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## The Relationship Between Global Self-Concept and Attribution Preference in Primary School Children

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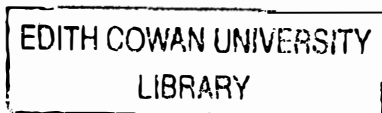
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# **The Relationship between Global Self-Concept and Attribution Preference in Primary School Students**

**by**

**Carolyn Moore BA(Ed)**



**A thesis submitted in partial fulfilment of the requirements of the  
award of Bachelor of Education with Honours**

**at the Faculty of Education, Edith Cowan University**

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## **Abstract**

The purpose of this study was to compare low and high self-concept students to ascertain whether they differ in the causes they attribute to their performance on a problem-solving task. The relationships of gender to self-concept and gender to attribution preference were also examined. This study differed from previous studies examining relationships with causal attributions by focusing on students' attribution preferences for a task with an equivocal outcome as opposed to tasks with success and failure outcomes.

Eighty-two year seven students from four Perth metropolitan primary schools participated in this study. The study was conducted using a 2 x 2 factorial design, with two levels of self-concept (low and high) and two gender groups (male and female), and four dependent variables. The dependent variables were the four causal attributions (ability, effort, luck, and task difficulty).

The Piers-Harris Children's Self-Concept Scale was used to measure students' global self-concept. An interrupted task procedure was developed to measure students' attribution preferences for an equivocal outcome. Quantitative statistical analyses were applied to the data collected to test for significant differences between the means of the relevant variables.

The results from these analyses indicated that low and high self-concept students do not differ in the causes they attribute to their performance on a problem-solving task with an equivocal outcome. Males were found to attribute their performance more to ability than females. However, no other gender differences in attribution preference were found. There was also no significant difference between the mean scores of males and females on the global self-concept measure.

A number of conclusions were made based on the findings from this study. First, that global self-concept is not predictive of differences in students' attribution preferences for an equivocal outcome. Second, that males more than females take more responsibility for their task outcomes by attributing their performance more to their own ability. Finally, that gender is not a mediator for global self-concept.

## Declaration

I certify that this thesis does not, to the best of my belief:

- (i) incorporate without acknowledgment any material previously submitted for a degree or diploma in any institution of higher education;
- (ii) contain any material previously published or written by another person except where due reference is made in the text; or
- (iii) contain any defamatory material.

Signed: \_\_\_\_\_

Date: 4/3/98

## **Acknowledgments**

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# Chapter 1

## Introduction

Present insights into the self-perceptions of students have been aided by research on the self-concept and research on attribution theory. By focusing on both of these constructs in educational settings, researchers have gained an understanding of students' learning and behaviour. This chapter introduces these constructs and explains how they relate to the purpose of the present study.

The *self-concept* is defined as a set of beliefs, attitudes, and expectations an individual has acquired about the type of person he or she is (Bracken, 1996). These perceptions individuals have of themselves relate to a number of areas, including intellectual status, physical appearance and body image, personality characteristics, and emotional tendencies. Self-theorists propose that the self-concept is not innate, it is the product of a lifetime of experiences developed through individuals' interactions with their environment (Burns, 1982).

*Attribution theory* is a theory of motivation that attempts to explain how an individual's explanations, justifications, and excuses influence behaviour (Woolfolk, 1993). Attribution theorists assume that humans are motivated essentially to

understand themselves and the world around them; to “attain a cognitive mastery of the causal structure of the environment” (Stipek, 1993, p. 126).

### **Self-Concept**

The self-concept remains one of the most widely researched constructs in the social sciences (Hattie, 1992). A number of theories regarding the self have been proposed over the past one hundred years. The four main theoretical approaches of this century are outlined here.

James (1910) wrote extensively on the self as a major determiner of personality. James discriminated between two global aspects of the self - *I* (the knower or doer) and *me* (the self as a known). In describing the self, James proposed that there were three constituents to the self, a *material self* (body, family, and possessions), a *social self* (views others hold of the individual) and a *spiritual self* (emotions).

Cooley (1912) and Mead (1934) developed these ideas of the self in the following decades. They viewed the self as being dependent on the social interaction of the individual with his or her environment. Cooley introduced the theory of the *looking-glass self*, which was based on the assumption that one’s self-concept is significantly influenced by what the individual thinks others think of him or her. In recognition of Cooley’s looking-glass self, Mead proposed that the self was essentially a social process, developed into a unique entity through the use of language within a social context.

Adler (1927), Freud (1943) and Erikson (1963) defined the self in terms of psychoanalytic concepts. These theorists were particularly interested in the *self-other* relationship. In psychoanalytic theory, the self is described as being composed of three parts - the *ego*, the *id* and the *superego*. The ego, essentially the self-concept, is a mediational structure which is learned as a result of contact with social reality. The various psychoanalytic theorists argued as to the basis of this social reality, with Freud suggesting it was psycho-sexual in nature, Adler that it was family and society, and Erikson that it was cultural.

Phenomenological approaches to understanding the self emerged in the middle decades of the present century. Theorists supporting these approaches emphasised that an individual's self-concept could best be understood not by focusing on physical events, but rather how such events are perceived and experienced (Burns, 1982). Phenomenologists Snygg and Coombs (1949) claimed that individuals' behaviour is a result of their perceptions of a situation and themselves at the moment of their action. Similarly, Rogers (1951) asserted that individuals behave in terms of the way in which they see themselves, and that this is a conscious activity.

Contemporary theorists of the self have elaborated on earlier theories, but have come no closer to consensus on a definition of self-concept than their predecessors. There have been two major theoretical approaches to understanding the self-concept in the last three decades. These have been self-concept as a unifactorial construct versus self-concept as a multifaceted-hierarchical construct. The unifactorial approach, most widely supported by Coopersmith (1967) and Marx and Winne (1977), suggests that

the self-concept is so heavily dominated by a single, general factor (the *general* or *global* self-concept) that separate factors cannot be adequately differentiated. The proponents of this approach also claim that children are too immature to make distinctions between different facets of self-concept, however, they concede that these different facets may become more or less important when compared to similar constructs. For example, facets of the academic self-concept become more important when compared to academic achievement (Hattie, 1992).

The multifaceted-hierarchical approach to self-concept is gaining increasing acceptance among contemporary theorists (Marsh & Shavelson, 1985; Shavelson, Hubner, & Stanton, 1976). The proponents of this approach claim that the global self-concept is constructed of a number of different facets. Global, or general, self-concept sits at the top of the hierarchical tree, which then breaks into a number of smaller components, such as academic, social, emotional and physical self-concepts. The number and type of these components varies from one theory to another. The stronger the influence of the global self-concept, the closer to a unifactorial construct the hierarchical construct becomes (Hattie, 1992).

The lack of agreement surrounding the definition and dimensionality of self-concept has made the measurement of self-concept a difficult task. This measurement is made more difficult by the fact that the self-concept can not be seen, which presents limitations in determining its state at any given point in time (Labenne & Greene, 1969). Consequently, a large number of instruments have been developed that claim to

measure the self-concept. Hattie (1992) concludes that “there seems to be as many measures of self-concept as there are researchers of the topic” (p. 140).

The terms ‘self-concept’ and ‘self-esteem’ are often used interchangeably among measurement instruments. Theoretically the two constructs differ. Whereas self-concept is defined as the perceptions individuals have of themselves, *self-esteem* is defined as the evaluations individuals place on those perceptions (Burns, 1982). Despite this theoretical difference, in practice it is generally accepted that measures of one construct can be applied to the other (Hattie, 1992).

There are generally two ways to measure the self-concept: by an individual’s completion of a test or scale (self-report) or by observing an individual’s behaviour. A combination of these two methods can also be used. The self-report technique is the most common form of measurement. Although there is a wide range of self-report instruments that claim to measure various aspects of the self-concept, relatively few of these instruments have been thoroughly developed, commercially published or widely used in research or clinical practice (Bracken, 1996). As a result, there has been a relatively small number of test authors (e.g., Coopersmith, 1967; Piers & Harris, 1964; Rosenberg, 1979) who have made long-lasting contributions of significance to this field.

### ***Attribution Theory***

Attribution theory has a far shorter history than that of self-concept. The origin of attribution theory can be traced to the 1950s, at a time when social psychologists were largely interested in the study of human perception. Attribution theory developed



from this when theorists began to direct greater attention to people's ascriptions to the causes of their behaviour rather than their perceptions of the behaviour itself. The three most prominent attribution theories have been authored by Heider (1958), Jones and Davis (1965), and Kelley (1967).

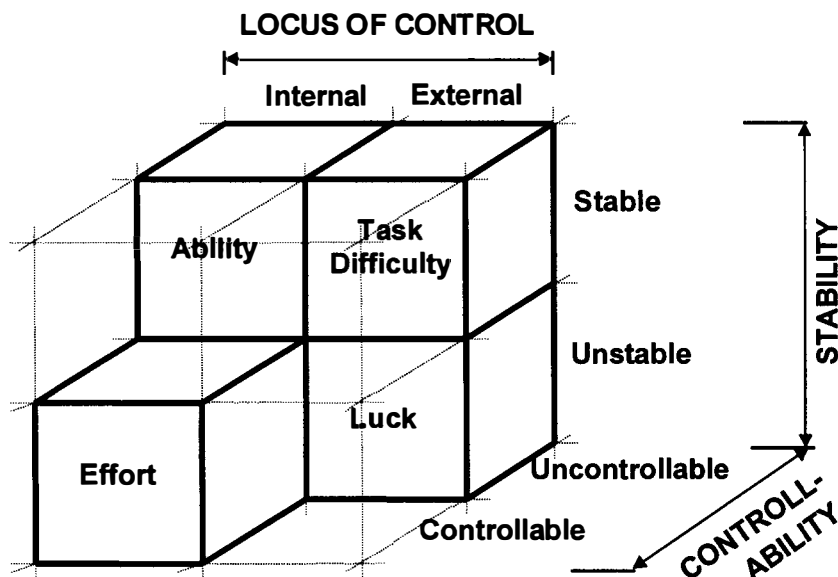
Heider (1958) is one of the earliest theorists to have provided a psychological framework to explain how people attempt to understand the causes of their own actions. Heider proposed a *naive analysis of action theory*, in which he argued that a person attributes the cause of some action either to internal (dispositional) or external (environmental) factors. Heider's distinction of these different classes of attributions served as a basis for subsequent attribution theories (Antaki & Brewin, 1982).

Following this early work, Jones and Davis (1965) proposed an attribution theory which they called the *correspondent inference theory*. This theory placed particular emphasis on understanding the internal cause of a single instance of behaviour (with an external cause a default option made only when an internal cause could not be found). Their theory focused on identifying how people distinguish between different internal causes of behaviour.

Kelley's (1967) *multi-dimensional theory of attribution* states that individuals attempt to explain behaviour in terms of how three variables covary across time. These variables were designated as the distinctiveness of the behaviour, its consensus, and its consistency. *Distinctiveness* of the behaviour describes how often a similar behaviour occurs (e.g., is it commonplace or something that stands out). *Consensus* describes whether other people act in a similar way in the same situation. *Consistency*

describes how similarly the person acts in a similar situation (e.g., how consistent individuals' behaviour is with their typical behaviour).

Based on this conceptual groundwork, Weiner, Frieze, Kukla, Reed, Rest and Rosenbaum (1971) proposed that individuals generally attribute their success and failure in achievement-related situations to one of four *causal attributions*, with their typical causal attribution for a given task defined as their *attribution preference*. These causal attributions are defined as the perceptions or beliefs individuals hold to explain an event by relating it to a cause. The four causal attributions proposed by Weiner and colleagues are ability, effort, luck, and task difficulty. These four attributions exist along three dimensions: locus of control, stability, and controllability, as shown in Figure 1.



**Figure 1.** The Locus of Control, Stability and Controllability Dimensions of Attribution Theory (Barry & King, 1993, p. 392)

*Ability* is defined as the acquired knowledge and skills an individual brings to a task. *Effort* is defined as the physical and mental energy an individual exerts in performing a task. *Luck* is defined as the role that chance plays in the performance of a task. *Task difficulty* is defined as how easy or hard a task is to complete (Weiner, 1974).

In the *locus of control* dimension, attributions are organised as either *internal* or *external* (Weiner, 1974). Ability and effort are internal attributions because they refer directly to the person making the attribution (e.g., I *am* incompetent at spelling or I *tried* hard in my math test). Task difficulty and luck are external attributions because they refer indirectly to the person making the attribution (e.g., I failed my science test because the test was *too hard* or I did well in class today because I was *lucky* with the questions the teacher asked).

Attributions can also be classified as *stable* or *unstable* (Weiner, 1974). A stable attribution tends to remain the same over time and situation, whereas an unstable attribution will vary across time and situation. Ability and task difficulty are viewed as stable attributions (e.g., I have always been good at spelling or timed maths tests are always hard). Effort and luck are viewed as unstable attributions (e.g., on some days students feel like trying hard, but do not always try equally hard in all situations, or sometimes a student will have a lucky day, but not every day).

The four attributions can also be categorised as *controllable* or *uncontrollable* (Weiner, 1974). A person can either consciously manipulate a situation towards a desired end or not. Effort is the only attribution that is viewed as being controllable

(e.g., people can consciously try harder tomorrow than they did today in an effort to reach a desired goal). Ability is considered as an uncontrollable attribution, for it is a quality which a person is born with or which is acquired early in life as a result of specific experiences that develop one's capabilities. Likewise, luck and task difficulty are viewed as being uncontrollable, at least by one's self.

Research into the field of attribution theory has increased in recent years, but measurement techniques in this area remain largely untested for reliability and validity. Similar problems arise to those in the field of self-concept, with difficulty in measuring an intangible entity. As a result, a large number of measurement devices have been developed. Current measures can generally be classified into three groups. *Open-ended questioning* is normally performed in an interview style, with the researcher making qualitative judgements on individuals' responses to questions such as "Why do you think you did well on the test?". *Self-report measures* involve individuals responding to scales or checklists related to causal attributions. The *direct-rating method* draws on a combination of these two techniques, with individuals stating the reason for their performance, then rating the reason on attributional dimensions (Benson, 1988).

### ***Purpose of the Study***

Research on attribution theory and self-concept has important implications for classroom practice. Insights into attribution theory have enabled educational researchers to identify the causes that students attribute to their performance in achievement settings. These perceived causes are critical in the classroom because

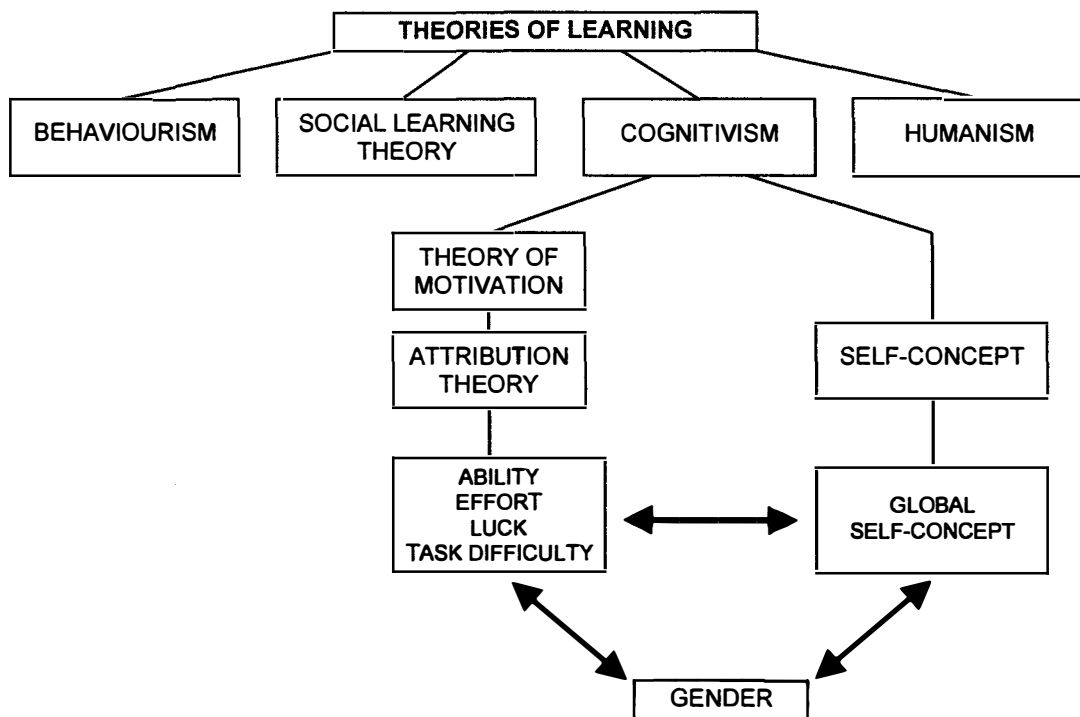
they influence expectations for future performance, feelings of potency, and subsequent motivation to put forward effort (Hunter & Barker, 1987). Self-concept has also been shown to impact on students' behaviour and learning. Students who more clearly and positively assess their own ability to perform in school and who have more positive views of themselves and their capacities tend to do better in their schoolwork than those with uncertain, negative views of themselves (Burns, 1982). It is theorised that a substantive relationship exists between self-concept and attribution preference in individuals (Burns, 1979; Hattie, 1992; Marsh, Relich & Smith, 1983).

The purpose of the present study is to further explore the relationship between self-concept and attribution preference. In exploring this relationship the following main research question will be investigated: What is the relationship between global self-concept and attribution preference in selected groups of primary-aged children? In addition to this, two secondary research questions will be investigated: Is there a difference in attribution preference between males and females? Is there a difference in global self-concept between males and females?

Many teachers have a rudimentary knowledge of the terms attribution theory and self-concept, but few fully grasp the importance of these concepts in understanding students' learning and behaviour. This study aims to provide teachers with a better understanding of these terms and how they are inter-related. By being one of the first studies to measure students' attribution preferences for a task with an equivocal outcome, this study will uniquely contribute to the body of knowledge in this field.

## Conceptual Framework

A range of theories exists to explain the process of learning. The four most common theories are behaviourism, social learning theory, cognitivism, and humanism. The self-concept and attribution theory relate to learning within a cognitive framework. Figure 2 demonstrates how the present study relates to this framework.



**Figure 2.** Conceptual Framework for Examining the Relationship between Global Self-Concept and Attribution Preference in Primary School Students.

Note: The arrows represent the relationships under investigation in the present study.

The cognitive approach to learning views learning as “an active mental process of acquiring, remembering, and using knowledge” (Woolfolk, 1993, p. 238). Cognitive theorists claim that learning is the result of students’ attempts to make sense of their world. The way students think about situations, along with their knowledge, expectations, and feelings, influence how and what they learn (Schunk, 1991).

Cognitive theories of motivation state that behaviour is determined by an individual’s thoughts (e.g., beliefs, expectations, goals, values) and not by whether the individual has been rewarded or punished for behaviour in the past (Stipek, 1993). Attribution theory is a cognitive theory of motivation that is concerned with individuals’ beliefs about the causes of outcomes. The present study is based on Weiner and colleagues’ (1971) model of attribution theory.

The present study also builds on the suggestion of McHugh, Fisher, and Frieze (1982) that future research should investigate individuals’ reactions to equivocal outcomes as opposed to limiting research to clearly defined success and failure outcomes. The need for such research on *equivocal outcomes* is necessary. Outcomes experienced by individuals in real-life are often not clear successes or clear failures. Individuals often have their own standards for what they consider to be a success or failure. As Maehr and Nicholls (1980) have pointed out, “success and failure are not concrete events. They are psychological states consequent of reaching or not reaching goals” (p. 9). In terms of educational settings, school tasks are often left ungraded or unfinished. Also, actual perceptions of success and failure will differ from student to student, and are not necessarily relative to an achieved score or grade. In the present

study, students' attribution preferences for a task with an equivocal outcome are measured. The methodology employed and its justification is described in the subsequent chapters.

It has been demonstrated in this chapter that contemporary theories of self-concept can be dichotomised into those within a unifactorial framework or those within a multifaceted-hierarchical framework. The present study is conducted within a unifactorial paradigm and focuses on assessing students' levels of global self-concept. As the measuring device used in this study is that devised by Piers and Harris (1964), their definition of self-concept has been adopted. For the purpose of the present study, self-concept is defined as "a relatively stable set of self-attitudes reflecting both a description and an evaluation of one's own behaviour and attributes" (Piers, 1984, p. 1).

