MEASURING EXPLANATORY STYLE IN CHILDREN

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ABSTRACT

Causal explanations that individuals use to explain events in their lives are referred to as explanatory style. Three dimensions: internal-external, stable-unstable, and global-specific have most frequently been measured. Internal, stable, global explanations for negative events represent a pessimistic style, whereas these same explanations for positive events are considered optimistic. Explanations for negative events that are stable and global are considered to reflect hopelessness.

The psychometric properties of the most commonly used measure of explanatory style for children, the Children Attributional Style Questionnaire (CASQ; Kaslow, Tanenbaum & Seligman, 1978) are poor. This is a limitation to research and theoretical advancement. Four studies were conducted in this project to investigate the measurement of explanatory style in 9-12 year old children.

In Study 1, children (N = 173) completed the CASQ in a group to investigate the psychometric properties of the composite scales and subscales and the relationship between explanatory style and depressive symptoms. Internal consistency and inter-item correlations of the composite scales and subscales were poor. Regression analyses showed explanatory style for negative events (pessimism or hopelessness) made weak but significant unique contributions to the explanations of depressive symptoms.

Study 2 (N = 72) investigated the stability of the CASQ scales longitudinally. The internal consistency and inter-item correlations for the CASQ scales were poor. The stability of explanatory style was low. The predicted relationship between depressive symptoms and explanatory style was found to be inconsistent, emerging at Time 1 but not at Time 2, 12 months later.

Study 3 (N = 79) examined the forced-choice response scale of the CASQ using a fuzzy set approach. A fuzzy set scale which uses a Likert-type response that ranged from completely true to completely false was used to determine how well a child’s
response of choice, their natural response, matched both the selected and non-selected response from the CASQ. Items on the CASQ that measure both pessimism and hopelessness were found to be a poor match to the natural responses of children. Little separation was found between the selected and non-selected responses for all items. The internal consistency of the CASQ was poor when the forced choice scoring approach was used. When Likert-type fuzzy values were used, good internal consistency was obtained. Providing a wider range of responses, obtained using fuzzy values, produced a more sensitive measure of the components of explanatory style.

When the CASQ was scored according to the forced choice protocol weak, significant relationships were found between explanatory style and depressive symptoms, and explanatory style and neuroticism. There were no significant relationships found for either pessimism or hopelessness, with either depression or neuroticism using Likert-type fuzzy values.

Study 4 elicited spontaneous causal explanations following success or failure on tasks that were familiar or unfamiliar. Task familiarity was manipulated. Using an interview format, children (N = 111) responded to questions, eliciting causal explanations, following task success or failures. Likert-type scales measured the internality, stability or globality of the explanation. Results showed that, following failure on two familiar tasks, acceptable levels of internal consistency were obtained on the subscales used to produce the measure of hopelessness and for the composite measure of hopelessness. This same pattern did not emerge following failure on combinations of familiar and unfamiliar events or on two tasks that were unfamiliar. Stable and global explanations and the composite measure of hopelessness, following failure on familiar tasks, were also positively related with depressive symptoms but not neuroticism. These results show that a reliable measure of hopelessness can be obtained from spontaneous explanations for failure at familiar events. Under these conditions the
theoretically predicted relationship between explanatory style and depressive symptoms emerges.

Conclusions were drawn about the theoretical conceptualisation of explanatory style and measurement recommendations were made that apply to 9- to 12-year-old children. Explanations for familiar events produced a consistent measure of explanatory style. The use of a Likert-type response scale to assess agreement with internal, stable, global components were shown to improve scale reliability. The findings are discussed in relation to theory and the measurement of explanatory style in children.
STATEMENT OF ORIGINALITY

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

Signed: ______________________________________________
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CHAPTER 1.0
OVERVIEW AND INTRODUCTION OF THEORY

1.1. Overview of Theoretical Focus

Human beings naturally try to explain the events that occur in their lives. This is especially true for negative and stressful events. In some theories, these causal explanations have been broadly referred to as explanatory style. Two related and influential theories developed to describe the multiple dimensions of explanatory style and study how explanatory styles are associated with socioemotional functioning are the reformulated theory of learned helplessness (RTLH; Abramson, Seligman, & Teasdale, 1978) and the hopelessness theory of depression (Abramson, Metalsky, & Alloy, 1989). The current studies are founded in these classic theories of explanatory style.

There are three important bipolar dimensions of explanatory style in the RTLH: internal-external, stable-unstable, and global-specific. According to this theory internal (“it’s my fault”), stable (“it will always happen this way”) and global (“it affects everything”) explanations for negative events are considered a pessimistic explanatory style, whereas explanations for negative events that are external (“it’s not my fault”), unstable (“next time it will be different”) and specific (“it only affects this”) are considered less pessimistic (Abramson et al., 1978). For example, a child who fails a test (negative event) may explain this failure by saying: “I’m stupid, I will always be stupid, and I fail at everything.” This explanation would be considered internal, stable, and global and, overall, indicate that the child has a pessimistic style when explaining negative events. Another child may explain this failure by saying “The teacher in that class doesn’t like me, so I’ll get better results in math as soon as I get a different teacher.” This explanation for a negative event would be considered external, unstable, and specific, and is a much less pessimistic way of explaining the negative event. An optimistic explanatory style is characterised by internal (“due to me”), stable (“will
always be this way”), global (“affects everything”) explanations for positive events. For example, the optimistic child who passes a test (positive event) may explain the result by saying: “I am smart (internal), I will always do well (stable) and I usually do well at things” (global). Pessimistic explanations are expected to be associated with greater mental health problems, such as depression. Optimistic explanations can be protective against problems and may even promote positive well-being.

The hopelessness theory of depression (Abramson et al., 1989) is a modification of the RTLH. In this theory, only the bipolar dimensions of stable-unstable and global-specific are considered important to understanding individuals’ explanations for events and how these explanations are associated with mental health. In the hopelessness theory, Abramson et al., argue that stable, global explanations for important negative events can result in hopelessness and hopelessness depression, regardless of whether such explanations are internal or external.

1.1.1. Terminology for Explanations for Positive and Negative Events

Despite widespread use of the terms pessimism and optimism in the explanatory style literature, there is little definitional clarity when studies are compared. This has the potential to lead to confusion in the literature, especially in regard to measurement. Most commonly, internal, stable, global explanations for negative events describe pessimism, which is consistent with the RTLH (Abramson et al., 1978). However, pessimism has also been defined as external, unstable, specific explanations for positive events (Gillham, Shatte, Reivich, & Seligman, 2001). The latter definition of pessimism has infrequently been used in research. Similarly, optimism is most commonly defined as internal, stable, global explanations for positive events; however, at times it has been defined as external, unstable, specific explanations for negative events.
For the purposes of the current project the more frequently used and common terminology, consistent with the RTLH and hopelessness theory, will be employed. Internal, stable, global explanations for negative events will be referred to as pessimism and internal, stable, global explanations for positive events will be referred to as optimism. Stable, global explanations for negative events will refer to explanations consistent with hopelessness or more specifically, generalised hopelessness.

1.2. History of Attributional Theories

The RTLH and hopelessness theories and the constructs of pessimism, hopelessness and optimism have historical links with early attributional theories. Attributional theories provide explanations of how people determine the causes for events that occur in their lives. This approach has stimulated a vast body of research since the late 1950s. There are three main components of attributional theories. These include a) a concern with causality, b) a concern with reasons generated to explain a particular event and c) the understanding that causal explanations are constructed by, and meaningful to, the individual without being necessarily observable (Weiner, 1980).

Heider (1958) is widely considered to be the founder of attributional theory and initially introduced and categorised causal explanations as either internal or external and stable or unstable. An internal explanation was described as being due to personal factors such as effort and ability. An external explanation was described as being due to environmental factors such as task difficulty or luck. When the explanation for an event was viewed as relatively fixed and stable, there was an expectation that negative events could not be changed and would occur in the future. For example, when a child explains his/her failure on an exam as being due to low ability ("I’m bad at this"), he or she is likely to expect experiences of failure to be unchangeable and stable ("I’ll always be bad at this"). Alternatively, where the cause for an event is viewed as specific ("the
teacher was in a bad mood when he/she wrote the exam”), negative events will be seen as more variable and changeable (“I might have better luck next time”).

*Locus of control* was an alternative theory introduced to describe how individuals explain or attribute causes of events that occur in their lives (Rotter, 1966). In this framework individuals perceive the control they have over events that occur in their lives differently, and these differences in turn, influence success and failure in one’s life. Locus of control was classified as either *internal* or *external*. Rotter defined external control as perceptions of events as being a “result of luck, chance, fate, as under the control of others, or as unpredictable because of the great complexity (of surrounding forces)” whereas internal beliefs of control were described as perceptions of events that are “contingent upon (one’s) own behaviour or relatively permanent characteristics” (Rotter, 1966, p. 1). A range of variables have been investigated in studies of locus of control. These include: information seeking (Ingold, 1989), achievement (Ashkanasy & Gallois, 1987), coping skills (Parkes, 1984) and psychological adjustment (Ormel & Schaufeli, 1991). As a result of this research, an internal locus of control has come to be considered as broadly positive or good, associated with being open and related to seeking information, whereas an external locus of control is considered to be negative and associated with being less open and not actively seeking experiences (Weiner, 1990).

Building on the original work of Heider and Rotter, Weiner (1985) introduced the attributional theory of achievement motivation. This theory categorised causal attributions across the following three dimensions: internal versus external, stable versus unstable, and controllable versus uncontrollable. Weiner also examined both the conditions under which causal searching occurred and the associated influence of different causal attributions for events on achievement-related behaviour. For example, internal and external attributions for positive and negative events have been widely
related to self-concept (Weiner & Kukla, 1970) and pride (Weiner, 1986). Internal explanations for failure were negatively associated with self-concept or pride, and external explanations for failure were associated with improvements in self-concept or pride. The reverse was found for positive events.

Locus of control and attributional theories provide different explanations of the influence of internal and external explanations for positive and negative events. An internal locus of control is generally considered to be associated with better mental health and functioning, whereas an external locus of control is generally thought to undermine wellbeing. This differs from attribution theory where the type of event, success (e.g., doing well on a test) or failure (e.g., failing a test), determines whether internal or external causal explanations are regarded as enhancing or undermining mental health and other aspects of socioemotional functioning.

Many of these theories have provided the foundation for studies with children, adolescents and university students. For example, the conditions under which explanations for events or causal searching were most likely sought by children to explain events in their lives were investigated by Wong and Weiner (1981). Children reported what they thought might have happened to them following an unexpected or expected success or failure on a hypothetical exam. The results showed that explanations for events were more likely to occur where children experienced failure rather than success, and in conditions where the failure was unexpected rather than expected (Wong & Weiner). From a review of 17 studies on causal searching in adults or children a major finding was that achievement-related situations were the type of event most likely to elicit causal explanations (Weiner, 1985a). Additionally, causal explanations spontaneously occurred in conditions where the outcome was failure as opposed to success and where the outcome was unexpected rather than expected (Weiner).
A more recent study by Gendolla and Koller (2001) investigated the conditions most likely to elicit causal searching among university students. Replicating previous studies, the conditions most likely to elicit spontaneous causal attributions were events producing failure or a negative outcome for an event considered important. Additionally, when the negative outcome was unexpected, producing a surprising outcome, there was an increased likelihood of causal searching.

Much of the work from the attributional theories was influential in the development of RTLH and hopelessness theory, which originated from the initial learned helplessness theory. The theory of learned helplessness arose in an attempt to account for the different responses that individuals have in response to uncontrollable events or outcomes.

1.3. **Learned Helplessness Theory**

Numerous research studies have been conducted to understand the circumstances or conditions where helplessness and depression might occur in response to events. In developing and testing helplessness theory, several series of classic experiments were conducted, predominantly with animals. Across these experiments results have shown that performance consistently deteriorated under conditions of noncontingency; that is, when there was no connection between behaviour and outcomes. In these circumstances the outcome was also uncontrollable. For example, Seligman (1975) described a series of studies conducted between 1965 and 1969 where dogs were placed into a hammock and exposed to uncontrollable shocks. Following exposure to the uncontrollable shocks the dogs were placed in a shuttle box where they could jump a barrier to escape from the shocks. After initial exposure to the uncontrollable shocks, about two thirds of the dogs became helpless and made no attempt to escape from the box in order to escape further shocks. Seligman referred to this as learned *helplessness*. 
This helplessness effect was later tested in samples of university students (Hiroto, 1974). The electric shocks were replaced with loud noise. Participants could, in some conditions, use a finger response to eliminate the noise. The results showed that, in conditions where participants believed the outcome was not in their control, and there was nothing they could do to stop the noise, they were more likely to become helpless. Overall, the research conducted into learned helplessness found that negative events that could not be changed by the strategies used by the individual were associated with this helpless response, and were also associated with a range of difficulties including decreased motivation, fear and depression (Seligman).

Based on these early findings of Seligman (1975) and Hiroto (1974), learned helplessness theory was developed. It stipulates that, when an individual finds that his/her responses are independent of the outcome, there is recognition that the events are uncontrollable and the individual develops the expectancy that there is nothing that can be done to alter the outcome. This produces decreased motivation, fear, confusion, cognitive withdrawal, feelings of helplessness and depressed affect (Seligman, 1975).

Researchers soon discovered, however, that learned helplessness theory could not completely explain variation in individuals’ responses to uncontrollable negative events. For example, when faced with an uncontrollable negative event, some but not all study participants developed helpless responses. This finding led to a reconceptualisation of the helplessness theory and, later to the development of the RTLH and hopelessness theory of depression. Both the RTLH and hopelessness theories included the attributional concepts to explain the variation in helplessness responses. The RTLH and hopelessness theories will be presented in the next sections followed by studies testing the empirical support for these theories.
1.4. The Reformulated Theory of Learned Helplessness

The RTLH combined the theory of learned helplessness and components of attributional theory. In this account the different responses of individuals when placed in situations beyond their control determined whether a helpless response occurs. The internal-external (internality) and stable-unstable (stability) dimensions from attributional theories together with a new dimension, the global-specific (globality) dimension were used to explain whether a helpless response occurred to uncontrollable events. Causal explanations along these three dimensions were expected to explain whether individuals would develop helplessness in response to uncontrollable negative events.

In the RTLH, explanatory style is described as a cognitive personality variable, which leads to individuals having a “habitual” approach when explaining a variety of events in their life (Peterson & Seligman, 1984). Using this framework, it is possible to measure explanations for causal events in a variety of ways including behavioural observation, content analysis of statements and responses on self-report questionnaires. Where studies have examined the consistency of causal explanations assessed across the different methods of measurement there has been little consistency in explanatory style within studies completed with both adults and children (Butters, McClure & Siegert & Ward, 1997; Cutrona, Russell, & Jones, 1985; Morris & Tiggerman 1999; Robins & Block, 1989). These findings pose challenges for researchers attempting to measure explanatory style, with different measures producing different outcomes within the same sample of participants.

When considering the impact of event type on causal explanations Peterson and Seligman stated that “an attribution is not a real thing, like a microphone or typewriter” but rather a more hypothetical concept being similar to concepts such as “natural selection, life, reward, preference” (Peterson & Seligman, 1984, p. 351). Based on this
view they reported that, as a hypothetical concept, explanatory style could be assessed in a variety of ways, rather than requiring that the individual be able to reflect on and verbally describe his/her attribution. This approach gives scope for the assessment of attributions using various types of events, some being familiar and real and others being hypothetical or unfamiliar. Peterson and Seligman also recognised that the reality of an event impacts on the explanation stating that “when reality is ambiguous enough, a person may project and impose habitual explanations” (Peterson & Seligman, p. 355). This is important in relation to the RTLH as it suggests that individuals use a consistent “style” to explain the outcomes of events in their lives. This explanation suggests that, irrespective of the characteristics of the event, as long as the reality of the outcome is ambiguous, one’s habitual style of explanation can be accessed. As a result research has used varying approaches and types of events to obtain a measure of explanatory style. However, in practice, the reality/ambiguity of an event may not be the only aspect of an event that might be salient to accurate measurement of explanatory style. Consistent with the work completed within the attributional framework a number of factors may contribute to eliciting causal searching including; the outcome of the event (positive or negative), and surprise associated with the outcome and the type of event (Gendolla & Koller, 2001; Wong & Weiner, 1981). The novelty of the event may also be important as some events will be more or less familiar to participants. Event familiarity has not been explored within the frameworks of RTLH or hopelessness theory as a factor that may influence causal explanations.

The RTLH also has been used to make predictions about differences in explanations offered by individuals and their adaptive or maladaptive responses following negative experiences. One central prediction of the RTLH is that individuals who have an explanatory style that “invokes internal, stable, global causes for bad events tend to become depressed when bad events occur” (Peterson & Seligman, 1984,
p. 355). This prediction is based upon how events are explained using all three dimensions of explanatory style. Further, the theory holds that when an individual is exposed to an uncontrollable, negative event and explains the event using a pessimistic (internal, stable, global) explanatory style, there will be motivational, cognitive and behavioural consequences. For example, where a child performs poorly on a test at school and explains this using a pessimistic explanatory style, he or she may be less inclined to attempt further tasks, as he or she may think: “I’m not smart enough so why bother”. This may result in continued poor performance, not only in the subject that the test was in, but in other areas of performance, as the explanation is personal, pervasive and permanent. This provides a specific example of how these three components together contribute to explanatory style, and how this has implications for performance, cognition and motivation.

1.4.1. Internal, Stable, Global Dimensions

The internal, stable, and global dimensions are viewed as fundamental to the explanations of events that are offered by individuals. According to the RTLH these dimensions can be measured independently. As outlined in Section 1.1, an internal explanation for an event is seen to have something to do with the individual (e.g., “it is because of me”, “due to me”), whereas an external explanation attributes the cause of the event to circumstances outside the individual (“it’s someone else’s fault”, “it’s just bad luck”). The internality of the explanations is related to the personalisation of the explanation and is reported to be associated with self-esteem (Peterson & Seligman, 1984). Internal explanations for negative events are associated with low self-esteem whereas the internal explanations for positive events promote self-esteem.

The second dimension, the stable-unstable dimension, concerns the permanence or stability of the explanation. A stable explanation is one in which there is an expectation that the event would re-occur in the future (“it will probably happen
again”), and an unstable explanation is an expectation that the event is temporary (“it probably won’t happen again”). For the example concerning failure on a test, if the failure is attributable to a stable cause, an individual may expect to always fail such tests, whereas if the failure is attributable to an unstable cause, the individual will have an expectation that this would be unlikely to recur.

The third dimension is the global-specific dimension, relating to the pervasiveness of the explanation. Here an individual’s perception of the globality of an event is assessed. A global explanation of an event would result in a view of the cause as having wide-reaching implications that would influence a person’s actions or responses across many areas of functioning (influencing many situations) whereas a specific explanation would have less influence (affecting this one situation only) (Abramson et al., 1978). For example, following failure on a math test, if the explanation given is global the individual may have an expectation that he or she may fail at all other tests, not only maths. Conversely, if the failure is explained specifically, the explanation may be that he or she will only fail in math tests.

In the RTLH, particular influences are applied to each of the dimensions of explanatory style. Following negative events, causal beliefs that are internal are expected to result in a loss of self-esteem. This view is different to Rotter’s account of internality where internal explanations were generally viewed as positive or good (Weiner, 1990), but is consistent with Weiner’s recognition that internal causal explanations can result in higher or lower levels of self-esteem, for positive and negative events respectively (Weiner, 1986). According to the RTLH if the explanation for the negative event is seen to persist or be stable (“it will happen again”) then the impact is expected to be more permanent and long lasting. Finally, the globality of an explanation is reported to influence the pervasiveness of the explanation. Where explanations are global the influence is expected to occur across a variety of situations
(Peterson & Seligman, 1984). The most frequent focus of research on explanatory style concerns the explanations for negative events. A pessimistic explanatory style occurs when explanations for negative events are internal, stable, and global. If the causal explanation of the same negative event is external, unstable and specific, the explanation is not considered pessimistic.

The association between pessimism and depressive symptoms was shown in one early study (Seligman, Abramson, Semmel, & Von Baeyer, 1979), which provided empirical support for the RTLH. The results showed that depressed college students were more likely to explain negative events using an internal, stable, global (i.e., pessimistic) explanatory style than were non-depressed students.

While the RTLH suggests that each dimension of explanatory style can account for variation in individual mental health, researchers have most commonly investigated the associations between the composite scales of pessimism, optimism or hopelessness and depression (see section 1.6 for discussion of empirical studies). This practice occurred predominantly because research has found poor psychometric properties in the dimensional scales used to measure explanatory style. Consequently, a number of prominent researchers suggested using the composite scales (pessimism, hopelessness, optimism) rather than the dimensional subscales (internality, stability, and globality) (Nolen-Hoeksema, Girgs, & Seligman, 1992; Peterson, 1991) to improve the reliability of the measure and this is currently the common practice.

The RTLH makes predictions that pessimism is likely to produce motivational and cognitive consequences. Theorists have acknowledged that these consequences are not only limited to failure scenarios (Abramson et al., 1978). While some studies have focused on positive events, most existing published research has used negative events only, as these are considered to produce the highest associations with depressive symptoms.
The association between pessimism and depressive symptoms has been widely researched. Abramson et al. (1989) reported inconsistencies in the findings concerning the relationship between depressive symptoms and explanatory style. The debate surrounding this relationship (Barnett & Gotlib, 1988; Coyne & Gotlib, 1983) has not only highlighted an area of weakness within the theoretical framework of the RTLH, but has lead to a revision of the RTLH. Abramson and colleagues criticised RTLH on two grounds. First, the RTLH does not “explicitly present a clearly articulated theory of depression” (Abramson et al., p. 358) but rather more effectively accounts for human helplessness. Second, Abramson and colleagues (1989) reported that the empirical studies did not support the RTLH conclusion that internal explanations reduced motivation or affect, as research showed that internal explanations for failures and successes could result in greater effort in a variety of circumstances (Abramson et al.). This is consistent with some of the work on locus of control, which has found positive relationships between an internal locus of control and both academic achievement (Ashkanasy & Gallois, 1987) and psychological adjustment (Ormel & Schaufeli, 1991). These findings are the opposite of what would be expected according to the RTLH. As a result of the variable impact of internal and external explanations, questions have been raised about the efficacy of the inclusion of the internal-external dimension as an important contributor to a pessimistic explanatory style. This also leads to questions about the relationship between internality and depressive symptoms. To address these concerns a revision to the RTLH the hopelessness theory was introduced.

1.5. The Hopelessness Theory of Depression

Hopelessness theory (Abramson et al., 1989) focuses on a subtype of depression, namely hopelessness depression. Hopelessness depression has been reported to include symptoms such as apathy, psychomotor retardation, rumination, poor concentration, sleeplessness and suicidal ideation (Abramson et al.).
One notable difference between hopelessness theory and the RTLH concerns the internal-external dimension. Internality is no longer included as a dimension of primary focus. Hopelessness theory does not view internal explanations for negative events as maladaptive (Abramson et al., 1989). There is recognition that an internal explanation of failure on a test (“due to me”) may produce increased effort whereas the alternative external explanation (“due to others”) may produce reduced effort.

According to hopelessness theory “the symptoms of hopelessness depression are more likely to occur when negative events are attributed to stable (i.e., enduring) and global (i.e., likely to affect many outcomes) causes and when they are viewed as important as opposed to when they are attributed to unstable, specific causes and viewed as unimportant” (Abramson et al., 1989, p. 361). Stable and global explanations (the diathesis), existing in the presence of negative events (the stressor), are a risk factor for the development of hopelessness depression. Based on this, hopelessness theory predicts that stable and global explanations for events would precede and predict the symptoms of depression (Abramson et al.).

Hopelessness theory also differs from the RTLH in that any negative events, rather than merely a perception of uncontrollability, can produce the conditions associated with feelings of hopelessness (Abramson et al., 1989). Hopelessness can arise when the individual has negative expectations for any highly desired outcome. This is termed “negative outcome expectancy”. This, combined with helpless expectations with respect to changing the outcome (helplessness expectancy) is sufficient to produce hopelessness (Abramson et al.). In other words, when a person expects a negative outcome and does not think that there is anything that can be done to change the negative outcome for an important event, it is likely that they will experience hopelessness and hopelessness depression.
Hopelessness theory uses the term *generalised hopelessness* to explain helplessness when negative events are perceived as being both stable and global. Generalised hopelessness influences many aspects or domains within an individual’s life. Under these circumstances failure on a test may affect one’s view of oneself across both academic and interpersonal domains. Alternatively, *circumscribed pessimism* is used to explain negative outcomes or helplessness occurring within a limited or specific domain of one’s life. In these circumstances negative events are perceived as being stable and specific (Abramson et al., 1989), so influence specific aspects of life. In this circumstance, for example, failure on a math test may affect one’s expectancies regarding performance at math in school, but does not influence expectancies concerning social or interpersonal relationships. The hopelessness theory predicts that generalised hopelessness is associated with more severe symptoms of depression whereas circumscribed pessimism will result in less severe symptoms, unless associated with very important outcomes. Motivational deficits are thought to be present in both generalised hopelessness and circumscribed pessimism however sad affect, an emotional symptom, is less likely to occur in cases of circumscribed pessimism (Abramson et al., 1989).

1.6. **The Correlates of Explanatory Style**

Both the RTLH and hopelessness theories highlight pessimism and hopelessness as risk factors for depressive symptoms. Studies investigating the relationship between emotional and physical wellbeing and hopelessness or pessimism have produced a vast body of literature with both adults and children.

With adults, research has examined the impact of explanatory style on health (Lin & Peterson, 1990; Peterson, 1988; Peterson & Seligman, 1987; Peterson, Seligman, & Vaillant, 1988), achievement in academics (Nolen-Hoeckema, Girdus, & Seligman, 1986, 1992), sporting events (Seligman, Nolen-Hoeckema, Thornton, &
Thornton, 1990), and vocational areas (Seligman & Schulman, 1986). Explanatory style in children has been examined in relation to a variety of issues including attention deficit disorder and medication status (Collett & Gimpel, 2004), peer rejection (Prinstein & Aikins, 2004), child abuse potential (Rodriguez, 2003) and physical abuse (Runyon & Kenny, 2002).

The association between explanatory style and depressive symptoms has been tested in samples of both adults and children. Numerous studies report an association between explanatory style and depression (see reviews by Gladstone & Kaslow, 1995; Sweeney, Anderson, & Bailey, 1986) yet there are inconsistencies and controversies arising in the literature concerning this relationship. There has been much debate amongst researchers who have attempted to explain the inconsistent findings regarding measurement of explanatory style, particularly in children (see Mezulis, Hyde, & Abramson, 2006; Persons & Miranda, 1992; Pervin, 1991).

In 1991, a large number of the articles in Psychological Inquiry (Pervin, 1991) debated issues surrounding the construct of explanatory style, the measurement of explanatory style, the consistency of the associations found between explanatory style and depressive symptoms, and the magnitude of this relationship. The association between depressive symptoms and explanatory style is reported to be in the small to moderate range at best (Abela, 2001; Bell, McCallum, & Doucette, 2004; Hunsley, 1989; Quayle, Dziurawiec, Roberts, Kane, & Ebsworthy, 2001; Sweeney et al., 1986). This is a challenge for research as it raises questions about the magnitude of the relationship and the contribution of explanatory style to depressive symptoms.

A number of meta-analytic reviews have been conducted examining the relationship between explanatory style and depressive symptoms. Sweeney et al. (1986) analysed data from 104 studies with adults that investigated the association between depressive symptoms and explanatory style. Consistent with the RTLH, internal, stable,
global explanations for events were investigated separately for positive and negative events. Results of the meta-analysis showed small to medium positive associations between depressive symptoms and high scores on the composite negative scales \( (d = 0.27) \) and individual scales representing internal \( (d = 0.20) \), stable \( (d = 0.21) \) and global \( (d = 0.22) \) dimensions for negative events. In addition, for explanations of positive events, there were reduced associations found between depressive symptoms and the composite positive scales \( (d = -0.15) \) and the individual scales representing internal \( (d = -0.19) \), stable \( (d = -0.14) \) and global \( (d = -0.06) \) explanations for positive events. Hence, pessimism is associated with depressive symptoms but optimism is not. Sweeney and colleagues reported that explanations that adults offer for events in their lives, particularly negative events, make a small but meaningful contribution when attempting to understand risk for the development of depressive symptoms. While this study did not specifically test hopelessness the results are consistent with the RTLH, hopelessness theory and earlier attributional theories, supporting the continued focus on explanations for negative events and pessimism and hopelessness rather than explanations for positive events and optimism when attempting to examine risk for depressive symptoms.

A further meta-analysis of 28 studies analysed data that investigated the relationship between depressive symptoms and explanatory style in children and adolescents (Gladstone & Kaslow, 1995). Only studies that had measured explanatory style using either the Children’s Attributional Style Questionnaire (CASQ; Seligman et al., 1984) or its revised version, the Children’s Attributional Style Questionnaire – Revised (CASQ-R; Thompson, Kaslow, Weiss, & Nolen-Hoeksema, 1998), as well as a measure of depressive symptoms, were included. Where depressive symptoms were measured, most commonly self report measures were used. Gladstone and Kaslow found support for a positive association between pessimistic (internal, stable, global) explanations for negative events and depressive symptoms and also reported a positive
association between external, unstable, specific explanations for positive events and depressive symptoms.

Taken together, the findings of both meta-analytic studies showed support for the association between explanatory style and depressive symptoms. Both reviews reported effect sizes in the small to moderate range. Further, both studies noted limitations resulting from the incomplete reporting of reliability data or, where reliability data were reported, the poor reliability of the tools used to measure explanatory style. Sweeney et al. (1986) reported that less than 8% of studies included reliability data for the explanatory style measures, whereas most included reliability data for the depression measures. Consistent with the findings of Sweeney and colleagues, the issue of reliability of the measures of explanatory style in children was cited as a limitation of the meta-analysis completed by Gladstone and Kaslow (1995). Only a few studies provided reliability data for the subscales, and reliability was generally poor for the composite scales of the CASQ and the CASQ-R.

An additional issue affecting research in the area is that most research investigating the association between explanatory style and depressive symptoms has been based on cross-sectional analyses. In circumstances where the predictive nature of this relationship has been explored using longitudinal studies, there has been greater variation in the results obtained. Explanatory style has proven useful for predicting increases in depressive symptoms in some studies (Abela, 2001; Nolen-Hoeksema et al., 1986, 1992; Turner & Cole, 1994), but not in others (Dixon & Aherns, 1992; Hammen, Adrian, & Hiroto, 1988).

Approaches commonly used to measure depressive symptoms are another potential issue for studies examining the relationship between explanatory style and depressive symptoms. The most common approach to assessing depressive symptoms has been through the use of self report instruments such as the Child Depression
Inventory (CDI; Kovacs, 1991). The CDI can provide an indication of the presence and severity of depressive symptoms. However, in instances where the information provided by a respondent is not accurate this can influence the validity of the measure (Kovacs, 1992). This is an issue affecting all self report measures. Despite these difficulties the CDI has been shown to be a useful tool when measuring the symptoms of depression in children (Hodges, 1990).

In some correlational studies with children, a longitudinal design has been used to account for previous depressive symptoms, prior to testing the association between cognitive style (including explanatory style assessed using the CASQ) and depressive symptoms. For example, Hilsman and Garber (1995) tested the cognitive diathesis-stress model of depression, which holds that individuals who have a more negative explanatory style are at greater risk of depression when they experience stressful life events. The study used a sample of 439 children with a mean age of 11.39 years. Children who offered more pessimistic explanations (internal, stable global) for negative events, consistent with the RTLH, reported more depressive symptoms and negative affect following unacceptable report card results (grade stress). The study recognised that while the findings were significant, only a small proportion of the variance was explained by measures of explanatory style and academic perceptions of competence. These results are consistent with the conclusions reached in the meta-analyses. While explanatory style contributed significantly to depressive symptoms the majority of the variance in depressive symptoms was explained by initially reported depressive symptoms and negative affect. Again, a notable limitation of the study was the low internal consistency of the CASQ (Hilsman & Garber).

Other longitudinal studies have reported that a pessimistic explanatory style, when combined with the experience of negative events, can predict depressive symptoms (Dixon & Aherns, 1992; Panak & Garber, 1992). While these studies
provide support for the diathesis-stress model, many other studies have failed to support this model (e.g. Cole & Turner, 1993).

The study conducted by Cole and Turner (1993) used the CASQ composite negative scale items only and examined the factor structure of this scale. They reported weak and negative factor loadings amongst the items representing the three dimensions from the composite negative scale of the CASQ. While a three-factor structure was derived, the factors were not consistent with the dimensions of internality, stability and globality. Rather, they were described as a general stability dimension, internal state factor and internal trait factor. These factors were used to test the diathesis-stress model. Using these factors, support for the diathesis-stress model of depression in children did not emerge.

While there is inconsistent support for the diathesis-stress model, a consistent point of agreement amongst researchers is the poor psychometric properties of the CASQ. In fact, Cole and Turner (1993) reported that the validity of the measure of explanatory style is so problematic that it limits the capacity to completely represent explanatory style as the construct of interest. Another issue affecting studies is the different measures of explanatory style produced from the CASQ scales. On some occasions the hopelessness theory is tested using the stable and global explanations for negative events. However, on other occasions the CASQ scales are used to test the RTLH and the constructs of pessimism and optimism are derived from the scales of the CASQ using internal, stable, global explanations for negative and positive events, respectively. The limitations of the CASQ are a major issue for research conducted with children when testing both the RTLH and hopelessness theories, and may contribute to inconsistent research findings.

When attempting to extend theory and explain the inconsistent findings between explanatory style and depressive symptoms, some studies have investigated the
differences in explanatory style in children within the normal population and in children with more severe affective disorders. However, studies on clinical and non-clinical child populations have produced contradictory findings in regard to the relationship between explanatory style and depressive symptoms. For example, Tems, Stewart, Skinner, Hughes and Emslie (1993) investigated cognitive distortions, including explanatory style (assessed using the CASQ), in child and adolescent psychiatric inpatient and non-clinical populations. They found that inpatients reported greater pessimism than the non-clinical group at admission; however, following treatment, no statistically significant differences between the groups on the measures of explanatory style were found. These researchers reported that explanatory style may fluctuate with depressive symptoms and at best may be considered as state dependent rather than enduring and trait-like in children aged between 8-16 years. These findings do not support the RTLH, which proposes that explanatory style is stable and trait-like rather than state dependent and fluctuating with depressive symptoms.

