions, Negative Disposition alone had no direct or indirect effects on depressed mood. However, also unpredicted, Negative Disposition was generated by Positive Disposition. Therefore being resilient to depressed mood by attributing good events to dispositions such as being a positive person, having a great life, and being a fun person was likely to reduce the tendency to attribute negative events to causes such as being easily annoyed, bad tempered, and unpopular.

5.4.1.3 QES relationships with Negative Mood.

The convergent validity of the QES was next evaluated in relation to Negative Mood, with only pessimistic factors expected to directly influence Negative Mood. As hypothesised, the pessimistic factors, Negative Disposition, Negative Behaviour, and Negative Global were strong predictors of Negative Mood. Therefore the pessimistic factors provided vulnerability to general psychological distress rather than to depression-specific mood. The pessimistic factors each contributed equally to general psychological distress suggesting that Negative Disposition was not paramount in relation to Negative Mood as Positive Disposition was for depressed mood. People prone to general psychological distress were found likely to attribute bad events to dispositions such as being easily annoyed, having a bad temper, and being argumentative; and to attribute bad events to behaviours such as being momentarily angry, embarrassed by the truth, and unable to relax. Furthermore, people prone to general psychological distress were found likely to consider that bad events occurring because of losing track of time, having a bad dream, and being delayed by traffic would adversely affect many areas of their lives. Findings replicated Study 1 and also support the findings of Hawkins and Miller (2003) using the ASQ that negative event attributions were related to negative affect.

Although not predicted, Negative Behaviour also provided a vulnerability measure to general psychological distress that was mediated by Negative Disposition. This finding added weight to the confirmation of Negative Behaviour as a weaker measure of dispositional attributions.

It was predicted that Positive Disposition would have no influence on Negative Mood. Unexpectedly, Positive Disposition predicted Negative Mood indirectly via Negative Disposition. This result supported the inverse relatedness between optimistic and pessimistic factors (discussed earlier) and also positioned Positive Disposition as generating negative dispositional attributions. Contrary to
predictions, Negative Global was not partially mediated by Negative Disposition in relation to Negative Mood in the present study. This result provided further evidence that the dispositional and globality constructs were relatively separate.

Discriminant validity was assessed against the hypothesis that the optimistic factors would not affect Negative Mood either directly or indirectly. The optimistic factors displayed good discriminant validity by directly predicting Positive Mood and not Negative Mood. Optimistic factors therefore appeared to be specific to depression. Yet, against predictions, the optimistic factor Positive Disposition indirectly predicted Negative Mood via Negative Disposition. This link was likely due to the depression-related content measured by Negative Mood and the strong association between the two dispositional factors.

5.4.2.4 Optimism and its relationships with explanatory factors and mood.

It was anticipated that the Positive Bias measure of optimism would mediate each of the QES factors in their relationships with Positive Mood. However, Positive Disposition was identified as a measure of self-enhancing attributions that was conceptually linked to Positive Bias. Consequently, a new latent construct Optimism was formed that consisted of S. Smith’s (2001) Positive Bias items as one measure and the QES Positive Disposition items as the second. In keeping with S. Smith, the DO and SS scales were confirmed as forming the construct of Positive Bias.

All items from the Positive Bias and Positive Disposition scales loaded significantly to their respective individual constructs and the two separate constructs provided excellent joint measures of Optimism. Results were consistent with the conceptualisation of Positive Disposition as a self-enhancing concept discussed in the earlier section. Positive Disposition may be framed as a component of positive bias that enabled a person to disallow negative cognitions from reaching awareness by replacing them with positive interpretations. These self-enhancing biases reflected their preferred perception of themselves in line with Gur and Sackheim (1979) and Sackheim and Gur (1978).

Positive Disposition also contained elements described by Koenig et al. (1992) and Margo et al. (1993) as self-enhancements similar to S. Smith’s construct, SS. The highest loading items for SS “I can do anything if I really set my mind to it” and “I cannot think of anything that I would want to change in my life” were similar to those for Positive Disposition, of “being a positive person” and “having a great life”. The present finding that Optimism generated Positive Mood was consistent
with Optimism as a form of self-deception. This conceptualisation of Optimism as engendering the self-illusion that the future held largely positive outcomes supports Gibbons and McCoy (1991). Moreover, Optimism was supported as a resilience factor for depressed mood in keeping with the findings of Roth and Ingram (1985) and S. Smith (2001).

The overall content of Optimism was underpinned by a sense of personal control that enables one to bring about positive events. Optimism substantially and inversely predicted Negative Disposition, a self-blaming concept that includes elements of lack of control over adverse events. This result provided evidence that Optimism also taps the illusion of control through which unrealistic control over negative events is perceived (Taylor, 1983; Taylor & Brown, 1988). This finding was also consistent with the earlier conceptualisation of Optimism as a construct that disallows negative cognitions from reaching awareness by replacing them with positive interpretations (Gur & Sackheim, 1979; Sackheim & Gur; 1978). Negative Disposition has been identified as a pessimistic explanatory factor and may also be a component of a more general pessimism construct in the same manner that Positive Disposition was a component of a more general optimism construct. A more general pessimism construct could consist of negative expectations about the future in addition to pessimistic attributions. Unfortunately the present model was unable to provide evidence on which to draw such conclusions.

The finding of equivalence between an explanatory factor and an optimism factor contrasts with previous research findings that, although attributions generate optimism, they are separate constructs (Hawkins & Miller, 2003; Hull & Mendolia, 1991). These studies were testing the reformulated learned helplessness model of depression (Abramson et al., 1978) and hopelessness theory of depression (Abramson et al., 1989) that construed attributions as antecedents to expectancies about the future (optimism). These expectancies about the future subsequently affected mood. The present finding suggests that not only do attributions generate optimism, but that optimism can also generate attributions. In Study 1 and previous research (Hawkins & Miller, 2003; Hull & Mendolia, 1991), the mediating construct for depressed mood did not contain positive event attributions but only optimism items. Consequently, Optimism in the present study may not fit the theoretical description of an intervening variable in relationships between attributions and depression as described by Abramson et al. (1978) and by Weiner (1972). Another
explanation for the differences obtained in the present study and is that other researchers; for example, Hawkins and Miller, Hull and Mendolia; used structural equation modeling to show that optimism mediated explanatory styles in relation to depressed mood. Unfortunately, these studies did not test competing models, with the effects going in the opposite directions from optimism to attributions, that could have provided a better explanation of their data.

The mediating effects of Optimism in relation to depressed mood were similar to the mediating effects of Positive Disposition on its own, mediating the effects of Positive Behaviour and Negative Behaviour on Positive Mood. Although conclusions regarding these findings must be tempered because the behavioural scales displayed poor reliabilities and were likely to be weak measures of stable attributions, the behavioural constructs did affect peoples’ general self-enhancing beliefs and outlook on life.

In the present study, Positive Global and Negative Global had only small direct effects on Optimism and indirectly affected Optimism via covariances with the behavioural factors. By contrast, in Study 1 the globality factors provided moderate direct effects on Optimistic Bias. It is likely that the associations of the globality factors with the behavioural factors weakened their effects on Optimism. This finding may be explained by the different content of the globality scales in the two studies: being largely internal in the present study; and, largely external in the previous study. The present Positive Global contains internal causes with good events due to one’s own actions or abilities whereas Study 1 Positive Global contained external causes with good events due to the generosity and happiness of others, and to enjoyable surroundings. Likewise, the present Negative Global contains more internal cause items with bad events due to one’s own actions or abilities than external causes whereas in Study 1 Negative Global contained external causes with bad events due to being delayed by traffic/transport and by others. The added internality within the globality scales may explain the moderate relationships with the behavioural scales and these relationships in turn explain why the globality scales operated via the behavioural scales in relation to Optimism.

5.4.3 Limitations of the Present Study

The interpretative limitations of the structural equation modeling technique and the lack of generalisability of results to clinical samples outlined in Study 1 also apply to the present study. Another limitation in the present study arose from an
unexpected inability of the QES format to measure unstable attributions. The QES format and item wording for the behavioural scales did not yield the internal and unstable attributions that were intended to form a proposed optimistic negative event factor. Therefore relationships between optimistic negative event attributions and depressed mood could not be examined.

A final limitation was that the 45-item QES scales obtained in the current study were initially measured using an 88-item instrument. The extra items may have affected the way that items were rated. The 45-item QES now needs to be measured alone to check its psychometric properties. Moreover, the validation process also used a structural equation modeling process and may have relied too heavily on chance. The results therefore require replication with a new sample.

**5.4.4 Future Research**

A direct comparison of the QES with the ASQ would provide further evidence to support the validity of the QES dispositional and globality scales and would help to clarify the dimensional content of all of the QES factors in relation to the ASQ subscales. For example, relationships between the ASQ negative event composite of internality and stability with QES Negative Disposition and Negative Behaviour scales would demonstrate further evidence of likeness between Negative Disposition and Negative Behaviour.

Negative Disposition was identified as a pessimistic explanatory factor, however the extent to which it is a component of a more general pessimism construct was not tested in the present study. Future research that uses a separate measure of pessimism as negative expectations about the future could provide evidence to support Negative Disposition as a component of a general pessimism construct.

Evidence in support of the construct validity of the QES provided in the present study requires replication with a new sample. Furthermore, examining the predictive validity of the factors for depressed mood would also provide additional psychometric support for the QES. The predictive validity of the measure needs to be examined using a longitudinal design. A study is therefore required that can provide evidence that the optimistic and pessimistic factors yielded by the QES can predict the subsequent onset of depressed mood. Also, using unrelated measures of mood, such as depression-specific and anxiety-specific measures, could provide stronger support for the validity of the QES.
5.4.5 Conclusion

The QES was further developed and extended in the present study resulting in a 45-item measure that contained six scales, Positive Disposition, Negative Disposition, Positive Behaviour, Negative Behaviour, Positive Global, and Negative Global. As expected, the three positive event scales measured optimistic attributions and two of the three negative event scales measured pessimistic attributions. However, the third negative event scale, Negative Behaviour, was intended as an optimistic measure of internal and unstable attributions but was found to be a pessimistic measure of internal and stable attributions. Therefore the aim of producing internal and unstable measures was not achieved and the probable cause was the QES format. Because of the failure to produce an optimistic negative event scale, optimistic and pessimistic attributions for negative events that differed on the stability dimension could not be compared.

At both the QES measurement model level and the validation model level, evidence was provided that Positive Disposition was inversely related to Negative Disposition and Negative Behaviour. Thus, strong evidence was provided in the present study to support bipolarity for the optimistic and pessimistic explanatory factors in keeping with the tenets of reformulated learned helplessness theory of depression (Abramson et al., 1978) and with Peterson et al.’s (1995) interpretation of the theory.

Positive Disposition was the only explanatory factor to yield a direct effect on depressed mood. Moreover, Positive Disposition combined with Positive Bias to form a single construct, Optimism that provided similar mediating effects on depressed mood to those predicted for Positive Bias alone. That is, all effects on depressed mood were via Optimism as expected. Thus, Positive Disposition was supported as a self-enhancing optimistic construct. Also as predicted, pessimistic factors displayed direct effects on Negative Mood. Additionally as predicted, Negative Disposition formed a mediating pessimistic construct in relation to Negative Mood for other pessimistic factors. Contrary to a predicted effect from pessimistic attributions onto Optimism, Positive Disposition and Optimism displayed direct effects onto Negative Disposition and via this link unexpectedly indirectly affected Negative Mood. The extent to which Negative Disposition equates with a more general pessimism construct was unclear and requires further investigation.
In conclusion, the QES format was unable to elicit unstable causes and consequently an optimistic attributional factor for negative events could not be examined. Optimistic dispositional attributions were evidenced as components of broad optimism, providing resilience to depressed mood. The pessimistic attributional factors were validated as vulnerabilities to general psychological distress rather than depressed mood. Optimism was found to causally precede pessimistic dispositional attributions both alone and in relation to general psychological distress. The QES requires further validation to replicate the current findings in a new sample and to test if pessimistic dispositional attributions form part of a general pessimism construct. As well, a longitudinal study to test the stability and predictive validity of the QES may help to further clarify the relationships of the QES scales with depression.
CHAPTER 6
Study 2B: Validation of the QES Using an Existing Measure of Attributional Style

6.1.1 Introduction and Rationale

6.1.1.1 Overview.

Study 1 findings provided support for the development of the QES as a new measure of explanatory factors. Further development of the QES scales was undertaken in Study 2A. The present study was conducted in conjunction with Study 2A as part of the validation process for the QES but is reported separately to improve clarity. An important step in developing new scales is to ensure that they measure the intended constructs. Therefore a comparison of the QES to a well-established measure of explanatory style enables the testing of the construct validity of the QES scales with other purported measures of similar constructs. An appropriate comparison measure for the QES is the ASQ because it is the most frequently used questionnaire of explanatory style.

The convergent and discriminant validity of the QES and ASQ also needs to be compared. Comparisons of the relationships that each measure has with mood and optimism will provide this information. Evidence that the AQS has similar patterns of relationships with optimism and mood as does the QES will also add further support for the construct validity of the QES.

6.1.1.2 The ASQ and issues relating to its use for validation purposes.

Explanatory style constructs were developed out of the reformulated learned helplessness theory of depression (Abramson et al., 1978). One of the first measures of explanatory style was the ASQ. The ASQ has subsequently been used to also test the hopelessness theory of depression (Abramson et al., 1989) and to measure optimistic and pessimistic explanatory styles. Respondents to the ASQ generate a self-related cause for six good and six bad hypothetical events. Respondents then rate each cause on three dimensions: internal-external, stable-unstable, and global-specific. Attributional styles of composite internal, stable, and global dimensions for positive events and for negative events are usually used in analyses. As the most popular existing measure of explanatory style, the ASQ is considered appropriate for an evaluation of the QES. However, some practical and psychometric problems have
been evident with the ASQ, although the ASQ displays psychometric shortcomings, it has been widely evidenced as providing excellent validity Peterson et al. (1995). Therefore evidence of substantial relationships between the similar constructs of the QES and ASQ will provide some evidence of the convergent validity of the QES.

Deficiencies in the ASQ structure and reliability were discussed in Chapter 3 and are of relevance to its use as a validating measure for the QES. The ASQ provided poor overall factor structure for Arntz et al. (1985) and Cutrona et al. (1985). These researchers found only weak evidence for the separation of the theoretical ASQ dimensions. Questions about the adequacy of the ASQ as a measure of the separate dimensions of explanatory style suggest that the ASQ scales may not map directly onto their respective QES scales. This could weaken the relationships between ASQ scales and comparable QES scales. The psychometric problems with the ASQ also included rather low reliabilities for the scales, averaging .40 to .67 (Sweeney et al., 1986). When directly comparing the two instruments, the low reliabilities of the ASQ scales will reduce the strength of relationships with the QES scales. The reduction will be compounded for the QES behavioural scales that also have low reliabilities.

The lower reliabilities obtained for the ASQ scales compared to the QES scales (.55 to .90) should also affect comparative relationships with mood and optimism. The QES scales should have stronger relationships with optimism and mood scales providing better evidence of convergent validity for it than the ASQ. The comparative results for the discriminant validity of the QES and ASQ scales are difficult to predict. The QES scales were developed using a depression-specific mood measure whereas the ASQ was developed using the BDI that was strongly related to general psychological distress (Watson & Clark, 1984). The QES would therefore be expected to provide better discriminant validity than the ASQ. However, the generally lower reliabilities of the ASQ scales may lower the relationships that they have with the validating scales and therefore may produce similar discriminant validity results to those provided by the QES scales.

Some differences will be encountered when comparing the QES scales with the dimensional scales of the ASQ. Disparity occurs because the QES scales combine the internal and stable dimensions to form Positive Disposition, Positive Behaviour, Negative Disposition, and Negative Behaviour whereas the ASQ provides separate
scales for the internal and stable dimensions, Positive Internal, Positive Stable, Negative Internal, and Negative Stable. On the other hand, both the ASQ and QES have separate scales for the global dimension.

Based on its composition, the QES scale Positive Disposition should be a proxy for the ASQ scales Positive Internal and Positive Stable combined. The QES scale Negative Disposition should be a proxy for the ASQ scales Negative Internal and Negative Stable combined. The QES behaviour scales, Positive Behaviour and Negative Behaviour, were intended as measures of internal and unstable attributions. However, in Study 2A the two scales were strongly related to the dispositional scales indicating that although they measure internality, their measurement on the stability dimension is uncertain. As a result, QES Positive Behaviour should relate to ASQ Positive Internal and QES Negative Behaviour should relate to ASQ Negative Internal. The QES scale Positive Global should be a proxy for the ASQ scale Positive Global. The QES scale Negative Global should be a proxy for the ASQ scale Negative Global. Within both the QES and the ASQ the Positive Global and the Negative Global scales have produced positive relationships with each other. For example Hull and Mendolia (1991) found a moderate correlation of .36 between the two ASQ globality scales and Study 2A found a moderate correlation of .44 between the two QES globality scales. If the QES and ASQ globality scales represent similar constructs, inter-relatedness would be expected for all four scales, not only for the like-valenced scales. Therefore, QES Positive Global, ASQ Positive Global, QES Negative Global, and ASQ Negative Global should all inter-relate.

Scales with the same valence from within the QES and within the ASQ have shown inter-relatedness. For example, in Study 2A all positive QES scales had moderate positive intercorrelations and all negative QES scales had moderate positive intercorrelations. Likewise, Hull and Mendolia (1991) reported the same patterns of associations within the ASQ positive and negative scales. Therefore the QES positive scales should provide some degree of positive associations with the ASQ positive scales and the QES negative scales should provide some degree of positive associations with the ASQ negative scales.

A further issue in the validation process concerns the mood and optimism instruments used to validate the attributional scales. The QES scales were developed to predict depression-specific mood. As an index of depression-specific mood, Positive Affect has been shown as a good mood measure of convergent validity for
the QES scales. Likewise the personality scales DO and SS showed associations with Positive Affect in Study 2A and were thus shown as depression-specific resiliences. Research by Hawkins and Miller (2003) has also shown that the ASQ scales provide convergence with Positive Affect. However, DASS-D was not a good index for convergent validity in Studies 1 and 2A because it was clearly not depression-specific and consequently will not be used in the present study. Discriminant validity was examined in Studies 1 and 2A using the DASS-S and Negative Affect as joint measures of Negative Mood, an index of general psychological distress. In relation to mood and personality scales, all QES and ASQ scales should correlate more strongly with depression-related measures than with general psychological distress measures. However, past research has shown that all of the ASQ and the QES negative event scales related to general psychological distress in addition to depression-specific mood. Therefore, the negative event scales are not expected to discriminate between depression-specific mood and general psychological distress.

6.1.2 Aims

The present study aims to continue the investigation of the construct validity of the QES. To support the construct validity of the QES, relationships of the scales to another well-known measure of attributional style, the ASQ, will be examined. In addition, the relationship of each scale from the ASQ and the QES to mood and optimism will be compared to further evaluate the construct validity of the QES.

6.1.3 Hypotheses

The present study hypothesises moderate to strong correlations between the following scales: QES Positive Disposition and ASQ Positive Internal and Stable; QES Positive Behaviour and ASQ Positive Internal; Negative Disposition and ASQ Negative Internal and Stable; QES Negative Behaviour and ASQ Negative Internal; QES Positive Global and ASQ Positive Global and ASQ Negative Global; and, QES Negative Global and ASQ Negative Global and ASQ Positive Global.

Associations between the explanatory scales and mood and personality scales are anticipated to provide further evidence of convergent and discriminant validity for the QES. The QES scales are predicted to yield stronger associations with optimism and depression-specific scales than will the ASQ scales because of the better reliabilities and clearer structures of the QES scales. The QES scales are
predicted to provide better discriminant validity than their comparable ASQ scales because the QES was developed using a depression-specific mood scale. Both QES and ASQ sets of negative event scales will provide only modest evidence of discriminant validity because these scales have been shown as vulnerabilities to general psychological distress in past research (e.g., Study 2A, Hawkins & Miller, 2003). In summary, QES scales and ASQ scales will provide moderate and modest correlations respectively with Positive Affect, DO, and SS. Modest to moderate correlations are also expected for QES and ASQ negative event scales respectively with Negative Affect and DASS-S.
Method

6.2.1 Participants

Participants were a convenience sample of Australian men and women recruited from the general population, who volunteered to complete the questionnaires on request and without payment. Participants came from urban, regional, and rural areas of Victoria, the Australian Capital Territory, and Queensland. The researcher directly recruited all of the participants for this part of the study from family members, friends, and acquaintances. The present study was conducted in conjunction with Study 2A with 200 of the 700 questionnaires used in Study 2A containing one additional instrument, the ASQ. Participants consisted of 71 subjects with an age range of 19 to 64 years and a mean age of 34.13 years \((SD = 12.03)\). The 49 females had an age range of 19 to 57 years and a mean age of 33.33 years \((SD = 10.51)\). The 22 males had an age range of 19 to 64 years and a mean age of 35.86 years \((SD = 14.95)\). A total of 200 questionnaires were distributed with a response rate of 35%.

6.2.2 Measures

Three personality measures and two mood measures were used in this study. The personality inventories comprised the QES, the DVRS scales DO and SS (S. Smith, 2001), and the ASQ (Peterson et al., 1982). The mood measures were the PANAS (Watson et al., 1988) and the DASS (Lovibond & Lovibond, 1995). Descriptions of the DVRS, PANAS, and DASS are provided in Chapter 5. A summary of the QES is provided below.

6.2.2.1 QES.

An initial pool of 88 items was generated for the QES, shown in Appendix B and described earlier in Study 2A. The six resulting scales were 7–item Positive Disposition, 5–item Positive Behaviour, 10–item Positive Global, 6–item Negative Disposition, 7–item Negative Behaviour, and 10–item Negative Global. The items are shown in Tables 11 to 16 of Study 2A.