The purpose of this chapter was to introduce the constructs self-concept and attribution theory and to explain how they relate to the present study. The following chapter summarises the existing empirical research related to the research questions stated earlier in this chapter. Chapter Three defines the research design and outlines the research method developed for the present study. The results obtained in the present study are outlined in Chapter Four. These findings and their implications for educational practice are discussed in Chapter Five.



## **Chapter 2**

### **Literature Review**

The purpose of this chapter is to summarise research on attribution theory and self-concept as it relates to the purpose of this study and the research questions outlined in the first chapter. Empirical research examining the relationship between global self-concept and attribution preference is reviewed first. Research into gender differences in attribution preference and gender differences in global self-concept is then summarised. The chapter concludes with a synopsis of the status of research in this field.

#### ***Global Self-Concept and Attribution Preference***

Researchers are taking an increasing interest into the nature of the relationship between global self-concept and attribution preference. This attention is justified by evidence indicating that the perceived causes of success and failure in low and high self-concept individuals differ (Ames, 1978; Fitch, 1970; Ickes & Layden, 1978; Weiner, 1974, 1979). An early study by Solley and Stagner (1956), preceding the work of Heider (1958), alluded to such differences even though the researchers did not describe their findings in attributional terms. Solley and Stagner recorded the spontaneous remarks of low and high self-concept participants when given insolvable anagrams. They reported that high self-concept participants made remarks indicating

that they were externalising the cause of failure (e.g., “Is this a word?”). However, low self-concept participants indicated that they were internalising their failure (e.g., “I must be stupid”). Subsequent research has been able to replicate the findings of Solley and Stagner within the paradigm of attribution theory.

Weiner (1974) theorised that individuals with a high self-concept are more likely to attribute success to ability and failure to unstable causes such as effort or luck. Conversely, he theorised that individuals with a low self-concept will attribute their success to unstable causes and their failure to a lack of ability. A number of researchers have used Weiner’s theory as a basis for their studies, with many focusing on the specific dimensions of attribution theory (i.e., locus of control, stability, controllability). Even researchers who define their study using the four causal attributions (ability, effort, luck, and task difficulty) often report their findings in terms of the specific dimensions, especially locus of control.

An early study by Fitch (1970) examined the effects of self-esteem, perceived performance, and choice on causal attributions. The participants of this study completed the Tennessee Self-Concept Scale followed by a dot-estimation task. In this task, participants were allowed three seconds to view slides projected onto a screen. Each slide contained a number of dots randomly distributed over its area. After viewing a slide for three seconds, the participants responded with an estimate of the number of dots on that slide. Each participant viewed ten slides. Success and failure outcomes were manipulated through the use of false performance feedback. Participants’ attribution preferences were measured by the completion of a

questionnaire, which each participant completed after judging each slide. Each question allowed the participants to distribute causality for their performance over four possible causes (ability, effort, luck, and physical or mental state). This study found that individuals with a low self-esteem who receive failure feedback attribute their failure significantly more to internal causes than do individuals with a high self-esteem who also receive failure feedback. However, both low and high self-esteem individuals are equally likely to attribute success to internal causes.

Ames and Felker (1979) explored the effects of self-concept on children's causal attributions and self-reinforcement. The participants of this study completed the Piers-Harris Children's Self-Concept Scale and six puzzles drawn from a stack at random. Instructions were given for the six puzzles that intended to create an ambiguity over the causal determinants of one's performance. Consequently, participants could perceive their performance on a task as predominantly caused by their own skill or by luck. The participants indicated their attribution preferences for their performance using a pie-graph device, similar to one developed by Nicholls (1975). Using this device, participants could attribute their performance either to skill or luck. The findings from this study suggest that when a task is characterised as involving skill or luck, the causal explanations of high and low self-concept children differ. Whereas high self-concept children causally relate success to their skill, low self-concept children relate their success to luck. Both low and high self-concept children use lack of skill to account for their failure.

Madonna, Bailey and Wesley (1990) studied the effects of classroom environment and locus of control in identifying high and low self-concept children. The participants completed three scales: the Piers Harris Children's Self-Concept Scale, the Classroom Environment Scale, and the Nowicki-Strickland Children's Locus of Control Scale. A differentiation of high and low self-concept groups was made using cut-off scores on the Piers-Harris Children's Self-Concept Scale of below 52 for low self-concept and above 62 for high self-concept (out of a possible score of 80). This study found that children with a high self-concept are more internal in their locus of control than children with a low self-concept, who are more external.

Current research suggests that global self-concept may be a mediator for attribution preference. So far, research indicates a fairly consistent pattern: individuals with a high self-concept appear to internalise their success and externalise their failure more than individuals with a low self-concept. However, given that this research is typically based on information collected in highly constrained situations (e.g., attributions for a specific task), it is probably inappropriate to make conclusions about the general tendencies that characterise the attribution patterns of low and high self-concept individuals. It is apparent that further research is necessary if general statements regarding the attribution preferences of high and low self-concept individuals are to be made.

## ***Gender Differences in Attribution Preference***

Early writings on attribution theory did not address the issue of gender differences in attribution preference. However, a number of research studies have been undertaken in recent decades, showing that differences between gender groups may exist. Some of the first studies to address gender differences in attribution preference were conducted by Deaux and Emswiller (1974) and Simon and Feather (1971), typically with college undergraduate students. These studies found that whereas males tend to make internal attributions for success and external attributions for failure, females are more likely to make external attributions for success and internal attributions for failure. A number of more recent studies have attempted to replicate these findings with varying degrees of success, as indicated by the studies summarised in this section.

Researchers have generally used three principal models to explain gender differences in attribution preference. The proponents of the *general externality* model suggest that females tend to attribute both their success and failure to external causes. Possible explanations for this attribution pattern have included that females are higher in both fear of success and fear of failure, and therefore withdraw from achievement situations altogether (Simon & Feather, 1973). Another explanation has been that females and other 'low status' groups tend to have less control over their destinies than those of a higher status, and this lack of control causes them to attribute outcomes they receive to external factors (Wiley, Crittenden & Birg, 1979).

The *self derogation* model states that females attribute success to external causes and failure to internal causes (Nicholls, 1975). This model is based on the theory that females typically have low self-esteem in achievement settings (Frieze, Fisher, Hanusa, McHugh, & Valle, 1978) and therefore are more willing to believe negative information about themselves. The *low expectancy* model is based on the view that females typically have lower expectations than males in achievement situations, and that these expectations lead females to make unstable attributions for success and stable attributions for failure (Frieze et al, 1978).

One of the early studies that was able to show gender differences in attribution preference was undertaken by Nicholls (1975). Nicholls examined the effects of task outcome, attainment value and gender on causal attributions. His research was based on the work of Heider (1958) and Weiner and associates (1971), and was one of the first research studies in which attribution preferences were indicated by the participants analysing the outcomes of their own behaviour, rather than imagined outcomes or outcomes of others' behaviour. The experimental task used to measure attribution preferences in this study was one in which the participants attempted to match acute angles in a book with standard acute angles mounted on a wall in front of them. All of the angles in the book were exactly between any two of the standard angles, with the difference between the standard angles being slight. Therefore, false feedback could be given to the participants regarding their success or failure on this task without the participants becoming suspicious. Before the participants attempted the task they were informed that the average score for a fourth-grade student on this task was twelve correct responses. Misleading feedback was then given to the participants according to

a pre-assigned schedule. They were given either six or eighteen correct responses, denoting a failure or success outcome respectively. The participants' attribution preferences were then measured using a pie-graph device, which could be adjusted to show the relative importance of the four causal attributions (ability, luck, effort, and task difficulty) to their performance. The findings from this study indicate that females attribute failure to low ability more than success to high ability, however males do not. Thus, females show a significant self-derogatory bias which is not evident for males. It was also found that males, more than females, attribute failure to bad luck.

Cooper, Burger and Good (1981) conducted a study based on the general externality model of gender differences in attribution preference. This study examined whether locus of control beliefs differed between young males and females. Like Nicholls (1975), they found that a difference between gender groups existed, however they conceded that this difference was very small. This study used a standardised test, the Intellectual Achievement Responsibility (IAR) Questionnaire, which gauges internal versus external beliefs about academic performance, and contains separate sub-scales for success and failure outcomes. The items from the IAR Questionnaire require participants to select one of two alternatives that best explains the occurrence of success and failure at academic tasks. All IAR Questionnaire questions were read aloud by the researcher and the participants responded to these questions in written form. Contrary to the prediction of the general externality model, this study found that females in elementary school take more responsibility for academic outcomes than males. However, this difference, while significant, was very small. Prior to the study,

the researchers conducted a meta-analysis of ten previous studies that also looked at the relationship between gender and attribution preference. The findings of this meta-analysis were supported by the findings of their study.

Wigfield (1988) conducted a study that found few gender differences in attribution preference. His study examined how children's achievement attributions were influenced by age, attentional focus, gender, and success or failure experience. Similarly to conditions implemented in Nicholls' study (1975), Wigfield gave false success or failure feedback to the participants in respect to their performance on a memory task. This task involved participants listening to a tape-recorded story and then verbally recalling this story. As no participants were able to recall the story with 100% accuracy, they were able to be given false feedback without becoming suspicious. Half of the participants were given success feedback and the other half failure feedback. The participants were then asked to rate the importance of several different reasons (ability, luck, effort, interest, and task difficulty) for their performance. The researcher read each question aloud and recorded the participants' responses on rating scales of 1 (very unimportant) to 5 (very important). This study found that males make somewhat more negative attributions than do females, attributing success more to task ease and failure more to lack of interest in school. In addition, males attribute failure more to lack of specific ability than do females, but this effect is only marginally significant. Wigfield, in his discussion of these findings, suggested that the task used in his study had close ties with reading, a subject which quite often females in elementary school prefer and excel in, and this could explain why males' attributions were somewhat more negative than those of females.



Burgner and Hewstone (1993) examined how males and females differ in the causes they attribute to their success and failure. Two tasks were completed individually by each participant. The first was a seven piece jigsaw of a clown, which was successfully completed by all participants. The second was a very difficult wire-loop tracing game, in which the participants had to move a wire loop around a twisting wire. No participant was successful at this task. Following each task, the participants were asked an open-ended question and their response to this question determined their attribution preferences for their performance. The researchers found that significant gender differences did exist in attribution preference. Both males and females use internal attributions to explain their performance, however males more than females attribute their success to their ability. Males tend not to attribute their failure to lack of ability, but females do. Under conditions of failure, males tend to use explanations significantly more than females, while their use under conditions of success is approximately the same. The researchers' findings overall tend to support the self derogation model of gender differences in attribution preference.

While the research studies described in this section have shown a relationship between gender and attribution preference, many have failed to replicate earlier findings, generated contradictory results, or produced findings suggestive of weak relationships. The variety of instruments used to measure attribution preferences for success and failure, as well as differences in the tasks employed and in the settings in which such attributions were elicited, may help to explain these conflicting findings.

## ***Gender Differences in Global Self-Concept***

The question of the nature of the relationship between gender and global self-concept has interested many researchers. A number of research studies have been conducted in an attempt to show whether a significant difference exists between the self-concept of males and females. While it is theorised that males will have a higher global self-concept than females, empirical findings have varied in their acquiescence of this hypothesis.

Some researchers in this field have shown that males do have a higher global self-concept than females, however the reported effect size is usually relatively small. Alpert-Gillis and Connell (1989) were able to show a marginally significant difference in the global self-concept of male and female fourth to sixth grade students. The Perceived Competence Scale for Children was used to measure the participants' self-concept. This 28-item scale measures children's self-concept in three areas - cognitive, social and physical - with a fourth sub-scale for global self-concept. While the researchers were able to show that males have a marginally significant higher global self-concept than females, this difference was extremely small in magnitude. O'Brien (1991) also found some significant gender differences both for global and dimensional self-concept, but once again, these differences were very small. His study used the Multi-dimensional Self-Esteem Inventory, which measures global self-esteem and eight components of self-esteem.

There has been much speculation as to the genesis of gender differences in global self-concept. These differences are commonly linked to the stereotypes of

males and females. Burns (1979) suggests that gender differences become more apparent as females tune into the fact that stereotypic characteristics of the female self-image are less valued than those of males. Other arguments, such as “females are in a minority group status, females fulfil societal expected roles, females have more role conflict than males, females are more socially and economically dependant, and cultural ideology calls for women to be regarded as inferior” (Hattie, 1992, p. 177) have also been suggested as reasons accounting for females lower global self-concept.

A number of other researchers however, have been unable to find significant differences in the global self-concepts of males and females. Piers and Harris (1964), while developing their measurement scale, were unable to show a significant difference between the self-concept of males and females in a sample of 363 third to tenth grade students. The measurement device used was a preliminary scale of 140 items, which was trimmed to its current 80 items following the study. In a study by Crase and Elrod (1980), which investigated children’s global self-concept and perceptions of parental behaviour using the Piers-Harris Children’s Self-Concept Scale, no significant gender differences in self-concept were found in a sample of 172 fifth and sixth grade students. A number of other studies using the Piers-Harris Children’s Self-Concept Scale, including those by DeVoe (1977), Moyal (1977), and Ketcham and Snyder (1977) were also unable to report significant differences in global self-concept between males and females.

Wylie (1979), in an examination of 47 research investigations into the relationship between global self-concept and gender, found that non-significant

relationships dominated the findings. Wylie (1974) had previously hypothesised that gender differences may exist for specific facets of self-concept, but these differences are obscured when the items on a self-concept measure are summed to give a total, or global, self-concept score.

Hattie and McInman (1991) conducted a meta-analysis on data collected from 77 studies that compared global self-concept and gender on self-concept measures. They found that, while the mean self-concept score of males was slightly higher than that of females, this difference was so slight as to be almost negligible. They concluded that there was no overall relationship between gender and global self-concept. They did, however, find that there were differences on some dimensions of self-concept, and that males tend to attribute positive concerns to themselves and are self-enhancing, while females tend to attribute negative concerns to themselves and are self-verifying. These findings are consistent with the earlier findings of Wylie (1979).

Researchers who have found no gender differences in global self-concept have concluded that females may appear to have a lower self-concept than males perhaps because females are more willing to disclose personal weaknesses. Bogo, Winget and Gleser (1970) investigated male and female responses on self-concept *lie* or *defensiveness* scales. Such scales reflect the extent to which individuals disguise their true feelings and present a more favourable picture of themselves on a self-concept measure. From this investigation, the researchers reported that males obtained higher scores on these scales than females and thus concluded that males more than females

are more likely to provide information about themselves that they believe to be socially desirable.

Wylie (1979) has also offered several explanations as to the lack of support by empirical research for the theory that males have a higher global self-concept than females. She argues that studies rarely deal purely with the variable of gender, and consequently, questions are often worded in such a way that they may depress the self-concept of males, who are perhaps more likely to read poorly or lack motivation in school-related tasks. Another possibility for the apparent similarity in the global self-concepts of males and females is that gender differences are obscured when many facets are summed. Males and females may therefore gain similar scores by endorsing different sets of items.

The issue of gender differences in global self-concept remains a controversial one. Some researchers continue to espouse the theory that males have a higher global self-concept than females, despite few researchers having been able to verify such a relationship. The findings of the cited research would suggest that gender is a poor predictor of global self-concept, and that males and females are more similar than different in regards to global self-concept.

## **Summary**

A number of theories have been proposed to explain putative relationships among global self-concept, attribution preference, and gender. The principles of these theories have been outlined in this chapter. Weiner (1974) theorises that individuals with a high self-concept attribute their success to ability and their failure to unstable causes (effort and luck), while individuals with a low self-concept attribute their success to unstable causes and their failure to a lack of ability. In respect to gender differences in attribution preference, three theories were discussed. The first theory states that females are more likely to attribute success to external causes and failure to internal causes (ability and effort). The proponents of the second theory suggest that females attribute both success and failure to external causes (luck and task difficulty). Proponents of the third theory claim that females attribute their success to unstable attributions and their failure to stable attributions (ability and task difficulty). In reference to gender differences in global self-concept, it is theorised that males have a higher global self-concept than females.

The empirical findings cited in this chapter have varied in their support for the key propositions of these theories. Research into the relationship between global self-concept and attribution preference has tended not to support Weiner's (1974) theory. Rather, it has shown that high self-concept individuals tend to attribute success to internal causes and failure to external causes, and vice versa for low self-concept individuals. Researchers who have explored the relationship between gender and attribution preference have tended to show small differences in how males and females attribute causes to their performance, however none of the three models was fully

supported. Few studies have indicated a significant difference in the global self-concept of males and females, and this difference, when found, has tended to be relatively small.

The present study differs from previous studies investigating relationships with causal attributions by focusing on participants' attribution preferences for an equivocal outcome as opposed to success or failure outcomes. Given this difference in task outcomes, it is inappropriate to make predictions about the findings of the present study where relationships with causal attributions are examined. However, from the evidence given in this chapter it is possible to predict that if a difference is to be shown between the global self-concepts of males and females, then this difference will be small, with males having a slightly higher global self-concept than females.

# Chapter 3

## Methodology

This chapter outlines the research method developed for this study. The chapter begins with a description of the research design followed by details of the research sample. The materials used and the procedure implemented in the study are given. The chapter concludes with a statement of the three research hypotheses tested by the study.

### ***Research Design***

Keppel (1991) has indicated that a *factorial design* is the most common means by which two or more independent variables are manipulated in an experiment or comparative study. In a factorial design, the experiment includes every possible combination of the levels of the independent variables. The present study was conducted using a 2 x 2 factorial design, with two levels of self-concept (high and low), and two gender groups (males and females), and four dependent variables. The four dependent variables are the four causal attributions (ability, effort, luck, and task difficulty). This factorial design and the distribution of participants in the cells of the design are represented by the matrix in Table 1.



**Table 1.** Research Factorial Design

		SELF-CONCEPT	
		Low	High
GENDER	Male	14	14
	Female	16	16

### ***Participants***

Data for this study were collected from year seven students in four schools in the Perth metropolitan region. Socio-economic bias was controlled by choosing schools within middle socio-economic areas. The schools were selected randomly from this group.

Eighty-two year seven students took part in this study. There were 36 males and 46 females. This age group was selected because at this age children are more capable of making the necessary abstractions to represent accurate feelings of the self and of their performance (Gilberts, 1983). This sample was divided into three levels of self-concept, with 37 low self-concept students, 30 high self-concept students and the remaining 15 students constituting a middle self-concept group. The basis for this division was determined by the students' responses to the Piers-Harris Children's Self-Concept Scale. Students obtaining a score of 58 or less out of a possible score of 80 were defined as having a *low self-concept*, students obtaining a score of 65 or more were defined as having a *high self-concept* and students obtaining a score between 59

and 64 were defined as having a *middle self-concept*. These cut-off scores were chosen to remove the middle fifth of the self-concept scores, thereby creating a definitive division between low and high self-concept groups. In order to balance the number of participants in the low and high self-concept groups, the data obtained from seven students were randomly deleted prior to the data analysis.

The participants of this study were assured that the data obtained for the study would be kept confidential. Consent was required from the students' parents, teacher and school principal before they were allowed to participate in the study. Parent consent letters and an information sheet for teachers were distributed prior to the commencement of the study. The purpose of the information sheet was to provide teachers with a background knowledge of the study, including the research aim, method, and benefits of the research. A copy of the parent consent letter and the teacher information sheet are shown in Appendix A.

### **Materials**

The *Piers-Harris Children's Self-Concept Scale* (Piers & Harris, 1964) was used to measure the participants' levels of global self-concept. The test consists of eighty 'yes-no' items, written as simple declarative statements, such as 'I am unpopular' and 'I have good ideas'. The overall global self-concept score is derived by adding all responses that are in the direction of high self-concept. The scale focuses on children's self-perceptions rather than attempting to infer their self-concept by observing the behaviour or the attributions of others.