The empirical research investigating explanatory style, particularly in children, shows there are inconsistent findings concerning the relationship between explanatory style and depressive symptoms. A number of researchers have expressed concern that weaknesses in the measures available to assess causal explanations, particularly for children, are potentially clouding the research findings (Abela, 2001; Cole & Turner, 1993; Mezulis et al., 2006; Rueger & Malecki, 2007) and inhibiting theoretical advancement. The RTLH was initially developed to explain helpless responses in adults; the theory was not specifically applied to children until later. The early literature on children’s explanatory style largely failed to consider differences in explanatory style that may have been a function of their developmental stage.
1.7. Application of the Reformulated Theory of Learned Helplessness and Hopelessness Theories to Children

The pattern of relationships found between explanatory style and depressive symptoms were expected to emerge with children, based on earlier work completed with adults (Petersen & Seligman, 1984). In keeping with this, research with children to date has typically included participants from a wide age range without consideration of the impact of age and, relatedly, of development on explanatory style. For example, Runyon and Kenny (2002) examined the relationships between explanatory style (assessed using the CASQ) trauma and depressive symptoms in children. They used the CASQ to explore age-related differences in explanatory style in 8-17 year old participants who had experienced physical or sexual abuse. They found that the pre-teen children (8-12 years) had significantly higher composite positive and composite negative scores, reflecting pessimism and optimism, than the adolescent participants (13-18 years).

In the few studies that have examined age-related changes in explanatory style and their relationship to depression, the results have supported the previous findings of age-related differences. These studies have found that an internal, stable, global explanatory style for negative events has been associated with relatively higher levels of depressive symptoms in older (Grade 7-8), but not in younger children (Grade 3) (Abela, 2001; Nolen-Hoeksema et al., 1992; Turner & Cole, 1994).

Nolen-Hoeksema et al. (1992) examined explanatory style in children longitudinally. Explanatory style was measured using the CASQ every 6 months for a 5-year period, commencing when children were in Grade 3. The study found that the contribution of a pessimistic explanatory style to depression increased with time and stabilised with age and improved cognitive abilities. Gibb et al. (2006) examined the stability of explanatory style and depressive symptoms in children (mean age 9.77 years...
at Time 1), assessed using the CASQ-R and CDI, over a 6-month period and reported that explanatory style ($r = .48$) and depressive symptoms ($r = .65$) remained relatively stable over time. Hierarchical regression analyses were used to longitudinally examine the variables contributing to a negative explanatory style. It was found that increasing symptoms of depression contributed to the development of a negative explanatory style over time.

Further, support for the impact of age on explanatory style was found by Turner and Cole (1994) who examined the association between explanatory style for negative events and depressive symptoms in 4th, 6th and 8th grade children. The relationship was stronger for the older children, providing some support for the notion that age influences the association between explanatory style and depressive symptoms.

Additional support for the value of a developmental focus within the explanatory style literature can be found in research investigating the attributional theories. In studies where the impact of age on the development of attributional style has been examined, research has shown that attributional style gains increasing importance during middle childhood (Fincham & Cain 1986; Normandeau & Gobeil, 1998). There has also been recognition that, as children age, there is change in the way that attributional information is processed.

Taken together, these findings show that the age of participants needs to be considered when conducting research with children. The inconsistencies in the findings may be more evident where there is a wide age range of participants in a study. Cole and Turner (1993) have noted that this has resulted in questions being raised regarding the very existence of explanatory style in children. To obtain a clearer understanding of explanatory style, it is necessary to investigate the explanations of children within a restricted age range.
Even though findings across studies have been inconsistent, researchers have repeatedly identified that constraints and limitations occur as a result of the poor psychometric properties of the measures available to assess explanatory style in children (e.g., Abela, 2001; Cole & Turner, 1993; Mezulis et al., 2006; Rueger & Malecki, 2007). Indeed, Abela stated that “measures with higher reliability would allow researchers to rule out the possibility that inconsistent findings….are not just a consequence of the varying quality of the different measures used” (2001, p. 253). Problems with measurement make it even more important to select a narrow age range when conducting studies with children in order to control for age-related developmental differences.

1.8. Eliciting Causal Explanations using Real and Hypothetical Events

While developmental issues have been reported to influence measurement reliability and the relationship between explanatory style and depressive symptoms, another factor potentially influencing the way children provide causal explanations for events is the type of event used to elicit explanatory style. To date, various event types and approaches have been used. The approaches to measure explanatory style have included controlled laboratory studies (Alloy, Peterson, Abramson, & Seligman, 1984), studies examining the explanations from written text using content analysis (Schulman, Castellon, & Seligman, 1989), and, more commonly, responses to self-report questionnaires. The latter includes the Attributional Style Questionnaire, which is used with adults (ASQ; Peterson, Semmel, von Baeyer, Abramson, Metalsky, & Seligman, 1982; see Chapter 2 for an overview), and the CASQ or the shortened version of the CASQ, the CASQ-R, which are used with children and adolescents. However, there have been issues raised in research concerning the types of events used by the varying approaches to measure explanatory style.
The influence of event types on causal explanations was examined in an early review by Wortman and Dintzer (1978). These researchers presented a critique of the RTLH and reported that explanatory style may be different for unique events (something unlikely to occur again) as opposed to events that were likely to recur. Their view was that in circumstances where individuals expect to experience the event or outcome again (e.g., failing a test), the event would be considered more controllable than events that occur less frequently, which are perceived as less controllable. This review highlighted the potential influence of different types of events on causal explanations.

The difference in explanations for hypothetical and real events has also been investigated. Some studies have reported a positive relationship between explanatory style assessed from explanations of hypothetical and real events (Peterson et al., 1982; Peterson & Villanova, 1988), supporting the RTLH, whereas other research has not found this relationship (Butters, McClure & Siegert & Ward, 1997; Cutrona, Russell, & Jones, 1985; Morris & Tiggeman 1999; Robins & Block, 1989). The inconsistencies in the findings raise further concern about the impact of event type (real versus hypothetical) on the causal explanations offered.

Morris and Tiggerman (1999) attempted to explain the differences in causal explanations for different event types by suggesting that real life events have a factual basis with identifiable causes whereas hypothetical events do not. Similarly, Hill and Larson (1992) suggested that, when measuring explanatory style using hypothetical events, participants might recall real events from the past and respond with an explanation for the hypothetical event that is influenced by past events or memory. This explanation complements research within the cognitive theories which recognises that schemas develop early in one’s life and are used to make sense of experiences and interactions with others (Beck & Weishaar, 1989). It seems feasible that different
attributional or explanatory style processes may occur depending on the past experiences or prior familiarity with an event. This view is consistent with the attributional literature (Gendolla & Koller, 2001; Weiner, 1985) but not with the RLTH or the hopelessness theory of depression.

Self-report measures of explanatory style for both adults and children commonly include a variety of events, some that are familiar, and others unfamiliar to a person’s experience. From a measurement perspective this does not control for different processes that operate when explaining familiar versus unfamiliar events, which are hypothetical. The influence of familiar and unfamiliar events on the consistency of causal explanations has yet to be specifically examined in research. Researchers to date have not asked participants to identify the events that are familiar or unfamiliar to them. Event familiarity has not been directly considered within the explanatory style literature as a factor potentially influencing the reliable measurement of causal explanations. This was a focus in this project.

1.9. Domain Specificity

As well as the combination of familiar and unfamiliar events used in questionnaires that measure explanatory style (i.e., the CASQ or CASQ-R for children and ASQ for adults) the events used include situations from both the interpersonal- and achievement-related domains. Domain specificity has not been theoretically addressed within the RTLH as explanatory style is considered general, not domain specific. However, in the hopelessness theory, domain specificity has been addressed and Abramson and colleagues have stated that individuals may have specific vulnerabilities “when there is a match between the content areas of an individual’s depressogenic attributional style and the negative life events he or she encounters” (Abramson et al., 1989, p. 362).
Consistent with this view some researchers have questioned the approach to measuring explanatory style across a variety of domains and have suggested that explanations for events may in fact be domain specific (Abramson, Alloy, & Metalsky, 1995; Robins & Hayes, 1995; Toner & Heaven, 2005; Turner & Cole, 1994). This view is supported by research that has found differences in the explanations children offer when explaining achievement and interpersonal events (Turner & Cole, 1994).

Turner and Cole (1994) investigated explanations in 4th, 6th and 8th grade students using items that assessed events in the social, sporting and academic domains. These researchers modified the CASQ scale by constructing two separate scales that reflected negative social and academic events. The social scale consisted of nine items whereas the academic scale consisted of seven items. Turner and Cole reported that the modified CASQ scale had internal consistencies that ranged from .65 to .70. Responses were obtained from both the CASQ and the Children’s Negative Cognitive Error Questionnaire (Turner & Cole, 1994) to assess a child’s cognitive style across the social and academic domains, as well as within the sporting domain. The scores across the different measures were standardised and summed to produce a measure designed to reflect a child’s cognitive style. These researchers found differences in cognitive style in children as a function of event type. Specifically, all age and gender groups rated achievement-focused events as more important than social or sporting events. Additionally, within the Grade 8 group (older children) it was found that a pessimistic explanatory style for negative academic events was more strongly associated with depressive symptoms than were pessimistic explanations of social or sporting events. Based on these findings it seems that pessimistic explanations for failure are more likely to be associated with depressive symptoms in domains that are considered to be more important and relevant to children. These findings are consistent with the hopelessness
theory which emphasises the importance of an event. These findings also highlight the value of considering domain specificity when assessing explanatory style in children.

Bell et al. (2004) examined the similarities between explanations given for events in Grade 5 students assessed using three measures. The CASQ was used to assess the children’s generalised explanatory style (ignoring specific domains) and the Student Academic Attribution Scale (SAAS; cited in Bell et al.) and the Student Social Attribution Scale (SSAS; Bell & McCallum, 1995) were used to assess their explanations for events within the academic and social domains, respectively. The SAAS and SSAS include explanations for positive and negative events and assess internal (ability and effort) and external (chance and task difficulty) attributions for positive and negative events. Bell et al. noted that these measures were consistent with the RTLH and consequently calculated pessimism scores for the children based on failure attributions for ability, task difficulty and luck. Optimism scores were calculated from attributions for successful events based on ability, effort and luck. The relationship between depressive symptoms and general and domain-specific explanations for academic and social situations were investigated. The findings of the study showed a weak to moderate positive relationship between the composite negative scale of the CASQ, reflecting a measure of pessimism, and the measures of explanatory style for negative events within the academic domain (SAAS) \( (r = .22) \) and social domain (SSAS) \( (r = .42) \). Depressive symptoms were more highly correlated with causal explanations for negative events within the separate academic \( (r = .48) \) and social domains \( (r = .49) \) than with explanations for negative events using the CASQ as a generalised measure that combined explanations across the interpersonal and achievement domains \( (r = .23) \). The results showed that domain-specific measures were more strongly associated with self-reported symptoms of depression in children than a more general measure of explanatory style across the interpersonal and achievement
domains, as measured by the CASQ. The results suggest domain specificity is an important consideration when assessing causal explanations in children and provides support for the practice of assessing explanations in children within a specific domain as opposed to obtaining a more generalised measure of explanatory style.

An experimental study was conducted by Alloy et al. (1984) to answer questions and address issues surrounding the domain specificity of explanatory style. Using the RTLH, these researchers predicted that, where negative events are explained globally, they will generalise across and influence many domains (e.g., academic and social), but, where explained specifically, the influence will be more specific to a particular situation (e.g., academic only). A two-phase laboratory study with a university population was used to test this prediction. Explanatory style was assessed using the ASQ and subjects were assigned to one of three conditions: no noise, controllable noise or uncontrollable noise. Differences in attempts to escape the noise (behavioural responses) were examined separately for individuals based on responses to the global-specific dimension from the ASQ. At Phase 1 specific or global explanations assessed using the ASQ produced no significant between-group differences for the different noise conditions.

At Phase 2, participants completed the noise task followed by a dissimilar, anagram-solving task. Participants with a global explanatory style experienced greater difficulties when solving anagram tasks than participants with a specific explanatory style. This showed that characteristics of helplessness generalised across tasks requiring that individuals escape noise and solve anagrams. These researchers concluded that individuals who assign a global explanation for a negative event are more likely to show a generalisation of helplessness across domains.

One limitation of the study was the approach used to assess causal explanations. Explanatory style was assessed using the ASQ prior to study participation. Causal explanations for specific performance on experimental tasks were not obtained. This
resulted in an inability to determine whether the participants’ causal explanations for their task performance (a real event) were consistent with their explanatory style as assessed by the ASQ (hypothetical events). A second potential issue with this study that has not previously been considered was the use of a combination of familiar and unfamiliar events, which may have influenced the findings. At Phase 1 subjects completed unfamiliar tasks (controllable or uncontrollable noise tasks) with no significant effects found for global versus specific explanations. However at Phase 2, subjects completed an unfamiliar task (noise) followed by a familiar task (anagram) and differences were found based on global versus specific explanations. Familiarity with the second task (anagrams) may have elicited a different outcome due to differences in the expectations about likely success or failure on the familiar task. The events presented at Phase 2 were familiar events and may have been more likely to influence performance than the more novel, unfamiliar events (noise tasks) used at Phase 1. To date, there is no known study that has tested the impact of familiar and unfamiliar events on causal explanations under controlled conditions. This is a factor that may influence the sensitivity and reliability of measurement of explanatory style. This was investigated in the current project.

1.10. Confounding effects of Neuroticism on Mood Disorders

Sensitivity of measurement is important in order to gain an accurate reflection of explanatory style. It is recognised that depressive symptoms can influence a child’s interpretation or explanation of negative events, yet the role of neuroticism is less clear. A person high in neuroticism can be thought of as “an anxious, worrying individual, moody and frequently depressed” (Eysenck & Eysenck, 1991, p. 4). Eysenck and Eysenck describe such an individual as overemotional and reactive to stimuli, which results in responses to events that are irrational and rigid.
Research into explanatory style has produced small yet fairly consistent relationships between explanations for negative events and depressive symptoms, regardless of whether pessimism or hopelessness has been used as the measure of explanatory style for negative events. However, negative affect/neuroticism is also correlated with both anxiety and depressive symptoms (Clark & Watson, 1991). Research using children also provides support for the relationships between negative affect/neuroticism, anxiety symptoms and depressive symptoms, with reports of a strong relationship between these variables (Chorpita, Brown, & Barlow, 1998; Phillips, Lonigan, Driscoll, & Hooe, 2002). For example, negative affect/neuroticism was found to correlate strongly with both self-reported symptoms of anxiety ($r = .77$) and depressive symptoms ($r = .64$) in a sample of children aged 11-18 years of age (Phillips et al.). Clark and Watson (1995) reported that negative terminology used in questionnaires has the potential to reflect neuroticism and they noted that care needs to be taken when developing questionnaire items to ensure that any negative terminology used does not reflect a non-specific factor such as neuroticism or negative affect, rather than the construct of interest. Thus, items used to assess negative constructs such as pessimism or hopelessness need careful consideration to ensure they represent pessimism or hopelessness rather than neuroticism.

Given the strong relationship between neuroticism and depressive symptoms it is important to ensure that explanatory style makes a unique contribution to depressive symptoms beyond the variance explained by the relationship between explanatory style and neuroticism. The extent to which negatively phrased items influences the accurate measurement of explanatory style has yet to be ascertained. The relationships between explanatory style, depressive symptoms and neuroticism were examined in the current studies to explore the relationship between neuroticism and explanatory style.
1.11. Summary

Explanations for negative events, consistent with the RTLH concept of pessimism and the hopelessness theory’s conceptualisation of hopelessness, have been associated with a variety of constructs and most frequently with depressive symptoms, yet there have been a number of inconsistencies and limitations recognised in the literature (c.f., Barnett & Gotlib, 1988; Cole & Turner, 1993; Persons & Miranda, 1992). An ongoing limitation recognised by researchers investigating explanatory style in children is the poor psychometric properties of the CASQ, the most frequently used measure of explanatory style. This has been identified as a serious limitation to both research and theoretical advancement (Cole & Turner, 1993; Hilsman & Garber, 1995; Robins & Hinkley, 1989). From the review of the literature a number of factors potentially influencing the accurate measurement of explanatory style can be identified. These include the types of events used to assess causal explanations, with previous research finding differences in the explanations offered for real and hypothetical events (Butters et al., 1997; Morris & Tiggerman, 1999). In addition, there have been concerns raised about the consistency or stability of causal explanations across different domains. Studies have found differences in the relationship between depressive symptoms and causal explanations within the interpersonal and achievement domains (Bell et al., 2004; Turner & Cole, 1994). Finally, constructs such as neuroticism may also influence the accurate measurement of explanatory style. How these issues may interfere with accurate measurement of explanatory style in children will be reviewed in the following chapter with a view to improving the accurate measurement of explanatory style for children.

The issues raised in this chapter highlight the need for an accurate measure of explanatory style for children. Accurate measurement has implications when evaluating and applying explanatory style theories to the causal explanations offered by children to
explain events in their lives. Where the reliability of measurement instruments is poor theoretical constructs can not be tested and evaluated by research. Given the associations found between explanatory style and depressive symptoms and theoretical assertions that causal explanations for negative events can serve as vulnerabilities or risk factors in the development of depressive symptoms, improving the accurate measure of explanatory style in children is an important area for research.
CHAPTER 2.0
THE MEASUREMENT OF EXPLANATORY STYLE

The most common and frequently used approach to measure explanatory style is through the use of self-report questionnaires, which became increasingly popular in the 1970s. The self-report measures of explanatory style investigate causal explanations across the dimensions consistent with the RTLH and hopelessness theory. This chapter provides an overview of some of the measures available for use with adults, as these measures have been used to produce a large component of the supporting evidence for both the RTLH and hopelessness theory. Following this, a more extensive description of the frequently used measures of explanatory style for children will be provided.

2.1. Measurement Approaches

2.1.1. Overview of Measures for Adults

The Attributional Style Questionnaire (ASQ; Peterson et al., 1982) and the Expanded Attributional Style Questionnaire (EASQ; Peterson & Villanova, 1988) are the self-report measures most frequently used to measure explanatory style in adults. Both measures present participants with hypothetical events and require that they write down one major cause for each event. Participants then rate each self-generated cause across the three dimensions of explanatory style. To assess the dimensions responses are anchored by statements reflecting the poles of each. For example, participants must select a response ranging from due to other people (1) to due to me (7) using a 7-point, Likert-type scale to obtain a measure of their internality. Scores are then summed separately to produce the subscale scores reflecting internality, stability and globality. The subscale scores are commonly combined to produce a composite positive scale score (for positive events) and a composite negative scale score (for negative events). The measure of pessimism is produced by summing the scores for negative events on
subscales reflecting internality, stability, and globality whereas, for hopelessness, the subscales of stability and globality are combined for negative events. Optimism scores reflect the summed internality, stability and globality subscales for positive events.

In 1988 the EASQ was introduced to improve the internal consistency of the measure of explanatory style in adults. The number of scale items was increased from 12 (on the ASQ) to 24 but it retained the same format as the ASQ. The EASQ differed from the original ASQ as the scales for positive events were removed, leaving a measure that focused solely on explanations for negative events. With this modification, Peterson and Villanova (1988) reported improved levels of internal consistency for scales when assessing explanatory style for negative events in adults.

Content Analysis of Verbatim Explanations or the CAVE technique (Peterson, Luborsky, & Seligman, 1983) is an alternative measure, that as been used with adults. This approach examines causal explanations for events from verbatim statements or written text. Judges independently code phrases from the spoken or written text across the dimensions of explanatory style. The internal consistencies for the scales are reported to be good, ranging from .89 to .90 (Peterson, Bettes, & Seligman, 1982, cited in Peterson & Seligman, 1984). One major issue reported in research with adults is that explanatory style assessed using the CAVE technique correlates weakly with explanatory style assessed using the ASQ (Peterson & Seligman, 1984).

2.1.2. Measures of Explanatory Style Designed for Children

The CASQ was developed in 1978, and is also referred to as the KASTAN. A revised version of the CASQ was introduced in 1991, and is known as the Revised CASQ (CASQ-R; Kaslow & Nolen-Hoeksema, 1991) or KASTAN-R. In 2001, the Children’s Attributional Style Interview (CASI; Conley, Haines, Hilt, & Metalsky, 2001) was introduced for use with younger children to gain a measure of their explanatory style.
Similar to the adult measures, the different CASQ measures assess the internality, stability and globality of explanations for positive and negative events in children above the age of 8 years. These dimensions are consistent with the RTLH and hopelessness theory. In the following sections, each of these measures is described in detail.

2.1.2.1. *The Children’s Attributional Style Questionnaire (CASQ).*

The CASQ consists of 48 items (see Appendix A) and was designed for use in a group setting. There are 24 positive and 24 negative events which children are asked to imagine when completing the measure. The CASQ items include events from the interpersonal- and achievement-related domains. The CASQ has six subscales of eight items each. The subscales assess the dimensions of internality (internal-external), stability (stable-unstable), and globality (global-specific) separately for positive and negative events.

The CASQ uses a forced-choice approach to measurement rather than the Likert-type scale approach used with the adult measures. Each event or item provides two possible causes for choice which are presented as forced-choice responses. Participants must select between options ‘a’ or ‘b’, making a category response choice within a dimension and results in a response selection that is, for example, either internal or external, stable or unstable, and global or specific. In each item two of the three dimensions are held constant while the dimension of interest is manipulated or varied (see Table 2.1). For example, the CASQ includes the positive event: “you play a game with some friends and you win”, and the child must choose either a specific, stable, external explanation (“the people that I played with did not play the game well”) or a specific, stable, internal explanation (“I play the game well”). In this example, the dimension of internality is manipulated. The forced-choice response selected for each
item, based on the option of best choice, provides a measure of one’s internality, stability or globality for events and, ultimately, one’s explanatory style.

Table 2.1

Examples of Items for the CASQ

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Positive events</th>
<th>Negative events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internality</td>
<td>You play a game with some friends and you win.</td>
<td>A good friend tells you that he hates you</td>
</tr>
<tr>
<td></td>
<td>1. The people that I played with did not play the game well. (External)</td>
<td>1. My friend was in a bad mood that day. (External)</td>
</tr>
<tr>
<td></td>
<td>2. I play the game well. (Internal)</td>
<td>2. I wasn’t nice to my friend that day. (Internal)</td>
</tr>
<tr>
<td>Stability</td>
<td>All of your friends catch a cold except for you.</td>
<td>You miss the ball and your team loses the game.</td>
</tr>
<tr>
<td></td>
<td>1. I have been healthy lately. (Unstable)</td>
<td>1. I didn’t try hard while playing ball that day. (Unstable)</td>
</tr>
<tr>
<td></td>
<td>2. I am a healthy person. (Stable)</td>
<td>2. I usually do not try hard when I am playing ball. (Stable)</td>
</tr>
<tr>
<td>Globality</td>
<td>You get an ‘A’ on a test.</td>
<td>You gain a lot of weight and start to look fat.</td>
</tr>
<tr>
<td></td>
<td>1. I am smart. (Global)</td>
<td>1. The food that I have to eat is fattening. (Specific)</td>
</tr>
<tr>
<td></td>
<td>2. I am good at the subject that the test was in. (Specific)</td>
<td>2. I like fattening foods. (Global)</td>
</tr>
</tbody>
</table>

The subscale scores are summed within each dimension to produce separate scores for positive and negative events. Subscale scores range from 0 to 8 with higher scores reflecting more internal, stable or global responses.

The composite scale scores are calculated by adding the internal, stable, global subscale scores, separately for positive and negative events. For negative events summing the number of the internal, stable, global responses produces pessimism scores, with a maximum possible score of 24. Similarly, summing the number of stable and global responses, with a maximum possible score of 16, produces a score for hopelessness. For positive events, summing the internal, stable, and global responses...
produces optimism scores. For all composite scale scores the higher the score, the greater the pessimism, hopelessness or optimism.

An additional score that has sometimes been used is the overall score of explanatory style. This score can be calculated by subtracting the composite negative score from the composite positive score. Where this score has been used in research studies, it has yielded poor internal consistency, and questions have been raised about its conceptual meaning. One concern about the use of the overall score has been the relationship between explanations for positive and negative events. A study completed by Gillham, Hamilton, Freres, Patton and Gallop (2006) found that the composite positive and composite negative scores were only weakly correlated at best ($r$’s ranged from -.20 to -.39). Therefore, the meaning that can be attributed to the score produced by subtracting the composite negative score from the composite positive score remains questionable. Cunningham (2003) examined the factor structure of the overall score of explanatory style and found the factor loadings did not support the overall score or the theoretical conceptualisation of explanatory style. Currently, from a theoretical and measurement perspective, it remains unclear what meaning can be derived from the overall score.

2.1.2.2. *The Children’s Attributional Style Questionnaire-Revised (CASQ-R).*

The CASQ-R is a shortened version of the CASQ. There are 24 items in this revised scale: 12 items assess explanations for positive events and 12 items assess explanations for negative events. The response format and scoring protocol are identical to the CASQ. On the CASQ-R there are two items that assess the internal-external dimension, seven items assessing the stable-unstable dimension and three items assessing the global-specific dimension for positive events. For negative events, there are three items that assess the internal-external dimension, six items assessing the stable-unstable dimension and three items assessing the global-specific dimension.
Of the 48 items in the CASQ only 15 of these appear on the CASQ-R (see Appendix 1). Nine items on the CASQ-R are substantially different in content from the original CASQ items (see Appendix 2). The items included on the CASQ-R were initially selected based on item-total correlations from the original CASQ items (Thompson et al., 1998). The CASQ item correlations for positive events ranged from -.16 to .33 and only items with item-total correlations $\geq .14$ were included in the revised composite positive scale. Similarly, the item-total correlations for negative events ranged from -.11 to .27 and only items with item-total correlations $\geq .08$ were included on the CASQ-R composite negative scale.

The item-total correlation estimates used in the development of the CASQ-R were based on limits established by the researchers as the lowest acceptable limits. However, many of the estimates considered acceptable on the CASQ-R by Thompson and colleagues were considered to be below acceptable limits by other researchers. For example, Clark and Watson (1995) recommended that item-total correlation estimates should range from .15 - .50 in order to be considered acceptable.

2.1.2.3. The Children’s Attributional Style Interview (CASI).

The Children’s Attributional Style Interview assesses explanatory style in younger children (Conley et al., 2001). The CASI requires children to generate spontaneous causal explanations for events that are represented as pictures. There are 16 pictures used, with 8 that depict positive events and 8 that depict negative events. For each event, the children are shown a picture then asked to generate an explanation for the event. Finally, they are asked three questions about their explanation (each question relating to a single dimension of explanatory style). This approach to eliciting causal explanations is similar to that used on the ASQ, which requires adults to generate their own causal explanations for events based on a written scenario. Similar to the ASQ, the
CASI then requires that children rate their explanation using three Likert-type response scales which range from internal to external, stable to unstable, and global to specific.

The response format of the CASI differs substantially from that of the CASQ and CASQ-R, as it does not require children to make a forced choice between category responses (i.e., internal or external) to obtain a measure of explanatory style. Rather, children spontaneously generate causal explanations which they rate using Likert-type scales across each dimension.

The CASI is scored similarly to the CASQ, with scale scores produced by summing the separate internal, stable, global scale scores for positive events and negative events. These are combined to produce a composite score for pessimism or using the stable, global dimensions to produce a score representing hopelessness.

When developing the CASI, Conley et al. (2001) piloted items from the interpersonal- and achievement-related domains that were particularly relevant and important to younger children. Separate psychometric data on the interpersonal and achievement domains were not included in the evaluation of the CASI. However, Conley and colleagues set out to ensure that the events used on the scale would be relevant to younger children to improve their ability to complete the items accurately. In doing so, these researchers also created a measure of explanatory style where the events on the measure are all likely to be familiar to children. It is possible that the use of familiar events may provide a more fine-grained, accurate measurement of explanatory style in younger children. To date, there is no known study where differences in explanations for familiar and unfamiliar events have been systematically explored.

In sum, the commonly used measures of explanatory style in children have a number of notable issues that potentially influence the accuracy of the measurement of explanatory style in children. One is the event domain used to measure explanatory
style. The measures developed by Seligman and colleagues to test the RTLH for both adults (ASQ and EASQ) and children (CASQ, CASQ-R and CASI) commonly include events from both the interpersonal and achievements domains. A second issue is the type of response scale used: Some measures include a Likert-type response scale whereas others use a forced-choice, category response format to obtain a measure of explanatory style. Finally, there are differences in the types of events used to elicit explanatory style: The CASI focuses solely on events that are relevant/familiar to children, whereas the CASQ and the CASQ-R use a combination of real/familiar events and hypothetical/unfamiliar events. These differences in the scales used to measure explanatory style may influence the accuracy of measurement in children and are worthy of closer examination.

2.2. The Reliability of Measures

Coefficient alpha (α) is a measure of the reliability or internal consistency of scales. For acceptable reliability, coefficient alpha should equal or exceed .70 for use in research (DeVilles, 1991, p. 85; Nunnally, 1978, p. 278). Further, Devilles recommends that alpha estimates below .60 are considered unacceptable, with estimates between .60 and .65 being undesirable, and estimates between .65 and .70 minimally acceptable. Poor reliability of the CASQ as a measure of explanatory style has been consistently reported in the literature (see Appendix 3).

2.2.1. Calculation of Composite Scale Scores to Measure Explanatory Style

One approach frequently recommended to improve the reliability of the measurement of explanatory style involves the combination of the dimensional scales to produce two composite scores, one for positive and one for negative events (Nolen-Hoeksema et al., 1992; Peterson, 1991). Nolen-Hoeksema et al. (1992, p. 408) reported that on the CASQ “individual scales tend to have very low internal consistency, in part
because they are only eight items long and the items require binary choice”. They recommended the use of the composite scales as an alternative, as the subscale reliabilities were lower than those obtained for the composite scales. The use of the composite scores has arisen not only to describe the constructs of pessimism, optimism, and hopelessness but also to improve the psychometric properties of the scale.

In 1991 an issue of *Psychological Inquiry* devoted a number of pages to articles highlighting the issues and concerns about this approach to the measurement of explanatory style. The value of composite scale scores, as a measure of pessimism or optimism, has been fiercely debated on methodological and theoretical grounds. Gotlib (1991) discussed the patterns of correlations between the dimensions that are combined to produce a composite scale score. He reported that the internal dimension did not correlate in the same direction as the dimensions of stability and globality and recommended against combining the three dimensions to produce a composite score as, statistically, they produce two orthogonal factors. Contrada (1991) relatedly raised concerns about this practice, noting that the combination of the dimensional scores to produce a composite score can result in erroneous inferences as a result of the small inter-correlations between the three separate dimensions. Contrada reported that, under such circumstances, the combination of scores has the potential to decrease the specificity of measurement and increase measurement error. Anderson and Deuser (1991) also raised questions about this practice and suggested that the combination of the scales makes an assumption that all dimensions are equally relevant or important to explanatory style. This is an assumption that has not been empirically tested.

The composite scale score approach to measurement implies that particular responses to the different dimensions are not of prime importance but rather it is the combination of scores across the dimensions or composite score which is of interest. This raises issues when integrating measurement with theory, as within the sub-sample
of children who have the same composite score for pessimism or hopelessness, there can be substantial heterogeneity in their dimensional scores. This is likely to lead to increased measurement error and reduce the capacity of the scale scores to adequately test theoretical predictions.

Despite reservations raised, the practice of using composite scale scores on the CASQ when obtaining a measure of explanatory style continues to be the practice of choice in research, particularly where studies with children are conducted. For example, Gillham et al. (2006) recently used the CASQ to investigate the efficacy of a depression prevention program that sought to improve explanatory style in a sample of children aged between 10 to 14 years. Composite scores were used to assess changes in explanatory style. The internal consistency of the estimates was below acceptable levels, at .55 for the composite positive scale and .50 for the composite negative scales.

With improved levels of internal consistency on the subscales, the measurement of explanatory style would be refined. This would remove the need for reliance on composite scores and overall scores as a method of increasing reliability. Further, the relevance of, and relationships between, the dimensions of explanatory style could be clarified. This is critical to advancing theoretical and applied knowledge.

2.2.2. The Reliability of the Explanatory Style Questionnaires for Children

Most studies that have reported the internal consistency of the CASQ and CASQ-R have found the estimates to be poor. There have been few studies where the dimensional subscales and composite scale reliabilities have been included. Appendix 3 presents the internal consistencies reported in the literature for these scales, and also provides examples of many studies where the psychometric properties of the scales have not been presented.

A single study has reported an acceptable level of internal consistency for the composite positive scale of the CASQ (Seligman et al., 1984). The study assessed
explanatory style in a group of 96 children in Grades 3 – 6, aged from 8 to 13 years. The scale was administered in a group setting at two times, 6 months apart. Participants completed the questionnaires independently as a researcher read them the items. Seligman et al. reported internal consistencies (Cronbach’s α) of α = .66 at Time 1 and α = .73 at Time 2, for the composite positive scale. Internal consistency on the composite negative scale of α = .50 and .54 at Time 1 and Time 2 were found, respectively. The individual subscale reliabilities for positive events ranged from α = .33 to .55 and from α = .13 to .56 for negative events. The internal consistencies for the composite negative scale and all the dimensional subscales were below acceptable levels. Correlations between the subscales at Time 1 and Time 2 ranged from \( r = .52 \) to .64 for negative events and from \( r = .53 \) to .61 for positive events. The composite scales also showed stability over time for both positive \( (r = .71) \) and negative \( (r = .66) \) events (Seligman et al.). There was no recent study located that has reported acceptable levels of levels of internal consistency for the composite scales or for the individual dimensional scales of the CASQ. Most studies that have reported internal consistency estimates for the composite scales and subscales report estimates that are well below acceptable guidelines (see Appendix 3).

One possible explanation for the higher internal consistency obtained by Seligman et al. (1984) on the composite positive scale when compared to other studies may be related to the scale development process occurring in this early study completed with the CASQ. DeVilles (1991) reported that the scale development process can influence internal consistency as during development items are selected based on their contribution to overall scale alpha coefficients. Therefore, the CASQ may have been based on, and adapted for, a specific sample of participants during development, which produced the improved alpha estimates for the composite positive scale on this one occasion, but has not been replicated.
The psychometric properties of the CASQ-R were also evaluated longitudinally. The internal consistency and temporal stability of the composite and overall scales was evaluated over a 6-month period (Thompson et al., 1998). The internal consistency of the composite negative scales ($\alpha = .45$ to .46), composite positive scales ($\alpha = .53$ to .60) and overall scales ($\alpha = .61$) were poor at both Time 1 and Time 2. The test re-test reliability (temporal stability) for the overall scale was $r = .53$, composite positive scale, $r = .53$, and composite negative scale, $r = .38$ showing low to moderate stability over time.