The disposition scales required respondents to rate whether a given cause is a likely reason for the event described if it happened to them. Ratings are on a 5-point scale ranging from 1 = highly unlikely to 5 = highly likely. An example of a positive event with a dispositional cause is “You happen to feel content. Is it because you are
a positive person?” The behaviour scales require respondents to rate whether a given cause is a likely reason for the event described if it happened to them. Ratings are on a 5-point scale with 1 = rarely to 5 = very often. An example of a negative event with a behavioural cause is “You happen to get behind with your paperwork. Is it because just lately you can’t be bothered?” The globality scales require respondents to rate the number of areas of their life that are affected by a given cause. Ratings are on a 5-point scale from 1 = very few to 5 = nearly all areas. An example of a positive event global item is “When you make a good decision, how many areas of your life benefit?” The QES scales produced the following reliabilities in Study 2A: Positive Disposition, .69; Positive Behaviour, .56; Positive Global, .90; Negative Disposition, .71; Negative Behaviour, .55; and, Negative Global, .82.

### 6.2.2.2 Attributional Style Questionnaire.

The ASQ is a measure of explanatory style widely used in both current and past research. This self-report questionnaire has twelve items with each item containing four parts. Participants first generate a self-related cause for twelve hypothetical events of which six are good and six are bad. Participants then rate these causes on 7-point rating scales for three dimensions: internal-external, stable-unstable, and global-specific. For both positive and negative events, higher values represent attributions of greater internality, stability, and globality. In the present research, the internality, stability, and globality dimensions were examined separately and were also combined into two composite internal and stable attributional scores, one for positive events and one for negative events.

The ASQ yields modest internal consistencies for the scales and moderate internal consistencies for attributional style composites of positive and negative events of .75 and .72 respectively (Peterson et al., 1982). Peterson et al. also reported acceptable test-retest reliabilities with values of .70 and .64 for positive and negative event composite scores respectively. The validity of the ASQ has been well supported. For example, ASQ scores predict actual attributions made by subjects for specific events, and they also predict depressive symptom onset after stress (Metalsky et al., 1987).

### 6.2.3 Procedure

Participants were directly recruited from the researcher’s family, friends, and acquaintances. Participants were given a plain language statement, questionnaire and
a reply-paid envelope to Deakin University, Melbourne Campus. The plain language statement clearly stated the aims of the research, gave examples of the questions, and informed participants about the availability of results. The questionnaire was completed at a time and place chosen by the participant and took about 45 minutes to complete.

The questionnaire began with the demographic variables age and sex followed in order by the PANAS, DO, QES, DASS, and ASQ. A copy of the plain language statement, and of the PANAS, DO, SS, QES, DASS, and ASQ used in the present study appear in Appendix B. The completed questionnaires form the data collected at the Deakin University Melbourne Campus for analysis by the researcher. The treatment of participants was in accordance with the ethical standards of the National Statement on Ethical Conduct in Research Involving Humans (1999).
Results

The current study examined the construct validity of QES explanatory scales Positive Disposition, Positive Behaviour, Positive Global, Negative Disposition, Negative Behaviour, and Negative Global in relation to the ASQ, the personality scales DO, SS, and mood scales Positive Affect, Negative Affect, and DASS-S.

The construct validity of the QES was examined using correlations to explore the relationship between the QES and the ASQ. The relationships that both the QES and the ASQ had with other personality and mood measures was also explored to assess and compare the convergent and discriminant validity of the two measures. Data preparation and correlation analyses were conducted using SPSS 10.

6.3.1 Data Preparation and Assumptions

Each QES scale was calculated as the unweighted composite of the constituent items. Positive and negative event ASQ scales for the separate internal, stable, and global dimensions were calculated. As well, composite measures for the ASQ internal and stable scales were computed to enable comparisons with the QES dispositional scales and overall composites for ASQ positive events and ASQ negative events were calculated to enable comparison with past research. All variables used in the validation process were screened for normality and univariate outliers prior to analyses. Four univariate outlier scores on four of the variables (DASS-S, QES Positive Disposition, QES Negative Disposition, and ASQ Positive Internal) were recoded back to acceptable limits. There were no multivariate outliers above the \( p < .001 \) cut-off criterion recommended by Tabachnick and Fidell (1996).

6.3.2 Summary Descriptives

Means and standard deviations were next calculated for each measure and are presented in Table 18. Most values are comparable to those obtained in earlier studies or by other researchers. The QES values are comparable to those obtained in Study 2A for a sample of 321: Positive Global mean = 38.58 (SD = 7.40); Negative Global mean = 25.37 (SD = 6.02); Negative Disposition mean = 14.61 (SD = 3.94); Positive Disposition mean = 24.05 (SD = 4.00); Positive Behaviour mean = 17.92 (SD = 2.86); and Negative Behaviour mean = 22.03 (SD = 3.93). ASQ results provided similar means to those found in Peterson et al. (1982) and Hull and Mendolia (1992) using undergraduate samples. Peterson et al. obtained a similar positive event composite mean value of 94.50 (SD = 14.22) and a negative event
composite mean value of 74.16 ($SD = 11.52$). The DO and SS values matched those obtained by S. Smith (2001) for a student sample of 303 participants who had mean values of 17.46 ($SD = 3.27$) and 13.82 ($SD = 3.03$) respectively. The PANAS and DASS values were similar to those obtained in Study 1 (presented in Table 1).

Table 18
*Means and Standard Deviations for Variables used in the Correlational Analyses*

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<th>SD</th>
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<td>.43</td>
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</table>

*Note.* $N = 71$, DASS = Depression, Anxiety and Stress Scales; DVRS = Depressive Vulnerability and Resilience Scales; PANAS = Positive and Negative Affect Schedule; QES = Questionnaire of Explanatory Style; ASQ = Attributional Style Questionnaire; higher values indicate more of the characteristic.

The ASQ scale alphas were in line with those obtained by Peterson et al. (1982) of between .44 to .69 for scales and .72 and .75 for positive event and negative event composites respectively. Similarly, Sweeney et al. (1986) in their meta-analysis reported average reliabilities of between .40 and .67 for ASQ scales and of .64 and .68 for positive event and negative event composites respectively from eight studies. The high scale alphas provided by the mood scales in this study replicate those reported in previous research. For example, Antony et al. (1998)
obtained DASS Depression, Anxiety, and Stress alphas of .94, .87, and .91 respectively. Watson et al. (1988) obtained scale alphas of .86 to .90 for Positive Affect and .84 to .87 for Negative Affect. The DO scale alpha is similar in this study to the .70 and .72 that S. Smith (2001) obtained, but value for SS is slightly higher than the .49 and .57 alphas obtained by S. Smith.

6.3.3 Correlational Analyses

The zero-order correlations between the six scales of the QES, the six scales of the ASQ, the two ASQ positive and negative composites of internal and stable, and the two ASQ positive event and negative event composites are shown in Table 19. The QES scale Positive Disposition displayed a small but non-significant positive correlation with ASQ Positive Internal and Stable whereas it had a significant negative correlation with ASQ Negative Internal and Stable. The QES scale Positive Behaviour did not correlate significantly with ASQ Positive Internal or ASQ Negative Internal. The QES scale Negative Disposition did not correlate significantly with ASQ Negative Internal and Stable whereas it had a significant negative correlation with ASQ Positive Internal. The QES scale Negative Behaviour did not correlate significantly with ASQ Negative Internal whereas it had a significant negative correlation with ASQ Positive Internal. The QES scale Positive Global had moderate correlations with ASQ Positive Global and ASQ Negative Global. The QES scale Negative Global had a moderate correlation with ASQ Negative Global and a modest correlation with ASQ Positive Global.

In summary, the QES positive event scales were more related to the ASQ negative event scales with the exception of Positive Global that related to both ASQ positive event and negative event globality scales. The QES negative event scales were more related to ASQ positive event scales with the exception of Negative Global that related to both ASQ positive event and negative event globality scales.

6.3.4 Convergent and Discriminant Validity Comparison of the QES and ASQ

The convergent validity and discriminant validity of the QES and the ASQ were next assessed in relation to a set of mood and personality scales. The QES and the ASQ were correlated with the PANAS, DASS, and the DVRS measures DO and SS. This enabled a comparison of the validity of the QES with that of the ASQ.
Table 19  
Correlations between the QES scales and the ASQ scales and composites

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<th>4</th>
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<th>6</th>
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<th>12</th>
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<th>15</th>
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<td>.10</td>
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<tr>
<td>4. QES Negative Disposition</td>
<td>-.44**</td>
<td>-.11</td>
<td>-.18</td>
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<td>.57**</td>
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<td>7. ASQ Positive Internal</td>
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<td>-.24*</td>
<td>.15</td>
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<td>.08</td>
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<td>.19</td>
<td>.38**</td>
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<td>9. ASQ Pos Internal Stable</td>
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<td>.12</td>
<td>.23</td>
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<td>-.10</td>
<td>.20</td>
<td>.89**</td>
<td>.76**</td>
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<td>.20</td>
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<td>.30*</td>
<td>.33**</td>
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<td>.06</td>
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<td>-.08</td>
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</tr>
<tr>
<td>12. ASQ Negative Stable</td>
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<td>-.29*</td>
<td>-.12</td>
<td>.18</td>
<td>.06</td>
<td>.09</td>
<td>-.24*</td>
<td>.16</td>
<td>-.09</td>
<td>.03</td>
<td>.32**</td>
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Note. N = 71, QES = Questionnaire of Explanatory Style, ASQ = Attributional Style Questionnaire.
*p = .05. **p = .01.
Table 20 presents the correlations provided by the six scales of the QES and the six scales and four composites of the ASQ with mood and optimism scales. It was expected that all of the QES scales and ASQ scales would converge with Positive Affect, DO, and SS. Additionally, the QES pessimistic scales and ASQ negative event attributions were expected to correlate to a lesser extent with Negative Affect and DASS-S. It was further expected that the QES optimistic scales and ASQ positive attributions would be discriminated from Negative Affect and DASS-S by showing weak relationships with these constructs. Although not all expected convergent correlations were of sufficient magnitude to be significant, relationships were all in the expected directions.

Table 20
Correlations of QES and ASQ with mood and optimism scales

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<tr>
<td>Stable</td>
<td>-.10</td>
<td>.16</td>
<td>.20</td>
<td>-.04</td>
<td>-.29*</td>
</tr>
<tr>
<td>Internal and Stable</td>
<td>-.02</td>
<td>.09</td>
<td>.17</td>
<td>-.12</td>
<td>-.42**</td>
</tr>
<tr>
<td>Global</td>
<td>-.13</td>
<td>.30*</td>
<td>.18</td>
<td>-.06</td>
<td>-.10</td>
</tr>
<tr>
<td>Composite</td>
<td>-.09</td>
<td>.23</td>
<td>.21</td>
<td>-.11</td>
<td>-.33**</td>
</tr>
</tbody>
</table>

Note. N = 71, QES = Questionnaire of Explanatory Style, ASQ = Attributional Style Questionnaire; PANAS = Positive and Negative Affect Schedule; DASSD = Depression, Anxiety and Stress Scales, Depression Scale; DASSS = Depression, Anxiety and Stress Scales, Stress Scale; DO = Depressive Vulnerability and Resilience Scales, Defensive Optimism Scale; SS = Depressive Vulnerability and Resilience Scales, Self Satisfaction Scale. *p < .05. **p < .01.

The QES optimistic scales displayed stronger correlations with the mood and optimism scales than did the ASQ positive event scales. Correlations with Positive Affect, DO, and SS were stronger for QES Positive Disposition, Positive Behaviour, and Positive Global than for their ASQ counterparts, Positive Internal and Stable,
Positive Internal, and Positive Global respectively. Correlations with Positive Affect and DO were stronger for QES Negative Disposition, Negative Behaviour, and Negative Global than for their ASQ counterparts, Negative Internal and Stable, Negative Internal, and Negative Global respectively. However, correlations with SS were weaker for QES Negative Disposition, Negative Behaviour, and Negative Global than for their ASQ counterparts, Negative Internal and Stable, Negative Internal, and Negative Global respectively.

Correlations with Negative Affect were stronger for QES Positive Disposition and Negative Disposition than for their ASQ counterparts, Positive Internal and Stable and Negative Internal and Stable respectively. Additionally, the QES scales Positive Behaviour, Positive Global, Negative Behaviour, and Negative Global had correlations with Negative Affect of similar strength to their ASQ counterparts Positive Internal, Positive Global, Negative Internal, and Negative Global respectively. Correlations with DASS-S were stronger for all QES scales than their respective ASQ scales.

In summary, the QES scales provided stronger convergent validity than the corresponding ASQ scales but their discriminant validity was generally poorer. The QES positive scales and Negative Disposition showed as much association with depression-specific constructs as with general psychological distress constructs. The other QES negative scales were more strongly associated with general psychological distress than with depression-specific constructs.
Discussion

The results provided some evidence that the QES and ASQ scales measure similar constructs. However, although relationships between similar constructs were generally in the expected directions, their magnitudes were usually low. The correspondence between the QES scales and the ASQ scales was most clearly apparent with a crossover of event valence. Consequently, the QES optimistic scales related to the AQS pessimistic scales and vice versa. The globality scales provided exceptions to this trend. These provided relationships in accord with expectations.

The QES showed evidence of convergent validity with the mood and optimism scales, with QES convergent correlations comparing favourably to the corresponding ASQ scale correlations. However, the QES scales did not provide the predicted discrimination between depression-specific and general psychological distress scales.

The interpretation of the results requires a two-stage approach. The first stage will compare relationships between the QES and ASQ. The second stage will examine the comparative roles of the QES scales and the ASQ scales in relation to depression-specific scales and general psychological distress scales. Wider implications of the findings and the limitations of the current study will be discussed.

6.4.1 Comparison of the QES and the ASQ

Predicted correlations between QES scales and their specified corresponding ASQ scales were in the expected directions but not of the expected magnitude. Most intercorrelations were insufficient (all less than .35) to indicate that the two measures were of the same constructs. It was hypothesised that QES Positive Disposition would provide a strong positive relationship with ASQ Positive Internal and Stable composite. However, QES Positive Disposition yielded only a small albeit definite correlation with the ASQ Positive Internal and Stable composite. In fact, QES Positive Disposition had a stronger inverse relationship with the ASQ Negative Internal and Stable composite. This finding differs from past research that shows positive and negative attributions are either unrelated or have only small associations (e.g., Corr & Gray, 1996; Hawkins & Miller, 2003; Hull & Mendolia, 1991; Reno & Halaris, 1989; Tripp et al., 1997; Yee et al., 1996). The inverse relationship of Positive Disposition with ASQ Negative Internal and Stable was therefore not expected, but is understandable given that ASQ Negative Stable is often used to measure catastrophising (e.g., Peterson & Villanova, 1988). The item content of
Positive Disposition measures general self-enhancing biases such as explaining the causes of good events as due to one’s positive attitude and fun personality that appear the opposite of catastrophising. QES Positive Behaviour also related to ASQ Negative Stable, but not to ASQ Positive Internal or Negative Internal, in a similar manner to QES Positive Disposition, evidencing likeness for the two scales.

A similar pattern of relationships to that obtained for QES Positive Disposition was obtained for QES Negative Disposition. QES Negative Disposition had a stronger inverse relationship with the ASQ Positive Internal and Stable composite than with the ASQ Negative Internal and Stable composite. It is understandable that Negative Disposition displayed an inverse relationship with ASQ Positive Internal when their item content is examined. The item content of Negative Disposition reflects the self-rebuking attributions of explaining bad events as caused by one’s temper. It is understandable that this style was inversely related to the ASQ Positive Internal content of explaining good events as caused by personal characteristics. QES Negative Behaviour significantly related to ASQ Positive Internal, but not to ASQ Negative Internal, in a similar manner to Negative Disposition evidencing likeness for the two scales. The lack of overlap between QES and ASQ internal constructs of the same valence is difficult to explain. It may be due to differences in item causal content of the same valenced items across measures.

Rather than clarifying the construct validity of the QES disposition and behaviour measures, comparisons with the ASQ scales have confused matters. QES Positive Disposition and Positive Behaviour appeared more likely to be inverse measures of negative ASQ scales than measures of positive ASQ scales. Likewise, QES Negative Disposition and Negative Behaviour appeared more likely to be inverse measures of positive ASQ scales than measures of negative ASQ scales. Thus there was an inverse relatedness between the differently valenced attributions across instruments and the distinction between negative event items and positive event items was less evident between instruments than within instruments. This suggests that employing one instrument to measure oppositely valenced items may encourage a separation of the positive from the negative items because of an accumulation of shared measurement error to be found within one instrument. Additionally, variability has been found in the intercorrelations within the ASQ scales in past research. For example, some research has found significant correlations between ASQ Negative Internal and ASQ Negative Stable (Bagby et al., 1990;
Peterson et al., 1982), whereas other research has not (Zautra et al., 1985). Bagby et al. and Zautra et al. both found that ASQ Positive Internal displayed significant negative correlations with ASQ Negative Stable and ASQ Negative Global, a similar pattern to that found for QES Positive Disposition. This indicates that QES Positive Disposition operated like ASQ Positive Internal in relation to ASQ negative event attributions and thereby adds some support to its construct validity.

The QES globality scales correlated with the ASQ globality scales in the expected manner. All interrelationships were moderate and positive. Both QES Positive Global and Negative Global provided moderate positive relationships with each of the two ASQ globality scales. The present study therefore supported the construct validity of the globality measures as representing similar measures to ASQ globality constructs.

6.4.2. The QES and ASQ in relation to Optimism and Mood Scales

Correlations provided by the QES and the ASQ with the PANAS, DASS, DO and SS were used to examine the convergent and discriminant validity of the QES scales. A comparison of the QES and ASQ in relation to this set of mood and personality scales produced mixed findings. All correlations were in the expected directions with QES correlations with mood, DO, and SS generally stronger in magnitude than ASQ correlations. Therefore generally the QES showed stronger convergent validity then the ASQ. The exception was that the QES pessimistic scales had weaker correlations with SS than their ASQ counterparts.

Against predictions, findings provided little evidence of discriminant validity for the QES. The ASQ scales provided smaller correlations with Negative Affect and DASS-S than their corresponding QES scales, thereby showing better discriminant validity. However, the weaker correlations provided by the ASQ scales may be indicative of generally weaker correlations with all mood and optimism scales obtained for the ASQ and may have been due to poor reliabilities rather than better discrimination. Findings of poor discriminant validity for the QES may relate to the nature of the validation measures used in the present study. Negative Affect and DASS-D both incorporate aspects of depression and were both correlated with Positive Affect in previous studies of this research. A true anxiety-specific measure may have improved the discriminant validity outcome.

Of the QES optimistic scales, Positive Disposition was shown as a measure of resilience to all mood scales. Positive Global was shown as resilience to none of the
mood states. Finally, Positive Behaviour was shown as resilience to Positive Affect and DASS-S. Of the QES pessimistic scales, Negative Disposition was shown as vulnerability to all mood scales. Negative Behaviour and Negative Global were shown as vulnerabilities to optimism scales, Negative Affect, and DASS-S but not Positive Affect. Overall, the QES produced stronger evidence than the ASQ of convergent validity but weaker evidence than the ASQ of discriminant validity.

6.4.3 Limitations of the Present Study and Problems with interpreting Results

Robins (1988) noted that ASQ validity is strongly affected by power. The modest reliabilities yielded by the ASQ scales and the QES behavioural factors limited the strength of the results obtained. In addition to reliability levels, the small sample size affected power and thereby the strength of relationships between the QES and ASQ. The use of Negative Affect and DASS-S as measures of discriminant validity for the validation of the QES may not have produced the desired discrimination between depression-specific mood and other mood states. A better discrimination may be between depression-specific and anxiety-specific moods.

6.4.4 Conclusion

The present study continued the validation of the QES and the exploration of the measurement of explanatory style. Some evidence was obtained to support the construct validity of the QES scales. The QES dispositional and behavioural scales provided a correspondence with internal and stable ASQ scales as a crossover of event valences. The QES optimistic scales inversely related to the ASQ negative event scales and vice versa. Additionally, the QES globality scales provided similar constructs to the ASQ globality scales. A comparison of the QES and the ASQ relationships with mood and optimism scales provided support for the QES convergent validity. However, there was little support for the discriminant validity of the QES scales. Problems with obtaining the required level of support for the measures were in part due to poor reliabilities of the QES behavioural factors and ASQ scales, the small sample size, and a subsequent lack of power. The mood measures used to assess discriminant validity may also have reduced the evidence in support of the discriminant validity of the QES scales.
CHAPTER 7
Study 3: Further Validation of the QES

7.1.1 Introduction and Rationale

7.1.1.1 Overview.

Study 2 validated the QES, a measure of explanatory style that yielded the optimistic factors Positive Disposition, Positive Behaviour, and Positive Global and the pessimistic factors Negative Disposition, Negative Behaviour, and Negative Global. The dispositional scales indexed internal and stable attributions that best predicted mood. They also mediated effects of the other QES scales on mood. Positive Disposition mediated effects on depressed mood and Negative Disposition mediated effects on general psychological distress. The global scales were relatively separate from the other scales in relation to mood.

A comparison of the QES scales with corresponding ASQ scales supported the construct validity of the QES globality scales and provided limited evidence that the dispositional and behavioural scales had some equivalence to the ASQ internal and stable scales. The QES scales showed better convergent validity than their respective ASQ scales in relation to depressed mood, but no better discriminant validity than their respective ASQ scales in relation to general psychological distress.

Further validation and an examination of the psychometric properties of the QES are now required for four reasons. First, in the previous study a new 45-item instrument was developed. The psychometric properties of the new QES now require testing with a new sample. Second, Study 2A used structural equation modeling, a technique that may have capitalised on chance. Therefore the obtained validation results require replication with a new sample. Third, the mood scales used for validation of the QES did not adequately discriminate depression-specific mood from other negative mood states. Negative Mood contained some depressive content as evidenced by its moderate correlation with depression-specific mood. More specific mood measures for depression and for anxiety need to be used in the present study to better assess convergent and discriminant validity of the QES scales. Fourth, the QES scale Positive Disposition joined with Positive Bias to form a single construct and was thereby evidenced as a measure of optimism. However, the role of the QES scale Negative Disposition as a measure of pessimism was not examined. An
examination of the QES dispositional scales in relation to separate measures of optimism and pessimism will help clarify their nature.