Numerous studies in this field (e.g., Ames & Felker, 1979; Crase & Elrod, 1980; DeVoe, 1977) have been based on the assumption that evaluative statements made by individuals about themselves are valid and reliable sources of data. Several theorists in this field have also expressed their beliefs about the importance and value of using self-reports as measurement instruments of self-concept. For example, Allport (1943) has written that the individual has the right to be believed when he or she reports about his or her self. Similarly, Rogers (1951) claims that self-reports are valuable sources of information about the individual.

The Piers-Harris Children's Self-Concept Scale was originally developed as a research instrument to provide a quantitative self-report measure of children's self-concepts. This is still one of its primary purposes. It has also been used extensively to investigate the relationship between self-concept and other traits or behaviours (e.g., locus of control, personality characteristics, achievement), to monitor changes in self-concept over time, and to address fundamental questions about the nature of children's self-evaluative attitudes and their possible antecedents (Piers, 1984).

The Piers-Harris Children's Self-Concept Scale has proven to have satisfactory reliability and validity. A number of studies (e.g., Alban-Metcalf, 1981; Lefley, 1974; Shavelson & Bolus, 1982) have investigated the test-retest reliability of this instrument, and have repeatedly shown reliability coefficients of more than 0.7 in general populations. The validity of the scale has been measured against peer and teacher ratings, other self-concept measures, and other behavioural and personality measures (e.g., Felker & Thomas, 1971; Karnes & Wherry, 1982; Parish & Taylor,

1978). Satisfactory correlations were found with all of these measures, the highest being with the Coopersmith Self-Esteem Inventory ( $r = .85$ ), which resembles the Piers-Harris Children's Self-Concept Scale in format and age range (Piers, 1984). The Piers-Harris Children's Self-Concept Scale has also been successfully validated with Australian School students (Amato, 1984).

This Piers-Harris Children's Self-Concept Scale was chosen for the present study because it is the most widely used and tested measure of global self-concept. The instrument is simple to administer and score and yields quantitative scores that permit easy comparison. The test has also been used extensively and successfully in many studies with primary school students and has been proven suitable for use with Australian primary school students (Amato, 1984). The prevalence of the Piers-Harris Children's Self-Concept Scale as a measure of self-concept is indicated in a study by Hattie (1992). The terms *Piers*, *Harris*, *self-concept* and *self-esteem* were used to search the ERIC and Psychological Abstracts data banks. From this search a total of 145 studies based on 41,669 persons that included these terms were found. Of this sample 36% came from upper primary school, 42% came from lower primary school, and 22% from preschool.

A problem-solving task was used to measure the participants' attribution preferences for their performance. Following this task, the students answered a series of questions in which they could rate the importance of each of the four causal attributions (ability, effort, luck, task difficulty) to their performance. A near-identical problem was presented to the students three times. Each problem consisted of a 6 x 6

checkerboard with black and white squares. These problems and the questions presented to the students are shown in Appendix B. This problem-solving task was chosen as the researcher considered that it allowed the students to neutrally attribute their performance to any of the four causal attributions. It had the advantage of being easy to administer and comprehensible, yet challenging to this year level. This task was attempted and the questions completed three times to improve the validity of the measurement technique. By keeping the tasks similar, the attribution preferences measured by the task were controlled. For example, if different tasks were used each time, different attributions may have been elicited from different groups of students.

After each task was attempted, the participants answered eight questions related to the four causal attributions. The method of *magnitude scaling* was used to record the participants' responses to these questions. Magnitude scaling has been developed by researchers in an attempt to more accurately measure the direction and strength of people's beliefs and preferences. Until this technique was developed, the most common tool used to measure these entities was *category scaling* (a Likert scale in its most common form), in which a person rates an item or expresses a judgement by selecting one of a number of fixed options. This technique, however, has a number of limitations. First, information is lost due to the limited categories presented by category scaling. Second, the nature of the scale forces respondents to judge items similarly. Third, by offering a fixed number of categories for the respondents to choose from, the researcher is unintentionally affecting the response, by forcing the respondents into making judgements that may not really apply to them (Lodge, 1981).

The use of magnitude scaling addresses these limitations by allowing the respondent almost unlimited variety of response, yet yields quantitative data. In this method, respondents indicate the direction and strength of their beliefs by relating them to an arbitrary scale, which is determined by either the researcher or the respondent. An example of this is where respondents rate the brightness of different lights. Using magnitude scaling, the researcher shows the respondent a low- or medium-intensity light, and either assigns a value to its brightness or allows the respondent to assign a value to its brightness. The respondent then rates the brightness of all other lights to the original reference light. For example, if the respondent thinks that the light is half as bright as the first light, he or she assigns a value of half of the reference value (Lodge, 1981).

In the present study the magnitude scaling technique was adapted to measure the participants' preferences for each of the four causal attributions. The length of a line drawn by the students was used to gauge the degree of the students' beliefs. First, a *reference line* was drawn by each student in response to a question such as "How much would a teacher at this school think that *luck* makes a difference in how well a student does this problem?". The researcher used a *teacher* as the standard for the reference line because all students are familiar with the role of the teacher in a school. It was feasible for students to envisage what a teacher would think of an individual's performance in such a situation. The students then drew a *response line* to indicate their perception of the importance of the attribution to their performance in response to a question such as "How much do you think that *luck* made a difference in how well you did this problem?". The relationship of this second line to the first line indicated

the relative importance of the causal attribution to the students' performance on the problem-solving task. An example of two students' responses using the magnitude scaling technique are shown in Figure 3. In these examples, student A would receive a higher attribution score for luck than student B.

**Student A**

1A. How much would a teacher at this school think that luck makes a difference in how well a student does this problem?

●—————

1B. How much do you think that luck made a difference in how well you did this problem?

●—————

**Student B**

1A. How much would a teacher at this school think that luck makes a difference in how well a student does this problem?

●—————

1B. How much do you think that luck made a difference in how well you did this problem?

●—————

**Figure 3.** Example of Two Students' Responses using the Magnitude Scaling Technique

Prior to the commencement of the study, a pilot study was conducted with a group of year seven students in order to determine the suitability of the problem-solving task with the year level and the method of testing. Following this pilot study, several adjustments were made, including the addition of four short scenarios, which were required to more clearly define the terms 'ability', 'effort', 'luck' and 'task

difficulty'. These scenarios were read aloud to the students. For example, in order to more clearly define the concept of luck, the following scenario was presented to the class:

John was competing in a running race. The lanes next to him had been wet by a broken water pipe. This made these lanes very slippery and difficult to run fast. John's lane was dry and this allowed him to run a lot faster than his other opponents. John won his race. He was lucky.

When John was ready to compete in his next race another water pipe broke and this time made his lane wet and not the other lanes. This made it difficult for John to race as the slippery and wet conditions slowed him down. John lost his race. He was unlucky.

In both races luck, a lot of luck or not enough luck, made a difference in how well John did.

All four scenarios presented to the students can be found in Appendix C.

### ***Procedure***

Two visits were made to each of the classes in the four schools which had agreed to participate in the study. The purpose of the first visit was to obtain data on the global self-concept of all participating students. During this first visit, a copy of the Piers-Harris Children's Self-Concept Scale was distributed to the students, and



they were asked to write their name and indicate on the test whether they were male or female. The students were then given the following instructions by the researcher:

In front of you are a set of statements that tell how some people feel about themselves. Read each statement and decide whether it describes the way you feel about yourself. If it is like you, circle the word 'yes' next to the statement. If it is not like you, circle the word 'no'. Answer every question, even if some are hard to decide. I know that everyone feels differently at different times and in different situations, but answer each question the way you *usually* feel. Do not circle both 'yes' and 'no' for the same statement. If you want to change an answer, cross it out with an X, and circle your new answer. Remember that there are no wrong or right answers.

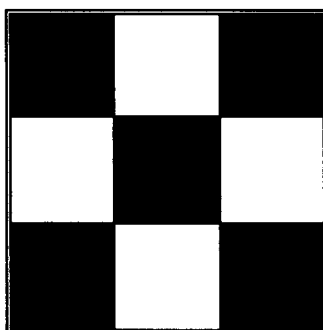
The students then completed the test individually within a group setting. The students were asked to stop and wait following each set of twenty questions until further instructions were given to proceed with the next twenty questions. This procedure ensured that students did not rush through the test answering thoughtlessly and allowed all students to complete the test at the same time. The students took approximately twenty minutes to complete the test. The researcher collected the tests from all students, ensuring that they had written their name and indicated whether they were male or female in the appropriate sections. The results from these tests were used to categorise the students into low, middle, and high self-concept groups. A full copy of the script used by the researcher in this first visit is shown in Appendix D.

The purpose of the second visit was to determine students' attribution preferences for their performance on the three problem-solving tasks under predetermined conditions. As attribution preferences for an equivocal outcome were being investigated, an *interrupted task* method was developed. This method involved the interruption of the high and low self-concept students after two minutes of working on a selected problem. While the middle self-concept students were allowed to continue for a further one minute, with no group being allowed to complete the task. This interrupted task method meant that success and failure outcomes were not apparent, and the test measured attributions for an equivocal outcome. It is likely that if the students had been all interrupted at the same time, they would have judged the reason for their non-completion of the task as being *teacher interruption* and therefore opted for an external cause. The rationale behind the different interruption times was that the students would not know why some students were stopped while others were not, and therefore would opt for either internal (ability or effort) or external (task difficulty or luck) causes when the answering questions related to their performance on the problem-solving tasks.

For this visit, each participant was given a package containing the problem-solving tasks and response sheets. These packages were coded by the pre-positioning of the students' names. Names written on the right-hand side of the page represented students who had obtained a low or high self-concept score and names written on the left-hand side of the page represented students who had obtained a middle self-concept score. This pre-positioning of names enabled the researcher to efficiently identify the

correct students to stop at the appropriate times. This discreet method of coding also prevented students guessing that they were being deliberately stopped.

Prior to commencing the problem-solving tasks, the participants were read the four short scenarios related to the four causal attributions. Following this, the students were instructed as to how they were required to answer the questions that would follow the tasks. The students then completed two example questions to check their understanding of the magnitude scaling technique. The students were then guided through a practice problem to introduce them to the problem-solving tasks. In this example, they were presented with a 3 x 3 checkerboard as shown in Figure 4. The students were instructed to locate the total number of squares of all sizes in the figure. After a square had been located, the students were required to trace around the square and then tick a box in a grid under the problem for each square that was found. This procedure delayed the students from finishing the problem before being interrupted. Following this practice example, each problem-solving task (6 x 6 checkerboards) was presented in turn to the students. Students were required to complete these tasks individually within a group setting.



**Figure 4.** The Problem-Solving Task used for the Practice Task

Prior to students commencing the problem-solving tasks the researcher gave the following instructions:

You are now ready for the main problems. One other thing that I need to tell you is that when you are working on these problems I will be coming around to see how you are going. After I have been around to see everyone I will be stopping some of you. If I put a red counter (like this one) on your desk I want you to stop working when I tell you to. If I tell you to stop, please sit quietly with your arms folded.

A full copy of this script used by the researcher in this visit can be found in Appendix E. While the students were working on the selected problem-solving task, the researcher walked around the class, and placed a counter on those students' desks who were to be interrupted first (i.e., low and high self-concept students). After approximately two minutes, the students with red counters on their desks were instructed to stop working on the problem and sit quietly and wait. The remaining middle self-concept students were instructed to continue working on the problem. After a further minute, the researcher asked these students to stop working on the problem. All students were then asked to complete the attached eight questions related to their performance on this problem. Each of the questions was read to the class by the researcher and adequate time was allowed for the students to record their responses in the space provided. The researcher then collected the students' responses. This procedure was repeated for each of the three problem-solving tasks.

At the conclusion of this second visit the researcher explained to the students that the reason they were prevented from completing the tasks was not a reflection of their abilities, but rather a measure of what they thought of themselves when they were interrupted during a task. A copy of the three problem-solving tasks and the solutions were distributed to the class teacher for the students to complete at a later date.

### ***Research Hypotheses***

Three research hypotheses were tested by the present study. First, that there would be a significant relationship between global self-concept score and attribution preference. Second, that there would be a significant relationship between attribution preference and gender. Third, that there would be a significant relationship between global self-concept score and gender. For each of these hypotheses an alpha level of 0.05 was set to show a significant relationship between the variables.

# Chapter 4

## Results

The results obtained from this study are presented in the body of this chapter. The first section outlines the statistical methods used to analyse the data. The subsequent sections describe the results from the analyses. Each of these sections correspond to a dependent variable. The dependent variables are the four causal attributions, ability, effort, luck, and task difficulty, and the independent variables are gender and self-concept. The results of the analysis of the relationship between the independent variables are then reported. The chapter concludes with a summary of the findings.

### ***Method of Data Analysis***

Quantitative statistical analyses were applied to the data collected using the statistics package *SPSS for Windows Version 7.5*. For all statistical analyses, an alpha level of 0.05 was used to test for differences between the means of the relevant variables.

Prior to the analyses, the data collected from seven students were deleted from the data set in order to balance the number of participants in the high and low self-concept groups. Five female and two male students were randomly deleted from the

data set. Students who completed only one of the two stages of data collection were unable to be included in the analyses. Students who formed the middle self-concept group were also not included in the analyses.

The magnitude scaling technique was used to measure the participants' attribution preferences for their performance on the interrupted problem-solving tasks. This technique required the participants to draw two lines in response to two questions related to each of the four causal attributions. The first line drawn by the participants was termed the reference line and the second the response line. The length of each line drawn by the participants was measured and recorded in millimetres. The relationship of the second line (response line) to the first line (reference line) indicated the relative importance of the causal attribution to the participants' performance on the problem-solving tasks. The participants' raw responses to the attribution questions for the three problem-solving tasks were averaged to give a single set of responses for each attribution. This transformation was applied to the data before the data were analysed.

Magnitude scaling is typically analysed by taking the base-10 logarithm of the ratio between the response line and the reference line (Lodge, 1981). This was seen to more accurately model human responses. However, a more recent method of analysing magnitude scaling is to use an *ANCOVA (analysis of covariance)* design (Darlington, 1990). This was selected as the statistical analysis to test the hypotheses related to the four causal attributions. This analysis allows the use of an extraneous variable (covariate) to adjust for mean differences on the dependent variable. To determine whether the relevant independent variable is having an effect, the influence

of the covariate on the dependent variable is statistically controlled for in the analysis (Keppel, 1991). A  $2 \times 2$  ANCOVA was computed on the data. For each of the designated attributions, the dependent variable was the length of the response line and the covariate was the length of the reference line.

Results of tests for interaction effects and main effects are reported at every level of the analysis. *Adjusted means (M)* and *standard errors (SE)* of each causal attribution were derived for each level of analysis. The adjusted mean indicates the mean value of the attribution for each independent variable adjusted for the covariate. The standard error indicates the variability of the mean due to sampling and other chance influences (Keppel, 1991).

To validate the ANCOVA, the data were tested for *linearity* and *homogeneity of regression slopes*. To satisfy the linearity requirements, a linear relationship should exist between the dependent variable and the covariate for each group. Homogeneity of regression slopes is satisfied if the relationship of the dependent variable to the covariate in each group is of approximately the same order (Keppel, 1991). Linearity was tested by inspection of scatter plots of the reference line (covariate) and the response line (dependent variable) for each independent variable. Homogeneity of regression slopes was tested using procedures designated in the SPSS for Windows Version 7.5 package. Scatter plots for the independent variables for each of the causal attributions, and the results of the homogeneity tests are shown in Appendix F.

For the dependent variables which did not satisfy the above requirements, an *ANOVA (analysis of variance)* was used to test the relevant hypotheses. While an



ANOVA does not require the same stringent criteria as an ANCOVA, it does not allow for an adjustment mechanism (Keppel, 1991). A logarithmic transformation was applied to the data prior to the ANOVA being run, in which the base-10 logarithm of the ratio of the response line to the reference line was taken. This transformation adjusted the responses to allow for the reference line before the analysis took place. For the variables analysed using an ANOVA, results of tests for interaction effects and main effects are reported at every level of the analysis and *adjusted means (M)* and *standard deviations (SD)* were calculated for every level of analysis.

An independent samples *t*-test was applied to test the hypothesis that there would be a significant relationship between global self-concept score and gender. This *t*-test was used to determine the statistical significance of mean score differences between males and females in respect to global self-concept. An alpha level of 0.05 was set to test for differences between these means.

The output data for all statistical analyses are presented in Appendix G.

### ***Ability Attribution***

To validate the use of an ANCOVA for this variable, the data were tested for linearity and homogeneity of regression slopes. As the homogeneity of regression slopes assumption for this variable was rejected for gender (gender:  $F [1, 56] = 5.049$ ,  $p = .029$ ; self-concept:  $F [1, 56] = 0.585$ ,  $p = .448$ ), it was appropriate to analyse the data using another statistical method. A base-10 logarithmic transformation was applied to the data and it was then analysed using an ANOVA.

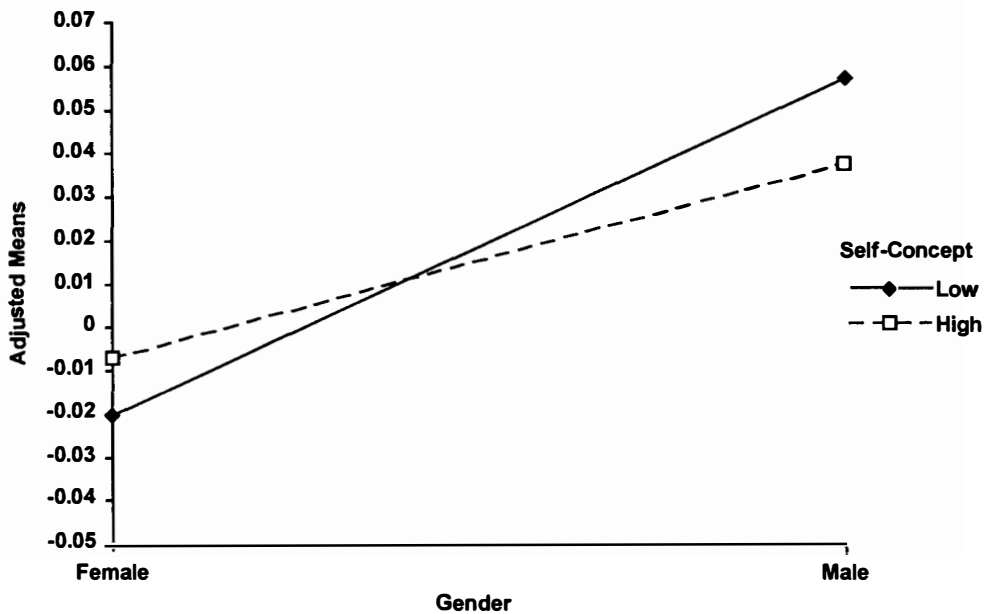
The dependent variable was analysed in relation to the self-concept and gender variables. Table 2 shows the adjusted means and standard deviations for the interaction of gender and self-concept for this attribution. A graphical display for this interaction is presented in Figure 5.

**Table 2.** Adjusted Means and Standard Deviations of Gender  $\times$  Self-Concept for Ability Attribution

		SELF-CONCEPT		
			Low	High
<b>GENDER</b>	<b>Female</b>	<i>M</i>	-0.0203	-0.0070
		<i>SD</i>	0.156	0.0512
	<b>Male</b>	<i>M</i>	0.0575	0.0381
		<i>SD</i>	0.116	0.0823

The interaction between gender and self-concept was not significant ( $F [1, 56] = 0.335, p = .565$ ). Since this interaction was not significant, the main effects were examined without constraint. A marginally higher mean was calculated for participants with a low self-concept ( $M = 0.016, SD = 0.142$ ) than those with a high self-concept ( $M = 0.014, SD = 2.77$ ) for this attribution. This difference was not significant ( $F [1, 56] = 0.012, p = .914$ ). This finding indicates that there was not enough evidence to suggest that high and low self-concept students differ in how they attribute their performance to ability on an interrupted task. However, there was a significant difference between the responses of males and females for this attribution

( $F [1, 56] = 4.720, p = .034$ ). The mean response of males ( $M = 0.048, SD = 0.099$ ) was higher than that of females ( $M = -0.014, SD = 0.11$ ). This finding suggests that males more than females attribute their performance to ability on an interrupted task.