Despite revision, the CASQ-R still has substantial limitations. Thompson et al. (1998) recommended that the original CASQ be used where possible and suggested use of the CASQ-R when assessment time was limited. Unfortunately, given the original CASQ’s poor psychometric properties, its use does not offer substantial benefits over the CASQ-R. Inadequate levels of internal consistency are an issue affecting both self-report measures of explanatory style in children.

Where the CASQ and CASQ-R scales have been used in their original form researchers have consistently reported poor internal consistency for the scales or alternatively, have cited internal consistency or coefficient alpha estimates from past research rather than reporting the internal consistency of the scales from their own projects (e.g., Bell et al., 2004; Collett & Gimpel, 2004; Quayle et al., 2001; Nolen-Hoeskema et al., 1986; Rodriguez, 2003; Rodriguez & Pehi, 1998; Tems et al., 1993). Other researchers have failed to include any reliability information when using the CASQ or CASQ-R (see Appendix 3).

The lack of internal consistency data in research has been particularly problematic for researchers seeking to conduct meta-analytic reviews of the literature. Mezulis, Abramson, Hyde and Hankin (2004) conducted a meta-analysis that investigated self-serving attributional positivity bias in adults and children and found
that, out of 503 samples, internal consistency data for the explanatory style measures were not provided for 410 studies. The researchers then explored effect sizes in relation to internal consistency. They reported smaller effect sizes for positivity bias in samples with low internal consistency. They also noted that smaller effect sizes were evident for the samples where internal consistency data were not provided.

A variety of strategies have been used in an attempt to improve the reliability in the measurement of explanatory style. One approach that has been used to improve the internal consistency of the CASQ composite scales involves reducing the number of items on each scale based on psychometric guidelines (Runyon & Kenny, 2002; Thompson et al., 1998; Turner & Cole, 1994). However, even with these changes, researchers have been unable to obtain acceptable levels of internal consistency.

An alternative approach to improve the psychometric properties of the CASQ was used by Turner and Cole (1994). They modified the measure to represent negative events separately across the interpersonal and achievement domains. Using this approach, the internal consistencies for the composite negative scales, within each domain, were reported to range from $\alpha = .65$ to $.70$ across three testing periods. Turner and Cole’s findings provide support for the value of using domain-specific measures to assess explanatory style in children to improve the psychometric properties of the scales.

Conley and colleagues (2001) had some success in obtaining a reliable measure of explanatory style when they used the CASI with younger children. The composite scales of the CASI reached acceptable levels of reliability, ranging from $\alpha = .78$ to $.83$ for scores representing pessimism and hopelessness for negative events or optimism for positive events (Conley et al., 2001). The CASI has a number of notable differences to the CASQ which may have contributed to its superior reliability. First, it was specifically designed to include events that are relevant, important and familiar to
children, whereas this was not the case for either the CASQ or CASQ-R. Second, it uses children’s spontaneously generated explanations for events. These spontaneous explanations are then rated using Likert-type scales to determine scale scores for each dimension. Given these differences and the superior reliability of this measure when compared to its predecessors, there is some evidence that explanatory style can be measured accurately in children where these specific issues are considered. These differences and their implications for the accuracy of measurement of explanatory style will be discussed in more detail in the next section.

2.3. Improving Internal Consistency using Domain-Specific Events to Measure Explanatory Style

Event types (interpersonal- and achievement-related) are usually combined when measuring explanatory style using the CASQ or CASQ-R. In fact, the value of the CASQ has been described as its ability to provide a measure of one’s generalised explanatory style. According to RTLH this practice is acceptable because a generalised explanatory style is meant to reflect causal reasoning across a variety of events or situations (Peterson & Seligman, 1984).

Some support for the potential influence of event type on the reliable measurement of explanatory style can be found in studies that have assessed explanatory style using domain-specific events. For example, Toner and Heaven (2005) used a revised version of the Peer-social Attributional Style Scale (PASS-1; Toner & Munro, 1996) to measure explanations for peer-related or social event types. It was found that the peer-social domain was of increasing importance to youth in late childhood and adolescence. When administering the PASS-1 adolescents were presented with 14 peer-social related events and were asked to generate spontaneous causal explanations. They were then asked to rate these explanations on internality, stability and globality using 5-point bipolar Likert-type scales. The internal consistency
for these scales ranged from $\alpha = .69$ to $.82$ and from $\alpha = .84$ to $.90$ for the composite scales.

While the PASS-1 presents domain-specific events there are also similarities between this measure and the CASI with regard to the approach used to measure explanatory style. Both measures elicit spontaneous causal explanations for events. Further, both approaches include a Likert-type scale response format to obtain a measure of the internality, stability and globality of the explanation. This technique resulted in improvement in the internal consistency of the scales and this may be attributed to either the event type used or to the use of Likert-type scales. Both differ from the approach used in the CASQ. A final issue that may have influenced the improved reliability of the measurement of explanatory style using either the PASS-1 or CASI concerns event familiarity. Both measures include events that were selected due to their relevance or importance to youth at a particular developmental stage. This is another issue potentially influencing the reliability of measurement of the CASQ that has not previously been addressed.

### 2.4. Familiar Events

The CASQ items include a combination of events that are likely to be familiar and form part of a child’s real life experience (e.g., “your parents praise something that you make”) and events that are likely to be novel and unfamiliar (e.g., “your pet gets run over by a car”). While event familiarity has not been recognised as an issue influencing causal explanations for events within the RTLH, it is possible that using a combination of familiar and unfamiliar or novel events may have the potential to confound the accuracy of measurement. One effect of this confound would be to reduce the consistency of explanations used in assessing the events. This, in turn, would have implications for any attempts to assess an individual’s general, habitual style of explaining events. Given that questionnaires such as the CASQ and ASQ (for adults)
use a combination of real (familiar) and novel (unfamiliar) hypothetical events, the measurement of explanatory style may be confounded with personal past experiences of participants as some events will be familiar and others unfamiliar for different participants within each study.

2.5. The Forced-Choice Format

Likert-type response formats may have also contributed to improvements in scale reliability when measuring explanatory style. Bell and McCallum (1995) have recognised that individuals frequently generate more than one response when explaining causes of events. This may result in greater inconsistency in measurement and increased error when attempting to make a single category forced-choice selection where more than one explanation is possible. Toner and Heaven (2005) have described the forced-choice approach used by the CASQ as restrictive.

Other researchers who have investigated response sets have noted that the limited choices inherent in single category forced-choice scales may result in information being lost due to an inadequate match between the natural responses of the participant and the available options for choice (Viswanathan, Bergen, Dutta, & Childers, 1996). These researchers noted that difficulties arise where forced-choice scales are used if there is overlap in membership across both categories of choice. Perfect membership of a category, (total agreement with one item and disagreement with another) for example internal or external, is necessary for reliable measurement when a forced-choice scale is used. Given this guideline, where there is overlap in membership across forced-choice responses, it is likely that the internal consistency of the scales will reduce as a result of increasing levels of ambiguity. This increase in ambiguity may occur as a result of participants being required to clearly separate and select between forced-choice response options. For example, if measuring internality, where a participant’s response is partially internal (“due to me”) and partially external
(“due to outside influences”) it is more likely that response ambiguity will occur. This problem would increase as the responses or options available for choice do not match the responses of the participant or, alternatively, where a participant has to select between competing partially correct response options. When there is a poor match between the response options offered, random responses to items may occur. This would prove particularly problematic for measures of internal consistency and test re-test reliability, which has previously been found with the CASQ.

Currently, the approach used by the CASQ and CASQ-R when assessing the dimensions of explanatory style in children assumes that each pair of theoretically proposed responses on the CASQ or CASQ-R, representing the dimensions, can be discretely categorised. This is thought to allow children to easily identify and select a response to explain events in their lives. This approach to measuring explanatory style for children is different from the Likert-type scale approaches used to assess explanatory style in the CASI and the PASS-1 (Conley et al., 2001; Toner & Heaven, 2005) where agreement within a dimension is assessed using a scale that ranges across the components of a dimension of explanatory style. Likert-type scale approaches allow for greater flexibility in responding to the dimensions of explanatory style. In such instances a participant can respond across the scale, which ranges from internal to external, rather than using a forced-choice or category response.

To date, irrespective of measurement scale or approach used to measure explanatory style, neither Likert-type scale approaches nor forced-choice approaches have provided recognition that a child may explain an event as internal and external, stable and unstable and global and specific. Likert-scale and forced-choice approaches used to measure explanatory style assume that there is a negative, linear relationship between the different components of the dimensions of explanatory style (i.e., internal versus external). This relationship has not yet been tested.
Viswanathan et al. (1996) have applied fuzzy set approaches to investigating response sets on questionnaires. They have reported that forced-choice response formats on questionnaires can result in difficulty for participants when selecting responses under circumstances where there is overlap between the options available for choice or a poor match between a participant’s true or natural response and the available responses. These difficulties significantly impact the internal consistency of scales.

Given the poor psychometric properties of the CASQ, and the concerns raised by researchers about the weaknesses associated with the continued use of the forced-choice format (Bell & McCallum, 1995; Toner & Heaven, 2005), a better understanding of the factors influencing the accurate measurement of explanatory style is vital to improving the reliable measurement of explanatory style in children.

From the available research there is some evidence that improved internal consistency can be obtained when assessing causal explanations in children using events that are relevant or important to children (as used by the CASI or the PASS-1), using events within the achievement- or interpersonal-related domains (as used by the PASS-1) and using scales that allow for greater flexibility by virtue of their expanded Likert-type scale response format (Bell et al., 2004; Conley et al., 2001; Toner & Heaven, 2005). However, to date, it remains unclear whether one or all of these changes are responsible for the improvements in consistency as they have yet to be empirically tested under controlled conditions.

2.6. Summary and Overview of Studies

Despite its poor reliability and uncertain validity, the CASQ continues to remain the measure of choice for assessing explanatory style in children. Researchers infrequently report subscale scores and they combine the subscales to produce composite scales for positive and negative events. Unfortunately, the combination of the subscales to produce composite scales has not resulted in adequate improvement in
reliability as the composite scales rarely reach acceptable levels of internal consistency for use in research.

From a review of the literature there are a number of issues that potentially affect the reliable measurement of explanatory style. Reliability shows some improvement where explanations are assessed within a specific domain. Further, there have been improvements in the internal consistency of the scales when researchers have assessed explanatory style using Likert-type scale responses rather than category forced-choice responses to hypothetical events. Improvements have also occurred where researchers have gained a measure of explanatory style from the spontaneously elicited explanations of children. Despite the different approaches being able to produce some improvement in the reliability of measurement, it currently remains unclear to what extent restricting event domains, obtaining spontaneous explanations from children, using Likert-type scales, or using events that are relevant or important to children can account for the improvements in reliability. These are issues important to both the psychometric and theoretical understanding of explanatory style in children and require systematic examination through a series of studies.

A key aim of this thesis was to assess children’s explanations of events, and to identify factors that influence the reliable measurement of explanatory style in children. Four studies were conducted. The first three studies examined measurement issues and the fourth study determined whether a consistent style of explanation could be found in children using spontaneous causal explanations following performance on different achievement tasks. The studies were designed to clarify the theoretical and psychometric issues surrounding the types of events used to assess explanatory style, and to evaluate the implications for measurement of explanatory style when using a forced-choice scale approach.

Study 1 and 2 were conducted to identify the items and responses contributing to the accurate measurement of explanatory style using the CASQ. The psychometric
properties of the subscales and composite scales were investigated on three occasions using two different samples of similarly aged children. The internal consistency, inter-item correlations and the temporal stability of explanatory style were examined over a 12-month period. Further, the relationships between explanatory style, depressive symptoms and neuroticism were investigated.

Based on the findings of these two studies, the third study examined the way children evaluate the response options on the CASQ for each of the items. It investigated the match between the response choices and the natural responses of the children and determined whether the responses for items representing a proposed dimension of explanatory style were mutually exclusive (i.e., whether high agreement with one component of a dimension was associated with low agreement with the alternative component of the same dimension). This study also explored the forced-choice response pattern to individual items as an important contributing factor to the accurate measurement of explanatory style.

Study 4 was conducted to determine if a consistent style of explanation in children could be elicited using spontaneous causal explanations following performance on achievement tasks in the academic domain (i.e., using a single event type). The differences between explanations for familiar and unfamiliar positive and negative events were also investigated to examine the consistency of the explanations individuals offer for success or failure under these different conditions. The relationship between neuroticism, depression and explanations offered by children were also examined.

Despite the measures of pessimism and hopelessness generated from the CASQ demonstrating poor psychometric properties, consistent but weak positive relationships have been found between these measures and depressive symptoms. These associations have been the focus of much attention despite the problems in measuring explanatory style and the small effect sizes found in previous studies. For the field to advance, a better understanding of explanatory style in children is needed.
CHAPTER 3.0
STUDY ONE AND STUDY TWO – PSYCHOMETRIC PROPERTIES OF THE CHILDREN’S ATTRIBUTIONAL STYLE QUESTIONNAIRE AND ASSOCIATIONS BETWEEN EXPLANATORY STYLE, DEPRESSIVE SYMPTOMS AND NEUROTICISM

This study investigated the psychometric properties of the CASQ using a sample of children in Grade 6 who were 9-12 years of age. This age group was selected as numerous studies have examined the explanations of children within this age range (see Appendix C). This is the most common age range of children in Grade 6 in Australian schools. In addition, research has shown greater stability in the explanations of children within this age range (Gibb, 2006). The key areas of interest were the response patterns of participants across the dimensions of explanatory style, the internal consistency of the subscales and composite scales, inter-item correlation estimates for scale items, and the stability of the CASQ over a 12-month period.

3.1. Internal Consistency and Inter-item Correlations

For a tool to be psychometrically sound, its internal consistency (Cronbach’s alpha) should be above .70 for research purposes (DeVilles, 1991; Kline, 1990; Nunnally, 1978) and between .90 and .95 for clinical use (DeVilles, 1991). While internal consistency is important, items included should share a sound theoretical basis and must produce a clear description of the construct of interest without being restrictive.

The average inter-item correlation is another useful indicator of internal consistency (Clark & Watson, 1995). This provides a measure of the relationships between items included on a scale and measures how representative an item is with other items (DeVilles, 1991). Unlike internal consistency, which is generally higher with larger numbers of items on a scale, the number of items used does not influence
inter-item correlations. It is recommended that test developers work towards average inter-item correlations of between .15 and .50 (Clark & Watson). Given these recommendations, it would be expected that the CASQ subscales and composite scales will have inter-item correlations falling in this range, with higher inter-item correlations found for items on the subscales than between subscales. Clark and Watson note that where subscale items do not meet these criteria, they should not be combined to produce an overall score. Despite this, when the CASQ-R was developed Thompson et al. (1998) report that items were included on the measure where item-total correlations were ≥ .08. This estimate is lower than that recommended by Clark and Watson for inter-item correlations.

The first aim of this study was to investigate the internal consistency of the composite and dimensional subscales of the CASQ to identify which items accurately reflect the measurement of explanatory style in children and which items do not. Second, the correlations between and within subscales were obtained, to determine the extent that different components were measuring specific constructs.

3.2. CASQ Subscales and Composite Scales

The CASQ includes six subscales: three subscales each for positive and negative events. The subscales can be combined to produce a composite positive score and a composite negative score. It is the composite scores that are most frequently reported in the literature to reflect measures of pessimism, hopelessness or optimism. However, the practice of combining the subscales has long been an issue of debate (Anderson & Deuser, 1991; Contrada, 1991; Gotlib, 1991; Hammen, 1991) with one commonly raised concern being that composite scores reduce the capacity to identify the contribution of each unique dimension of explanatory style to the composite measure of explanatory style for negative events (pessimism and hopelessness) and positive events (optimism). This study examined the relationship between the subscales that are
combined to produce the measures of optimism, pessimism and hopelessness to
determine how they contribute to the overall measure of explanatory style. The
conceptualisations of pessimism and hopelessness were investigated separately as was
their relationship with depressive symptoms.

3.3. Stability of Explanatory Style

The stability or agreement between the measurements of a construct at different
times was also measured in the current study. The consistency of measures at Time 1
and Time 2 provides additional information about the accuracy of measurement when
the construct of interest is not expected to change. Past research has found varying
levels of stability of the CASQ over a 12-month period, with reported coefficients of .48
for the composite positive scale (optimism) and .54 for the composite negative scale
(pessimism) (Gladstone, Kaslow, Seeley, & Lewinsohn, 1997). These researchers
investigated the stability of explanations using a sample of participants aged 15 to 18
years. McCarty, Vander Stoep & McCauley (2007) reported the association for the
composite measures of pessimism, over a 12 month period, to be .40. These researchers
used a sample of participants in Grades 6 and 7. Seligman et al. (1984) reported the correlations between composite scale scores over a 6- month period ranged from $r = .66$
to .71, using a sample of children aged from 8 to 13 years. They reported this provided
evidence that explanatory style is a stable individual difference in children in the age
range tested. A five-year longitudinal study conducted by Nolen-Hoeksema et al.
(1986, 1992) tested children twice a year from Grade 3 to Grade 8. They found
relatively low stability of explanatory style over a series of intervals, with correlations
reported ranging from $r = .29$ to .35.

Based on previous research it was expected that there would be a positive, linear
relationship between CASQ Time 1 and Time 2 scores, providing evidence for the
stability of explanatory style (pessimism, optimism and hopelessness). The associations
between explanatory style and depressive symptoms were measured, as was the stability of depressive symptoms over a 12-month period. Given that explanatory style has been considered to be a habitual style of explanation and depressive symptoms are not, it was expected that the relationship between depressive symptoms at Time 1 and 2 would show less stability than the relationship between explanatory style at Time 1 and Time 2.

3.4. The Relationship between the Children’s Attributional Style Questionnaire and Other Constructs

An internal, stable, global explanatory style for negative events is reported to be “at the core of depressed thinking” (Seligman, 1992, p. 58) and a positive, linear relationship between measures of explanatory style for negative events and depression is frequently expected and found in research. In this study, the relationship between depressive symptoms and the composite and subscale scores for negative events were investigated. It was expected that positive, linear relationships would be found between pessimism and hopelessness and depressive symptoms, in keeping with the conceptualisation of explanatory style found in both RTLH and hopelessness theory.

Neuroticism has been defined as a broad trait reflecting overemotional and reactive responses to events (Eysenck & Eysenck, 1991). Neuroticism has been reported to have an impact on responses to questionnaire items, particularly when attempting to measure constructs such as pessimism (Watson & Clark, 1984). Further, this personality trait has been related to depressive symptoms. In this current study, the relationships between neuroticism, explanatory style and depressive symptoms were examined, as were the independent contributions of explanatory style and neuroticism to depressive symptoms. It was expected that explanatory style would make a unique contribution to depressive symptoms beyond that which was accounted for by neuroticism.
3.5. Method

3.5.1. Participants.

One hundred and seventy-three children who were enrolled in Grades 5 and 6 and aged between 9 and 12 years ($M = 10.55$ years, $SD = 0.65$ years) participated. The students were recruited from three independent primary schools in Queensland, Australia. The sample was comprised of 74 females (42.1%) and 99 males (57.2%). The participation rate from each school exceeded 53% of children within each class group. Ethical approval for the study was obtained from the University Human Research Ethics Committee and parents or guardians were required to provide written informed consent prior to their child’s participation.

3.5.2. Measures.

3.5.2.1. The Children’s Attributional Style Questionnaire.

The Children’s Attributional Style Questionnaire (CASQ) described in the previous chapter was used (see section 2.1.2.1).

3.5.2.2. The Children’s Depression Inventory.

The Children’s Depression Inventory (CDI; Kovacs, 1992) is a 27-item measure designed to assess depressive symptomatology in children. The measurement period used in this instrument examines how students have been feeling over the past few weeks. Each item has three statements in graded severity, which are scored between 0 and 2. The item on the CDI assessing suicidality was removed from the scale at the request of the participating schools. This resulted in a 26-item measure. Scores on the CDI can range between 0 – 54 (0-52 with the removal of the suicide item) with higher scores indicative of greater reported depressive symptoms. The internal consistency of the CDI is reported to be moderate to good, with coefficient alpha on the CDI ranging from .71 to .89 (Kovacs), indicating good reliability for this scale. The CDI also has
high temporal stability (.80) over a 6-month period (Seligman et al., 1984). The validity of the CDI is reported to be “well documented in the research literature” (Kovacs, 1992). Hodges (1990) found evidence for the convergent and discriminant validity of the CDI, describing the CDI as a useful instrument to screen for depressive symptoms and to assess change in depressive symptomatology over time.

3.5.2.3. *The Junior Eysenck Personality Inventory.*

The Junior Eysenck Personality Inventory (EPQ-J; Eysenck & Eysenck, 1987) is an 81-item, forced-choice, self-report scale designed to assess personality traits in youth aged between 7 and 15 years. Items are presented using closed questions and children indicate their agreement by circling either yes or no. The inventory yields scale scores for neuroticism, extraversion and psychoticism and also includes a lie scale. While the complete EPQ-J was administered, for the purpose of this project the neuroticism scale, consisting of 20 items, was the focus of investigation (hereafter referred to as the EPQ-J-N). Higher scores indicate greater levels of neuroticism. Research has established that the EPQ-J is a valid and reliable measure of personality for youth (Eysenck & Eysenck). Internal consistencies for the EPQ-J are reported in the results section of this study.

3.5.3. Procedure

Participants completed all measures in small groups during school hours. The questionnaires were completed in a classroom setting and the order of presentation was the CASQ followed by the CDI and the EPQ-J. Previous research has examined order effects for the presentation of the CASQ and CDI questionnaires and found no significant differences based on order of presentation (Ludlow, 1997).

During testing, a researcher read aloud the items and children individually completed their questionnaires. A second, trained assistant was available to answer any questions students may have had on an individual basis. The questionnaires were
completed according to the standardized instructions. Following completion of the assessment, the children were provided with a small incentive (pen or folder) for participating in the project.

3.6. Results

Analyses were conducted using SPSS. Where missing data occurred the child was excluded from the associated statistical analyses; this occurred infrequently, with the sample sizes ranging from 156-173 across analyses. Missing data occurred as a result of random missing responses to items on the scale and were not associated with specific participant characteristics such as high depressive symptoms or neuroticism.

3.6.1. Response Patterns on Measures

3.6.1.1. Children’s Attributional Style Questionnaire.

Descriptive statistics for the composite scales and subscales of the CASQ are presented in Table 3.1. The subscale scores can range from 0 to 8 with subscale scores ≤ 4 obtained by 90% of participants on the stable-unstable and global-specific dimensions of explanatory style for negative events. For the internal-external dimension 84% of participants had a score of ≤ 4, with a further 12% obtaining a score of 5. Less than 5% of participants scored higher than 5 on this subscale. This shows that 90% of the participants endorsed fewer than 5 of the 8 eight items on any of the CASQ dimensional subscales for negative events. Transformation did not correct the positive skew in these data, so analyses were completed with the data in its original form.
Table 3.1

Summary Statistics for the Children’s Attributional Style Questionnaire Composite Scales and Subscales (N= 173)

<table>
<thead>
<tr>
<th>Composite Scale/Subscale</th>
<th>Range of scores</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CASQ Composite Scales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite Positive Scale</td>
<td>4-22</td>
<td>13.85</td>
<td>3.35</td>
</tr>
<tr>
<td>Composite Negative Scale</td>
<td>1-16</td>
<td>7.43</td>
<td>2.96</td>
</tr>
<tr>
<td>Hopelessness Scale</td>
<td>1-16</td>
<td>4.62</td>
<td>2.36</td>
</tr>
<tr>
<td>CASQ Positive Events Subscales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internality</td>
<td>1-8</td>
<td>4.67</td>
<td>1.39</td>
</tr>
<tr>
<td>Stability</td>
<td>0-8</td>
<td>4.57</td>
<td>1.85</td>
</tr>
<tr>
<td>Globality</td>
<td>1-7</td>
<td>4.48</td>
<td>1.49</td>
</tr>
<tr>
<td>CASQ Negative Events Subscales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internality</td>
<td>0-7</td>
<td>2.81</td>
<td>1.50</td>
</tr>
<tr>
<td>Stability</td>
<td>0-6</td>
<td>2.10</td>
<td>1.59</td>
</tr>
<tr>
<td>Globality</td>
<td>0-6</td>
<td>2.49</td>
<td>1.33</td>
</tr>
</tbody>
</table>

Note. Composite positive and composite negative scale = 24 items; Hopelessness scale = 16 items; Subscales = 8 items.
3.6.1.2. The Child Depression Inventory and Junior Eysenck Personality Questionnaire.

Scores on the CDI ranged from 0 to 41, with a mean of 8.93 ($SD = 7.75$). The pattern of responses was consistent with that generally found in a nonclinical child population (Kovacs, 1992), with 69% percent of participants obtaining a score of 10 or below. The positive skew in the distribution was normalized with a square root transformation.

Scores on the neuroticism scale of the EPQ-J ranged from 0 to 20 with a mean of 10.52 ($SD = 5.47$). The responses were normally distributed.

3.6.1.3. Extreme scores on subscales for explanations of negative events on the CASQ.

Pessimism scores were obtained from the sum of the internal, stable and global dimensional scores for negative events, and hopelessness scores were obtained by summing the global and stable dimensional scores for negative events. Participants with the highest 10% of scores on the pessimism scale were identified as having extreme pessimism scores. In the current sample extreme scores were indicated by a composite negative score $\geq 12$ out of a possible total score of 24 (50%). There was no specific pattern found for the scores on the three subscales, which made up the composite scores (see Table 3.2). For example, the subscale scores of participants with a composite score of 12 revealed scores on the internal-external dimension ranging from 3-7, on the stable-unstable dimension ranging from 3-6, and on the global-specific dimension ranging from 2-6. Thus, a high composite negative score was not reflective of a high score on one or all dimensions of explanatory style consistent with pessimism. Similar effects were found for hopelessness.
Table 3.2

Scores of Participants with Extreme Composite Negative Scores (top 10%, n = 17)

<table>
<thead>
<tr>
<th>Internality</th>
<th>Stability</th>
<th>Globality</th>
<th>Pessimism (Hopelessness)</th>
<th>Depressive symptoms</th>
<th>Neuroticism</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>4</td>
<td>6</td>
<td>16 (10)</td>
<td>17</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>4</td>
<td>15 (10)</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>3</td>
<td>15 (9)</td>
<td>24</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>6</td>
<td>14 (10)</td>
<td>28</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>5</td>
<td>14 (11)</td>
<td>13</td>
<td>25</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>5</td>
<td>14 (9)</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>2</td>
<td>13 (6)</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>5</td>
<td>13 (8)</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>5</td>
<td>13 (9)</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>3</td>
<td>13 (9)</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>12 (7)</td>
<td>23</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>4</td>
<td>12 (9)</td>
<td>20</td>
<td>-</td>
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<tr>
<td>3</td>
<td>4</td>
<td>5</td>
<td>12 (9)</td>
<td>19</td>
<td>15</td>
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<td>4</td>
<td>12 (8)</td>
<td>9</td>
<td>13</td>
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<tr>
<td>6</td>
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<td>12 (6)</td>
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<td>12 (8)</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>4</td>
<td>12 (9)</td>
<td>1</td>
<td>13</td>
</tr>
</tbody>
</table>

Note. - = missing response on one scale item therefore score for neuroticism not produced.

3.6.2. The Relationship between CASQ Subscales, Composite Scales and the Overall Scale of Explanatory Style

Pearson’s $r$ correlation was used to investigate the relationships between the subscales and composite scales of explanatory style (see Table 3.3). Significant but weak, positive linear correlations were found among the subscales measuring optimism (internality, stability, and globality). These findings show that the subscales were measuring different dimensions of explanatory style for positive events yet still correlated together as theoretically predicted.
Table 3.3

_Correlations between the CASQ Subscales (N=173)_

<table>
<thead>
<tr>
<th>CASQ Scales</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive events</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Internality</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Stability</td>
<td>.22**</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Globality</td>
<td>.29**</td>
<td>.29**</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative events</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Internality</td>
<td>-.09</td>
<td>-.17*</td>
<td>-.03</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Stability</td>
<td>-.14</td>
<td>-.25**</td>
<td>-.19*</td>
<td>.15</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>6. Globality</td>
<td>-.13</td>
<td>-.09</td>
<td>-.08</td>
<td>.02</td>
<td>.29**</td>
<td>1.0</td>
</tr>
</tbody>
</table>

_Note. _* = p < .05; ** = p < .01._

The expected positive correlations between the three subscales of explanatory style for negative events did not emerge. A weak but significant positive, linear relationship was found between the global-specific and stable-unstable subscales. However, there was no significant relationship between the internal-external subscale and other subscales for negative events. The CASQ scoring protocol recommends that the internal-external, stable-unstable, and global-specific scales be combined to produce a composite negative scale of explanatory style. The lack of association between the internal-external subscale and other subscales that contribute to the composite negative score raises statistical concerns about the practice of combining the subscales to produce the composite negative scale as a measure of pessimism. However, the results provide some support for the composite scale representing hopelessness.

The overall measure of explanatory style is recommended as a possible alternative measure of explanatory style. This score is obtained by subtracting the composite negative (pessimism) from composite positive score on the CASQ (optimism). A significant, weak, negative, linear relationship was found between the composite scales of positive (optimism) and composite negative (pessimism) scales, \( r \) (156) = -.26, \( p = .001 \). This showed that children with relatively lower levels of
optimism (internal, stable, global explanations for positive events) had a relatively higher level of pessimism (internal, stable, global explanations for negative events).

3.6.3. Internal Consistency of Measures

Cronbach’s alpha (α) for each of the composite scales and subscales of the CASQ is presented in Table 3.4. All are below acceptable levels for research. Subscale totals for optimism, pessimism and hopelessness, while higher, were also below acceptable levels.

Table 3.4

<table>
<thead>
<tr>
<th>CASQ scales</th>
<th>Positive events</th>
<th>Negative events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internality</td>
<td>0.19</td>
<td>0.32</td>
</tr>
<tr>
<td>Stability</td>
<td>0.51</td>
<td>0.51</td>
</tr>
<tr>
<td>Globality</td>
<td>0.29</td>
<td>0.20</td>
</tr>
<tr>
<td>Composite scale</td>
<td>0.57</td>
<td>0.50</td>
</tr>
<tr>
<td>Hopelessness</td>
<td>-</td>
<td>0.51</td>
</tr>
</tbody>
</table>

High levels of internal consistency were found for the Neuroticism scale (α = .88) and for the Child Depression Inventory (α = .89). As these internal consistencies reached acceptable levels, it is clear that problems with internal consistency found in this study were limited to the CASQ.

3.6.4. Inter-item Correlations on CASQ Scales

Inter-item correlations were examined to identify the positive items on the CASQ subscales that were acceptable for inclusion in a revised measure (i.e., \( r = .15 - .50 \)). Of the eight items on each scale there were two from the internal-external dimension, three from the global-specific dimension and six from the stable-unstable dimension that met acceptable inter-item correlation estimates (see Table 3.5). Four of these 11 items met the inter-item correlation guidelines recommended by Thompson et
al. (1998) and are currently included on the CASQ-R scales. The internal consistency of the adjusted scales was recalculated and while it improved, it remained below acceptable limits ($\alpha = .55$ for the stable-unstable dimension, $\alpha = .41$ for the internal-external dimension and $\alpha = .30$ for the global-specific dimension).

Table 3.5

**Average Corrected Inter Item Correlation for Items on CASQ Dimensions for Negative Events ($N=173$)**

<table>
<thead>
<tr>
<th>CASQ item #</th>
<th>Internal-external</th>
<th>Inter-item $r$</th>
<th>Global-specific</th>
<th>Inter-item $r$</th>
<th>Stable-unstable</th>
<th>Inter-item $r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>.06</td>
<td>12</td>
<td>.08</td>
<td>13</td>
<td>.10</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>.11</td>
<td>15$^a$</td>
<td>.15$^*$</td>
<td>18</td>
<td>.05</td>
<td></td>
</tr>
<tr>
<td>10$^a$</td>
<td>.25$^*$</td>
<td>20</td>
<td>-.04</td>
<td>24</td>
<td>.37$^*$</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>.13</td>
<td>21</td>
<td>.12</td>
<td>28</td>
<td>.17$^*$</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>.03</td>
<td>27$^a$</td>
<td>.18$^*$</td>
<td>31</td>
<td>.33$^*$</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>.09</td>
<td>46</td>
<td>.16$^*$</td>
<td>33$^a$</td>
<td>.32$^*$</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>.26$^*$</td>
<td>47</td>
<td>-.07</td>
<td>35</td>
<td>.17$^*$</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>.08</td>
<td>48</td>
<td>.07</td>
<td>36</td>
<td>.38$^*$</td>
<td></td>
</tr>
</tbody>
</table>

Note. * = inter-item $r$ estimates that meet criterion for scale inclusion; $r$ ranging from .15 - .50.; $^a$ = items meeting inter-item guidelines for inclusion on CASQ-R (Thompson et al., 1998): Individual items are presented in Appendix A.

The internal consistency of the adjusted composite negative scale (ADJCN) was $\alpha = .50$, the same as that found for the original CASQ composite negative scale with 24 items.

The inter-item correlations were examined for the ADJCN scale. These ranged from .02 - .40 (see Table 3.6). The two items from the internal-external dimension failed to meet the guidelines for inclusion (Clark & Watson, 1995) so were removed from the scale, leaving six items from the stable-unstable dimension and three items from the global-specific dimension as a measure of explanatory style from negative events. This measures hopelessness, not pessimism, as the internal-external dimension is not
represented. The internal consistency of the revised scale increased to $\alpha = .57$ when the revised adjusted composite negative scale (ADJCNr) was used. Four of the items on this scale are consistent with items on the CASQ-R.

3.6.5. Distribution of Adjusted Composite Negative Scale Items

Clark and Watson (1995) recommend that items on a scale should not be included if they are selected or not selected by 95% of participants as these items are not discriminatory. None of the items on the ADJCNr scale fell into this category.

Out of a possible score of 9, the distribution of the composite scores of the ADJCNr scale ranged between 0-6 ($M = 2.1$, $SD = 1.71$). There were 79% of the participants with scores of 3 or less on the overall score. A square root transformation was conducted to normalize the ADJCNr scale data for use in further analyses.