In the present study, a longitudinal methodology will be employed to assess the test-retest stability of the QES. This methodology will also provide an opportunity to test how well the QES factors predict subsequent depression. Specifically, the predictive role of the QES scales and life stress on longitudinal change in mood will be examined. Cross-sectional results will be used to confirm the content and structure of the QES and also to validate the QES scales with optimism, pessimism, and mood.

7.1.1.2 Psychometric evaluation of the QES and methodological issues.

The six scales of the QES determined by the preceding study comprised the instrument for investigation by this study. The scales, namely 7-item Positive Disposition, 5-item Positive Behaviour, 10-item Positive Global, 6-item Negative Disposition, 7-item Negative Behaviour, and 10-item Negative Global, characterised relatively reliable and valid explanatory style factors. The internal structure, reliability, and construct validity for the six QES scales require replication using a new sample. A computation of test-retest reliability to assess the stability of the scales will extend the psychometric evaluation of the QES.

A central methodological issue for the present study is the use of an appropriate mood-specific measure to assess discriminant validity for the QES scales. The QES scales are proposed as depression-related measures and discriminant validity should be assessed using a measure that does not contain depression content. In the previous studies, discriminant validity was assessed using PANAS Negative Affect and DASS Stress in a measure that lacked sufficient specificity because it related to depressed mood. To better establish discriminant validity for the QES scales, the present study will use an instrument that offers more specific measures of depression and anxiety. The Mood and Anxiety Symptom Questionnaire (MASQ; Watson & Clark, 1991) was designed to provide two sets of depression and anxiety scales, one set representing general symptoms and the second set representing symptoms specific to depression and anxiety. The MASQ specific symptom clusters of anhedonia (Anhedonic Depression) and somatic arousal (Anxious Arousal) represent the unique symptoms for depression and anxiety respectively. Although the complete assessment of depression and anxiety requires the inclusion of both specific and non-specific symptoms (Watson et al., 1995), the specific scales of the MASQ
were found to offer very good discrimination between depression and anxiety (Keogh & Reidy, 2000; Watson et al.). Therefore the present research will use these two measures to further validate the QES.

New validation evidence for the QES will accrue from testing the predictiveness of the scales for subsequent depressed mood while controlling for intervening stress. In testing this predictive validity, existing levels of depression at the start of a longitudinal study are important risk factors for future depression (Hammen, Adrian, & Hiroto, 1988; Lewinsohn et al., 1994). Therefore, the current study will control for the effects of initial depression levels in assessing how QES factors influence the development of future depression.

Another methodological issue for the present study concerns the analysis of the data in the proposed longitudinal research. The QES scales can be construed as depressive vulnerability and depressive resilience measures. When examining change in depression over time, research by Lewinsohn, Joiner, and Rohde (2001) found that the depression threshold was between medium levels and high levels of depressive vulnerability. Therefore continuous measures of vulnerability and resilience will be used in the present study to maintain all of the information available.

**7.1.1.3 The QES scales in relation to optimism and pessimism.**

In Study 2A, the QES scale Positive Disposition combined with a measure of optimism to form a single construct, Optimism. Optimism had a strong direct effect on depression-specific mood and also mediated the effects of other QES scales on depression-specific mood. Similarly, QES Negative Disposition had a strong direct effect on general psychological distress and also mediated the effects of QES Negative Behaviour and Optimism on general psychological distress. The identification of Positive Disposition as a general optimism construct suggests that Negative Disposition may likewise be framed as a general pessimism construct. However, as Study 2A did not include a measure of pessimism, the proposition could not be tested. If Negative Disposition constitutes a form of pessimism, conclusions drawn about relationships between optimism, pessimism, and explanatory style in past research may need reconsideration.

In their review of research into optimism and explanatory style, Gillham et al. (2001) concluded that little was known about the relationship between optimism and causal explanations. Some authors have conceptually linked dispositional optimism with attributional style, suggesting that both derive from expectancies about the
future (Carver & Gaines, 1987; Scheier & Carver, 1992), and that both reflect individual differences in facing life demands (Peterson & Bossio, 1991). These proposals imply that attributional style and optimism should correlate quite strongly, yet correlations between attributional style measured by the ASQ and optimism are usually weak (Ahrens & Haaga, 1993; Scheier & Carver) or moderate (Hjelle, Belongia, & Nesser, 1996). Study 2B likewise found low correlations between ASQ attributional style and optimism. In spite of these findings, Scheier and Carver suggested that because a pessimistic attributional style and optimism provide parallel findings in relation to depression, the two sets of constructs may operate similarly. The successful representation of Positive Disposition as a component of optimism in Study 2A extends this contention by providing evidence of a strong link between an optimistic explanatory factor and the optimism measure Positive Bias.

The most commonly used conceptualisation of optimism in depression research is the construct of dispositional optimism that is usually measured by the Life Orientation Test (LOT; Scheier & Carver, 1985). Dispositional optimism was identified as a relatively stable predisposition for expecting favourable outcomes (Carver & Scheier, 1981). The LOT was revised by Scheier et al., (1994) with the removal of two items relating to coping. The resulting LOT-R contains three positive and three negative items with four filler items. The LOT-R is highly related to, and has similar psychometric properties to the LOT (Scheier et al.).

Research has associated LOT measured optimism with depression (Ahrens & Haaga, 1993; Bromberger & Matthews, 1996; Buckby, 2002; Hull & Mendolia, 1991; McDermut, et al. 1997; Scheier et al., 1994; van Servellen et al., 1998; Vickers & Vogeltanz, 2000). However, some researchers have found that the positively worded and negatively worded items of the LOT represent two separate constructs, optimism and pessimism respectively (Chang, D’Zurilla, & Maydeu-Olivares, 1994; Dember, Martin, Hummer, & Melton, 1989; Hjelle et al., 1996; Marshall et al., 1992; Mroczek, Spiro, Aldwin, Ozer, & Bosse, 1993; Myers & Steed, 1999; Robinson-Whelan, Kim, MacCullam, & Kiecolt-Glaser, 1997), and that only the positively worded items correlate strongly with Optimistic Bias (Buckby). Researchers generally find correlations of around -.50 between optimism and pessimism concluding that the relationship is not strong enough to indicate one construct. This view is strengthened by Mroczek et al. who found smaller correlations of around -.30
Further evidence for the independence of optimism and pessimism came from Marshall et al. who found different personality correlates for each. Optimism was related to extraversion and positive affect, whereas pessimism was related to neuroticism and negative affect. Although Scheier and Carver (1985) also found two factors in the LOT, representing positively and negatively worded items, these two factors were best represented as positive and negative views of one construct. Using structural equation modeling for the LOT-R, Scheier et al. (1994) found that a one-dimensional model of optimism provided a better and more parsimonious interpretation for most research purposes. Mehrabian and Ljunggren (1997) likewise found that the one-factor model better represented the LOT-R. These findings led Watson, Clark, and Harkness (1994) to conclude that item wording should be considered in relation to personality and emotionality measurement.

The LOT has attracted some criticism about its validity because of high correlations both with measures of neuroticism (T. W. Smith, Pope, Rhodewalt, & Poulton, 1989) and with negative affect (Andersson, 1996). Also, the LOT measure provided no unique relationship with depression beyond its relationship with neuroticism (T. W. Smith et al.). Using the LOT positively phrased items to represent optimism and the negatively phrased items represent pessimism, Marshall et al. (1992) found that optimism was associated with positive affect whereas pessimism associated with negative affect. Myers and Steed (1999) also found that pessimism measured in this way was correlated with neuroticism and negative affect. Yet other studies reported that the total LOT was distinct from negative affect (Hull & Mendolia, 1991; Ahrens & Haaga, 1993). Furthermore, Scheier et al. (1994) and Vickers and Vogeltanz (2000) found a unique relationship between the LOT and depression even after controlling for neuroticism. Therefore, when the LOT was separated into two measures, only LOT pessimism was related to neuroticism, but when totalled the LOT has substantial links to neuroticism.

Although the previously reviewed evidence suggests that optimism and pessimism likely form one bipolar construct (Mehrabian & Ljunggren, 1997; Scheier et al., 1994), the present study will use separate measures to maximise the information available. The LOT-R optimism measure will permit the testing of QES Positive Disposition as a component of optimism. The LOT-R pessimism measure
will permit the testing of QES Negative Disposition as a component of pessimism. This approach will also permit evaluation of whether the LOT-R optimism and pessimism measures form one bipolar dimension.

**7.1.1.4 Explanatory style in relation to stress and mood.**

Not all people suffer depression, even when they are exposed to the most severe stress (G. W. Brown & Harris, 1986; Dohrenwend & Dohrenwend, 1981). However, for some people one severe event alone can be sufficient to trigger depression (G. W. Brown & Harris). To explain these individual differences, several theories of depression posit a psychological predisposition to depression that is activated by stress (e.g., Abramson et al., 1989; Beck, 1967; Robins & Block, 1988).

Research has found that attributional style for negative events predicts depressed mood following a negative outcome or stress (Abela & Seligman, 2000; Alloy, et al., 1997; Hilsman & Garber, 1995; Houston, 1995; Kwon & Laurenceau, 2002; Metalsky et al., 1987; Metalsky et al., 1993; Metalsky & Joiner, 1992; Peterson & Seligman, 1984; Robinson & Alloy, 2003; Tiggemann & Crowley, 1993). The predictive role of explanatory style and life stress on subsequent mood has been largely studied within diathesis-stress frameworks wherein negative event attributions interact with stress. However, research does not consistently show that an interaction between attributions and stress predicts depression (Abramson, Alloy, & Metalsky, 1995; Tiggemann et al., 1991; Vázquez, Jiménez, Saura, & Avia, 2001). The reason for this may be that many diathesis-stress analyses use multiple regression in which the interactions are susceptible to severe reduction in effects because of multicollinearity, non-normality, and low reliabilities of the interaction variables (Aiken & West, 1991). Additionally, the greater the proportion of variance accounted for by the first order effects, the greater the diminution of the interaction effects as reliability decreases. Evaluation of the contribution of the interaction between attributions and stress would therefore have been greatly affected by the poor reliabilities usually obtained for the ASQ.

The predictive role of positive event attributions in conjunction with life stress on subsequent mood has received little attention, despite findings that positive event attributions interact with positive events to predict recovery from depression (Johnson et al., 1998; Needles & Abramson, 1990). Research examining the role of positive event attributions in interaction with other variables includes: the interaction between positive event attributions and negative event attributions in relation to
depresion (Voelz, Haeffel et al., 2003); the interaction of combined positive event attributions and negative event attributions with life events in relation to mood (Alloy et al., 1997); and, the interaction of combined positive event attributions and negative event attributions with sports failure in relation to anxiety and later performance (Martin-Krumm, Sarrazin, Peterson, & Famose, 2003). However, no research could be found in which the interaction between positive event attributions and stress was reported. Following the reasoning of Peterson et al. (1995), positive event optimistic explanatory factors will act as resilience to stress and should interact with stress to reduce levels of subsequent depression. As the current body of research has found that optimistic explanatory factors have stronger effects on depressed mood than pessimistic explanatory factors, the optimistic factors are expected to provide stronger interactions with stress than the pessimistic factors.

7.1.1.4 The measurement of stress in relation to depression.

Research generally supports explanatory style as a diathesis or vulnerability to depression as outlined previously, but the measurement of stress has caused some concern (Coyne & Racioppo, 2000). Following Lazarus (2000), stress in the current study will be defined in terms of provoking events such as a major loss, change in one’s life, or other environmental stimulus. Depressive symptoms have been associated with severe events that involve loss (G. W. Brown & Harris, 1978, 1989; Lloyd, 1980), severe disappointment, and events that are undesirable or severely threatening (Lloyd). The experience of a major negative event increases the risk of depression by between two and five times (Paykel, 1978) and was found over twice as likely to have occurred in depressed patients than the community (Shrout et al., 1989). Furthermore, depression symptom-severity is associated with severe stress prior to onset (Monroe, Harkness, Simons, & Thase, 2001). In addition, depression was also associated with ongoing major difficulties (G. W. Brown & Harris, 1986; Zimmerman, 1983) and minor life stressors often called daily hassles (Kanner, Coyne, Schaefer, & Lazarus, 1981; Lu, 1994; Monroe, 1983; Vickers & Vogeltanz, 2000; Whisman & Kwon, 1993).

In the prediction of depression, hassles have at times shown superiority over major events (David, Green, Martin, & Suls, 1997; DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982; Eckenrode, 1984; Kanner et al., 1981). Hassles were found to contribute beyond major events to the prediction of depressive symptoms by Kanner et al. Yet, other research found that severe life events were more relevant.
than hassles in relation to depressed mood (D. A. Clark & Oates, 1995). Although there is clear evidence that both severe life events and daily hassles play a role in the onset of depression, the extent to which each interacts or overlaps with the other is uncertain. Thus, stress measurement in the present study will include both daily hassles and major events.

The two depression provoking event types, major events and daily hassles, have generated separate forms of stress measurement. Whereas daily hassles are generally measured by self-report (Coyne & Whiffen, 1995), major life events are usually assessed by self-report or by semi-structured interview (G. W. Brown & Harris, 1989). Compared to self-reports, interviews generally provide more accurate information, with increased breadth and depth (G. W. Brown & Harris; Coyne & Racioppo, 2000), and predict depression better (McQuaid, Monroe, Roberts, Kupfer, & Frank, 2000). By contrast, Lewinsohn, Rhode, and Gau (2003) found strong agreement between self-report and interview based ratings.

Problems with self-report measures include difficulties in identifying the relative importance of acute versus chronic, major versus minor, and desirable versus undesirable stress (Monroe & Simons, 1991). Hassles measures sometimes confound stress with symptoms (Dohrenwend, Dohrenwend, Dodson, & Shrout, 1984). Attempts have been made to reduce confounds in stress measures by removing events that may constitute symptoms. For example, Kohn, Lafreniere and Gurevich (1990) removed items that reflect physical and mental responses to stress. Furthermore, whilst recognising the limitations of self-report stress measures, Lazarus (2000) argued that they provide a valuable initial step in research that can supply important information by allowing for the study of large samples.

A consideration for interpreting findings on stress for the present study is that people with a negative attributional style did not report increased levels of stress compared to others, but rather showed a greater depressive response to stress (Kwon & Laurenceau, 2002). However, research has indicated that depressed individuals generate more stress in their lives than did non-depressed individuals (Davila, Hammen, Burge, Paley, & Daley, 1995; Hammen, 1991). Therefore initial depression levels may be related to subsequent stress levels in the present research.

In spite of the shortcomings in self-report life event measures, they provide an economical method of stress measurement (Lazarus, 2000). Self-report will be
used in the present study because of the large sample required. The stress measure will include both daily hassles and major events with symptom items excluded.

7.1.2 Aims

7.1.2.1 General aim.

The general aim of the present study is to explore the role of the QES scales in relation to optimism, pessimism, depression-specific symptoms, and anxiety-specific symptoms. The ability of the QES measures to predict future depression levels, especially in response to stressors, will also be evaluated.

7.1.2.2 Specific aims.

There are a number of specific objectives in this study. First, the study is designed to replicate the internal factor structure of each QES scale and of the entire QES. This exploration will show whether the QES maintains factorial validity across different samples. Second, the construct validity of the QES will be further examined by using more specific mood measures than those used in the previous studies. Third, the QES scales will be examined in relation to measures of optimism and pessimism. Fourth, the test-retest reliabilities of the QES scales will be evaluated. Finally, the predictive validity of the QES scales for depression-specific mood will be examined. The stress-diathesis interactions for the QES scales in relation to depression will also be explored.

7.1.3 Hypotheses and Questions that will be Addressed by the Research

This research hypothesises that the QES scales represent optimistic and pessimistic explanatory factors. The hypothesised structural equation model for confirming the internal structure of the QES is depicted in Figure 26 and derives from Study 2 findings. Positive Behaviour will covary with Positive Global.
Figure 26. Hypothesised measurement model for the QES. Negative Behaviour will covary with Negative Global. The globality factors will also covary. The behaviour scales and Positive Global will directly generate Positive Disposition. In addition, Negative Behaviour and Positive Disposition will directly generate Negative Disposition.

The structural equation model for mood, depicted in Figure 27, makes predictions about the QES scale relationships with optimism, pessimism, and mood. First, QES Positive Disposition and LOT-R optimism items will combine to form a single construct, Optimism. Likewise, QES Negative Disposition and LOT-R pessimism items will combine to form a single construct, Pessimism. Second, the QES behaviour factors and Positive Global will generate Optimism whereas QES Negative Behaviour and Optimism will generate Pessimism. Optimism is positioned as a mediating variable in the relationships between optimistic explanatory factors and Depressed Mood and between QES Negative Behaviour and Depressed Mood.
Third, Optimism alone will directly generate Depressed Mood. Fourth, for the purposes of establishing discriminant validity Pessimism, QES Negative Behaviour, and QES Negative Global are positioned as directly generating Anxious Mood in order to demonstrate low associations. Finally, depression-specific mood will be measured by Anhedonic Depression and anxiety-specific mood will be measured by Anxious Arousal. No association is predicted between the two mood constructs.

The longitudinal study hypothesises that the QES scales tap dispositions that are considered to be relatively stable and thus will provide good test-retest reliabilities. A further hypothesis is that initial levels of the QES scales will interact with intervening stress to predict later depression, beyond the initial existing levels of depression. It is anticipated that people who explain positive events as due to their own dispositions and behaviours, and attach global significance to positive events, are less likely to suffer depressed mood as a result of exposure to negative life
events. Alternatively, people who explain negative events as due to their own behaviours and attach global significance to negative events, are more likely to suffer depressed mood as a result of exposure to negative life events.
Method

7.2.1 Participants

Participants were a convenience sample of Australian men and women, recruited from the general population and who volunteered to complete a questionnaire twice, with a two months intervening period, on request and without payment. Participants came from urban, regional, and rural areas of Victoria, and the Australian Capital Territory. Approximately two-thirds of the participants were directly recruited by the researcher from Deakin University campuses in Melbourne and Geelong, Victoria. The remaining third were recruited by the researcher’s family members and friends using the “snowball” recruitment technique (Costa & McRae, 1985), whereby these participants who were recruited by the researcher went on to recruit their family members and friends as participants. A total of 500 questionnaires were distributed at Time 1, however a response rate could not be estimated because the number of prospective participants who received a questionnaire is unknown.

At Time 1, participants consisted of 250 subjects with an age range of 18 to 66 years and a mean age of 27.38 years ($SD = 10.43$). The 203 females had an age range of 18 to 58 years and a mean age of 26.13 years ($SD = 9.43$). The 47 males had an age range of 18 to 66 years and a mean age of 32.83 years ($SD = 12.75$). Two participants did not state their sex. At Time 2, participants consisted of 197 subjects with an age range of 18 to 65 years and a mean age of 27.47 years ($SD = 10.43$). The 162 females had an age range of 18 to 58 years and a mean age of 26.18 years ($SD = 9.47$). The 35 males had an age range of 18 to 65 years and a mean age of 33.43 years ($SD = 12.57$).

The attrition rate from Time 1 to Time 2 was 21%. The mean Time 1 to Time 2 interval was 66.38 days ($SD = 9.10$). Those participants who did not complete at Time 2 were not significantly different on Anhedonic Depression levels at Time 1 to those participants who completed both Time1 and Time 2, $t(196) = .24$, $p = .82$.

7.2.2 Measures

Two personality measures and one mood measure were used in the first and second phases of this study and are shown in Appendix C. The personality inventories comprised the QES (Hawkins, 2004) and the LOT-R (Scheier & Carver, 1985; Scheier et al., 1994). The mood measure was the MASQ (Watson & Clark,
An additional measure, a composite of items from several existing life event and hassles scales, was included in the second phase of the study as a measure of stress.

7.2.2.1 QES.

The 45-item QES contains six scales: 7-item Positive Disposition; 5-item Positive Behaviour; 10-item Positive Global; 6-item Negative Disposition; 7-item Negative Behaviour; and, 10-item Negative Global. A detailed description of each QES scale is given in Chapter 6.

7.2.2.2 LOT-R.

The LOT-R is a 10-item scale containing 6 items, 3 positive items and 3 negative items, designed to measure the extent to which an individual possesses favourable expectations concerning life outcomes. The negatively worded items are usually reverse-keyed. An example of a positively worded item is “In uncertain times, I usually expect the best”. The remaining four items are filler items. Responses are rated using a 5-point scale ranging from 1 = strongly agree to 5 = strongly disagree. Higher scores indicate higher levels of optimism. Scheier et al. (1994) reported an acceptable reliability of .78 and test-retest correlations ranging from .56 to .79 for periods from 4 months to 2 years. LOT-R optimism has been found to correlate positively with self-esteem and negatively with depression (Scheier et al.).

7.2.2.3 MASQ.

The short form version of the MASQ (Watson & Clark, 1991) was designed to measure symptoms specific to depression and anxiety in addition to symptoms of general psychological distress. The MASQ includes two mood-specific scales: Anxious Arousal (17 items); and, Anhedonic Depression (22 items). The Anhedonic Depression scale contains 8 loss of interest items and 14 high positive affect items that are reverse-keyed. Participants indicate how much they have felt or experienced each item on a 5-point scale ranging from 1 = not at all to 5 = extremely. The time period chosen for the rating was “during the past week, including today” to permit valid comparisons with other research.

Anxious Arousal and Anhedonic Depression have very high internal consistencies both producing coefficient alpha values of .90 for a patient sample of 470 adults (Watson et al., 1995). Both Anxious Arousal and Anhedonic Depression
have excellent convergent validity with similar measures and high discriminant validity with unrelated measures of mood (Watson et al.). Anxious Arousal and Anhedonic Depression offer construct-specific measures of anxiety and depression respectively (Watson et al.).

7.2.2.4 Stress scales.

Two scales, one for major negative events and one for daily hassles, were used to measure stress in this study. The major negative life events were the 11 events previously selected by Lewinsohn et al. (2001) from various existing measures. Lewinsohn et al. excluded events that may be symptoms of psychopathology. Respondents indicated if the event had happened to them within the past two months by ticking a box.