**Figure 5.** Adjusted Means for Ability Attribution according to Self-Concept and Gender

### **Effort Attribution**

For this dependent variable, inspection of the scatter plots of the reference line against the response line for each independent variable showed a linear relationship. The tests for homogeneity indicated that the regression slopes were homogenous (gender:  $F [1, 56] = 0.691, p = .409$ ; self-concept:  $F [1, 56] = 0.043, p = .836$ ).

Therefore, the data was analysed using an ANCOVA. The covariate (effort reference line) adjusted the dependent variable (effort response line) for mean differences.

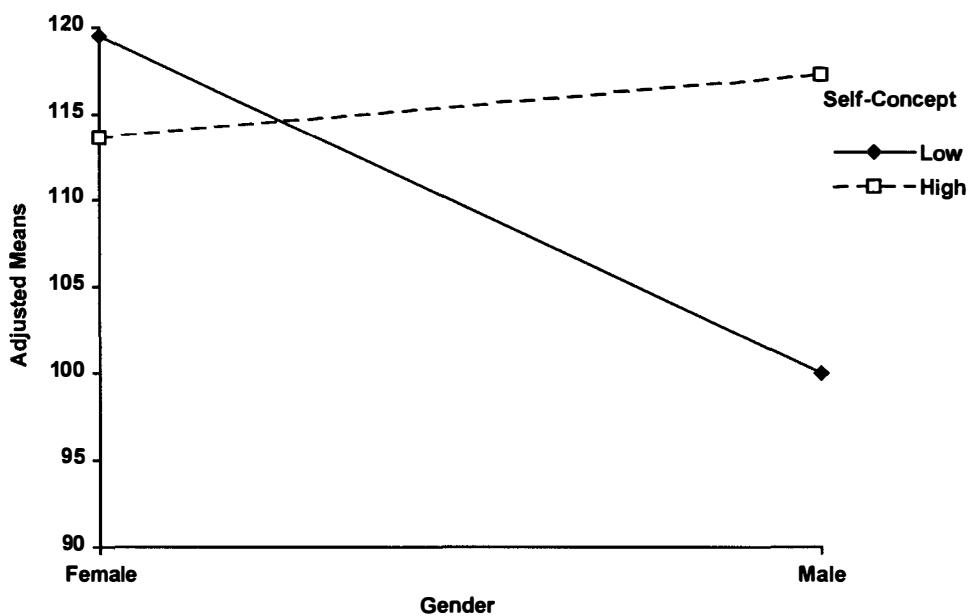
The dependent variable was analysed in relation to the two independent variables, self-concept and gender. The adjusted means and standard errors for the interaction of gender and self-concept for this attribution are shown in Table 3. Figure 6 depicts a graphical display of the data.

**Table 3.** Adjusted Means and Standard Errors of Gender  $\times$  Self-Concept for Effort Attribution

		SELF-CONCEPT		
		Low	High	
GENDER	Female	<i>M</i>	119.5	113.6
		<i>SE</i>	6.13	6.10
	Male	<i>M</i>	100.0	117.3
		<i>SE</i>	6.52	6.59

Despite the superficial appearance of an interaction between self-concept and gender in Figure 6, an ANCOVA revealed that this interaction was not statistically significant ( $F [1, 55] = 3.37, p = .072$ ). However, it will be noted that it did approach significance ( $F [1, 55] = 3.37, p < .08$ ). No significant interactions indicated at this level of analysis allowed an unconstrained consideration of the main effects. Analysis of the data indicated that participants with a high self-concept had a slightly higher status on the response to effort ( $M = 115.4, SE = 4.47$ ) than those with a low self-

concept ( $M = 109.8, SE = 4.47$ ), however the difference in these means was revealed to be non-significant ( $F [1, 55] = 0.804, p = .374$ ). This finding indicates that high and low self-concept students do not differ in how they attribute their performance to effort on an interrupted task. Females had a higher mean response ( $M = 116.6, SE = 4.34$ ) than males ( $M = 108.6, SE = 4.64$ ) for this attribution. However, when an ANCOVA was applied, it was revealed that this difference was not significant ( $F [1, 55] = 1.54, p = .220$ ). This finding suggests that on an interrupted task males and females do not differ in attributing their performance to effort.



**Figure 6.** Adjusted Means for Effort Attribution according to Self-Concept and Gender

## **Luck Attribution**

For this dependent variable, observation of the scatter plots of the reference line against the response line showed that the relationships were linear, and the tests for homogeneity indicated that the regression slopes were homogeneous (gender:  $F [1, 56] = 0.347, p = .558$ ; self-concept:  $F [1, 56] = 1.547, p = .219$ ). Therefore, the data was analysed using an ANCOVA. The reference line for the luck attribution was used as the covariate for each analysis, adjusting for mean differences on the dependent variable.

The dependent variable was analysed in respect to the two independent variables. Table 4 shows the adjusted means and standard errors for the interaction of gender and self-concept for this attribution.

**Table 4.** Adjusted Means and Standard Errors of Gender  $\times$  Self-Concept for Luck Attribution

			SELF-CONCEPT	
			Low	High
GENDER	Female	<i>M</i>	31.46	32.96
		<i>SE</i>	6.73	6.72
	Male	<i>M</i>	41.51	40.17
		<i>SE</i>	7.39	7.32

The test of interaction between self-concept and gender revealed a non-significant effect ( $F [1, 55] = 1.55, p = .843$ ). The absence of an interaction at this

level of analysis allowed the main effects to be examined without concern for higher-order complication. The difference in mean scores between the low ( $M = 36.5$ ,  $SE = 4.97$ ) and high ( $M = 36.6$ ,  $SE = 4.97$ ) self-concept participants for this attribution was very small, and was not statistically significant ( $F [1, 55] = 0.00$ ,  $p = .991$ ). This finding indicates that high and low self-concept students do not differ in attributing their performance to luck on an interrupted task. Although males ( $M = 40.8$ ,  $SE = 5.09$ ) had a higher mean response than did females ( $M = 32.2$ ,  $SE = 4.76$ ) for this attribution, a non-reliable difference in means was revealed after an ANCOVA was applied ( $F [1, 55] = 0.04$ ,  $p = .221$ ). This finding suggests that males and females do not differ in attributing their performance to luck on an interrupted task.

### ***Task Difficulty Attribution***

Linearity of the data for this dependent variable was satisfied by the inspection of the scatter plots of the reference line against the response line for each independent variable. The data was also shown to be homogeneous when tested (gender:  $F [1, 56] = 0.013$ ,  $p = .991$ ; self-concept:  $F [1, 56] = 0.128$ ,  $p = .772$ ). Therefore, an ANCOVA was used to analysed the data. The reference line for the task difficulty attribution used as the covariate to adjust for mean differences on the dependent variable.

The dependent variable was analysed in relation to self-concept and gender. Table 5 shows the adjusted means and standard errors for the interaction of gender and self-concept for this attribution.

**Table 5.** Adjusted Means and Standard Errors of Gender x Self-Concept for Task Difficulty Attribution

			SELF-CONCEPT	
			Low	High
<b>GENDER</b>	<b>Female</b>	<i>M</i>	94.08	82.25
		<i>SE</i>	5.06	5.06
	<b>Male</b>	<i>M</i>	80.57	83.79
		<i>SE</i>	5.40	5.40

The interaction between gender and self-concept was revealed to be non-significant ( $F [1, 55] = 2.08, p = .155$ ), allowing the main effects of gender and self-concept to be examined without constraint. The main effect for self-concept for this attribution was not significant ( $F [1, 55] = 0.66, p = .419$ ), with low self-concept participants exhibiting a slightly higher mean response ( $M = 86.3, SE = 3.71$ ) than the high self-concept participants ( $M = 83.0, SE = 3.71$ ). This finding indicates that high and low self-concept students do not differ in how they attribute their performance to task difficulty on an interrupted task. Although females had a slightly higher mean response ( $M = 88.2, SE = 3.56$ ) than did males ( $M = 82.2, SE = 3.81$ ) for this attribution, an ANCOVA revealed that this difference was not statistically significant ( $F [1, 55] = 1.32, p = .256$ ). This finding suggests that on an interrupted task males and females do not differ in attributing their performance to task difficulty.



### **Global Self-Concept and Gender**

Global self-concept was compared to gender using an independent samples *t*-test. The means and standard deviations of self-concept score for males and females are indicated in Table 6. The application of a *t*-test to this data revealed that there was no significant difference between these mean scores ( $t [58] = 0.31, p = .760$ ). This finding suggests that males and females do not differ in regards to global self-concept as measured by the Piers-Harris Children's Self-Concept Scale.

**Table 6.** Means and Standard Deviations of Self-Concept for Gender

<b>GENDER</b>	<b><i>M</i></b>	<b><i>SD</i></b>
<b>Female</b>	57.81	15.59
<b>Male</b>	59.00	14.42

### **Summary**

The present study tested three hypotheses. First, that there would be a significant relationship between global self-concept score and attribution preference. Second, that there would be a significant relationship between attribution preference and gender. Third, that there would be a significant relationship between global self-concept score and gender. The results obtained by the present study are summarised below.

The dependent variables for the first and second hypotheses in the present study were the four causal attributions, ability, effort, luck, and task difficulty. The

data collected for these dependent variables were analysed in relation to the independent variables, self-concept and gender. The absence of any interactions at this level of analysis allowed the main effects to be considered without constraint.

Analysis of the first dependent variable, ability, revealed that there were no significant difference in how high and low self-concept students attribute their performance on an interrupted task to this attribution. However, a significant difference was revealed between the responses of males and females, indicating a gender main effect. It was shown that on an interrupted task males more than females attribute their performance to ability.

Analysis of the three remaining dependent variables (effort, luck, and task difficulty) revealed that low and high self-concept students do not differ in how they attribute their performance on an interrupted task to any of these attributions. Similarly, a gender difference was not apparent, suggesting that males and females also do not differ in attributing their performance to effort, luck, and task difficulty on an interrupted task.

Finally, the third hypothesis that there would be a significant relationship between global self-concept score and gender was tested. No significant difference was found between the mean scores of males and females on the Piers-Harris Children's Self-Concept Scale. This finding suggests that males and females do not differ in regards to global self-concept.

# Chapter 5

## Discussion

The purpose of this study was to examine the relationship between global self-concept and attribution preference in primary school students. The relationships of gender to global self-concept and gender to attribution preference were also examined. The findings of the present study as they correspond to the three research questions stated in Chapter One are discussed in this chapter. The limitations of this study and suggestions for future research are also discussed. The chapter concludes with the implications of the findings for educational practice.

### ***Global Self-Concept and Attribution Preference***

The main research question posed by this study was: What is the relationship between global self-concept and attribution preference in selected groups of primary-aged children? The present study revealed that high and low self-concept students do not differ in attributing their performance on an interrupted task to any of the four causal attributions (ability, effort, luck, and task difficulty). This study is one of the first to determine students' attribution preferences for a task with an equivocal outcome. Previous research studies have tended to measure individuals' attribution preferences for tasks with success and failure outcomes. The present study is more applicable to classroom settings, where equivocal outcomes are commonly

experienced. No published research studies were found that examined the relationship between global self-concept and attribution preference for an equivocal outcome. As such, caution is necessary in comparing the findings of the present study with those of previous studies.

The lack of a substantive relationship between global self-concept and attribution preference in the present study is contrary to the findings of a number of previous studies that have shown a significant relationship between these variables. Fitch (1970) showed that low self-concept individuals attribute failure to internal causes more than high self-concept individuals. Ames and Felker (1979) also found a relationship between self-concept and attribution preference, but with a difference in how high and low self-concept individuals attribute causes to success. In particular, their study found that high self-concept individuals internalise their success more than low self-concept individuals. Madonna, Bailey and Wesley (1990) found that individuals with a high self-concept attribute their success and failure more to internal causes, whereas low self-concept individuals attribute their success and failure more to external causes.

A possible explanation for the lack of a substantive relationship between global self-concept and attribution preference in the present study may be due to the different perceptions held by low and high self-concept participants of the task interruption. It could be hypothesised that participants with a low self-concept would be more likely to view the interruption of the task as a failure. On the contrary, participants with a high self-concept may view the interruption as a success. If the general findings of

previous research are accepted, that is, high self-concept individuals attribute success to internal causes (ability and effort) and failure to external causes (task difficulty and luck) and vice versa for low self-concept individuals, then both low and high self-concept participants in the present study would attribute their performance for the interrupted task to internal causes. This would explain the lack of significant differences between the attribution preferences of high and low self-concept students and the relatively high mean attribution scores for ability and effort compared with task difficulty and luck in the present study.

There are notable differences in the tasks and measurement devices used to measure participants' attribution preferences in previous studies. Fitch (1970) required participants to complete a dot-estimation task. Participants' attribution preferences for this task were measured by their completion of a questionnaire that allowed them to distribute causality for their performance over four possible causes. In the study conducted by Ames and Felker (1979), participants were randomly given six puzzles to complete. Participants indicated their attribution preferences for their performance on these tasks using a pie-graph device. Madonna, Bailey and Wesley (1990) measured participants' attribution preferences for success and failure by their completion of the Nowicki-Strickland Children's Locus of Control scale.

It is likely that the tasks employed in these studies and the measuring devices of attribution preferences would affect the causal attributions chosen by individuals. For example, the type of task (e.g., mathematical, comprehension) and the context in which the task is performed (e.g., degree of competitiveness, novelty of the task,

versus private reporting of task outcomes and attributions) may affect attribution choices. The measuring devices in previous studies and the number and type of attribution choices available from these instruments vary widely. The use of the magnitude scaling technique and all four causal attributions in the present study is an improvement on previous studies. This measuring device provided the students with almost unlimited opportunity to respond with regards to their attribution preferences. The task employed in the present study and the equivocal outcome obtained are more similar to school-type tasks than those used in previous studies. As such, the task and measurement device used in this study, with some refinement and testing, could become an extremely effective tool for measuring students' attribution preferences.

In summary, the present study found that high and low self-concept students do not differ in respect to their attribution preferences for an interrupted task. This finding suggests that global self-concept is not predictive of differences in students' attribution preferences for an equivocal outcome. This study did not consider a multifaceted-hierarchical model of self-concept. However, many researchers in this field (e.g., Hattie, 1992; Marsh & Shavelson, 1995) support the claim that specific facets of self-concept may become more or less important when compared to similar constructs. In this study, measures of academic self-concept may have shown more significant findings.

### ***Gender Differences in Attribution Preference***

The second research question posed by the present study was: Is there a difference in attribution preference between males and females? The present study found that males more than females attribute their performance on an interrupted task to ability. No other gender differences in attribution preference were found. As stated in the previous section, the present study measured students' attribution preferences for an equivocal outcome whereas previous studies have focused on measuring students' attribution preferences for success and failure outcomes. Due to this difference in task outcomes, caution is necessary in comparing the findings of the present study with those of previous studies.

The findings of the present study are in accord with previous studies that have shown that males and females do differ in attributing their performance to ability. As the present study did not determine whether the participants perceived the interruption of the problem-solving task as a success or failure, the present study's findings support those of other research studies which have found that males more than females attribute either their success or failure on a task to ability. Burgner and Hewstone (1993) conducted a study which revealed that males attribute their success to ability more than females. In this study, the participants were presented with two tasks, one that was easy and which all participants successfully completed, and one that was difficult and which no participants successfully completed. Open-ended questions were then used to measure participants' attribution preferences for these two tasks. Wigfield (1988) found that males on a memory task attribute failure more to lack of

specific ability than females. Participants' attribution preferences in this study were measured by their rating of the importance of a number of reasons for their performance.

The finding of the present study that males more than females attribute their performance on an interrupted task to ability conflicts with the findings of Nicholls (1975) and Cooper, Burger and Good (1981). Nicholls (1975) found that females attribute failure to low ability more than success to high ability, however males do not. In his study, an angle matching task was given to participants followed by false performance feedback. A pie-graph device was then used to measure participants' attribution preferences for their success or failure on this task. Cooper, Burger and Good (1981) found that females take more responsibility than males on academic outcomes. In their study, the Intellectual Achievement Responsibility Questionnaire was used to gauge participants' locus of control beliefs.

As with studies that have examined the relationship between global self-concept and attribution preference, various tasks and measurement devices have been used in the research studies cited in this section to measure the attribution preferences of individuals. It is likely that these different methods will influence participants' attribution choices. Notably, previous studies that are supported by the finding of the present study that males more than females attribute their performance to ability have also used problem-solving tasks similar to those used in a classroom setting.

The present study found no significant differences between males and females in their preference for any of the other causal attributions (effort, luck, and task



difficulty). This finding supports the findings of Burgner and Hewstone (1993), who also showed no gender differences for any causal attribution other than ability. It is, however, contrary to the findings of a number of other studies in this field that have shown a significant relationship between gender and attribution preference. Nicholls (1975) showed that males more than females attribute their failure to bad luck. Similarly, Wigfield (1988) found that males make more negative attributions than females by attributing their failure more to lack of interest and their success more to task ease.

Overall, the findings from the present study question the assumptions of the three models (i.e., general externality, low expectancy, and self derogation) that have been proposed to explain gender differences in attribution preference. However, an alternative model suggested by Sweeney, Moreland and Gruber (1982) is supported by the present study's finding that males more than females attribute their performance on an interrupted task to ability. This model states that males exhibit a *general internality* bias as opposed to females displaying a general externality bias. The proponents of this model claim that males tend to attribute their performance more to internal causes (ability and effort) because they are more socialised to acknowledge personal responsibility for their outcomes.

In summary, it appears from the findings of the present study that there are few gender differences in attribution preference for an equivocal outcome. This study found that males and females only differ in attributing their performance on an

interrupted task to ability. Specifically, this study found that males attribute their performance on an interrupted task more to ability than females.

### ***Gender Differences in Global Self-Concept***

The third research question posed by the present study was: Is there a difference in global self-concept between males and females? While it is theorised that males have a higher global self-concept than females, few empirical studies have supported this theory, and when a significant difference between the mean scores of males and females on a global self-concept measure has been found, this difference is usually small in magnitude (e.g., Alpert-Gillis & Connell, 1989; O'Brien, 1991).

The present study replicates the findings of many previous studies that have found no significant difference between the mean scores of males and females on a global self-concept measure. Hattie and McInman (1991), in their meta-analysis of 77 studies that compared gender to self-concept, found that there was no overall relationship between gender and global self-concept. Wylie (1979), in her review of 47 studies into the relationship between self-concept and gender, similarly found that non-significant relationships dominated findings. The findings of the present study are also consistent with those of a number of other research studies that have examined gender differences in global self-concept. These include studies by DeVoe (1977), Ketcham and Snyder (1977), Moyal (1977), and Piers and Harris (1964), all of which were unable to report a significant difference in the global self-concepts of males and females.

Gender differences in specific facets of self-concept were not a consideration for this study. However, such differences, if they do exist, may be obscured when items on a self-concept scale are summed to obtain a global self-concept. Many previous studies (e.g., Marsh, 1984; Mboya & Mwamwenda, 1996) based on a multifaceted-hierarchical approach to self-concept have found gender differences in specific facets of self-concept. From an extensive review of research into the relationship between gender and self-concept, Marsh (1989) suggested that there appears to be a pattern of gender differences favouring males for math and physical self-concept and favouring females for verbal and social self-concept. He concluded that there are small gender effects favouring males for total self-concept measures. He also concluded that there appear to be larger, counterbalancing gender differences in more specific facets of self-concept that are generally consistent with gender stereotypes.

In summary, the present study indicates that males and females display similar levels of global self-concept on the Piers-Harris Children's Self-Concept Scale. This finding is consistent with those of many previous studies in this field, leading to the cogent conclusion that gender is not a mediator for global self-concept. Once again, a multifaceted-hierarchical model of self-concept may have shown more significant findings in this study.

### ***Limitations of the Study***

This study was conducted with 82 year seven students from four Perth metropolitan schools within similar socio-economic areas. The findings from this study cannot be readily generalised to students of a different age group, socio-economic status, or geographic location.

The present study is one of the first to measure students' attribution preferences for a task with an equivocal outcome. The technique used to measure the participants' attribution preferences in this study has not yet been validated against other measures that also claim to measure individuals' attribution preferences and this presents some technical limitations. The findings of this study are also, to an extent, limited by the selection of task. This study did not assess participants' familiarity of the problem-solving task and this may pose some limitations on the findings, given that some researchers (e.g., Langer, 1978) claim that novelty of a task may affect attribution choice. The task employed in this study may also have influenced the attribution preferences of males and females, as it has been shown that males have higher expectations for success than females on visual-spatial tasks (Gitelson, Peterson & Tobin-Richards, 1982).