Table 3.6

*Average Corrected Inter-Item Correlations for Items on the Adjusted Composite Negative Scale*

<table>
<thead>
<tr>
<th>Subscale</th>
<th>CASQ hypothetical event (item #)</th>
<th>Inter-item r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internality</td>
<td><em>A good friend tells you that he hates you</em> (10)</td>
<td>.02</td>
</tr>
<tr>
<td>Internality</td>
<td><em>You twist your ankle in sports class</em> (29)</td>
<td>.06</td>
</tr>
<tr>
<td>Globality</td>
<td>A person steals money from you (15)</td>
<td>.23</td>
</tr>
<tr>
<td>Globality</td>
<td>You walk into a door and get a bloody nose (27)</td>
<td>.15</td>
</tr>
<tr>
<td>Globality</td>
<td><em>You try and convince a kid to go to the movies with you but he won’t go</em> (46)</td>
<td>.12</td>
</tr>
<tr>
<td>Globality</td>
<td>You try and sell chocolates but no-one will buy any (24)</td>
<td>.34</td>
</tr>
<tr>
<td>Stability</td>
<td>You miss the ball and your team loses the game (28)</td>
<td>.23</td>
</tr>
<tr>
<td>Stability</td>
<td>You take a train which arrives so late that you miss a movie (31)</td>
<td>.29</td>
</tr>
<tr>
<td>Stability</td>
<td>The team that you are on loses a game (33)</td>
<td>.25</td>
</tr>
<tr>
<td>Stability</td>
<td>Your teacher asks you a question and you give the wrong answer (35)</td>
<td>.19</td>
</tr>
<tr>
<td>Stability</td>
<td>You get on the wrong bus and you get lost (36)</td>
<td>.40</td>
</tr>
</tbody>
</table>

*Note. Items in italics were removed from revised composite negative scale; # = item number from CASQ.*
3.6.6. Positive Events

Analysis of the individual CASQ subscale items for positive events showed that one of the eight items on both the internal-external scale and the global-specific scale met acceptable inter-item correlation estimates, with seven of the eight items on the stable-unstable scale meeting guidelines (see Table 3.7).

These nine items were combined to produce an adjusted composite positive scale (ADJCP). The internal consistency of the revised scale was $\alpha = .49$. Based on the inter-item correlation estimates only the items from the stability dimension fitted the theoretical conceptualization of the RTLH regarding optimism in children.

Table 3.7

*Average Corrected Inter-Item Correlation for Items on CASQ Dimensions for Positive Events (N=173)*

<table>
<thead>
<tr>
<th>CASQ item #</th>
<th>Internal-external Inter-item r</th>
<th>CASQ item #</th>
<th>Global-specific Inter-item r</th>
<th>CASQ item #</th>
<th>Stable-unstable Inter-item r</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-.05</td>
<td>1</td>
<td>.12</td>
<td>5</td>
<td>.20*</td>
</tr>
<tr>
<td>4</td>
<td>.05</td>
<td>3</td>
<td>-.03</td>
<td>9</td>
<td>.19*</td>
</tr>
<tr>
<td>8</td>
<td>.05</td>
<td>17</td>
<td>.08</td>
<td>23</td>
<td>.38*</td>
</tr>
<tr>
<td>16</td>
<td>.07</td>
<td>25</td>
<td>.11</td>
<td>39</td>
<td>.12</td>
</tr>
<tr>
<td>19</td>
<td>.05</td>
<td>30</td>
<td>.25*</td>
<td>40</td>
<td>.18*</td>
</tr>
<tr>
<td>22</td>
<td>.10</td>
<td>32</td>
<td>.14</td>
<td>41</td>
<td>.26*</td>
</tr>
<tr>
<td>44</td>
<td>.18*</td>
<td>34</td>
<td>.08</td>
<td>42</td>
<td>.24*</td>
</tr>
<tr>
<td>45</td>
<td>.08</td>
<td>37</td>
<td>.14</td>
<td>43</td>
<td>.31*</td>
</tr>
</tbody>
</table>

Note. * = inter-item $r$ estimates that meet criterion for scale inclusion; $r$ ranging from $.15 - .50$; $a$ = items meeting inter-item guidelines that appear on CASQ-R (Thompson et al., 1998)

3.6.7. Relationship between Depressive Symptoms, Neuroticism and the CASQ Subscales, Composite Scales and Adjusted Composite Negative Scale

Pearson’s $r$ was used to examine the associations between depressive symptoms, neuroticism and the original and revised measures of explanatory style for positive and
negative events. For both depressive symptoms and neuroticism positive, linear relationships were expected between these measures and explanations for negative events. As expected weak, significant, positive, linear relationships were found between depressive symptoms and neuroticism and each of the composite negative scales of explanatory style representing pessimism, hopelessness and the adjusted composite negative scale. Weak but significant negative linear relationships were found between depressive symptoms and neuroticism and the composite positive scale of explanatory style (optimism) (see Table 3.8). These results were all in the expected direction and showed consistency in the pattern of relationships between depressive symptoms and neuroticism and the different measures of explanatory style.

Table 3.8

<table>
<thead>
<tr>
<th>CASQ Scales</th>
<th>Depressive symptoms</th>
<th>Neuroticism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite Scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internality</td>
<td>0.15</td>
<td>0.11</td>
</tr>
<tr>
<td>Stability</td>
<td>0.31**</td>
<td>0.21**</td>
</tr>
<tr>
<td>Globality</td>
<td>0.35**</td>
<td>0.18*</td>
</tr>
<tr>
<td>Negative events</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pessimism</td>
<td>0.40**</td>
<td>0.25**</td>
</tr>
<tr>
<td>Hopelessness</td>
<td>0.39**</td>
<td>0.24**</td>
</tr>
<tr>
<td>Adjusted</td>
<td>0.38**</td>
<td>0.19**</td>
</tr>
<tr>
<td>Positive Events</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimism</td>
<td>-0.51**</td>
<td>-0.41**</td>
</tr>
<tr>
<td>Internality</td>
<td>-0.24**</td>
<td>-0.12</td>
</tr>
<tr>
<td>Stability</td>
<td>-0.31**</td>
<td>-0.53**</td>
</tr>
<tr>
<td>Globality</td>
<td>-0.35**</td>
<td>-0.20*</td>
</tr>
</tbody>
</table>

Note. * = p < .05; ** = p < .01; N = 150 to 170.
Significant, weak, linear relationships were found between depressive symptoms and neuroticism and the stable and global subscales for positive and negative events. The pattern of correlations for the internal dimension was not consistent. Internal explanations for negative events were not significantly related to depressive symptoms or neuroticism. However, a weak but significant, negative, linear relationship was found between internality for positive events and depressive symptoms. No significant relationship was found between internality for positive events and neuroticism (see Table 3.8).

3.6.8. Neuroticism and Depressive Symptoms

A strong positive, linear relationship was found between neuroticism and depressive symptoms, $r (158) = .68$, $p < .01$, showing increasing depressive symptoms were associated with increasing neuroticism scores. A standard multiple regression analysis examined the influence of neuroticism and explanatory style for negative events (using the original CASQ composite negative scale score reflecting pessimism) for depressive symptoms. Together, neuroticism and pessimistic explanations for negative events accounted for 49% of the variance in depressive symptoms, $F (2, 151) = 72.93$, $p < .0005$. Both variables made a significant unique contribution to the explanations of depressive symptoms with neuroticism accounting uniquely for 35% of the variance, $t (151) = 10.30$, $p < .0005$, and pessimism 4% of the variance, $t (151) = 3.39$, $p < .01$ (see Table 3.9).

The same analysis was conducted with the revised adjusted composite negative scale for the CASQ, with a similar pattern of results found (see Table 3.9). Together the results of both analyses showed that neuroticism made a large and significant contribution to understanding depressive symptoms, with a small additional unique contribution made by explanatory style for negative events.
Table 3.9

Summary of Standard Regression Analyses for Variables Predicting Depressive Symptoms ($N = 154$)

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE (B)$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original CASQ composite negative scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite negative measure of explanatory style</td>
<td>.10</td>
<td>.03</td>
<td>.20**</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.15</td>
<td>.01</td>
<td>.62**</td>
</tr>
<tr>
<td>Adjusted CASQ composite negative scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted composite negative measure of explanatory style</td>
<td>.31</td>
<td>.11</td>
<td>.16**</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.16</td>
<td>.01</td>
<td>.63**</td>
</tr>
<tr>
<td>CASQ composite positive scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite positive scale measure of explanatory style</td>
<td>-.64</td>
<td>.15</td>
<td>-.28**</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.69</td>
<td>.09</td>
<td>.50**</td>
</tr>
</tbody>
</table>

Note. Analysis 1: $R^2 = .49$, Analysis 2: $R^2 = .485$, Analysis 3: $R^2 = .45$. ** = $p < .01$.

3.6.9. The Contribution of Explanatory Style for Positive Events and Neuroticism to Depressive Symptoms

The same analyses were conducted using the composite positive measure of explanatory style, reflecting optimism (see Table 3.9). Optimism and neuroticism together accounted for 45% of the variance of depressive symptoms, $F(2, 148) = 60.69, p < .0005$. Significant unique contributions to depressive symptoms were made by both neuroticism, accounting for 21% of the variance, $t(150) = 7.52, p < .0005$, and optimism, accounting for 7% of the variance, $t(150) = -4.23, p < .0005$.

3.6.10. Summary of Findings

The findings of this study show explanatory style is difficult to measure consistently in children using the CASQ as internal consistency for the subscales and composite scales for positive and negative events are below acceptable guidelines. The items meeting the guidelines for negative events were from the stable-unstable and global-specific subscales and are consistent with the more recent hopelessness theory. Only items from the stable-unstable scale met guidelines when examining explanations.
for positive events. The findings support the concerns raised in the literature (Abramson et al., 1989; Dweck & Licht, 1980), particularly in relation to the contribution of the internal-external dimension to pessimism. These findings support the concerns expressed by some researchers regarding the implications of internal explanations on psychological adjustment and the contribution of internality to pessimism and optimism.

When examining the contributions of explanatory style for positive and negative events and neuroticism to depressive symptoms, the results show neuroticism and explanatory style for positive and negative events each make a significant unique contribution to understanding depressive symptoms. These results show that despite difficulties with the psychometrics properties of the CASQ, there remains support for the association between the causal explanations that children offer for positive and negative events and depressive symptoms.

3.7. The Stability of the CASQ over a 12-Month Period and Associations with Depressive Symptoms

In Study 2 the stability of the subscales of the CASQ was investigated over a 12-month period using a separate sample of participants to those in Study 1.

3.8. Method

3.8.1. Participants

Eighty-six students participated at Time 1, and 83% of these participants completed a second assessment 12 months later. This resulted in a longitudinal sample of 72 students, 40 females (56%) and 32 males (44%). Only the participants who completed the study at both Time 1 and Time 2 were included in the analyses. At Time 1, the participants were aged between 9-12 years ($M = 10.33$, $SD = 0.73$). No participant in this study was involved in the previous study.
3.8.2. Measures and Procedure

After obtaining parental consent, students completed the measures during school hours in special classrooms. The same measurement instruments used in Study 1 were used in Study 2 with the exception of the EPQ-J, which was not administered. The procedure was the same as that used for Study 1.

3.9. Results

The descriptive statistics and reliabilities of the measures are reported in Table 3.10. The distributions of all variables were examined for Time 1 and Time 2. A square-root transformation was conducted on the CDI data for Time 1 and Time 2 to normalise the distributions. Untransformed scores are presented in the descriptive data, with transformed scores used for analyses.

Examination of the range of the composite and subscale scores of explanatory style showed that participants endorsed more internal, stable, global explanations for positive events at Time 1 and Time 2 than they did for negative events. This is consistent with the findings obtained in Study 1.

3.9.1. Internal Consistency of the CASQ Composite and Subscales

The internal consistency for the subscales and composite scales of the CASQ at Time 1 and Time 2 ranged from $\alpha = .15$ to $.57$, showing poor internal consistency at both testing sessions. In contrast, the internal consistency of the CDI reached acceptable levels at both Time 1 and Time 2 (see Table 3.10). These results are consistent with the findings obtained in Study 1.
Table 3.10

*Descriptive Statistics for the Children's Attributional Style Questionnaire (CASQ) and Child Depression Inventory (CDI) at Time 1 and Time 2 (N = 72)*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Observed Range</th>
<th>M</th>
<th>SD</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>0-30</td>
<td>8.21</td>
<td>5.43</td>
<td>.76</td>
</tr>
<tr>
<td>Time 2</td>
<td>0-37</td>
<td>9.0</td>
<td>6.67</td>
<td>.86</td>
</tr>
<tr>
<td>Composite Positive Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>6-19</td>
<td>12.40</td>
<td>3.04</td>
<td>.57</td>
</tr>
<tr>
<td>Time 2</td>
<td>4-21</td>
<td>12.00</td>
<td>3.19</td>
<td>.32</td>
</tr>
<tr>
<td>Composite Negative Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>3-13</td>
<td>7.78</td>
<td>2.36</td>
<td>.22</td>
</tr>
<tr>
<td>Time 2</td>
<td>2-13</td>
<td>7.28</td>
<td>2.61</td>
<td>.37</td>
</tr>
<tr>
<td>Hopelessness Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>1-9</td>
<td>4.58</td>
<td>1.97</td>
<td>.29</td>
</tr>
<tr>
<td>Time 2</td>
<td>0-9</td>
<td>3.89</td>
<td>2.04</td>
<td>.41</td>
</tr>
<tr>
<td>Internality Positive Events</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>1-7</td>
<td>3.97</td>
<td>1.50</td>
<td>.33</td>
</tr>
<tr>
<td>Time 2</td>
<td>1-7</td>
<td>4.12</td>
<td>1.45</td>
<td>.15</td>
</tr>
<tr>
<td>Internality Negative Events</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>0-6</td>
<td>3.18</td>
<td>1.46</td>
<td>.30</td>
</tr>
<tr>
<td>Time 2</td>
<td>0-7</td>
<td>3.39</td>
<td>1.60</td>
<td>.33</td>
</tr>
<tr>
<td>Stability Positive Events</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>0-8</td>
<td>4.04</td>
<td>1.71</td>
<td>.40</td>
</tr>
<tr>
<td>Time 2</td>
<td>0-8</td>
<td>3.65</td>
<td>1.69</td>
<td>.36</td>
</tr>
<tr>
<td>Stability Negative Events</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>0-5</td>
<td>2.12</td>
<td>1.29</td>
<td>.23</td>
</tr>
<tr>
<td>Time 2</td>
<td>0-5</td>
<td>1.83</td>
<td>1.21</td>
<td>.28</td>
</tr>
<tr>
<td>Globality Positive Events</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>2-8</td>
<td>4.42</td>
<td>1.27</td>
<td>.19</td>
</tr>
<tr>
<td>Time 2</td>
<td>1-8</td>
<td>4.22</td>
<td>1.46</td>
<td>.26</td>
</tr>
<tr>
<td>Globality Negative Events</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>0-5</td>
<td>2.49</td>
<td>1.33</td>
<td>.22</td>
</tr>
<tr>
<td>Time 2</td>
<td>0-6</td>
<td>2.05</td>
<td>1.41</td>
<td>.34</td>
</tr>
</tbody>
</table>
3.9.2. Inter-item Correlations for Items on the CASQ Composite Negative Scale

The inter-item correlations for items on the composite negative scale were generated at Time 1 and Time 2 using the same procedure used in Study 1. The calculated inter-item estimates show 11 items met the inter-item correlation criterion at Time 1. At Time 2, 15 items met guidelines. Of the items identified at each testing interval, only seven items were consistent across the two assessment intervals.

The items that fulfilled the inter-item criteria at both Time 1 and Time 2 are presented in Table 3.11. When these items were compared with those found to meet criterion for acceptable inter-item correlations in Study 1, only four fulfilled the criteria across times and studies. These four items were from the global (one item) and stable (three items) dimensions and would be included in the measure of hopelessness (see Appendix A for the content of these specific items). Overall, this analysis showed poor inter-item consistency over time.

The items found to perform consistently over time and studies (n = 4) included events representing both interpersonal- and achievement-related content. Three of the four items (items 24, 33 and 35) were events likely to exist within children’s every day experience. For example, one item asks children to imagine that “Your teacher asks you a question and you give the wrong answer”.

Table 3.11

**Inter-item Correlation of CASQ Composite Negative Scale Items at Time 1 and Time 2**

**Time 2**

<table>
<thead>
<tr>
<th>Test item</th>
<th>Inter-item r</th>
<th>Test item</th>
<th>Inter-item r</th>
<th>Test item</th>
<th>Inter-item r</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.17</td>
<td>6&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.11</td>
<td>15</td>
<td>.23</td>
</tr>
<tr>
<td>10&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.21</td>
<td>7</td>
<td>.18</td>
<td>24&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.34</td>
</tr>
<tr>
<td>13</td>
<td>.07</td>
<td>10&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.20</td>
<td>27&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.15</td>
</tr>
<tr>
<td>14</td>
<td>.05</td>
<td>15</td>
<td>.05</td>
<td>28</td>
<td>.23</td>
</tr>
<tr>
<td>20</td>
<td>.18</td>
<td>18</td>
<td>.21</td>
<td>31</td>
<td>.29</td>
</tr>
<tr>
<td>24&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.07</td>
<td>21</td>
<td>.30</td>
<td>33&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.25</td>
</tr>
<tr>
<td>27&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.10</td>
<td>24&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.07</td>
<td>35&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.19</td>
</tr>
<tr>
<td>28</td>
<td>.06</td>
<td>26</td>
<td>.17</td>
<td>36</td>
<td>.40</td>
</tr>
<tr>
<td>33&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.07</td>
<td>27&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.20</td>
<td>33&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.09</td>
<td>35&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>36</td>
<td>.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>38</td>
<td>.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>47</td>
<td>.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>48&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.24</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.*  
<sup>a</sup> = item with acceptable inter-item correlation at both Time 1 & Time 2 assessments in Study 2;  
<sup>b</sup> = items with acceptable inter-item correlation in Study 1 and at Time 1 & Time 2 in Study 2 (four items).

3.9.3. Stability of Explanatory Style for Negative Events

The stability of the CASQ was investigated by examining the association between the subscales and composite scales over a 12-month period (see Table 3.12), and these were found to be poor. Weak but significant, positive, linear relationships were found between Time 1 and Time 2 scores for the composite positive, composite negative and hopelessness scales. In contrast, a strong, positive, linear relationship was found across time for depressive symptoms.
Similar problems with stability were noted for the subscales, with poor correlations found between subscale scores at Time 1 and Time 2. A significant, weak linear association was found across time for the stable-unstable subscale for positive events only. For negative events, a significant association across time was found for the internal-external subscale and the global-specific subscales. Overall, the results showed that the CASQ subscales and composite scales demonstrated poor stability over a 12-month period. Given the poor internal consistency of the scales this result was expected.

### 3.9.4. Relationship between Explanatory Style for Negative Events and Depressive Symptoms

The relationships between depressive symptoms and explanatory styles (pessimism and hopelessness) for negative events were examined across time (see Table 3.13). Weak, positive associations were found between depressive symptoms and the composite measures of pessimism and hopelessness for negative events at Time 1, but not at Time 2. These findings suggest the consistency of the relationship between

### Table 3.12

**Stability of Depression and Explanatory Style from Time 1 to Time 2 (N = 72)**

<table>
<thead>
<tr>
<th>Measures at Time 1 and Time 2</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CASQ Composite Scales</strong></td>
<td></td>
</tr>
<tr>
<td>Composite positive</td>
<td>.27*</td>
</tr>
<tr>
<td>Composite negative</td>
<td>.30*</td>
</tr>
<tr>
<td>Hopelessness</td>
<td>.36*</td>
</tr>
<tr>
<td><strong>CASQ Subscales for Positive Events</strong></td>
<td></td>
</tr>
<tr>
<td>Internality</td>
<td>.19</td>
</tr>
<tr>
<td>Stability</td>
<td>.23*</td>
</tr>
<tr>
<td>Globality</td>
<td>.13</td>
</tr>
<tr>
<td><strong>CASQ Subscales for Negative Events</strong></td>
<td></td>
</tr>
<tr>
<td>Internality</td>
<td>.39**</td>
</tr>
<tr>
<td>Stability</td>
<td>.21</td>
</tr>
<tr>
<td>Globality</td>
<td>.31**</td>
</tr>
<tr>
<td><strong>Child Depression Inventory (CDI)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.62**</td>
</tr>
</tbody>
</table>

*Note.* * = $p < .05$; ** = $p < .01$. 


explanatory style for negative events (pessimism and hopelessness) lacks stability over time.

Table 3.13

Correlation between CASQ Composite Scores and CDI Scores at Time 1 and Time 2 (N = 72)

<table>
<thead>
<tr>
<th>Measures</th>
<th>CDI Time 1</th>
<th>CDI Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CASQ CN (Pessimism)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>.31**</td>
<td>.13</td>
</tr>
<tr>
<td>Time 2</td>
<td>.07</td>
<td>.16</td>
</tr>
<tr>
<td>CASQ CN (Hopelessness)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>.31**</td>
<td>.09</td>
</tr>
<tr>
<td>Time 2</td>
<td>.12</td>
<td>.15</td>
</tr>
</tbody>
</table>

Note. CN = composite negative scale; * = p < .05; ** = p < .01.

3.10. Discussion

The two studies reported addressed two issues concerning explanatory style. First, the psychometric properties of the CASQ and its temporal stability were examined. The individual dimensions and the different conceptualisations of explanatory style (pessimism, hopelessness and optimism) were evaluated. Second, the associations between depressive symptoms, neuroticism and the components of explanatory style were assessed. Consistent with previous research, the psychometric properties of the CASQ were poor regardless of whether individual scales or the composite scales were assessed. Inconsistent associations were also found between depressive symptoms and the different components of explanatory style. Reasons for the poor ability of the CASQ to produce a consistent measure of explanatory style will be discussed, as will possible reasons for the inconsistent relationship between explanatory style and depressive symptoms.
3.10.1. The Internal Consistency and Inter-item Correlations for CASQ Scales

Consistent with previous research (e.g., Chorpita et al., 1998; Nolen-Hoeksema et al., 1992; Robins, 1988; Robins & Hinkley, 1989; Seligman et al., 1984; Turner & Cole, 1994) poor internal consistency was found for the CASQ dimensional subscales and composite scales (pessimism, hopelessness and optimism), regardless of the items used, the method used to produce the scores, or whether positive or negative events were examined. These findings support the concerns raised in the literature about the poor levels of internal consistency for the CASQ subscales and composite scales (Abela, 2001; Cole & Turner, 1993; Mezulis et al., 2006).

Despite the poor internal consistency of the scales, the expected relationships between the different dimensions of explanatory style and the composite measures of pessimism, hopelessness and optimism emerged. The relationships between the internal, stable and global subscales for positive and negative events were examined in Study 1. For positive events the correlations were weak, but in the direction that would be expected theoretically. For negative events, the dimensions of globality and stability were weakly correlated in the direction theoretically expected. However, there was no significant relationship found between the internal dimension and either the stable or global dimensions for negative events. While this finding provides some support for the hopelessness theory, which focuses on the stable and global dimensions, it also highlights weakness in the measurement of the construct of pessimism as described within the RTLH.

The findings in this study add support to the concerns raised about the practice of combining the subscales to produce a composite scale (Anderson & Deuser, 1991; Contrada, 1991; Gotlib, 1991; Hammen, 1991). The results showed inconsistent and unstable relationships between the items contributing to the CASQ subscale and composite scores and give support to concerns raised about the meaning that can be
attributed to these scores when they are combined to produce measures of optimism, pessimism, or hopelessness.

3.10.2. Implications of High Composite Scores for Pessimism or Hopelessness

To determine if the expected relationships between the items on the dimensional subscale representing pessimism or hopelessness emerged for children with high scores (pessimism or hopelessness), the pattern of scores for participants in Study 1 within the highest 10% of negative scores (i.e., participants that would be considered to have a pessimistic or hopeless explanatory style) were examined. The results showed that participants with the highest composite negative scores did not consistently score highly across the three subscales (internal, stable, and global) for negative events (as a measure of pessimism) or across the stable and global subscales as a measure of hopelessness. The results showed varying response patterns across the subscales for negative events in this high-scoring group. This is consistent with the low correlations found between the subscales of the CASQ and adds further support to concerns about the practice of adding scores across the dimensions of explanatory style to produce composite scores. Similarly, the findings showed that high composite negative scale scores were not consistently related to high scores on the measures of depressive symptoms or neuroticism. These findings raise concern about the use of the CASQ and the combination of the subscale scores to produce the composite scale scores and the meaning that can be drawn from such scores.

3.10.3. Explanatory Style and Depressive Symptoms

In previous research, an association between explanatory style and depressive symptoms in children has been reported with children who are more pessimistic or hopeless reporting more symptoms of depression (see Gladstone & Kaslow, 1995 for a review). In the current studies, the correlations between explanatory style for negative events (pessimism and hopelessness) and depressive symptoms were inconsistent. The
relationship between depressive symptoms and explanatory style was found in two separate samples, in Study 1 and again at Time 1 of Study 2, where children were similarly aged. However, in Study 2 where explanatory style was assessed over a 12-month interval, the relationship between explanatory style and depressive symptoms was not found at Time 2 when children were 1 year older. The high temporal stability of children’s reports of depression over this time span shows that children who reported a greater number of depressive symptoms at Time 1 also showed more symptoms of depression at Time 2. Given these results it seems either that children’s explanatory style changed or they were unable to respond consistently to the CASQ over time. Further, the findings show that depressive symptoms are more stable over time than is explanatory style which, is reported to be trait-like and has been described as a habitual approach to explaining events in one’s life.

Various explanations for inconsistent findings concerning the relationship between explanatory style and depressive symptoms have been offered in previous research. One suggestion was that the relationship between explanatory style and depressive symptoms may stabilise with cognitive development (Abela, 2001), so that the association between explanatory style and depressive symptoms should increase as children get older. However, evidence for this did not emerge in the current study.

The poor psychometric properties of the CASQ found in this study and also reported by others (e.g., Turner & Cole, 1994) could also explain the inconsistent associations found. The consistencies of the responses of participants for items on the CASQ scales were unstable and this likely reduces the meaning that can be drawn from the findings concerning the relationship between explanatory style and depressive symptoms. Based on Watson and Clark’s (1984) findings regarding the impact of neuroticism on responses to scales with negatively worded items, it seems possible that
neuroticism may be contributing to the inconsistent measure of explanatory style and to its relationship with depressive symptoms.

3.10.4. Explanatory Style, Neuroticism and Depressive Symptoms

Neuroticism has been described as a stable aspect of personality and Watson and Clark (1984) reported that it could detract from the effectiveness of questionnaire items in assessing constructs such as pessimism. They report this can occur as neuroticism may influence how a person responds to any negatively phrased questionnaire content.

This measurement issue was investigated in Study 1 with a strong positive association found between neuroticism and depressive symptoms. Weak positive association were found between neuroticism and pessimism and neuroticism and hopelessness. After neuroticism was controlled, the regression analyses showed that both pessimism and hopelessness made small but significant unique contributions to the explanation of depressive symptoms.

The weak and inconsistent relationships between explanatory styles and depressive symptoms may occur as a result of the way explanatory style is measured. The poor reliability of the CASQ suggests there is variability in the selections children are making between the responses available for choice which reflect their explanatory style. One possibility is that the need to make a forced or categorical choice may be influence response selection and the association found between explanatory style and depressive symptoms. Improvement in the accurate measurement of explanatory style may allow for more unique variance of depressive symptoms to be explained by explanatory style alone.

3.10.5. Measurement issues

Explanatory style has been described as a stable way of interpreting negative and positive events, and has been described as being similar to a trait (Peterson & Seligman, 1984). Given this, a moderate to strong relationship was expected between the
composite and subscale scores over time. In Study 2, the weak positive association found between Time 1 and Time 2 scores for positive and negative events ($r = .27$ to .31) showed that there was little stability in explanatory style over a 12-month period. In contrast, the stability of depressive symptoms over a 12-month period was high. These results are inconsistent with the findings of Seligman et al. (1984) who found high stability across a 6-month period in a sample of children of a similar age to those used in the current study. However, the findings in this study are more similar to those found by Nolen-Hoeksema et al. (1992) who reported relatively low correlations between explanatory style measures over a 12-month period in children in 3rd, 4th and 5th grades.

The low association between scores obtained at Time 1 and Time 2 may occur for multiple reasons. One possibility is that there is no consistent “explanatory style” in children at this age and, rather, that the explanations that children offer change with age and experience, a conclusion difficult to make given the poor psychometric properties of the CASQ. A second possibility is that the current response format of the CASQ may not allow children to demonstrate their habitual style of explanation as a result of either the items or the response options available for choice. The CASQ requires a categorical response and censors the response pattern in children to categorise their explanations across the dimensions of explanatory style. This approach to measurement may be too gross or large to capture the true response of the child, and produce inconsistent or weak relationships between explanatory style and depressive symptoms.

The forced-choice options on the CASQ may have restricted the natural range of responses of the participants and ultimately influenced measurement reliability as a result of the limited response options for choice. Children are required to make a forced choice when completing the CASQ by selecting either option A or option B. This requires a mutually exclusive response choice. This approach to measuring explanatory
style in children may be problematic if the responses available do not reflect the true responses of the participants. This could produce ongoing difficulties when measuring explanatory style in children.

The influence of response patterns on questionnaire items has been previously investigated, with Viswanathan et al. (1996) reporting that the reliability of measures can be affected by the degree of match between the options available for choice and the natural response of the participants. These researchers reported that, where there is little differentiation between the options for choice (some degree of agreement or disagreement with both options for choice or partial agreement), if children are unclear about the response options, they would have difficulty responding consistently to scale items measuring the same construct or to the same item at different times. If there is a poor natural match with the responses for choice on the CASQ this would have a significant influence on their ability to respond consistently to the CASQ over time. These are both issues that are potentially problematic with the CASQ. Improved understanding of how these issues may affect children as they complete the CASQ would enable identification of the items that are most clearly discriminating, and accurately measuring, explanatory style in children.

A number of previous studies have used Likert-type response scales when measuring explanatory style. These have produced higher levels of internal consistency (Bell & McCallum, 1995; Bell et al., 2004; Toner & Heaven, 2005), lending support for the idea that the forced-choice approach may provide some explanation for the poor consistency found when using the CASQ in its original form.

3.10.6. Summary and Conclusion

Regardless of the items used to produce measures of explanatory style, using pessimism, hopelessness or optimism, the internal consistency and temporal stability of
the CASQ is poor. This study has also shown that selecting items on the scale with acceptable inter-item correlations does not improve the consistency of the scales.

A particular limitation of the CASQ may be the forced-choice approach used to obtain responses to assess explanatory style. This may occur because children are unable to differentiate between the options for choice, or alternatively the options for choice may be a poor match with children’s explanatory style. Improved understanding of a child’s degree of agreement with their selected response, and also with each of the responses available for choice, may contribute to providing information about how appropriate each response choice is for children when explaining events from the CASQ. On this basis, Study 3 investigated the items and responses of the CASQ using fuzzy set techniques with the aim of assessing children’s degree of agreement with their selected responses and with each of the responses available for choice.
CHAPTER 4.0
STUDY THREE – EVALUATION OF THE CASQ ITEMS AND RESPONSE CHOICES USING FUZZY SET METHODOLOGY

Poor internal consistency, low inter-item scale correlations and low temporal stability for the Children’s Attributional Style Questionnaire (CASQ) were found in Studies 1 and 2. The aim of Study 3 was to investigate the way children respond to items on the CASQ and to identify which responses were able to measure explanatory style accurately in children.

As previously described the CASQ requires category forced-choices based on response options reflecting the dimensions of the RTLH. The response options on the CASQ reportedly discriminate between the internal and external, or stable and unstable, or global and specific dimension by varying the components of the dimension of interest only. When responding to each item on the CASQ a child must select one of two response options designed to reflect a single component of a dimension of explanatory style. For example, when responding to the positive item, “You get an ‘A’ on a test” (see Table 4.1) children must decide if this is the result of being good at the subject that the test was in (a specific option), or a result of being smart (a global option). With this approach to measurement there is no opportunity for both responses to have some influence, as a child must select only one response as their preference or choice. This ultimately requires selection of one of the two possible options to reflect explanatory style. While this approach can successfully classify responses into categories across the different components of a dimension it also acts to censor the data collected. This approach groups children into categories with no information concerning how accurately the response selected accurately reflects their natural or true responses. Such an approach can result in a loss of important detail as there may be differing degrees of agreement with the response selected, and not selected, as the option of best choice.
Viswanathan et al. (1996) argued that forced-choice scales can be problematic as they involve three assumptions: first, that the question and response choices are clearly understood; second, the participant can distinguish between the response options presented; and third, the participant has agreement with only one response option enabling them to select a single response that is a close match with their true response. One, two or all of these assumptions may not be accurate with the CASQ and this may contribute to the psychometric weaknesses evident in the measure.

Inadequate forced-choice responses on questionnaires can result in difficulty when selecting responses, due to a poor match between a participant’s true or natural response and the options available for choice (Viswanathan et al., 1996). If participants are unable to easily select an appropriate response, the accuracy of measurement can be affected as a result of the inability to clearly distinguish between the options for choice (Viswanathan et al.). For example, in the item described in Table 4.1, children may attribute their positive result on a test to the fact that they are both smart and good at the subject, in which case the response choices available overlap, making it difficult to distinguish between the options for choice.

When overlapping or inappropriate response options occur on a questionnaire participants are more likely to randomly respond, resulting in increased measurement error. While the forced-choice scale may clearly differentiate between the components of the dimension, the separation may be an artifact of the forced-choice scale rather than
a true distinction between the choices available. The capacity of one response on a forced-choice measure to clearly capture the natural response of an individual, with little overlap with the alternative nonselected response, is a fundamental requirement for precise measurement when using forced-choice scales to categorise responses. Where overlap occurs and individuals have agreement with both response options, the item is unable to produce a clear or crisp measure of the construct of interest. This can result in inconsistent responses on a scale, as individuals are more likely to respond inconsistently when forced to select one item when they have no clear preference for either of the choices. For example, an individual may have slightly more preference for the global response “I am smart” as opposed to the specific response “I am good at the subject that the test was in” and will select the global response for the item. However, they may also have little clear preference for the remaining seven items on this scale making arbitrary choices as they select between the options available. This can produce poor internal consistency on the scale and may also explain the poor temporal stability of the measure of explanatory style found in Study 2.

4.1. Fuzzy Set Methodology

When the aim is to examine responses to items to improve test construction fuzzy set methodology (e.g., Kaufman, 1975) can be a useful technique. Fuzzy set theory was developed in the 1960s and is increasingly being used in research in the social sciences (Ragin & Pennings, 2005). The fuzzy set technique allows for evaluation of response scales on questionnaires and can provide an estimate of how closely a response captures an individual’s membership within a response set. Ragin and Pennings noted that the fuzzy set approach is very useful in studies where researchers are attempting to ascertain the degree to which membership within a response set can be full (i.e., agree completely with one of two category forced-choice response options and disagree with the other), nonexistent (i.e., disagree completely
with both of the forced-choice response options) or partial (i.e., have some degree of agreement with both response options). This approach differs from the more traditional dichotomous approaches to measurement that assumes that the response selected is representative of the individual (completely true) and the response not selected is not descriptive of the individual (completely false). In dichotomous approaches, if there is a high degree of overlap (agreement with both response choices) this information is lost, as forced-choice responses only identify the response selected as the best option for choice.