The daily hassles were 20 experiences selected from the Inventory of College Students Recent Life Experiences (ICSRLE; Kohn et al., 1990); the Schedule of Recent Experiences (Holmes & Rahe, 1967); the Life Events Schedule (Sandler & Block, 1979); and, Kanner et al.’s (1981) lists of the 10 most frequently experienced hassles for middle-aged and student groups. Respondents indicated how much each of the experiences had been a part of their life over the past two months on a four-point rating scale from 1 = not at all to 4 = very much. Items were restricted to event-like hassles such as conflicts, being ignored, and financial burdens. Items that included emotional content such as being worried about work or concerned about a family member were omitted because they may be symptoms of psychopathology.

The use of two distinct measures for life stress, although recommended (Eckenrode, 1984), requires weighting of the more severe events to reflect their greater importance in relation to depression (Holmes & Rahe, 1967). The daily hassles were scored directly from the responses and provided a maximum score of four for hassles that were rated as very much a part of life. Weightings were calculated for the major life events using the Social Readjustment Rating Scale (Holmes & Rahe), the weightings for life events obtained by Cochrane and Robertson (1973), and the scalings for life events provided by Dohrenwend et al. (1978). When scaled to a maximum of 10, death of a spouse was rated 10 and conflict was rated at 4. The highest rating of 4 for daily hassles such as “conflicts with your family” is consistent with the weights generally provided by the above authors and suggests that the use of ratings to weight the major life events allowed the successful integration of daily hassles and major events.
7.2.3 Procedure

Many participants were directly recruited from the researcher’s family, friends, acquaintances, and from students and staff at Deakin University campuses in Victoria, Australia. Other participants were recruited by the researcher’s family and friends using a “snowball” technique (Costa & McRae, 1985), whereby some of these participants who were directly recruited by the researcher went on to recruit their family members and friends as participants. Participants were given a plain language statement, consent form, questionnaire and a reply-paid envelope to Deakin University, Melbourne Campus. The questionnaire was completed at a time and place chosen by the participant and took about 30 minutes to complete.

The Time 1 questionnaire began with the demographic variables age and sex followed in order by the combined QES Positive Disposition, Positive Behaviour, Negative Disposition, and Negative Behaviour scales, the LOT-R, the combined QES Positive Global and Negative Global scales, and the MASQ. The Time 2 questionnaire contained the same measures followed by the hassles and major life events lists. A copy of the plain language statement, consent form, and the complete Time 2 questionnaire used in the present study appear in Appendix C. The completed questionnaires form the data collected at the Melbourne Campus for analysis by the researcher. On receipt of the Time 1 questionnaires, the questionnaires and consent forms were numbered, separated and stored in separate locations. The consent forms were dated upon receipt and subsequently used to provide the timing and addresses for posting out the Time 2 questionnaires (two months after receipt of the completed respective Time 1 questionnaire). The treatment of participants was in accordance with the ethical standards of the National Statement on Ethical Conduct in Research Involving Humans (1999). A copy of the ethics approval for this study also appears in Appendix C.
Results

The psychometric properties of the QES were further evaluated in the present study. The reliability, stability, and validity of the six QES scales were tested. The data were tested against the models determined in Study 2A.

For the first phase cross-sectional data, preparation and correlations were conducted using SPSS 10. The extent to which the factor structure adequately represented the covariation among items was examined using confirmatory factor analysis. Confirmatory factor analysis was performed using AMOS 4 (Arbuckle & Wothke, 1999). The analyses then used structural equation models to examine the relationships between explanatory style, optimism, and mood. Structural modeling was also conducted with AMOS 4.

In total, five sets of models were evaluated. First, the constituent items for each QES scale construct were confirmed as contributing significantly to the measurement of that construct. Second, the hypothesised measurement model for the QES factors, shown in Figure 26, was examined to enable comparisons with Study 2A. Then, separate measurement models were estimated for optimism, and for mood. Finally, the hypothesised overall structural model (with QES scales, optimism and mood) was tested. This model addressed the direct and indirect relationships of the QES and LOT-R constructs with Anhedonic Depression and Anxious Arousal.

Analyses of the longitudinal data also used SPSS 10. First, the stability of each of the QES scales was examined using test-retest correlations. Second, a series of hierarchical multiple regressions were performed to predict Time 2 Anhedonic Depression from QES measures taken at Time 1 and from interactions between Time 1 QES measures and intervening stress. These hierarchical multiple regressions controlled for the effects of Time 1 Anhedonic Depression and intervening stress on subsequent depressed mood.

7.3.1 Summary Descriptives

Several random missing values were replaced using the mean value for each affected variable. Means and standard deviations were then calculated for each measure at Time 1 and are presented in Table 21. Most results are comparable to those obtained by other researchers and are close to those obtained in Studies 1 and 2. The current mean MASQ Anhedonic Depression values match those obtained over the same period by Watson et al. (1995) for their sample of 438 undergraduate males and 635 undergraduate females of 55.6 ($SD = 13.4$) and 54.2 ($SD = 13.9$)
respectively. The current MASQ Anxious Arousal mean was slightly lower than those obtained by Watson et al. for their undergraduate samples of males and females, of 27.8 (SD = 9.4) and 27.1 (SD = 8.2) respectively. However, the current Anxious Arousal mean matched those obtained for their adult samples of 142 men and 187 women, who obtained mean values of 24.4 (SD = 8.0) and 24.2 (SD = 7.8) respectively.

The LOT-R results were similar to those obtained by Scheier et al. (1994) during scale revision. Scheier et al. obtained a mean value of 14.33 (SD = 4.28) for a sample of 2,055 college students.

QES mean values were similar to those produced in Study 2 (321 adults). In Study 2, Positive Disposition provided a mean value of 24.05 (SD = 4.00); Positive Behaviour provided a mean value of 17.92 (SD = 2.86); Positive Global provided a mean value of 38.58 (SD = 7.40); Negative Disposition provided a mean value of 14.61 (SD = 3.94); Negative Behaviour provided a mean value of 22.03 (SD = 3.93); and, Negative Global provided a mean value of 25.37 (SD = 6.02).

Gender differences in the mood, optimism, and QES scales were tested by multivariate analysis of variance. There was a significant difference between males and females at the global level, $F(9, 250) = 3.46, p = .001$. However, when the results for the scales were considered separately, none of the differences reached statistical significance using a Bonferroni adjusted alpha level of .001. It was thus deemed acceptable to combine data for females and males.

Table 21
Means and Standard Deviations for Measured Mood, Optimism, and QES Variables

<table>
<thead>
<tr>
<th>Measure</th>
<th>Scale Range</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>MASQ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anhedonic Depression</td>
<td>22-110</td>
<td>57.82</td>
<td>14.43</td>
</tr>
<tr>
<td>Anxious Arousal</td>
<td>17-85</td>
<td>22.99</td>
<td>5.87</td>
</tr>
<tr>
<td>LOT-R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimism</td>
<td>0-24</td>
<td>14.69</td>
<td>4.52</td>
</tr>
<tr>
<td>QES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Disposition</td>
<td>7-35</td>
<td>24.42</td>
<td>3.99</td>
</tr>
<tr>
<td>Positive Behaviour</td>
<td>5-25</td>
<td>17.81</td>
<td>2.82</td>
</tr>
<tr>
<td>Positive Global</td>
<td>10-50</td>
<td>34.14</td>
<td>6.71</td>
</tr>
<tr>
<td>Negative Disposition</td>
<td>6-30</td>
<td>14.27</td>
<td>3.66</td>
</tr>
<tr>
<td>Negative Behaviour</td>
<td>7-35</td>
<td>22.41</td>
<td>3.43</td>
</tr>
<tr>
<td>Negative Global</td>
<td>10-50</td>
<td>24.13</td>
<td>5.19</td>
</tr>
</tbody>
</table>

Note. $N = 250$, MASQ = Mood and Anxiety Symptom Questionnaire – Short Form; LOT-R = Life Orientation Test, Revised; QES = Questionnaire of Explanatory Style; higher values indicate more of the characteristic.
7.3.2 Confirmatory Factor Analysis and Model Evaluation

An evaluation of the internal structure of the QES was conducted in two stages. The first stage of measurement model assessment, confirmatory factor analysis, was applied to the constituent items for each scale. This strategy permitted the testing of content of each of the six scales. During the second stage of measurement model assessment, proposed relationships between scales were investigated. In confirming the measurement models for the six scales, item retention in the scales was based upon two criteria: significant loading coefficients (similar to factor loadings) and the goodness-of-fit indices described earlier in Chapter 4 (namely, $\chi^2$, $\chi^2/df$, RMSEA, IFI).

Each scale was tested using maximum likelihood estimates. In specifying each model, the latent construct variance was set at 1.00 so as to assign a metric to the model. The AMOS program (Arbuckle & Wothke, 1999) produces the factor loadings and factor score weights for all items in each model. It should be noted that factor score weights are calculated from the variance and factor loading matrices, and are not linearly proportional to factor loadings. Reliabilities of the latent constructs and percentage of variance explained in the latent constructs were calculated according to the formulae provided by Bollen (1989). All goodness-of-fit indices presented in the following sections represent the best possible model solutions, although they do not always reach acceptability on all four measures of model fit. In all analyses the significance level for path loadings was set at $p < .05$.

7.3.2.1 Positive Global.

The Positive Global scale consisted of 10 items. Through the measurement model assessment process, all items were retained. Loading coefficients for constituent items are presented in Table 22. All loading coefficients were significant at $p < .01$. The scale returned the following goodness-of-fit statistics, $\chi^2 (34, N = 250) = 48.41, p = .05, \chi^2/df = 1.42$, RMSEA = .04, IFI = .99, meeting all four fit criteria. This factor explained 44% of the variance in the constituent items and yielded a strong internal consistency reliability of .89.
Table 22

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>When you make an effort, how many areas of your life benefit</td>
<td>.77</td>
<td>.22</td>
</tr>
<tr>
<td>When you are successful at something important to you, how many areas of your life benefit</td>
<td>.74</td>
<td>.20</td>
</tr>
<tr>
<td>When you concentrate well on something, how many areas of your life benefit</td>
<td>.72</td>
<td>.18</td>
</tr>
<tr>
<td>When you happen to be efficient, how many areas of your life benefit</td>
<td>.72</td>
<td>.17</td>
</tr>
<tr>
<td>When you do something clever, how many areas of your life benefit</td>
<td>.68</td>
<td>.14</td>
</tr>
<tr>
<td>When you do something enjoyable, how many areas of your life benefit</td>
<td>.67</td>
<td>.12</td>
</tr>
<tr>
<td>When you do a good deed, how many areas of your life benefit</td>
<td>.60</td>
<td>.10</td>
</tr>
<tr>
<td>When you have worked hard on a project, how many areas of your life benefit</td>
<td>.59</td>
<td>.11</td>
</tr>
<tr>
<td>When others make you do something enjoyable, how many areas of your life benefit</td>
<td>.59</td>
<td>.08</td>
</tr>
<tr>
<td>When you make a good decision, how many areas of your life benefit</td>
<td>.55</td>
<td>.09</td>
</tr>
</tbody>
</table>

Note. Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

7.3.2.2 Negative Global.

The Negative Global scale consisted of 10 items. Through the measurement model assessment process, all items were retained. Loading coefficients for constituent items are presented in Table 23. All loading coefficients were significant at \( p < .01 \). The scale returned the following goodness-of-fit statistics, \( \chi^2 (29, N = 250) = 35.93 \), \( p = .18 \), \( \chi^2 / df = 1.24 \), RMSEA = .03, IFI = .98, meeting all four fit criteria. This factor explained 23\% of the variance in the constituent items and yielded a sound internal consistency reliability of .74.
<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>When you are delayed by traffic or transport, how many areas of your life suffer?</td>
<td>.62</td>
<td>.28</td>
</tr>
<tr>
<td>When you happen to be tense, how many areas of your life suffer?</td>
<td>.60</td>
<td>.23</td>
</tr>
<tr>
<td>When you have a bad dream, how many areas of your life suffer?</td>
<td>.54</td>
<td>.26</td>
</tr>
<tr>
<td>When you happen to embarrass yourself, how many areas of your life suffer?</td>
<td>.53</td>
<td>.13</td>
</tr>
<tr>
<td>When you get a bad cold, how many areas of your life suffer?</td>
<td>.50</td>
<td>.15</td>
</tr>
<tr>
<td>When you happen to be careless, how many areas of your life suffer?</td>
<td>.48</td>
<td>.21</td>
</tr>
<tr>
<td>When you lose track of the time, how many areas of your life suffer?</td>
<td>.44</td>
<td>.15</td>
</tr>
<tr>
<td>When you are unable to finish something at work, how many areas of your life suffer?</td>
<td>.33</td>
<td>.06</td>
</tr>
<tr>
<td>When you accidentally suffer minor injuries, how many areas of your life suffer?</td>
<td>.31</td>
<td>.06</td>
</tr>
<tr>
<td>When you keep a secret for someone, how many areas of your life suffer?</td>
<td>.23</td>
<td>.04</td>
</tr>
</tbody>
</table>

*Note.* Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

### 7.3.2.3 Positive Disposition.

The Positive Disposition scale initially had seven items. Through the measurement model assessment process, this number was reduced to six. Loading coefficients for constituent items are presented in Table 24. All loading coefficients were significant at $p < .01$. The scale returned the following goodness-of-fit statistics, $\chi^2 (8, N = 250) = 7.53, p = .48, \chi^2/df = .94$ RMSEA $= .00$, IFI $= 1.00$ meeting all four fit criteria. This factor explained 31% of the variance in the constituent items and yielded a sound internal consistency reliability of .71.
Table 24
*Loading coefficients for the Positive Disposition scale of the QES in a General Population Sample of 250 Adults*

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>You happen to feel content. Is it because you are a positive person?</td>
<td>.73</td>
<td>.40</td>
</tr>
<tr>
<td>You happen to feel like celebrating. Is it because you have a great life?</td>
<td>.68</td>
<td>.31</td>
</tr>
<tr>
<td>You happen to feel very relaxed. Is it because you are an easy-going person?</td>
<td>.59</td>
<td>.22</td>
</tr>
<tr>
<td>You happen to feel fortunate. Is it because you are a lucky person?</td>
<td>.42</td>
<td>.11</td>
</tr>
<tr>
<td>You happen to have fun at a family get-together. Is it because you are fun to be with?</td>
<td>.40</td>
<td>.16</td>
</tr>
<tr>
<td>You happen to sleep very well. Is it because you are a sound sleeper?</td>
<td>.40</td>
<td>.08</td>
</tr>
</tbody>
</table>

*Note.* Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

The item removed was “You happen to make your friends laugh. Is it because you have a good sense of humour?” Removal was necessary because the item made no significant contribution to the construct Positive Disposition, providing a factor loading of .15.

### 7.3.2.4 Negative Disposition.

The Negative Disposition scale consisted of six items. Through the measurement model assessment process, all items were retained. Loading coefficients for constituent items are presented in Table 25. All loading coefficients were significant at $p < .01$. The scale returned the following goodness-of-fit statistics, $\chi^2(8, N = 250) = 10.50$, $p = .23$, $\chi^2/df = 1.31$, RMSEA = .04, IFI = .99, meeting all four fit criteria. This factor explained 29% of the variance in the constituent items and yielded a relatively sound internal consistency reliability of .67.
### Table 25

**Loading coefficients for the Negative Disposition scale of the QES in a General Population Sample of 250 Adults**

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>You happen to be angry. Is it because you have a bad temper?</td>
<td>.87</td>
<td>.63</td>
</tr>
<tr>
<td>You happen to be in a bad mood. Is it because you are easily annoyed?</td>
<td>.66</td>
<td>.20</td>
</tr>
<tr>
<td>You happen to argue with other family members. Is it because you are argumentative?</td>
<td>.48</td>
<td>.10</td>
</tr>
<tr>
<td>You happen to lose faith in a friend or family member. Is it because you are unforgiving?</td>
<td>.36</td>
<td>.08</td>
</tr>
<tr>
<td>You happen to feel lonely. Is it because you are not popular?</td>
<td>.30</td>
<td>.06</td>
</tr>
<tr>
<td>You happen to annoy a friend. Is it because you are an inconsiderate person?</td>
<td>.28</td>
<td>.05</td>
</tr>
</tbody>
</table>

*Note.* Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

#### 7.3.2.5 Positive Behaviour.

The Positive Behaviour scale consisted of five items. Through the measurement model assessment process, all items were retained. Loading coefficients for constituent items are presented in Table 26.

### Table 26

**Loading coefficients for the Positive Behaviour scale of the QES in a General Population Sample of 250 Adults**

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>You happen to be smiled at by an attractive stranger. Is it because at the time you are smiling?</td>
<td>.48</td>
<td>.36</td>
</tr>
<tr>
<td>You happen to prepare a meal for friends and they compliment you. Is it because this day you make an effort preparing the food?</td>
<td>.41</td>
<td>.26</td>
</tr>
<tr>
<td>You happen to really like your work. Is it because just now you feel in control?</td>
<td>.40</td>
<td>.25</td>
</tr>
<tr>
<td>You happen to exercise. Is it because that day you feel energetic?</td>
<td>.38</td>
<td>.19</td>
</tr>
<tr>
<td>You happen to win a game. Is it because at the time you are really focused on the game?</td>
<td>.26</td>
<td>.15</td>
</tr>
</tbody>
</table>

*Note.* Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.
All loading coefficients were significant at \( p < .01 \). The scale returned the following goodness-of-fit statistics, \( \chi^2 (5, N = 250) = 1.83, p = .87, \chi^2/df = .37 \), RMSEA = .00, IFI = 1.07, (in some cases values greater than 1.00 can be obtained for incremental or comparative fit indices and may indicate an over-specified model. In this instance the model was not considered over-specified because the included pathways were not theoretically trivial). The model met all four fit criteria. This factor explained 15% of the variance in the constituent items and yielded a modest internal consistency reliability of .46.

### 7.3.2.6 Negative Behaviour.

The Negative Behaviour scale initially had seven items. Through the measurement model assessment process, this number was reduced to five. Loading coefficients for constituent items are presented in Table 27. All loading coefficients were significant at \( p < .01 \). The scale returned the following goodness-of-fit statistics, \( \chi^2 (4, N = 250) = 1.91, p = .75, \chi^2/df = .48 \), RMSEA = .00, IFI = 1.05 meeting all four fit criteria. This factor explained 16% of the variance in the constituent items and yielded a modest internal consistency reliability of .42.

<table>
<thead>
<tr>
<th>Item Content</th>
<th>Factor Loading</th>
<th>Factor Score Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>You happen to have a bad night out. Is it because at the time you are unable to relax?</td>
<td>.54</td>
<td>.45</td>
</tr>
<tr>
<td>You happen to tell a lie. Is it because at that moment you are too embarrassed to tell the truth?</td>
<td>.46</td>
<td>.24</td>
</tr>
<tr>
<td>You happen to feel nervous. Is it because at the time you are anxious about a forthcoming event?</td>
<td>.42</td>
<td>.45</td>
</tr>
<tr>
<td>You happen to be treated rudely. Is it because at the time you are angry about something?</td>
<td>.30</td>
<td>.17</td>
</tr>
<tr>
<td>You happen to miss a social engagement. Is it because at this time you are too tired to go out?</td>
<td>.24</td>
<td>.09</td>
</tr>
</tbody>
</table>

*Note.* Factor score weights are calculated from the variance and factor loading matrices and are not linearly proportional to factor loadings.

The two items removed from Negative Behaviour were “You happen to get behind with your paperwork. Is it because just lately you can’t be bothered?” and
“You happen to worry about the future. Is it because just then you remembered some outstanding expenses?” Removal was necessary because the items made no significant contribution to the construct Negative Behaviour, both providing factor loadings of .21.

7.3.3 Measurement and Structural Equation Models

Prior to the validation of the QES factors with optimism, pessimism, and mood, measurement models for the QES, optimism, and mood were assessed. Testing the associations of the measures allowed for the measurement models to be set before proceeding to structural models. This process allows for the stepwise building of a model and aids interpretability (Hair et al., 1995).

7.3.3.1 Measurement models for the QES, LOT-R, and mood.

To reduce the number of measured variables and thus paths requiring estimation in subsequent models, each QES factor obtained through confirmatory factor analysis was converted into a congeneric latent variable. A congeneric latent variable is a composite of the weighted items contained in a measure. Congeneric latent variables allow for the unequal contributions of individual items to their latent construct (Holmes-Smith & Rowe, 1994). Further, the use of congeneric latent variables provides a means of data reduction that supplies valid and reliable composite variables, allowing for the reliabilities and error variances to be fixed in structural equation models (Holmes-Smith & Rowe). Factor score weights were applied to each constituent item and summed to create each congeneric latent variable. MASQ Anhedonic Depression, MASQ Anxious Arousal, LOT-R Optimism, and LOT-R Pessimism were also calculated as the composite of their weighted items. The factor score weights for the mood measures and for the LOT-R were obtained from measurement model analyses of their respective constituent items.

In assessing any construct measured by more than one variable, the path loading of one measure was set at 1.00 so as to assign a metric to the construct because each latent construct was measured by more than one variable. Later, when one latent construct was defined by one congeneric variable, in accordance with Holmes-Smith and Rowe (1994), the path loading and error variance were calculated using the scale reliability, standard deviation and variance. The obtained path loading and error term were then applied to enable model identification. Consequently, in
some of the models the intercorrelations between constructs were the only paths estimated. Measurement model assessment for LOT-R Optimism and Pessimism was carried out in an exploratory fashion based on past research and theory.

An evaluation of the internal structure of the QES was conducted using measurement model analysis of the six latent constructs. First, interrelationships between the six QES constructs, based on Figure 16 in Study 2A, were examined to replicate the previous findings. Second, the hypothesised associations and direct effects predicted in the hypothesised model, Figure 26 of this study, were tested. Third, a measurement model for Optimism and Pessimism comprising the LOT-R, QES Positive Disposition, and QES Negative Disposition was tested. Fourth, a measurement model for mood was tested. Fifth, the model for the explanatory factors in relation to Anhedonic Depression was tested. Then, Anxious Arousal was introduced into the model. Finally, the LOT-R, was introduced to mediate relationships between explanatory factors and mood. Consequently, measurement models were merged into a structural model containing QES, LOT-R, and mood constructs.