The Piers-Harris Children's Self-Concept Scale was used in the present study to measure participants' levels of global self-concept. While it is generally agreed that self-concept can best be measured by statements that reflect the self-worth, personal competence, and achievement ideals or aspirations of individuals (Gilberts, 1983), the self-report technique does have its detractors. The major critics of this technique (e.g.,

Cattell, 1946; Coombs, Soper, & Courson, 1963; Edwards, 1957, 1990) argue that what individuals report about the self is not necessarily an accurate representation of the self-concept. The self-report is only what individuals are willing to and able to disclose to someone else. For example, there is a tendency for people to provide information about themselves that they perceive to be socially desirable rather than display their true thoughts or feelings (Burns, 1979). Consequently, scores on the Piers-Harris Children's Self-Concept Scale are subject to conscious and unconscious distortions by respondents, usually in the direction of more socially desirable responses.

### ***Suggestions for Future Research***

There are several issues that need to be addressed if further advancement is to be made in researching the relationship between global self-concept and attribution preference in individuals. These issues fundamentally relate to the reliability and validity of measurement techniques employed in this field.

A variety of tasks and measurement techniques have been developed by researchers in an attempt to measure the attribution preferences of individuals. Some of the tasks used in previous studies have varied between solving anagrams (e.g., Bar-Tal & Frieze, 1977), matching angles (e.g., Nicholls, 1975), solving logical and mathematical problems (e.g., Feldman-Summers & Kiesler, 1974), and the use of hypothetical settings (e.g., Croxton & Klonsky, 1982). However, little indication of the appropriateness of these tasks was made in the studies. The task itself (e.g., gender-stereotyped tasks), and the context in which the task is performed (e.g., the

novelty of a task, degree of competitiveness, public versus private reporting of outcome and attribution preference) may influence the types of attributions individuals make. More effort needs to be made in making the task suitable and impartial within the context in which it is to be applied. Measurement techniques in previous studies have also varied widely, ranging from rating scales (e.g., Wigfield, 1988) and percentage ratings (e.g., Ames & Felker, 1979) to open-ended questioning (e.g., Burgner & Hewstone, 1993). However, many of these measures remain largely untested for reliability or validity. Future research in this field should focus on the technical adequacy of these measures. It would be more appropriate to devise a small number of measurement instruments with acceptable levels of reliability and validity against which new measures can be accurately tested.

There is also a need for research into the validity and reliability of self-concept measures. Improvements to the measures of self-concept should take similar lines to those proposed for the measurement of attribution preferences, with the development of a small number of valid and reliable measures. Future measurement devices should be based on more clearly articulated and justifiable theoretical models. Increasing and evaluating the validity of self-concept measures could also be achieved by more sophisticated application of item analyses, factor analyses, multitrait-multimethod matrices, and techniques for evaluating and minimising the possibly irrelevant responses or score determiners that can decrease construct validity (Wylie, 1989).

Improving the reliability and validity of the devices that measure self-concept and attribution preferences will benefit future research that examines the relationship

between these variables. Improved measures should result in more consistent findings from which more accurate conclusions regarding this relationship can be made.

By taking into account certain situational variables, further advancement may also be made in examining the relationship between global self-concept and attribution preference in individuals. The placement of individuals in artificial task settings in which the researcher defines or manipulates the task outcome may result in a distorted or an inaccurate view of attribution patterns. Previous studies have also tended to measure individuals' attribution preferences for one particular type of task or problem. This has prevented any sound conclusions being made about the general tendencies that characterise the attribution patterns of high and low self-concept individuals. Studying the spontaneous attribution preferences of individuals in multiple contexts and for self-chosen tasks would be more appropriate.

Future research should also focus on refining the procedure used to measure the attribution preferences of participants in the present study. The use of the interrupted task procedure attempted to produce a situation in which success and failure were not apparent, and students could make their own assessment of their performance on the problem-solving task. This procedure allowed students to make a personal judgment of their success or failure. Examining individuals' actual perceptions of the task interruption should be a focus for future research. As well as this, replication of this study with a larger population and testing the measure used in this study against other measures in this field for reliability and validity is required.

There is an increasing acceptance of the multifaceted-hierarchical approach to self-concept among contemporary theorists (e.g., Marsh, 1984; Shavelson, Hubner, & Stanton, 1976). This approach may be more useful in detecting relationships between self-concept and other variables. Measures of academic self-concept, for example, may be more appropriate to use in detecting a relationship between self-concept and attribution preference for academic outcomes.

The research agenda outlined in this section provides a rich foundation upon which educational researchers can build conceptualisations about the relationship between self-concept and attribution preference in individuals. Past research has furthered educators' understandings, and it is likely that there will be many more such developments. Perhaps research more grounded in theory and methodologically improved will offer deeper insights into this relationship.

### **Conclusion**

This study has initiated a new field of research into attribution theory. Very little research has been conducted into the measurement of students' attribution preferences for tasks with an equivocal outcome. Previous studies have tended to measure students' attribution preferences for tasks with success and failure outcomes, however, this is not necessarily typical of outcomes experienced in real-life. As stated earlier in this chapter, the present study is more applicable to classroom settings where equivocal outcomes are commonly experienced.

A number of conclusions can be drawn from the findings of this study. The foremost is that global self-concept is not predictive of differences in students'



attribution preferences for an equivocal outcome. Contemporary self-concept theorists (e.g., Hattie, 1992; Marsh & Shavelson, 1995) tend to agree that a multifaceted-hierarchical approach to self-concept is more valid in detecting relationships between self-concept and other variables. Further research into the relationship of attribution preference for an equivocal outcome and more applicable facets of self-concept, such as academic, may provide more telling results in the future.

A second conclusion that can be drawn from this study is that males more than females attribute their performance for an equivocal outcome to ability. This finding supports the theory that males are more internal in their attributions than females by taking more responsibility for their task outcomes (Sweeney, et al., 1982).

The final conclusion from this study is that gender is not a mediator for global self-concept. It would seem that the findings of both the present study and previous studies in this field do not support the theory that males have a higher global self-concept than females. Once again, a multifaceted-hierarchical approach may be more appropriate for detecting gender differences in self-concept.

The present study has important implications for educational settings. As noted in Chapter One, actual perceptions of success and failure differ from student to student, are consequent of reaching or not reaching a goal, and are not necessarily relative to an achieved grade or score. As well as this, school tasks are often left ungraded or unfinished. Therefore, equivocal outcomes are more typical of many school-type tasks, and research into students' attribution preferences for these outcomes is highly relevant to understanding students' learning and behaviour in the classroom.

In light of the present research, it appears that teachers cannot make judgements about students' attribution preferences for an equivocal outcome based on a global self-concept score. This study did not examine the effects of specific facets of self-concept on students' attribution preferences and did not determine students' actual perceptions of the task interruption. Investigation of these issues may further clarify the relationship between self-concept and attribution preference for an equivocal outcome. This study does however, provide a solid basis and raise some interesting questions for future research.

## References

- Adler, A. (1927). *The practice and theory of individual psychology*. NY: Harcourt Brace.
- Alban-Metcalfe, B. (1981). Self-concept and attitude to school. *Journal of Educational Psychology, 51*, 66-76.
- Allport, G. (1943). The ego in contemporary psychology. *Psychological Review, 50*, 451-468.
- Alpert-Gillis, L., & Connell, P. (1989). Gender and sex-role influences on children's self-esteem. *Journal of Personality, 51*, 1, 97-113.
- Amato, P. (1984). *The Piers-Harris Children's Self-Concept Scale*. Working paper. Melbourne: The Institute of Family Studies.
- Ames, C. (1978). Children's achievement attributions and self-reports of self-concept and competitive reward structure. *Journal of Educational Psychology, 70*, 345-355.
- Ames, C., & Felker, D. (1979). Effects of self-concept on children's causal attributions and self reinforcement. *Journal of Educational Psychology, 71*, 613-619.

- Antaki, C., & Brewin, C. (1982). *Attributions and psychological change*. London: Academic Press.
- Barry, K., & King, L. (1993). *Beginning teaching*. (2nd ed.). Sydney: Social Science Press.
- Bar-Tal, D., & Frieze, I. (1977). Achievement motivation for males and females as a determinant of attributions for success and failure. *Sex Roles*, 3, 301-313.
- Benson, M. (1988). Attributional measurement techniques: Classification and comparison of approaches for measuring causal dimensions. *The Journal of Social Psychology*, 129, 307-323.
- Bogo, N., Winget, C., & Gleser, G. (1970). Ego defenses and perceptual styles. *Perceptual Motor Skills*, 30, 599-604.
- Bracken, B. (1996). *Handbook of self-concept*. Canada: John Wiley & Sons.
- Burgner, D., & Hewstone, M. (1993). Young children's causal attributions for success and failure: 'Self-enhancing' boys and 'self-derogating' girls. *British Journal of Developmental Psychology*, 11, 125-129.
- Burns, R. (1979). *The self-concept in theory, measurement, development and behaviour*. London: Longman Group Ltd.
- Burns, R. (1982). *Self-concept development and education*. East Sussex: Holt, Reinhart and Winston Ltd.
- Cattell, R. (1946). *Description and measurement of personality*. London: Harrap.
- Cooley, C. (1912). *Human nature and the social order*. NY: Scribners.

- Coombs, A., Soper, D., & Courson, C. (1963). The measurement of the self-concept and self-report. *Educational Psychology and Measurement*, 23, 495-500.
- Cooper, H., Burger, J., & Good, T. (1981). Gender differences in the academic locus of control beliefs of young children. *Journal of Personality and Social Psychology*, 40, 562-572.
- Coopersmith, S. (1967). *The antecedents of self-esteem*. CA: Freeman.
- Cruse, S., & Elrod, M. (1980). Sex differences in self-esteem and parental behaviour. *Psychological Reports*, 46, 719-727.
- Croxton, J., & Klonsky, B. (1982). Sex differences in causal attributions for success and failure in real and hypothetical sport settings. *Sex Roles*, 8, 399-409.
- Darlington, R. (1990). *Regression and linear models*. USA: McGraw-Hill.
- Deaux, K., & Emswiller, T. (1974). Explanation of successful performance on sex-linked tasks: What is skill for the male is luck for the female. *Journal of Personality and Social Psychology*, 29, 80-85.
- DeVoe, M. (1977). Cooperation as a function of self-concept, sex, and race. *Educational Quarterly*, 2, 3-8.
- Edwards, A. (1957). *The social desirability variable in personality assessment and research*. NY: Dryden.
- Edwards, A. (1990). Construct validity and social desirability. *American Psychologist*, 45, 282-289.
- Erikson, E. (1963). *Childhood and psychology*. NY: Norton.

- Feldman-Summers, S., & Kiesler, S. (1974). Those who are number two try harder: The effect of sex on attributions of causality. *Journal of Personality and Social Psychology, 30*, 846-855.
- Felker, D., & Thomas, S. (1971). Self-initiated verbal reinforcement and positive self-concept. *Child Psychology, 42*, 1285-1287.
- Fitch, G. (1970). Effects of self-esteem, perceived performance, and choice on causal attributions. *Journal of Personality and Social Psychology, 16*, 311-315.
- Freud, S. (1943). *A general introduction to psychoanalysis*. NY: Garden City Publishing Co.
- Frieze, I., Fisher, J., Hanusa, B., McHugh, M., & Valle, V. (1978). Attributions of the causes of success and failure as internal and external barriers to achievement in women. In J. Sherman & F. Denmark (Eds.), *Psychology of women: Future directions of research*. NY: Psychological Dimensions.
- Gilberts, R. (1983). The evaluation of self-esteem. *Family & Community Health, 20*, 29-49.
- Gitelson, I., Peterson, A., & Tobin-Richards, M. (1982). Adolescents' expectancies of success, self-evaluations, and attributions about performance on spatial and verbal tasks. *Sex Roles, 8*, 411-419.
- Hattie, J. (1992). *Self-concept*. NJ: Lawrence Erlbaum Associates.
- Hattie, J., & McInman, A. (1991). *Gender differences in self-concept*. Manuscript submitted for publication.

- Heider, F. (1958). *The psychology of interpersonal relations*. NY: Wiley.
- Hunter M., & Barker, G. (1987). 'If at first . . . ': Attribution theory in the classroom. *Educational Leadership*, 45, 50-53.
- Ickes, W., & Layden, M. (1978). Attribution styles. In J. Harvey, W. Ickes, & R. Kidd (Eds.), *New directions in attribution research* (Vol. 2). NJ: Lawrence Erlbaum Associates.
- James, W. (1910). *Psychology: The briefer course*. NY: Holt.
- Jones, E., & Davis, K. (1965). From acts to dispositions. In L. Berkowitz, (Ed.), *Advances in experimental social psychology* (Vol. 2). NY: Academic Press.
- Karnes, F., & Wherry, J. (1982). Concurrent validity of the Children's Personality Questionnaire O Factor as suggested by the Piers-Harris Children's Self-Concept Scale. *Psychological Reports*, 50, 574.
- Kelley, H. (1967). Attribution theory in social psychology. In D. Levine (Ed.), *Nebraska symposium on motivation*. Lincoln: University of Nebraska Press.
- Keppel, G. (1991). *Design and analysis: A researcher's handbook*. (3rd ed.). NJ: Prentice Hall.
- Ketcham, B., & Snyder, R. (1977). Self-attitudes of the intellectually and socially advantaged student: Normative study of the Piers-Harris Children's Self-Concept Scale. *Psychological Reports*, 40, 111-116.
- Labenne, W., & Greene, B. (1969). *Educational implications of self-concept theory*. CA: Goodyear.

- Langer, E. (1978). Rethinking the role of thought in social interaction. In J. Harvey, W. Ickes, & R. Kidd (Eds.), *New directions in attribution research* (Vol. 2). NJ: Lawrence Erlbaum Associates.
- Lefley, H. (1974). Social and familial correlates of self-esteem among American Indian children. *Child Development*, 45, 829-833.
- Lodge, M. (1981). *Magnitude scaling: Quantitative measurement of opinions*. London: Sage Publications.
- Madonna, S., Bailey, G., & Wesley, A. (1990). Classroom environment and locus of control in identifying high and low self-concept in fourth and fifth graders. *Psychological Reports*, 66, 1152-1154.
- Maehr, M., & Nicholls, J. (1980). Culture and achievement motivation: A second look. In N. Warren (Ed.), *Studies in cross-cultural psychology* (Vol. 2). NY: Academic Press.
- Marsh, H. (1984). Relations among dimensions of self-attribution, dimensions of self-concept, and academic achievements. *Journal of Educational Psychology*, 76, 1291-1308.
- Marsh, H. (1989). Sex differences in the development of verbal and mathematics constructs: The high school and beyond study. *American Educational Research Journal*, 26, 191-225.
- Marsh, H., Relich, J., & Smith, I. (1983). Self-concept: The construct validity of interpretations based upon the SDQ. *Journal of Personality and Social Psychology*, 45, 173-187.



- Marsh, H., & Shavelson, R. (1985). Self-concept: Its multifaceted, hierarchal structure. *Educational Psychologist, 20*, 107-125.
- Marx, R., & Winne, P. (1977). Construct interpretation of three self-concept inventories. *American Educational Research Journal, 15*, 99-109.
- Mboya, M., & Mwamwenda, T. (1996). Self-concept and locus of control among South African adolescents. *Psychological Reports, 79*, 1235-1238.
- McHugh, M., Fisher, J., & Frieze, I. (1982). Effects of situational factors on the self-attributions of females and males. *Sex Roles, 8*, 389-397.
- Mead, G. (1934). *Mind, self and society*. Chicago: University of Chicago Press.
- Moyal, B. (1977). Locus of control, self-esteem, stimulus appraisal, and depressive symptoms in children. *Journal of Consulting and Clinical Psychology, 45*, 951-952.
- Nicholls, J. (1975). Causal attributions and other achievement-related conditions: Effects of task outcome, attainment value, and sex. *Journal of Educational Psychology, 31*, 379-389.
- O'Brien, E. (1991). Sex differences in components of self-esteem. *Psychological Reports, 68*, 214-242.
- Parish, T., & Taylor, J. (1978). The Personal Attribute Inventory for Children: A report on its validity and reliability as a self-concept scale. *Educational and Psychological Measurement, 38*, 568-569.

- Piers, E. (1984). *Piers-Harris Children's Self-Concept Scale: Revised manual*. LA: Western Psychological Services.
- Piers, E., & Harris, D. (1964). Age and other correlates of self-concept in children. *Journal of Educational Psychology*, 55, 91-95.
- Rogers, C. (1951). *Client-centred therapy: Its current practice, implications, and theory*. Boston: Houghton Mifflin.
- Rosenberg, M. (1979). *Conceiving the self*. NY: Basic Books.
- Schunk, D. (1991). *Learning theories: An educational perspective*. NY: Macmillan Publishing Company.
- Shavelson, R., & Bolus, R. (1982). Self-concept: The interplay of theory and methods. *Journal of Educational Psychology*, 74, 3-17.
- Shavelson, R., Hubner, J., & Stanton, G. (1976). Self-concept: Validation of construct interpretations. *Review of Educational Research*, 46, 407-441.
- Simon, J., & Feather, N. (1971). Attribution of responsibility and valence of outcome in relation to initial confidence and success and failure of self and other. *Journal of Personality and Social Psychology*, 18, 173-188.
- Simon, J., & Feather, N. (1973). Causal attributions for success and failure at university examinations. *Journal of Educational Psychology*, 64, 46-56.
- Snygg, A., & Coombs, D. (1949). *Individual behaviour: A new frame of reference for psychology*. NY: Harper & Brothers.

- Solley, C., & Stagner, R. (1956). Effects of magnitude of temporal barriers, type of goal and perception of self. *Journal of Experimental Psychology*, 51, 62-70.
- Statistical Package for the Social Sciences* (Version 7.5, Windows platform).  
Chicago, IL: SPSS Inc.
- Stipek, D. (1993). *Motivation to learn*. (2nd ed.). MA: Allyn and Bacon.
- Sweeney, P., Moreland, R., & Gruber, K. (1982). Gender differences in performance attributions: Students' explanations for personal success or failure. *Sex Roles*, 8, 359-373.
- Weiner, B. (1974). *Achievement motivation and attribution theory*. NJ: General Learning.
- Weiner, B. (1979). A theory of motivation for some classroom experience. *Journal of Educational Psychology*, 71, 3-25.
- Weiner, B., Frieze, I., Kukla, A., Reed, L., Rest, S., & Rosenbaum, R. (1971). *Perceiving the causes of success and failure*. NY: General learning Press.
- Wigfield, A. (1988). Children's attributions for success and failure: Effects of age and attentional focus. *Journal of Educational Psychology*, 80, 76-81.
- Wiley, M., Crittenden, K., & Birg, L. (1979). Why a rejection? Causal attribution of a career achievement event. *Social Psychology Quarterly*, 42, 214-222.
- Woolfolk, A. (1993). *Educational psychology*. (3rd ed.). MA: Allyn and Bacon.
- Wylie, R. (1974). *The self-concept: A review of methodological considerations and measuring instruments*. London: University of Nebraska Press.

Wylie, R. (1979). *The self-concept*. London: University of Nebraska Press.

Wylie, R. (1989). *Measures of self-concept*. London: University of Nebraska Press.

# **Appendix A**

## **Parent Consent Form and Teacher Information Sheet**

The consent letter given to the students' parents and the information sheet for the class teachers are shown on the following pages.

Dear Parent/Guardian,

I am a qualified primary teacher. I am currently doing project work on problem-solving in year seven classes. I am visiting schools in the metropolitan area.

I will be working with your child's class in the near future. A short, twenty-minute questionnaire will be given to the children, followed by three problem-solving activities. These will be completed as a whole class and take no longer than one hour of class time. Children generally enjoy these activities. I know that the information gathered from these activities will be of benefit to teachers and students in schools.

Any further queries regarding this study can be directed to me on (08) 9123 4567. I will be happy to answer any questions. Thank you.

Yours sincerely,

Carolyn Moore  
Honours Student - Faculty of Education  
Edith Cowan University

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I have read the information above and understand my child's role as a participant in the study. I give consent for my child \_\_\_\_\_ (name) to be included in the questionnaire and the problem-solving activities. I understand that my child's name will not be used in any publication of this work.

Parent/Guardian's Name \_\_\_\_\_

Parent/Guardian's Signature \_\_\_\_\_

Date \_\_\_\_\_

## INFORMATION SHEET FOR TEACHERS

**NAME:** Carolyn Moore

**CONTACT NUMBER:** (08) 9123 4567

**QUALIFICATIONS:** Bachelor of Arts (Primary Education) at Edith Cowan University.

**COURSE:** Bachelor of Education (Honours) at Edith Cowan University.

**RESEARCH TITLE:** The Relationship between Global Self-Concept and Attribution Preference in Primary School Students.

**RESEARCH AIM:** To determine the extent of the relationship between **how students feel about themselves** (their self-concept) and **what students attribute their performance** on a problem-solving task to (i.e., their ability, their effort, luck, or difficulty of the task).

**RESEARCH METHOD:** Two sessions are required to collect the information needed to examine the above relationship. An outline of these two sessions is provided below.

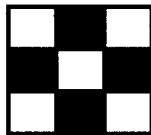
### Session 1

The Piers-Harris Children's Self-Concept Scale will be used to gather information regarding students' levels of self-concept. This test consists of 80 yes/no items. The items are written as simple declarative statements, for example "I am unpopular" and "I have good ideas". Students, within a group setting, will complete the test (in written form) individually.

### Session 2

Students will be required to attempt three similar problem-solving tasks. A simple version of this problem can be seen below.

How many squares of all sizes are on the checkerboard below?



The students will be divided into two groups (depending on the score they obtain on the self-concept test), and each group interrupted at different times during each problem. The students will then be asked to complete a short questionnaire, which aims to determine what they attribute their performance to for these tasks.

Following these tasks, the students will be assured that the reason that they were interrupted was not due to their abilities.

**BENEFITS OF THE RESEARCH:** The information gathered from this study will be of benefit to teachers and students in schools. This study aims to provide teachers with a better understanding of the terms attribution theory and self-concept and how they are inter-related. As well as this, the study will focus on the importance of these concepts in the context of the classroom.

I would like to thank your school, the teachers and the students for taking the time to participate in this study. Your enthusiasm and cooperation play a vital role in making this study possible. My sincere thanks, Carolyn Moore.

# **Appendix B**

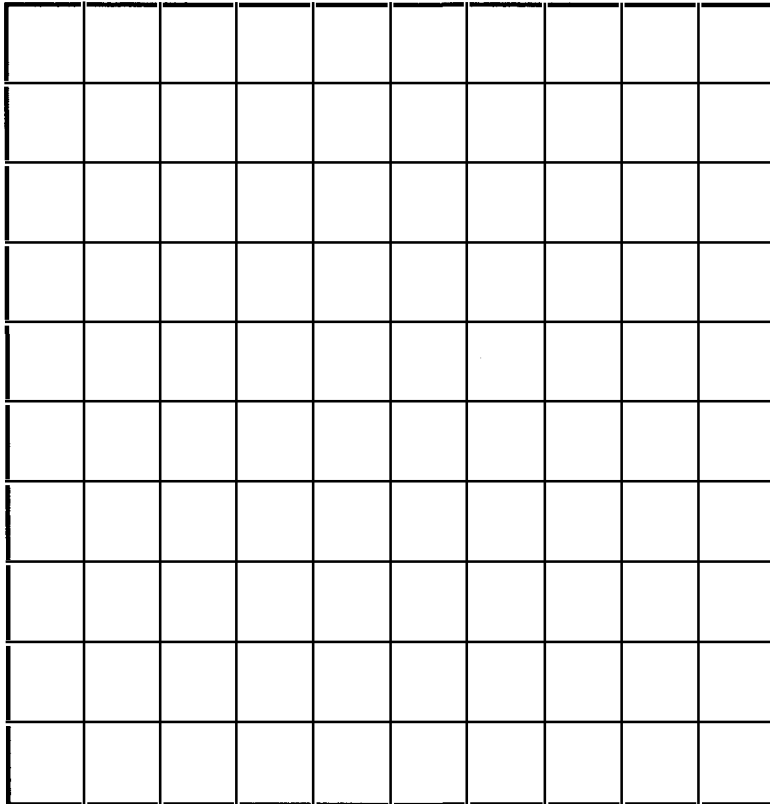
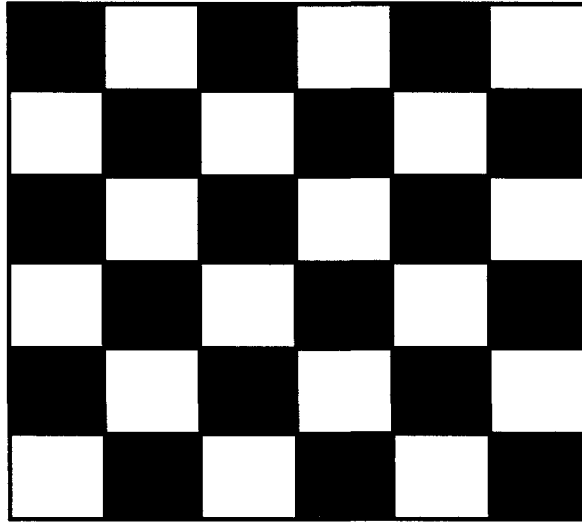
## **Problem Solving Tasks and Response Sheets**

The problem solving tasks and response sheets used to measure the students' attribution preferences are shown on the following pages.



## How Many Squares?

How many squares of all sizes are on the checkerboard below?



**PLEASE DO NOT TURN OVER UNTIL TOLD TO DO SO.**

1A. How much would a teacher at this school think that luck makes a difference in how well a student does this problem?

•

1B. How much do you think that luck made a difference in how well you did this problem?

•

2A. How much would a teacher at this school think that students' ability makes a difference in how well they do this problem?

•

2B. How much do you think that your ability made a difference in how well you did this problem?

•

3A. How much would a teacher at this school think that students' effort makes a difference in how well they do this problem?

•

3B. How much do you think that your effort made a difference in how well you did this problem?

•

4A. How much would a teacher at this school think that the difficulty of this problem (easy or hard) makes a difference in how well a student does this problem?

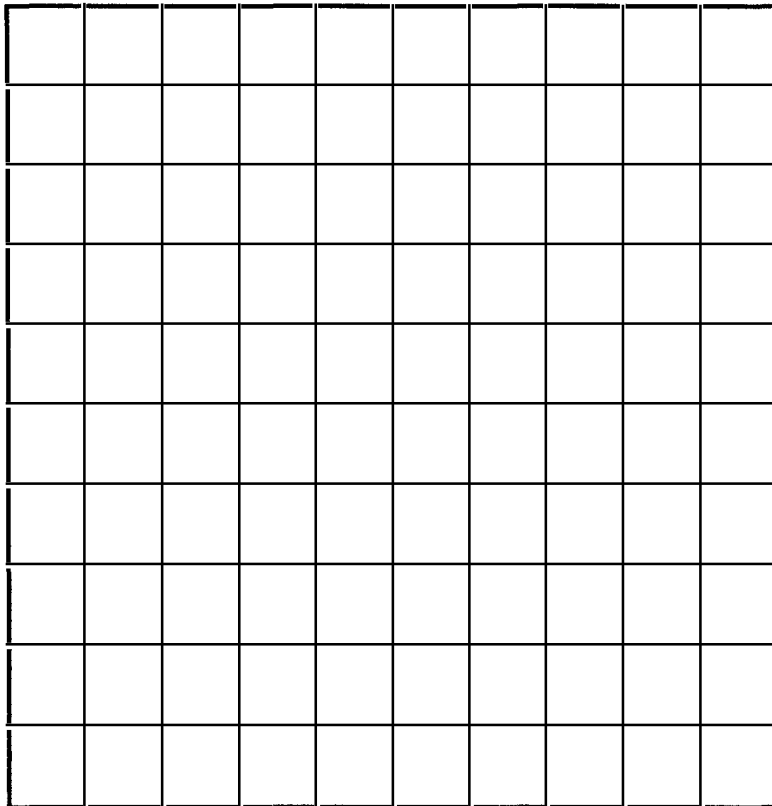
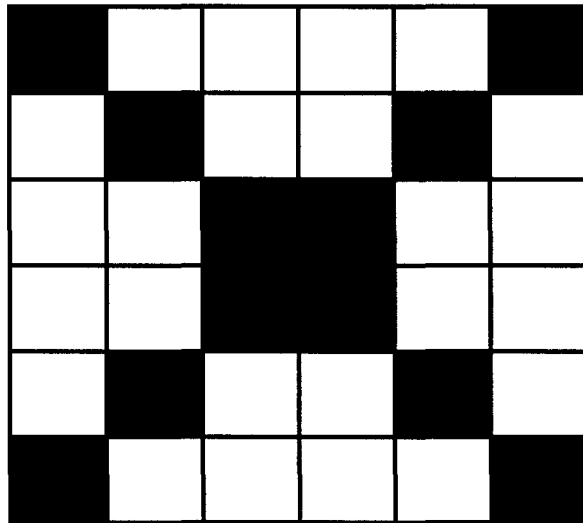
•

4B. How much do you think that the difficulty of this problem (easy or hard) made a difference in how well you did this problem?

•

## How Many Squares?

How many squares of all sizes are on the checkerboard below?



**PLEASE DO NOT TURN OVER UNTIL TOLD TO DO SO.**

1A. How much would a teacher at this school think that luck makes a difference in how well a student does this problem?

•

1B. How much do you think that luck made a difference in how well you did this problem?

•

2A. How much would a teacher at this school think that students' ability makes a difference in how well they do this problem?

•

2B. How much do you think that your ability made a difference in how well you did this problem?

•

3A. How much would a teacher at this school think that students' effort makes a difference in how well they do this problem?

•

3B. How much do you think that your effort made a difference in how well you did this problem?

•

4A. How much would a teacher at this school think that the difficulty of this problem (easy or hard) makes a difference in how well a student does this problem?

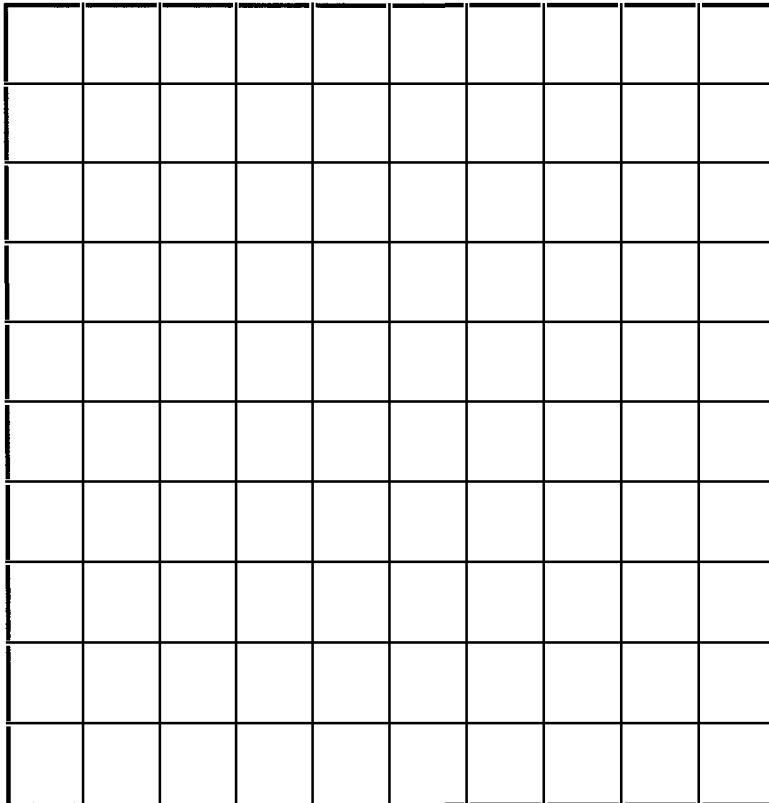
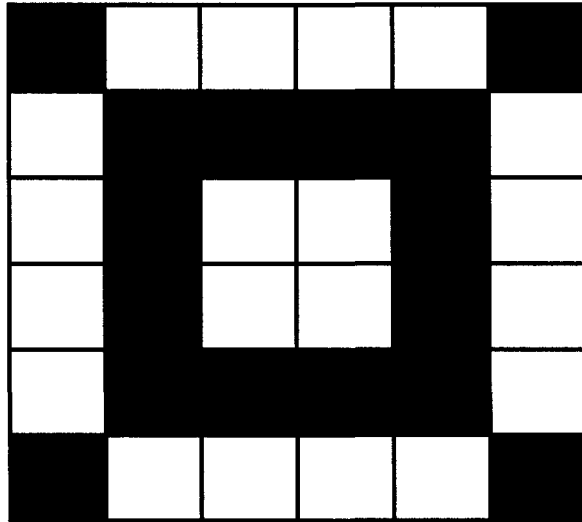
•

4B. How much do you think that the difficulty of this problem (easy or hard) made a difference in how well you did this problem?

•

## How Many Squares?

How many squares of all sizes are on the checkerboard below?



**PLEASE DO NOT TURN OVER UNTIL TOLD TO DO SO.**

1A. How much would a teacher at this school think that luck makes a difference in how well a student does this problem?

•

1B. How much do you think that luck made a difference in how well you did this problem?

•

2A. How much would a teacher at this school think that students' ability makes a difference in how well they do this problem?

•

2B. How much do you think that your ability made a difference in how well you did this problem?

•

3A. How much would a teacher at this school think that students' effort makes a difference in how well they do this problem?

•

3B. How much do you think that your effort made a difference in how well you did this problem?

•

4A. How much would a teacher at this school think that the difficulty of this problem (easy or hard) makes a difference in how well a student does this problem?

•

4B. How much do you think that the difficulty of this problem (easy or hard) made a difference in how well you did this problem?

•

# Appendix C

## Attribution Scenarios

### ***Luck Attribution***

John was competing in a running race. The lanes next to him had been wet by a broken water pipe. This made these lanes very slippery and difficult to run fast. John's lane was dry and this allowed him to run a lot faster than his other opponents. John won his race. He was lucky.

When John was ready to compete in his next race another water pipe broke and this time made his lane wet and not the other lanes. This made it difficult for John to race as the slippery and wet conditions slowed him down. John lost his race. He was unlucky.

In both races luck, a lot of luck or not enough luck, made a difference in how well John did.

### ***Ability Attribution***

Jane has always been a fast runner. On the sports carnival day she won every race she entered, because of her ability to run fast.

Mary has never been good at running. Every time Mary competes in a running race she always comes last. This is because Mary doesn't have much ability at running.

In both races ability, high ability or low ability, made a difference in how well each student did.

### ***Effort Attribution***

When Paul competes in running races he usually finishes somewhere in the middle of the group. Paul decided that in the next running race that he would really try hard to win. This time Paul put all of his effort in to the race and came first.

Ryan is in year 6. He always finishes in the top three. Ryan decided that in the final running race for the day that he couldn't be bothered to try hard and therefore did not put any effort into the race. He finished last.

In both races effort, a lot of effort or not enough effort, made a difference in how well each student did.



### ***Task Difficulty Attribution***

Lisa and Sarah also run in the school races. They first ran a short, easy race and finished closely at the top of the bunch. The teacher then said she was going to give a harder race. She asked the students to run around the oval three times. In this race Sarah and Lisa became tired after the first lap and did not run so well. They finished in the middle of the bunch.

In this case the difficulty of the task, how easy or hard it was, made a difference in how well the students did.

# Appendix D

## Researcher's Script for First Visit

### ***Introduction & Instruction***

Good morning everyone. My name is Miss Moore. I am a visiting teacher to your school, and some time next week, I will be coming in to do some problem-solving activities with you. Today I wanted to come in to introduce myself to you, and to get to know your class a little better.

To help me get to know you, I would like you to answer some questions about yourself. These require yes/no answers, and shouldn't take more than about twenty minutes. What is important is that your answers to these questions should show what *you* feel, not what you think your friends feel, or what you think I might want to hear.

At the top of the page, where it says 'Name', I would like you to print your name and indicate whether you are male or female by circling either 'boy' or 'girl' and then sit quietly with your arms folded and wait for further instructions.

*Hand out self-concept tests.*

In front of you are a set of statements that tell how some people feel about themselves. Read each statement and decide whether it describes the way you feel

about yourself. If it is like you, circle the word 'yes' next to the statement. If it is not like you, circle the word 'no'. Answer every question, even if some are hard to decide. I know that everyone feels differently at different times and in different situations, but answer each question the way you *usually* feel. Do not circle both 'yes' and 'no' for the same statement. If you want to change an answer, cross it out with an X, and circle your new answer. Remember that there are no wrong or right answers.

After every twenty questions, there is a dotted line. When you get to each line, I would like you to sit quietly with your arms folded. When everyone has finished each set of questions, we will go on to the next twenty. That way, everyone will finish together.

Are there any questions about what you have to do?

If anyone has any questions while you are working, please raise your hand and I will come around. You may begin. Remember to take your time and think carefully about the answers you give, be honest with your answers, and keep your eyes on your own work.

*Participants complete the Piers-Harris Children's Self-Concept Scale individually, but within a group setting. Researcher supervises, responding to any queries.*

## **Conclusion**

*Researcher collects self-concept tests, ensuring that the participants' names have been written on the tests.*

Thank you all for filling out your answers to these questions. You have been a very good class, and I look forward to working with you all again next week.

Note - *Italicised text* = researcher's or participants' actions.

# Appendix E

## Researcher's Script for Second Visit

### ***Introduction***

Good morning everyone. Last week I got you to answer some questions about how you felt about yourself. Today we will be doing some problem-solving activities. This time I want to find out how *you* feel about how well you do these problems. I will give you one problem at a time and then be asking you to answer some questions about how well *you* did. It is very important that you listen carefully to the instructions that I give.

### ***Attribution Scenarios***

I'd first like you to listen to some short stories about some year seven students that I know. When I read you these stories I want you to think very carefully about four things and what they mean: *luck, ability, effort, and task difficulty*.

*Show first and second overhead, read stories - emphasising the four attributes.*

### **First Practice Question**

I will now go through how I'd like you to do answer the questions that I will be giving you at the end of each problem.

Let's take a very simple question (*show third overhead - first example*). Read first question. Demonstrate answer to question - more or less (*story of Michael and Rebecca*). Now I want you to have a go at drawing your own lines

(*Distribute first page of handout, students complete first practice question*).

(*Have a look around*). Excellent, you've really been concentrating. Great, pens down and eyes to me.

### **Second Practice Question**

Now let's have look at another practice question (*show third overhead - second example*). Read second question. Demonstrate answer to question - more or less. Now I want you to have a go at drawing your own lines for the second question on your hand-out.

(*Have a look around*). That's great. I can see that you are all ready to start the problems. I need to have everyone's attention - so eyes to me.

### **Practice Problem**

The problems I will be giving you will be checkerboards like this one (*show fourth overhead*). I will be asking you to count the number of squares in the

checkerboard. It is not just the 1x1 squares, but also the 2x2 squares and the 3x3 squares. This is a practice problem to begin with.

What I would like you to do is to trace around each square using a pencil (*like this*) and then tick a box for each square you find. I want you to find as many squares as you can before I stop you.

I will show you the correct answer for this practice problem. *Demonstrate solution. Highlight that there are more boxes than the answer to the problem.* Are there any questions about what you have to do?

You are now ready for the main problems. One other thing that I need to tell you is that when you are working on these problems I will be coming around to see how you are going. After I have been around to see everyone I will be stopping some of you. If I put a red counter (like this one) on your desk I want you to stop working when I tell you to. If I tell you to stop, please sit quietly with your arms folded.

### **Main Problems**

I will now hand out the first problem. Please do not pick up a pen until I tell you to start. (*hand out problems*). You may begin.