A fuzzy scale, which is continuous, provides information about the degree of membership where there can be full membership, nonmembership, or ambiguity in responses. It is this information that will be used to evaluate the utility of the response choices for items on the CASQ. It is expected that, where CASQ items have fuzzy values, indicating ambiguity or nonmembership for responses selected as the best choice, there will be poor internal consistency within the scale. Where there is substantial overlap across the response options, indicated by poor separation between the responses, the scales will also show poor internal consistency.

4.2. The Fuzzy Scale

Fuzzy scale values as used in the current study (see Table 4.2) explored a participant’s degree of agreement with selected and nonselected responses. Where a response selected is completely true (completely right) a fuzzy value of 5 will be produced, showing a participant has complete agreement or membership within the response set. Where a response is not selected, if the response is completely false (wrong) a fuzzy value of 0 is produced, showing complete nonmembership within the response set. For example, a fuzzy value of 0 for the CASQ response “I am smart” would indicate that the participant has no agreement with this response whereas a fuzzy value of 5 would show a participant has complete agreement with this response. Where
fuzzy values fall between 2 and 3 there is maximum ambiguity as participants’
responses denote a “sort of” true or “sort of” false, indicating little clear membership
within a response set. This produces “maximum fuzziness”. It was expected that fuzzy
values indicating high agreement within the response set would occur on scale items
where the natural or true response was shown to be a good match to the response
selected.

Table 4.2

*The Fuzzy Scale used to Evaluate Responses on the CASQ*

<table>
<thead>
<tr>
<th>Completely True (Right)</th>
<th>Mostly True (Right)</th>
<th>Sort of True (Right)</th>
<th>Sort of False (Wrong)</th>
<th>Mostly False (Wrong)</th>
<th>Completely False (Wrong)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

4.3. *Separation between Responses*

As an indicator of the separation between the forced-choice responses, a
difference score can be produced to show the difference between the fuzzy value for the
response selected as best choice and the nonselected response for each item. Difference
scores are produced by subtracting the fuzzy value for the response of best choice (the
response selected as the best choice by the individual) from the fuzzy value for the
nonselected response option. Where there is perfect separation or discrimination
between the responses, the maximum difference between the response of best choice
“a” and the nonselected response “b” would be 5 – 0 = 5  (a – b = difference score),
indicating perfect discrimination between the responses and full membership within one
set or with one component of a dimension of explanatory style. For example, if a child
reported they did well on the test because “I am smart” reported that this response was
completely true for them, and reported that the nonselected response “I am good at that
subject” was completely false for him/her, the response options would be completely
independent. This shows clear discrimination between the forced-choice responses for
the item. Alternatively, if the response identified as the best choice was “I am smart”, and the non-selected response “I am good at the subject that the test was in” were regarded as completely true, this would produce a fuzzy value of 5 indicating complete agreement with both responses. The difference between the options would be zero \((5 – 5 = 0)\) indicating complete overlap of the response options for choice. In other words, the difference score indicates the degree of separation or overlap between selected and nonselected responses. Difference scores closer to 5 indicate greater separation between the response options, scores in the range of 2 to 3 show both responses are “sort of true” and indicate ambiguity and scores of 0 to 1 indicate a high degree of overlap where there is little separation between the response choices available for choice.

This study used the described fuzzy approach to evaluate the capacity of each of the response choices to discriminate between the individual components within a dimension (e.g., internal and external). An aim was to identify items where selected responses closely matched the true response of the participants. Next, the degree of separation between the selected and nonselected responses was investigated. This allowed investigation of participants’ abilities to discriminate between the forced-choice responses that represent the different dimensions of explanatory style. Items that were a good match to the children’s natural responses and produced clear discrimination between the dimensions of explanatory style were identified with a view to producing a more reliable and internally consistent measure of the construct.

4.4. The Relationship between Explanatory Style, Depression and Neuroticism

The relationship between explanatory style and depressive symptoms has been widely explored, with a modest relationship found between these variables. Using the fuzzy set approach, the internal, stable and global responses from the CASQ were evaluated using the Likert-type scale which examined how closely the responses matched the natural responses of the children. The scores reflecting agreement with
each response could range from complete agreement to complete disagreement. These Likert-type scores were summed to provide a measure of pessimism, hopelessness or optimism. Using this approach to measurement children were not required to make a categorical, forced choice. The relationship between the scores created from these items and depressive symptoms and neuroticism were also examined. It was expected that there would be a significant association between explanatory style for negative events and depressive symptoms. A nonsignificant association between explanatory style and neuroticism was predicted as children no longer had to select between negatively worded content but rather indicate their degree of agreement with the internal, stable, global explanations, thereby, potentially minimizing the influence of neuroticism on response selection. Consistent with Study 1, a strong association between neuroticism and depressive symptoms was expected.

4.5. Method

4.5.1. Participants

Seventy-nine 10 and 12 year old ($M = 10.94, SD = 0.49$) Grade 6 children who had not taken part in previous studies participated. There were 40 males (50.6%) and 39 females (49.4%). The students were recruited from an independent primary school in Queensland, Australia. The study was approved by the University Human Research Ethics Committee, and children with written parental consent participated.

4.5.2. Measures

4.5.2.1. Self-report instruments.

The Children’s Attributional Style Questionnaire (CASQ), the Child Depression Inventory (CDI) and the Junior Eysenck Personality Questionnaire (EPQ-J) –
Neuroticism Scale were used (for description of the CASQ see Section 2.1.2.1; for the CDI see Section 3.5.2.2; for the EPQ-J see Section 3.5.2.3).

4.5.2.2. **Fuzzy scale CASQ.**

A fuzzy scale version of the CASQ was produced. Materials used to administer the fuzzy scale included 48 individually printed cards that contained each CASQ hypothetical situation and 96 individually printed cards containing each forced-choice response option from the CASQ. There were six boxes labelled with the fuzzy set options as illustrated in Table 4.2.

4.5.2.3. **Fuzzy value scores.**

In order to calculate the fuzzy value scores, children were asked to identify the response with which they most agreed for each hypothetical event. They were then asked to rate their level of agreement on a scale from 0 (completely false) to 5 (completely true). They also rated their level of agreement with the nonselected response on the same scale. As outlined in an earlier section, scores of 4-5 show strong agreement with the response selected or not selected, scores of 2-3 show maximum ambiguity in responses, and scores of 0-1 show little to no agreement or membership within the response set.

A difference score was calculated by subtracting the fuzzy value for the response not selected from the fuzzy value of the response selected as best choice. A score of 5 showed no overlap between the responses (complete agreement with the response selected and complete disagreement with the nonselected response), whereas a score of 0 indicated complete overlap between the response selected as the best choice, and the nonselected response.

Fuzzy values were summed to produce the dimensional scale scores separately for the internal, stable, global explanations for positive and negative events. A measure of the degree of pessimism and optimism was calculated by summing the fuzzy values
for internal, stable, global responses for negative events and positive events. This technique ignored the forced choice responses but obtained a measure of how strongly participants agreed with each response. Similarly, a score for hopelessness was calculated by summing stable, global responses for negative events. Using fuzzy set values, pessimism and optimism scores could range from 0 to 120 and the hopelessness score could range from 0 to 80. Higher scores indicated greater agreement with the internal, stable, global response options for pessimism and optimism or stable, global response options for hopelessness.

4.5.3. Procedure

Testing was completed over two sessions, which were conducted during school hours. In the first testing session using the standardised instructions, the self-report questionnaires, including the CASQ (which was completed in its original form), were completed in small groups (5-15 children). All items and responses were read aloud to the participants while they individually completed the questionnaires. During group testing the researcher and a trained assistant were present and available to answer any individual questions. Two weeks later, individual interviews were conducted using fuzzy set methodology to evaluate the CASQ response options.

During the individual interviews each item and response was presented in the same order as they appear on the original CASQ. Participants were seated at a table facing a researcher. On the table in easy reach for the child were three cards representing the individual item and the two response options for each item. There were also six boxes present, labelled completely true to completely false. The labels are shown in Table 4.2.

The item and the two forced-choice responses were read aloud by the researcher. Participants were asked to identify the response of best choice. The child then placed the selected response card that best represented their responses in the “fuzzy box”
(labelled completely true to completely false). The child was then asked to place the non-selected response in the “fuzzy box” that best described that response for them.

Each of the 48 items and associated responses were examined using this approach. Throughout the testing the researcher recorded a) the preferred response choice for each item as a measure of their internality, stability and globality (consistent with how the CASQ is traditionally scored) and b) the fuzzy scale values for each of the response options within an item to obtain a measure of how well each item accurately reflected the participant’s agreement with the responses.

4.6. Results

Descriptive statistics and internal consistency (α) for all scales administered are reported in Table 4.3. Data from all participants were included for the group-administered questionnaires. No children had missing data from the CASQ fuzzy set procedures. When children were missing data on the self-report measures they were excluded from the specific analysis, resulting in a sample that ranged from 76 to 79 participants.

The internal consistencies (α) obtained on the CASQ composite and subscales for both the group and individual administrations are presented in Table 4.3. Regardless of whether the CASQ was conducted in a group setting or individual setting, where scale scores were produced based on the category forced-choice approach, the internal consistency of all subscales and composite scales were poor. In contrast, the CDI and EPQ-J-N, administered with the same sample of children in a group format, reached acceptable levels of internal consistency. These results are consistent with those in Study 1.
Table 4.3

Means, Standard Deviations, Score Ranges and Alpha Levels for Self-Report Measures

<table>
<thead>
<tr>
<th>Variable</th>
<th>M (SD)</th>
<th>Range</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDI</td>
<td>10.72 (7.39)</td>
<td>0-36</td>
<td>.86</td>
</tr>
<tr>
<td>EPQ-J-N</td>
<td>11.34 (4.75)</td>
<td>0-19</td>
<td>.85</td>
</tr>
<tr>
<td>CASQ Scales - Individual Administered</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite Negative Scale</td>
<td>8.22 (2.74)</td>
<td>2-15</td>
<td>.24</td>
</tr>
<tr>
<td>Internality</td>
<td>3.61 (1.82)</td>
<td>0-8</td>
<td>.51</td>
</tr>
<tr>
<td>Stability</td>
<td>2.02 (1.33)</td>
<td>0-5</td>
<td>.25</td>
</tr>
<tr>
<td>Globality</td>
<td>2.23 (1.27)</td>
<td>0-5</td>
<td>.22</td>
</tr>
<tr>
<td>Composite Positive Scale</td>
<td>12.87 (3.65)</td>
<td>5-23</td>
<td>.51</td>
</tr>
<tr>
<td>Internality</td>
<td>4.35 (1.51)</td>
<td>1-8</td>
<td>.32</td>
</tr>
<tr>
<td>Stability</td>
<td>3.93 (1.97)</td>
<td>0-8</td>
<td>.57</td>
</tr>
<tr>
<td>Globality</td>
<td>4.59 (1.43)</td>
<td>1-7</td>
<td>.33</td>
</tr>
<tr>
<td>CASQ Scales - Group Administered</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Composite Negative Scale</td>
<td>7.87 (2.42)</td>
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<td>.41</td>
</tr>
<tr>
<td>Internality</td>
<td>3.28 (1.68)</td>
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<td>.47</td>
</tr>
<tr>
<td>Stability</td>
<td>2.40 (1.64)</td>
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<td>.53</td>
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<tr>
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<td>.38</td>
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<tr>
<td>Internality</td>
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<td>.07</td>
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<td>Stability</td>
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<td>Globality</td>
<td>4.48 (1.26)</td>
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</table>

Note. N = 78 for individually administered scales. N = 79 for group administered questionnaires

CDI = Child Depression Inventory, EPQ-J-N = Junior Eysenck Personality Questionnaire Neuroticism Scale, CASQ = Children’s Attributional Style Questionnaire.

4.6.1. The Fuzzy Set Scale

4.6.1.1. CASQ item responses matching the true responses of participants.

The fuzzy values for the individual responses, both selected and not selected are presented in Table 4.4 for negative events and Table 4.5 for positive events. The mean fuzzy values for CASQ responses selected as the preferred choice ranged from 2.20 (sort of false) to 4.56 (mostly to completely true). For responses selected as best choice 56% had fuzzy values less than 4 showing that the items selected did not mostly or completely represent the natural response of the participant. The remaining 44% of selected responses received mean fuzzy values $\geq$ 4 when selected as best choice. Of the response options with acceptable agreement (mostly to completely true), seven were
from the composite negative scale (see Table 4.4) and 35 were from the composite positive scale (see Table 4.5). Overall, 73% of responses from the composite positive scale on the CASQ, when selected as the best-choice response, were a close match to the true response of a participant whereas 14% of the best-choice responses from the composite negative scale accurately reflected the true responses of participants. The responses from the composite negative and composite positive scales are discussed separately.

4.6.1.2. Composite negative scale.

The three dimensions of explanatory style were represented by the seven composite negative scale responses with mean fuzzy values ≥ 4. Three of these were from the internal-external scale, three from the global-specific scale, and one from the stable-unstable scale. Six of these seven responses are representative of an optimistic explanation (external, specific, unstable) for a negative event. There was only one response option from the composite negative scale that reflected a pessimistic explanation that was selected as the response of best choice and also matched the natural response of the participants (see Table 4.4). That response was the internal explanation of item 14 (14b). This item presented children with the negative event “You gain a lot of weight and start to look fat”. Children were required to choose from an external explanation (“The food I have to eat is fattening”) or an internal explanation (“I like fattening food”).
Table 4.4

<table>
<thead>
<tr>
<th>Item #</th>
<th>Subscale</th>
<th># selecting option</th>
<th>Mean fuzzy value</th>
<th>% of fuzzy values ≥ 4</th>
<th>Range of fuzzy values</th>
<th>Item #</th>
<th>Subscale</th>
<th># selecting option</th>
<th>Mean fuzzy value</th>
<th>% of fuzzy values ≥ 4</th>
<th>Range of fuzzy values</th>
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<td>27a</td>
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<td>3.67</td>
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Note: * = Items with mean fuzzy values ≥ 4 when selected by participants as the preferred response option
### Table 4.5

**Fuzzy Values for CASQ Composite Positive Scale Items Where Responses are Selected as Preferred Choice (N = 78)**

<table>
<thead>
<tr>
<th>Item #</th>
<th>Subscale</th>
<th># selecting option</th>
<th>Mean fuzzy value</th>
<th>% of fuzzy values ≥ 4</th>
<th>Range of fuzzy values</th>
<th>Item #</th>
<th>Subscale</th>
<th># selecting option</th>
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<td>50</td>
<td>3.84</td>
<td>72</td>
<td>2-5</td>
<td>37a</td>
<td>Specific</td>
<td>34</td>
<td>4.56</td>
<td>94</td>
<td>3-5</td>
</tr>
<tr>
<td>5b</td>
<td>Unstable</td>
<td>28</td>
<td>4.11(^a)</td>
<td>82.1</td>
<td>2-5</td>
<td>37b</td>
<td>Global</td>
<td>34</td>
<td>4.48</td>
<td>94</td>
<td>3-5</td>
</tr>
<tr>
<td>8a</td>
<td>External</td>
<td>16</td>
<td>4.0(^a)</td>
<td>75.1</td>
<td>2-5</td>
<td>39a</td>
<td>Stable</td>
<td>26</td>
<td>4.12</td>
<td>81</td>
<td>2-5</td>
</tr>
<tr>
<td>8b</td>
<td>Internal</td>
<td>62</td>
<td>4.08(^a)</td>
<td>83.9</td>
<td>2-5</td>
<td>39b</td>
<td>Unstable</td>
<td>52</td>
<td>4.08</td>
<td>75</td>
<td>2-5</td>
</tr>
<tr>
<td>9a</td>
<td>Unstable</td>
<td>35</td>
<td>3.57</td>
<td>54.3</td>
<td>0-5</td>
<td>40a</td>
<td>Stable</td>
<td>51</td>
<td>4.39</td>
<td>94</td>
<td>3-5</td>
</tr>
<tr>
<td>9b</td>
<td>Stable</td>
<td>43</td>
<td>3.86</td>
<td>79.1</td>
<td>1-5</td>
<td>40b</td>
<td>Unstable</td>
<td>27</td>
<td>4.07</td>
<td>89</td>
<td>2-5</td>
</tr>
<tr>
<td>16a</td>
<td>Internal</td>
<td>36</td>
<td>4.14(^a)</td>
<td>89</td>
<td>2-5</td>
<td>41a</td>
<td>Unstable</td>
<td>41</td>
<td>4.00</td>
<td>83</td>
<td>2-5</td>
</tr>
<tr>
<td>16b</td>
<td>External</td>
<td>42</td>
<td>4.21(^a)</td>
<td>88</td>
<td>3-5</td>
<td>41b</td>
<td>Stable</td>
<td>37</td>
<td>4.35</td>
<td>95</td>
<td>3-5</td>
</tr>
<tr>
<td>17a</td>
<td>Global</td>
<td>38</td>
<td>2.34</td>
<td>5</td>
<td>1-5</td>
<td>42a</td>
<td>Unstable</td>
<td>40</td>
<td>4.13</td>
<td>90</td>
<td>1-5</td>
</tr>
<tr>
<td>17b</td>
<td>Specific</td>
<td>40</td>
<td>2.58</td>
<td>10</td>
<td>0-5</td>
<td>42b</td>
<td>Stable</td>
<td>38</td>
<td>4.05</td>
<td>87</td>
<td>2-5</td>
</tr>
<tr>
<td>19a</td>
<td>External</td>
<td>21</td>
<td>4.0(^a)</td>
<td>76</td>
<td>3-5</td>
<td>43a</td>
<td>Stable</td>
<td>44</td>
<td>4.16</td>
<td>91</td>
<td>2-5</td>
</tr>
<tr>
<td>19b</td>
<td>Internal</td>
<td>57</td>
<td>4.21(^a)</td>
<td>95</td>
<td>2-5</td>
<td>43b</td>
<td>Unstable</td>
<td>34</td>
<td>4.12</td>
<td>88</td>
<td>2-5</td>
</tr>
<tr>
<td>22a</td>
<td>Internal</td>
<td>35</td>
<td>4.09(^a)</td>
<td>83</td>
<td>3-5</td>
<td>44a</td>
<td>Internal</td>
<td>17</td>
<td>4.41</td>
<td>88</td>
<td>2-5</td>
</tr>
<tr>
<td>22b</td>
<td>External</td>
<td>43</td>
<td>3.93</td>
<td>79</td>
<td>2-5</td>
<td>44b</td>
<td>External</td>
<td>61</td>
<td>4.02</td>
<td>84</td>
<td>2-5</td>
</tr>
<tr>
<td>23a</td>
<td>Stable</td>
<td>40</td>
<td>4.40(^a)</td>
<td>95</td>
<td>3-5</td>
<td>45a</td>
<td>External</td>
<td>36</td>
<td>4.08</td>
<td>92</td>
<td>2-5</td>
</tr>
<tr>
<td>23b</td>
<td>Unstable</td>
<td>38</td>
<td>3.89</td>
<td>74</td>
<td>2-5</td>
<td>45b</td>
<td>Internal</td>
<td>42</td>
<td>4.05</td>
<td>81</td>
<td>0-5</td>
</tr>
</tbody>
</table>

*Note: \(^a\) = Items with mean fuzzy values ≥ 4 when selected by participants as the preferred response option*
4.6.1.3. **Composite positive scale.**

On the composite positive scale 35 of the 48 possible response options selected as “best choice” had mean fuzzy values $\geq 4$, showing that the response choice made was a close match to the natural response of the child. The acceptable responses to positive events included both optimistic (internal, stable, global) explanations for positive events as well as pessimistic (external, unstable, specific) explanations for positive events. Seventeen of the 35 responses obtaining fuzzy values $\geq 4$ were representative of pessimistic responses for positive events (external, unstable, and specific). Eighteen responses from the composite positive scale that obtained fuzzy values $\geq 4$ were representative of optimistic explanations (internal, stable, and global) for positive events. These 18 items closely matched the true responses of the majority of children, as shown by mean fuzzy values, demonstrating that most children had some agreement with the responses selected (see Table 4.5).

Coefficient alpha was recalculated for the composite positive scale, using only those items that had acceptable fuzzy values. The estimate increased from $\alpha = .38$ to $\alpha = .58$. While there was some improvement in internal consistency using the fuzzy values, the consistency of the scale still did not reach recommended levels. These results suggest that while participants have closer agreement with the responses available for choice on the composite positive scale, the continued low reliability of the scale shows that there are other factors influencing the reliable measurement of explanatory style for positive events.

4.6.1.4. **Response discriminability.**

Response discriminability was obtained by calculating the difference between the fuzzy value for the selected and nonselected responses (outlined in section 4.5.2.3, page 113). In this study an absolute difference score $\geq 4$ was the criterion to determine
whether an item was able to both match the true response of the child and discriminate well in terms of the response options, meaning that the selected response was descriptive of the behaviour and the other option was not descriptive of the behaviour. An absolute difference score $\geq 3$ shows some separation between the response selected and response not selected. For example, the option of best choice may be “completely true” while the nonselected response may be described as “sort of false or wrong”. An absolute difference score of $\leq 2$ shows maximum overlap or ambiguity. Such responses show participants have either a degree of agreement or degree of disagreement with both response options: for example, selecting a response as “completely false” or “completely true” while selecting the alternative as “sort of false” or “sort of true”, respectively. Alternatively, such a difference score may reflect responses that fall within the middle of a scale. For example, a participant may rate the selected response as “sort of true” and the alternative response “sort of false” and obtain a difference score $\leq 2$.

The mean absolute difference scores for all items ranged from 1.0 to 2.58 (see Table 4.6). This result shows that the majority of participants were not clearly discriminating between the response choices representing the dimensions of explanatory style. This range of difference scores represents a high degree of fuzziness or ambiguity across the response sets that are meant to reflect the distinct components of explanatory style. These findings raise concern about the ability of the category responses on the CASQ to clearly discriminate between the dimensions of explanatory style for either positive or negative events.

4.6.1.5. CASQ Composite negative scale absolute difference scores.

Fuzzy values allow both the match and discriminability of the responses of the CASQ composite negative scale to be examined. Given that response 14b was the only response option from the composite negative scale that closely matched the natural
response of the participants this response was examined in relation to the criterion of discriminability. The results showed that despite participants having strong agreement with response “b” (fuzzy values $\geq 4 = \text{mostly to completely agree}$) there was little separation in the fuzzy values between the response selected and not selected, as shown by the mean absolute difference score of 2.2 (see Table 4.6). This result demonstrated that participants who selected option “b” (I like fattening food) as a good match also frequently had some agreement with option “a” (The food I have to eat is fattening). Thus, there was little discrimination between response options 14a (external explanation) and 14b (internal explanation), which are designed to represent two distinct styles of explanation for a negative event.
Table 4.6

*Mean Absolute Difference Scores (ADS) for CASQ Item Forced-Choice Pairs (N = 79)*

<table>
<thead>
<tr>
<th>Composite Negative Scale</th>
<th>Composite Positive Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item #</td>
<td>Mean ADS (SD)</td>
</tr>
<tr>
<td>6</td>
<td>2.14 (1.59)</td>
</tr>
<tr>
<td>7</td>
<td>1.13 (1.01)</td>
</tr>
<tr>
<td>10</td>
<td>1.67 (1.36)</td>
</tr>
<tr>
<td>11</td>
<td>2.12 (1.41)</td>
</tr>
<tr>
<td>12</td>
<td>1.76 (1.24)</td>
</tr>
<tr>
<td>13</td>
<td>1.86 (1.20)</td>
</tr>
<tr>
<td>14</td>
<td>2.22 (1.44)</td>
</tr>
<tr>
<td>15</td>
<td>2.32 (1.23)</td>
</tr>
<tr>
<td>18</td>
<td>2.17 (1.33)</td>
</tr>
<tr>
<td>20</td>
<td>1.85 (1.35)</td>
</tr>
<tr>
<td>21</td>
<td>2.37 (1.23)</td>
</tr>
<tr>
<td>24</td>
<td>2.01 (1.29)</td>
</tr>
<tr>
<td>26</td>
<td>2.01 (1.37)</td>
</tr>
<tr>
<td>27</td>
<td>1.95 (1.33)</td>
</tr>
<tr>
<td>28</td>
<td>2.58 (1.27)</td>
</tr>
<tr>
<td>29</td>
<td>2.08 (1.36)</td>
</tr>
<tr>
<td>31</td>
<td>2.22 (1.27)</td>
</tr>
<tr>
<td>33</td>
<td>2.15 (1.29)</td>
</tr>
<tr>
<td>35</td>
<td>2.06 (1.43)</td>
</tr>
<tr>
<td>36</td>
<td>2.34 (1.47)</td>
</tr>
<tr>
<td>38</td>
<td>1.72 (1.40)</td>
</tr>
<tr>
<td>46</td>
<td>1.49 (1.14)</td>
</tr>
<tr>
<td>47</td>
<td>2.06 (1.41)</td>
</tr>
<tr>
<td>48</td>
<td>2.28 (1.33)</td>
</tr>
</tbody>
</table>

*Note: ADS scores range from 1.0 to 2.58*

4.6.1.6. Composite positive scale absolute difference scores

Eighteen responses from the composite positive scale were found to closely match the “true” response of participants for positive events when fuzzy values were used (see Table 4.7). The response discriminability analyses showed two items had a mean absolute difference score ≥ 2 with remaining absolute difference scores ranging from 1 to 1.99. This demonstrates poor discrimination and a high level of ambiguity between the response options for the items on the composite positive scale, despite fuzzy values showing the participants have a strong agreement with the response
selected as “best choice”. Where participants had strong agreement with a response the results showed they also had agreement with the alternative response for choice. Thus, there was little discrimination between the response choices representing the different components of the dimensions of explanatory style for positive events.

Table 4.7

Mean Absolute Difference Scores for CASQ Composite Positive Items that were Selected as a Match with the True Response of Participants (N = 79)

<table>
<thead>
<tr>
<th>Item Pair</th>
<th>Dimension</th>
<th>Mean Absolute Difference Score (SD)</th>
<th>Item Pair</th>
<th>Dimension</th>
<th>Mean Absolute Difference Score (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4ab</td>
<td>Int-ext</td>
<td>1.27 (1.15)</td>
<td>34ab</td>
<td>Glo-Spe</td>
<td>1.56 (1.20)</td>
</tr>
<tr>
<td>8ab</td>
<td>Int-Ext</td>
<td>1.99 (1.30)</td>
<td>37ab</td>
<td>Glo-Spe</td>
<td>1.19 (1.09)</td>
</tr>
<tr>
<td>16ab</td>
<td>Int-Ext</td>
<td>1.24 (1.06)</td>
<td>39ab</td>
<td>Sta-Uns</td>
<td>1.79 (1.20)</td>
</tr>
<tr>
<td>19ab</td>
<td>Int-Ext</td>
<td>1.13 (1.05)</td>
<td>40ab</td>
<td>Sta-Uns</td>
<td>1.33 (1.46)</td>
</tr>
<tr>
<td>22ab</td>
<td>Int-Ext</td>
<td>1.03 (1.10)</td>
<td>41ab</td>
<td>Sta-Uns</td>
<td>1.41 (1.09)</td>
</tr>
<tr>
<td>23ab</td>
<td>Sta-Uns</td>
<td>2.10 (1.40)</td>
<td>42ab</td>
<td>Sta-Uns</td>
<td>1.79 (1.20)</td>
</tr>
<tr>
<td>25ab</td>
<td>Glo-Spe</td>
<td>1.38 (.90)</td>
<td>43ab</td>
<td>Sta-Uns</td>
<td>1.38 (1.10)</td>
</tr>
<tr>
<td>30ab</td>
<td>Glo-Spe</td>
<td>1.26 (1.12)</td>
<td>44ab</td>
<td>Int-Ext</td>
<td>1.00 (.99)</td>
</tr>
<tr>
<td>32ab</td>
<td>Glo-Spe</td>
<td>2.01 (1.39)</td>
<td>45ab</td>
<td>Int-Ext</td>
<td>1.59 (1.22)</td>
</tr>
</tbody>
</table>

Note: Int-Ext = Internal-external dimension, Sta-Uns = Stable-unstable dimension, Glo-Spe = Global-Specific dimension

4.6.2. Absolute Difference Scores for Participants with Highest Reported Depressive Symptoms

The absolute difference scores for composite negative scale items were examined specifically for participants with depressive symptoms within the top 10% of the sample (n = 7) to determine if clear separation was more evident for participants reporting more depressive symptoms. The scores for depressive symptoms ranged from 22 to 36, all within the range of “much above average” to “very much above average” when compared to children of a similar age and gender (Kovacs, 1992).

For this group the absolute difference scores ranged from 1.14 to 4.0 (see Table 4.8). Four items had absolute difference scores ≥ 3, indicating some items were
adequately separating between the responses for choice where participants were reporting higher symptoms of depression. Of these four items one item was from each of the subscales assessing internality and stability and two items were from the subscale assessing globality. However, examination of the individual responses showed three of the four participant’s responses reflected strong agreement with specific explanations for a negative event, which is the opposite pattern to that expected, based on the predicted association between global explanations and depressive symptoms.

### Table 4.8

*Mean ADS for Composite Negative Scale Items for Participants with Depressive Symptoms Scores within the top 10% of the Sample (n = 7)*

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean (SD)</th>
<th>Range</th>
<th>Item</th>
<th>Mean (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>2.29 (2.14)</td>
<td>0-5</td>
<td>26</td>
<td>3.00 (1.70)</td>
<td>1-5</td>
</tr>
<tr>
<td>7</td>
<td>1.14 (.90)</td>
<td>0-2</td>
<td>27</td>
<td>2.43 (1.99)</td>
<td>0-5</td>
</tr>
<tr>
<td>10</td>
<td>2.29 (2.06)</td>
<td>0-5</td>
<td>28</td>
<td>3.00 (1.41)</td>
<td>1-5</td>
</tr>
<tr>
<td>11</td>
<td>2.86 (1.34)</td>
<td>1-5</td>
<td>29</td>
<td>2.29 (1.38)</td>
<td>1-5</td>
</tr>
<tr>
<td>12</td>
<td>1.86 (1.68)</td>
<td>0-4</td>
<td>31</td>
<td>2.86 (1.57)</td>
<td>1-5</td>
</tr>
<tr>
<td>13</td>
<td>2.00 (1.15)</td>
<td>1-4</td>
<td>33</td>
<td>2.57 (1.99)</td>
<td>1-5</td>
</tr>
<tr>
<td>14</td>
<td>2.71 (1.50)</td>
<td>1-5</td>
<td>35</td>
<td>2.57 (1.72)</td>
<td>0-5</td>
</tr>
<tr>
<td>15</td>
<td>1.71 (1.38)</td>
<td>0-4</td>
<td>36</td>
<td>4.00 (1.53)</td>
<td>0-5</td>
</tr>
<tr>
<td>18</td>
<td>2.14 (1.46)</td>
<td>1-5</td>
<td>38</td>
<td>2.71 (1.50)</td>
<td>1-5</td>
</tr>
<tr>
<td>20</td>
<td>3.14 (2.03)</td>
<td>0-5</td>
<td>46</td>
<td>1.86 (1.77)</td>
<td>0-4</td>
</tr>
<tr>
<td>21</td>
<td>1.71 (1.38)</td>
<td>0-3</td>
<td>47</td>
<td>1.71 (1.50)</td>
<td>0-4</td>
</tr>
<tr>
<td>24</td>
<td>2.29 (1.60)</td>
<td>0-5</td>
<td>48</td>
<td>2.71 (1.50)</td>
<td>1-5</td>
</tr>
</tbody>
</table>

#### 4.6.3. Composite Fuzzy Values Reflecting the Degree of Pessimism and Degree of Hopelessness

An alternative approach to assessing pessimism and hopelessness was available in the current study using fuzzy values obtained for each response on the composite negative scale. Pessimism scores were calculated by summing the fuzzy values for the 24 internal, stable and global responses (total possible range of 0-120). Similarly, a fuzzy value score for hopelessness was calculated by summing the fuzzy values for the
16 stable and global responses (total possible range 0-80). This measurement technique ignored the category response and obtained a measure of explanatory style based on the strength of agreement with each internal, stable, and global response option.

Coefficient alpha was calculated for pessimism and hopelessness scales using Likert-type fuzzy responses. The internal consistency for each composite measure was $\alpha \geq .70$ (see Table 4.9), substantially higher than the measure obtained using the standard scoring protocol for the scale.

The same procedure was used to produce a measure of optimism. Fuzzy values were summed from the internal, stable, global responses to positive events, with possible scores ranging from 0 – 120. The Likert-type fuzzy measure of optimism produced a coefficient alpha estimate of .86, showing good internal consistency for the scale (see Table 4.9).

Table 4.9

*Descriptive Statistics and Alpha for Hopelessness and Pessimism Scales Produced Using Fuzzy Values (N = 79)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean ($SD$)</th>
<th>Range</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite Scales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pessimism (Internal, stable, global for negative events)</td>
<td>56.74 (14.27)</td>
<td>23-87</td>
<td>.81</td>
</tr>
<tr>
<td>Optimism (Internal, stable, global for positive events)</td>
<td>82.58 (14.38)</td>
<td>48-111</td>
<td>.87</td>
</tr>
<tr>
<td>Hopelessness (Stable, global for negative events)</td>
<td>35.58 (9.86)</td>
<td>11-53</td>
<td>.74</td>
</tr>
<tr>
<td>Subscales for negative events</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internality</td>
<td>21.02 (6.39)</td>
<td>8-36</td>
<td>.71</td>
</tr>
<tr>
<td>Stability</td>
<td>17.17 (5.99)</td>
<td>2-29</td>
<td>.62</td>
</tr>
<tr>
<td>Globality</td>
<td>19.71 (4.91)</td>
<td>9-32</td>
<td>.52</td>
</tr>
<tr>
<td>Subscales for positive events</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internality</td>
<td>28.30 (5.12)</td>
<td>16-39</td>
<td>.71</td>
</tr>
<tr>
<td>Stability</td>
<td>26.05 (6.40)</td>
<td>8-38</td>
<td>.78</td>
</tr>
<tr>
<td>Globality</td>
<td>28.10 (14.38)</td>
<td>12-38</td>
<td>.68</td>
</tr>
</tbody>
</table>

These results show that using the fuzzy set scale which evaluates agreement with each response, ranging from completely true to completely false, produces an internally
consistent measure of the degree of pessimism, degree of hopelessness, and degree of optimism. This suggests that measuring explanatory style with a Likert-type response scale may produce a more internally consistent measure of the construct.