### 7.3.3.2 Data preparation and assumptions.

All variables to be used in the structural equation modeling process were screened for normality and univariate outliers prior to analyses. Thirty-two univariate outlier scores on seven of the variables (Positive Disposition, Positive Behaviour, Negative Disposition, Negative Behaviour, Negative Global, Anxious Arousal, and LOT-R Pessimism) were recoded back to acceptable limits. There were two multivariate outliers above the $p < .001$ cut-off criterion recommended by Tabachnick and Fidell (1996). The first was a 27-year old male with high scores on all measures except for Positive Behaviour, Negative Global, and Negative Disposition. The second was a 22-year old female who had high scores on the globality scales, Anhedonic Depression, and Optimism but a low score on Anxious Arousal. Data for these two respondents was removed from further analyses, leaving 248 participants in subsequent analyses.

Gender differences in the redeveloped QES scales were tested with a multivariate analysis of variance. There was a significant difference between males and females at the global level $F(6, 248) = 4.37$, $p = .000$. When the results for the scales were considered separately, none of the differences reached statistical
significance using a Bonferroni adjusted alpha level of .003. Therefore the data for males and females was combined.

The two distribution assumptions required by AMOS4 (Arbuckle & Wothke, 1999) are the independence of observations and multivariate normality. The independence of observations assumption was met, but in testing for univariate normality of the distributions, Anxious Arousal was identified as moderately skewed. Because multivariate normality could not be assumed, an ADF estimation method of SEM was employed for models using this variable. This estimation method allows for the use of non-normal data. Sample size for the present study was adequate for ADF, being over 200 and estimating less than 12 measured variables (Holmes-Smith & Rowe, 1994). The sample size, 248, was also above the desirable 10:1 ratio between the number of participants and the number of parameters estimated (Kline, 1998).

7.3.3.3 Model estimation.

All measurement model analyses for the QES were based on a covariance matrix and used maximum likelihood estimates. Measurement model analyses for the mood measures and structural model estimations were based on a covariance matrix and used the ADF method. The intercorrelations underpinning the structural equation models are presented in Table 28. All models presented in the results show standardised parameter estimates. The adequacy of the following measurement and structural models was assessed using the four fit indices ($\chi^2$, $\chi^2/df$, RMSEA, IFI) described in Study 1.
Table 28
Correlations between Weighted Measures used in the Measurement and Structural Models

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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</thead>
<tbody>
<tr>
<td>1. QES Positive Global</td>
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<tr>
<td>2. QES Negative Global</td>
<td>.31***</td>
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<tr>
<td>3. QES Positive Disposition</td>
<td>.34***</td>
<td>-.29***</td>
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<tr>
<td>4. QES Negative Disposition</td>
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<td>.36***</td>
<td>-.40***</td>
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<tr>
<td>5. QES Positive Behaviour</td>
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<td>.10</td>
<td>.39***</td>
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<tr>
<td>6. QES Negative Behaviour</td>
<td>-.07</td>
<td>.32***</td>
<td>-.12</td>
<td>.34***</td>
<td>.27***</td>
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<td>7. MASQ Anhedonic Depression</td>
<td>-.38***</td>
<td>.23***</td>
<td>-.64***</td>
<td>.30***</td>
<td>-.21**</td>
<td>.23***</td>
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<tr>
<td>8. MASQ Anxious Arousal</td>
<td>-.00</td>
<td>.23***</td>
<td>-.30***</td>
<td>.18**</td>
<td>.05</td>
<td>.18**</td>
<td>.32***</td>
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<tr>
<td>9. LOT-R Optimism</td>
<td>.28***</td>
<td>-.25***</td>
<td>.70***</td>
<td>-.41***</td>
<td>.22**</td>
<td>-.21**</td>
<td>-.58***</td>
<td>-.29***</td>
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<tr>
<td>10. LOT-R Pessimism</td>
<td>-.19**</td>
<td>.31***</td>
<td>-.62***</td>
<td>.32***</td>
<td>-.18**</td>
<td>.17**</td>
<td>.57***</td>
<td>.32***</td>
<td>-.68***</td>
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</tbody>
</table>

Note. N = 248, QES = Questionnaire of Explanatory Style, MASQ = Mood and Anxiety Symptom Questionnaire, MASQ GD = Mood and Anxiety Symptom Questionnaire General Distress, LOT-R = Life Orientation Test, Revised.

**p = < .01, ***p = < .001
7.3.3.4 QES measurement model analysis.

The hypothesised measurement model for the QES constructs, Figure 26, was evaluated and is shown in Figure 28.

Figure 28. QES hypothesised measurement model.

Note. PDIS = Positive Disposition, PBEH = Positive Behaviour, PGLO = Positive Global, NGLO = Negative Global, NDIS = Negative Disposition, NBEH = Negative Behaviour, ***p < .001.

The measurement model shown in Figure 28 returned the following goodness-of-fit statistics, $\chi^2 (8, N = 248) = 29.12, p = .00, \chi^2 / df = 3.64$, RMSEA = .10 (.07 - .15), IFI = .90, meeting none of the four fit criteria and indicating poor fit to the data. All of the paths in the model are significant except for the nonsignificant path from Positive Global to Positive Disposition. This path will be retained to ensure the integrity of the measurement model. A look at the modification indices greater than four suggested that an additional covariance between Positive Behaviour and Negative Behaviour would improve model fit. Positive Behaviour contained content such as: smiling, making an effort, and feeling in control; and, Negative Behaviour contained content such as: being unable to relax, anxious, and too embarrassed to tell the truth. These two factors may both tap emotional striving...
content in a similar way to the globality factors tapping similar content. Thus a
link between Positive Behaviour and Negative Behaviour was considered justified
and is shown in Figure 29.

Figure 29. QES measurement model depicting higher order dispositional constructs.

Note. PDIS = Positive Disposition, PBEH = Positive Behaviour, PGLO = Positive Global,
NGLO = Negative Global, NDIS = Negative Disposition, NBEH = Negative Behaviour, ***p < .001.

The measurement model shown in Figure 29 returned the following
goodness-of-fit statistics, $\chi^2 (7, N = 248) = 7.06, p = .42, \chi^2/df = 1.01$, RMSEA = .01
(0.00 - .08), IFI = 1.00, meeting all of the four fit criteria and indicating excellent fit to
the data. Negative Behaviour displayed strong direct effects on both of the
dispositional constructs. The globality constructs had very small effects on the
dispositional constructs except via associations with the behavioural constructs. The
combined constructs explained 80% of the variance in Positive Disposition and 58%
of the variance in Negative Disposition.

7.3.3.5 The measurement of optimism and pessimism.

The hypothesised composition of Optimism and Pessimism was examined in
a model whereby Positive Disposition and LOT-R Optimism comprised Optimism
and Negative Disposition and LOT-R Pessimism comprised Pessimism. This model
was inadmissible because the implied covariance matrix for the proposed Optimism and Pessimism constructs was not positive definite, indicating that the model was incorrect. To examine relationships between these four variables further, each was specified as forming a latent construct. The resulting model is shown in Figure 30.

\[ \text{Figure 30. Confirmatory factor analysis of LOT-R and QES dispositional factors.} \]

Note. PDIS = Positive Disposition, LOTO = LOT-R Optimism, LOTP = LOT-R Pessimism, NDIS = Negative Disposition, ***p < .001.

The confirmatory model shown in Figure 30 was a saturated model returning no goodness-of-fit indices. Figure 30 depicts extremely high associations between LOT-R Optimism and LOT-R Pessimism and each with Positive Disposition. Negative Disposition has lower associations with the other three constructs indicating that it is relatively separate. A model showing the new construct, Optimism, composed of LOT-R Optimism, LOT-R Pessimism, and Positive Disposition, and the separate construct, Negative Disposition, can be seen in Figure 31.
Figure 31. Final confirmatory factor analysis of LOT-R and QES dispositional factors.

Note. PDIS = Positive Disposition, LOTO = LOT-R Optimism, LOTP = LOT-R Pessimism, NDIS = Negative Disposition, ***p < .001.

The final confirmatory model shown in Figure 31 returned the following goodness-of-fit statistics, $\chi^2 (2, N = 248) = 2.00, p = .37, \chi^2 / df = 1.00, \text{RMSEA} = .00$ ($0.00 - 0.13$), IFI = 1.00 meeting all of the four fit criteria and indicating excellent fit to the data. LOT-R Optimism, Positive Disposition, and LOT-R Pessimism all have high loadings onto Optimism. The inverse association between Optimism and Negative Disposition was moderate indicating that Optimism and Negative Disposition formed separate but related constructs.

7.3.3.6 Mood measurement.

Next, the Anhedonic Depression and Anxious Arousal scales from the MASQ were examined to confirm them as measures of depression-specific and anxiety-specific constructs. Figure 32 shows the two mood measures contributing to separate but related latent constructs and confirms the proposed measurement of mood.
Figure 32. Measurement model for mood.

*Note* AD = Mood and Anxiety Symptom Questionnaire-Anhedonic Depression, AA = Mood and Anxiety Symptom Questionnaire-Anxious Arousal, ***$p < .001$.

The mood measurement model shown in Figure 32 was a saturated model returning no fit indices. As predicted, Anhedonic Depression and Anxious Arousal yielded a low to moderate association, lower than that obtained between Positive Mood and Negative Mood in the previous studies. Anhedonic Depression and Anxious Arousal were deemed suitable as convergent and discriminant validity measures for the QES scales.

7.3.3.7 Validation of the QES using the LOT-R, Anhedonic Depression, and Anxious Arousal.

The hypothesised validation model presented in Figure 27 of the introduction was tested in an incremental fashion. The first step in the validation process was the addition of Anhedonic Depression to the final confirmation model of the QES structure shown in Figure 29. The validation model for the QES with Anhedonic Depression is shown in Figure 33.
The validation model shown in Figure 33 returned the following goodness-of-fit statistics, $\chi^2 (11, N = 248) = 35.05, p = .00, \chi^2 /df = 3.12$, RMSEA = .09 (.06 - .13), IFI = 0.89, meeting none of the four fit criteria and indicating poor fit to the data. The combined constructs explained 68% of the variance in Anhedonic Depression. No paths could be removed from the model because of the need to retain the integrity of the QES structure. However, an examination of the modification indices revealed that direct paths from both Positive Global and Negative Behaviour to Anhedonic Depression would improve model fit. These paths were theoretically justified by the reformulated learned helplessness theory (Abramson et al., 1978) that would predict direct relationships for any attributional factors with depressed mood (when attributional factors only are compared with depressed mood). A model with the addition of the paths is shown in Figure 34.
Figure 34. Final validation model for QES constructs with Anhedonic Depression.

Note. PDIS = Positive Disposition, PBEH = Positive Behaviour, PGLO = Positive Global, NGLO = Negative Global, NDIS = Negative Disposition, NBEH = Negative Behaviour, AD = Anhedonic Depression, **p > .01, ***p > .001.

*Significance values are based both on magnitude of the loading and the error term. Consequently, lower loadings are sometimes more significant than higher loadings.

The validation model shown in Figure 34 returned the following goodness-of-fit statistics, $\chi^2 (9, N = 248) = 15.68, p = .07, \chi^2 / df = 1.74$, RMSEA = .05 (.00 - .09), IFI = 0.97, meeting all of the four fit criteria and indicating excellent fit to the data. The combined constructs explained 66% of the variance in Anhedonic Depression.

The next step of the validation process was the addition of Anxious Arousal to the validation model to establish discriminant validity. Paths from the pessimistic factors to Anxious Arousal were included in order to evaluate the magnitude of path loadings and are shown in Figure 35.
Figure 35. Discriminant validation model for QES constructs with mood.

Note. PDIS = Positive Disposition, PBEH = Positive Behaviour, PGLO = Positive Global, NGLO = Negative Global, NDIS = Negative Disposition, NBEH = Negative Behaviour, AD = Anhedonic Depression, AA = Anxious Arousal. ***p < .001.

'Significance values are based both on magnitude of the loading and the error term. Consequently, lower loadings are sometimes more significant than higher loadings.

The validation model shown in Figure 35 returned the following goodness-of-fit statistics, \( \chi^2 (13, N = 248) = 23.25, p = .04, \chi^2 / df = 1.79, RMSEA = .06 (.00 - .09), IFI = 0.96, \) meeting three of the four fit criteria and indicating good fit to the data. The combined constructs explained 61% of the variance in Anhedonic Depression and 20% of the variance in Anxious Arousal. The paths from the pessimistic constructs to Anxious Arousal were tested in order to evaluate their loadings for discriminant validity. If the pessimistic constructs were depression-specific, the paths to Anxious Arousal would be low. All pessimistic factors yielded
nonsignificant paths to Anxious Arousal and were removed incrementally, leaving no significant path to Anxious Arousal. As none of the QES factors significantly predicted Anxious Arousal, as indicated by modification indices, it was removed from future models. Therefore the validation model displayed in Figure 34 was reverted to as the final mood validation model.

The next step of the validation process was the addition of the LOT-R to the validation model. A difference between the validation model tested and shown in Figure 36 and the model proposed back in Figure 27, occurred because the measurement of Optimism and Pessimism were not as originally predicted.

Figure 36. QES and LOT-R validation model with mood.

Note. PDIS = Positive Disposition, PBEH = Positive Behaviour, PGLO = Positive Global, NGLO = Negative Global, NDIS = Negative Disposition, NBEH = Negative Behaviour, LOTO = LOT-R Optimism, LOTP = LOT-R Pessimism, AD = Anhedonic Depression, *p > .05, ***p > .001.

The validation model shown in Figure 36 returned the following goodness-of-fit statistics, $\chi^2 (21, N = 248) = 48.42 \ p = .00$, $\chi^2/df = 2.31$, RMSEA = .07 (.05 – 1.0), IFI = 0.90, meeting two of the four fit criteria and indicating acceptable fit to the data. The combined constructs explained 65% of the variance in Anhedonic Depression. As Optimism was a newly formed construct, it was deemed acceptable.
to remove the nonsignificant path from Positive Global to Optimism. Next, the modification indices were examined and a covariance between the LOT-R error terms was identified as likely to improve model fit. It was acceptable that constructs yielded from the one measure (LOT-R) could share common error variance, therefore Figure 37 shows a model with the inclusion of this covariance.

![Diagram of mood validation model for QES factors and Optimism.](image)

**Figure 37.** Final mood validation model for QES factors and Optimism.

*Note.* PDIS = Positive Disposition, PBEH = Positive Behaviour, PGLO = Positive Global, NGLO = Negative Global, NDIS = Negative Disposition, NBEH = Negative Behaviour, LOTO = LOT-R Optimism, LOTP = LOT-R Pessimism, AD = Anhedonic Depression, *p > .05, ***p > .001.

The final validation model shown in Figure 37 returned the following goodness-of-fit statistics, $\chi^2 (21 \ N = 248) = 41.97, \ p = .00, \ \chi^2/df = 1.99, \ RMSEA = .06 \ (.03 - .09), \ IFI = .92$, meeting three of the four fit criteria and indicating good fit to the data. The combined constructs explained 66% of the variance in Anhedonic Depression. An examination of the modification indices indicated no further justifiable improvement to model fit.

7.3.4 *Psychometric Properties of the QES scales based on Longitudinal Data*

The longitudinal data were next examined to further evaluate the QES scales. There was an 8 to 16 week period ($M = 66.38 \ \text{days}, \ SD = 9.10$) between the Time 1
and Time 2 data collection. Over this period, the number of participants reduced from 250 to 197. The longitudinal data therefore required additional preparation. Using SPSS 10, the psychometric properties for the QES factors were calculated for the 197 participants who completed both Time 1 and Time 2.

7.3.4.1 *Data preparation and assumptions.*

Each QES scale was calculated as the total of the unweighted composite of the constituent items. All variables used in the following test-retest stability and hierarchical multiple regressions were screened for normality and univariate outliers prior to analyses. Seven univariate outliers on three of the variables (Time 1 Positive Behaviour, Time 1 Negative Global, and Time 2 Negative Global) were recoded back to acceptable limits. There were no multivariate outliers above the $p < .001$ cut-off criterion recommended by Tabachnick and Fidell (1996). All variables used in the following analyses were found to have normal distributions and there was no evidence of non-linearity.

7.3.4.2 *QES stability.*

A test-retest stability correlation was calculated for each of the QES scales. Test-retest reliabilities along with summary descriptives for the QES scales are shown in Table 29. Very acceptable test-retest reliabilities were obtained for the QES factors. Positive Disposition was the most stable scale and Negative Behaviour was the least stable.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Scale Range</th>
<th>$M$</th>
<th>$SD$</th>
<th>Test-Retest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Disposition</td>
<td>7-35</td>
<td>24.42</td>
<td>3.99</td>
<td>.82</td>
</tr>
<tr>
<td>Positive Behaviour</td>
<td>5-25</td>
<td>17.81</td>
<td>2.82</td>
<td>.70</td>
</tr>
<tr>
<td>Positive Global</td>
<td>10-50</td>
<td>34.14</td>
<td>6.71</td>
<td>.74</td>
</tr>
<tr>
<td>Negative Disposition</td>
<td>6-30</td>
<td>14.27</td>
<td>3.66</td>
<td>.70</td>
</tr>
<tr>
<td>Negative Behaviour</td>
<td>7-35</td>
<td>22.41</td>
<td>3.43</td>
<td>.63</td>
</tr>
<tr>
<td>Negative Global</td>
<td>10-50</td>
<td>24.13</td>
<td>5.19</td>
<td>.71</td>
</tr>
</tbody>
</table>

*Note. N = 197.*

7.4.3.3 *Summary Descriptives*

Two random missing values on Time 2 MASQ Anhedonic Depression were replaced with the mean values. Means and standard deviations were then calculated for MASQ Anhedonic Depression and Stress at Time 2 and are presented in Table 30. The mean MASQ Anhedonic Depression values matched those obtained at Time
1 (Table 21) and those obtained in previous research by Watson et al. (1995). The Stress measure was developed for this study using several existing measures and thus no previous norms are available for comparisons to be made.

Table 30
*Means and Standard Deviations for Time 2 Anhedonic Depression and Stress*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Scale Range</th>
<th>M</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td>Time 2 MASQ Anhedonic Depression</td>
<td>22-110</td>
<td>58.43</td>
<td>14.49</td>
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<tr>
<td>Stress</td>
<td>20-134</td>
<td>41.63</td>
<td>9.22</td>
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</tbody>
</table>

*Note. N = 197, MASQ = Mood and Anxiety Symptom Questionnaire – Short Form; higher values indicate more of the characteristic.*

**7.3.4.4 QES, Stress, and QES x Stress as predictors of Anhedonic Depression.**

To further test the validity of the QES factors, a series of hierarchical regression analyses were performed to predict Anhedonic Depression at Time 2 from measures taken at Time 1. Two core predictors in the series were Time 1 Anhedonic Depression and Stress. For each analysis, Time 1 Anhedonic Depression was entered first to control for the effect of initial depression levels. At the next step, Stress was always entered in conjunction with each of the QES scales in turn. Finally at step 3, the interaction between Stress and the particular QES scales as a predictor was entered. In all cases the dependent variable was Anhedonic Depression at Time 2. To control for multicollinearity between the main variables and their interactional term, each interaction variable was centered around its mean before computation of the interaction term (Aiken & West, 1991; Cohen & Cohen, 1983).

**7.3.4.5 Data preparation and assumptions.**

Time 2 MASQ Anhedonic Depression and Stress were screened for normality, univariate, and multivariate outliers prior to analyses. Both variables were normally distributed and contained no univariate or multivariate outliers. The intercorrelations between the variables used in the regression analyses are shown in Table 31.
Table 31
Intercorrelations between Variables used in the Multiple Regression Analyses

<table>
<thead>
<tr>
<th>Measure</th>
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<tr>
<td>1. Anhedonic Depression Time 2</td>
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<td>3. Stress</td>
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<td>.31***</td>
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<td>4. Positive Disposition</td>
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<td>- .44***</td>
<td>-.53***</td>
<td>-.09</td>
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<tr>
<td>5. Positive Behaviour</td>
<td>-.21**</td>
<td>- .17*</td>
<td>-.03</td>
<td>.34***</td>
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<td>6. Positive Global</td>
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<td>-.44***</td>
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<td>.33***</td>
<td>.36***</td>
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<tr>
<td>7. Negative Disposition</td>
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<td>.37***</td>
<td>.24**</td>
<td>-.31***</td>
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<td>-.21**</td>
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<td>8. Negative Behaviour</td>
<td>.17*</td>
<td>.25***</td>
<td>.33***</td>
<td>-.05</td>
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<td>.10</td>
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<td></td>
</tr>
<tr>
<td>9. Negative Global</td>
<td>.25***</td>
<td>.26***</td>
<td>.30***</td>
<td>-.27***</td>
<td>.14*</td>
<td>.30***</td>
<td>.29***</td>
<td>.38***</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>10. Stress x Positive Disposition</td>
<td>-.03</td>
<td>-.05</td>
<td>.03</td>
<td>.10</td>
<td>.09</td>
<td>.09</td>
<td>-.03</td>
<td>.11</td>
<td>.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Stress x Positive Behaviour</td>
<td>-.02</td>
<td>-.10</td>
<td>.04</td>
<td>.04</td>
<td>.00</td>
<td>.03</td>
<td>-.06</td>
<td>.02</td>
<td>-.02</td>
<td>.51***</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>12. Stress x Positive Global</td>
<td>.09</td>
<td>-.07</td>
<td>.13</td>
<td>.08</td>
<td>.03</td>
<td>-.03</td>
<td>.07</td>
<td>.07</td>
<td>.05</td>
<td>.46***</td>
<td>.55***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Stress x Negative Disposition</td>
<td>-.03</td>
<td>-.04</td>
<td>.16*</td>
<td>-.03</td>
<td>-.03</td>
<td>.08</td>
<td>.12</td>
<td>.08</td>
<td>.05</td>
<td>-.23**</td>
<td>-.05</td>
<td>-.15*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Stress x Negative Behaviour</td>
<td>-.04</td>
<td>-.03</td>
<td>.25**</td>
<td>.11</td>
<td>.02</td>
<td>.07</td>
<td>.08</td>
<td>.15*</td>
<td>.09</td>
<td>.10</td>
<td>.26***</td>
<td>.22**</td>
<td>.45***</td>
<td></td>
</tr>
<tr>
<td>15. Stress x Negative Global</td>
<td>.01</td>
<td>-.09</td>
<td>.19**</td>
<td>.04</td>
<td>.01</td>
<td>.06</td>
<td>.05</td>
<td>.11</td>
<td>.12</td>
<td>-.15*</td>
<td>.07</td>
<td>.32***</td>
<td>.23**</td>
<td>.47***</td>
</tr>
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</table>

*Note. N = 197.  
* p = < .05, **p = < .01, ***p = < .001.
The results of the hierarchical regressions are shown in Table 32. Results show Stress, Positive Disposition, and Positive Behaviour as significant unique predictors of depressed mood. No other QES scales uniquely predicted depressed mood. None of the interactions between Stress and the QES scales were significant predictors of Anhedonic Depression at Time2.