*Researcher walks around the class. Hand out red counters to selected students (low and high self-concept participants). Stop students with counters after 2 minutes. Stop remaining students after a further 1 minute.*

Excellent, let's have a go at answering the questions. I will read each of the questions to you and give everyone time to answer. After you have answered a question I would like you to sit quietly with your eyes to me so that I know that you

are ready for the next question. It is important that you do not go ahead with another question until I have read it to you. Answer the questions on your own and think very carefully about your answer, giving it like you did before with the straight lines. Remember to wait until I have read each question before answering it. Now turn over to the next page. (*Read the first question - repeat for all questions*). *Repeat procedure for each problem. Researcher collects problems.*

### **Conclusion**

Thank you very much year 7's for listening carefully to my instructions and for your participation. Even though I stopped some of you and let others continue today it wasn't because you were not doing the right thing or that you weren't good enough - in fact you were all very good. What I wanted to find out was how you felt about how well you did on a problem when you were interrupted part way through. Because we didn't get enough time to complete the problems I will leave a copy of the problems and the answers with your teacher for you to complete later. Thanks again, you have been a wonderful class.

Note - *Italicised print* = researcher's or participants' actions.



## **Overheads**

### **First Overhead - Attribution Scenarios**

#### **Luck**

John was competing in a running race. The lanes next to him had been wet by a broken water pipe. This made these lanes very slippery and difficult to run fast. John's lane was dry and this allowed him to run a lot faster than his other opponents. John won his race. He was lucky.

When John was ready to compete in his next race another water pipe broke and this time made his lane wet and not the other lanes. This made it difficult for John to race as the slippery and wet conditions slowed him down. John lost his race. He was unlucky.

In both races luck, a lot of luck or not enough luck, made a difference in how well John did.

#### **Ability**

Jane has always been a fast runner. On the sports carnival day she won every race she entered, because of her ability to run fast.

Mary has never been good at running. Every time Mary competes in a running race she always comes last. This is because Mary doesn't have much ability at running.

In both races ability, high ability or low ability, made a difference in how well each student did.

## Second Overhead - Attribution Scenarios

### Effort

When Paul competes in running races he usually finishes somewhere in the middle of the group. Paul decided that in the next running race that he would really try hard to win. This time Paul put all of his effort in to the race and came first.

Ryan is in year 6. He always finishes in the top three. Ryan decided that in the final running race for the day that he couldn't be bothered to try hard and therefore did not put any effort into the race. He finished last.

In both races effort, a lot of effort or not enough effort, made a difference in how well each student did.

### Task Difficulty

Lisa and Sarah also run in the school races. They first ran a short, easy race and finished closely at the top of the bunch. The teacher then said she was going to give a harder race. She asked the students to run around the oval three times. In this race Sarah and Lisa became tired after the first lap and did not run so well. They finished in the middle of the bunch.

In this case the difficulty of the task, how easy or hard it was, made a difference in how well the students did.

### Third Overhead - Practice Questions

1A. How much would a teacher at this school like hamburgers?

•

1B. How much do you like hamburgers?

•

2A. How much would a teacher at this school think that luck makes a difference in how well a student does in spelling?

•

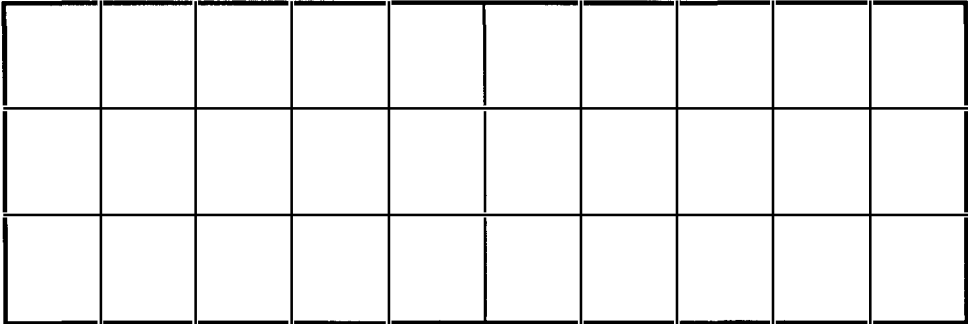
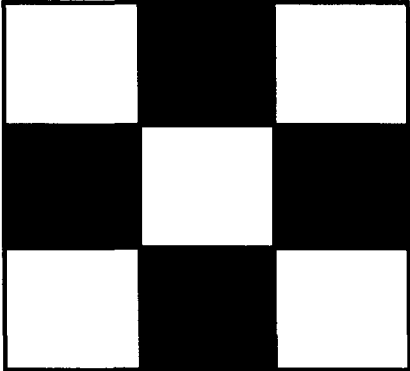
2B. How much do you think that luck makes a difference in how well you do in spelling?

•

Fourth Overhead - Practice Problem

How Many Squares?

How many squares of all sizes are on the checkerboard below?



## ***Student Handout Sheets***

### **First handout - Example questions**

1A. How much would a teacher at this school like hamburgers?

•

1B. How much do you like hamburgers?

•

2A. How much would a teacher at this school think that luck makes a difference in how well a student does in spelling?

•

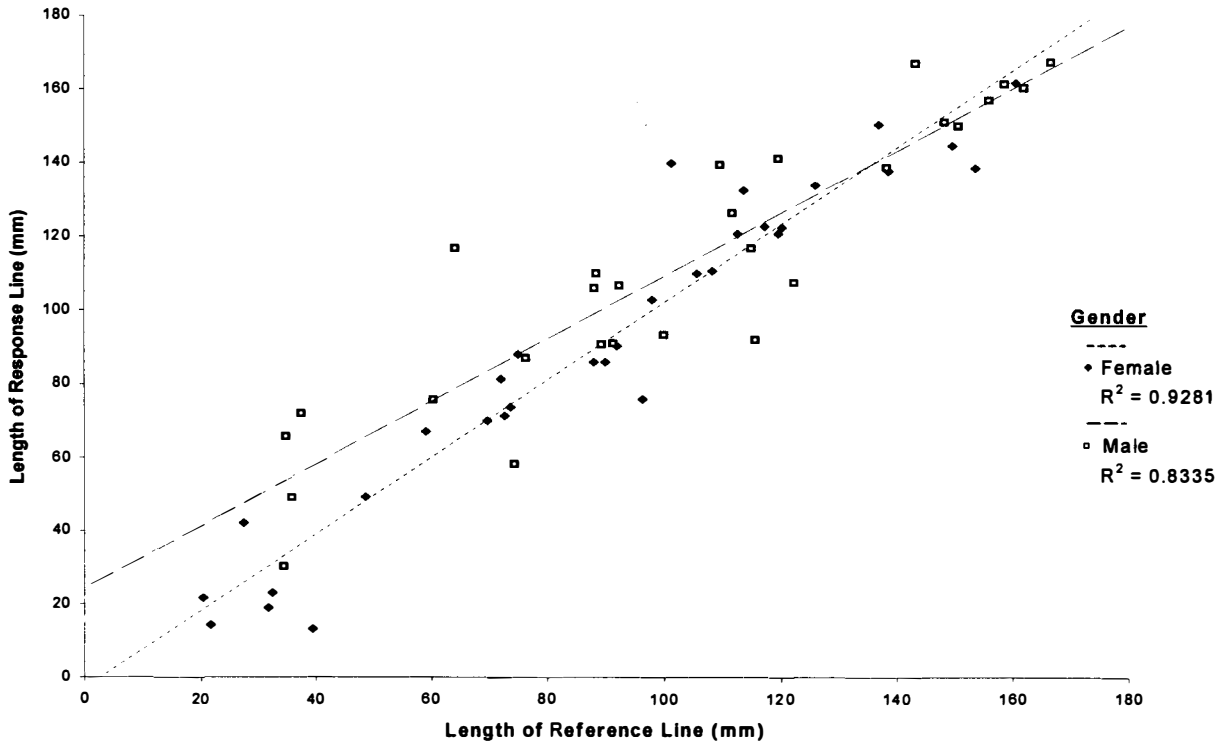
2B. How much do you think that luck makes a difference in how well you do in spelling?

•

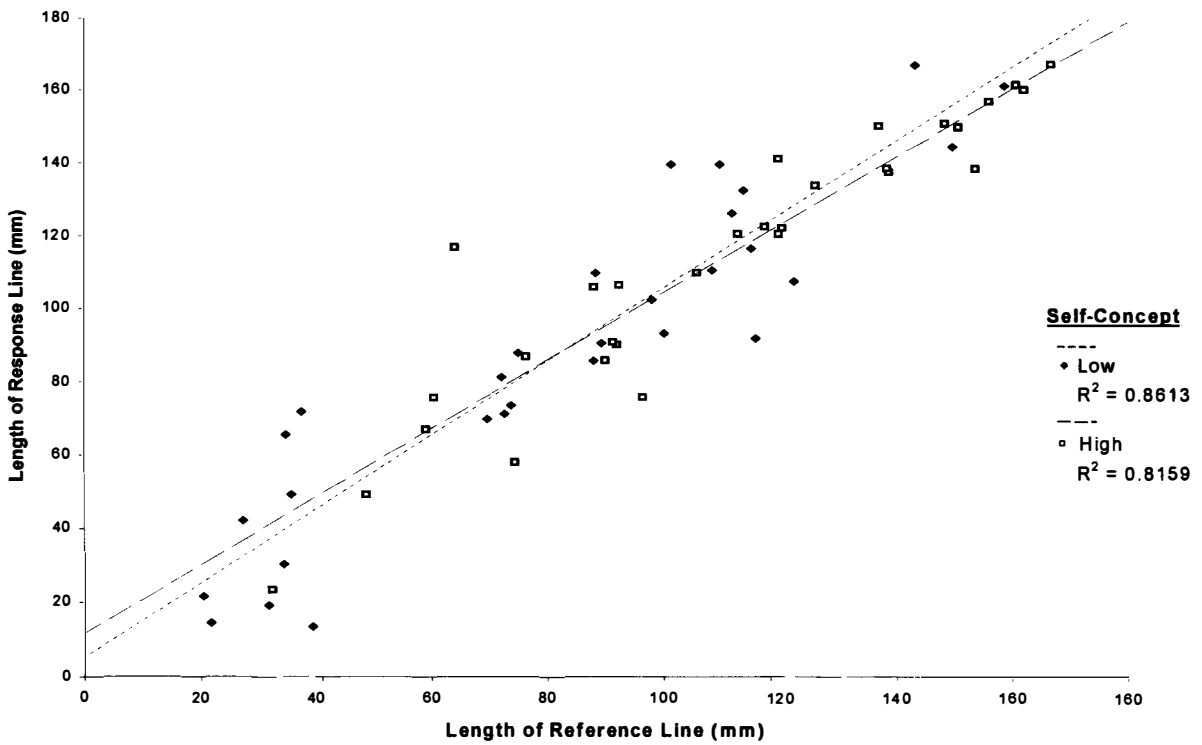
# **Appendix F**

## **Scatter Plots for Linearity and Tests for Homogeneity**

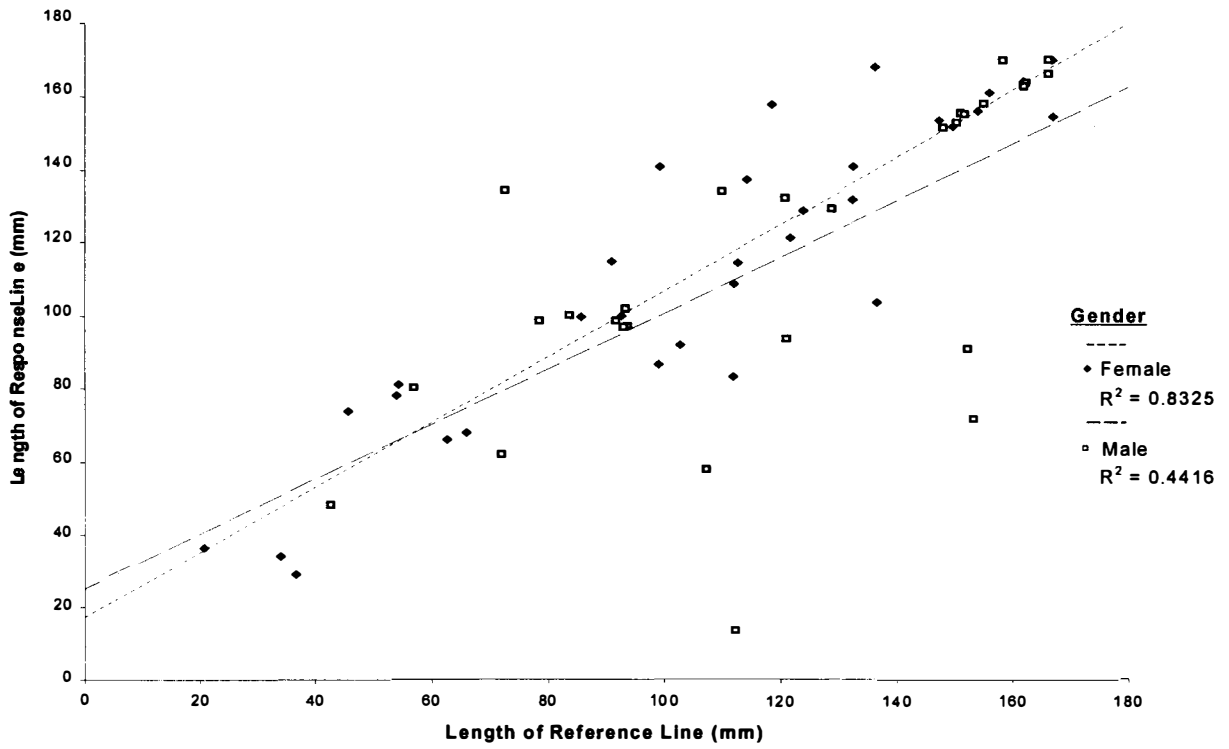
The following pages show the scatter plots of the response line (dependent variable) against the reference line (covariate) for each dependent variable at each level of analysis. These were used to test the data for linearity. Results of the statistical tests for homogeneity are then presented.



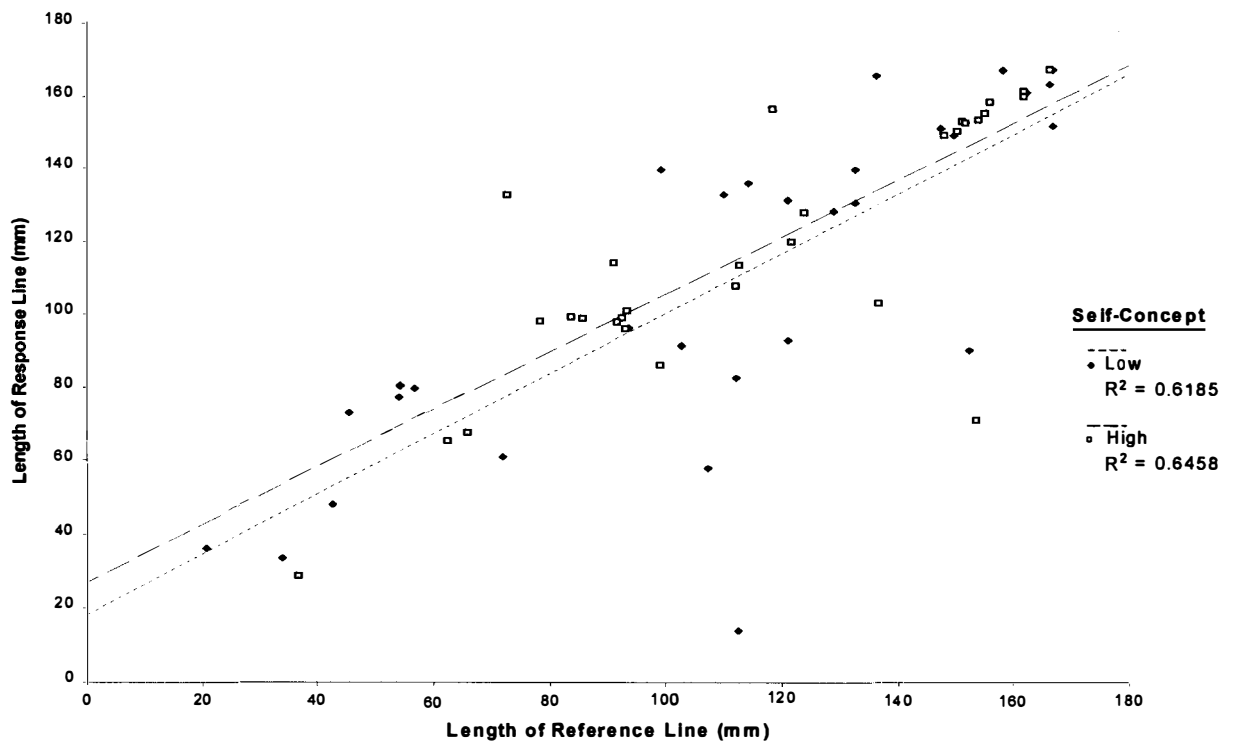
Scatter Plot of Responses to Ability Attribution according to Gender



Scatter Plot of Responses to Ability Attribution according to Self-Concept

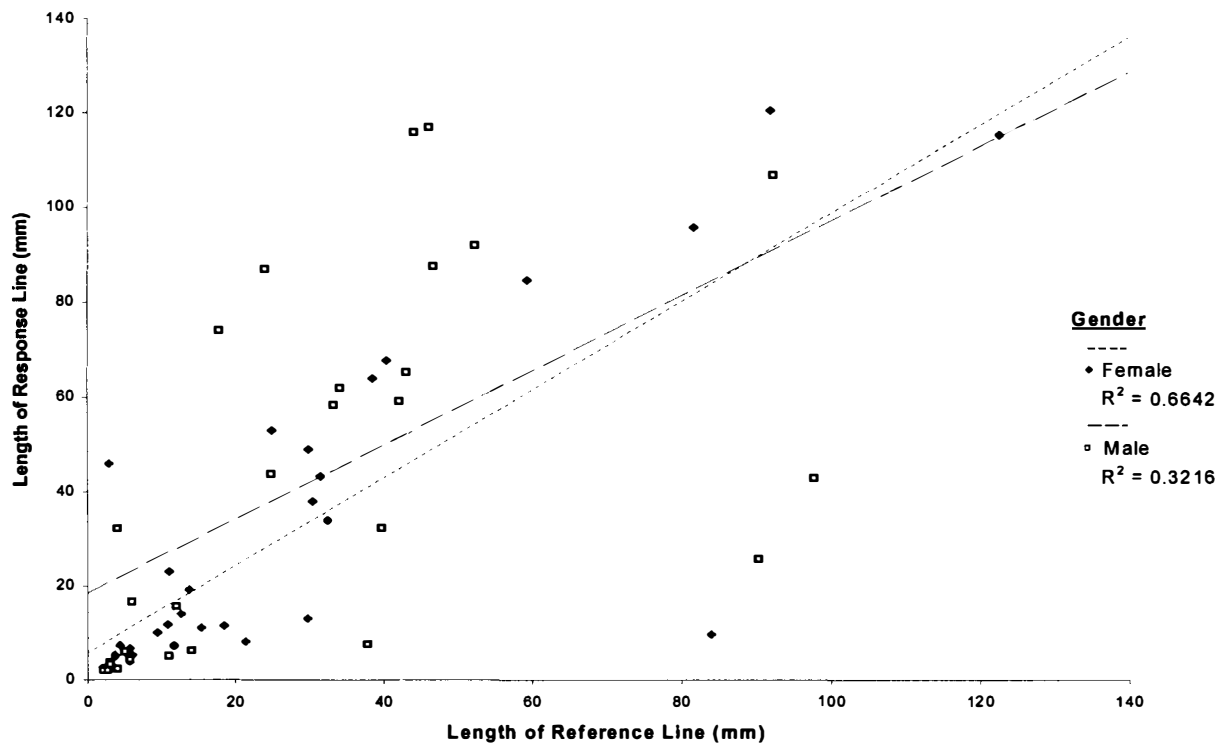


Scatter Plot of Responses to Effort Attribution according to Gender

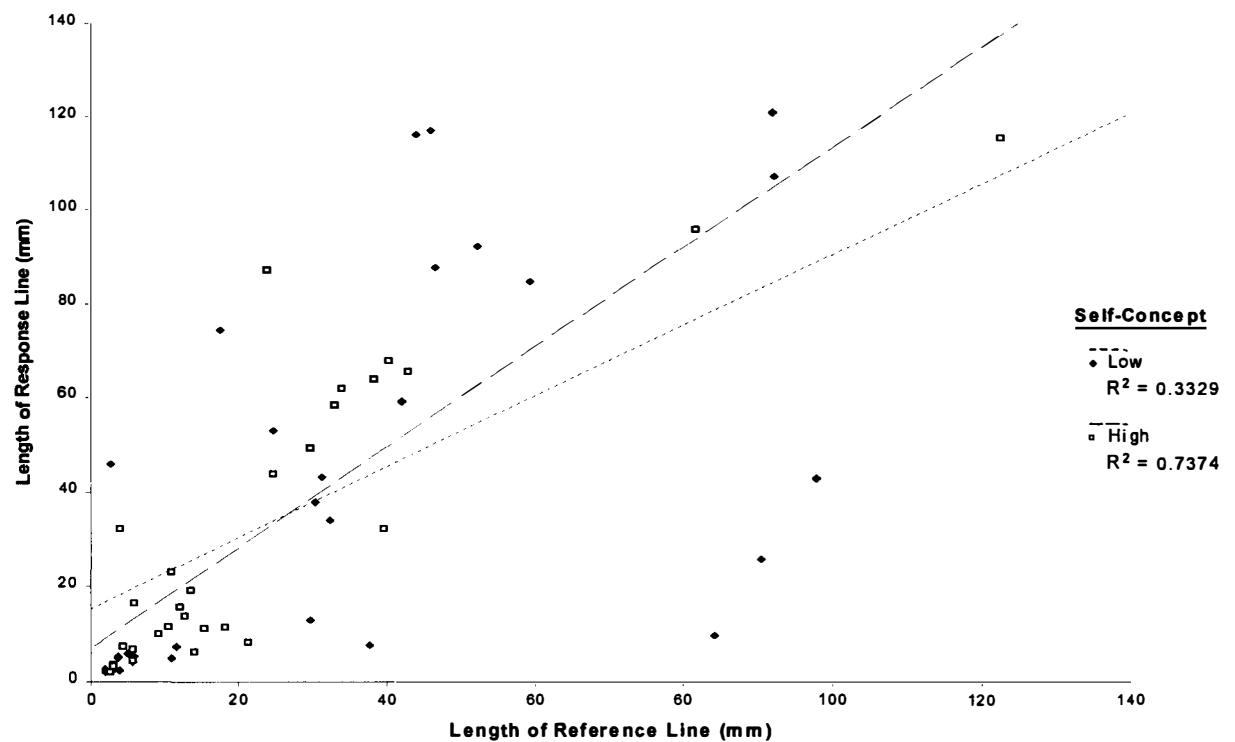


Scatter Plot of Responses to Effort Attribution according to Self-Concept

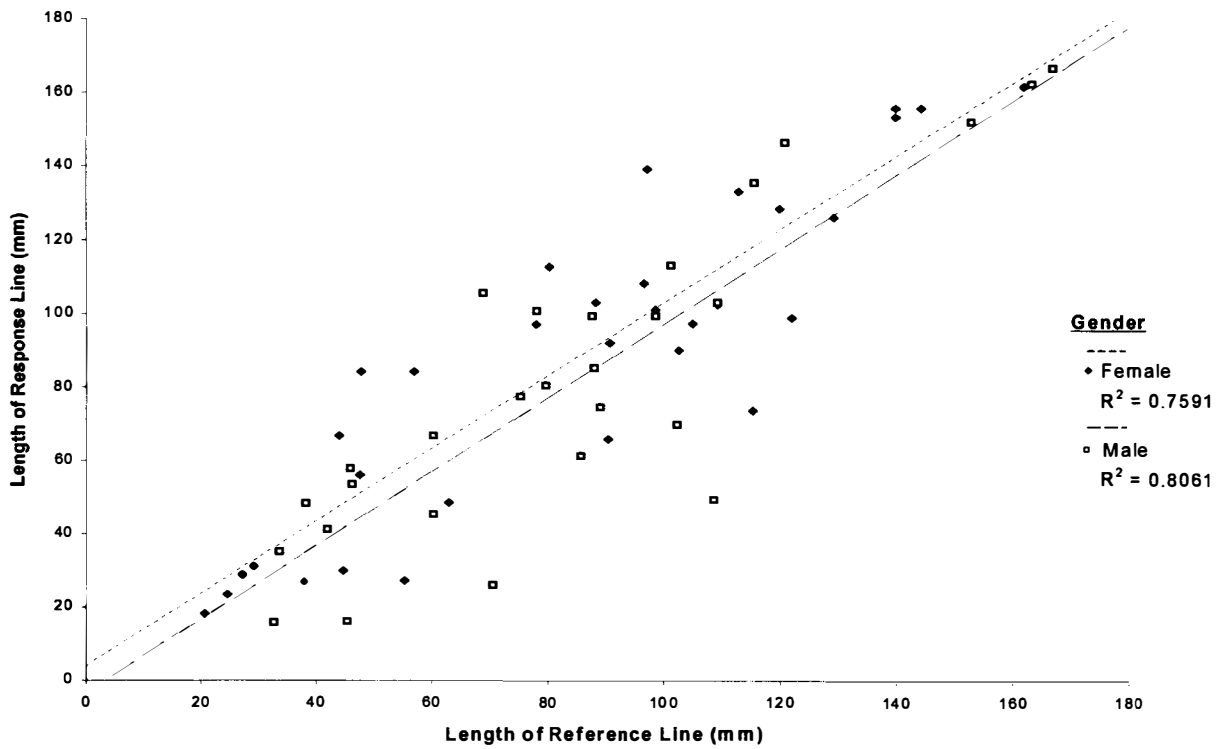




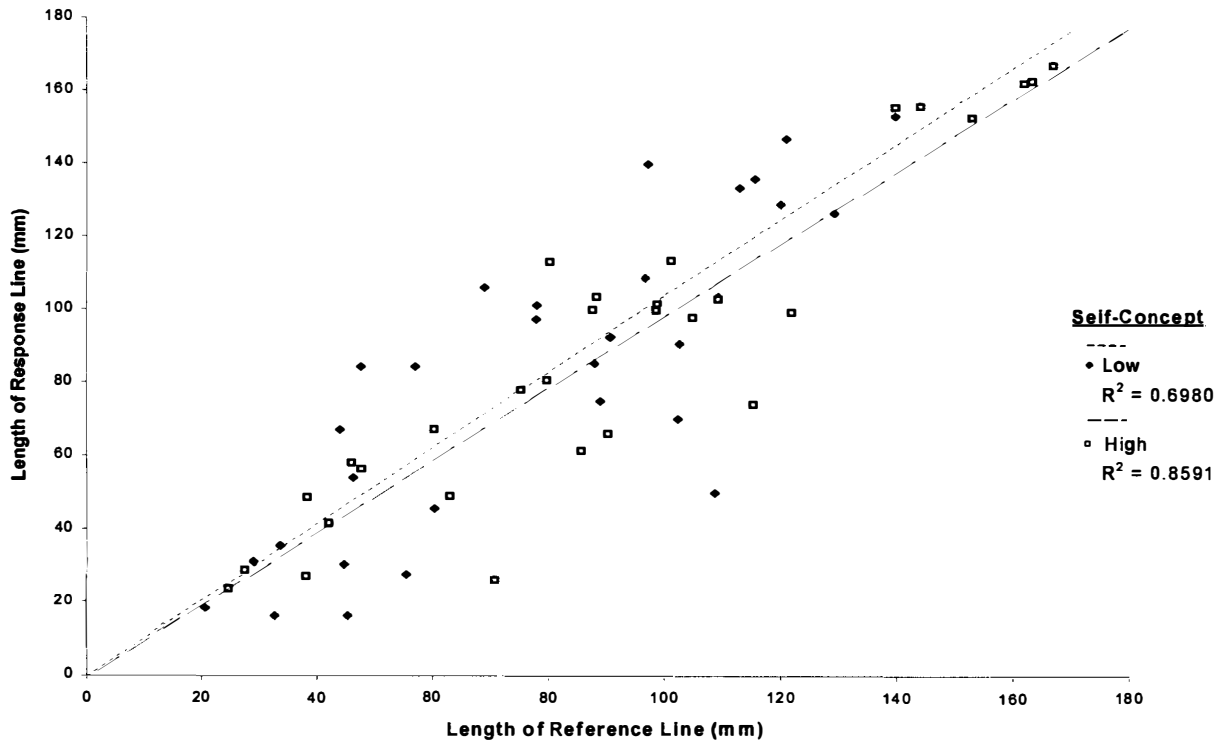
Scatter Plot of Responses to Luck Attribution according to Gender



Scatter Plot of Responses to Luck Attribution according to Self-Concept



Scatter Plot of Responses to Task Difficulty Attribution according to Gender



Scatter Plot of Responses to Task Difficulty Attribution according to Self-Concept

## **Homogeneity Test Results for Ability Attribution according to Gender**

### **Tests of Between-Subjects Effects**

Dependent Variable: **ABILB**

<b>Source</b>	<b>Type III Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>	<b>Noncent. Paramete r</b>	<b>Observed Power</b>
<b>Corrected Model</b>	93892.042	3	31297.347	162.235	.000	486.706	1.000
<b>Intercept</b>	1021.302	1	1021.302	5.294	.025	5.294	.618
<b>GENDER</b>	1624.476	1	1624.476	8.421	.005	8.421	.814
<b>ABILA</b>	85719.260	1	85719.260	444.341	.000	444.341	1.000
<b>GENDER * ABILA</b>	973.995	1	973.995	5.049	.029	5.049	.598
<b>Error</b>	10803.134	56	192.913				
<b>Total</b>	715073.0	60					
<b>Corrected Total</b>	104695.2	59					

Note - **ABILA** = reference line  
**ABILB** = response line

**Homogeneity Test Results for Ability Attribution according to Self-Concept**

**Tests of Between-Subjects Effects**

Dependent Variable: **ABILB**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power
<b>Corrected Model</b>	92175.912	3	30725.304	137.438	.000	412.313	1.000
<b>Intercept</b>	543.686	1	543.686	2.432	.125	2.432	.335
<b>SCORE</b>	81.617	1	81.617	.365	.548	.365	.091
<b>ABILA</b>	80874.187	1	80874.187	361.759	.000	361.759	1.000
<b>SCORE * ABILA</b>	130.794	1	130.794	.585	.448	.585	.117
<b>Error</b>	12519.264	56	223.558				
<b>Total</b>	715073.0	60					
<b>Corrected Total</b>	104695.2	59					

Note - **ABILA** = reference line  
**ABILB** = response line

## **Homogeneity Test Results for Effort Attribution according to Gender**

### **Tests of Between-Subjects Effects**

Dependent Variable: **EFRTB**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Paramete r	Observed Power
<b>Corrected Model</b>	62910.944	3	20970.315	33.936	.000	101.808	1.000
<b>Intercept</b>	2762.958	1	2762.958	4.471	.039	4.471	.547
<b>GENDER</b>	92.398	1	92.398	.150	.700	.150	.067
<b>EFRTA</b>	58427.867	1	58427.867	94.553	.000	94.553	1.000
<b>GENDER * EFRT</b>	427.257	1	427.257	.691	.409	.691	.129
<b>Error</b>	34604.350	56	617.935				
<b>Total</b>	862074.1	60					
<b>Corrected Total</b>	97515.294	59					

Note - **EFRTA** = reference line  
**EFRTB** = response line

**Homogeneity Test Results for Effort Attribution according to Self-Concept**

**Tests of Between-Subjects Effects**

Dependent Variable: **EFRTB**

<b>Source</b>	<b>Type III Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>	<b>Noncent. Parameter</b>	<b>Observed Power</b>
<b>Corrected Model</b>	61930.112	3	20643.371	32.486	.000	97.459	1.000
<b>Intercept</b>	3250.306	1	3250.306	5.115	.028	5.115	.604
<b>SCORE</b>	125.213	1	125.213	.197	.659	.197	.072
<b>EFRTA</b>	57718.613	1	57718.613	90.831	.000	90.831	1.000
<b>SCORE * EFRT</b>	27.366	1	27.366	.043	.836	.043	.055
<b>Error</b>	35585.183	56	635.450				
<b>Total</b>	862074.1	60					
<b>Corrected Total</b>	97515.294	59					

Note - **EFRTA** = reference line  
**EFRTB** = response line

## **Homogeneity Test Results for Luck Attribution according to Gender**

### Tests of Between-Subjects Effects

Dependent Variable: LUCKB

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Paramete r	Observed Power
<b>Corrected Model</b>	38707.515	3	12902.505	18.257	.000	54.770	1.000
<b>Intercept</b>	4369.652	1	4369.652	6.183	.016	6.183	.686
<b>GENDER</b>	1189.912	1	1189.912	1.684	.200	1.684	.247
<b>LUCKA</b>	35228.963	1	35228.963	49.848	.000	49.848	1.000
<b>GENDER * LUCK</b>	244.998	1	244.998	.347	.558	.347	.089
<b>Error</b>	39576.728	56	706.727				
<b>Total</b>	157079.7	60					
<b>Corrected Total</b>	78284.243	59					

Note - **LUCKA** = reference line  
**LUCKB** = response line

**Homogeneity Test Results for Luck Attribution according to Self-Concept**

**Tests of Between-Subjects Effects**

Dependent Variable: LUCKB

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power
<b>Corrected Model</b>	38458.097	3	12819.366	18.025	.000	54.076	1.000
<b>Intercept</b>	3707.532	1	3707.532	5.213	.026	5.213	.612
<b>SCORE</b>	501.347	1	501.347	.705	.405	.705	.131
<b>LUCKA</b>	37238.206	1	37238.206	52.361	.000	52.361	1.000
<b>SCORE * LUCK</b>	1100.185	1	1100.185	1.547	.219	1.547	.231
<b>Error</b>	39826.145	56	711.181				
<b>Total</b>	157079.7	60					
<b>Corrected Total</b>	78274.243	59					

Note - **LUCKA** = reference line  
**LUCKB** = response line



**Homogeneity Test Results for Task Difficulty Attribution according to Gender**

**Tests of Between-Subjects Effects**

Dependent Variable: **TDIFFB**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power
<b>Corrected Model</b>	86275.109	3	28758.370	68.454	.000	205.362	1.000
<b>Intercept</b>	1.258	1	1.258	.003	.957	.003	.050
<b>GENDER</b>	131.859	1	131.859	.314	.578	.314	.085
<b>TDIFFA</b>	84436.197	1	84436.197	200.985	.000	200.985	1.000
<b>GENDER * TDIFF</b>	5.266	1	5.266	.013	.911	.013	.051
<b>Error</b>	23526.245	56	420.112				
<b>Total</b>	547106.3	60					
<b>Corrected Total</b>	109801.4	59					

Note - **TDIFFA** = reference line  
**TDIFFB** = response line

**Homogeneity Test Results for Task Difficulty Attribution according to Self-Concept**

**Tests of Between-Subjects Effects**

Dependent Variable: **TDIFFB**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power
<b>Corrected Model</b>	86126.705	3	28708.902	67.908	.000	203.724	1.000
<b>Intercept</b>	2.961	1	2.961	.007	.934	.007	.051
<b>SCORE</b>	.514	1	.514	.001	.972	.001	.050
<b>TDIFFA</b>	82538.356	1	82538.356	195.236	.000	195.236	1.000
<b>SCORE * TDIFF</b>	54.214	1	54.214	.128	.722	.128	.064
<b>Error</b>	23674.649	56	422.762				
<b>Total</b>	547106.3	60					
<b>Corrected Total</b>	109801.4	59					

Note - **TDIFFA** = reference line  
**TDIFFB** = response line

# Appendix G

## Output of Statistical Analyses

### *ANOVA for Ability Attribution*

#### Tests of Between-Subjects Effects

Dependent Variable: LOG

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power
<b>Corrected Model</b>	6.043E-02	3	2.014E-02	1.687	.180	5.060	.418
<b>Intercept</b>	1.740E-02	1	1.740E-02	1.457	.232	1.457	.220
<b>GENDER</b>	5.636E-02	1	5.636E-02	4.720	.034	4.720	.570
<b>SCORE</b>	1.398E-02	1	1.398E-02	.012	.914	.012	.051
<b>GENDER * SCORE</b>	4.006E-02	1	4.006E-02	.335	.565	.335	.088
<b>Error</b>	.669	56	1.194E-02				
<b>Total</b>	.743	60					
<b>Corrected Total</b>	.729	59					

Note - LOG =  $\log_{10}$  (response line/reference line)

## ANCOVA for Effort Attribution

### Tests of Between-Subjects Effects

Dependent Variable: EFRTB

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power
<b>Corrected Model</b>	64838.608	4	16209.652	27.283	0.000	109.134	1.000
<b>Intercept</b>	2733.250	1	2733.250	4.600	0.036	4.600	0.559
<b>EFRTA</b>	60003.200	1	60003.200	100.995	0.000	100.995	1.000
<b>GENDER</b>	913.282	1	913.282	1.537	0.220	1.537	0.230
<b>SCORE</b>	477.517	1	477.517	0.804	0.374	0.804	0.143
<b>GENDER * SCORE</b>	2003.003	1	2003.003	3.371	0.072	3.371	0.438
<b>Error</b>	32676.686	55	594.122				
<b>Total</b>	862074.1	60					
<b>Corrected Total</b>	97515.294	59					

Note - **EFRTA** = reference line  
**EFRTB** = response line

## ANCOVA for Luck Attribution

### Tests of Between-Subjects Effects

Dependent Variable: LUCKB

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power
<b>Corrected Model</b>	38491.933	4	9622.983	13.301	.000	53.203	1.000
<b>Intercept</b>	4090.664	1	4090.664	5.654	.021	5.654	.647
<b>LUCKA</b>	33160.358	1	33160.358	45.833	.000	45.833	1.000
<b>GENDER</b>	1109.275	1	1109.275	1.533	.221	1.533	.229
<b>SCORE</b>	8.5178E-02	1	8.5178E-02	.000	.991	.000	.050
<b>GENDER * SCORE</b>	28.627	1	28.627	.040	.843	.040	.054
<b>Error</b>	39792.310	55	723.497				
<b>Total</b>	157079.7	60					
<b>Corrected Total</b>	78274.243	59					

Note - LUCKA = reference line  
LUCKB = response line

## ANCOVA for Task Difficulty Attribution

### Tests of Between-Subjects Effects

Dependent Variable: TDIFFB

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power
<b>Corrected Model</b>	87454.235	4	21863.559	53.810	.000	215.240	1.000
<b>Intercept</b>	1.564	1	1.564	.004	.951	.004	.050
<b>TDIFFA</b>	85155.685	1	85155.685	209.582	.000	209.582	1.000
<b>GENDER</b>	534.960	1	534.960	1.317	.256	1.317	.204
<b>SCORE</b>	269.330	1	269.330	.663	.419	.663	.126
<b>GENDER * SCORE</b>	846.797	1	846.797	2.084	.155	2.084	.294
<b>Error</b>	22347.119	55	406.311				
<b>Total</b>	547106.3	60					
<b>Corrected Total</b>	109801.4	59					

Note - **TDIFFA** = reference line  
**TDIFFB** = response line

**Independent Samples t-test for Global Self-Concept and Gender**

<b>LEVENE'S TEST FOR EQUALITY OF VARIANCES</b>			
		<b>F</b>	<b>Significance</b>
<b>SELF-CONCEPT SCORE</b>	<b>Equal variances assumed</b>	1.052	.309
	<b>Equal variances not assumed</b>		

<b>t-TEST FOR EQUALITY OF MEANS</b>								
		<b>t</b>	<b>df</b>	<b>Sig. (2-tailed)</b>	<b>Mean Diff.</b>	<b>Std. Err. Diff.</b>	<b>95% Confidence Interval of the Mean</b>	
							<b>Lower</b>	<b>Upper</b>
<b>SELF-CONCEPT SCORE</b>	<b>Equal Variances Assumed</b>	-0.305	58.00	0.762	-1.19	3.90	-8.99	6.61
	<b>Equal Variances not assumed</b>	-0.306	57.81	0.760	-1.19	3.88	-8.95	6.57