The relationships between the pessimism and hopelessness scores (using the fuzzy values) and depressive symptoms were examined (See Table 4.10). No significant, linear relationships were found between depression and pessimism or hopelessness. Furthermore, there were no significant linear relationships found between neuroticism and pessimism or hopelessness. These results showed that while the use of Likert-type fuzzy scales produced an improvement in the internal consistency of the measure of pessimism and hopelessness for negative events, the scores obtained did not covary with depressive symptoms or neuroticism in accordance with theoretical expectations.

Table 4.10

**Correlations between Depressive Symptoms and Neuroticism and the Original CASQ Composite Scale Scores and Fuzzy Value CASQ Composite Scale Scores.**

<table>
<thead>
<tr>
<th>CASQ Scales</th>
<th>Depressive symptoms</th>
<th>Neuroticism</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fuzzy Values</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of Pessimism</td>
<td>.01</td>
<td>.09</td>
</tr>
<tr>
<td>Degree of Hopelessness</td>
<td>.06</td>
<td>.15</td>
</tr>
<tr>
<td>Degree of Optimism</td>
<td>-.36**</td>
<td>-.30**</td>
</tr>
<tr>
<td><strong>Original CASQ Composite Scales</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pessimism</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Administered</td>
<td>.40**</td>
<td>.28*</td>
</tr>
<tr>
<td>Individually administered</td>
<td>.23*</td>
<td>.13</td>
</tr>
<tr>
<td>Hopelessness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Administered</td>
<td>.54**</td>
<td>.24*</td>
</tr>
<tr>
<td>Individually administered</td>
<td>.33**</td>
<td>.21*</td>
</tr>
<tr>
<td>Optimism</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Administered</td>
<td>-.37**</td>
<td>-.34**</td>
</tr>
<tr>
<td>Individually administered</td>
<td>-.37**</td>
<td>-.42**</td>
</tr>
</tbody>
</table>

*Note.* N = 75 – 78
These results contrast with the weak associations found between the original composite measures of explanatory style and depressive symptoms and neuroticism. This technique differed as it did not use a forced choice approach but had all children rate all responses. This may explain the different results obtained concerning the relationship between explanatory style for negative events and depressive symptoms when using the two measurement techniques.

For positive events, use of the fuzzy values to provide a measure of optimism resulted in significant, negative, linear relationships between optimism and depressive symptoms and optimism and neuroticism. In contrast to the poor match between the response selected and the natural or true response of the child for negative events, the majority of the responses on the positive scale selected by children were also found to closely match their natural response, which may explain why the association was found between optimism and depressive symptoms remained consistent despite the alteration from a category forced-choice to Likert-type response scale.

4.7. Discussion

The aims of this study were to determine the extent to which the original category forced-choice response format of the CASQ influenced the accurate measurement of explanatory style and to assess the way different measurement approaches (category or Likert-type fuzzy scales) influence the relationships between explanatory style, depressive symptoms and neuroticism. Fuzzy set techniques were used to assess the accuracy of children’s forced choice responses on the CASQ. The results of the study using this methodology showed that the response options chosen by children frequently failed to match their natural responses, and there was poor discriminability between the response options selected or not selected, particularly for items from the negative events scale. Internal consistency for the composite positive and composite negative scales improved when the fuzzy Likert-type response scales
were used. Significant, linear relationships were found between optimism, depressive symptoms and neuroticism but not between pessimism, hopelessness, depressive symptoms and neuroticism.

The findings will be discussed in relation to three issues: first, the internal consistency of the revised scales; second, the use of continuous scales in comparison to forced-choice or dichotomous scales when measuring explanatory style; and third, the association between the different measures of explanatory style and depressive symptoms and neuroticism.

4.7.1. Internal Consistency of the CASQ Scales

The internal consistencies of the composite scales of the CASQ when calculated using the fuzzy set scale were acceptable. The fuzzy Likert-type scale had values ranging from *completely true* to *completely false* providing a measure of how true each of the response options for the individual items was for children. This approach measured the magnitude of a child’s agreement with each internal, stable and global dimension of explanatory style, improving the internal consistency of the measure substantially.

The fuzzy set technique treated the internal-external, stable-unstable, and global-specific dimensions of explanatory style independently. This is a very different approach to measurement as it provides a measure of within-dimensional variance, whereas the forced-choice approach requires a child to select between one of the two components of a dimension. Consistent with expectations, the results of the current study show that, where children had greater flexibility and choice when responding to the content of the CASQ within a dimension, they were more consistent in their explanatory style for both positive and negative events. The difference in the two measurement approaches is of critical importance to measuring the construct of explanatory style accurately.
4.7.2. Between versus Within Dimension Approaches to Measure Explanatory Style

The results of this study support the concerns raised in the literature about the effects associated with using a category forced-choice scale to assess explanatory style (Bell et al., 2004; Toner & Heaven, 2005). The poor discriminability of the response options from the CASQ raises questions about the efficacy of using a dichotomous approach to measurement and forcing children to select from two responses that are not mutually exclusive. This may reflect problems with the item and response content, or alternatively may indicate that children have more variation in their responses to the dimensions of explanatory style than previously thought. For example, when responding to the item “You get an ‘A’ on a test” a child may have selected the response option “I am smart” (a global explanation) as his or her preferred choice and indicated high agreement with this statement. However, when examining the alternative non-selected response option, “I am good at the subject that the test was in” (a specific explanation) the fuzzy scale score can also show they have high agreement with this statement, the nonselected alternative. This produces poor discrimination between the responses for choice and is particularly problematic for measurement when using dichotomous, forced-choice scales. Partial membership within both response sets produces problems with accurate measurement of constructs (Simthson & Verkuilen, 2006; Viswanathan et al., 1996). The results in this study show that this is an important issue for the measurement of explanatory style. They also show the dimensions are not most accurately or clearly articulated using ‘all or nothing’ categories.

Poor discriminability between responses also reduces reliability. Viswanathan et al. (1996) have reported that this pattern of responding to forced-choice scales is likely to contribute to measurement error and measurement instability (i.e., low inter-item correlations and internal consistency for the scales and low stability). This is because children may have similar levels of agreement with both response options and respond
inconsistently across the items on the same scales, or may choose the other response when retested as a result of poor item discriminability. The results from this study show this pattern of results for the CASQ.

The results of this study suggest that children do not use dichotomous categories to explain events in their lives. Discrete categorisation of causal explanations across the dimensions may not occur in reality, but rather as a result of the forced-choice or categorical responses required by the CASQ. The fuzzy set technique used in this study showed that children explain events using internal and external, stable and unstable, and global and specific explanations, although they may have some preferences, one way or the other, and this may be meaningful, agreement with one does not mean disagreement with the other reason. On this basis information is lost when using a forced choice measurement technique. This finding is at odds with the approach to measurement used by the CASQ, and questions the nature of the inverse relationships between the dimensions implied by the RTLH and hopelessness theories.

The content of the response options for individual items may also contribute to poor discriminability. Many responses were regarded by children as a poor match to their natural response, whether selected or not selected. This means that children were attempting to select between two responses that were not particularly relevant to their own individual style of explaining events. This was particularly problematic for responses selected on the composite negative scale. Given that explanations for negative events are used to determine measures of pessimism or hopelessness based on the choice between the available responses, this is cause for concern.

4.7.3. The Relationship between Explanatory Style, Neuroticism and Depressive Symptoms

The consistent relationships found between different measures of explanatory style and depression has stimulated most research into both the RTLH and hopelessness
theories of depression. In this study, when the CASQ was scored using the original
dichotomous response format, despite the poor internal consistency of the scales, the
expected relationships were found between explanatory style and depressive symptoms
and neuroticism, respectively. When the scores for pessimism, optimism and
hopelessness were generated from the fuzzy set responses, significant, negative, linear
relationships were only obtained between optimism and depression and optimism and
neuroticism. There was no significant relationship found for either pessimism or
hopelessness with either depression or neuroticism. This different pattern of findings
can be explained by considering the different results obtained across the measures of
explanatory styles for positive and negative events. For the positive scales a high
proportion of items measuring optimism matched the natural responses of the children,
so there was considerable overlap between the scale scores calculated using fuzzy
values and that calculated using the forced-choice responses. The fuzzy Likert-type
scale, therefore, showed some capacity to improve the reliable measurement of
optimism in circumstances where the responses selected on the dichotomous scales
were a good match with the natural responses of the children. However, when the
negative components of explanatory style were measured, few responses were found to
accurately capture the natural responses of the children as indicated by the fuzzy scores.
In this case the response options and the fuzzy scores were not a good match. This
meant that the fuzzy measures of pessimism and hopelessness were calculated from the
responses of children who did not report a high level of agreement with the internal,
stable or global components of explanatory style for negative events. Consequently, the
responses on the fuzzy set scale did not correspond with the response options selected
using the dichotomous measure. This may have produced the different associations
found between depression and the negative components of explanatory style when using
the different measurement techniques. This shows the importance of using content that
closely matches the natural responses of children when attempting to obtain an accurate measure of their explanatory style.

The inconsistent result found for the association between depression, pessimism, and hopelessness will be further investigated in the next study (Study 4), where children’s spontaneous explanations for failure and success will be measured. Using this approach, the responses obtained will be a direct measure of a child’s explanatory style and should more clearly measure the associations between pessimism, hopelessness, and optimism and depressive symptoms.

4.7.4. Limitations and Conclusion

The findings of this study provide some specific information about issues that influence the internal consistency of the CASQ. While the use of Likert-type, fuzzy responses resulted in a more internally consistent measure of explanatory style, it also resulted in reductions in the associations between explanatory style and depressive symptoms. This may have occurred because the options on the CASQ have little in common with a child’s actual explanations for the events. A measurement technique that can access a child’s own causal explanations is required to gain access to explanations across the dimensions of explanatory style.

The options for choice available on the CASQ are neither a good match nor are they able to discriminate between the internal or external, stable or unstable and global or specific dimensions. One possible explanation for this is that content of the scales is difficult for children to distinguish between and, thus, potentially have different meaning for different children. Given the high overlap between the responses on the CASQ it seems important to reduce the overlap when measuring explanatory style. Using tasks to elicit a child’s own causal explanations for events may be a more effective approach to measure explanatory style in children. Such an approach would provide an opportunity to examine the overlap between the components of explanatory
style and would also ensure that the content was consistent with a child’s natural response when obtaining a measure of their explanatory style.

The measurements of internal consistency showed that the fuzzy Likert-type response scale can produce a more reliable measure of explanatory style than can a forced-choice, categorical approach to measuring the dimensions of explanatory style. However, a major issue was the content of the responses used to measure explanatory style for negative events. Adjusting the fuzzy scale to directly address agreement with the dimensions of explanatory style, rather than the agreement with the CASQ responses, may further improve the measurement of explanatory style and the meaning that can be attributed to such a score. This would remove the restrictiveness of the forced-choice approach used by the CASQ, which may be limiting the accurate measurement of children’s explanatory style.

In study 4, children’s spontaneous explanations were elicited using experimental tasks and the different components of pessimism and hopelessness were measured using Likert-type scales. The strength of the relationships between depression, neuroticism and the different components of explanatory style were once again investigated to assess if the strength of the relationships would vary as a function of the expected improvements in measurement.
CHAPTER 5.0
STUDY 4 – THE OBJECTIVE MEASUREMENT OF EXPLANATORY STYLE USING EXPERIMENTAL TASKS

5.1. Overview and Introduction to Study 4

Studies 1 to 3 showed that explanatory style is difficult to demonstrate consistently using the CASQ. Additionally, Study 3 found that the use of a forced-choice or categorical response format, where children explain events as internal or external, stable or unstable, and global or specific contributed to the poor consistency of measurement. The use of a fuzzy Likert-type response scale, where children’s responses reflected their degree of agreement or disagreement with each response that contributed to a measure of explanatory style produced more reliable measures of the internal, stable, global components.

This study measured explanatory style using children’s own spontaneously generated causal explanations for experimental tasks that produced outcomes of either uncontrollable success or failure. This approach ensured an uncontrollable event was used to elicit spontaneous causal explanations that were relevant and accurate for each child.

Previous research has found that the event type used when making causal explanations can have considerable influence on the explanations given (Butters et al., 1997; Wong & Weiner, 1981; Wortman & Dintzer, 1978) yet, to date, this has not been systematically explored as an issue affecting the accurate measurement of explanatory style. This study used achievement tasks that were either familiar or unfamiliar to the child to determine if causal explanations were influenced by event familiarity.

In this study children responded to both components of each dimension of explanatory style. For example, using the global-specific dimension, each child rated the extent that their failure or success experience was global and to what extent the
same event was specific. This approach to measurement tested not only a child’s agreement with the components of the dimensions of explanatory style, but also provided information on the relationships between the components of each dimension and pessimism, hopelessness and optimism. The associations between causal explanations and symptoms of depression, neuroticism and task persistence (as an indicator of behavioural motivation) were examined.

5.2. Response Choices

One major concern with the CASQ identified in Study 3 was the content of the category forced-choice responses and children’s partial support for both the selected and nonselected response options. These issues are potentially contributing to difficulties when producing an accurate measure of explanatory style. Where forced choice scales are used to assess the dimensions of explanatory style the overlap between the components of a dimension cannot be clarified, and the categorical approach to measurement may artificially reflect separation between the dimensions. These types of scales do not account for partial membership within categories or nonmembership. Where separate scales are used to assess a child’s agreement or disagreement with each component of a dimension, the distinctiveness of explanations across the dimensions may be more clearly identified and understood. Theoretically it would be expected that children who are more discriminating in their explanatory style across the components of the dimensions may be at greater risk for depressive symptoms, where their explanatory style reflects strong agreement with the components consistent with pessimism or hopelessness when explaining negative events. The Likert-type scale approach used in Study 3 is one technique that can assess a child’s agreement with each component of a dimension of explanatory style and was used in this study.

Open-ended interviews have been successfully used with younger children to elicit spontaneous causal explanation and obtain a measure of their explanatory style.
The CASI asks children to spontaneously verbalise an explanation for an event. The explanation given is then used to evaluate their agreement with the different dimensions of explanatory style. Children move a pointer across a scale in response to questions about the explanation given. For example, “How much of that is because of you?” is used to examine the dimension of internality. The options presented and discussed with the child include “because of you” (internal response), “not because of you” (external), “or somewhere in between”. At one end of the scale a tiny picture of a child is presented, with the other end showing a large picture of a child pointing to him/her self. A child’s movement of the pointer, across a 10-point scale (visible only to the researcher) is used to provide a measure of each of the dimensions of explanatory style. Similar to the results in Study 3, where a Likert-type response scale was used, acceptable levels of internal consistency have been obtained using the CASI (Conley et al.).

The approach used by the CASI and adult measures of explanatory style, like the ASQ, is to rate responses using a scale where the components of a dimension appear at each end of the Likert-type scale. For example, an internal explanation is at one end of the scale and an external explanation is at the opposite end. Individuals respond to each item by determining whether the explanation is closer to the internal or external end of the scale. Both this approach used by the CASI and ASQ, and that used by the CASQ assumes that there is an inverse relationship between the components of the dimensions. The findings of Study 3 did not show clear separation between the components of a dimension when using separate Likert-type response scale to assess a child’s agreement with individual components of explanatory style, suggesting that the inverse relationship does not emerge. One explanation for this outcome was that the content of the CASQ responses used to measure explanatory style poorly matched the natural responses of the children, particularly for negative events. The item content may have
contributed to the lack of separation between the components of the dimensions of explanatory style. In this study the relationships between the components of a dimension were investigated by obtaining a measure of a child’s agreement with each component using a child’s own spontaneous explanations for events. This approach ensured the causal explanation was accurate before the internality, stability and globality of the explanations were examined.

5.3. Event Types

Peterson and Seligman (1984) reported “if the reality is ambiguous enough, a person may project and impose habitual explanations” (p. 355). This view does not account for the importance of the event (as identified in hopelessness theory), the situational specificity of the explanation, or the potential for past experience or familiarity with the event to influence causal explanations. It assumes that under circumstances where reality is unclear that one’s more consistent and trait-like style of explaining events can be accessed.

5.3.1. Real and Hypothetical Events

Inconsistent relationships have been found in the literature for causal explanations of hypothetical and real events. One study conducted with adults found a positive relationship between explanatory style for hypothetical events and real events (Peterson & Villanova, 1988), however, other studies failed to find this relationship (Cutrona et al., 1985; Morris & Tiggerman, 1999).

One explanation for the different findings is that individuals use different processes for explaining real and hypothetical events. Researchers have examined explanatory style using the ASQ (hypothetical events) and attributions of success or failure on examination performance among university students (real event) (Morris & Tiggerman, 1999). No significant relationships were found between explanatory styles
assessed using the ASQ and causal explanations for exam performance. These findings were interpreted to reflect differences in explanations given to specific, real life situations and a general or habitual style. Some researchers suggested that hypothetical events may be irrelevant to some individuals and therefore lack validity (Butters et al., 1997; Hammen et al., 1988). Another explanation for the different outcome in results relates to the argument that causal explanations may differ for real events that occur within a specific domain (exam performance, an achievement-related domain) and measures of explanatory style based on events across interpersonal- and achievement-related domains. Real and hypothetical events within different domains may produce quite different responses and measures of explanatory style. Therefore, this study controlled the domain specificity of events and used only events within an achievement-related domain.

5.3.2. Task Familiarity

Another possible explanation for the differences in outcomes is event familiarity. Events that are real and hypothetical can differ in terms of the familiarity that one has with the event. Morris and Tiggerman’s (1999) failure to find an association between explanatory styles assessed from exam performance (an immediate and familiar event) and from the ASQ (retrospective explanations of events which may or may not be familiar) draws attention to the need to consider event familiarity as another possible factor influencing the measurement of explanatory style. Explanations for performance on an exam (a real event, which is also familiar and likely to be important) may differ from the explanations assessed using the ASQ (hypothetical events which are likely to be both familiar and unfamiliar events, some that are likely to be important).

A weak relationship was found between explanatory styles assessed using the CASQ-R and CASI (Conley et al., 2001). The poor association between the different
measures of explanatory style may be explained by the different types of events used on the instruments. Both scales present children with a range of different events, however, the CASI uses event known to be relevant, important and therefore, that are also likely to be familiar to children. The CASQ (and CASQ-R) use a wider range of events that have not been evaluated for familiarity, relevance or importance to children. Based on the low association found between the CASI and CASQ scales, one explanation may be that the event types produce different causal explanations based on past experience or familiarity with events.

Some evidence for the potential influence of event familiarity on causal explanations can be found from the research on cognitive schemas. Schemas are developed from early, personal life experiences and interactions with others and are used by individuals as a means of interpreting “their” world (Beck & Weishaar, 1989). Beck’s cognitive theory of depression holds that schemas become activated in stressful situations, which in combination with other vulnerabilities, can produce depression. This view is consistent with both the hopelessness theory of depression (a diathesis-stress model) and the RTLH. Consistent with these theoretical viewpoints, where uncontrollable negative events are experienced, one’s habitual style of explaining events may be more clearly elicited. Familiar events that are also uncontrollable may produce the conditions most likely to elicit one’s consistent style of causal explanation. Explanations for familiar events may be based upon past experiences or schemas and may be different to explanations for unfamiliar or novel events. The difference between explanations for familiar and unfamiliar events was examined in the current study.

To investigate these differences familiar and unfamiliar, unsolvable (negative events) or solvable tasks (positive events) were used. It was expected that explanations for familiar events would be more likely to produce a consistent explanatory style
whereas explanations for unfamiliar events would produce greater inconsistency in
measurement.

5.4. Associations between Depressive Symptoms and Explanatory Style

Weak, positive, linear relationships have frequently been found between
depressive symptoms and pessimism or hopelessness (Conley et al., 2001; Gladstone &
Kaslow, 1995; Peterson & Seligman, 1984). There have also been studies that have
failed to find this association (Dixon & Aherns, 1992; Hammen, Adrian, & Hiroto,
1988). In studies where the relationship between explanatory style and depressive
symptoms has been reported the magnitude of this relationship is low to moderate at
best (Abela, 2001; Bell, McCallum, & Doucette, 2004). As depressive symptoms in the
studies have been commonly measured using instruments such as the CDI, which has
good psychometric properties, the way explanatory style is measured may provide some
explanation for the inconsistent results.

In Study 3 weak, positive, linear relationships were found between depressive
symptoms and explanatory style for negative events (pessimism and hopelessness),
using the standard CASQ scoring protocol. These associations were not replicated
when the fuzzy Likert-type scale was used to assess explanatory style with the same
sample of participants. This finding suggests the relationship between explanatory style
and depressive symptoms varies with different measures of the construct. To address
inconsistencies in the findings this study obtained separate measures of explanatory
style by producing success or failure using real events which were either familiar or
unfamiliar. Measures of explanatory style were obtained following failure on two
familiar events (puzzles) and unfamiliar events (dot counting) or for combinations of
familiar and unfamiliar events. The association between the measures of explanatory
style and depressive symptoms were obtained. It was expected that if event familiarity
influenced causal explanations there would be different relationships between
depressive symptoms and the different measures of explanatory style as a function of event type. Familiar events (puzzle tasks) were expected to be more likely to elicit one’s consistent or habitual style of explanation. Measures of pessimism or hopelessness for familiar events were expected to produce the stronger association with depressive symptoms than measures of pessimism or hopelessness produced following presentation of two unfamiliar events.

5.5. Task Persistence

A pessimistic explanatory style for negative events has been associated with helplessness and a giving up reaction (Seligman, 1992, pp. 15-16). This study examined the association between explanations for negative events and the tendency to give up when facing a challenge. Giving up was operationalised as selection of an easy rather than challenging final task. Based on the RTLH and hopelessness theory it was expected that greater pessimism and hopelessness in explanations for failure would produce a greater likelihood of a giving up response, in this case the selection of an easy task. If event familiarity influenced the giving up response, then unsolvable, familiar and unfamiliar tasks would produce different giving up responses.

5.6. Neuroticism

In studies 1 and 3, strong, linear relationships were found between neuroticism and symptoms of depression ($r = .60$ to $.68$). Explanatory style was found to be weakly correlated with neuroticism. In Study 3, when pessimism and hopelessness scores were produced using the fuzzy Likert-type values no significant associations was found between neuroticism and these measures. One hypothesis for this outcome was that measurement accuracy potentially decreased the influence of neuroticism. However, in Study 3 it was unclear whether the different results concerning the relationship between neuroticism and explanatory style was a function of the overlap between the responses
available for choice or the poor agreement or match between a child’s natural response and the responses available. Using a child’s own spontaneous explanations for events may control for neuroticism when measuring explanatory style, as children are no longer required to select between content that poorly matches their natural responses to obtain a measure of their explanatory style. It was expected that neuroticism would show a strong, positive, linear relationship with depressive symptoms. However, it was expected that, with the use of a child’s own spontaneous explanations and improved measurement accuracy of explanatory style, the relationship between neuroticism and explanatory style would be negligible as found in Study 3 when children were no longer required to select between forced choice options to obtain a measure of their explanatory style.

5.7. Method

5.7.1. Participants

Participants were children in Grade 6 at two Queensland primary schools. The sample consisted of 111 students, 58 males (52%) and 53 females (48%), aged between 9 and 12 years of age, with a mean age of 10.77 years ($SD = 0.48$). The students were recruited from one independent and one state primary school in Queensland, Australia. University Human Research Ethics Committee approval for the project was obtained along with written informed parental consent for each participant.

5.7.2. Measures

The Child Depression Inventory (CDI) and the Junior Eysenck Personality Questionnaire (EPQ-J) were used to assess depressive symptoms and neuroticism respectively. For a description of the measures see section 3.5.2.
5.7.2.1. **Spelling.**

To assess achievement on a familiar, academic-related task, participants completed a spelling test using the first 30 words from the spelling sub-test of the Wide Range Achievement Test (WRAT-3; Wilkinson, 1993). The WRAT-3 spelling subtest is a standardised measure designed to assess spelling abilities in individuals between the ages of 5-74 years of age. The WRAT-3 spelling scale has good internal consistency with alpha ranging from .88-.96 with participants aged between 10-12 years of age (Wilkinson, 1993). This was used for group allocation purposes only (see Section 5.7.7).

5.7.2.2. **Experimental tasks.**

**Rapid Sequential Counting Task (Unfamiliar Task).** Two versions of a Rapid Counting task, one solvable and one unsolvable were used. The Rapid Counting Task was selected as it was unfamiliar and no child had previously completed this type of task. The task was presented via computer monitor. At the beginning of each trial, participants were presented with a cross in the centre of the monitor screen for one second to signal the start of the trial. Following this, between four and eight dots were sequentially presented in the same place on the computer screen. In the unsolvable condition the time between the presentations of individual stimulus dots was so short that it was beyond the biological capacity of the human eye to accurately count the number presented. In the solvable condition the presentation of stimuli was slower, allowing children to accurately count the number presented.

Following completion of each trial, participants recorded the number of stimuli counted by pressing a button on the computer’s numbered keypad. The buttons were marked from 2 to 10. Manipulated feedback was provided, via the computer, after each trial. In the solvable condition participants received feedback (one duck quack) indicating they had correctly counted the number of dots. In the unsolvable condition
participants received feedback (three duck quacks) indicating they had made an incorrect response. Each child completed five practice trials prior to the experimental task. During the practice trials accurate feedback was provided for task performance.

The following instructions were provided to participants during the counting task:

**Screen 1:** Between 2 and 10 dots will flash on the screen one after the other. Please count them and press a number to show how many dots you counted. First you will see a cross on the screen and then the dots will appear. If you get it right you will hear 1 duck quack. If you get it wrong you will hear 3 duck quacks.

Press enter, to continue.

**Screen 2:** Let’s practice. (Practice Task – five trials presented)

**Screen 3:** That’s the end of practice. Your score was (actual number correct) out of 5. When you are ready press the space bar to continue. (Experimental Task - block of eight trials presented)

**Screen 4:** Let’s take a break. When you are ready press the space bar (Experimental task - block of eight trials presented)

**Screen 5:** That’s the end. Your score was 0 out of 16 (unsolvable condition) or Your score was 16 out of 16 (solvable condition).

There were two blocks of eight trials presented. After all trials were completed participants receive manipulated feedback, informing them that they had scored either 16 correct out of 16 in the solvable condition or, zero out of 16 correct in the unsolvable condition, irrespective of their actual result.

**Puzzle Task (Familiar Task).** There were two versions of a puzzle developed; one each for solvable and unsolvable conditions. In both conditions students were given
5 minutes to reproduce the target shape, presented to them on an A4 sheet of paper. In the unsolvable puzzle task seven puzzle pieces were provided to create a target shape that required eight pieces, making it impossible to reproduce the shape. In the solvable condition the shape could be reproduced with the seven pieces provided. The following instructions were provided:

*I’ve got a puzzle for you to do now. I’d like you to work as quickly as you can to solve the puzzle. What you need to do is to use all the pieces here (give puzzle pieces to participant) to make the same design as this. (Place design in front of participant) Remember to work as quickly as you can. You have 5 minutes to work on the puzzle. Tell me when you have finished working.*

5.7.3. Design

During Phase 1 of the study 45 students undertook an unsolvable, unfamiliar task, 45 undertook an unsolvable, familiar task and 21 students completed a solvable, unfamiliar task. In Phase 2 of the study the same participants were allocated to one of five conditions with 20 to 25 students in each condition. These conditions presented either familiar or unfamiliar and unsolvable or solvable tasks. In Phase 3 all students completed an achievable task (see Table 5.1).

5.7.4. Task Conditions

In Phase 1 there were three different conditions. Children either completed an unsolvable, familiar task, an unsolvable, unfamiliar task, or a solvable, unfamiliar task. Following completion of Phase 1 tasks all children responded to a series of questions and provided the scaled responses to the causal interview statements for the first time (see Causal Interview section below). Following the unsolvable tasks presented at Phase 1, half the children were given the same unsolvable task (familiar or unfamiliar). The remaining half of the sample undertaking unsolvable tasks were given the
alternative unsolvable task at Phase 2 so if a familiar task (puzzle) was completed at Phase 1, an unfamiliar (rapid counting) task was completed at Phase 2 or, if an unfamiliar task (rapid counting) was completed at Phase 1 a familiar task (puzzle) was completed at Phase 2. This resulted in four conditions, described in Table 5.1, where students completed two consecutive tasks. The fifth condition investigated explanations for positive events and students completed two consecutive unfamiliar solvable tasks. Following completion of tasks at Phase 2, all children responded to the same series of questions and rated their responses for the second time.

Following the causal explanations made at the completion of Phase 2 tasks, children were asked to select either a hard or easy task to complete at Phase 3. Irrespective of choice, at Phase 3, all children were given an easy version of the task completed at Phase 2. Following completion of Phase 3 all children responded to the questions and associated response ratings for the final time. This data was not used as part of the study and was completed to ensure all children experienced an achievable and successful outcome in the final component of the study.

Table 5.1

Experimental Task Conditions

<table>
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<th>Event</th>
<th>Type of task</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
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<td>Unfamiliar X 2</td>
<td>Unsolvable dot counting (unfamiliar)</td>
<td>Unsolvable dot counting (unfamiliar)</td>
<td>Solvable dot counting (unfamiliar)</td>
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<tr>
<td>Negative</td>
<td>Familiar X 2</td>
<td>Unsolvable puzzle (familiar task)</td>
<td>Unsolvable puzzle (familiar task)</td>
<td>Solvable puzzle (familiar)</td>
</tr>
<tr>
<td>Negative</td>
<td>Familiar/Unfamiliar</td>
<td>Unsolvable puzzle (familiar task)</td>
<td>Unsolvable dot counting (unfamiliar)</td>
<td>Solvable puzzle (familiar)</td>
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<td>Negative</td>
<td>Unfamiliar/Familiar</td>
<td>Unsolvable dot counting (unfamiliar)</td>
<td>Unsolvable puzzle (familiar task)</td>
<td>Solvable puzzle (familiar)</td>
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<tr>
<td>Positive</td>
<td>Unfamiliar X 2</td>
<td>Solvable dot counting (unfamiliar)</td>
<td>Solvable dot counting (unfamiliar)</td>
<td>Solvable dot counting (unfamiliar)</td>
</tr>
</tbody>
</table>
5.7.5. Causal Interview

Following each phase of the study, a structured interview was administered to elicit participants’ explanations for task performance and responses to tasks. The interview was comprised of two parts. Part A questions (see Table 5.2) elicited a participant’s causal explanation for their success or failure for the completed task.

Table 5.2

<table>
<thead>
<tr>
<th>Question</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Why do you think you received the result you did?</td>
<td>Elicit Causal Explanation</td>
</tr>
<tr>
<td>2. Are there any other reasons for your result?</td>
<td>Determine # of causal explanations offered for task</td>
</tr>
<tr>
<td>3. You’ve mentioned (list explanations provided by student).</td>
<td>Identify most important explanation for event</td>
</tr>
<tr>
<td>Which is the most important or most likely cause for your result?</td>
<td></td>
</tr>
<tr>
<td>4. I’d like you to think about (experimenter paraphrases reason</td>
<td>Focus interview and clarify causal explanation offered</td>
</tr>
<tr>
<td>identified as most important) and I’ll ask you some questions.</td>
<td></td>
</tr>
</tbody>
</table>

Part B included six items designed to assess students’ agreement with components of the dimensions of explanatory style (see Table 5.3). Each item was read to participants who responded by circling an item from a 6-point Likert-type scale, which ranged from completely right/true (1) to completely wrong/false (6). Low scores indicate more agreement with the component of explanatory style whereas high scores indicate more disagreement with the component of explanatory style.

Composite scale scores for optimism, pessimism and hopelessness were produced in two ways: First, using the Likert-type scales a measure was produced by summing causal explanations for internal, stable, global components of explanatory style for solvable or unsolvable tasks to obtain measures of optimism and pessimism, respectively. Likert-type responses for the stable and global components of explanatory style for unsolvable tasks were summed to obtain a measure of hopelessness. The second scoring approach accounted for scores on both components within a dimension.
For example, for internality, the score on the scale assessing externality was subtracted from the score assessing internality to provide a measure of the degree of difference for internality. This same procedure was followed to produce a difference score for the dimensions of stability and globality. These scores were then used to calculate scores for optimism, pessimism and hopelessness.

Table 5.3

Part B: Interview Questions and Scale to Assess Agreement with Components of Dimensions of Explanatory Style

<table>
<thead>
<tr>
<th>Statement</th>
<th>Dimensional Component and Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>How right or true is it that (explanation) is due to you / has something to do with you?</td>
<td>Internal</td>
</tr>
<tr>
<td>How right or true is it that (explanation) is due to things other than you?</td>
<td>External</td>
</tr>
<tr>
<td>How right or true is it that (explanation) will make a difference next time you do something like this?</td>
<td>Stable</td>
</tr>
<tr>
<td>How right or true is it that (explanation) will not make a difference next time you do something like this?</td>
<td>Unstable</td>
</tr>
<tr>
<td>How right or true is it that (explanation) makes a difference to other things that happen to you?</td>
<td>Global</td>
</tr>
<tr>
<td>How right or true is it that (explanation) only makes a difference to things like this?</td>
<td>Specific</td>
</tr>
</tbody>
</table>

5.7.6. Task Persistence

After completion of two tasks and the interview questions, students were asked to select either an easy or hard task for the final task. The choice of a hard or easy final
task was designed to assess persistence, following two consecutive positive (successful) events or two negative (failure) events. The following instructions were provided:

*You can choose the final task. You need to let me know if you would like to try an easier or harder task. If you pick the harder task it will give you a good chance to try hard at (counting dots/doing puzzles) again. If you pick the easier task you will not have to try as hard, but you won’t get a chance to learn anything new.*

Irrespective of selection of an easy or hard task, the final task in each condition was a solvable version of Task 2, either a dot counting task or puzzle task.

5.7.7. Procedure

All participants completed the CDI, EPQ-J and WRAT Spelling test in groups of up to 20 children in one 40-minute assessment session. Prior to and after completion of the spelling test participants were asked to predict, out of a possible score of 30, how many words they would spell correctly. All instructions and test items were read aloud to the students while a trained assistant was available to answer any individual questions arising during the group-testing situation.

To ensure the equality of optimism across the five conditions a matched sampling technique was used to allocate participants to conditions. Participants were ranked based on the difference between their predicted spelling score (prior to taking test) and actual spelling scores, with higher scores reflecting more optimism concerning spelling achievement. After ranking, participants were allocated to one of the five task conditions. This procedure ensured that there was an equal distribution of perceptions of achievement-focused competence across each of the groups.