Table 32
Hierarchical regression analyses showing prediction of Time 2 depression using Time 1 depression, Stress, QES factors, and QES x Stress interactions

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>ΔR²</th>
<th>Zero-Order Corr</th>
<th>β</th>
<th>sr²</th>
<th>t</th>
<th>df</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>Depression Time 1</td>
<td>.65</td>
<td>.65</td>
<td>.42</td>
<td>11.85***</td>
<td>1, 195</td>
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</tr>
<tr>
<td>2.</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>Positive Disposition</td>
<td>.06***</td>
<td>-.44</td>
<td>.04</td>
<td>3.92***</td>
<td>1, 193</td>
<td></td>
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<tr>
<td></td>
<td>Stress x Positive Disposition</td>
<td>.00</td>
<td>.03</td>
<td>.06</td>
<td>.02</td>
<td>2.65**</td>
<td>1, 192</td>
</tr>
<tr>
<td>2.</td>
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<td></td>
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<tr>
<td></td>
<td>Positive Behaviour</td>
<td>.05***</td>
<td>-.21</td>
<td>.16</td>
<td>.21</td>
<td>-2.30*</td>
<td>1, 193</td>
</tr>
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<td></td>
<td>Stress x Positive Behaviour</td>
<td>.00</td>
<td>-.02</td>
<td>.03</td>
<td>.00</td>
<td>0.61</td>
<td>1, 192</td>
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<tr>
<td>2.</td>
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<tr>
<td></td>
<td>Positive Global</td>
<td>.04**</td>
<td>-.27</td>
<td>.06</td>
<td>.22</td>
<td>-0.89</td>
<td>1, 193</td>
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<td></td>
<td>Stress x Positive Global</td>
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<td>.09</td>
<td>.10</td>
<td>.01</td>
<td>1.80</td>
<td>1, 192</td>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Negative Disposition</td>
<td>.04***</td>
<td>-.34</td>
<td>.09</td>
<td>.19</td>
<td>1.62</td>
<td>1, 193</td>
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<tr>
<td></td>
<td>Stress x Negative Disposition</td>
<td>.00</td>
<td>-.03</td>
<td>-.05</td>
<td>.00</td>
<td>-.96</td>
<td>1, 192</td>
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<tr>
<td>2.</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Negative Behaviour</td>
<td>.04**</td>
<td>-.17</td>
<td>.05</td>
<td>.38</td>
<td>-1.45</td>
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<td></td>
<td>Stress x Negative Behaviour</td>
<td>.01</td>
<td>-.04</td>
<td>-.08</td>
<td>.01</td>
<td>-.95</td>
<td>1, 193</td>
</tr>
<tr>
<td>2.</td>
<td>Stress</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Negative Global</td>
<td>.04**</td>
<td>-.38</td>
<td>.03</td>
<td>.38</td>
<td>3.36**</td>
<td>1, 193</td>
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<td>.01</td>
<td>.02</td>
<td>.00</td>
<td>0.73</td>
<td>1, 193</td>
</tr>
</tbody>
</table>

Note. N = 197.
*p < .05; **p < .01; ***p < .001.

In some circumstances the zero-order correlations of the QES factors with Time 2 Anhedonic Depression were significant and the failure to obtain unique predictions was due to the overlap of QES scales with other variables in the analyses. An example is Negative Disposition that has a zero-order correlation of .34 with Time 2 Anhedonic Depression. As shown in Table 31, Negative Disposition also has
a moderate correlation with Time 1 Anhedonic Depression and a definite but small correlation with Stress that would account for the overlap. Additionally, examination of correlations for Positive Global with Anhedonic Depression show that Positive Global has a far stronger relationship with concurrent depressed mood than with subsequent Time 2 depressed mood.
Discussion

The present study aimed to further explore the construct validity of the QES scales in relation to optimism, and pessimism, depression-specific symptoms, and anxiety-specific symptoms. The capacities of the QES scales to predict future depression levels in response to stress were also examined.

The six QES scales were largely confirmed in their internal factor structure. Likewise, the hypothesised structure for the QES scales was largely supported. Additionally, the hypothesised relationships between QES scales and mood were supported thereby providing evidence of convergent validity for most scales and discriminant validity for all scales. The predicted mesh of QES Positive Disposition with LOT-R Optimism to form a single construct was obtained. However QES Negative Disposition did not mesh with LOT-R Pessimism as was predicted.

Using a longitudinal methodology, the QES scales displayed good test-retest reliabilities, evidencing the scales as trait-like measures. For predictive validity, only two QES optimistic scales predicted depression-specific mood over time after controlling for initial depression-specific mood and intervening stress. The QES negative scales did not predict later depression-specific mood largely due to overlap with other predictors. No QES scale interacted with stress to predict subsequent depression-specific mood and hence a diathesis-stress framework was not supported.

The interpretation of results will proceed in three stages. The first stage will address the content and structure of the QES that was obtained from the cross-sectional data. The second stage, also using cross-sectional results, will examine the construct validity of the QES scales in relation to optimism, pessimism, depression-specific mood and anxiety-specific mood. Finally, the third phase, using the longitudinal results, will examine temporal stability of the QES scales and their capacity to predict subsequent depression-specific mood beyond the effects of initial depression and intervening stress. Wider implications of the findings will then be discussed, as will the limitations of the current study.

7.4.1 The QES Content, Structure, and Reliability

The present study used the 45 items that were confirmed and validated for the six QES scales in Study 2A. During confirmatory analyses, the number of items in the QES was reduced to 42. All of the constituent items from Study 2A for Positive Behaviour, Positive Global, Negative Disposition, and Negative Global were confirmed as contributing to their respective scales. However for the present sample,
one item from Positive Disposition and two items from Negative Behaviour did not contribute sufficiently to their respective constructs. These three items were also poor contributors to their respective constructs in Study 2A but just exceeded the requirement for inclusion. Therefore only a small attrition in their values led to their exclusion. Chance fluctuations in item loadings that are due to sample differences are liable to result in removal of some items, however with a substantially larger sample these items may be preserved in the scale (Gorsuch, 1983).

The hypothesised structure for the QES shown in Figure 26 was supported in the present study. Positive Disposition played a central role within the QES structure in that four other scales had direct or indirect effects on it and a fifth scale (Negative Disposition) was generated by it. The central role of Positive Disposition will be discussed in more detail shortly. The overall structure of the QES showed that Positive Behaviour and Negative Behaviour are very strongly related to Positive Disposition indicating the possibility of a more general optimistic explanatory style. By contrast, the globality scales are moderately related to their respective behavioural scales and with each other but have little direct effect on the dispositional scales and do not appear to contribute to an overall explanatory style. Thus although there is some evidence of a higher-order optimistic explanatory style there is no evidence of a higher-order explanatory style for the negative scales.

In addition to the predicted relationships, the structure of the QES required a covariance between the two behavioural scales. This covariance revealed a positive association between the two scales. One might have expected an inverse association because one scale measured positive event causes and the other negative event causes. The failure to obtain an inverse association between the behavioural scales will be discussed shortly because the result may arise from the properties of the scales.

Internal consistency reliabilities of the QES scales in the present study were similar to those obtained in Study 2. The reliabilities of the QES scales ranged from poor for Negative Behaviour to very good for Positive Global. The four scales Positive Global, Negative Global, Positive Disposition, and Negative Disposition provided adequate reliabilities. The scales of Positive Behaviour and Negative Behaviour again yielded inadequate reliabilities. The lack of cohesiveness amongst the constituent items of these scales was possibly due to some confusion produced by the QES format. As discussed in the previous study, the QES format required
respondents to rate whether supplied causes were likely for given events. If the causes were rated as likely for a current event, they probably would also be rated as likely for that event in the future, that is as stable. Thus behavioural causes, although intended as unstable causes, may have confused some respondents in their ratings and thereby reduced the cohesiveness of the behavioural scales. The confusion may likewise explain the failure to obtain an inverse association between the behavioural scales. As similar responses to the behavioural scales were replicated with two different samples, their further development using the QES format is not recommended.

7.4.2 The Validity of the QES in Relation to Optimism and Mood

The construct validity of the QES scales was largely as predicted in relation to other measures of mood and optimism. The construct validity models were developed incrementally by adding in turn Anhedonic Depression, Anxious Arousal, and finally, LOT-R. The following section will first discuss the measurement of Optimism and Pessimism, then the measurement of mood using the MASQ. Thereafter the convergent and discriminant validity of the QES scales will be explored.

7.4.2.1 Optimism, pessimism, and the QES scales.

The predicted constituents of optimism and pessimism were not obtained in that QES Negative Disposition did not load with LOT-R Pessimism to form a single pessimism construct. Instead, LOT-R Pessimism was inversely associated with the optimism construct, whereas Negative Disposition formed a separate construct. In the present study, the LOT-R Optimism and LOT-R Pessimism measures formed one bipolar construct thereby supporting the results of Scheier et al. (1994) and Mehrabian and Ljunggren (1997). This finding contrasts with Chang et al. (1994), Hjelle et al. (1996) and Myers and Steed (1999) who reported that the LOT-R contains two factors. One reason for the discrepancy is that the latter researchers used correlations to extract two factors, whereas those obtaining a bipolar construct used structural equation modeling. Structural equation modeling is a more rigorous analysis that permits the removal of error and shared error variance from measures. Mehrabian and Ljunggren found that a two-factor solution for the LOT-R arose largely due to shared variance amongst the positive items, and separate shared variance amongst the negative items. When the shared variance was accounted for in
structural equation modeling, the positive and negative items associated strongly with each other, thus indicating that a one factor model was more parsimonious and superior.

The new latent construct Optimism comprised QES Positive Disposition, LOT-R Optimism, and LOT-R Pessimism. Results were consistent with the findings of the previous study in which Positive Disposition combined with Positive Bias (another measure of optimism) to form a single construct. In the present study, Optimism was defined by self-enhancing causal explanations for past positive events together with positive expectations about the future. Optimism therefore represents a confidence that one can attain goals and an expectation that one’s goals will be attained in the future, in accord with Scheier, Carver, and Bridges (2001). Results also supported the contention that both positive dispositional attributions and dispositional optimism derive from a common basis (Carver & Gaines, 1987; Scheier & Carver, 1992) and that both attributions and optimism reflect similar individual differences in facing life demands (Peterson & Bossio, 1991).

The proposal that QES Negative Disposition measured general dispositional pessimism was not supported. Thus Negative Disposition and the other negative event QES scales are more accurately termed negative scales rather than pessimistic scales. Negative Disposition represented a pattern of self-blame for negative outcomes that were narrowly focused on personal temperament causes (e.g., one’s bad temper, being easily annoyed, and being argumentative). Negative Disposition was not the inverse of Positive Disposition, perhaps because it represented more specific causes than the more general self-enhancing causes in Positive Disposition (e.g., being a positive person). It remains possible that a pessimistic explanatory factor with general causes antithetical to those of Positive Disposition (e.g., being a negative person and being a boring person) may yield bipolarity with Positive Disposition. This possibility would support Peterson et al.’s (1995) suggestion of an inverse relatedness between optimistic and pessimistic explanatory styles.

### 7.4.2.2 The measurement of mood.

The use of the MASQ scales Anhedonic Depression and Anxious Arousal provided the desired separation of depression-specific mood from anxiety-specific mood. Results confirmed that Anhedonic Depression and Anxious Arousal represented relatively independent measures that tapped depression-specific symptoms and anxiety-specific symptoms respectively as proposed by Watson et al.
The association between Anhedonic Depression and Anxious Arousal found in the present study was similar in magnitude to correlations found in past research. For example, Watson and McKee Walker (1996) obtained a correlation of .32 for 334 adult students. Thus the mood scales offer a sound basis for evaluating convergent and discriminant validity of the QES scales.

7.4.2.3 QES and Optimism relationships with Anhedonic Depression.

It was anticipated that relationships between the QES scales and mood would remain unchanged once LOT-R Optimism and LOT-R Pessimism were entered into the model. This was the case when the new construct, Optimism, was included in the model. Consequently, QES relationships with mood will be discussed in conjunction with Optimism.

The convergent validity of the QES scales in relation to depression-specific mood and optimism was evaluated against the postulated model given in Figure 27 and was largely confirmed. Exceptions were additional direct paths from Positive Global and Negative Behaviour that affected depression-specific mood. Therefore, elements of these QES scales were not mediated by optimism in relation to depression-specific mood and their direct links with Anhedonic Depression were likely due to common item content unrelated to Optimism.

The changed measure for depression-specific mood may be responsible for the additional paths found from Positive Global and Negative Behaviour to Anhedonic Depression. In the earlier study, depressed mood was measured by Positive Affect, the inverse of anhedonic depression alone. The scale used in the present study, Anhedonic Depression also includes symptoms of apathy. As well as measuring depression-specific mood more broadly, Anhedonic Depression also included negatively and positively valenced items whereas Positive Affect had only positively valenced items.

The absence of an expected path from Positive Global to Optimism is likely due to differences in the Optimism constructs across the two studies. In the earlier study, Optimism contained the additional component of Self-Satisfaction, a form of self-deception that was not a component of the LOT-R. It may be that the tendency to perceive positive event causes as influencing a range of life areas is related to optimism primarily through self-deception.

Paths from the optimistic QES scales to Anhedonic Depression were as expected with higher optimistic attributions predicting lower Anhedonic Depression
levels. Of the QES scales, Positive Disposition (a component of Optimism) had a central influence on depression-specific mood, exerting the strongest effect on Anhedonic Depression. This finding supports past identification of causal stability as a primary attributional influence on depression (Weiner, 1983, 1985; Weiner et al., 1971). Weiner also posited a role for dispositional attributions in depression. This contention was supported by findings for Positive Disposition and the zero-order correlation for Negative Disposition, but not by findings for Negative Disposition when evaluated in conjunction with Positive Disposition. By including both measures in one analysis and positioning Positive Disposition as the antecedent to Negative Disposition, the present results improve on those of Weiner. It is the causal stability of attributions for positive events that are central to depression. The stability of attributions for negative events are relevant to depression as weaker by-products of Positive Disposition.

The present findings suggest that the reformulated learned helplessness theory of depression (Abramson et al., 1978) and the hopelessness theory of depression (Abramson et al., 1989) might benefit by incorporating a role for positive event attributions in the development of depression. Although hopelessness theory of depression (Abramson et al., 1989) includes positive event attributions as important in recovery from depression, the present findings suggest an important role for Positive Disposition in the aetiology of depression. Hopelessness theory of depression posits three possible elements to a cognitive diathesis for depression. These elements include causal attributions for negative events, inferred negative consequences, and inferred negative self-characteristics. Positive Disposition represents two of these three elements, namely causal attributions and inferred self-characteristics. However the attributions are for positive events rather than for negative events. In conjunction with Optimism, Positive Disposition also reflects implied consequences via expectancies about the future. Causal attributions for positive events (Positive Disposition) may protect against depression in that they imply positive self-characteristics and high confidence for attaining goals. As a component of Optimism, they are accompanied by positive expectancies for the future and thus high hope. Positive Disposition can thus be construed as a depressive resilience. Low levels represent a lack of protection against depression.

The hopelessness theory of depression does not differentiate positive events per se but rather refers to their non-attainment as constituting negative events
(Abramson et al., 1989). However, low Positive Disposition reflects a lack of confidence in one’s capacity to actualise good events or attain goals, which probably reduces the motivation for goal-striving. This is not the same as a failure to attain goals. By contrast, Negative Disposition may be regarded as a lack of control or inability to avoid failure and other negative outcomes. These differences between Positive Disposition and Negative Disposition were supported by evidence of differences between the two scales in their relationships with optimism and mood. Moreover, Positive Disposition causally preceded Negative Disposition, indicating that a lack of confidence for attaining desirable goals or outcomes leads to perceptions that negative outcomes cannot be avoided and to accompanying self-blame.

In relation to convergent validity, only the three QES scales of Positive Disposition, Positive Global, and Negative Behaviour yielded direct effects on Anhedonic Depression, to evidence convergent validity. Another two QES scales, Positive Behaviour and Negative Global, showed convergent validity through their indirect effects on Anhedonic Depression. The final QES scale, Negative Disposition, had no direct or indirect effects on Anhedonic Depression and thus lacked evidence of convergent validity. Rather, Negative Disposition was identified as the product of Positive Disposition. The finding of a distinction between Negative Disposition and Optimism is in keeping with the moderate correlations between negative attributions and the LOT reported by some researchers (Ahrens & Haaga, 1993) and the modest correlations reported by others (Hjelle et al., 1996; Scheier & Carver, 1992).

7.4.2.4 QES and Optimism relationships with anxiety-specific mood.

Nonsignificant paths to anxiety-specific mood supported the discriminant validity of the QES negative scales. Furthermore, no paths were required between any QES optimistic scales and anxiety-specific mood to improve model fit. Thus the QES scales appear specific to depression-specific mood. The optimistic QES scales consistently predicted depression-specific mood across three studies in this research. However, the negative QES scales predicted general psychological distress in Study 1 and Study 2 of this research, indicating that they possibly tap the more general depressive content of the negative affect or general psychological distress measure.

Specificity of the QES compares favourably with other measures of explanatory style such as the ASQ and its derivatives that associate more strongly
with negative mood (Tiggemann et al., 1991) and anxiety-specific mood (Corr & Gray, 1996; Dowd et al., 1985; Ganellen, 1988; Ralph & Mineka, 1998; Rodriguez & Pehi, 1998). In their review of research, Bell-Dolan and Wessler (1994) concluded that although research findings on attributional style and anxiety yielded mixed results, there was an association between attributional style and anxiety. This conclusion was based largely on research using the ASQ. The present findings challenge the conclusion and indicate that causal attributions can be specific to depression.

7.4.3 The Longitudinal Results

The longitudinal results, obtained over an interval of approximately two months, provided further evidence to support the psychometric properties of the QES. The temporal stability of the QES scales and their predictive validity of later depressed mood provided further evidence of the usefulness of the QES as a measure of optimistic and negative explanatory factors.

7.4.3.1 The temporal stability of the QES.

The longitudinal results confirmed the QES scales as stable measures of explanatory style. Five of the six scales yielded high test-retest reliabilities. Therefore, the scales appeared to tap trait-like or relatively stable characteristics for the types of causes attributed to events. This finding supports the proposition that explanatory style is a relatively stable trait (M. O. Burns & Seligman, 1989; Ilardi & Craighead, 1999; Johnson et al., 1998; Peterson et al., 1995; Voelz, Walker et al., 2003). Positive Disposition was the most stable scale, supporting it as an optimistic trait. Although the least stable scale was Negative Behaviour, its stability was still moderate and high enough to place it more as a trait than a state.

7.4.3.2 The measurement of Stress and QES relationships with Stress.

The stress measures that combined daily hassles and major life events accounted for significant variance in Anhedonic Depression at Time 2, indicating a strong predictiveness for depression. This finding adds to past findings of a causal role in depression for stress (Paykel, 1978; Shrout et al., 1989), for daily hassles (Lu, 1994; Vickers & Vogeltanz, 2000; Whisman & Kwon, 1993), and for major life events (G. W. Brown & Harris, 1978, 1989; Monroe et al., 2001).

Of the QES scales measured at Time 1, only the negative scales displayed substantial zero-order correlations with Stress measured at Time 2. Thus the extent to
which people made negative attributions was related to their subsequent reports of stress. This finding may be due to those with high negative styles having greater initial stress than those with less negative styles. However, this possibility is inconclusive for the present study because stress was not measured at Time 1. The finding differed somewhat to other reports that negative event attributions do not predict future stress but rather determine responses to future stress (Kwon & Laurenceau, 2002). These researchers found no evidence to suggest that people who made negative attributions also tend to stress more than do others. An alternative explanation may be that those more inclined to negative attributions also perceive that they experience more stressors (van Eck, Nicholson, & Berkhof, 1998). The overlap found between negative attributions and reported stressors in the prediction of later depression would support this explanation. Some researchers (Davila et al., 1995; Hammen, 1991) have found that those more inclined to use negative attributions actually generate more stressors. Perhaps there is a factual basis or precedence for their negative attributions. For example, Negative Disposition represents ascribed causes such as one’s temper or argumentative nature. If the person really has a bad temper, that bad temper is likely to generate conflict and stress in the person’s life.

7.4.3.3 The predictive validity of the QES.

The regression analyses provided evidence that the QES scales Positive Disposition and Positive Behaviour predicted subsequent depression-specific mood after controlling for initial depression-specific mood and intervening stress. These optimistic scales predicted depression but did not interact with or overlap with stress. Therefore Positive Disposition and Positive Behaviour displayed strong convergent, discriminant, and predictive validity. Other QES scales did not predict later depression-specific mood, largely because of overlap with initial depressed mood and, for the negative attributions, overlap with stress. Despite their overlaps with later reports of life stress, the negative scales did not have significant paths to Anxious Arousal in the earlier cross-sectional results. Had the negative scales related to symptoms of somatic tension and hyperarousal in addition to stress, they would be implicated as vulnerabilities to anxiety and neuroticism. However, the negative scales displayed acceptable discriminant validity but less convincing convergent and predictive validity and were therefore probable measures of nonspecific mood symptoms that occur for both depression and anxiety (Watson et al., 1995).
None of the QES scales interacted with stress to predict subsequent depression-specific mood. Rather, the QES scales and stress acted as independent causative factors for depression-specific mood. This finding is similar to others who have not found significant interactions (Abramson et al., 1995; Tiggemann et al., 1991; Vázquez et al., 2001) but differs from those who have found significant interactions (Alloy & Clements, 1998; Tiggemann & Crowley, 1993; Vickers & Vogeltanz, 2000). There are several possible reasons for discrepant findings about interactions, including the measures used, analyses conducted, and the effects controlled for in the analyses. The current finding may attest to the caveat from Aiken and West (1991) that significant interactions are difficult to obtain from hierarchical multiple regression. In particular, the greater the proportion of variance accounted for by the first order effects, the greater the diminution of the interaction effects as reliability decreases. In the present study, a large proportion of the variance in subsequent depression was accounted for by initial depression and then by stress, clearly reducing the potential for main effects of the QES scales at later entry and their subsequent interactional effects with stress. It is notable that the interactional term closest to significance included the most reliable QES scale, Positive Global.

Other explanations have also been posed for the lack of significant interactions between explanatory factors and stress in predicting depression. Abramson et al. (1995) argued that depressive attributional styles in specific life domains are tied to stress in the same life domains. Thus there may be a need to match domains between vulnerability and stress in order to obtain strong interactions. Vázquez et al. (2001) argued that diathesis-stress for depression may only be found for vulnerabilities and stressors that match and are important to the person concerned.

7.4.4 Implications of Results for the Measurement of Explanatory Style

The six QES scales showed considerable variability in their content, reliability, and validity. Their differing relationships with mood and optimism reveal the multifaceted nature of explanatory style. Positive Disposition was the most pertinent QES scale for predicting depression-specific mood, measuring optimism, mediating the influences of the behavioural scales on Anhedonic Depression, and directly influencing Negative Disposition. The causal content of Positive Disposition reveals the causes as internal, stable and also quite global. For example, being a positive person and having a great life are causes that likely affect a considerable
range of life areas. This causal content may represent the type of internal, stable, and global causes that were initially identified by Abramson et al. (1978) as implicated in the development of depression. However, in this case the content represents resilience to depression. Generating corresponding negative event causes such as being a negative person and having an unfortunate life may provide the internal, stable and global causes that index vulnerabilities to depression in accord with Abramson et al.’s theory.

Although Positive Disposition met all of the psychometric requirements, each of the other QES scales had shortcomings. Negative Disposition had adequate internal consistency and stability, however it lacked convergent and predictive validity. Negative Disposition appears to be the product of optimism but it is not pessimism per se. Negative Disposition was related to stress, and in the previous study, to general psychological distress. Therefore it may be a vulnerability measure for nonspecific mood symptoms. Positive Behaviour had modest internal consistency but offered nothing beyond Positive Disposition in the prediction of depression-specific mood. Yet this scale met all other psychometric criteria and therefore may merit further development. Negative Behaviour had modest internal consistency and stability but no predictive validity, having the highest overlap with stress. Negative Behaviour may partly measure nonspecific mood symptoms but also directly influenced depression-specific mood and had a strong inverse relationship with Optimism. Negative Behaviour may therefore tap a pessimistic style, as opposed to the negative style of Negative Disposition, and may be worthy of further investigation. Positive Global met all psychometric criteria except for predictive validity, but was not as strongly related to depression-specific mood as was Positive Disposition. Positive Global also had a direct influence on depression-specific mood that was not mediated by optimism and this link is worthy of further investigation. Negative Global had adequate internal consistency and stability but lacked predictive validity and only indirectly affected depression-specific mood.

In relation to depression-specific mood, the optimistic scales were the most informative measures yielded from the QES. They were also specific to depression. Low scorers on these scales are pessimists who lack resilience to depression. The QES negative scales were generally not measures of pessimism or antecedents to anxiety, rather being measures of nonspecific mood symptoms as shown by their links to negative mood states and stress. Negative Disposition was the product of
optimism and its self-rebuking attributions for bad outcomes are best construed as a vulnerability to nonspecific mood symptoms.

7.4.5 Limitations of the Present Study

The interpretative limitations of the structural equation modeling technique and the inability to generalise results to clinical samples apply to the present study. One further limitation of the present study was that no initial level of stress was measured. Thus comparison of initial levels of the QES negative scales in relation to initial life stress could not be made.

Another limitation to the present study was that the mean inter-test interval was approximately nine weeks which may have been too short. A longer interval may have provided more opportunity for respondents to experience major life events and hence permit a greater variance in Stress scores that showed limited variability ($SD = 9.22$ for the scale range of 20 to 134). An increase in the variance of Stress may have permitted a better evaluation of interactional terms.

The QES scales were developed partly to evaluate reformulated learned helplessness and hopelessness theories of depression. However, conclusions are shaped by the nature of the scales obtained. Thus a different form of scale could potentially confirm theory-derived predictions for unstable causes in relation to depression or for the relatedness of positive and negative attributions.

7.4.6 Conclusion

The internal factor structure of each QES scale and of the entire QES obtained in Study 2 were largely confirmed in the present study hence evidencing factorial validity across two different samples. In relation to depression-specific mood, the optimistic scales are the most informative measures yielded from the QES. They are specific to depression and show evidence of a general optimistic explanatory style. Strong evidence of predictive validity for subsequent depression-specific mood was found for two optimistic scales. However, the study was unable to demonstrate that explanatory style predicts subsequent depression in interaction with stress. The QES negative scales are not measures anxiety-specific symptoms or of pessimism (except for Negative Behaviour). Rather they were related to stress and are probably vulnerabilities to nonspecific mood symptoms. They are more independent than related, showing no evidence of a general negative explanatory style.
Positive Disposition is the best of the six QES scales, meeting all of the reliability and validity criteria. It is a form of self-enhancing optimism that represents a confidence for attaining goals and confirms that the stability of attributions is important to the development of depression. Yet it should be noted that all stable attributions were also internal so that internality of attributions may be equally important to depression. Results implicate a central role for optimistic explanatory style in the development of depression with low levels representing a lack of resilience to depression. Therefore positive event attributions, in particular dispositional attributions, merit consideration in current theories of depression. They imply positive self-characteristics, and when combined with optimism they imply positive expectancies for the future, and consequently hope.
CHAPTER 8
Overview, General Discussion, and Summary

The primary purpose of this research was to examine the nature of explanatory style and optimism in relation to depression-specific mood. In so doing, a secondary purpose was to produce a new measure of explanatory style. The paper posed a number of questions that the research process sought to answer:

1. Based on problems with the measurement of explanatory style, can a new measure be produced to ameliorate these shortcomings?
2. Can factors be formed for each of the extremities of the three attributional dimensions?
3. What are the constituents of an optimistic/ pessimistic explanatory style in terms of positive and negative event attributional dimensions?
4. Do optimistic and pessimistic explanatory styles form a bipolar construct?
5. Do optimistic and pessimistic explanatory styles display similar relationships with optimism, depression-specific mood, general psychological distress, and anxiety-specific mood?
6. Do optimistic and pessimistic explanatory styles predict future depression-specific mood in response to stressors?

The rationale behind the research was that explanatory style constructs, derived from the reformulated learned helplessness theory of depression (Abramson et al., 1978), were useful and valid in explaining depressive resilience and vulnerability (Peterson et al., 1995). However, problems with the reliability and structure of current explanatory style instruments foreshadowed a need for a reliable instrument that would measure the dimensional constituents of optimistic and pessimistic explanatory styles from positive and negative event attributions. Additionally, the role of positive event attributions in relation to depression was unclear, both in theories of depression and in relation to optimistic and pessimistic explanatory styles. Research generally either omitted positive event attributions or reported modest relationships with depression. Yet, when a depression-specific mood measure was used, positive event attributions predicted depressed mood as well as did negative event attributions (Hawkins & Miller, 2003), indicating a need to further examine and clarify the nature of positive event attributions.

Recently, the internality dimension of attributional style has been de-emphasised (Abramson et al., 1989), and omitted from much subsequent research
into depression (e.g., Alloy et al., 1999). By contrast, the internality dimension was found to contribute to positive event attributions and negative event attributions (Hawkins & Miller, 2003; Hull & Mendolia, 1991) and may perform an important role in depression.

Current explanatory style instruments and measurement techniques require time and cognitive effort to complete (for respondents); or, several trained judges to score; or, do not contain both positive and negative events. A new instrument, the QES was designed to separately assess the three attributional dimensions of internality, stability, and globality, and for both event types, with the aim of testing whether the de-emphasis of the internality dimension and omission of positive event attributions from research into depression was premature. As well, the new measure of explanatory style was used to clarify how attributions might represent depressive resilience and vulnerability.

The present investigation has gone some way to answering the questions posed. It also advances the current understanding of the phenomenon of explanatory style in relation to optimism and mood. The research findings, the new questionnaire produced, as well as novel contributions to current knowledge will be covered in the following sections. First, the specific findings from each of the studies within the current research will be outlined. Next, the objectives of the research will be addressed in turn. This process includes presenting the QES and its psychometric properties and discussing the scales in relation to optimism and mood. Following the research findings, relevant theoretical, clinical, methodological implications and limitations of the findings will be discussed. Finally, additional areas of interest and relevance requiring further investigation that were uncovered by the research process will be outlined.

8.1.1 Summary of Each Study in the Thesis

Study 1 developed and tested the QES, a new measure of explanatory style with a format that is unique in explanatory style measurement. The QES was designed to yield separate ratings for internal and external causes and to provide subscales for the three attributional dimensions of internality, stability, and globality for positive events and for negative events. It was intended that the external causes would be rated as unstable and specific thereby allowing the endpoints of each bipolar dimension to be treated as separate constructs in order to test their relatedness. Factor analysis and confirmatory factor analysis were used for item
selection, and structural equation modeling was used for validation of the factors obtained. The QES did not yield separate scales for each end of the three dimensions. For the globality dimension, global but not specific scales were obtained. Furthermore, the QES did not separate the three dimensions from each other. Rather, the internal scales were simultaneously stable as well.

Five reliable and valid factors were yielded from the QES. A sixth factor containing positive events with external and stable causes was psychometrically inadequate and related only to optimism, not mood. Study One laid the foundations for the final QES instrument by finding that internal and stable attributions clustered into factors for positive events and for negative events. Separate, but related factors were obtained for positive event globality and negative event globality. No negative event external factor was elicited.

The QES did not yield higher-order positive event attributions and negative event attributions. Instead, it produced independent yet weakly cohering sets of optimistic factors and negative factors. All QES factors predicted optimism and predicted depression-specific mood via links with optimism. The QES negative factors also predicted general psychological distress. Although QES relationships with mood supported an inverse relatedness between the optimistic and negative factors, only limited conclusions could be drawn regarding the bipolarity of the attributational dimensions at the dimensional or event type level.

In Study Two part A, the QES was further developed and extended. External causes were abandoned and the internality and stability causal dimensions were combined with the aim of comparing dispositional (internal and stable) with behavioural (internal and unstable) causes. Negative dispositional attributions were proposed to measure depressive vulnerability and negative behavioural attributions were proposed to measure depressive resilience. The resulting 45-item measure contained the six scales Positive Disposition, Negative Disposition, Positive Behaviour, Negative Behaviour, Positive Global, and Negative Global. However, the QES format could not separate out factors with behavioural causes that were internal and unstable. Rather, the behavioural scales measured stable causes and were weaker de facto measures of the dispositional factors such that behavioural resilience for negative events was not obtained. Additionally, Positive Disposition displayed strong inverse associations with both Negative Disposition and Negative Behaviour,
providing some evidence of an inverse relatedness between optimistic and negative factors.

The validation of the QES using structural equation modeling showed that Positive Disposition, a self-enhancing optimistic construct, was validated as the only scale to directly influence depression-specific mood. The negative scales had direct effects on general psychological distress. Positive Disposition combined with Positive Bias to form a single construct, Optimism, which mediated the effects of other attributional constructs on depression-specific mood in the same manner as Positive Disposition alone.

Study Two part B continued the validation of the QES and provided evidence to support the construct validity of the QES scales in relation to their corresponding ASQ scales. The QES dispositional and behavioural scales provided a correspondence with internal and stable ASQ scales, evidenced as a crossover of event valences. For example, the QES optimistic scales inversely associated with the ASQ negative event scales and vice versa. The QES globality scales provided similar constructs to the ASQ globality scales. Although providing evidence of similarities between the QES and ASQ, the magnitudes of the relationships were not strong. Problems with obtaining strong correlations between the two instruments was in part due to poor reliabilities of the ASQ scales and of the QES behavioural scales, the small sample size, and a subsequent lack of power. In addition, relationships with mood and optimism showed that the QES scales compared favourably to their respective ASQ scales. The QES items obtained in Study 2 were accepted as comprising the final QES scales for the subsequent validation study. This was necessary because of time constraints.

In Study Three, the internal factor structure of each QES scale and of the entire QES obtained in Study Two were largely confirmed, evidencing factorial validity across two different samples. Four QES scales were reliable and stable: Positive Disposition, Positive Global, Negative Disposition, and Negative Global. The other two scales were moderately stable but less reliable, namely Positive Behaviour and Negative Behaviour. Positive Disposition combined with LOT-R to form a single Optimism construct, evidencing it as a valid measure of optimistic attributions. However, Negative Disposition did not combine with pessimism, but instead was a product of optimism. All scales except Negative Disposition were validated as either directly or indirectly predicting depression-specific mood,
providing evidence of convergent validity. Evidence of discriminant validity was provided for all scales with none substantially predicting anxiety-specific mood. Predictive validity over time was evidenced for two optimistic scales, Positive Disposition and Positive Behaviour. However, none of the QES scales interacted with stress to predict subsequent depression-specific mood. Rather, the explanatory scales and stress acted as independent causative factors for depression-specific mood.

Positive Disposition was the best of the six QES scales, supporting the importance of stability attributions (that are also internal) in the development of depression. This scale met all of the reliability and validity criteria and represents a self-enhancing optimism and confidence for attaining positive outcomes. Low scores indicate a lack of resilience to depression. Therefore positive event attributions, in particular dispositional attributions, merit consideration in current theories of depression. They imply positive self-characteristics, and when combined with optimism they imply positive expectancies for the future, and consequently hope.

8.1.2 Findings in Relation to Study Objectives

8.1.2.1 A new measure to ameliorate shortcomings in existing measures of explanatory style: The QES, its reliability, acceptability and scoring.

The current research presents the newly designed and developed QES, a 42-item measure of explanatory style. The QES yields six scales, three measures are optimistic explanatory scales (positive event attributions) and three measures are negative explanatory scales (negative event attributions). The scales are 6-item Positive Disposition \( (r = .71) \), 6-item Negative Disposition \( (r = .67) \), 10-item Positive Global \( (r = .89) \), 10-item Negative Global \( (r = .74) \), 5-item Positive Behaviour \( (r = .46) \), and 5-item Negative Behaviour \( (r = .42) \). The two scales Positive Behaviour and Negative Behaviour are not recommended for current use in their own right without extensive development because of their poor reliabilities. However, they can be usefully combined with each other and Positive Disposition for a higher-order measure of optimistic style.

Four of the QES scales provide very acceptable reliabilities that compare favourably with the reliabilities for existing measures of explanatory style such as the ASQ. The four reliable QES scales capture cohesive explanatory styles that are consistently exhibited. These scales were confirmed as reliable measures across two
studies with two different samples showing that they measure consistent explanatory styles within the Australian community.

The QES scales yield test-retest reliabilities ranging from .63 to .82, providing evidence that they are trait-like measures. This finding supports researchers who also reported trait-like attributional constructs (e.g., M. O. Burns & Seligman, 1989; Ilardi & Craighead, 1999; Johnson et al., 1998; Peterson & Seligman, 1984; Voelz, Walker et al., 2003). The findings also support the reformulated learned helplessness theory of depression (Abramson et al., 1978) and hopelessness theory of depression (Abramson et al., 1989) in that both theories specify attributional constructs that are trait-like and include ongoing tendencies to explain the causes of events in consistent styles.

A shortcoming of some existing measures of explanatory style is their need for considerable cognitive effort and time to complete (Dykema et al., 1996; Lynd-Stevenson, 1995, 1996; Winefield et al., 1987). The acceptability of the QES to community members was demonstrated by the successful completion of over 900 questionnaires without supervision, additional instructions, or financial inducements. The QES may therefore be regarded as an acceptable measure for general population samples.

The QES is an easy instrument to score as item-ratings are simply summed to form the scale totals, with higher scores indicating higher levels of the measured construct. Similarly, questionnaire measures of explanatory style are also easy to score. However, some explanatory style measurement techniques that do not involve time and effort from participants are difficult and time-consuming to score. For example, the CAVE technique (Peterson et al., 1983) requires only passages of text or spoken word from participants but requires several trained judges to score.

**8.1.2.2 Factors for the extremities of attributional dimensions and the separation of optimistic/ pessimistic explanatory style constituents in terms of positive and negative events.**

The QES did not yield separate scales for each end of the three causal dimensions of internality, stability, and globality for positive and negative events. Nor did the QES yield a single optimistic/ pessimistic construct. Rather, the QES internal scales were also stable and relatively separate from the globality scales.

In total, three optimistic scales and three negative scales were yielded from the QES. The three negative scales were intended as pessimistic scales but only
Negative Behaviour was validated as such. The causal content for each of the QES scales is as follows. The dispositional scales contain items with causes that are internal and stable and may be global. Positive Disposition causes concern a person’s positive attitude, easy going and fun nature, and a belief that they have a great life. Negative Disposition causes concern a person’s bad temper, argumentative, unforgiving, and inconsiderate nature. The behavioural scales contain items that were designed to be internal and unstable but ended up as internal and stable. Positive Behaviour causes concern specific instances of making an effort, smiling and being focused. Negative Behaviour causes concern specific instances of anger, embarrassment about the truth, and inability to relax. The globality scales contain a mix of internal and external causes rated as affecting a range of life areas. Positive Global causes concern making an effort, concentrating well, and being successful. Negative Global causes concern traffic delays, tension, and experiencing bad dreams. It is notable that each QES scale contains uniquely different causal content to the others.

The clustering together of internal and stable causes that were relatively separate from globality causes contrasts with past research for negative event attributions that finds strong links between stable and global attributions but weaker links between them and internal attributions (e.g., Corr & Gray, 1996; Peterson & Villanova, 1988; Sweeney et al., 1986; Tiggemann & Crowley, 1993). This may be due to the multifaceted nature of negative internality as evidenced in Study One when two separate negative internal and stable factors were produced. Moreover, the ASQ often yields poor reliabilities for the negative internality subscale (e.g., Hull & Mendolia, 1991; Sweeney et al.) also indicating that it is not a cohesive factor.

8.1.2.3 Bipolarity of optimistic and pessimistic explanatory factors.

The proposition that positive and negative event attributions are bipolar is implied in reformulated learned helplessness theory (Abramson et al., 1978) and clearly stated later (Peterson et al., 1995). Theory can be used to predict that a pessimistic explanatory style consists of negative internal, stable, and global attributions together with positive external, unstable, and specific attributions. An optimistic explanatory style consists of positive internal, stable, and global attributions together with negative external, unstable, and specific attributions. The present research could not isolate external and unstable attributions but did obtain positive internal and stable attributions separate from positive global attribution.
Likewise obtained were negative internal and stable attributions separate from negative global attributions. Studies Two and Three provided some evidence of an inverse relatedness for Positive Disposition with both Negative Disposition and Negative Behaviour.

Although Positive Disposition and Negative Disposition are rather different measures in the current research, results show a strong degree of inverse relatedness between positive and negative event attributional scales. By contrast, past research generally shows that positive and negative attributions are either unrelated or have only small associations (e.g., Corr & Gray, 1996; Hawkins & Miller, 2003; Hull & Mendolia, 1991; Reno & Halaris, 1989; Tripp et al., 1997; Yee et al., 1996). The reason for the current research finding of relatedness between the two event types is likely because of the strong similarity of the causal content for the scales involved. Research using the ASQ or its derivatives does not necessarily elicit similar causal content for the different event types because respondents supply their own causes to the given events. By contrast, the QES was developed using factor analysis and consequently the causes cohere to form scales that measure common causal dimensional content.

### 8.1.2.4 Do QES optimistic and negative scales display similar relationships with optimism and mood?

One QES scale, Positive Disposition, emerged as a measure of optimism that combined with Positive Bias (an optimism measure) and later with the LOT-R to form single Optimism constructs. Positive Disposition contains self-enhancing attributions that measure one’s confidence and personal control to bring about positive events. These attributions are related to self-illusions that the future holds largely positive outcomes (Gibbons & McCoy, 1991) and feelings of unrealistic control over future events (Taylor, 1983; Taylor & Brown, 1988). Optimistic attributions also allow for the self-enhancing belief that one has an essentially good life and can achieve one’s goals (Koenig et al., 1992; Margo et al., 1993; S. Smith, 2001). Moreover, optimism reflects beliefs about how goals will be achieved (Peterson, 2000). Channelling goals toward small positive events that can be achieved through one’s own dispositions may provide a healthy form of optimism. Peterson described such optimism as also preventing demoralisation if goals are unattainable. Positive Disposition (Optimism) directly decreases the use of Negative Disposition attributions. Therefore, optimistic attributions enable a person to stave
off negative cognitions by using a positive interpretation, in keeping with Sackheim and Gur (1978) and Gur and Sackheim (1979). These authors argued that these positive interpretations reflect peoples’ preferred perception of themselves.

Negative Disposition, a self-rebuking construct that includes elements of lack of control over adverse events, was identified as a product of optimism/ pessimism rather than a component of pessimism. The finding of a distinction between Negative Disposition and Optimism is in keeping with the modest to moderate correlations between negative attributions and the LOT reported by some researchers (Ahrens & Haaga, 1993; Hjelle et al., 1996; Scheier & Carver, 1992). That Negative Disposition did not affect expectancies about the future, as predicted by the reformulated learned helplessness and the hopelessness theories of depression (Abramson et al., 1978; Abramson et al., 1989), presents a challenge to these theories that will be discussed later.