Two weeks after the group assessment was completed students participated individually in the experimental task. Individual testing sessions were approximately 30 minutes in duration. Instructions and interview statements were read to each student by
an experimenter, who sat alongside the student as he/she completed the tasks and associated scales assessing their causal statements.

At the completion of each phase participants immediately completed the causal interview (Parts A and B). Participants’ responses were recorded on separate pages to reduce their ability to recall their earlier responses. Prior to commencing Phase 3 participants were asked to state their preference for the final task, either a hard or easy task. Participants then completed the causal interview for the final time. They were then thanked for their participation, given an opportunity to ask any questions and provided with a small incentive (lolly pop or eraser) for their participation in the project.

5.8. **Results**

There were four issues investigated in this section. The first issue was the internal consistency of the measure of explanatory style elicited from explanations for performance on experimental tasks. This was assessed using coefficient alpha for the different task conditions. Second, the study investigated the extent that different components of the dimensions of explanatory style could be differentiated. This was done by producing difference scores to provide a measure of the separation between the components within each dimension (i.e., internal and external) of explanatory style. Third, the linear associations between the measures of explanatory style, depressive symptoms and neuroticism were examined using Pearson’s $r$. Finally, analysis of variance (ANOVA) was used to determine if task persistence, measured by the selection of an easy or hard final task, was influenced by the causal explanations provided by children for success or failure on earlier tasks.

5.8.1. **Assumptions of Analyses**

The distributions of scores for all variables were examined. Consistent with previous studies a square root transformation was performed on depressive scores to
normalise the distribution. Scores on the internal and stable components of explanatory style for positive events were positively skewed at Phase 1 and Phase 2. The majority of scores were below 3 indicating that most participants agreed with the internal and stable components of explanatory style when explaining their performance on a solvable task (positive event). A square root transformation of the composite score of optimism was completed, which normalised the distribution. Other variables were normally distributed.

5.8.2. Internal Consistency

The internal consistency of the Child Depression Inventory (CDI) and Eysenck Personality Questionnaire Neuroticism (EPQ-N) scale were examined. Results show they were internally consistent, with coefficient alpha estimates similar to those found previously (CDI, \( \alpha = .87; \) EPQ-N, \( \alpha = .85 \)).

The internal consistency of the subscales reflecting the components of composite scales of explanatory style were obtained from children’s explanations for events presented at Phase 1 and Phase 2. Data are presented in Table 5.4 for the individual components of explanatory style and in Table 5.5 for the composite scales of hopelessness, pessimism, and optimism.

For solvable tasks (positive events), children provided internally consistent responses for scales measuring internal and external components where unfamiliar tasks were explained (see Table 5.4). The internal consistencies of the remaining components of explanatory style for solvable, unfamiliar tasks were below acceptable guidelines.

The internal consistencies of scale responses for familiar, unsolvable (negative events) tasks were acceptable for all components of explanatory style except for the scale measuring specific explanations (see Table 5.4). Importantly, all scales measuring the components of explanatory style used to generate the composite scores for hopelessness (stable, global) or pessimism (internal, stable, and global) reached
acceptable levels of internal consistency. This shows that the children were consistent in the explanations they offered for unsolvable, familiar events across all components of explanatory style used to assess pessimism or hopelessness. In the remaining conditions, where children explained two unsolvable events that were either unfamiliar or presented as combinations of familiar and unfamiliar events, there was less consistency between the responses within the subscales.

Table 5.4

*Internal Consistency (alpha) for the Components of Explanatory Style for Events*

*Presented at Phase 1 and Phase 2 (n = 20-25 per group)*

<table>
<thead>
<tr>
<th></th>
<th>Solvable tasks (positive events)</th>
<th>Unsolvable tasks (negative events)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unfamiliar + Unfamiliar</td>
<td>Unfamiliar + Unfamiliar</td>
</tr>
<tr>
<td>Internal</td>
<td>.79</td>
<td>.28</td>
</tr>
<tr>
<td>Stable</td>
<td>.44</td>
<td>.53</td>
</tr>
<tr>
<td>Global</td>
<td>.54</td>
<td>.28</td>
</tr>
<tr>
<td>External</td>
<td>.90</td>
<td>.46</td>
</tr>
<tr>
<td>Unstable</td>
<td>.02</td>
<td>.79</td>
</tr>
<tr>
<td>Specific</td>
<td>.54</td>
<td>-.37</td>
</tr>
</tbody>
</table>

*Note: Number of scale items = 2*

These results show the familiarity of the task influenced the consistency of children’s causal explanations for unsolvable tasks across the components of explanatory style. The same degree of consistency was not evident when children were explaining two unsolvable, unfamiliar tasks, or using combinations of familiar and unfamiliar events. Further, the results show that two of the same tasks were not sufficient to produce consistency in the responses for the components of explanatory style as failure on two familiar tasks (task familiarity) elicited consistent causal explanations whereas the same did not occur when explaining failure on two unfamiliar tasks (task similarity).
The internal consistency for the composite scales ranged from .15 to .78. Inspection of Table 5.5 shows the consistency of the scales was influenced by event type, familiar or unfamiliar. Acceptable internal consistency was obtained for the composite scales for hopelessness with presentation of either two familiar events or with presentation of a familiar event followed by an unfamiliar event. The composite scale for pessimism reached acceptable internal consistency only where a familiar event was followed by an unfamiliar event. Presentation of an initial unfamiliar event or two unfamiliar events produced poorer internal consistency for pessimism and hopelessness.

Table 5.5

Internal Consistency (alpha) for the Composite Scales of Optimism, Pessimism and Hopelessness

<table>
<thead>
<tr>
<th>Composite scale</th>
<th>Phase 1 and Phase 2 events</th>
<th>Overall scale α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimism</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solvable tasks (21)</td>
<td>2 x unfamiliar events</td>
<td>.69</td>
</tr>
<tr>
<td>Pessimism</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unsolvable tasks (23)</td>
<td>2 x unfamiliar events</td>
<td>.62</td>
</tr>
<tr>
<td>Unsolvable tasks (25)</td>
<td>2 x familiar events</td>
<td>.66</td>
</tr>
<tr>
<td>Unsolvable tasks (20)</td>
<td>1 familiar &amp; 1 unfamiliar event</td>
<td>.70</td>
</tr>
<tr>
<td>Unsolvable tasks (22)</td>
<td>1 unfamiliar &amp; 1 familiar event</td>
<td>.53</td>
</tr>
<tr>
<td>Hopelessness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unsolvable tasks (23)</td>
<td>2 x unfamiliar events</td>
<td>.55</td>
</tr>
<tr>
<td>Unsolvable tasks (25)</td>
<td>2 x familiar events</td>
<td>.78</td>
</tr>
<tr>
<td>Unsolvable tasks (20)</td>
<td>1 familiar &amp; 1 unfamiliar event</td>
<td>.74</td>
</tr>
<tr>
<td>Unsolvable tasks (22)</td>
<td>1 unfamiliar &amp; 1 familiar event</td>
<td>.15</td>
</tr>
</tbody>
</table>

Note. Number of items for scales assessing optimism and pessimism = 6; Number of items for scales assessing hopelessness = 4.

5.8.3. The Associations between the Internal, Stable and Global Components of Explanatory Style across the Different Task Conditions

The relationship between the internal, stable and global components of explanatory style that contribute to the composite measures of pessimism, hopelessness and optimism were examined. For unsolvable tasks the results show the stable and
global components of explanatory style were significantly correlated only in the conditions where participants explained either two unsolvable tasks that were familiar, $r = .51, p < .01$ or a combination of unsolvable tasks that were familiar followed by an unfamiliar task, $r = .76, p < .01$. For unsolvable tasks the internal component of explanatory style was not significantly associated with the stable or global components of explanatory style across all conditions. In conditions where participants explained either two unfamiliar tasks or a combination of tasks that were unfamiliar followed by a familiar task, there was no significant associations found between the internal, stable and global components of explanatory style for negative events. For solvable tasks only the internal and global components of explanatory style were positively correlated, $r = .46, p < .05$, with no significant relationships found between the internal and stable or stable and global components of explanatory style.

5.8.4. The Differentiation between the Components of Explanatory Style

The separation between the components of the dimensions of explanatory style were examined using difference scores. In each case a score of 6 represented no agreement with a component (completely wrong) and a score of 1 indicated complete agreement with a component (completely true). Difference scores were created to measure the separation between the individual components within a dimension. To achieve this, scores on the external, unstable, or specific scales were subtracted from scores on the corresponding internal, stable, or global scales. Using this technique, scores for internality, stability, and globality were obtained that controlled for the effects that might occur when children determined that a causal explanation was both internal and external, both stable and unstable and both global and specific. For example, if a child rated the internal component of their explanation as 6 (completely false) and the external component as 1 (completely true), when subtracting the external score from the internal score, an overall difference score of 5 is produced. This means
the child has no agreement with the internal component of the scale. Conversely, if the child rated the internal component as completely true, a score of 1 would be obtained. If the score on the corresponding external scale was 6 (completely false), then the difference score would be -5, showing that the internal explanation was completely true for the child. Both scores would demonstrate clear discrimination between the components of this dimension of explanatory style. If a child reported that the internal component was ‘somewhat true’ for him/her, a score of 3 would be obtained. If the same score was obtained for the external component the difference score would be 0, showing there was ambiguity in the internality of their explanation for the event, with little separation between the components for this dimension.

The mean difference scores for each of the dimensions are presented in Table 5.6. Results showed the mean differences between each of the components of the dimensions of explanatory style ranged from 1.23 to 2.30. This shows that, on average, most children do not explain their failure or success on the tasks conducted in this study as solely internal, global or stable. This result was found for all task conditions (familiar and unfamiliar, positive and negative events), showing that children tend to use both components of dimensions to explain events in their lives.
Table 5.6

The Difference between Components of the Dimensions of Explanatory Style at Phase 1 and Phase 2

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unsolvable task – unfamiliar (rapid counting) x 2 (n = 23)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal- external</td>
<td>1.83 (1.64)</td>
<td>2.30 (1.52)</td>
</tr>
<tr>
<td>Stable- unstable</td>
<td>2.22 (1.35)</td>
<td>1.96 (1.92)</td>
</tr>
<tr>
<td>Global-specific</td>
<td>2.09 (1.47)</td>
<td>1.87 (1.49)</td>
</tr>
<tr>
<td><strong>Unsolvable task – familiar (puzzle) x 2 (n = 25)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal- external</td>
<td>1.60 (1.32)</td>
<td>1.68 (1.55)</td>
</tr>
<tr>
<td>Stable- unstable</td>
<td>1.84 (1.43)</td>
<td>2.04 (1.51)</td>
</tr>
<tr>
<td>Global-specific</td>
<td>1.88 (1.45)</td>
<td>2.32 (1.62)</td>
</tr>
<tr>
<td><strong>Unsolvable tasks – familiar (puzzle) and unfamiliar (rapid counting) (n = 20)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal- external</td>
<td>1.25 (0.85)(^a)</td>
<td>1.55 (1.57)</td>
</tr>
<tr>
<td>Stable- unstable</td>
<td>1.85 (1.35)</td>
<td>2.30 (1.52)</td>
</tr>
<tr>
<td>Global-specific</td>
<td>1.40 (1.23)(^b)</td>
<td>1.60 (1.43)(^b)</td>
</tr>
<tr>
<td><strong>Unsolvable tasks – unfamiliar (rapid counting) and familiar (puzzle) (n = 22)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal- external</td>
<td>1.59 (0.96)(^a)</td>
<td>1.77 (1.27)</td>
</tr>
<tr>
<td>Stable- unstable</td>
<td>2.23 (1.48)</td>
<td>1.73 (1.42)</td>
</tr>
<tr>
<td>Global-specific</td>
<td>2.14 (1.67)</td>
<td>1.86 (1.39)</td>
</tr>
<tr>
<td><strong>Solvable tasks – unfamiliar (rapid counting) x 2 (n = 21)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal- external</td>
<td>1.81 (1.78)</td>
<td>1.81 (1.80)</td>
</tr>
<tr>
<td>Stable- unstable</td>
<td>2.48 (1.75)</td>
<td>2.67 (1.98)</td>
</tr>
<tr>
<td>Global-specific</td>
<td>1.62 (1.56)</td>
<td>2.14 (1.74)</td>
</tr>
</tbody>
</table>

Note. Range for scores = 0-5 unless otherwise marked \(^a\) range = 3; \(^b\) range = 4

5.8.5. The Association between the Measures of Explanatory Style and Depressive Symptoms and Neuroticism

Pearson’s \(r\) was used to examine the relationship between depressive symptoms and the composite scores for optimism, pessimism and hopelessness. Due to the sample size, in order to reduce Type II error, the significance level was not adjusted and remained as \(p < .05\). The data are presented separately for causal explanations following success or failure on one occasion (Phase 1) and where participants experienced two successive failure or success (at Phase 1 and Phase 2) experiences. The associations with depressive symptoms are presented for the composite scores and difference scores (described in previous section) and measures of pessimism,
hopelessness and optimism. For both the composite scores (sum of the individual scales for internal, stable, global components) and the difference scores, low scores indicate strong agreement with internal, stable, global components of explanatory style. Negative, linear relationships were expected between depressive symptoms and hopelessness and pessimism and a positive, linear relationship was predicted between optimism and depressive symptoms.

The results obtained (see Table 5.7) show no significant relationships between depressive symptoms and optimism and pessimism at Phase 1. A trend towards a weak, negative, linear relationship between depressive symptoms and hopelessness when explaining performance on an unsolvable, familiar task was found Phase 1.

Table 5.7

*The Relationship between Depressive Symptoms and Composite Scores and Difference Scores for Pessimism, Hopelessness and Optimism at Phase 1*

<table>
<thead>
<tr>
<th></th>
<th>Depressive symptoms</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Unfamiliar events</td>
<td>Familiar events</td>
</tr>
<tr>
<td>Unsolvable events</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pessimism – composite score</td>
<td>-.10</td>
<td>-.21</td>
<td></td>
</tr>
<tr>
<td>Pessimism - difference score</td>
<td>-.05</td>
<td>-.07</td>
<td></td>
</tr>
<tr>
<td>Hopelessness – composite score</td>
<td>-.16</td>
<td>-.28*</td>
<td></td>
</tr>
<tr>
<td>Hopelessness – difference score</td>
<td>-.06</td>
<td>-.14</td>
<td></td>
</tr>
<tr>
<td>Solvable events</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimism composite score</td>
<td>-.19</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Optimism – difference score</td>
<td>-.05</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Note. *p = .06; Unsolvable, unfamiliar events n = 45; Unsolvable familiar events n = 41; Solvable, unfamiliar events n = 21.*

The associations between depressive symptoms and causal explanations made following two failures or successes were evaluated using the same procedure outlined for Phase 1. Following two positive experiences no significant, linear relationships emerged between depressive symptoms and the composite score for optimism, $r (20) = -$
.24, \( p = .30 \) or the difference score for optimism, \( r (20) = .01, p = .97 \). This shows there was no relationship between optimistic explanations for successes and depressive symptoms.

For failure experiences no significant, linear relationships were found between depressive symptoms, the subscales and the composite measures of pessimism and hopelessness when combinations of familiar and unfamiliar tasks, or two unfamiliar tasks were presented in succession (see Table 5.8). However, when failure occurred following performance on two familiar tasks (puzzles) there was a significant, moderate, negative, linear relationship between the stable subscale and the composite measure of hopelessness and depressive symptoms. The association between depressive symptoms and pessimism, while in the same direction, failed to reach statistical significance. These results show that increased hopelessness in explanations for two consecutive failure experiences for familiar tasks produced the expected relationship between hopelessness and depressive symptoms, consistent with the hopelessness theory of depression. Combinations of familiar and unfamiliar events, or unfamiliar events alone did not produce the relationship with depressive symptoms. This relationship was found regardless of whether the difference scores or total scores for the internal, stable, global dimensions were used.
Table 5.8

The Relationship between Depressive Symptoms and Subscale, Composite Scores and Difference Scores for Pessimism and Hopelessness for Tasks Completed at Phase 1 and Phase 2

<table>
<thead>
<tr>
<th></th>
<th>Unfamiliar X 2 (n = 23)</th>
<th>Familiar X 2 (n = 24)</th>
<th>Familiar &amp; Unfamiliar (n = 19)</th>
<th>Unfamiliar &amp; Familiar (n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subscales</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>.01</td>
<td>-.02</td>
<td>-.12</td>
<td>.19</td>
</tr>
<tr>
<td>Stable</td>
<td>-.01</td>
<td>-.41*</td>
<td>.21</td>
<td>-.02</td>
</tr>
<tr>
<td>Global</td>
<td>-.24</td>
<td>-.32</td>
<td>-.05</td>
<td>-.39</td>
</tr>
<tr>
<td><strong>Composite Scores</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pessimism</td>
<td>-.12</td>
<td>-.39*</td>
<td>.02</td>
<td>-.12</td>
</tr>
<tr>
<td>Hopelessness</td>
<td>-.15</td>
<td>-.42*</td>
<td>.08</td>
<td>-.33</td>
</tr>
<tr>
<td><strong>Difference scores</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pessimism</td>
<td>-.02</td>
<td>-.33</td>
<td>.02</td>
<td>-.01</td>
</tr>
<tr>
<td>Hopelessness</td>
<td>-.06</td>
<td>-.45*</td>
<td>.41</td>
<td>-.10</td>
</tr>
</tbody>
</table>

Note. * = p = .06, * = p < .05

5.8.6. Depressive Symptoms, Neuroticism, and Explanatory Style for Negative Events

Consistent with earlier studies a strong, positive, linear relationship was found between depressive symptoms and neuroticism, $r(98) = .69$, $p < .001$. Children with higher scores for neuroticism also reported significantly more symptoms of depression. The relationship between neuroticism and composite scores for pessimism and hopelessness produced no statistically significant linear relationships with neuroticism irrespective of whether the composite scores or difference scores were used.

5.8.7. Hopelessness and Task Choice for Unsolvable Tasks

As the hopelessness scale produced the highest measure of internal consistency, hopelessness as a factor influencing persistence on unsolvable tasks was investigated using ANOVA. The hopelessness score was used as the dependent variable and task choice (easy or hard) as the independent variable. Analyses were conducted for each of
the different combinations of unsolvable tasks. Greater levels of hopelessness (lower mean scores for hopelessness) were expected to occur where students selected an easy final task, as an indication of lower levels of persistence.

There was a significant difference in hopelessness scores for children selecting easy and difficult final tasks following failure on two consecutive unsolvable, unfamiliar tasks, $F(1, 19) = 4.38, p = .05$. Higher hopelessness scores (lower mean scores) were associated with the selection of a difficult final task ($M = 13.37, SD = 4.17, CI = 9.89 – 16.86$) rather than an easy final task ($M = 16.78, SD = 3.38, CI = 14.83 – 18.74$). The effect size (Cohen’s $d = .90$) was strong. There were no significant effects of final task selection found when other combinations of failure tasks were presented.

These results show greater hopelessness produced greater persistence (selection of a hard rather than an easy final task). However, this occurred only in the condition where participants completed unsolvable, unfamiliar tasks. This result is inconsistent with the predictions of hopelessness theory as hopelessness explanations for unfamiliar events produced greater persistence. There were no significant differences in hopelessness explanations for familiar events in terms of selection of a hard ($M = 14.27, SD = 4.73, CI = 11.65 – 16.88$) or easy ($M = 13.60, SD = 5.19, CI = 9.88 – 17.31$) final task. Consistent with this outcome the effect size (Cohen’s $d = .13$) was low.

5.8.8. Optimism and Task Choice for Solvable Unfamiliar Events

For positive events the relationship between optimism and task choice was investigated. It was predicted that students with greater optimism (lower scores for internal, stable, global explanations for positive events) would be more likely to persist (select a hard task rather than an easy task) following success on an unfamiliar task. ANOVA was used to investigate mean differences in optimism for positive events and final task choice where students completed two solvable tasks. There was a significant difference in task choice and optimism scores, $F(1, 19) = 8.53, p = .009$. Greater
optimism was associated with selection of a hard task (more persistence) \((M = 13.31, SD = 3.84, CI = 11.26 - 15.36)\) and lower levels of optimism scores \((M = 20.00, SD = 6.28, CI = 12.19 – 27.80)\) produced selection of an easy task (less persistence). Cohen’s \(d\) showed a strong effect \((d = 1.28)\). These results suggest that, when facing solvable unfamiliar events, children who offered optimistic causal explanations for success were more likely to persist and select a hard final task. Conversely, children who were less optimistic, following successful outcomes, were more likely to choose an easy final task, showing less persistence. The strong effect size clearly shows that, where children have more optimistic causal explanations for solvable, unfamiliar events, they are more likely to show persistence. This finding is consistent with theoretical predictions as optimism produced expected levels of motivation and persistence.

5.9. Discussion

This study had four main aims. The first aim was to develop a reliable measure of explanatory style. This aim was achieved when children gave immediate causal explanations of success or failure in response to familiar, unsolvable tasks. When an unfamiliar task followed by a familiar task, or two unfamiliar tasks were used, reliable measurement of the construct was not obtained. A second aim was to discriminate between the components of each explanatory style dimension. Difference scores showed that there was little separation between each component of the dimensions, showing that children explain events using both internal and external, both stable and unstable, and both global and specific components of explanatory style. The third study aim was to test the associations between explanatory style and depressive symptoms. A significant, linear association was found between hopelessness and depression following two consecutive failures when the task used was familiar (a puzzle). Similar relationships were found for this condition, irrespective of whether composite scores or differences scores were used to produce the measure of hopelessness. Finally, the
fourth study aim was to examine the association between hopelessness and task persistence. Inconsistent with expectations, when children failed at two consecutive unfamiliar tasks (dot counting), those reporting more hopelessness were significantly more likely to persist (select a difficult task) than those reporting less hopelessness. For unfamiliar, positive events the results were more consistent with theory. In the following section factors that influence consistent measurement of explanatory style will be discussed, together with the implications of the results of this study for the RTLH and hopelessness theories of depression.

5.9.1. Internal Consistency

5.9.1.1. Composite scales.

In this study, children completed a series of familiar and unfamiliar achievement tasks, and the internal consistency of explanations varied across conditions. The internal consistency of the composite scales either met, or were close to meeting the recommended guidelines of Nunnally (1978, p.278) in conditions where participants explained failure on a familiar task at Phase 1, followed by an unsolvable task, which was either a familiar or unfamiliar to them at Phase 2. Both of the tasks measured achievement, so were within the same domain. These results are consistent with the previous research where domain-specific events have produced more consistent measures of explanatory style (Bell et al., 2004; Turner & Cole, 1994). However, irrespective of the domain specificity of the tasks, the internal consistencies of the composite scales were lower and more variable in conditions where explanations were elicited initially for unsolvable, unfamiliar conditions followed by a second unsolvable task which was either unfamiliar or familiar. This suggests that domain specificity itself is insufficient to improve the consistency of the measurement of explanatory style. Task familiarity also seemed important to the reliability of measurement. The difficulties with the reliable measurement of explanatory style when using the CASQ is
not surprising given these findings, as the CASQ includes a variety of both familiar and unfamiliar events across both interpersonal- and achievement-related domains. Using such an approach, the internal consistency of the scales will typically vary across studies depending on child age, experience and other factors, and might be expected to fall well below acceptable levels.

This study found that children’s explanations for failure after completing the same unfamiliar task twice were not consistent. However, a different pattern of results was obtained where children explained the same familiar task twice and internal consistency was achieved. These results show it is not the similarity of the events (two of the same events) that affects the consistency of responses but rather the familiarity of the events. This provides some support for the prediction that different types of events (familiar and unfamiliar) may influence the reliability of the measurement of explanatory style. The results also suggest repeated failure at a familiar task is an important consideration when exploring explanatory style. It may be that repeated failures on familiar tasks produce the necessary conditions to elicit causal searching and this approach may be one method for gathering reliable information about hopelessness.

5.9.1.2. **Subscales assessing the components of explanatory style.**

Consistent with the results obtained for the composite scales, the reliability of the individual components was strongest in the condition where participants explained two familiar unsolvable (negative) events. In this condition only the reliability estimates for the components of explanatory style, used to produce a measure of pessimism or hopelessness, reached acceptable levels of internal consistency. Poorer reliability was found in the remaining conditions where children explained two unfamiliar tasks or combinations of familiar and unfamiliar tasks. This finding shows that children explain familiar and unfamiliar events differently and again provides some
evidence that children do have a consistent style of explanation when explaining two instances of failure at a familiar event.

This finding adds to the literature as previously the RTLH or hopelessness theory have not emphasised event type, event familiarity or repeated failure as issues influencing the consistent measurement of explanatory style. It has been assumed that explanatory style can be measured in many ways and using varying types of events (Peterson & Seligman, 1984). Event type, familiarity or the extent of the perceived failure have not been considered when obtaining a measure of one’s explanatory style. However, in this study it was explanations for failure on familiar events that elicited a consistent “style”. Explanations for unfamiliar events were found to be less stable or consistent. There are a number of possible explanations for this outcome.

One explanation is that individuals use schemas to perceive and make sense of their world (Beck & Weishaar, 1989). Given this, explanations for familiar and unfamiliar events may differ because explanations for familiar events activate schemas whereas new or unfamiliar experiences do not. This may lead to differences in the consistency of the responses for children’s explanations of familiar versus unfamiliar events. Similarly, familiar events may activate expectancies as a result of prior knowledge and experience with those types of events and it may be that these negative outcome expectancies produce both a consistent style of explanation as well as the association with depressive symptoms. Following two consecutive failures on the same familiar task children may access and apply their habitual approach to explaining events. This same consistency may not be possible using unfamiliar events because one’s style is not evident in those circumstances. Alternatively, if the development of a style is based on experience, children may not have a habitual style of explanation when explaining unfamiliar events. Under circumstances where participants explain unfamiliar events, causal searching may be more obscure and ambiguous, without
consistency, producing a number of possible explanations for failure rather than providing access to a more consistent style in children.

Hopelessness theory (Abramson et al., 1989) recognises that the importance of an event can influence the experience of hopelessness. In the condition where children experience a familiar (puzzle) task they may have expectancies about the outcome. Following consecutive and potentially unexpected failures on such a task, they may attach increased importance to their failures which in turn enables access to their habitual explanatory style for negative experiences. The same may not be true for novel or new experiences.

These issues have implications for the measurement of explanatory style. When using the CASQ a broad range of events are used, some which would be familiar to children whereas others would not. This may partially account for the poor internal consistency of the measurement of explanatory style using the CASQ. The possible value in using familiar events to assess causal explanations can also be seen in the work of Conley et al. (2001) who showed that the CASI was a more internally consistent measure of explanatory style. The CASI uses events selected on the basis that they are “particularly relevant” for younger participants. In order for an event to be “relevant” it should be familiar or at least within the scope of a child’s experience.

The weaknesses of the psychometric properties of the CASQ can partially be explained by the inconsistency in response to events that differ in familiarity to a child. The differences in the type of explanations for familiar and unfamiliar events would explain some of the variability in the internal consistency found in previous studies using the CASQ. The results in this study show that the familiarity of an event is an important issue when wanting to access a consistent explanatory style. However, on the basis of this study it remains unclear whether a habitual explanatory style extends across different types of familiar events and across different domains. Future research needs to
more extensively examine children’s causal explanations across a variety of familiar events and across a variety of domains. In addition, improved understanding of the importance a child attaches to the outcome (success or failure) and the emotional state arising from the outcome may also increase understanding of the conditions most effective to gain an accurate measure of explanatory style.

5.9.2. The Bipolar Scales to Assess Explanatory Style in Children

The CASQ assesses explanatory style using mutually exclusive, forced-choice categories, with children reporting whether an event is internal or external, stable or unstable and global or specific. The CASI, PASS-I and, for adults the ASQ, use a continuous scale represented by the two poles of a dimension (internal to external, stable to unstable, global to specific) at opposite ends of the scale. With this approach the score obtained for a dimension is a representation of the extent to which the participant’s explanation is, for example, more internal or external, or neither internal nor external. This approach enables participants to estimate which of the poles best explains the outcome and provides a greater opportunity to obtain a measure of the magnitude of their internality, stability or globality.

While some approaches provide greater flexibility when responding to items, all approaches used to measure explanatory style in children assume they do not have agreement with both the internal and external, stable and unstable and global and specific components of a dimension and, rather, that explanations can be clearly categorised or placed at a single point on the continuum of each dimension. The forced-choice scale used by the CASQ has been particularly problematic when assessing explanatory style in children and this may be a reflection of the difficulty that children experience when they must select from one of two options, each representing the extreme of a dimension.
The results of Study 3 showed that children did not clearly distinguish between the components of the dimensions when the CASQ was used. Rather, there is little distinction and a high degree of overlap between the responses for choice. The findings achieved in this study were consistent with those in Study 3 showing little separation between the components of the dimensions of explanatory style when explanatory style was assessed using a child’s spontaneously generated causal explanations. These results show that causal explanations across the components of the dimensions of explanatory style are more ambiguous than clearly separated. This may partially explain how studies that have used a Likert-type scale response as opposed to a forced-choice response scale have frequently obtained a more internally consistent measure of explanatory style (Bell et al., 2004; Conley et al., 2001; Toner & Heaven, 2005). From the findings it appears that a Likert-type response scale may account for the magnitude of agreement within each component, effectively improving the reliability of measurement and simultaneously reducing the influence of the overlap in agreement across the dimensions. This is consistent with the results obtained in this study which show that irrespective of whether the composite scores of explanatory style are calculated by summing scores representing the degree of agreement with the individual internal, stable, global components or using a sum of the difference scores representing the degree of difference within each of the dimensions, the results remain consistent concerning the relationship between the measures of hopelessness and depressive symptoms. One reason that the same did not occur for pessimism is that the internal component of explanatory style does not correlate with the stable and global components. The internal component appears to perform differently to the stable and global component and does not contribute to the score of pessimism or the relationship between pessimism and depressive symptoms, even under conditions where familiar events are explained. A further conclusion that can be drawn from the findings is that
explanations for negative events as external, unstable and specific do not add further information to the relationship between explanatory style and depressive symptoms. This information may potentially lead to simplification of the measurement of explanatory style.

A clear separation between the components of explanatory style within each dimension was not found. There are a number of possible explanations for this outcome. One explanation is that children at this developmental stage are more flexible and have a less established style across the components of the dimensions when explaining events in their lives. This may partially explain why the consistent responses only emerge for children when examining familiar events. Similarly, it may be that with age and development children have greater consistency in the expectancies they have when explaining events. Initially, it may be that familiar events provide access to this style of explanation and with development and experience one’s consistent style across events become more clearly established. Some support for the influence of development on a clearly-defined explanatory style can been seen in previous research findings, which have shown that the relationship between explanatory style and depressive symptoms increases with age (Cole & Turner, 1993; Nolen-Hoeksema & Girgus, 1995; Turner & Cole, 1994). A consistent or habitual style of explanations across a variety of events may develop over time, with increasing age and with increasing experience producing more consistent expectancies and explanations for events. As this occurs children may develop a cognitive style that is used to predict outcomes and ease the burden of making sense of their increasingly complex world. A child’s approach to explaining familiar events rather than unfamiliar events may provide more insight into their developing explanatory style and the associated risk for depressive symptoms.
5.9.3. Relationship between Explanatory Style and Depressive Symptoms

This study tested the association between the measure of explanatory style and depressive symptoms. Explanations at Phase 1, after one experience of success or failure, were not related to depressive symptoms. However, a trend for an association between depressive symptoms and hopelessness explanations for familiar events emerged. However, at Phase 2, after two experiences of failure, a significant, negative, linear relationship between hopelessness and depressive symptoms emerged, but only where participants explained familiar events. Furthermore, the individual stable and global components of explanatory style and the composite score for hopelessness were correlated with depressive symptoms in the theoretically expected direction. The internal component of explanatory style was not associated with depressive symptoms and did not contribute to the scale scores when added to the stable and global components to produce the composite score of pessimism, nor to the relationship between pessimism and depressive symptoms. When the internal dimension was included to produce a composite score of pessimism the relationship with depressive symptoms decreased rather than increased.

The findings are consistent with the hopelessness theory rather than the RTLH and show that hopelessness, which does not include the component of internality, is more highly correlated with depressive symptoms than is pessimism. The relationship between depressive symptoms and hopelessness were the same regardless of whether the composite scale score for hopelessness or the composite difference score for hopelessness was used. The tendency to report greater stable and global explanations for failure on familiar events appears to contribute to hopelessness. Irrespective of the small separation between the components within a dimension, the Likert-type scale was able to accurately measure a child’s stable, global explanatory style using explanations for familiar events.
5.9.4. Relationship between Explanatory Style and Neuroticism

Neuroticism and depressive symptoms were strongly and positively correlated. These results are consistent with the results obtained in Study 1 and Study 3 where the correlations between these variables were also high. While the relationship between explanatory style and depressive symptoms was strong in this study, no significant relationship was found between neuroticism and the composite scores for pessimism and hopelessness. Research has reported that neuroticism has the potential to influence the accurate measure of pessimism or hopelessness (Watson & Clark, 1984) yet the results of this study (and those of Study 3 at Time 2) show that the use of a Likert-type scale approach can reduce the impact of neuroticism on measures of explanatory style for negative events in children. This shows the strong association between neuroticism and depressive symptoms had little influence on the relationship found between explanatory style and depressive symptoms. Based on these results it is suggested that accurate measurement of explanatory style using Likert-type scales and events that are familiar to children can not only provide more accurate measurement of the relationship between explanatory style and depressive symptoms but, it can also simultaneously reduce the impact of neuroticism on the measure of explanatory style.

5.9.5. Task Persistence and Explanations for Events

The RTLH makes predictions about behavioural responses following success and failure based on one’s explanatory style, stating that a pessimistic explanatory style will be associated with motivational, cognitive and performance consequences (Peterson & Seligman, 1984). In this study it was expected that persistence would be more likely to occur in children who showed greater levels of optimism for positive events (solvable tasks) and lower levels of hopelessness in their explanations for negative events (unsolvable tasks).
The results showed that for unfamiliar, unsolvable and solvable tasks hopelessness and optimism produced greater persistence. For familiar, unsolvable tasks hopelessness produced no differences in persistence.

These results only partially support expectations. For solvable tasks which were unfamiliar the results are consistent with the RTLH and with work completed by Dweck and Reppucci (1973) who found consecutive successes were associated with increasing persistence on tasks for children who were more optimistic in their explanations of their success. In children who were more optimistic, success at unfamiliar tasks produced a willingness to request additional challenges and select a harder task. Less optimistic children selected an easy task, despite previous successes. The results obtained in this study using solvable, unfamiliar tasks are consistent with the theoretically described giving up response.

Following failure experiences (unsolvable tasks) the results obtained were inconsistent with predictions. Familiar and unfamiliar events produced a different pattern of results following repeated failure. For unfamiliar tasks greater persistence occurred where children were more hopeless in their explanations rather than where they were less hopeless in explanations for failure. Furthermore, for familiar tasks there was no difference in persistence irrespective of hopelessness. These outcomes are harder to explain particularly given that higher hopelessness for familiar events was associated with greater depressive symptoms. It would be expected that depressive symptoms would increase the likelihood of giving up following repeated failures. From the results it appears that greater hopelessness produces greater persistence following failure at new or novel experience, whereas, repeated failure at familiar events does not produce the differences in persistence or hopelessness.

There are some additional factors that may influence persistence following failure at the unsolvable events. One factor is the importance attached to the event
(consistent with hopelessness theory). If a child does not view the task, and therefore the failure as important they may be less likely to persist, irrespective of their level of hopelessness. This may have influenced the outcome in the current study. Alternatively, a child’s expectancies about their likely success on the task may influence their level of persistence. In the current study, while it was known that all children had experienced puzzles before (the familiar task), the degree to which they had experienced previous success or failure at the task was unknown. This may have influenced the findings for children where familiar events were concerned as some children may have experienced previous successes with puzzles whereas others may have experienced many previous failures when puzzle tasks were more novel and less familiar. This in turn may have influenced their level of persistence. Where persistence occurs for unfamiliar tasks, and a successful outcome does not eventuate, repeated failure may reinforce stable and global explanations for performance. Should the initially unfamiliar event recur, the event may become more familiar but previous outcomes may influence ongoing levels of persistence. Some children, under conditions of repeated failure for familiar events, continue to try harder whereas other children give up, irrespective of the hopelessness of their explanations. Repetition of the same failure experience for a third time, for familiar and unfamiliar tasks, would further clarify the findings obtained here. In addition, replication of the study with a larger sample size would also increase statistical power as sample size is a limitation. Further exploration of this outcome in research may further clarify how persistence differs in children following positive or negative outcomes on familiar and unfamiliar tasks.

5.9.6. Summary and Conclusion

Previously there have been concerns raised about the existence of a consistent explanatory style in children (Cole & Turner, 1993). The results of this study show that hopelessness can be measured consistently in children when repeated failure at the same
familiar event occurs. This can improve the reliable and valid measurement of explanatory style in children. Explanations for familiar events produced a reliable measure of hopelessness across subscales and composite scales. One limitation of this study is the sample size and there is a need to replicate the study using a larger sample of participants to further explore differences found between causal explanations offered for familiar and unfamiliar tasks.

Explanations for familiar negative events produced the expected relationships between hopelessness and depressive symptoms irrespective of whether the measure of hopelessness was obtained from composite or difference scores. This approach provides a measure of the magnitude of a child’s internality, stability or globality when explaining events in their lives and this was found to be an important consideration when measuring explanatory style. Using this approach to measurement the theoretically expected relationship between hopelessness and depressive symptoms emerged. Furthermore, the influence of neuroticism on the relationship between explanatory style and depressive symptoms was minimized.

The overall integration of these findings with the previous studies, as well as the limitations and suggestions for future research arising from this research program are discussed in the following chapter.
CHAPTER 6.0

GENERAL DISCUSSION

The overall aims of this research programme were to investigate the factors that produced poor internal consistency on the CASQ and to improve the reliable measurement of explanatory style for children. The first two studies used the CASQ in its original form to determine its internal consistency, temporal stability and inter-item correlations. Later studies systematically manipulated different components of the scales, with Study 3 investigating the response format and Study 4 investigating the item content. A reliable and consistent measure of hopelessness was produced from spontaneous explanations for failure on familiar tasks only. The associations found between explanatory style and depressive symptoms were inconsistent. These results have important implications for our understanding of the relationships between explanatory style and emotional wellbeing. This chapter discusses the measurement and theoretical issues arising from the findings.

6.1. Psychometric Issues Affecting the Measurement of Explanatory Style

Consistent with previous research (see Appendix B) the findings obtained in this project show that the internal consistencies of the subscales and composite scales of the CASQ are below acceptable levels. In the first two studies reported in this thesis, the CASQ had poor internal consistency, inadequate inter-item correlation estimates and low test re-test reliability. These results were produced regardless of the way that the items were either included or excluded from the CASQ. When inter-item correlations were used to generate a revised version of the CASQ this scale also failed to replicate the item content of the CASQ-R, developed using the same technique (Thompson et al., 1998). The revised version did not produce improvements in either the internal consistency or stability of the measurement instrument.
The poor psychometric properties found are consistent with reports from previous research (e.g., Abela, 2001; Cole & Turner, 1993; Cunningham, 2003; Mezulis et al., 2006; Rueger & Malecki, 2007) and verified the need to improve the measurement of explanatory style for children and/or to reconsider the conceptualisation of explanatory style in children. This is particularly important as researchers continue to use the CASQ or CASQ-R to investigate the construct of explanatory style, in spite of its poor psychometric properties (e.g., Spence et al., 2005; McCarty, Vander Stoep, & McCauley, 2007; Mezulis et al., 2006). It is clear from the current research that, in its current form, the CASQ it is unable to provide an adequate measure of explanatory style that will add to research development and, in particular, improve understanding of its relationship to depressive symptoms.

Alternative measures of explanatory style for use with children that have improved psychometric properties are needed. To meet this need a second aim of this thesis was to explore issues potentially influencing the reliable measurement of explanatory style in children.

6.2. Issues Influencing the Reliable Measurement of Explanatory Style

The reliability of the composite scales of the CASQ was improved in Study 3 for both pessimism and hopelessness when the response format of the CASQ was changed from a category forced-choice to a fuzzy Likert-type scale where children rated each of the possible response options for each of the items on the scale. Using this approach the category responses chosen by the children were ignored and replaced with rating of a child’s agreement with each response. Children were not required to choose between an internal or external, stable or unstable and global or specific response. Instead, children rated each of the response options of the CASQ, based on how well each response option described them and this provided a measure of the extent that the answer was true or false for them. Using this technique to obtain a measure of explanatory style, the
frequently reported relationship between explanatory style for negative events and depressive symptoms was not found (e.g., Abela, 2001; Gladstone & Kaslow, 1995; Rueger & Malecki, 2007). The findings show that children responded consistently. However, in measuring agreement with both response options for each item, it is possible that the measure was in fact assessing a different construct to that originally tested with the CASQ. The original technique measured the preferred option of the child (e.g., either internal or external) whereas the fuzzy technique measured the degree of agreement with both options. It is possible that the latter technique resulted in an adequate measure of pessimism or hopelessness for each child as the emphasis was not on the choice between responses but rather the magnitude of agreement with each response option. The Likert-type approach to measurement was different from all previous measures of explanatory style where children were required to either make a forced choice (i.e., CASQ or CASQ-R) or respond using a bipolar scale (i.e., CASI, PASS-1). Using the Likert-type approach, it was possible to assess the discriminability or separation between the components of explanatory style and assess the influence of the degree of separation on the accurate measurement of explanatory style.

6.2.1. Discriminability of the components of the dimensions of explanatory style

The different outcomes in measurement found in Study 3, as shown by reliability estimates for the scales and the associations with depressive symptoms, may have been influenced by the discriminability or separation between the components of the dimensions of explanatory style (e.g., internal or external). Greater overlap rather than clear separation between the internal and external, stable and unstable, and global and specific components of explanatory style was found in both Study 3 and Study 4.

In Study 3 the measurement was obtained from the responses children made for each component of explanatory style using the content of the CASQ. In Study 4 explanatory style was measured using children’s own spontaneous explanations for
success or failure across the dimensions. This ensured there was a match between a child’s natural response and the content used to assess their explanatory style. When this approach was used, regardless of whether the measure of hopelessness was based on the composite stable or global component subscale scores (ignoring the other end of the bipolar scale) or whether a difference score was used (e.g., stable minus unstable) both techniques revealed a significant association between hopelessness and depressive symptoms. This shows that the small overlap between the different components of the dimensions was unimportant when explanations for familiar events were obtained.

The CASQ asks children to make a forced choice between options representing different components of a dimensional pair to obtain a measure of explanatory style. However, Study 3 showed that children had little separation in their agreement with the responses available for choice, so it is possible that random responding may have occurred across a number of items when the forced choice technique was used. Children may have been more likely to resort to random responding where the events were unfamiliar or where neither of the options closely matched their child’s natural responses. While the category approach used by the CASQ may have been introduced for ease of responding it clearly adds to the measurement error. Scales that require a forced-choice approach to measure explanatory style (i.e., the CASQ and CASQ-R) potentially censor and limit the availability of information when measuring a child’s causal explanations and they produce different outcomes than measures that include expanded response options (i.e., the CASI, PASS-1). This may partially explain the poor associations found between the CASQ and other measures of explanatory style (Conley et al., 2001).

Likert-type scales have advantages when measuring explanatory style. They can provide a child with increased flexibility when responding, can be successfully self-rated by children, and can also obtain a measure of a child’s degree or magnitude of
agreement for each component of each dimension. In the current studies this appeared to improve the sensitivity of measurement and reduced measurement error, as shown by improved reliability estimates, particularly in conditions where familiar events are explained. Not only did this approach increase the reliability of measurement, but it also may have led to more accurate estimations of the relationships between the individual components of explanatory style and depressive symptoms.

6.2.2. Event familiarity

Causal searching has been found to occur under specific conditions (Gendolla & Koller, 2001; Weiner, 1985; Wortman & Dintzer, 1978) and may not occur for the range of hypothetical events that vary in familiarity, domain or importance to the child. This led to investigation of the content used when measuring explanatory style. Study 4 ensured that the responses matched a child’s natural responses by using children’s spontaneous explanations for events in the measurement of their explanatory style. Event familiarity influences the consistency of causal explanations with explanations for familiar, unsolvable tasks (negative events) found to be internally consistent across the internal, stable and global subscales. The composite measure for hopelessness, also produces an internally consistent measure, with the same measure of pessimism, reaching a level of internal consistency just below that found acceptable (.66), but substantially better than that found when the CASQ was used to produce these measures. Event familiarity has not previously been directly tested in relation to explanatory style and it was found to be an important factor for accurate measurement. There are a number of possible explanations for the influence of event familiarity which can be drawn from attributional and cognitive theories.

Early empirical studies of attributions (e.g., Wortman & Dintzer, 1978) have shown that recurring events rather than unique events are more likely to produce causal searching. Wortman and Dintzer explained that recurring events produce differences in
expectation of controllability relative to one-off events, with recurring events considered to be more controllable. Consistent with this view, repeated failure at familiar events may be more likely to elicit causal searching because children may have expectations that these events are controllable and may expect to be able to predict the outcomes. On this basis, one possible explanation for the findings regarding event familiarity is that failure at familiar events may elicit a more meaningful causal search and provide better access to an individual’s consistent approach or style of explaining events. The same may not occur in circumstances where events are novel or unfamiliar as individuals are less likely to have specific expectations about outcomes for such events or about the controllability they have over success or failure.

The way in which past experience influences explanations for events may also contribute to differences between explanations for familiar and unfamiliar events (Gendolla & Koller, 2001; Weiner, 1985). Explanations for familiar events may include additional information as a result of retrospective information being incorporated into the causal explanation. This retrospective information may influence not only the expectations that children have for the event and its associated outcome but also the way children search for explanations when undertaking familiar tasks. The same may not occur when completing unfamiliar tasks as the individual has no previous information or expectations upon which to base their causal explanation. As a result of this, it is possible that familiar events are the events that give best access to one’s consistent style of explanation. Whether this style or approach of explanation is generalised and used across a variety of different types of familiar events has theoretical implications when considering explanatory style as a stable, trait like approach used to explain events.

Past experience with different events contributes to the development of cognitive schemas and the way events in one’s life are perceived and interpreted. These cognitive schemas reportedly become activated when explaining familiar rather than unfamiliar or
novel events (Beck & Weishaar, 1989). Based on the findings of this study it may be
this process that produces consistent causal explanations across the stable, global
dimensions as a measure of hopelessness for familiar events. The same may not occur
when explaining novel or unfamiliar events as there is no cognitive schema available to
assist in interpreting the failure experience. When combinations of familiar and
unfamiliar events are used, different explanations may be produced based on the way
cognitive schemas are activated. The current evidence suggests that uncontrollability,
recognised within the RTLH, is not sufficient to elicit a child’s consistent causal
explanations. Rather, repeated failure at familiar events may provide the circumstances
most likely to elicit a child’s consistent style of explanation. Hopelessness theory
stresses the importance of events and, consistent with this theory, it may be that familiar
events are more important than unfamiliar events to children.

The difference in the reliability of the measure of explanatory style found when
using familiar versus unfamiliar events has implications for accurate measurement.
Measures that include a combination of both familiar and unfamiliar events (e.g., the
CASQ) are likely to produce less accurate and reliable measurement of explanatory
style. Measures that include events that are relevant or familiar to children to gain a
measure of explanatory style are more likely to provide improved access to a child’s
consistent style of explanation across the components of explanatory style. Event
familiarity should be carefully considered when measuring explanatory style in future
studies with children between 9-12 years of age.

Consistent with the hopelessness theory, stable and global explanations for
events, as a measure of hopelessness, produced a significant association with
hopelessness and depression when the same familiar event was presented twice. The
association between hopelessness and depressive symptoms was not found when either
the same unfamiliar event was presented twice or when combinations of familiar and
unfamiliar events were presented. This suggests that repeated failure at familiar events elicited a response pattern that was found to be associated with depressive symptoms.

6.2.3. The contribution of the subscales to the composite measures of pessimism, hopelessness and optimism

Throughout this research programme the reliability of the composite scales of the CASQ was influenced by the way that the subscales (internality, stability, and globality) were combined to measure optimism, pessimism and hopelessness. When the associations of the subscales with depressive symptoms were evaluated the internal dimension did not produce the associations predicted by the RTLH in any of the four studies. Additionally, regardless of the technique used to measure internality (forced-choice, Likert-type responses to specific events, spontaneous explanations following negative experiences), no significant associations were found between internal explanations for negative events and the stable and global subscales. As a result, internal explanations for negative events cannot be considered pessimistic and the results do not support the RTLH. This outcome supports previous researchers (Contrada, 1991; Gotlib, 1991) who have criticised the inclusion of the internal-external dimension as a component of a pessimistic explanatory style. The results concerning the internality of one’s explanations are more consistent with previous research which has shown that internal explanations or an internal locus of control can be positive and adaptive rather than maladaptive (Ashkanasy & Gallois, 1987; Dweck & Licht, 1980; Ormel & Schaufeli, 1991; Weiner, 1990).

The findings regarding internality in this study are also consistent with the hopelessness theory which regards internality as independent of the dimensions of stability and globality when explaining negative events. The hopelessness theory does not consider internal explanations for events to be maladaptive or to contribute to the risk for depressive symptoms (Abramson et al., 1989). This theoretical assertion is
supported by the findings as there was a significant relationship between hopelessness in explanations for familiar, negative events and depressive symptoms. This relationship was not evident for pessimism, which also includes internality.

6.3. **Relationship between Explanatory Style and Neuroticism**

The influence of neuroticism on the relationship between explanatory style and depressive symptoms was investigated. A strong, positive, linear relationship was found between neuroticism and depressive symptoms. Researchers (Clark & Watson, 1995) have reported that negative affect or neuroticism has the potential to confound the relationship between other constructs and pessimism.

In Studies 1 and 3 a strong, positive, linear association was found between neuroticism and depressive symptoms. A weak, positive, linear association between both pessimism and hopelessness were found when the original CASQ scoring technique was used. However, when a Likert-type response scale was used (Studies 3 and 4) to measure explanatory style, no significant, linear relationship between explanatory style and neuroticism was found.

The different pattern of results concerning the relationship between explanatory style and neuroticism, in Studies 3 and 4, may have occurred as a result of the Likert-type response scale, which not only improved reliability but also reduced measurement error. One possible outcome is that with the increased flexibility available when using the Likert-type scales to produce a measure of explanatory style, the influence of neuroticism may have been reduced irrespective of the strong relationship between explanatory style and depressive symptoms. In Study 3 this may have occurred as children did not have to make a forced choice between options with which they had little agreement. In Study 4, where a child’s own spontaneous explanations were elicited and Likert-type scales were used again, children were able to elicit their own explanations and rate these explanations across the components of explanatory style.
This did not require that they make choices between statements with variations in negatively worded content. These changes would reduce the opportunities for negative response wording on questionnaires to influence response selection as a result of neuroticism. The strong relationship between depressive symptoms and neuroticism has the potential to influence the relationship between pessimism or hopelessness and depressive symptoms. It may be that, under circumstances where the children have little clear agreement or find it difficult to separate between the options for choice (when completing the CASQ in its original form) broad traits such as neuroticism have more potential to influence response selection on the CASQ. This may enable neuroticism to have greater influence on the measure of explanatory style and ultimately the relationship between explanatory style and depressive symptoms, given the strong relationship found between neuroticism and depressive symptoms.

This is consistent with Clark and Watson’s (1995) assertion that neuroticism can interfere with measurement accuracy. With increased accuracy in the measure of explanatory style the influence of neuroticism can be reduced, providing a clearer understanding of the relationship between explanatory style and depressive symptoms without being strongly influenced by the association between depressive symptoms and neuroticism.

6.3.1. Persistence and explanatory style

Behavioural persistence or the likelihood of giving up was investigated to examine the influence of hopelessness following success or failure. Consistent with the RTLH and research conducted by Dweck and colleagues (1973, 1980), greater persistence was found in children who were more optimistic in their explanations for successes on unfamiliar tasks. However, a different pattern of results emerged following failure at unfamiliar tasks, with children who were more hopeless showing greater persistence. Furthermore, failure at two consecutive familiar tasks produced no
differences in persistence for children who were more or less hopeless in their explanations. Again, these results show that task familiarity has an impact in terms of outcomes for behavioural persistence. However, the results following two consecutive failures at familiar tasks were not consistent with theoretical expectations. It was expected that children with more hopeless responses following two failures at the familiar task would show less task persistence.

Successes at unfamiliar events that were explained optimistically, or failure at unfamiliar events that were explained as hopeless, both produced increased persistence. These results are similar to those found in the original helplessness studies which showed that some individuals persisted in the face of uncontrollable negative events (shocks or uncontrollable noise) whereas others did not persist. It was this finding that resulted in the theoretical reformulation of the original helplessness theory and ultimately produced the RTLH. However, the results in this study suggest that there are factors other than helplessness that may have some association with the level of persistence and the behavioural responses of children in addition to the explanations offered for the events.

One factor influencing persistence that is consistent with the hopelessness theory may be the perceived importance that the individual attaches to the outcome (success or failure), regardless of the explanation offered. In Study 4 children were not asked to indicate how important success on the tasks was for them, nor was a measure obtained of their expectancies of success on the tasks. More data on task importance and/or expectancies about their performance might help clarify the association between behavioural persistence and causal explanations for familiar and unfamiliar events. Another further issue may relate to depression. Children who are depressed may have different behavioural responses to adversity relative to children from a nonclinical sample. It may be that hopelessness explanations in combination with depression are
associated with significantly lower task persistence than hopeless explanations alone. These areas need further exploration in research to enable better understanding of the associations between persistence and causal explanations for familiar and unfamiliar events.

6.4. **Conclusions, Limitations and Future Research Directions**

Explanatory style (and the associated RTLH and hopelessness theory) continues to be of interest to researchers today due to the associations with mental and emotional health. The predominant foci of this thesis were the relationship between explanatory style for negative events and depressive symptoms and the reliable measurement of explanatory style. The results show that it is possible to obtain a consistent measure of explanatory style from children using their own spontaneous explanations for events. They also show that the theoretically predicted relationship between explanatory style and hopelessness emerges when this technique is used to assess children’s explanations for familiar, negative events. Based on this outcome it appears that in children within this age group explanatory style can not be considered a stable or habitual approach to explanation across all event types. The results suggest children use different approaches to explaining events and that familiar events produce a stable style of explanations. However, it remains unclear whether the same explanatory style extends beyond the same type of familiar events or to events which are familiar occurring within another domain (i.e. interpersonal). These remain questions for further research.

This research programme was designed to evaluate the current measurement instrument used to assess explanatory style in children and to determine the extent to which pessimism and hopelessness are associated with depressive symptoms. The results show explanatory style can be measured more reliably in children than has been accomplished with the CASQ. Whereas one outcome of the current research programme was a more reliable technique for measuring children’s explanatory style,
there are a number of limitations to the studies. One limitation is the generalisability of the findings. The applicability of the results to children across different developmental phases is unknown. All studies reported here were conducted with children aged between 9 and 12 years. While this was done to reduce sample heterogeneity and measurement variability, a condition necessary to meet the purposes of this study, it did not allow exploration of developmental differences in explanatory style in children. Consequently, the results of the study may not generalise to all children, adolescents or adults. Given the differences in findings for familiar and unfamiliar events, it would be prudent to replicate the study with other age groups of participants to assess if these findings were consistent across all age ranges. Similarly, it would also be important to replicate Study 4 using a second, larger sample of participants. This would ensure the findings obtained were not specific to the sample of children included in this project.

In Study 4 a more consistent style of explanation for negative events was found for children following two failures, when using the same familiar task, but not when using the same unfamiliar task. It is possible that this result was obtained because children in this stage of childhood may be in the process of developing a more consistent explanatory style; therefore, the generalisability of their explanations for events may be less applicable to unfamiliar events (or combinations of familiar and unfamiliar events) and only accessible under very specific conditions. Further research is needed to determine if the same pattern of responding is found in a sample of older participants. Moreover, a longitudinal study would provide information on any age-related stability or change in the consistency of explanatory style, allowing for more conclusions about development. Given that the results clearly show that there are differences in explanations offered for familiar and unfamiliar events, it seems feasible that, with the further experience with a variety of events that occurs naturally with age, explanatory style may become clearer and more stable across time.
While some studies have found differences in the causal explanations children offer across the interpersonal and achievement domains (Bell et al., 2004; Turner & Cole, 1994), no studies to date have compared explanations between familiar and unfamiliar events in both social- and achievement-focused domains. Such a study would allow us to determine if explanatory style may be better considered as domain specific, due to familiarity or both. Domain specificity has received some support from researchers who have examined children’s perceptions of self worth across domains (e.g., Harter & Whitesell, 2003) and the current research programme adds to this by showing that familiarity with events within a domain is also important.

Further exploration of the differences in explanations for positive and negative events is another area for future research. Study 4 did not examine differences in explanations of success (positive events) for familiar tasks or combinations of familiar and unfamiliar tasks. Given the marked differences in explanations for unfamiliar and familiar unsolvable tasks (negative events), replication of this study with the inclusion of all combinations of familiar/unfamiliarity for solvable tasks would be worthwhile. Furthermore, given the differences noted in persistence on unfamiliar versus familiar tasks, future research on persistence should also assess event importance and outcome and expectancies to see if they account for the differences in persistence.

The relatively small sample size used in the final study limits the power of the results. The sample consisted of 111 children, which provided a modest number of participants within each of the five different conditions. Replication of the study with a larger sample size would improve statistical power and the ability to demonstrate the effects using a larger variety of statistical techniques, such as regression analyses.

6.5. Concluding Comments

The results of this research programme highlight and identify a number of issues to consider when measuring explanatory style in children. Specifically, Likert-type
scales, which provide greater flexibility in responding, produced a more reliable measure of children’s explanatory style. This reliability improved when explanations for familiar events were obtained. Second, there appears to be greater ambiguity in children’s causal explanations across the dimensions of explanatory style than previously recognised. A Likert–type scale approach can ensure that the overlap in agreement can be accounted for accurately, either by individually measuring a child’s agreement with each component of a dimension, or by producing a difference score to reflect a child’s degree of hopelessness. In Study 4 either scoring approach produced a similar relationship between hopelessness and depressive symptoms. Finally, the results of this study show that the familiarity of the task undertaken has a considerable influence on the consistency of children’s causal explanations. The results show children are only consistent in the explanations offered for familiar events. However, event familiarity was identified as an issue of primary importance to accurate measurement.

The findings provide some answers to the issues raised in the literature regarding the measurement of explanatory style. Previous problems with measurement have even culminated in researchers going so far as to suggest that children may not have a consistent explanatory style (Cole & Turner, 1993). The results show that children offer consistent explanations for familiar events as opposed to unfamiliar events or combinations of familiar and unfamiliar events. Therefore, it appears their style of explanation is more specific than trait-like within this stage of development. Based on the different outcomes obtained where children explained combinations of familiar and unfamiliar events, explanatory style does not appear to generalise to all types of events, but rather emerges when children explain two of the same events which are familiar. This outcome appears consistent with the view of the hopelessness theory and Abramson et al. (1989) who recognise that individuals have specific areas of
vulnerability. It may be that for children in order for these vulnerabilities to be accessed the events used to measure their explanatory style require them to have some prior experience, expectancies about the outcome, and ultimately some familiarity with the events in order to obtain access to their explanatory style. Under these conditions the theoretically predicted relationship between depressive symptoms and hopelessness emerges.

Overall, the results show that hopelessness can be accurately measured in children when they explain two events that are familiar, within a specific domain. Given this outcome, it is recommended that the CASQ, in its current form, no longer be used to measure explanatory style in children. Ongoing use of the CASQ will perpetuate confusion in the literature and potentially limit our ability to better understand the theoretical construct of explanatory style and the predicted relationships between explanatory style and other factors such as depressive symptoms. Given the demands of measuring explanatory style on an individual basis the development of a revised group administered self report approach that incorporates the findings of this project would be worthwhile. A self report measure that includes both Likert-type responses and events selected based on familiarity for children may be one method of improving the reliable measurement of explanatory style in 9 to 12 year old children.

This thesis has shown that it is possible to produce a reliable measure of explanatory style by eliciting children’s causal explanations for familiar events and measuring the stability and globality of their explanations using Likert-type scales. Further, the theoretically predicted relationships between hopelessness and depressive symptoms emerge when this method of measurement is used. This advances the measurement of explanatory style in children and adds to the current foundation of research on the associations between explanatory style and mental health, specifically depressive symptoms. Although there is much future research to be done, the findings
reported here denote a path towards better measurement of children’s explanatory style. The findings also provide a better understanding of how children’s explanations for failures and successes may be a foundation for persistence, motivation and mental health, especially when children’s natural responses to familiar events are considered.
REFERENCES


APPENDIX A

THE CHILDREN’S ATTRIBUTIONAL STYLE QUESTIONNAIRE (CASQ)

Instructions:
Different kids think in different ways. I want you to look at a bunch of questions. Each question is like a little story, for each story there are two ways you might react. You need to choose, one way or the other, the answer that is closest to how you think you would react if this particular thing happened to you.

Imagine each of these stories have happened to you. Then circle either the A or B answer – the one that best describes how you think you might react.

The best thing about this test is that there are no wrong answers! So just try to best answer how you think you would react in each of these little stories.

1. You get an A on a test.*
   A. I am smart.
   B. I am good at the subject that the test was in.

2. You play a game with some friends and you win.
   A. The people that I played with did not play the game well.
   B. I play that game well.

3. You spend a night at a friend's house and you have a good time.
   A. My friend was in a friendly mood that night.
   B. Everyone in my friend's family was in a friendly mood that night.

4. You go on holiday with a group of people and you have fun.
   A. I was in a good mood.
   B. The people I was with were in good moods.

5. All of your friends catch a cold except you.
   A. I have been healthy lately.
   B. I am a healthy person.

6. Your pet gets run over by a car.
   A. I don't take good care of my pets.
   B. Drivers are not cautious enough.

7. Some kids you know say that they don't like you.’
   A. Once in a while people are mean to me.
   B. Once in a while I am mean to other people.

8. You get very good grades.
   A. Schoolwork is simple.
   B. I am a hard worker.

9. You meet a friend and your friend tells you that you look nice.
   A. My friend felt like praising the way people looked that day.
   B. Usually my friend praises the way people look.
10. A good friend tells you that he hates you.*
   A. My friend was in a bad mood that day.
   B. I wasn't nice to m’ friend that day.

11. You tell a joke and no one laughs.
   A. I don't tell joke’s well.
   B. The joke is so well known that it is no longer funny.

12. Your teacher gives a lesson and you do not understand it.
    A. I didn't pay attention to anything that day.
    B. I didn't pay attention when my teacher was talking.

    A. My teacher makes hard tests.
    B. The past few weeks, my teacher has made hard tests.

14. You gain a lot of weight and start to look fat.
    A. The food I have to eat is fattening.
    B. I like fattening foods.

15. A person steals money from you.*
    A. That person is dishonest.
    B. People are dishonest.

16. Your parents praise something that you make.*
    A. I am good at making some things.
    B. My parents like some things I make.

17. You play a game and you win money.
    A. I am a lucky person.
    B. I am lucky when I play games.

18. You almost drown when swimming in a river.
    A. I am not a very careful person.
    B. Somedays I am not a careful person.

19. You are invited to a lot of parties.
    A. A lot of people have been acting friendly toward me lately.
    B. I have been acting friendly toward a lot of people lately.

20. A grown-up yells at you.
    A. That person yelled at the first person he saw.
    B. That person yelled at a lot of people he saw that day.

21. You do a project with a group of kids and it turns out badly.*
    A. I don't work well with the people in the group.
    B. I never work well with a group.

22. You make a new friend.*
    A. I am a nice person.
    B. The people that I meet are nice.

23. You have been getting along well with your family.*
    A. I am easy to get along with when I am with my family.
    B. Once in a while I am easy to get along with when I am with my family.
24. You try and sell chocolates but no one will buy any.
   A. Lately a lot of children are selling things, so people don't want to buy anything else from children.
   B. People don't like to buy things from children.

25. You play a game and you win.
   A. Sometimes I try as hard as I can at games.
   B. Sometimes I try as hard as I can.

26. You get a bad grade in school.*
   A. I am stupid.
   B. Teachers are unfair graders.

27. You walk into a door and you get a bloody nose.*
   A. I wasn't looking where I was going.
   B. I have been careless lately.

28. You miss the ball and your team loses the game.
   A. I didn't try hard while playing ball that day.
   B. I usually do not try hard when I am playing ball.

29. You twist your ankle in sport class.
   A. The past few weeks, the sports we played in class have been dangerous.
   B. The past few weeks I have been clumsy in sports class.

30. Your parents take you to the beach and you have a good time.
   A. Everything at the beach was nice that day.
   B. The weather at the beach was nice that day.

31. You take a train which arrives so late that you miss a movie.
   A. The past few days there have been problems with the train being on time.
   B. The trains are almost never on time.

32. Your mother makes you your favourite dinner.*
   A. There are a few things that my mother will do to please me.
   B. My mother likes to please me.

33. The team that you are on loses a game.*
   A. The team members don't play well together.
   B. That day the team members didn't play well together.

34. You finish your homework quickly.
   A. Lately I have been doing everything quickly.
   B. Lately I have been doing schoolwork quickly.

35. Your teacher asks you a question and you give the wrong answer.
   A. I get nervous when I have to answer questions.
   B. That day I got nervous when I had to answer questions.

36. You get on the wrong bus and you get lost.
   A. That day I wasn't paying attention to what was going on.
   B. I usually don't pay attention to what's going on.

37. You go to an amusement park and you have a good time.*
   A. I usually enjoy myself at amusement parks.
   B. I usually enjoy myself.
38. An older kid slaps you in the face.
   A. I teased his younger brother.
   B. His younger brother told him I had teased him.

39. You get all the toys you want on your birthday.
   A. People always guess right as to what toys to buy me for my birthday.
   B. This birthday, people guessed right as to what toys I wanted.

40. You take a holiday in the country and you have a wonderful time.
   A. The country is a beautiful place to be.
   B. The time of year that we went was beautiful.

41. Your neighbours ask you over for dinner.
   A. Sometimes people are in kind moods.
   B. People are kind.

42. You have a substitute teacher and she likes you.*
   A. I was well behaved during class that day.
   B. I am almost always well behaved during class.

43. You make your friends happy.*
   A. I am a fun person to be with.
   B. Sometimes I am a fun person to be with.

44. You get a free ice cream cone.
   A. I was friendly to the ice cream man that day.
   B. The ice cream man was feeling friendly that day.

45. At your friend's party and the magician asks you to help him out.
   A. It was just luck that I got picked.
   B. I looked really interested in what was going on.

46. You try and convince a kid to go to the movies with you but he won't go.
   A. That day he did not feel like doing anything.
   B. That day he did not feel like going to the movies.

47. Your parents get a divorce.
   A. It is hard for people to get along well when they are married.
   B. It is hard for my parents to get along well when they are married.

48. You have been trying to get into a club and you don't get in.
   A. I don't get along well with other people.
   B. I can't get along well with the people in the club.

Note. * denotes items on the CASQ which appear on the CASQ-R as identified from Thompson et al. (1998).
APPENDIX B

ITEMS UNIQUE TO THE CASQ-R

(AS REPORTED IN THOMPSON ET AL., 1998)

You break a glass
   A. I am not careful enough
   B. Sometimes I am not careful enough

You have a messy room
   A. I did not clean my room that day
   B. I usually do not clean my room

You do not get your chores done at home
   A. I was lazy that day
   B. Many days I am lazy

You go to a friend’s party and you have fun
   A. Your friend usually gives good parties
   B. Your friend gave a good party that day

You put a hard puzzle together
   A. I am good at putting puzzles together
   B. I am good at doing many things

You try out for a sports team and do not make it
   A. I am not good at sports
   B. The other kids who tried out are very good at sports

You fail a test
   A. All tests are hard
   B. Only some tests are hard

You hit a home run in a ball game
   A. I swung the bat just right
   B. The pitcher threw an easy pitch

You do the best in your class on a paper
   A. The other kids in my class did not work hard on their papers
   B. I worked hard on the paper
# APPENDIX C

## STUDIES REPORTING RELIABILITIES OF THE CASQ SCALES

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<td>CASQ</td>
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<td>Not reported</td>
</tr>
<tr>
<td>Wagner et al., 1998</td>
<td>CASQ</td>
<td>13-18</td>
<td>Not reported</td>
</tr>
<tr>
<td>Yates et al., 1995</td>
<td>CASQ</td>
<td>Grades 4, 6 &amp; 7</td>
<td>Not reported</td>
</tr>
</tbody>
</table>

Note: ^a = scales of the CASQ were altered in an attempt to improve reliability of measurement; ^b = composite negative scales reflecting hopelessness (combination of stable and global explanations) for negative events; ^c = range of internal consistencies across multiple testing intervals.