Zero-order correlations indicated that all QES scales displayed moderate significant correlations with concurrent Anhedonic Depression and thus predict depression-specific mood. However, in the construct validation of the QES scales using structural equation modeling, only Positive Disposition, and to a lesser extent Positive Global and Negative Behaviour, directly predicted Anhedonic Depression. Moreover, only Positive Disposition directly predicted Positive Affect. Although all QES scales predict depression-specific mood individually, the model identifies the nature of their interrelationships relative to mood. This is the first research to find stronger relationships for positive event attributions than for negative event attributions with depression. Past research finds either the opposite pattern (e.g., Peterson & Seligman, 1984; Sweeney et al., 1986) or, similar relationships for each with depression (Hawkins & Miller, 2003). Current findings challenge the priority given to negative event attributions in past research and theory as will be discussed later in the theoretical implications section.

Although all QES scales provided adequate discriminant validity in relation to anxiety-specific mood, the negative scales were identified as predictors of general psychological distress. The negative scales also overlapped with stress and therefore measured nonspecific mood symptoms rather than depression-specific mood.

People resilient to depression-specific mood were evidenced as those who tended to explain positive events as due to dispositional causes such as being a positive person; behavioural causes such as smiling; and, global causes such as
making an effort that were rated as affecting a range of life areas. They were also unlikely to explain negative events as due to behavioural causes such as being unable to relax. People vulnerable to nonspecific mood symptoms tended to explain negative events as due to self-rebuking dispositional causes such as having a bad temper; behavioural causes such as inability to relax; and, global causes such as being delayed by traffic or transport that were rated as affecting a range of life areas.

8.1.2.5 QES scales as predictors of depression-specific mood in response to stress.

Two of the QES scales, Positive Disposition and Positive Behaviour, significantly predicted later depression levels beyond initial levels of depression and intervening stress. These scales measure a perceived ability and mastery to bring about good events despite adversity, and thus provide resilience to depression-specific mood. Therefore, not only do positive event attributions increase hopefulness thereby reducing depression in depressed people (Johnson et al., 1996, 1998; Needles & Abramson, 1990; Voelz, Haeffel et al., 2003), but they help prevent depression even when people encounter stress. Alternatively, people scoring low on these scales may feel depressed even in the absence of stress. Furthermore, these scales were not related to subsequent reports of stress and could therefore not be regarded as influencing the reporting of stress.

The remaining four QES scales did not predict later depression levels beyond initial levels of depression and/or stress because Positive Global overlapped with concurrent depression-specific mood and the negative QES scales overlapped with intervening stress. Those inclined to use negative attributions may perceive that they experience greater stress (van Eck et al., 1998) and may also generate greater stress (Davila et al., 1995; Hammen, 1991).

This outcome suggests similarities between the negative QES scales and other cognitive vulnerabilities that involve negative information processing and negative self-schemata. For example, dysfunctional attitudes described by Beck (1967, 1976, 1983, 1991) provide cognitive vulnerability to depression. The similarities between Beck’s negative schemata and negative event attributions have been identified, and some researchers have used the factors together as measures of a broader depressive vulnerability factor (Alloy et al., 1999; Ilardi & Craighead, 1999). Moreover, when examined together in a structural equation model, ASQ negative events were found
to be strongly associated with Beck’s depressive vulnerability factors and with general psychological distress (Hawkins & Miller, 2003).

The current findings suggest that perceiving a high probability for desired outcomes due to personal dispositions or behaviours reduces helplessness and thereby reduces depression. These findings offer support to researchers who have argued for the continued consideration of positive event attributions in depression (e.g., Furnham et al., 1992; Haugen & Lund, 1998; Hawkins & Miller, 2003) and those who continue to research positive event attributions in relation to depression (e.g., Johnson et al., 1996, 1998; Voelz, Haefelf et al., 2003). Additionally, the importance of positive event attributions as mediating the relationships of other attributional scales with depression foreshadows a need to theoretically clarify the role of positive event attributions in depression and will be discussed in the next section.

8.2.1 Theoretical Implications of the Findings

The reformulated learned helplessness and hopelessness theories of depression (Abramson et al., 1978; Abramson et al., 1989) focus on the presence of vulnerability factors. Recently, there have been calls for more exploration of the factors that help people negotiate adversity (Seligman & Csikszentmihalyi, 2000). The present research aimed to examine positive cognitive styles that provide resilience to depression, as well as negative cognitive styles that render people vulnerable to depression. In so doing, this research supports the hopelessness theory of depression (Abramson et al., 1989) in that dispositional attributions for positive event attributions that imply positive characteristics, are likely to increase positive mood. However, whereas hopelessness theory posits a role only for positive attributions in recovery from depression, the present research found that positive dispositional attributions influenced future depression. This outcome is in keeping with past research findings that positive event attributions provide opportunities for hopefulness following positive events and thereby increase to positive mood (Alloy et al., 1997) and improve recovery from depression (Johnson et al., 1996, 1998; Needles & Abramson, 1990; Voelz, Haefelf et al., 2003). Consequently, hopelessness theory could well incorporate positive attributions as protective factors in the aetiology of depression as well as in the recovery from depression.

The obtained mesh of Positive Disposition with the LOT-R (a measure of expectancies about the future), conflicts with assertions that attributions indirectly
affect depression via their influence on expectancies about the future (Abramson et al., 1978; Peterson et al., 1995; Weiner, 1985; Weiner et al., 1971). Rather, the present findings show that some optimistic attributions are indistinguishable from optimistic expectancies in predicting depression-specific mood. Therefore a belief in attributes that can obtain good outcomes carries the expectation of good outcomes in the future.

Globality constructs demonstrated somewhat different influences to the internal and stable constructs, both for the QES in the present research and for the ASQ in some past research (Hawkins & Miller, 2003; Hull & Mendolia, 1991). The consistency of this finding suggests that the two types of constructs perform different functions that call for separate theoretical formulations. The QES globality measures contained mainly unstable causes such as “you lose track of time” and “you happen to feel content” and not stable causes such as “you have a bad temper” and “you are a positive person”. Researchers have found that stable causes are essential for internal attributions for negative events to associate with depression (Eschen & Glenwick, 1990; Zautra et al., 1985) and with optimism (Weiner et al., 1976). The reduced stability of causes in the globality scales may explain their lower associations with depression-specific mood than those found for the dispositional scales in the present research. This finding adds support to researchers who argue stability as the most important attributional dimension for depression (e.g., Weiner et al., 1971).

Nevertheless, the present findings suggest that causes that combine internal and stable attributions and provide self-enhancing explanations for events are even more central to the prediction of depression.

8.2.2 Clinical Implications of the Findings

Cognitive therapy aims to correct the negative beliefs arising from negative cognitions (DeRubeis & Hollon, 1995). Some negative cognitions are argued to trigger depression (causal attributions) and others are thought to maintain depressive symptoms (negative expectancies and hopelessness). Cognitive therapy can aim to alter explanatory style and such change is helpful in the treatment of depression (DeRubeis et al., 1990; DeRubeis & Hollon; Seligman et al., 1988). The present findings suggest that the therapeutic focus on changing negative attributions may be improved by directly boosting optimistic attributions for positive events because these flow on to reduce levels of negative attributions. Moreover, optimistic attributions are more directly related to depression than are negative event
attributions and work independently of stress to reduce depression. The central role of optimistic attributions in depression-specific mood changes the emphasis from self-blame for negative events to perceived mastery or control for positive events.

A component of cognitive therapy, activity scheduling, is a behavioural technique that aims to increase positive reinforcement by engaging in enjoyable activities (Beck, Rush, Shaw, & Emery, 1979). This strategy may be bolstered by having clients generate self-enhancing attributions for their positive events. Activity scheduling has already shown to be equal to complete cognitive therapy in treating depression (Gortner, Gollon, Dobson, & Jacobson, 1998; Jacobson et al., 1996). Likewise, positive self-statements have proved efficacious as an element of cognitive therapy (Garamoni, Reynolds, Thase, Frank, & Fasiczka, 1992; Riskind, Sarampote, & Mercer, 1996). Consequently, engaging in pleasant events and ascribing causes of such events to one’s dispositions, competencies and strengths may provide substantial therapeutic benefits. Similarly, self-enhancing attributions for positive events act to reduce hopelessness and aid in recovery from depression (Johnson et al., 1996, 1998; Needles & Abramson, 1990; Voelz, Haeffel et al., 2003).

The current research also posits an important role for families in engendering optimism. Study One found that high external and stable attributions for positive events such as supportive family relationships were related positively to high levels of optimism. For example, a belief that family support, encouragement, and activities can bring about positive outcomes is influential in engendering a positive outlook on life. Therefore therapeutic and preventative interventions that encourage family members to engender optimism through family activities may well be effective in reducing depression.

Finally, the QES provides a 42-item instrument that was acceptable to community samples and thus may be useful for clinical samples. In view of the validity findings it is recommended that a shortened version of the QES consisting of the combined Positive Disposition, Positive Behaviour, and Negative Behaviour scales (to measure optimistic style) be used for clinical samples. This short version of the QES should be acceptable to clinical samples while still accounting for most of the variance in depression-specific mood.
8.2.3 Methodological Implications of the Findings

One methodological issue for this research concerns the variety of different factors yielded by different versions of the QES. Several scales with varying item content have been elicited through the QES format approach. For example, Study One yielded two internal and stable factors for negative events. These factors had relationships of differing strength to depression-specific mood. Therefore negative event internal causes did not cohere into a single internality factor, suggesting that combining such causes from ratings alone will reduce reliability. In order to obtain cohesive reliable scales, causes of a similar nature as demonstrated by factor analysis are required. Questionnaires with self-generated causes like the ASQ cannot ensure the provision of like causes, or readily capture a cohesive internal attributional construct. This feature may help to explain why measures of attributional style like the ASQ often yield poor reliabilities for the subscales (Sweeney et al., 1986) and hence low associations with depression (Coyne & Gotlib, 1983). Also, the Study One and Study Two versions of the QES obtained two different internal and stable factors. Both scales contained internal and stable causes but of a different nature. Positive Disposition (Study Two; self-enhancing attributions) had stronger relationships with optimism and depression-specific mood than did Positive Internal and Stable (Study One; ability attributions). In the current research, the versions of the QES obtained a multiplicity of explanatory factors. These factors comprised a range of causes with different combinations of the three attributional dimensions that help explain why past research has produced mixed findings for explanatory style in relation to depression.

A second methodological issue concerns the difference in item content between the positive and negative event scales that may have caused the separation between positive event and negative event attributions found in Study One and in past research using the ASQ (e.g., Hawkins & Miller, 2003; Hull & Mendolia, 1991). Yet, providing the same events with positive and negative outcomes and allowing respondents to supply their own causes does not resolve this issue because research using such events found correlations across good and bad events of only .08 to .30 with the BASQ (Feather & Tiggemann, 1984).

The combined findings of the present research show that causal content is critical to yielding strongly related measures of explanatory style. In Study One, the Positive Internal and Stable scale and the Negative Internal and Stable Affect scale
had no association with each other. These were the precursors of the subsequent Positive Disposition and Negative Disposition scales that in later studies had a marked association, likely because of increasing similarity in the nature of the causes. However, although Positive Disposition and Negative Disposition were strongly negatively related, their item content differed to some extent and may account for their failure to form a single bipolar construct. Positive Disposition was a general self-enhancing optimistic construct, encompassing an overall positive attitude to life whereas Negative Disposition was a narrower negative self-concept regarding personal characteristics. If Negative Disposition had causes that involved larger life issues (e.g., “because I am a negative person”) as characterised by Positive Disposition (e.g., “because I am a positive person”), a bipolar relationship may arise. If this is the case, the important bipolar distinction is between the positive and negative conceptualisation of the same cause rather than between internal and external causes for the same event valence as postulated by reformulated learned helplessness theory (Abramson et al., 1978).

A third methodological issue concerns the QES format that was very effective at forming stable factors but did not form unstable factors. This shortcoming in the QES format was not anticipated, but resulted in the measurement of provided causes that were stable at the expense of provided causes that were unstable. Respondents rate supplied causes as likely or unlikely for a given event. However, once a cause is rated as likely for an event, then it is also likely for that event in the future and thus stable. Consequently the behavioural scales, although intended as unstable causes, actually measured stable causes and had modest reliabilities. Both of the behavioural scales contributed to a general optimistic explanatory style and to optimism suggesting that they may be of interest for future research.

A fourth methodological issue, that was due in part to the QES format, concerns problems with the ratings for the globality scales. Globality causes should be causes for one event that also operate as causes of events in many different life domains at any given time (Abramson et al., 1978). However, the globality dimension of the QES may not have captured the intended cross-situational characteristics of the cause. Similarly to the ASQ, the QES rates the affects (emotional consequences) of causes in their capacity to impact a range of life areas. Consequently, QES and ASQ globality scales may not measure the capacity of causes to influence many life areas at a given time, but instead measure the
emotional impact of the causes. Additional evidence of similarity between QES and ASQ globality scales was provided in Study Two by their relationships with each other and their comparative relationships with other explanatory scales, optimism, and mood.

A fifth methodological issue for research using instruments that include both positively and negatively valenced items is that situational factors and error variance found within sets of positive items and negative items always influence outcomes. For example, correlational analyses of the optimistic and pessimistic LOT and LOT-R items show only modest to moderate correlations between the positively worded and negatively worded item sets (e.g., Chang et al., 1994; Dember et al., 1989; Hjelle et al., 1996; Marshall et al., 1992; Mroczek et al., 1993; Myers & Steed, 1999; Robinson-Whelan et al., 1997). However, the present study and others using structural equation modeling that removes error variance from the measures, find that a one-dimensional model of optimism provides a better and more parsimonious interpretation of the measure. Optimism and pessimism items are evidenced as operating on a bipolar continuum in such research (Mehrabian & Ljunggren, 1997; Scheier & Carver, 1985; Scheier et al., 1994). Therefore when examining relatedness and bipolarity, structural equation modeling provides a better analysis on which to base conclusions.

A sixth methodological issue concerns the events posed by the ASQ that have been criticised as insufficiently severe to represent the types of events that elicit clinical levels of depression (Brewin, 1985; Hammen, 1985; Robins & Hayes, 1995). The QES events are even less severe than the ASQ events yet results show clear relationships with depression. Therefore depressive vulnerability and resilience can be determined regardless of event severity as long as the causes are relevant in nature and scope for respondents.

A final methodological issue concerns the nature of different validation measures and their effects on subsequent validity outcomes. This research used three different measures of mood to validate the QES. The PANAS and the MASQ were more successful at measuring depression-specific mood than was the DASS depression scale. The latter related strongly to the other DASS scales and therefore was not depression-specific. Yet, the PANAS and DASS measured general psychological distress equally well. Finally, the MASQ was the only measure to successfully distinguish depression-specific from anxiety-specific mood.
mood measures provided different validity evidence for the QES as exemplified by QES Negative Disposition. Negative Disposition was related to general psychological distress as measured by the PANAS and the DASS but not to Positive Affect measured by the PANAS, or to depression-specific mood measured by the MASQ, or to anxiety-specific mood measured by the MASQ.

8.3 Limitations of the Research

Some interpretative limitations apply to the structural modeling technique. The influence of constructs that were not specified in the model cannot be discounted and thus an effect may be predicated by an unknown variable. Furthermore, causal relationships between variables can only be inferred if they are theoretically justified. In the present study, theoretical justification for causal relationships derived from the reformulated learned helplessness theory of depression. This research demonstrated significant relationships between the variables, a necessary, but not a sufficient condition for establishing causal relationships.

The generalisability of the current research findings to a clinical population is unknown because the subjects in the present study who reported high levels of depression or nonspecific mood symptoms may not necessarily meet a clinical diagnosis of depression. Coyne (1994) maintained that results from research on analogue samples should be interpreted with caution. However, Lewinsohn et al. (2000) found that depression was best regarded as a continuum. Moreover, other authors such as Flett et al. (1997), Cox et al. (1999), and Enns et al. (2001) argued that analogue samples and self-report measures can be useful in depression research. Despite these findings, the issue of whether self-reports for depression-specific mood generalise to clinical depression remains contentious, and a cautious interpretation of the present research is required.

The research necessarily only looked at a limited range of events and causes from amongst the many that people experience in their daily lives. There may be other explanatory factors that operate in a similar manner as a resilience or vulnerability to depression-specific mood. An example of a negative event factor with global pessimism causal content is “being a negative person” and of a positive event factor with personal causal content is “being a relaxed person”.

The lack of rating evidence from other judges to substantiate the types of causes in the QES scales is a further limitation to the present research. However, the QES scales were verified initially by the clustering of the items. Moreover, these
items were confirmed as good representatives of their respective scales in the final study.

The validation of a new instrument is an ongoing process and therefore the QES requires further development. The extent to which the causes represent real-life attributions for actual events or of its ability to predict attributions for actual events is unknown. All measures used in the validity testing of the QES were self-report measures. It would be informative to validate the QES scales in relation to observer measures such as clinical diagnoses.

8.4 Future Directions for Research

Testing whether the QES dispositional, behavioural, and globality scales function in the same manner for clinically diagnosed depression would add support to their validity. Additionally, the acceptability of the QES to clinical samples should also be supported by appropriate research.

The effectiveness of boosting positive attributions, particularly Positive Dispositions, to reduce depression would be extremely productive research. The value of cognitive therapy in altering negative explanatory style and in treating depression is known (DeRubeis et al., 1990; DeRubeis & Hollon, 1995; Seligman et al., 1988). However, although positive attributions are implicated in the treatment of depression via their impact on hopefulness when positive events occur (Johnson et al., 1996, 1998; Needles & Abramson, 1990; Voelz, Haefel et al., 2003), the value of cognitive therapy in directly altering positive attributions to treat depression requires investigation.

The findings of the present research also have implications for the prevention of depression, suggesting likely benefits for targeting positive dispositional attributions in people at risk. Workshops and programs that include changing explanatory style as a cognitive component are effective for preventing depressive symptoms in children at risk (Jaycox, Reivich, Gillham, & Seligman, 1994) and adolescents at risk (Clarke et al., 1995). Additionally, although not targeted for change in a depression prevention program for university students at risk, explanatory style improves as a result of other cognitive interventions and mediates the prevention of depressive symptoms (Seligman, Schulman, DeRubeis, & Hollon, 1999). Positive Disposition has shown efficacy as a predictor of depression-specific mood and improving these attributions should also be useful in depression prevention.
8.5 Conclusions

To summarise the major findings, I have produced a new measure of explanatory style, the QES, and have supplied evidence to support its validity as a valuable measure of depressive resilience and vulnerability, unrelated to anxiety. The QES ameliorates some of the shortcomings of other measures, being acceptable to community samples. It also provides reliable and valid optimistic explanatory scales and negative explanatory scales. QES positive and negative dispositional scales displayed evidence of inverse relatedness, however the scales could not be considered bipolar constructs. The globality scales were relatively separate to the combined internality and stability scales.

The present research has advanced the argument about cognitive vulnerability and resilience to depression by evidencing clear relationships between the constructs of explanatory style, optimism, and depression-specific mood. The dominant optimistic scale, Positive Disposition, formed single constructs with optimism measures to mediate the QES behavioural scales and to directly predict depression and Negative Disposition. The pathways of negative attributions to depression-specific mood were largely indirect through relationships with optimistic attributions. Furthermore, combined findings evidenced the negative scales as vulnerability to nonspecific mood symptoms. Only two QES optimistic scales exerted influences on depression independent of stress and pre-existing depression.

In conclusion, the results of the present body of research provide support for the objectives of the thesis. A new measure of explanatory style was developed and confirmed as providing valid, reliable, stable, and predictive measures in relation to depression-specific mood as opposed to anxiety-specific mood. The central focus of this research was to explore the nature of explanatory style, which is not a simple or single construct. Rather, the development of the QES has shown that explanatory style is multifaceted and can be measured by different scales that show varying relationships with mood. Findings point to a need for consideration of positive event attributions in explanatory style theory, depression treatment, and depression prevention. The importance of attention to measurement issues in relation to attributions and mood were highlighted by the combined results.

A unique finding of the present research was that a single construct, Positive Disposition, was identified as central in predicting depression-specific mood and was construed as a resilience to depression-specific mood. These attributions are related
to other optimistic and negative attributions and may be considered to reflect personal confidence in one’s capacity and competency to attain positive outcomes. Findings affirm the importance of optimistic attributions to the understanding of depression and provide a productive focus for therapeutic intervention and future research.
References


Colligan, R. C., Offord, K. P., Malinchoe, M., Schulman, P., & Seligman, M. E. P. (1994). CAVEing the MMPI for an optimism-pessimism scale: Seligman’s...


Appendix A

Study 1

Ethics Approval

Plain Language Statement

PANAS

DVRS DO

QES

DASS
Appendix B

Study 2

Ethics Approval

Plain Language Statement

PANAS

DVRS DO and SS

QES

DASS

ASQ
Appendix C

Study 3

Ethics Approval

Consent Form

Plain Language Statement

QES

LOT-R

MASQ

Hassles

Major Events
I, (Name)……………………………  of  (Address) ……………………….
……………………….
……………………….
(Phone) ……………………….

Hereby consent to be a subject of a human research study to be undertaken
by Mary Hawkins
and I understand that the purpose of the research is to examine relationships between
personality characteristics, life events, and mood.

I acknowledge that
1. Upon receipt, my questionnaire will be coded and my name and address kept
   separately from it.
2. Any information that I provide will not be made public in any form that could
   reveal my identity to an outside party ie. that I will remain fully anonymous.
3. Aggregated results will be used for research purposes and may be reported in
   scientific and academic journals.
4. Individual results will not be released to any person except at my request and on
   my authorisation.
5. That I am free to withdraw my consent at any time during the study in which
   event my participation in the research study will immediately cease and any
   information obtained from me will not be used.

Signature:        Date: