SHAME IN ADOLESENCE: A TWIN STUDY

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SHAME IN ADOLESENCE: A TWIN STUDY

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There is increasing research interest in the role of shame-based emotions in psychopathological conditions such as anxiety and depression. To date, there have been few studies examining the experience of shame in adolescence. Adolescence is a time of dynamically shifting transitions from childhood into the adult world. Although the seeds of our biological, emotional, social and cognitive selves begin developing in childhood, the impact of growth can be seen most dramatically in the teenage years. This thesis is particularly interested in the role of shame emotions that can often be a by-product of the developing self-identity of adolescence. Anxiety and depression often occur in the turmoil of the teenage years, and shame may be major contributory factor to such feelings.

The first aim of the study was to explore the structure of shame in adolescents. The second aim was to explore the relationships between shame and mood state (i.e., anxiety and depression) and other measures including body weight, life event, and attributional style. It is possible that shame processes themselves are genetically influenced, and are constituent factors in the heritability of depression and anxiety. Thus the third aim of this study was to investigate whether there would be any genetic influences for shame.

A questionnaire was sent to a community-based sample of nearly 3,000 adolescents aged 12-19 years. Included in this sample were 850 twin pairs, and 276 sibling pairs. Their responses to the questionnaire were used to examine the genetic and environmental influences for shame, and relationship of shame to symptoms of anxiety and depression.

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Chapter 1

Introducing Shame

Gordie: Why did you have to die?

Vern: What's the matter with Gordie?

Chris: Nothing. Why don't you guys just go over there and look for some branches, okay?

Teddy: Okay.

Gordie: Why did he have to die, Chris? Why did Denny have to die? Why?

Chris: I don't know.

Gordie: It should've been me.

Chris: Don't say that.

Gordie: It should have been me.

Chris: Don't say that, man!

Gordie: I'm no good. My dad said it, I'm no good.

<<Gordie begins to weep.>>

Chris: He doesn't know you.

Gordie: He hates me.

Chris: No. He just doesn't know you.

Gordie: He hates me. My dad hates me. He hates me, oh God.

<<Now crying harder.>>

Chris: You're gonna be a great writer someday, Gordie. You might even write about us guys, if you ever get hard up for material.

from "Stand By Me" – a film by Rob Reiner (1986)

1.1. Introduction

The above quotation comes from Stand By Me, a "rites of passage" film about four boys on the precipice of adolescence. The events of the film happen over two days, and yet within that short time there is a sense of great journey that has taken place for each child. The scene above is near the end of the film, when the four boys have found the body of a dead child. Reflected in the words spoken by the two main protagonists of the film are the emotions of shame that in adolescence become so potent and devastating.

"I'm no good" could be thought of as the central statement in the anatomy of shame – a global description of self that can lead to a multitude of mental health problems,

especially when little support is available from families or friends. The statement forms the precursor to the desire for death – "It should have been me" can be translated as the desire to not be, to hide, to be swallowed up by the earth.

1.2. <u>What is shame?</u>

Shame is an extremely common emotion felt by nearly all people and yet it is rarely talked about openly. For this is one of its central features: a desire to hide or conceal a feeling that is both physically and psychologically overwhelming. Universally, the physiological response to shame includes: lowering of the eyes, decreasing the tone of all facial muscles, lowering of the head or tilting in one direction, and a loss of strength or energy (e.g., Lindsay-Hartz *et al*, 1995; Nathanson, 1992; Tomkins, 1987):

> No matter what the cause, the activation of the shame affect alters our interaction with others: The sudden loss of tonus in neck and shoulders makes the head droop; if we are involved with another person our eyes drop from contact and all sense of mutuality is lost…we realise from the sudden incandescence of our cheeks, that a blush has made our shame even more conspicuous.
>
> from Nathanson (1992), pp.315-316

Internally, there is often emotional confusion and turmoil that includes: feelings of wanting to disappear, wishing to be someone else, and the desire to erase the present and undo the past (e.g., Kaufman, 1989; M. Lewis, 1992).

> He who is ashamed would like to force the world not to look at him, not to notice his exposure. He would like to destroy the eyes of the world. Instead he must wish for his own invisibility.
>
> from Erikson (1965), p.244

These are the central physiological and psychological components of the shame experience. However, as Morrison (1998) notices, there are a huge number of different language terms for the experience of shame, and each one takes a slightly different perspective. This in part explains the variety of different theoretical approaches that are taken to understand shame. Yet, there may be an additional explanation. To avoid talking about shame directly, people are more likely to use alternative phrases or terms

to describe the shaming experience. For example, Morrison (1998) lists the following words or phrases that patients in his clinical care have used as being indicative of a shame response:

- "I am pathetic"
- "I am weak"
- "I feel like a freak"
- "There is something wrong with me"
- "I feel stupid, dumb, idiotic"

These examples suggest that there is a sense of inferiority and weakness that accompanies the process of feeling ashamed.

1.3. Plan of the literature review

This thesis aims to examine the potency of shame in teenagers aged 12-19 years old, and investigate its relationship to anxiety and fear, worry and depression. Initially, several theories of shame will be presented, and then bound into a useful construct for the current thesis. Next will be a focus on the impact of shame for children and teenagers. One of the research goals in this thesis is to investigate the individual differences in shame-proneness, using a behavioural genetics model to explore the relationship between environmental, biological and genetic influences. Finally, some quantitative genetic research that examines the heritability of adolescent anxiety and depression will be presented. It should be noted that until now, there has been no research that has specifically investigated the heritability of shame.

1.4. Theories of shame

Although there has recently been a profusion of theories of shame, all describe the experience of it using similar terms. The physiological, behavioural and emotional experience is understood, yet there is little agreement about its development, function, and how its mechanisms work. Different theories attempt to place shame within a human constellation of emotions, developmental pathways and relationships.

1.4.i Biological/emotional accounts of shame

Many researchers of shame owe their conceptual framework of emotions to Silvan Tomkins (Tomkins, 1962,1963), one of the foremost affect theorists in the 20th Century. In his seminal work, *Affect, Imagery and Consciousness,* he considers shame, along with anger, fear, joy, surprise, interest, distress, disgust and contempt, to be the basic set of affects, providing the organism with a system whose primary directive is to preserve the self and the species.

Tomkins suggests that humans are endowed with positive and negative affects that have innate systems of rewards and punishments. He argues that shame is specifically related to how the self is experienced, within a continuum of shame-pride. In the human map of affects and relationships, shame and pride are considered to occupy a primary role in the regulation of affect and how a person relates to the other (Kosofsky & Sedgewick, 1995). The shame affect 'script' reduces facial communication by forcing the individual to drop or close eyes, lower head, and almost to undergo a 'shrinking' of the upper body. By doing this, the individual stops looking at another person, especially at their face.

Tomkins conceives shame to be an innate auxiliary affect that specifically inhibits continuing interest and enjoyment. It is only activated in situations in which the organism is interested or enjoying the current activity. Once shame has been activated, the original excitement or joy can be increased again to inhibit the shame response (or of course vice versa).

Nathanson (1992) also considers the shame-humiliation affect as a system with which an organism attenuates its relationship with the external world. Similarly to Tomkins, he suggests that shame acts as an impediment to pleasure or interest, and effectively preventing the organism from continuing the previous affect script. He argues that shame requires the existence of other emotions; that its purpose is to interfere with the

operation of the positive affect programme and pull the organism away from whatever is interesting or exciting. Importantly, from a developmental perspective, Nathanson describes the shame affect as a biological system by which the organism controls and maintains its emotional systems. Thus it is possible to see shame in young infants even though it may not be experienced consciously as an emotion.

Kaufman (1989) also uses the language provided by Tomkins to describe the importance of shame in an interpersonal context. He describes the "interpersonal bridge" between two people that is formed by reciprocal interest and shared experiences of trust. Barriers to this connection and its shared positive affect ruptures the interpersonal bridge and activates shame. In Kaufman's view shame is the affect of inferiority in which the individual believes that he/she is seen in a painfully diminished sense, exposed to one's self and to others. Shame interrupts and impedes communication, eradicating speech, making the individual incommunicable to others. This can result in feelings of alienation and loneliness that reinforce internal scrutiny. The intense scrutiny of self can create a binding or paralysing effect and secondary effects of this process can include fear, distress and rage.

1.4.ii Developmental pre-requisites - Mascolo & Fischer (1995)

Mascolo and Fischer examine the developmental changes in *self-evaluative* emotions from infancy through adolescence to adulthood. They suggest that such emotions begin with individuals appraising their situation leading to a specific emotion that comes from evaluating how the situation relates to the individual's goals, values and concerns.

Similarly to Kaufman (1989), Mascolo and Fischer argue that for each emotion, there is a prototypic script that defines the sequence of events for the emotional process: the situation/environment that triggers the process to appraisal, action responses and self-monitoring. According to Mascolo and Fischer appraisal skills and the associated emotional/behavioural scripts expand in complexity according to a series of developmental stages (see table 1.1 below). Mascolo and Fischer end their developmental description of the precursors to shame at the beginning of adolescence.

According to their account, the relevant cognitive and self-appraisal processes are in place by the age of 12. Subsequently, adolescence forges the nature of self-identity and a person's use of self-conscious emotions such as pride, guilt and shame.

Table 1.1: The path of shame: from infancy to adolescence

Age of child	Description of shame processes
2-4 months	• Infant experiences positive and negative affects • Infant exhibits angry facial or vocal expressions and other signs of distress while striving to achieve goals
4-8 months	• Baby's emotions will also be socially referenced, i.e., they will show distress at a caregiver's negative reactions to their behaviour
1-2 years	• Social referencing is a core element of developing shame scripts as young children become more concerned with other people's expectations about their own actions
2-3 years	• Shame and distress are distinguishable by 2-3 years • Child able to mentally represent the caregiver's disappointment • Child aware that this is indicative of self as ineffective agent
3-5 years	• Child able to make representational mappings based on social comparisons
5-10 years	• Child able to store and manipulate multiple representations of self • Able to abstract out a single trait or personality characteristic from the many representations
12 years on	• Self-identity becomes more consistently constructed

1.4.iii <u>Cognitive accounts of shame</u>

Lewis (1992) considers "The Exposed Self" to be a central component of shame. He suggests that shame is very closely linked with self-thoughts, and the activation of such feelings can only follow from failure in regard to conforming to rules and standards, or reaching a required goal. Such a failure produces a signal to self, leading to self-reflection and an emotional state[1]. The model does not specify what constitutes success or failure, or how this might be evaluated. Additionally, the specific emotions that arise from the process of self-reflection are internal events to the individual only.

Lewis describes three kinds of processes within his cognitive model (see figure 1):

1) interpreting and creating standards, rules and goals

2) evaluation of success or failure with regard to standards, rules and goals

3) attributional processes of self (i.e., internal vs. external, global vs. specific)

Figure 1.1: A cognitive attributional model of shame (adapted from Lewis, 1992)
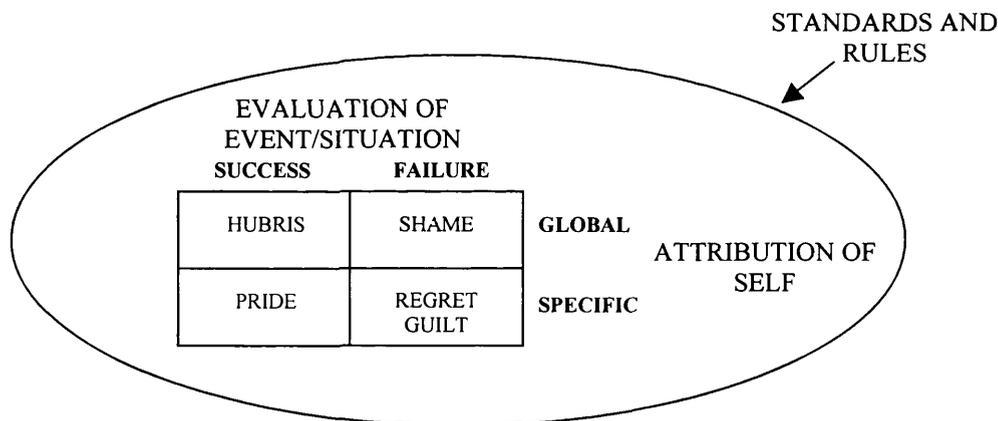
In keeping with the model suggested by Lewis (1992), the attributional process according to Tangney and Dearing (2002) is the key to understanding the nature of shame. Attributions represent the relationship that a person has to their self – i.e., an intrapersonal perspective - usually through some kind of evaluative process following a situation or event. Tangney and Dearing also suggest that differences between shame and guilt can be captured by attributional theory - i.e., variations across the three main

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[1] Lewis argues that emotional states lead to cognitions, but it is not explained how such a process works.

attributional domains: locus of control (internal vs. external), globality (global vs. specific), and stability (stable vs. unstable). Thus, shame-like feelings consist of cognitions that are internal, stable (i.e., enduring) and global (i.e., the triggering event causing a focus on global self) attributions. In comparison, guilt emotions are also likely to be internally focused; they may have attributions that are specific (i.e., about the act/response to a triggering event) and yet unstable (i.e., not enduring).

Gilbert offers another perspective on the cognitive accounts of shame. He has shown a longstanding interest in the evolutionary influences on mental health problems (e.g., Gilbert 1992, 1997, 1998, 2000). For example, depression may be connected to the sense that the individual has lost social power and influence. The loss of social rank within a group can generate feelings of loss and anguish that are the hallmarks of depression. Gilbert places shame processes at the heart of how people establish their social power within the group, and such processes are related to the level of success or failure at this task. The basic function of shame is the inward focus of attention on the self and in particular becoming highly sensitive to the failings, flaws and deficits in the self:

> Essentially, from an evolutionary point of view, shame is about power and dominance conflicts...(and) centres on issues of defeat, intrusion, encroachment, injury, and ultimately destruction of self... In shame one lives in the minds of others as something smaller, inferior and undesirable. Again, it is inferiority and its link with social comparison that is crucial to ranking theory.
>
> from Gilbert (1992), pp.227-8

1.5. Summary of the theories of shame

Before moving to research on shame in children, it may be useful to review the different theories of shame described. These theories of shame are but a few of the many different perspectives taken to understand shame both academically and clinically. The emphasis of the theories described here is to provide a biological and emotional underpinning to shame, and to understand how affect scripts might incorporate cognitive appraisal mechanisms and the developing self.

While Lewis (1992) and Tangney and Dearing (2002) have focused on the attributional aspects of shame, they have not clearly specified the role of self-discrepancy in shame. Figure 1.2 below shows a model of shame that is based on the idea of self-discrepancies (Higgins, 1987), which arise from the differences between perceptions of our *actual* self and our *idealised* self. Such discrepancies are likely to be influence by attributional style.

The model represented in figure 1.2 suggests that shame and guilt occur when the individual perceives self-discrepancies. Both the actual, expected and ideal self are constructed from the expectations of the other including: family, community, society and culture. Thus, people with high levels of this kind of discrepancy are vulnerable to dejection-related emotions and are inclined to see the other as disappointed in or dissatisfied with them leading to a shame or guilt reaction.

Guilt reactions occur when the self-discrepancy is based on an external or group-based self. Here, there is a difference between the individual's perceived *actual* self and what is *expected* by the group milieu in which the individual exists. Thus the guilt reaction is usually in response to a transgression of a social norm, and is related to specific acts or situations.

Guilt can of course occur simultaneously with a shame reaction, which is when the individual perceives the self-discrepancy entirely within the intrapyschic self; as a difference between *perceived* actual self and *desired* actual self. The greater the discrepancy, the more potent the possible shame reaction and loss of self-esteem to the trigger situation or event. Loss of self-esteem might be the cognitive appraisal of the self-discrepancy, and is dependent on whether a person perceives the discrepancy as a challenge to overcome (i.e., ambition), or indictment of self that must be hidden (i.e., shame). As the determinants of each perceived self, i.e., actual, individual ideal, or group/expected ideal is influenced by the construction of self in relation to family,

community, society and cultural norms or expectations. Thus the measuring of

discrepancies between actual, expected and ideal self are likely to be dynamic in nature.

Figure 1.2: An alternative model of shame

Internal
(within the individual)

External
(within the group)

Desired (ideal) self

Expected self

EXPECTATIONS
or RULES

self
family
community
society

SHAME
(i.e., the difference between
individual's *actual* self and the
individual's *ideal* self)

GUILT
(i.e., the difference between
individual's *actual* self and the
group's expected self)

Perceived (actual) self
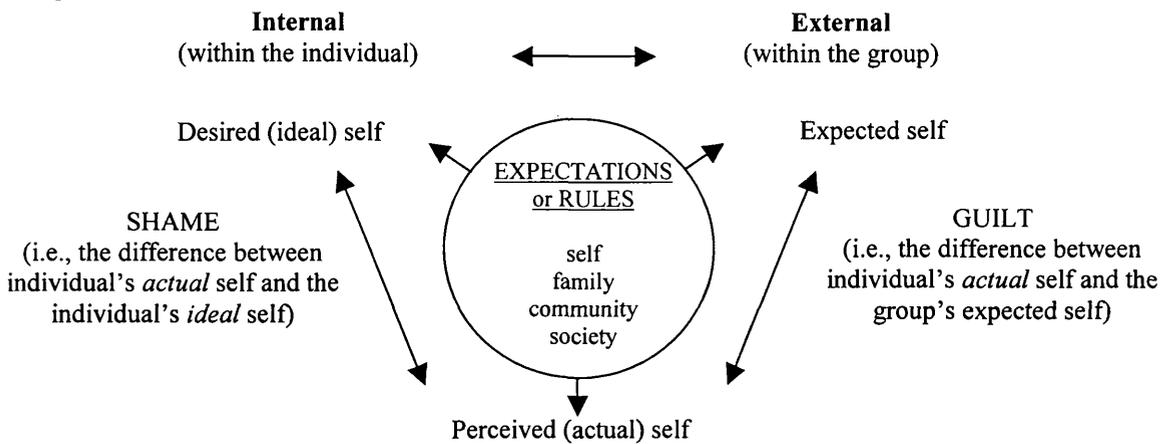
1.6 Shame in children

In this section, some studies exploring shame in children will be presented. Many

studies of shame with children have used two kinds of paradigms: to elicit a shame

response by placing children in possible shame-based situations; or to ask children to

place themselves in imaginary scenarios and express how they might feel. At the heart

of such studies is the notion that the child needs to be aware of the discrepancy between

their own actions and how such actions are perceived by the adult other.

1.6.i Studies that elicit shame responses

Keltner and Harker (1998) suggest that shame might serve a functional purpose by

offering appeasement through submission and regret, and thereby restoring social

harmony. Studies exploring the behaviour of young children (aged 2-5) have typically

used failure in a task as a shame-inducing situation. These studies manipulate success

and failure, and then make comparisons of children's behaviour. Failure generally leads

to dropped eyelids, lowered head, averted eye-gaze, and avoidant body posture. In short,

a complete inhibiting of excitement, interest and joy. Success is typically associated

with good eye contact, smiling and open body posture.

The intentional mishap study

For example, Barrett, Zahn-Waxler and Cole (1993) asked 44 children (aged 2-3 years) to take part in a play session using a doll. During this session an intentional mishap lead to the doll being broken. The children were observed to see whether or not they would avoid the experimenter. Children who avoided the experimenter were thought of as displaying more shame-prone behaviours (i.e., averted eye gaze, some distress) and took longer to make reparation by telling the experimenter about the broken doll. Children who did not avoid the experimenter were considered to show more guilt-based behaviours, as they tended to speak to the experimenter quickly after the doll broke. They did not avoid eye-gaze and still maintained a smile. Thus it seems that children as young as two years display the avoidant qualities of shame-based behaviours, and the reparative characteristics of guilt-based behaviours.

A disappointment paradigm

In another similar experiment, Cole, Zahn-Waxler and Smith (1994) examined expressive control in 4-5 year-old children who experienced disappointment during a play session. The children were split into three groups for relative risk of developing behaviour disorders. Boys in the high-risk group showed more negative emotion such anger and tears while the experimenter was present. However, when the experimenter was absent there was no difference for boys in any of the three groups. Girls in the high-risk group only differed when the experimenter left the play session by showing *less* negative emotions than girls in the low-risk group.

The finding that there is a difference between boys and girls generates some interesting ideas about how boys and girls might be different in the way they process shame-based feelings. The boys in the high-risk group were less able to control their expressive emotions, while girls in the same group were much more able to contain such feelings. This dichotomy at even this young age points to a gender difference regarding the externalisation versus internalisation of behaviour and feelings.

The failure-task study

Lewis, Alessandri and Sullivan (1992) presented 3 year-old children with six easy and six difficult tasks. The children's emotional responses to the tasks were closely observed. Lewis et al observed that when the children failed at the easy tasks they displayed more shame-based behaviours than when they failed at the more difficult tasks. These included lowered eyes or in askance, a non-smiling face, reduced speed during task completion, and a desire to withdraw from the task at hand.

This pattern was reversed for pride-based emotions, when children only showed pride at succeeding with the more difficult tasks. Interestingly, although there was no difference between boys and girls in succeeding at completing the various tasks, the girls showed significantly more shame-based behaviours. Again, this points to a differential response between boys and girls, although somewhat opposite to the findings of Cole et al discussed above.

These kinds of studies are good at providing some evidence for shame-based behaviours in very young children. However, it should be noted that since the studies did not contain self-report from the children about how they felt, it is not possible to be certain that shame was what they were feeling. However, the children's behaviour in all the studies described above indicated a desire to make some social reconciliation by trying to get the experimenter to support or help make things better or easier for the child. The next section of studies focuses on how children explain different self-conscious emotions like pride, shame and embarrassment.

1.6.ii Children's understanding of self-conscious emotions

There have been many different studies documenting the age-related changes in children's social-emotional understanding across middle childhood (i.e., 4-12 years) (e.g., Golderberg-Reitment, 1992; Griffin, 1992). Most studies take the format of showing children a picture story, or asking them to pretend to be the protagonist in

various scenarios. Despite these different methodological approaches, these studies have shown a general consistency in how children develop their understanding of emotions.

Understanding other people's intentions

In one reported study, Goldberg-Reitman (1992) presented a series of picture stories depicting a child in neutral or dangerous situations (e.g., falling off a roof) to 4,6 and 10 year-old girls, and asked them to predict what a mother would do. She found that all the children across the three age groups said that the mother would try to catch the child. When asked to explain this answer, she found that four year-olds said, "Because the child was falling" (i.e., external antecedent), six year-olds said, "Because mom does not want her child to get hurt" (i.e., one internal state), and ten year-olds said, "Because mother loves her child and doesn't want her to get hurt." (i.e., two internal states). The results suggested that only older children were able to have a complex understanding of the mother's emotional state.

Explaining emotions to aliens

In another study that was also trying to explore developmental differences in children's understanding of emotions, Griffin (1992) asked 4, 6 and 8 year-olds to think about their own happy and sad experiences and to pretend that they were explaining them to an alien child. The four year-olds tended to refer exclusively to behavioural events (e.g., "Happy is a birthday"), the six year-olds usually made statements with one internal statement (e.g., "Happy means I get something I want), and the eight year-olds typically included at least two internal events (e.g., "Happy means that I get something I like that I've been wanting for a long time."). This suggested that four year-olds tended to think that happiness and sadness came from an external event or situation, while six and eight year-olds recognised these emotions coming from within themselves (e.g., "the heart" or "the brain").

1.6.iii A theoretical framework for young children's understanding of emotions

Griffin (1995) proposes that children construct a limited set of schemata that shape the way in which physical and social realities develop. These schemata develop in similar way to Piaget's formulation of cognitive development in children:

1) At 4 years, children do not construct their world in a dimensional or intentional fashion, but rather in way that temporally, spatially or referentially connects two objects or events

2) At 6 years, children are capable of dimensional and intentional thought but are limited to a single dimensional or intentional structure by their working memory capacity

3) At 8 years, children have a greater memory capacity and are able to utilise bi-dimensional and bi-intentional thinking

Such a developmental sequence is clearly shown in one further study by Harter & Whitesell (1989). They asked children whether they could feel happy and sad at the same time, and found that four year-olds said no, six year-olds said they could but only in a temporal sequence, and eight year-olds said they could co-exist simultaneously.

Griffin argues that embarrassment that has three basic and interrelated components: a sense of being found to be physically or socially inappropriate; the implication that there is someone out there who makes an individual feel physically or socially inappropriate; and when the first two components are met this generates a sense of embarrassment. Thus, Griffin suggests that two cognitions are necessary for embarrassment to occur – self-judgement and audience-judgement. Until a child is able to interpret a social reality across two social judgement variables, then children will not experience embarrassment *per se*, but rather an earlier self-conscious emotion incarnation (e.g., shyness).

1.7.i <u>Being able to make causal attributions as precursor to shame and guilt</u>

The cognitive theories of shame all emphasise the idea that certain cognitive prerequisites are necessary for feeling shame and guilt. This includes a developed sense of self and the ability to make attributions about situations and events. As Lewis (1992) suggests, being able to make causal attributions is a key part of processing shame and guilt.

Children's ability to make causal attributions

Stipek and DeCotis (1988) were interested in finding out when children's emotional awareness becomes more sophisticated in terms of understanding that emotions are attribution-dependent (i.e., your own perception of an event or situation influences the attached emotion), rather than outcome-dependent (i.e., where the emotional response is dependent on the final outcome of an event or situation). They asked 60 children aged 6 to 12 years to listen to a story and then asked about the protagonist's emotion, and then to rate how intensely that emotion was felt. The stories were based on typical school-related situations and some had successful outcomes, while others had failed ones. E.g.:

Success-Luck
Marie got back her spelling test. She spelled all her words correctly and received 100% on her test. Marie didn't really know how to spell the words, so she guessed when she wrote them down. She was lucky. Even though she guessed on all the words, she spelled them all right.

Success-Ability
Claude was asked to pick a story to read to the class from the pile of books. He picked one from the pile and began to read. It was a hard book to read. Claude is a good reader, and he read the book to the class without making any mistakes

Interestingly, Stipek and DeCotis found that all the children, irrespective of age, were able to accurately assess the emotional intensity of each story's protagonist. This indicated that children as young as six years of age understood how an outcome is related to an individual's emotional response. However, there were differences among

the children in how they understood the specific attribution-emotions link. The youngest children did not differentiate pride or shame feelings of the story's protagonist in response to whether the outcome of the story was attributed to ability, effort or luck. Only children older than 9-10 years were able to understand that the cause of an outcome is related to one's emotional experience.

Understanding guilt and shame

So far, the studies with children aged between 4 and 12 years have shown a strong developmental progression in the understanding of social emotions, and how different kinds of emotional responses are often dependent on being able to interpret causal attributions of situations of events. Ferguson, Stegge and Damhuis (1991) investigated children's conceptions of guilt and shame by asking them questions about scenarios designed to elicit feelings of guilt and/or shame. The stories were based on themes of property damage, personal injury, standing up for a friend for an important date, and falsely accusing another of a serious misdeed. Then a series of questions were asked about each story, initially to make sure the children comprehended what happened, and then to ascertain the nature of the emotion reported and their understanding about that emotion.

Ferguson *et al* found that children aged 10-12 years were able to understand many of the distinctions between guilt and shame. The children tended to associate guilt with transgression of moral norms, while shame was to do with violating social standards. They also tended to consider shame as being related to what other people in the scenarios knew about the misdeed and their possible negative evaluations. The children's responses also indicated that being ridiculed arouses the greatest shame and the best way of dealing with this situation was to actively avoid other people.

By the age of 10-12 years children are able to make quite complex causal attributions about different events and situations, and are also capable of distinguishing between emotions like guilt and shame. This ability may be also tied into children's developing

self-identity and desire to create a self that is separate from parental and family constraints. However, more understanding of self in relation to other also means greater chances for actually experiencing and being aware of self-conscious emotions like shame and guilt.

1.7.ii Attributional style as a precursor to self-identity

Lewis (1991,1992b) argues that it is possible that causal attributions are a precursor to self-identity formation in adolescence. Self-conscious emotions require that children have two basic cognitive abilities: the ability to set standards and to evaluate them, and the ability to focus on different aspects of oneself. Both of these skills require the ability to focus on global-self and self in relation to a specific event or situation. Lewis (1992b) proposes that being able to make causal attributions enables such self-awareness. He suggests that such a theoretical approach is helpful in understanding the individual differences in self-conscious emotions as a function of changes in cognitive attribution styles as well as other developmental experiences.

1.8. How the teenage years provide an ideal context for shame

Reimer (1996) explores how development in adolescence has a significant impact on shame processes. She suggest that shame may be a particularly salient experience during adolescence, as they are more likely to engage in self-evaluation than young children, and temporary disturbances in self-concept are most likely to appear during this time. This is in part due to often unexpected consequences of physical maturation leading to bodily concerns that become more prominent in adolescence. Developing capacities for self-reflection and social perspective-taking also heighten self-consciousness and make young adolescents newly vulnerable to other people's negative evaluations of self.

Reimer argues that the central developmental process of adolescence seems to be the psychological task of identity development. Here adolescents strive to be separate and

distinct from their parents and close family, but yet still demand to be appreciated and loved by their family and friends. And in the attempt to balance the need for individuality with ongoing attachment needs, there may be the experience of intense cognitive and emotional reactions. Lewis (1992) argues that love withdrawal with children and adults is inevitably associated with shame as the loss is most likely to be associated with a sense of failure in self.

Pubertal changes

The most obvious changes in adolescence are wrought through pubertal processes. Of course, puberty is as much a social-psychological event as it is a physical one. Reimer (1996) considers the idea that there may be a link between the physical changes in adolescence and the development of self-understanding and awareness of others' expectations. There is an almost universal rites of passage process in different world cultures that requires the growing youth to prove themselves in prowess and excellence in a variety of tasks.

With puberty there are important gender differences with much research looking at the effect of weight gain/body change/menstruation in young female adolescents. For example, Brooks-Gunn and Reiter, (1995) found that physical attractiveness becomes a very important concern for adolescent girls at that same time as they become less satisfied with their bodily appearance. What makes the pubertal process additionally difficult for adolescents is that its effects are largely uncontrollable as is the extent to which others might respond to any physical changes.

Love and attraction

Reimer notes that part of the difficulties of adolescence is the desire to engage in developing love relationships, a process fraught with risks of global rejection of self. The desire to be attractive to others can meet with failure in many ways, most of which result in deep feelings of shame. With an emerging sexuality, both feelings and behaviour can often be associated with shame. This is also often associated with threats to the child-parent relationship, i.e., sexual acts that are felt to be condemned by parents. There are also still stigma issues in many societies about sexual identity and practice.

These might include homosexuality, masturbation, involuntary erections, nocturnal emissions and fantasies. So the emergence of sexuality in the teenage years can often lead to strong feelings of anxiety, embarrassment, guilt and shame (e.g., Katchadourian, 1990).

Being more able to think

As mentioned previously, cognitive development leads to improved reasoning abilities, but at the same time allows the teenager to have more chances to focus or ruminate about the self. This increases the opportunity for adolescents to perseveratively think about failure of self and others' views of self (e.g., Keating, 1990). This in turn means that the subsequent intense feelings of shame are harder to shake off. Adolescents can show extreme forms of egocentrism that are characterised by self-preoccupation and self-consciousness and lead to an 'imaginary audience' that is watching constantly (e.g., Lapsley & Murphy, 1985).

Being successful

Achievement motivation is a salient feature of adolescence as part of an increasingly demanding educational context:

> Whether competing on the playing field, in the social arena, or in the classroom, adolescents and others link their performance to their life chances. Success brings real recognition and benefits from peers, adults, and at times, institutions... In attending the "imaginary" as well as the "real" audience of peers and adults, whether one succeeds or fails, may, in fact, assume felt importance that is disproportionate to the original impetus for evaluation
>
> from Reimer(1996) p.347

Thus it is possible that the very structure of our education system with its heavy emphasis on succeeding in examinations contributes to the feelings of being scrutinised and increases opportunities for failure and shame.

1.9. Research about the experience of shame in adolescence

Given Reimer's comprehensive review of how adolescents are particularly primed by biological and social changes, there have been remarkably few studies exploring shame in adolescence. In this section, I will present the only two published studies that have specifically examined shame with adolescents. One other study examining the role of self-regulation in a group of adolescent anorexics will also be discussed.

Attributional style and shame

Joseph, Brewin, Yule and Williams (1993) explored the relationship between causal attributions and symptoms of post-traumatic stress in a group of adolescent survivors of the Jupiter cruise ship sinking. One characteristic of PTSD is persistent symptoms of increased arousal. Joseph et al explored how attributional style might be related to the persistence of such symptoms. They asked 16 adolescents (14 female, 2 male) aged 13-15 years at the time of the disaster to complete anxiety and depression inventories, and the Impact of Event Scales. Attribution style was coded from a series of interviews with each adolescent. Joseph et al also asked the participants of the study to complete a second set of questionnaires after a prolonged time interval.

They found that, as with adults, those adolescents who made more internal and uncontrolled based attributions tended to have increased PTSD symptoms. Joseph et al suggest this may happen because this group also had greater tendencies to feel depressed, which in turn lead to a more intense focus on self and identification of more internal causal factors for what had happened to them. However, as the authors themselves point out, this was a select group of individuals who were mostly female, and they had been referred to psychiatric review by their solicitors who were seeking compensation. It is also important to note that the study did not use any specific measure of shame with this group of participants.

Depression and shame

Carey, Finch and Carey (1991) examined the relationship between different kinds of emotions and depression in a group of 145 child and adolescent psychiatric inpatients. They were interested in the possible role of a wide array of emotions in the maintenance of depressive symptomatology. The participants were given a mental health diagnostic inventory, as well as the Differential Emotions Scale, a 37-item self-report questionnaire that measured emotions like interest, joy, sadness, anger, fear and shame. Using a multiple regression analysis Carey et al explored whether any of the measured emotions predicted depressive symptoms. They found that shyness, anger, enjoyment and shame accounted for 51.4% of the variance. They also found that guilt, surprise, anger, sadness and interest emotion measures were 80% accurate in discriminating the depressed participants. Thus, self-conscious emotions seem particularly important in the maintaining of depression in children and adolescents.

However, there are some methodological caveats. The authors themselves point out that the information was only gleaned from the inpatients themselves, and that it would have been better to also get parent and teacher perspectives. Furthermore, the negative internalising features may have been an effect rather than a cause of depression. They also did not use a specific measure of shame with this sample. Finally, it would be difficult to translate the role of shame in adolescence from a clinical sample to a wider more community-based population.

The self in adolescents with anorexia nervosa

A recent study by Karwautz et al (2001) investigated the perception of self and its relation to eating disorder symptoms in a clinical group of 61 adolescent females with anorexia nervosa (mean age 15 years). They also included a control group of teenage girls. The participants were asked to complete a Narcissism Inventory containing 163 items that identified four dimensions of self-regulation:

1) the endangered self – helpless, destabilisation of self, loss of control over affect, negative body self, social isolation

2) the narcissistic self – feelings of greatness and superiority, desire for praise and validation

3) the ideal self – longing for independence, devaluation of significant relationships in moments of disappointment, high moral standards in terms of self-evaluation

4) the hypochondriac self – diffuse anxieties about the body, concern about the weakness of body to bolster a weak sense of self

The participants were also asked to complete an Eating Attitudes Test as well as an Eating Disorder Inventory.

Karwautz et al found that adolescents with anorexia nervosa were far more likely to have an unstable sense of self, and a tendency to have an idealised self against which they measure their perceptions of actual self. They also tended to have frequent feelings of helplessness, lack of confidence, a loss of hope for their own survival, very negative body self, and a strong desire to avoid any social contact. The results of the study showed problems of self-regulation for the clinical sample in relation to the control group across all four domains measured by the Narcissistic Inventory. Unfortunately, while this study indicates the potency of self-discrepancy and the disintegration of the self for a severe mental health problem, there is no explicit measure of shame or other self-conscious emotions. However, this study does provide support for the more cognitive-based theories of shame discussed above.

1.10. Shame research with adults

The vast majority of research about shame has been conducted with undergraduate students. In this section, there will be a short survey of the studies that investigate the relationship between shame and intrapersonal perspectives of self. These studies will be split into three sections. The first section will discuss those research studies that set out to develop measures of shame and guilt. In the next section, studies examining shame and eating disorders are presented. It should be noted that many of the adult studies of shame are in relation to eating problems. And the final section will review some of the work focusing on childhood abuse, shame and psychopathology.

1.10.i <u>Measures of shame in adults</u>

There are many different measures of shame that are based on questionnaire format or interview schedules. In this section three measures of shame used with adults are discussed:

1) Test of Self-Conscious Attributions (TOSCA) – Tangney (1989)

2) Other as Shamer Scale (OAS) – Goss, Gilbert & Allen (1994)

3) Experience of Shame Scale (ESS) – Andrews, Qian & Valentine (2002)

Each measure reflects different theoretical approaches to exploring shame.

The Test of Self-Conscious Attributions

The TOSCA uses a causal attribution model. Each test item consists of a common everyday scenario followed by responses representing different aspects of shame and guilt. These responses aim to capture the cognitive, affective and behavioural aspects of shame and guilt. One example item from the TOSCA for adults:

> *You break something at work and then hide it.*
> a) You would think: "This is making me anxious. I need to either fix it or get someone else to."
> b) You would think about quitting
> c) You would think: "A lot of things aren't made very well these days."
> d) You would think: "It was only an accident."

Tangney and Dearing (2002) review the many studies using the TOSCA to explore the differences between trait and state guilt and shame, as well as the relationship of such self-conscious emotions to the self and psychopathology. For example, Tangney, Wagner and Gramzow (1992) explored such links by giving undergraduates a series of questionnaires that included the TOSCA, Beck Depression Inventory, State-Trait anxiety scale and an attributional style questionnaire. The results showed that shame-proneness was related to psychological problems in general, while guilt-proneness was only moderately related to psychopathology. More importantly for the authors, the

shame scale on the TOSCA accounted for substantial variance in depression, even taking into account attributional style.

The Other as Shamer Scale

The OAS scale extends the Internal Shamer Scale (ISS – Cook, 1991) by including items that focus upon beliefs about how others evaluate the self. This is linked to Gilbert's (e.g., 1997) theoretical positioning of shame as integral to social ranking in groups. Thus, feelings of inferiority represent how the individual adapts to the dynamic nature of social ranking. Example items from this scale include: "I think other people look down on me" or "Other people see me as small and insignificant."

Goss, Gilbert and Allan (1994) gave 156 undergraduate students a variety of shame questionnaires in order to examine how the individual's perceptions of being evaluated are related to other dimensions of shame. They found three main factors that suggested being seen as 'inferior' was different to being thought of as 'empty'. The third factor seemed to be related to social ranking issues such as feeling sub-ordinate to others. Although this study worked with a specific group of students, and not with a community-based sample or clinical group, its main contribution is to collapse measure of general shame into constituent parts of inferiority, emptiness, and social-rank perception. Furthermore Allan, Gilbert and Goss (1994) did find that both the OAS and the ISS more than the other measures of shame (e.g., the TOSCA) were strongly associated with clinical measures such as the Beck Depression Inventory, and the General Health Questionnaire.

The Experience of Shame Scale

The ESS was developed by Andrews, Qian and Valentine (2002) from a series of earlier studies that used interviews to examine the relationship between earlier childhood abuse and adult psychopathology. Thus, the orientation of the ESS is on how shame is experienced across three dimensions: bodily shame, shame-type behaviours, and shame as a character trait. Example items for each type of shame include: "Have you avoided

looking at yourself in the mirror?" (bodily shame), "Do you feel ashamed when you do something wrong?" (behavioural shame), "Have you felt ashamed of the sort of person you are?" (characterological shame).

Andrews, Qian and Valentine (2002) set out to investigate whether ESS could be used to find a prospective relationship between shame and psychopathology. They asked 163 university students to complete the ESS and the TOSCA, as well as completing a depression inventory at two time points nearly three months apart. The results of the study showed that each shame scale made significant independent contributions to depressive symptoms at time 1. However, only the ESS predicted additional significant variance in time 2 symptoms when time 1 symptoms were controlled. Andrews et al concluded that the ESS targets specific areas of shame related to self and performance and may therefore be more prone to mood-state (i.e. anxiety or depression).

1.10.ii Shame and eating problems in adults

Bodily shame, self-image and performance

Fredrickson, Roberts, Noll, Quinn and Twenge (1998) asked male and female undergraduate students to take part in a study about clothing and self-perception. The students were told that they were taking part in a study about emotions and consumer behaviour. The participants were randomly assigned to either try on a swimsuit or a jumper. They were then asked to look at themselves in a mirror and then answer a series of questionnaires (with many self-conscious emotion items) while still wearing the assigned article of clothing. The students were then asked about their mathematical ability, and given a short maths test.

Fredrickson et al found that women were far more susceptible to the effects of wearing a swimsuit, and that feelings of bodily shame tended to be related to body-mass index (i.e., shame increased with body-mass). There was no such effect for the male students. They also found that women wearing the swimsuit tended to eat less of the refreshments left in the changing cubicle. The study also showed that women who wore the swimsuit

scored significantly lower on the maths test. Men showed no such effect. Thus it seemed from the study, that when the female student wore a swimsuit this triggered self-conscious emotions of bodily shame, which in turn made them eat less and perform badly on a maths test, *even though no one else was present.*

Shame, guilt and eating

Burney and Irwin (2000) specifically investigated the relationship of shame and guilt to eating disorder symptomatology in women recruited from secondary schools, universities and fitness clubs. The participants were given several questionnaires to complete that included the Eating Aptitudes Test (measuring eating disorder symptoms), the Test of Self Conscious Emotions (TOSCA, Tangney, Wagner & Gramzow, 1989), and the Shame and Guilt Eating Scale (SGES, Frank, 1990). They found that shame and guilt items from the SGES that were specifically associated with eating, best predicted the severity of eating-disorder symptoms. However, eating problems were unrelated to proneness to global shame and guilt as measured by the TOSCA.

The authors themselves suggest caution in interpreting these correlation results arguing that it was extremely plausible that high scores on the SGES were a consequence of eating problems rather than the cause. This study used a community sample of women, and this may explain why the TOSCA failed to predict eating-disorder symptomatology. The items in the TOSCA are not designed to pick up shame and guilt in relation to specific issues, but rather to distinguish between global shame and guilt (e.g., Tangney, Wagner & Gramzow, 1992).

Another recent study by Murray, Waller and Legg (2000) examined the relationship between family dynamics and bulimic psychopathology, considering shame to have a mediating role. They also worked with a non-clinical sample, asking 139 undergraduate women to complete inventories about family functioning, shame (using the TOSCA and the Internalised Shame Scale - Cook, 1994), and bulimic attitudes and behaviour. The Internalised Shame Scale (ISS) asked participants to rate how often and to what

intensity they experienced a variety of shame items. It was this scale rather than the TOSCA that was significantly associated with bulimic symptomatology. Murray et al also found that family dysfunction, namely perceived parental control, was significantly related to eating problems and the ISS.

Murray et al also carried out a stepwise multiple regression to test whether the family-eating relationship was mediated through shame as measured by the ISS. Indeed, they found that the effect of perceived parental control on bulimic symptoms was mediated by the individual's level of shame-proneness. While the study shows the centrality of internalised shame as a link between family dysfunction and eating problems, the actual process underlying such links is still unclear. For example, the results from this study do not show whether the shame prompts too much control by parents or vice versa. In other words, the origin of shame itself is not specifically explored by this study.

1.10.iii Shame and Child Abuse

Andrews (1998) explores the relationship between the experience of childhood physical and sexual abuse and the development of shame schema. She suggests that the development of shame schema following childhood abuse is dependent on the interplay of external factors such as severity and length of abuse, and the internal factors such the social attitude to self and others.

In exploring the nature of self-blame, Andrews draws on the work of Janoff-Bulman (1979) with survivors of rape. She suggested that there is a difference between *characterological* and *behavioural* self-blame. In characterological self-blame, there is an attribution to a non-modifiable source (i.e., one's character) that represents the level to which one is deserving of negative outcomes. With behavioural self-blame, there is an attribution to a modifiable source (i.e., one's behaviour) that represents how much a situation can be avoided.

This kind of attributional style was examined by Andrews and Brewin (1990) who interviewed 70 women who had experienced marital violence. They assessed

psychiatric state, life events and difficulties, childhood abuse experiences and measures relating to the severity and attributions of marital violence. They found that women currently living with a violent partner were much more likely to make self-blame attributions – this seemed to be evidence of the state-like qualities of behavioural self-blame. They also found that women in past violent marital relationships who continued to make attributions of self-blame were more likely to have experienced a traumatic and violent childhood through physical or sexual abuse. Brewin and Andrews speculate that these women will have developed the trait-like elements of characterological self-blame that made them more likely to self-blame.

Andrews and Hunter (1997) interviewed 35 depressed patients (25 women, and 10 men) about their childhood experience, bodily shame as well as characterological and behavioural shame. Questions about childhood experience focused on relationships with parents as well as harsh discipline and unwanted sexual experiences before the age of 17. They found significant differences for bodily, characterological and behavioural shame for both male and female patients who had experienced either physical or child sexual abuse. Furthermore, patients with chronic or recurrent depression had higher shame scores than those patients with single acute episodes.

The internal cognitive factors on which Andrews focuses, are: self-blame and victimisation. Self-blame appears to exert a powerful influence on the development of shame schema for both sexual and physical abuse. Andrews uses the learned-helplessness model to understand the reactions to victimisation that is so often a part of child abuse: "The helpless individual responds with the belief of future response-outcome independence; in the victim, the belief involves self-definition as a victim, which carries with it a sense of vulnerability" (Andrews, 1998, p177).

This cognitive model of self-blame and victimisation in childhood relating to adult psychopathology was further explored by Andrews, Brewin, Rose and Kirk (2000) who investigated the role of shame, anger and childhood abuse in predicting PTSD symptoms in victims of violent crime. Within one month of the traumatic event, victims

were interviewed about the event as well as about childhood abuse experiences, shame and anger. The same participants in the study were followed up six months later. Andrews et al found that while shame and anger were independent predictors of PTSD symptoms at one month, shame become the only independent predictor of PTSD symptoms at six months. Furthermore they found that shame and not anger was related to past childhood abusive experiences and that there was a significant association between reported childhood abuse and PTSD.

The experience of parental bonding was examined by Lutwak and Ferrari (1997) who asked 304 undergraduates to reflect on childhood and adolescent familial relationships. They also gave the participants a shame scale and a Fear of Negative Evaluation inventory. Lutwak and Ferrari found that there was a high association between feeling shame and concerns about negative evaluation, which often resulted in social anxiety and interpersonal avoidance. There was also a link between the participants' perceptions of inadequate parenting and self-reported shame in adulthood. Such perceptions included mother as neglectful, controlling and affectionless; and father as someone not able to express warmth or affection. Lutwak and Ferrari suggest that such parental perceptions are central to the formulation of self and dispositions to adult psychopathologies.

1.11. Summary of research findings regarding shame

The short review of research regarding shame has shown some support for cognitive conceptions of shame. The research of shame in young and middle childhood has shown shame-like response in different kinds of situations, but that a real understanding of the meaning of shame is unlikely to happen before 10 years of age (e.g., Ferguson, Stegge & Damhuis, 1991; Stipek & Decotis, 1988). It is at this point the self-identity processes come into play as the child becomes more controlling and aware of their social and emotion environment (e.g, Griffin, 1995). The participants in the current study were aged 12-19 years, and thus it was possible to further explore the developmental path of shame reactions.

Reimer (1996) has suggested that adolescence is a time when the relationship between developing self-identity, awareness and shame becomes more clearly established. Initial research shows that adolescents do become more like adults in how causal attributions and feelings of shame relate to mental health difficulties (e.g., Joseph *et al*, 1993).

Studies of shame in adults have mainly focused on patients with eating disorders and bodily-shame. Here, there does seem to be a strong relationship between shame-proneness and a variety of mental health difficulties associated with eating disorders (e.g., Burney & Irwin, 2000; Muray, Waller & Legg, 2000). Shame-prone adults tend to experience more intense states of depression and anxiety. Finally, there does seem to be an important link between negative childhood and adolescent experiences (either physical or sexual abuse) and later psychopathology that is mediated by feelings of shame (e.g., Andrews, 1998; Andrews & Brewin, 1990; Andrews & Hunter, 1997).

The next chapter reviews the experience of anxiety and depression and children and adolescents, and introduces behaviour genetic approaches to understanding personality traits and mental health difficulties.

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Chapter 2

Behaviour Genetics, Depression and Anxiety

2.1 Introduction

One of the main aims of this thesis is to investigate whether individual differences in experiencing shame can be partly explained by inherited factors. The behaviour genetics methodology that is utilised will be described briefly in this chapter. To date, there have been no behaviour genetic studies of shame in children or adolescents. However, there have been some on childhood temperament including self-esteem and loneliness, which will be presented next in the chapter. Another aim of the current research is to examine the relationships between shame and anxiety/depression, so the epidemiology of anxiety and depression in children and adolescents will be discussed with some of behavioural genetic studies on these phenotypes.

2.2.i Getting at nature and nurture

There are a variety of quantitative methods for investigating genetic and environmental influences on behaviour. The two basic natural experimental designs are adoption and twin studies. These studies have consistently shown the role of genetics for complex psychological traits (e.g., McGuffin et al, 1994, Plomin et al, 2001).

Adoption Design

While many behaviours are observed to run in families this can be due to nature or genetic influences, as well as nurture or environmental components. Adoption studies represent a direct way of disentangling the genetic and environmental influences on family resemblances. Adoption creates pairs of genetically related individuals who do not share any common family environment. Conversely, it also creates pairs of non-genetically related individuals who do share common family environment. This comparison allows inferences about nature and nurture effects for any measured trait. Most studies look at correlations for measured traits or behaviour between parent-

offspring or siblings and table 2.1 below shows the possible genetic/environmental combinations.

Table 2.1: Possible genetic and environmental combinations in adoption studies

Relationship	Genetic similarity	Shared environmental
Biological parent – biological child (i.e., non adopted)	.5	1
Biological parent – adopted child	.5	0
Adoptive parent – adopted child	0	1
Biological siblings	.5	1
Adopted siblings	0	1
Reared apart biological siblings	.5	0

Twin Design

An alternative approach to disentangling genetic and environmental influences is to look at the differences between monozygotic twins (MZ – coming from one zygote) and dizygotic twins (DZ – coming from two ova). The major difference between these twin pairs is that MZs are genetically identical, while DZs share only 50% of their genetic material. DZs have the same genetic correlation as fully related siblings in a family. Half siblings share just ¼ of their genetic material and some newer studies have combined different twin *and* sibling types. These twin and sibling relationships are shown in table 2.2. If a trait is influenced genetically, then identical twins will be more similar than fraternal twins. This is based on the *equal environments assumption* of the twin methodology that assumes that the level of similarity of the environment for a twin pair will be the same regardless of zygosity.

One other important assumption of the twin design is that assortative mating is negligible. This assumes that parents select each other on random character traits, as opposed to selecting an individual for a specifically similar trait. The assumption is

important because we would expect a higher genetic correlation between siblings from parents who are particularly similar for a measured trait.

Table 2.2: Possible genetic and environmental combinations in twin studies

Relationship	Genetic similarity	Shared environmental
MZ twins	1	1
DZ twins	.5	1
Full-siblings	.5	1
Half-siblings	.25	1
Stepsiblings	0	1

2.2.ii The ACE model

It is possible to use these genetic and shared environmental correlations to establish models to fit the data from twin and adoption studies in order to find the best explanations of individual differences for a given measure. The variance in a measure is assumed to be due to the influence of three factors: genes (latent variable A in the model, which when squared gives the heritability or a^2, sometimes referred to as h^2); common or shared environment (latent variable C in the model, which leads to c^2); and the nonshared environment (latent variable E in the model, which results in the nonshared environment and error variance component e^2). Figure 1 shows the ACE path diagram for one individual, and then for a twin pair.

When there are twin pairs, variance in the measure from each individual is influenced by A, C and E. However, because of the differing levels of genetic relatedness between MZ and DZ pairs, it is possible to calculate how much the genetics and shared environment explains variance for a given measure of a trait. Put mathematically, from the path diagram in figure 2.1, it can be seen that the two simple equations below represent the correlations between the members of MZ and DZ twin pairs:

MZ twins: $r_{mz} = a^2 + c^2$

DZ twins: $r_{dz} = \frac{1}{2} a^2 + c^2$

If the correlation for the measured trait is available for both twin types, then subtracting the second equation from the first gives a heritability estimate:

Genetic heritability: $a^2 = 2(r_{mz} - r_{dz})$

The common shared environmental effects can be estimated as the difference between the MZ correlation and heritability:

Common shared environment: $c^2 = r_{mz} - a^2$

We also know that the total amount of variance must equal 1, thus $a^2 + c^2 + e^2 = 1$, and thus the nonshared environmental effect must be the difference between the MZ correlation and 1:

Nonshared environment: $e^2 = 1 - r_{mz}$

Figure 2.1: ACE path diagram for one individual and a twin pair

A: Genetic latent variable (a coefficient)

C: Common-shared environment latent variable (c coefficient)

E: Nonshared environment latent variable (e coefficient)
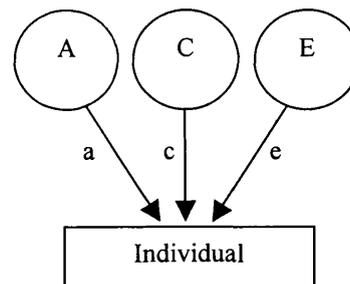
MZ correlation $r = 1$
DZ correlation $r = .5$

common shared environment correlation $r = 1$
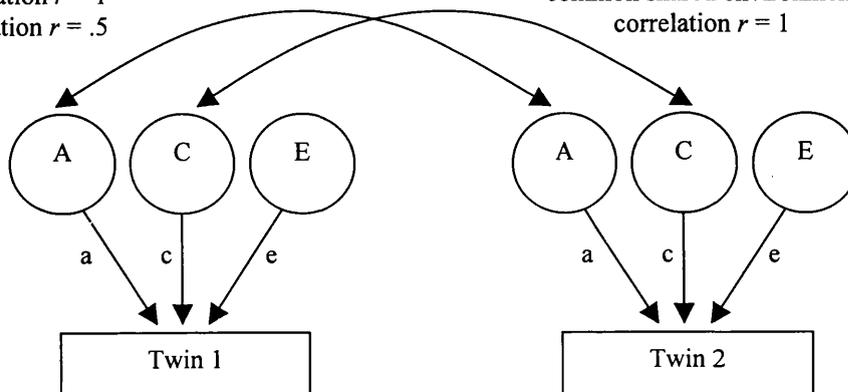
Genetic effects can be defined in terms of *additive genetic influence* and non-additive or *dominance genetics*. The additive genetic component represents the extent to which genotypes operate in an additive fashion (i.e. one copy of a gene gives half the effect on outcome to two copies of the gene). Genetic dominance refers to the non-additive genetic variance in which one allele (version) of a gene is dominant over another, in the way that a gene for brown eyes is dominant over those for blue, so while two blue genes are needed for blue eyes, only one is needed for brown eyes.

Environmental effects are split into common or shared environment influences or nonshared environment factors. Common environment refers to within-family resemblances and is likely to include variables such as socio-economic status. Nonshared environmental influences contribute to how family members are different from one another. Typical variables include child-specific factors such as illness or friendships outside the family. Nonshared environment also includes error.

2.3. Twin studies of self-esteem, self-worth and loneliness

The twin studies presented in this section use behavioural genetic model fitting to explore perceptions of self-worth and loneliness in children and adolescents. They are examples from both adoption and twin studies, and mixed sibling design.

Perceptions of self-worth in adolescents

McGuire, Neiderhiser, Reiss, Hethrington and Plomin (1994) investigated sibling resemblance for perceived competence and self-worth in 720 adolescent pairs ages 10-18 years, using a twin, full-sibling and stepsibling design. The families were interviewed and videotaped in their homes, and perceived competence was measured by using a self-perception profile for adolescents (Harter, 1988). The scale contains 9 dimensions of perceived competence: scholastic, social, athletic, physical appearance, morality, friendship, romantic appeal, job competence and global self-worth. This measure therefore covers the range of domains considered pertinent to adolescent

development of self-identity described by Reimer (1996). McGuire et al also used a personality self-report questionnaire that measured emotionality, activity and sociability, and a vocabulary task that represented a simple measure of language competence.

This study used an unusual mixed sibling-twin design, which according to McGuire et al, if genetic influences are important in self-worth, then sibling correlations should have the following pattern: MZ twins > DZ twins = full-siblings > half-siblings > unrelated siblings. This pattern was found across many of the self-perception profiles, in particular for scholastic achievement, social competence, physical appearance, and athletic skills. They found almost no influence of common environment (e.g., parental educational level, socio-economic status, family size, and family climate), with the environmental influence mainly being specific to each child (i.e., nonshared).

The global self-worth, morality and friendship subscales of the self-perception profile did not show significant genetic influence. The discrepancy between perceived friendship (heritability – a^2 = .10) and perceived social competence (a^2 = .49) suggests a difference in psychological and social components that relate to popularity as opposed to friendship. Popularity refers to the extent to which the individual is accepted by the peer group and is probably more affected by genetically influenced characteristics such as physical appearance or athletic skills. In contrast, friendships are dyadic relationships based on self-disclosure and shared ideals, which are probably more affected by attributes that might not be genetically influenced such as self-worth or morality.

Longitudinal follow-up

More recently, McGuire et al (1999) followed up 248 pairs from the original cohort of 720 pairs of twins, full-siblings and stepsiblings between 10 and 18 years old, in a longitudinal behaviour genetic study of perceived self-worth. The follow-up interviews and assessments took place three years after the initial visits. They used seven of the nine of the same self-perception profiles for adolescents, and found a significant genetic effect for all scales except morality. It seemed that the contribution of heritability

significantly increased during the three years between the initial assessment and follow-up. Common environmental effects remained low across both time points.

The friendship and general self-worth scales showed significant heritability three years later, when initially there was no evidence of a genetic effect. The explanation that individual experiences influence friendship and general self-worth is perhaps more applicable to middle childhood. In adolescence these traits become more securely established as part of developing self-identity. McGuire et al suggest that low general self-worth may become more stable over time, and perhaps predictive of adult neuroticism. Alternatively, as children become older, they may change their social environment around them to fit in with changing self-identity. This creates a two-way modifying relationship between identity and social environment, and might represent a way in which genes have significant influences in genetic-environment interactions.

The longitudinal study also showed that nonshared environmental effects had a far greater influence than common environment on self-worth and perceived competence. This suggests that lack of sibling similarity for self-concept is far more likely to be related to individually specific issues such as the parent-child bond, experience of family support, and peer group at school.

Loneliness in childhood
There has been one study to date examining perceptions of loneliness by children aged 8-14 years. McGuire and Clifford (2000) used both adoption and twin data. The children were asked to complete a loneliness scale including items such as "I am lonely" or "I have nobody to talk to". The adoption design included sibling pairs who were genetically related to each other, and pairs who were genetically unrelated as one of the pair was adopted. The twin design included MZ and DZ twins, as well as full-siblings. Thus the pattern assuming a genetic influence should be: MZ twins > DZ twins = full-siblings > adopted siblings.

The results showed that in general sibling similarity was low, indicating substantial nonshared environmental influences. The correlation between full-siblings was significant, and non-significant for unrelated siblings indicating little familial influence. Importantly, the twin correlations indicated a significant genetic influence for feelings of loneliness, with $r = .57$ for MZ twins, $r = .10$ for DZ twins, and $r = .17$ for full-siblings. McGuire and Clifford suggest that there are significant genetic contributions to children's feelings of loneliness, and that environmental contributions were unique to each sibling. They offer one explanation for this finding is that one child in the family may have a very supportive network, whereas another may be rejected by the peer-group.

2.4.i Anxiety in children and adolescents

Anxiety is one of the most common mental health problems for children and adolescents (Bernstein & Borchardt, 1991). Weiss and Last (2001) provide a comprehensive review on the manifestation and prevalence of anxiety disorders in children for both community and clinical samples. They report that among nonreferred children and adolescents, prevalence rates for anxiety disorder have ranged from 10.7 % to 17.3%. The most common anxiety disorders include separation anxiety disorder, and simple phobias, and tend to be more common in girls and younger children.

Weiss and Last's review suggests that the most common kinds of anxiety problems tend to be separation anxiety disorder, social phobia and simple phobias. Kashani and Orvaschel (1990) report that in a community sample of children aged 8-17 years, 12.4% of the participants met the criteria for separation anxiety disorder. They also found that 21% of females were affected in contrast to only 4.8% of males. Strauss and Last (1993) explored the characteristics of a clinical sample of children with social phobia. They found that social phobia tended to occur in adolescents aged 12-17 years, with a mean onset-age of 12.3 years. More females were affected (59%), and the prevalence for other related fears to social phobia was 64% fear of school, 57% fear of public speaking, 25%

fear of blushing, 21% fear of being in crowds, 18% eating or drinking in front of others, and 14% dressing in front of others.

Vasey and Dadds (2001) review the wide range of factors that may predispose a child or adolescent to developing anxiety difficulties. They suggest that there are many factors that are internal to the individual, such as genetic, neurobiological, emotional regulation, cognitive biases and temperament influences. There are also external factors that include familial relationships (in particular, parental responses to anxiety), exposure to risky situations or events that could magnify anxiety responses. Vasey and Dadds suggest that both the internal and external factors dynamically interact with each other, so that while one pathway to developing anxiety may be a triggering event, the anxious temperament may also gradually intensify through interactions of different factors.

2.4.ii <u>Behaviour genetics research for anxiety</u>

There have been many behaviour genetics studies of anxiety in children and adolescents, using the adoption and twin designs. These studies were reviewed by Eley (2001) for the different anxiety symptoms. The first study of the full range of anxiety symptoms was carried out Thapar & McGuffin (1994) with 376 pairs of twins aged 8-16 years. All the twins filled in a self-report measure of anxiety, and there was also a parent-report version. The anxiety symptoms reported by the parents had an estimated heritability of 59%, while the adolescent self-report measure showed no significant genetic effect. Thapar and McGuffin suggest that one explanation of this anomalous result was that parents might have been rating trait like qualities of anxiety, while the adolescents may have been recording current state feelings.

Two papers from the Virginia Twin Study of Adolescent Behavioural Development presented contrasting results about the heritability of anxiety in 1,412 twin pairs aged 8-16 years (Topolski et al, 1997; Topolski et al, 1999). Results from the children's self-report interviews and questionnaires indicated little genetic effect for separation anxiety disorder and only a moderate genetic influence in explaining individual differences for

overanxious disorder. The results indicated that the nonshared environment effect was the major influence in separation anxiety and overanxious disorder. On the basis of parental reports, MZ twins correlated more highly than DZ twins. Most measures showed small to moderate genetic effects and large effects of the nonshared environment. The results from both the child and parental perspectives for separation anxiety and overanxious disorder seem to suggest a moderate genetic effect for anxiety, a virtually nonexistent common shared environment effect, and a large effect of unique nonshared environment.

2.5.i Depression in children and adolescents

Clinically diagnosed depression is much less common than anxiety disorders in children and adolescents. Angold and Costello (2001) review the research on the epidemiology for depression in both community and clinical samples. Prevalence of depression in community samples differs from study to study, perhaps because there is little endorsement on how to determine whether depression is present. Also there are differences in the length of the depression episode. The range of prevalence rate across the 15-20 reviewed studies varies from 1.6% to 8.9%.

McCauley, Pavlidis and Kendall (2001) explore the developmental precursors to depression, in particular examining the child and his/her social environment. For example, an increased prevalence of depressive disorder has been seen in children with relatives who themselves have a psychiatric disorder. Children of parents with depression are six times more likely to become depressed. While this indicates a genetic factor, McCauley et al suggest that it is more likely that there is a genetic-environmental interaction that better explains a child developing a vulnerability to depression. One example of such an interaction is that depressed mothers are likely to have different parenting styles including being more withdrawn, conflict avoiding through over controlling, and being less flexible in dealing with child non-compliance.

While problems in the family environment are associated with childhood and adolescent depression, there are certain individual characteristics that may make a child more vulnerable to becoming depressed. For example, McCauley et al suggest that the ability to regulate negative emotions and develop coping skills are important in protection again depression. Coping strategies help to lessen the intensity of negative emotions, and allow problem-focused solutions. However, there are coping strategies that do not ameliorate depressive symptoms. For example, rumination, which is considered a form of emotional coping, has been linked to depression. Interestingly, McCauley et al report evidence for higher levels of rumination in girls than in boys. I.e., the girls tended to think about themselves and social peer group, while boys tended to focus on activities like music and sport.

2.5.ii Behaviour genetics research for depression

There is wide endorsement that depression in adults is heritable to some degree (e.g., McGuffin et al 1994), and there is recent evidence to suggest a link between childhood depressive disorder and depression in adulthood (e.g., Fombonne et al, 2001). Rice, Harold and Thapar comprehensively review the genetic aetiology of childhood depression. They report that there have been at least 10 independent twin studies of depression in children and adolescents. Most studies used parental and self-report measures such as the Mood and Feelings Questionnaire, Child Depression Inventory, and the Child Behaviour Checklist. These studies have shown heritability estimates for childhood and adolescent depression to be 30-75% according to parental measures, and 15-80% for child self-report measures.

However, an adoption design study by Eley et al (1998) suggests that twin heritability estimates are low. 180 adopted children (aged 9-12 years) and their biological and adoptive mothers, as well as 227 non-adopted children (aged 9-12 years) and their mothers were given a variety of parental and child measures that yielded information about personality (e.g., neuroticism) and current mood state. The correlations between biological siblings, as well as biologically related parent-offspring pairs were very low,

indicating negligible genetic influences. Again, nonshared environmental factors accounted for most of the individual differences across the measures used in the study.

2.6. Summary

This chapter has introduced a few of the basic methods used by behaviour genetics to investigate heritability for different traits and psychiatric conditions. Two studies have found genetic effects for perceived competence and self-worth, as well as for loneliness in children and adolescents. These findings are likely to be relevant to shame processes in adolescents. Self-worth and perceived competence may be highly influenced by the self-evaluative nature of shame. Loneliness may be related to self-confidence issues in forming relationships and being part of a social group. Again, shame processes may well be involved in the shyness that is often part of loneliness.

Anxiety and depression are common psychiatric disorders in childhood. In particular, separation anxiety and social phobias are very common in adolescence. It is possible that the shame processes are involved in anxiety, as often many anxious thoughts and worries are about being socially embarrassed, or having social support withdrawn leading to isolation. Again, depressogenic cognitive styles often conclude that the self is deficient and such feelings may also be related to shame based processes.

There is quite strong evidence for a genetic influence on anxiety in children and adolescents. Eley (2001) suggests that about one-third of the variance of individual differences in having anxiety is accounted for by genetic factors. It is more difficult to ascertain similar findings for depression. While twin studies show a strong genetic influence, adoption studies indicate little heritability for depression, suggesting that variance is more accounted for by unique individual characteristics.

2.7. Hypotheses regarding shame in adolescence

There has been no research regarding the heritability of shame in teenagers. Furthermore, there has been very little research specifically looking at shame processes in adolescents. The aim of the current project is to consider three central questions regarding shame in teenagers:

1) What is the structure of shame for adolescents?

2) Is there a relationship between shame and anxiety/depression?

3) Is shame heritable in adolescence?

The current thesis uses a 12-item shame self-report measure with adolescents aged 12 to 19 years, and a twin and sibling-pair design to disentangle the genetic and environmental components of shame-based processes. The teenagers were also asked to complete questionnaire items that measured anxiety and depression symptoms, life events, attributional style, and externalising or aggressive behaviours.

<p style="text-align:center">oOo</p>

Chapter 3

Method

3.1. Introduction

This chapter describes the GENESiS 1219 study in detail. GENESiS stands for "the Genetic Environmental Nature of Emotional States in Siblings" and the 1219 refers to the ages of the participants. First, the methods used for recruiting the twin and sibling adolescents will be described. Next, the behaviour genetics design used in this study is also reviewed. A list of the measures used in the study is presented, and finally the procedure for the questionnaire mailings is presented.

3.2. Participants

The participants in the GENESiS 1219 study were recruited in two ways: either from the GENESiS study, or from twin registers held by the Office of National Statistics. The initial cohort from the GENESiS study did not include twin pairs. Adolescent siblings aged from 12 to 19 were recruited from parents who had taken part in the GENESiS study based at the Institute of Psychiatry. This study is reported elsewhere (e.g., Sham et al, 2001), but in short, the project is a community-based sample of approximately 40,000 adults aged 20-55 years taking part in a questionnaire-based study of depression and anxiety. If GENESiS participants indicated that they had children living with them, then they were contacted about the GENESiS 1219 study, and told that this was an extension of the main GENESiS study for teenagers. Approximately 9,000 families were contacted, and 1,304 responses were received from the initial stage screening questionnaire. One explanation for this low response rate is that the GENESiS participants did not write down the ages of their children, so many of them will have fallen out of the 12-19 age range. The returned questionnaires generated 864 singletons, 403 sibling pairs, 73 triplets or more, which was a total of 1,850 adolescents (1,000 females, 850 males) with a mean age of 15.75 years.

We also worked with the Office of National Statistics who on our behalf contacted 4,000 parents of twins aged between 12-15 years. We received 1,419 initial-stage questionnaire responses that generated 20 singletons, and 1,405 twin pairs, which was a total of 2,830 adolescents (1,439 females, 1,337 males) with a mean age of 14.50 years. Parental information was already available from the GENESiS study, and the parents of the twin cohort were sent a questionnaire to get information re SES and ethnicity.

Once the initial questionnaire was received, a more in-depth second stage questionnaire was sent to both cohorts (N=4030). We received 2,947 replies (73% response rate) that generated 1,043 twin pairs, 286 sibling pairs and trios, and 188 singletons. Unfortunately, not all the data was available from the twin pairs, and any participants that missed out more than two items from the shame scale were discounted from analysis. Table 2.1 below shows the number of participants for each sibling group used in the behaviour genetic analysis.

Table 2.1: Number of sibling pairs in each group that completed the shame scale that were processed in time to include in analyses (note: comprises 83% of total sample)

Group	N (pairs)	% of total N (2947)
MZ males	127	8.6%
DZ males	100	6.8%
MZ females	172	11.7%
DZ females	157	10.7%
Opposite sex twin pairs	294	20.0%
Full sibling pairs males	54	3.7%
Full sibling pairs females	93	6.3%
Opposite sex sibling pairs	129	8.8%
Singletons	188	6.4%

3.3. Design

The current study used a combined twin and sibling design to disentangle similarity across siblings that could be attributed to shared genetic heritage from shared or nonshared environment. According to this design, if the correlation between siblings for

the shame measure is the same for all sibling types then shared environment will be an important factor. If genetic influences are important the correlations will show the following pattern: MZ twins > DZ twins = full siblings.

The model fitting approach allows a more powerful method of analysing sibling resemblance than just examining correlations. Model fitting analyses tests the data for the different sibling types simultaneously, tests for fit of data to the model, makes assumptions explicit, and permits tests of alternative models. In the current study, four models were tested in order to examine whether there would be any sex effects in sibling correlations for the shame measure: the first assumed non sex-specific effects and required the same parameter values for (i.e., a, *c*, *e*) both males and females; the second allowed these values to differ for males and females, but to be the same for males in same-sex pairs as males in opposite-sex pairs, and similarly for women (common-effects model). The third model not only allowed different values of a, *c* and *e* for males and females, but also allowed the genetic correlations between members of the opposite-sex pairs to vary (full-sex limited model). Finally, the fourth model was like the third except the shared environment correlation (r_c) was allowed to be free for the opposite-sex pairs. The third and fourth models tested the hypothesis that not only could quantitative influences of the three latent factors differ for male and female adolescents, but there could also be qualitative factors that differ (i.e., intrinsic differences for male and female actual shame responses). These models tested if shame responses in females would be different to that of males, and whether such differences could be due to genetic, common shared environment, or specific nonshared factors.

The fit of the models was tested using chi-square, which if low and nonsignificant would indicates a good fit. When models, as described above, are nested in one another, the difference in fit between models can be tested for by a change in chi-square, the significance of which is tested in relation to the change in number of degrees of freedom. The relative goodness of fit is also tested using Akaike's Information Criterion (AIC), which has a large negative value if the fit is good (Fujikoshi, 1985).

The final stage of the model fitting analysis included a bivariate genetic model, which decomposed the covariance between two variables rather than just considering the variance in each separately. Figure 3.1 is a diagrammatic representation of the bivariate model (for one twin only), in which the size of the genetic correlation ($r_{A(ExtShame-IntShame)}$), the shared environmental correlation ($r_{C(ExtShame-IntShame)}$), and the nonshared environment correlation ($r_{E(ExtShame-IntShame)}$) between external and internal shame identify the extent to which common genetic, and shared and nonshared environment influences both phenotypes. The influences on the phenotypic correlation can be divided into those that are genetic (i.e., from the product of the three paths in figure 3.1: $a_{ExtShame}r_{A(ExtShame-IntShame)}a_{IntShame}$), those arising from the shared environment (i.e., from the product of the three paths in figure 3.1: $c_{ExtShame}r_{C(ExtShame-IntShame)}c_{IntShame}$), and those due to nonshared environment (i.e., from the product of the three paths in figure 3.1: $e_{ExtShame}r_{E(ExtShame-IntShame)}e_{IntShame}$). Using this method it is possible to ascertain the extent to which these three influences account for the correlation between external and internal shame in twin pairs.

Figure 3.1: Path diagram of the correlation between the internal and external shame factors
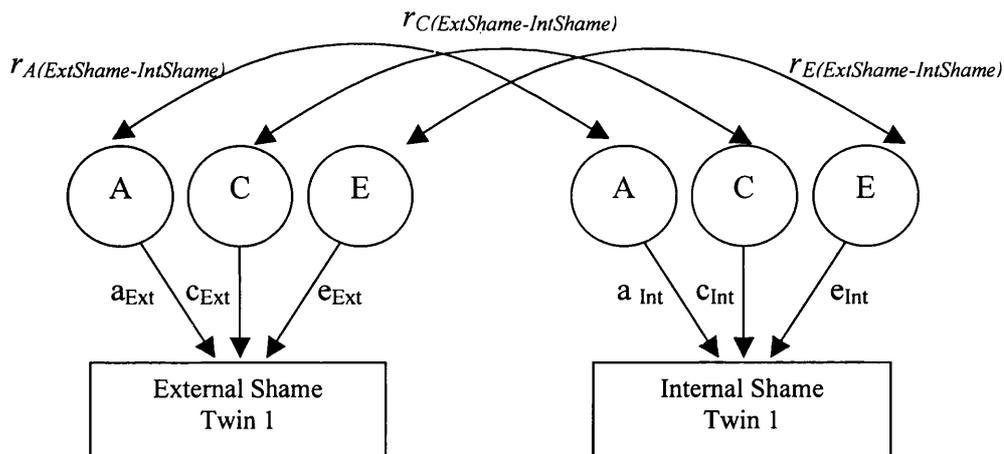
In one individual from a twin pair $r_{A(ExtShame-IntShame)}$ represents the additive genetic correlation, $r_{C(ExtShame-IntShame)}$ represents the shared environment correlation, and $r_{E(ExtShame-IntShame)}$ represents the nonshared environment correlation. The bivariate model examines whether external and internal shame factors are influenced similarly or differently by additive genetic, shared environment or nonshared environment components.

3.4 <u>Measures</u>

Participants completed the following measures:

Shame Items

The shame items used in the current study were derived from a scale developed by Andrews, Qian and Valentine (2002). In this study a group of 163 undergraduates were asked to complete questionnaires that explored their mood states and the degree to which they felt self-conscious emotions. The aim of the study was to investigate whether Andrews *et al*'s Experience of Shame Scale (ESS) was able to predict depressive symptoms measure nearly three months later. The ESS was compared with a well established scale designed by Tagney *et al* (1989) – the Test of Self-Conscious Affect (TOSCA).

The ESS was developed from an interview schedule used by Andrews and Hunter (1997) with a clinical sample of depressed women aged 17-73 years. There were three main areas of shame that the questionnaire assessed:

1) characterological shame: i.e., shame of personal habits, manner with other, the sort of person (you are) and personal ability

2) behavioural shame: i.e., shame about doing something wrong, saying something stupid, failure in different situations

3) bodily shame: i.e., feeling ashamed about (your) body or any part of it.

The ESS had a four point rating scale (from 1: not at all - 4: very much). On this basis, the test-retest reliability was .82, and an internal reliability of .92 (Cronbach's alpha).

In the current study some changes were made in how the question items were used. First, due to lack of space in a large questionnaire, only 12 items were selected from the full 25-item ESS. These items were equally divided across the three factors discussed above, and were selected on the basis of having the highest four factor loadings for each factor (although the bodily shame factor only consisted of four items). Thus, the selected items were as follows:

Characterological shame

1) I try to cover-up or conceal some of my personal habits

2) I worry about what other people think of my manner with others

3) I feel ashamed of the sort of person I am

4) I feel ashamed of my ability to do things

Behavioural shame

5) I worry about what other people think when I say something stupid

6) I worry about what other people think of me when I do something wrong

7) I feel ashamed when I fail at something that is important to me

8) I feel ashamed when I say something stupid

Bodily shame

9) I feel ashamed of my body or part of it

10) I worry about what other people think of my appearance

11) I avoid looking at myself in the mirror

12) I want to hide or conceal my body or parts of it

Second, the statements were changed from second to first person. This was because it was felt that teenagers would be able to relate better to the meaning of the statements when presented in the first person. Also, the 12 shame items were to be embedded in the Child Behaviour Check List (CBCL), which uses the first person. Third, there were further modifications made to some of the statements to make them more appropriate for teenagers.

Finally, one further significant change to the items used was that only a three-point rating scale was used (0: not true, 1: somewhat true, 2: very true) . Again, this was, in part, to embed the items within the CBCL, but additionally it was thought that this would make it easier for adolescents to make a response. Many of the changes made to

the ESS are in part due to its historical development. The questionnaire comes from items used in a clinical diagnostic interview schedule, and then used with undergraduates with an average age of 23 years. While many of the changes were due to practical considerations, it was also felt that there needed to be some adaptations to use the scale in a large community based sample.

Child Attributional Style Questionnaire (CASQ)

The CASQ was used by Seligman et al (1984) to investigate whether children (aged 8-13 years-old) had attributional styles that predicted depressive symptoms. The original scale had 48 items, each consisting of a hypothetical scenario that was either good or bad. Each child then had to choose from two statements about a scenario the one that best explained why the scenario happened. An example of internal vs. external attributional style item would be:

Scenario: A good friend tells you that he hates you

Statement A: My friend was in a bad mood that day (i.e., external attribution)

Statement B: I wasn't nice to my friend that day (i.e., internal attribution)

Seligman et al found that there was moderate internal consistency of .56 (Cronbach's alpha) for the whole scale. Test-retest reliability over 6 months was .71 suggesting that attribution style in children was relatively stable. In the current study, we only had space for 24 items from the CASQ so that 12 of the scenarios were positive (e.g., "You make a new friend") and the other half were negative (e.g., "You have a messy room"). Each of the 12 items were equally split across the three attributional styles: internal vs. external, stable vs. unstable, and global vs. specific. All 24 items can be seen in Appendix I.

Childhood Anxiety Sensitivity Index (CASI)

The CASI was developed by Silverman, Fleisig, Rabian and Peterson (1991) to assess whether children had beliefs about anxiety symptoms, that is, anxiety-sensitivity. The questionnaire consists of 18 items that ask children to say how averse they are to

differing anxiety symptoms (e.g., "I don't want people to know when I'm afraid." "It scares me when my heart beats fast"). Each item had a three-point scale (1: none, 2: some, 3: a lot).

Silverman et al used a clinical and non-clinical population of children aged 11-15 years old. They found that when the CASI was used with a non-clinical group of children, it had a test-retest reliability coefficient of .78, and an internal Cronbach's alpha of .87. They had similar results for the clinical sample of children. All 18 items were used in the current study, and the full version of the scale can be seen in Appendix I.

Spence Children's Anxiety Scale

This scale was developed by Spence (1994), consisting of 44 items split across 6 correlated factors (Spence, 1997) that included:

- panic-agorapobia (e.g., "I suddenly feel as if I can't breathe when there is no reason for this")
- social phobia (e.g., "I feel afraid if I have to talk in front of my class")
- separation anxiety (e.g., "I worry about being away from my parents")
- obsessive-compulsive problems (e.g., "I can't seem to get bad or silly thoughts out of my mind")
- physical fears (e.g., "I am scared of the dark")
- generalised anxiety (e.g., "I worry about things")

Each statement has a four point rating scale (0: never – 3: always). A full version of the scale with complete instructions is available in Appendix I.

Spence (1998) also suggests that the SCAS has other benefits to many other scales used to measure anxiety in children. It was specifically developed to work with children as young as eight years of age. The SCAS has been used with clinical samples, and the six factors map on the DSMIV-R categories for different anxiety disorders, indicating good ecological validity. Furthermore, the SCAS was widely tested in a community setting

and this produced good test-retest reliability coefficient of .96, and an internal Cronbach alpha of .90.

Mood and Feelings Questionnaire (MFQ)

The Mood and Feelings questionnaire was developed to detect depression in children and adolescents (Costello & Angold, 1988). The full version consists of 32 short items and a three point rating scale (1: not true, 2: sometimes true, 3: true). The shortened version of the MFQ consists of only 13 items, and was comprehensively tested for its psychometric qualities by Thapar and McGuffin (1998). The thirteen items are listed in Appendix I, together with instructions.

Importantly, they used a large community based sample, and gave the MFQ across several time points, and conducted interviews with respondents who scored above the 95th percentile (i.e., the more depressed cases). They also interviewed a random sample of respondents who scored below the 95th percentile. This meant that Thapar and McGuffin were able to ascertain that the shortened MFQ scale could efficiently screen and predict depressed cases. Thus the 13-item version of the MFQ was used across two time points in the current study.

Life Events Inventory

There were 50 life event items used in the current questionnaire, which were derived from the groundbreaking work of R. Dean Coddington in the 1970s. He was interested in exploring the relationships between different environmental stressors and psychopathological outcomes. He developed two Life Event Scales; one for children (LES-C) and the other for adolescents (LES-A). Coddington used a similar methodology to that of Holmes and Rahe (1967) who worked with adults in developing a life events inventory that reflected the effect of the event upon the individual.

To develop the scale to work with children, Coddington (1971a,b; 1984) assigned an arbitrary value of 500 units to the event of a birth of a sibling. Children and adolescents

then estimated the effect of other events relative to the 500-unit standard. The scale was then tested numerous times across clinical and community based samples of children and adolescents to provide a high level of validity to the items in the questionnaire.

Thus it seemed that the LES-A was an eminently suitable questionnaire to use in the current study. Although the original LES-A was a rating scale, in the current study we simply asked whether or not a particular life event had been experienced. However, the appropriate weighting for the effect of each life event was included in calculating the cumulative effect of environmental stressors that each participant may have experienced. A list of the items used in the current study can be seen in Appendix I.

Child Behaviour Checklist (CBCL)

The items from the Child Behaviour Checklist (CBCL) used in the current study were derived from Achenbach and Edlebrok's (1981) questionnaire developed in order to provide prevalence data on behavioural problems and competencies in relation to socio-demographic variables. The CBCL and its related instrument, the Youth Self Report (YSR) (Achenbach, 1991), are standardized instruments for assessing a broad array of psychopathological manifestations in children. The CBCL and YSR were designed to tap problems and competencies reported by parents of children aged 4-18 years and adolescents aged 11-18years. The parental component of the CBCL includes 20 items on the amount and quality of their children's participation in sports, hobbies, games, activities, jobs and chores, and friendships; how well the child gets along with others; and school functioning.

There are a further 118 behavioural items on both the parental /teacher CBCL and the YSR, scored on a three point scale (0: not true, 1: somewhat true, 2: always true), which produces a total score that ranges between theoretical limits of 0 and 240. The 1991 version of the scoring programme generates eight syndrome scale scores: the syndrome scales Withdrawn, Somatic Complaints, and Anxious/Depressed are grouped under the

Internalising Problems scale, and the scales Delinquent Behaviour and Aggressive Behaviour are grouped under the Externalising Problems scale.

In the current study, as there were already many questionnaires tapping into the same areas as the Internalising Problems scale, only the Externalising Problems scale was used. A list of the CBCL items used in the current study can be seen in Appendix I.

Additional items

There were few other items in the questionnaire including:

- height
- weight
- friendship measures
- parental relationship measures
- pubertal effects measures

However, only height and weight were used in the analyses of the current study.

3.5. Procedure

The current study was split into two stages. Initially, in stage one, each child received a leaflet explaining the purpose of the study and was asked to answer 13 items from the Mood and Feelings Questionnaire (MFQ). Once we received this leaflet, another questionnaire was sent that contained the measures described above. This stage two questionnaire was usually sent about 3-4 months after they had completed the initial 13 MFQ items.

With the twin component of the GENESiS 1219 study we also included a Parent's Questionnaire (PQ) with the initial leaflet in stage-1. This also contained information directed at answering parents' questions about the study. The PQ contained the following questionnaire and socio-demographic items:

- The short form of the neuroticism scale from the revised Eysenck Personality Questionnaire was used as a measure of trait anxiety (Eysenck & Eysenck, 198?)
- List of Threatening Events (Brugha, 199?) – a negative life events measure
- The Social Problem Questionnaire (Corney, Clare & Fry, 1982) – a list of social issues including work, housing, finances
- Employment information
- Housing information
- Education information
- Ethinicity

As the parents of children from the original GENESiS study had already completed a questionnaire with this information, it was not necessary to send them a PQ.

The stage one protocol for the non-twin part of the study was as follows:

1) Send GENESiS newsletter to all participants who indicated that they have children under the age of 19 living at home
2) After about one month send a GENESiS 1219 pack containing three individual child leaflets and envelopes
3) After about 2-3 weeks send out a reminder/thank you letter to all participants
4) After about one month send a second reminder with a new pack of leaflets

The stage one protocol for the twin part of the study was necessarily different, as we had to follow the guidelines set by the Office of National Statistics (ONS):

1) Ready packs for ONS to contain a letter for the Regional Health Authority asking them to pass on the pack to the GP of the twin family. Then there was a second letter addressed to the GP asking them to pass on the pack to the mother of the twin pair. At each stage we asked for a return slip in order to keep track of what happened to the packs.
2) After about one month a second reminder was sent using a similar system described in 1).

Once we received the initial leaflets from the children we then used the following protocol for the second stage of the study that was same for both the twin and non-twin participants:

1) Send the second-stage questionnaire with information directly to participants aged over 15 years, and to parents of participants under 16 years

2) Send follow-up reminder letter (with no questionnaire) to non-responders within six weeks of the initial questionnaire mailing

3) Send a second reminder letter with another copy of the questionnaire approximately 12 weeks after the initial questionnaire mailing

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Chapter 4

Results

4.1. Introduction

The results chapter is split into two main parts: a phenotypic section that details the structure of the shame scale and its relationship to other variables in the GENESiS 1219 study including measures of anxiety and depression; and a genotypic section that explores the heritable, common environment and nonshared environment factors influencing the variance for the shame scale.

4.2. Phenotypic results

Only the first sibling in each pair was included in all of the phenotypic analyses, in order to avoid the possibility of non-independent observations. All the singletons were automatically included in the phenotypic analyses. Table 4.1 below shows the shame items used in the questionnaire split across the three factors as reported by Andrews, Qian and Valentine (2002).

Table 4.1: Shame questions used with the original shame factors

Original factors	Question
Behavioural shame	1) I worry about what other people think when I say something stupid
	2) I worry about what other people think of me when I do something wrong
	3) I feel ashamed when I fail at something that is important to me
	4) I feel ashamed when I say something stupid
Characterological shame	5) I try to cover-up or conceal some of my personal habits
	6) I feel ashamed of the sort of person I am
	7) I feel ashamed of my ability to do things
	8) I worry about what other people think of my manner with others
Physical shame	9) I feel ashamed of my body or part of it
	10) I worry about what other people think of my appearance
	11) I avoid looking at myself in the mirror
	12) I want to hide or conceal my body or parts of it

4.2.i <u>Analysis of the shame scale</u>

The mean score for all 12 items on the shame scale is 8.27 with a Standard Deviation of 5.17 (N=1495). Graph 4.1 below shows the distribution of scores for the 12 items (minimum score = 0, maximum score = 24). This indicates a modest left-handed skew (.49) with more respondents having low or no shame scores, and good Kurtosis that was not significant (-.33).

Graph 4.1: Distribution of shame scale (N=1495)
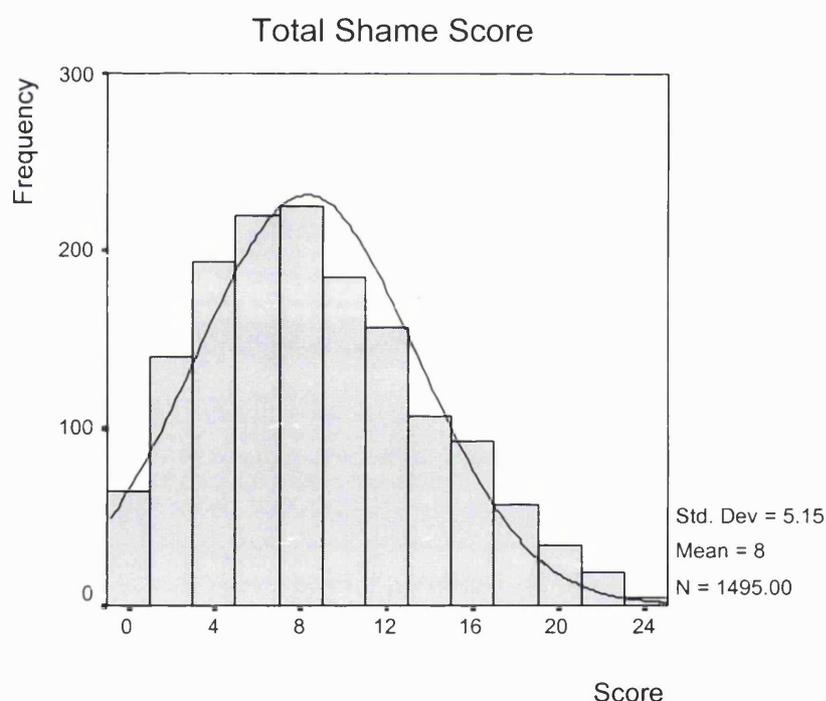
Table 4.2 below shows the endorsement rates for each of the items. This shows an average endorsement rate for all the items (i.e., including both 1 and 2 responses for a question) of 54%. The average split of response for the shame items was 46% for 0 ("not true"), 39% for 1 ("somewhat true"), and 15% for 2 ("very true"). The three items with the highest rates of endorsement were:

    1) shame item 3 with an endorsement rate of 80%: I feel ashamed when I fail at something that is important to me

2) shame item 10 with an endorsement rate of 76%: I worry about what other people think of my appearance

3) shame item 1 with an endorsement rate of 75%: I worry about what other people think when I say something stupid

Interestingly, items 1 and 10 both come from the 'behavioural' factor of shame outlined by Andrews. This might indicate that adolescents experience behavioural aspects of shame more than the other two factors. Among the three items with the lowest rates of endorsement there were no behavioural shame items:

1) shame item 11 with an endorsement rate of 17%: I avoid looking at myself in the mirror

2) shame item 6 with an endorsement rate of 26%: I feel ashamed of the sort of person I am

3) shame item 7 with an endorsement rate of 36%: I feel ashamed of my ability to do things

Of course a simple explanation of item 9 having the lowest endorsement might be due to the very different subject populations. Andrews et al (2002) worked with mainly female undergraduates, while the current study worked with a community based sample of teenagers.

Table 4.2: Frequency and endorsement rates for each of the shame items (N=1495).
Behavioural shame: items 1-4; Characterological shame: items 5-8;
Physical/bodily shame: items 9-12

Item	Fqy 0	%	Fqy 1	%	Fqy 2	%	Missing	Endorsement 1 + 2	%
1) I worry about what other people think when I say something stupid	374	25%	766	51.2%	355	23.7%	12	1121	75%
2) I worry about what other people think of me when I do something wrong	460	30.8%	766	51.2%	264	17.7%	5	1030	69%
3) I feel ashamed when I fail at something that is important to me	304	20.3%	792	53%	392	26.2%	7	1184	80%
4) I feel ashamed when I say something stupid	577	38.6%	702	47%	212	14.2%	4	914	61%
5) I try to cover-up or conceal some of my personal habits	710	47.5%	622	41.6%	156	10.4%	7	778	52%
6) I feel ashamed of the sort of person I am	1105	73.9%	306	20.5%	80	5.4%	5	386	26%
7) I feel ashamed of my ability to do things	952	63.7%	472	31.6%	67	4.5%	4	539	36%
8) I worry about what other people think of my manner with others	715	47.8%	624	41.7%	153	10.2%	3	777	52%
9) I feel ashamed of my body or part of it	696	46.4%	533	35.7%	263	17.6%	3	796	53%
10) I worry about what other people think of my appearance	362	24.2%	705	47.2%	425	28,4%	3	1130	76%
11) I avoid looking at myself in the mirror	1244	83.2%	192	12.8%	54	3.6%	5	246	17%
12) I want to hide or conceal my body or parts of it	733	49%	500	33.4%	257	17.2%	5	757	51%
Total	8232		6980		2678			9134	
Mean	686	46%	582	39%	223	15%		761	54%

Exploratory factor analysis

The reliability of the total scale using Cronbach's alpha was 0.87, indicating that the items had high internal consistency. An exploratory factor analysis was computed in order to check whether the same three factors that were found by Andrews, Qian and Valentine (2002) would be seen in an adolescent community-based sample. The factor analysis showed only *two* component factors with Eigenvalues of greater than 1, and the rotated varimax factor solution split the twelve items into the two equally sized shame scales, shown below in table 4.3.

Table 4.3: Two-factor structure for the shame items (with any score less than .4 suppressed)

Question		Factor1	Factor2
1)	I worry about what other people think when I say something stupid	.79	-
2)	I worry about what other people think of me when I do something wrong	.79	-
3)	I feel ashamed when I say something stupid	.77	-
4)	I worry about what other people think of my manner with others	.73	-
5)	I worry about what other people think of my appearance	.61	-
6)	I feel ashamed when I fail at something that is important to me	.58	-
7)	I feel ashamed of my body or part of it	-	.76
8)	I want to hide or conceal my body or parts of it	-	.73
9)	I avoid looking at myself in the mirror	-	.71
10)	I feel ashamed of the sort of person I am	-	.63
11)	I feel ashamed of my ability to do things	-	.56
12)	I try to cover-up or conceal some of my personal habits	-	.42
	Eigen values	5.03	1.27
	% variance explained	41.97	10.55

Confirmatory factor analysis

In order to explore this different finding from Andrews, Qian and Valentine (2002), a confirmatory factor analysis was computed in order to find the best factor model for the 12 shame items. The chi-square score for the two-factor model it was 373.74 (df: 53), while the three-factor model came to 558.76 (df: 51), and the one-factor model has a chi-square of 871.03 (df: 54). The difference between the lower two scores produces a significant chi-square of 185.02 (df: 2) which indicates that the two-factor model fitted significantly better the data than either the one-factor or three-factor model.

Two separate shame scales were created by summing the items that loaded highly on to each factor. On inspection, the items in the first factor seemed to be focused on concerns or worries about how other people see the self, and was labelled as *externalised* shame; that is: where the shame is related to how other people see the self in terms of physical and behaviour characteristics. The shame items on the second factor seem to be more internally focused, and was labelled as *internalised* shame; i.e., a self-focus that is not in front of others from others, and expressed within self. Externalised shame refers to the first factor and internalised shame refers to the second factor for the rest of the results chapter.

The mean score for the first shame scale was 5.33 (SD: 3.12), and the second scale, 2.94 (SD: 2.62). The difference in means between the two factors indicated that items on the second factor were less likely answered positively than those questions for the first factor. Indeed, the three least answered questions (items: 3, 5 and 9) were items on the second factor. The two shame scales were significantly correlated with each other, $r=.61$, $p<.01$ ($n=769$).

4.2.ii <u>Gender effects for shame</u>

Table 4.3 shows the endorsement rates for male and female adolescents on each of the questions for each shame scale. Inspection of the table shows that for most of the shame questions, female adolescents had much higher endorsement rates. There was only one shame item that did not show a difference between male and females, internal shame item 1: "I try to cover-up or conceal some of my personal habits." The two items with highest differences between male and female adolescents were:

1) Internal shame item 2: I feel ashamed of my body or part of it (males 36%, females 66%)
2) Internal shame item 6: I want to hide or conceal my body or parts of it (males 37%, females 60%)

This gender difference is suggestive of important gender differences especially about body image. This may also explain the differences between the current study and Andews et al (2002). In their sample 82% were female undergraduate students, while in the current sample only 59% were female. Given the very low male endorsement rates on the body shame items listed it is not surprising that this factor did not appear in the factor analysis. However, exploratory factor analyses for all 12 items were run for males and females, and they still only produced a two-factor solution for the shame scale.

Table 4.3: Endorsement rates for shame items by gender, with Mann-Whitney U tests of significance

	Male (N=618)			Female (N=877)			
Item	Endorsement (1 + 2)	Missing	%	Endorsement (1 + 2)	Missing	%	Sig.
1) I worry about what other people think when I say something stupid	429	0	69%	692	0	79%	**
2) I worry about what other people think of my manner with others	297	1	48%	480	2	55%	**
3) I worry about what other people think of my appearance	400	2	65%	730	1	83%	**
4) I worry about what other people think of me when I do something wrong	388	3	63%	642	2	73%	**
5) I feel ashamed when I fail at something that is important to me	456	5	74%	728	2	83%	**
6) I feel ashamed when I say something stupid	349	2	57%	565	2	65%	**
External Shame (Factor 1)	2319	13	64%	3837	9	73%	**
7) I try to cover-up or conceal some of my personal habits	328	4	53%	450	3	51%	ns
8) I feel ashamed of my body or part of it	222	2	36%	574	1	66%	**
9) I feel ashamed of the sort of person I am	117	3	19%	259	1	30%	**
10) I feel ashamed of my ability to do things	197	2	32%	242	2	28%	**
11) I avoid looking at myself in the mirror	63	3	10%	183	2	21%	**
12) I want to hide or conceal my body or parts of it	230	1	37%	527	4	60%	**
Internal Shame (Factor 2)	1157	15	31%	2235	15	43%	**

** = p <.01, Mann-Whitney

Finally, a t-test was computed for the mean scores for both shame scales for male and females. Unsurprisingly, they both show significant differences for external shame (t

(df=1493)= -7.30, p< .01), and internal shame (t (df=1493)= -9.21, p< .01) for male and female adolescents. The mean scores are shown in table 4.4.

Table 4.4: Means of external and internal shame factors for males and females

Shame Scale	Sex	N	Mean	(SD)
Externalised	Male	618	4.64	(2.95)
	Female	877	5.82	(3.13)
Internalised	Male	618	2.23	(2.27)
	Female	877	3.44	(2.74)

4.2.iii Age effects for shame

In order to test for age effects, each participant's age was put in yearly age ranges. The majority of the adolescents were aged between 13 and 17 years, reflecting the twin sub-sample within the GENESiS 1219 study that was recruited via the Office of National Statistics. As there were little differences between sex across the age groups, the analysis of shame by age was conducted for amalgamated age groups.

Table 4.5 shows the means scores for both shame scales across the age groups, and they are also visually represented in graph 4.2. In order to investigate whether there were any age effects for either of the shame factor, the scores were entered into a 10 (Group: Age groups 11-20) by 2 (Condition: external vs. internal shame) analysis of variance, with condition as the within subjects variable. The ANOVA showed a significant effect of group, $F(9,1476)=2.92$, p<.01, and a significant effect of condition, $F(1,1476)=315.78$, p<.01. The group by condition interaction was not significant, $F(1,48)=.48$, p=.67, confirming that each of the groups had the same pattern of shame scores, i.e., a high external shame score vs. a low internal shame score. Post-hoc analysis of the significant group effect showed that the only significant differences between age groups was: 13 year olds versus 18 year olds (Tukey, p<.05) and 13 year olds versus 19 year olds (Tukey, p<.05). The results indicate that there is a slight age effect with the older adolescents showing higher scores.

Table 4.5: Means for external and internal shame factors across the age groups

Age group	External Shame Mean (SD)	Internal shame Mean (SD)	N (Males)	N (Females)
11	6.50 (2.81)	3.0 (2.19)	1	5
12	5.58 (4.52)	2.09 (1.82)	4	8
13	5.07 (2.94)	2.65 (2.33)	190	220
14	5.14 (2.95)	2.78 (2.45)	93	153
15	5.06 (3.02)	2.80 (2.45)	103	145
16	5.57 (3.18)	3.26 (2.84)	110	171
17	5.45 (3.32)	3.16 (2.90)	60	81
18	6.23 (3.71)	3.62 (3.08)	26	44
19	6.65 (3.22)	3.79 (3.26)	15	28
20	5.55 (2.59)	2.97 (2.41)	12	17

Graph 4.2: External and internal shame scales across the age groups
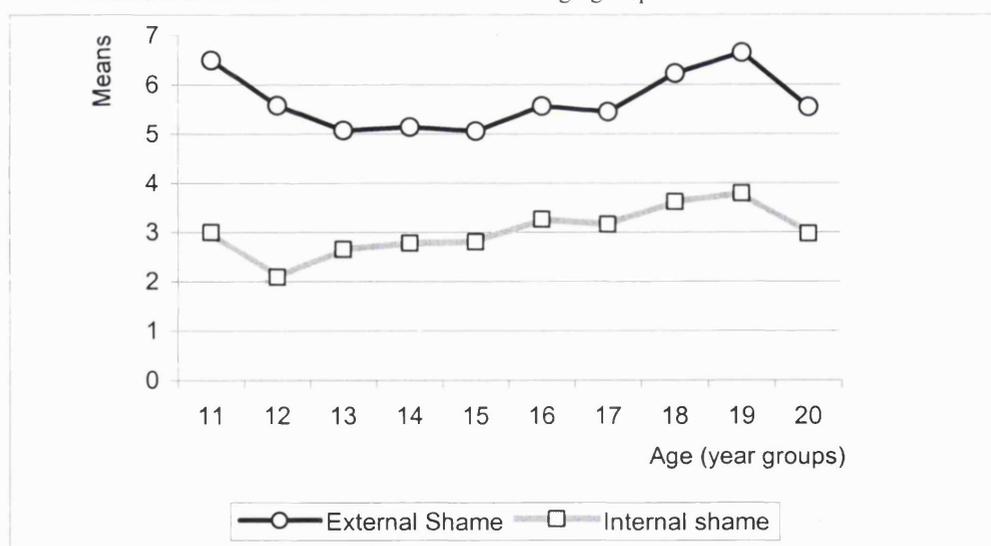
4.2.iv <u>Shame, anxiety, depression and behaviour</u>

Given that there are age and sex effects for the external and internal shame factors, the rest of the analyses reported in this chapter age and sex regressed scale, unless otherwise specified. Table 4.6 shows the correlations between the two shame scales and anxiety and depression scores, along with a test of significance to examine whether the two shame scales had a significantly different relationship to the different emotional and behavioural measures used in the study (Howell, 2002).

The correlation between the two shame scales was $r = .59$. Inspection of the correlations shows strong relationships between the shame items and the different scales of anxiety and depression. External shame had a significantly stronger relationship to social anxiety, while internal shame had a significantly stronger relationship with MFQ. This indicates that the two shame scales are tapping into slightly different areas. External shame appears to be more to do with concern with other people's perception, and this is reflected in the high social anxiety correlation ($r = .67$, p<.01). Internal shame reflects concerns about failure of self, and this is reflected in the high MFQ/depression correlation ($r = .63$, p<.01). In general, the shame items seem more highly correlated with social anxiety and general anxiety than with other anxiety items such as physical anxiety.

Table 4.6: Correlation of shame with mood-state inventories (N=1495)

Questionnaire	Scales	External Shame	Internal Shame	Test of significance between shame correlations
Spence	Panic-agoraphobia	.39 **	.44 **	$t(1492)=-2.40$, p<.05
	Separation anxiety	.40 **	.37 **	$t(1492)=1.41$, ns
	Social anxiety	.67 **	.49 **	$t(1492)=10.31$ p<.001
	Physical injury anxiety	.30 **	.28 **	$t(1492)=0.90$, ns
	OCD	.43 **	.45 **	$t(1492)=-0.97$, ns
	General anxiety	.53 **	.51 **	$t(1492)=1.04$, ns
	Spence total score	.59 **	.56 **	$t(1492)=1.65$, p<.05
MFQ	Depression	.48 **	.63 **	$t(1492)=-8.25$, p<.001
CASI	Anxiety Sensitivity	.51 **	.46 **	$t(1492)=2.52$, p<.02

* p<.05 ** p<.01

Table 4.7 lists the correlation analyses between the two shame scales and other measures included in the study. Inspection of the table shows that there were only moderate correlations between the two shame scales and the other measures, although there were significantly different strengths of relationships between internal and external shame. In particular, there was a low correlation between the CASQ total score (which represents the overall attribution style calculated by subtracting the negative score from the positive one). This suggests that attributional processes measured by the CASQ are tapping different areas of self-awareness than the shame items.

Though both external and internal shame have significant correlations with the CBCL scales, the internal shame scale shows significantly higher correlations than external shame with delinquency ($r = .38$ vs. $r = .13$), aggression ($r = .41$ vs. $r = .25$) and the overall externalising behaviours score ($r = .45$ vs. $r = .23$). However, the biggest

difference between external and internal shame correlations is with the body-mass index

score. Here, external shame has a significantly higher correlation ($r = .59$) than internal

shame ($r = .15$), even though the internal shame scale contains three items about bodily

shame.

Table 4.7: Correlation of shame with other GENESiS 1219 measures (N=1495

Questionnaire	Scales	External Shame	Internal Shame	Test of significance between shame correlations
CASQ	Total (positive – negative)	.18 **	.08 **	$t(1492)=4.34, p<.001$
CBCL	Delinquent	.13 **	.38 **	$t(1492)=-11.60, p<.001$
	Aggression	.25 **	.41 **	$t(1492)=-7.46, p<.001$
	Externalising behaviours	.23 **	.45 **	$t(1492)=-10.48, p<.001$
Life events	Weighted Total Score	.13 **	.23 **	$t(1492)=-4.38, p<.001$
BMI	Weight/Height ration	.59 **	.15 **	$t(1492)=24.25p<.001$

** $p<.01$

4.2.v <u>Shame and weight</u>

It was expected that there should be a relationship between shame and weight for

teenagers given the large effects of puberty on the body. Given the large number of

studies examining women's body image, feelings of shame and eating-disorders, an in-

depth analysis of the relationship between body-mass index and shame was conducted.

BMI is usually split into six categories: underweight (BMI < 20), normal weight (BMI

20-25), overweight (BMI 26-30), mild obesity (BMI 31-35), moderate obesity (BMI 36-

40) and high/extreme obesity (BMI >40). It should be noted that because of the

hypothesis that gender would have a significant role in the relationship between shame

and BMI, the original non-regressed shame scale scores were used. Table 4.8 shows the

number of male and female adolescents in each of the BMI categories, and the means of

the internal and external shame scales.

For males, there were very few participants who were in any of the obesity categories (N=3), and so means were only calculated for the underweight, normal weight and overweight categories. For both the external and internal shame factors there was an increase in the means for the overweight category. For females, there were no participants in the high obesity category, and only five participants in the mild and moderate obesity categories. The means for external shame tended to be similar across the first three BMI categories, and only increased in the obesity groups. The means for internal shame showed a slight trend to increase in the first three BMI categories, and then a large increase in the obesity groups.

Table 4.8: Mean external and internal shame scores across the BMI categories

| BMI category | Male | | | Female | | |
	N	External Mean(SD)	Internal Mean (SD)	N	External Mean(SD)	Internal Mean (SD)
Underweight	184	4.64 (2.83)	2.15 (2.01)	224	5.76 (3.15)	2.96 (2.64)
Normal weight	302	4.63 (3.06)	2.09 (2.33)	429	5.96 (3.06)	3.59 (2.74)
Overweight	30	6.44 (3.34)	4.63 (3.02)	48	5.60 (3.54)	3.98 (2.64)
Mild obesity	2	-	-	5	6.00 (4.30)	5.4 (3.78)
Moderate obesity	1	-	-	5	9.00 (2.92)	6.20 (4.09)
Extreme obesity	-	-	-	-	-	-

As there were so few participants in the obesity categories, these groups were dropped from further analysis. In order to investigate whether there were any significant BMI effects for shame, the scores were entered into a 2 (Group: Male vs. Female) by 3 (BMI Group: underweight vs. normal weight vs. overweight) by 2 (Shame condition: external vs. internal shame) analysis of variance, with condition as the within subject variables. The ANOVA showed a significant effect of gender, $F(1,1211)=6.59$, $p<.05$, that

reflected the differences in shame scores between male and female students. There was also a significant effect of BMI category, $F(2, 1211)=7.89$, $p<.01$, indicating that there were significant differences in shame scores between the different BMI groups. There was also a significant group interaction between gender and BMI, indicating significant differences in how males and females were affected by the BMI categories for shame, $F(2, 1211)=6.27$, $p<.01$. This difference between male and female adolescents can be clearly seen in graph 4.3 for both external and internal shame scales.. The interaction for gender by shame was not significant, $F(1,1211)=.01$, $p=.94$, confirming that males and females had a similar pattern of shame scores, i.e., a high external shame score vs. a low internal shame score. The interaction for BMI category by shame was significant, $F(2, 1211)=4.67$, $p<.05$ and this confirmed that the BMI groups had significantly different shame scores. Post-hoc analysis of this significant interaction showed that significant differences between BMI categories was for underweight versus overweight (Tukey, $p<.05$) and normal weight versus overweight (Tukey, $p<.05$). There was no overall interaction effect for gender by BMI by shame, $F(2,1211)=1.12$, $p=.326$ and this indicates a similar BMI by shame interaction for male and female adolescents.

Graph 4.4a below shows that females have the same external shame scores across the three BMI groups, while males in the overweight show a large increase in external shame. Graph 4.4b shows that females have a steady increase in internal shame from the underweight through normal weight to overweight categories. The males showed a similar pattern to graph 4.4a, in that there is substantial increase in internal shame for the overweight category.

Graph 4.3a: External shame across the 3 BMI groups
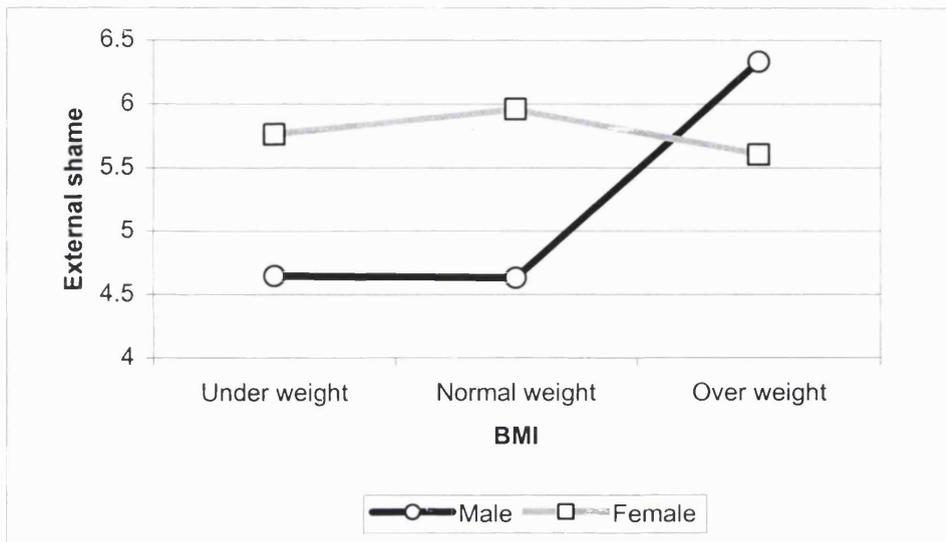
Graph 4.3b: Internal shame across the 3 BMI groups
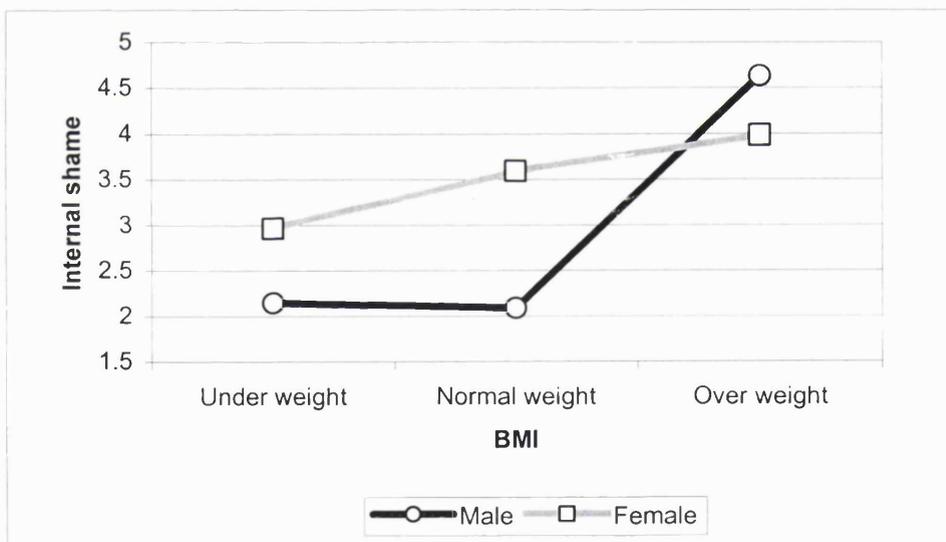
4.3. Genotypic analyses

The analyses conducted in this section investigate the genetic, common environment and non-shared environment components of the two shame scales. Table 4.9 below shows the correlations between sibling pairs for external and internal shame. Inspection of the table shows that for both males and females there were differences between the correlations for MZ twins and DZ twins for both internal and external shame. This indicates a significant heritability component for both shame scales.

Table 4.9: Sibling correlations for external and internal shame

	External shame	Internal shame
MZ – males (N=252)	.44**	.29**
DZ – males (N=200)	.31**	.08
Sib-pairs – males (N=108)	.37**	.24**
MZ – females (N=344)	.46**	.54**
DZ – females (N=314)	.32**	.27**
Sib-pairs – females (N=182)	.04	.15*
DZ – opposite sex (N=586)	.08*	.20**
Sib-pairs – opposite sex (N=254)	.12	.20**

4.3.i Univariate model fitting for externalising shame

All the model fitting described in the current study was conducted using *Mx* – a computer behaviour-genetic modelling package developed by Neale (1999). A sex-limited univariate model (Neale & Cardon, 1992) for external shame was computed to examine the patterns from the sibling correlations. As explained in Chapter Three, four models were tested:

1) No sex-specific effects model in which the parameter values (*a, c, e*) were the same for males and females, thus testing the hypothesis that there would be no significant sex difference

2) Common-effects model in which the parameter values (*a, c, e*) were allowed to be different, but had to be the same for males in same-sex pairs as males in opposite-sex pairs and similarly for females. This tested the hypothesis that male and female siblings have similar genetic and common environment components but in varying degrees

3) Full sex-limited in which the parameter values for *a, c* and *e* were allowed to be different and the genetic correlation between members of opposite sex pairs were left to vary (i.e., not being fixed at .5 for opposite sex-pairs). This tested the hypothesis that male and female siblings have different genetic components

4) This model was similar to the third, but the common environment correlation was allowed to vary instead of the genetic one. This tested the hypothesis that male and female siblings have different common environment components

Table 4.10 contains the components of variance and chi-square values for univariate model fitting for external shame. The models all showed similar fits of the data, although the model with largest negative AIC (Akaike Information Criterion - Fujikoshi, 1985; i.e., the best fitting model) is the second one – the common-effects model. However, a chi-square computed between the no sex-effects and common-effects models was not significant (X^2 = 6.75). This meant that the best-fit model of choice was one that contained parameters with no specific sex effects. In this model only the additive and nonshared environment parameters were significantly different from zero. Given that common environment effects were negligible, an A-E model (i.e., dropping the common environment component) was computed which produced a X^2 = 19.79 (df = 21), and an AIC score of –22.22. This model represents the best-fit for the external shame data, indicating a heritability of 42% and nonshared environment of 58% in explaining the variance of external shame.

Table 4.10: The different heritability models for external shame

Model	Males			Females			DZOS		Goodness of fit tests			
	a^2	c^2	e^2	a^2	c^2	e^2	r_A	r_C	AIC	X^2	df	p
1	.42	.0	.58	.42	.0	.58	.5	1.0	-20.21	19.79	20	.47
2	.26	.19	.55	.41	.0	.57	.5	1.0	-20.96	13.04	17	.73
3	.27	.18	.55	.43	.0	.57	.26	1.0	-19.13	12.87	16	.68
4	.25	.20	.55	.40	.02	.57	.5	1.0	-19.05	12.94	16	.68

Key: DZOS: Dizygotic Opposite-Sex Pairs
     Model 1: No sex-specific effects
     Model 2: Common-effects
     Model 3: Full sex-limited effects (genetic components)
     Model 4: Full sex-limited effects (common environment components)

4.3.ii Univariate model fitting for internalising shame

Table 4.11 contains the components of variance and chi-square values for univariate model fitting for external shame. The models all showed similar fits of the data, although the model with largest negative AIC (i.e., the best fitting model) is again the second one, i.e., the common-effects model. However, a chi-square computed between the no sex-effects and common-effects models was not significant ($X^2 = 6.17$). This meant that the best-fit model of choice was one that contained parameters with no specific sex-effects. Given that common environment effects were negligible, an A-E model (i.e., dropping the common environment component) was computed which produced a $X^2 = 26.01$ (df = 21), and an AIC score of –15.99. This model represents the best-fit for the external shame data, indicating a heritability of 44% and nonshared environment of 56% in explaining the variance of internal shame.

Table 4.11: The different heritability models for internal shame

Model	Males			Females			DZOS		Goodness of fit tests			
	a^2	c^2	e^2	a^2	c^2	e^2	r_A	r_C	AIC	X^2	df	p
1	44	.0	.56	.44	.0	.56	.5	1.0	-13.99	26.01	20	.17
2	.30	.0	.69	.55	.0	.45	.5	1.0	-15.16	18.84	17	.34
3	.31	.0	.69	.55	.0	.45	.47	1.0	-13.21	18.79	16	.28
4	.30	.01	.69	.55	.0	.45	.5	1.0	-13.15	18.85	16	.28

Key: DZOS: Dizygotic Opposite-Sex Pairs
Model 1: No sex-specific effects
Model 2: Common-effects
Model 3: Full sex-limited effects (genetic components)
Model 4: Full sex-limited effects (common environment components)

4.3.iii Bivariate model fitting for both shame scales

The univariate analysis only allows the genetic, common and nonshared environment influences for each shame scale to be individually examined. A bivariate analysis can investigate to what extent the genetic, common environment and nonshared environment factors are shared by both external and internal shame. Table 4.14 shows the chi-square and AIC fit indices for three different models: the no sex-effects model, the common-effects model and the full sex-effects model. The common-effects model had the best AIC score (-41.43). The chi-square computed between the no sex-effects model and the common-effects model was significant (X^2 = 26.75, df = 11). This meant that the best-fit model was the common-effects model indicating that there were sex differences for the genetic, common, and nonshared environmental relationships between the two shame scales.

Table 4.12: Model fitting statistics for the bivariate model

Model	AIC	X^2	df	p
1) No sex effects	-36.68	109.32	73	<.01
2) Common-effects	-41.43	82.57	62	.04
3) Full sex-effects	-39.15	80.85	60	.04

In the bivariate analysis the relationship between the two shame scales is broken into three components: genetic, common environment and nonshared environment. The influences of these three components from the bivariate analysis of the two shame scales can be seen in tables 4.13a-c.

Inspection of the tables shows more clearly the differences between male and females for the two shame scales. The main difference occurs for the external shame scale in which male adolescents show a higher heritability (a^2=.49) and lower nonshared environmental influences (c^2=41) in comparison with female teenagers (a^2=.33, c^2=58). There does not seem to be a difference between males and females for internal shame. However, the genetic correlation for external and internal shame was similar for both sexes and significantly high (males: rA=.63; females: rA=.66). This indicated that similar genes contributed to the genetic influence of both external and internal shame.

Differences between males and females can be seen in the correlation for the two shame scales, and the proportion of additive genetics that accounted for that correlation. For males, 62% of the correlation between external and internal shame was accounted for by genetic influences, while this proportion was only 45% for the females. Of course the converse was the case for the influence of nonshared environment on the correlation between internal and external shame (males: proportion accounted for by E = 28%; females: proportion accounted for by E=46%). The proportion of common environment for the correlation between the shame scales was only about 10% for both sexes.

Table 4.13a Bivariate analysis of the genetic contribution to external and internal shame and the relationship between them

Gender	External Shame Heritability (a²)	Internal Shame Heritability (a²)	Genetic correlation (rA)	Proportion of the correlation due to A
Male	.49	.52	.63	.62
Female	.33	.49	.66	.45

Table 4.13b Bivariate analysis of the common environment contribution to external and internal shame and the relationship between them

Gender	External Shame Common env.(c²)	Internal Shame Common env.(c²)	Common env. correlation (rC)	Proportion of the correlation due to C
Male	.10	.03	1.0	.10
Female	.09	.03	1.0	.09

Table 4.13b Bivariate analysis of the nonshared environment contribution to external and internal shame and the relationship between them

Gender	External Shame Nonshared env.(e²)	Internal Shame Nonshared env.(e²)	Nonshared env. correlation (rE)	Proportion of the correlation due to E
Male	.41	.45	.33	.28
Female	.58	.48	.52	.46

Graph 4.4 shows the proportion of variance of males and females for the shame scales, and for the bivariate components of the relationship between external and internal shame.

Graph 4.4a Proportion of variance explained by a, c, and e from **bivariate** analysis of external and internal shame scales
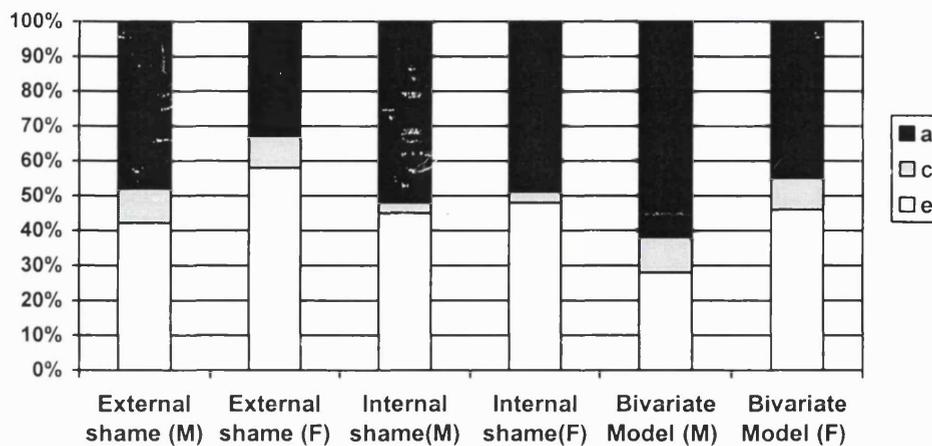
4.4 <u>Summary</u>

The results for the study were split into two sections: the phenotypic, and the genotypic. Initial analyses of the shame scale showed to be normally distributed and susceptible to sex effects with female adolescents showing a higher shame score. Factor analysis of the shame scale indicated two factors in contradistinction to the three-factor model of the shame scale found by Andrews, Qian and Valentine (2002). These factors were labelled external and internal shame. Further phenotypic analyses showed significant correlations between the shame scales and measures for anxiety, depression and body-mass index.

Genotypic univariate analyses indicated that external and internal shame scales were highly heritable traits, with virtually no common environment influence. The bivariate analysis showed a sex difference in heritability for external shame. Male adolescents seemed to show a greater genetic influence on external shame than females. Alternatively, this finding could be understood as females being more susceptible to individual-specific environmental factors such as weight.

<p style="text-align:center">oOo</p>

Chapter 5

Discussion

5.1 Introduction

The study presented in this thesis set out to answer three questions:

1) What is the structure of shame for adolescents?

2) Is there a relationship between shame and anxiety/depression?

3) Is shame heritable in adolescence?

The aim of this chapter is to review the results presented in Chapter 4, and to examine the extent to which these questions have been answered.

5.2. The structure of shame in adolescents

The first hypotheses was that the structure of the shame scale would be the same as that found by Andrews, Qian and Valentine (2002) and would have the following three factors: behavioural shame, characterological shame and physical shame. However, the results of the current study did not confirm this factor structure. There were only two factors found from this data: external shame including items that explicitly asked the respondents to think how they might be perceived by other people (e.g., "I worry about what other people think of my appearance"); and internal shame, assessed by items that implicitly assumed the public perception and dealt with the need to conceal or hide aspects of self (e.g., "I want to hide or conceal my body or parts of it"). It was surprising to find that the physical shame items did not form a factor, as it was assumed that teenagers would be highly susceptible to concerns about bodily image.

There are several possible explanations for differences found between these results and those of Andrews et al (2002). First, they worked with an undergraduate population who may have been a more homogenous sample (e.g., they were all psychology students) than the current community sample. Second, there was a female bias in Andrews et al study (2002) with 84% of the students being women. This bias was not so strong in the

current study (56% female), and this may have affected the factor structure as discussed below. Third, the Experience of Shame Scale was developed from an interview that was mainly used to investigate the relationship between early childhood experience, eating disorders and shame processes. Andrews et al's clinically oriented approach may be an explanation of the differences found in the GENESiS 1219 study, which was a questionnaire study that did not explore the same clinical issues.

The public versus private components of shame detected here reflect the construct of shame proposed by Goss, Gilbert and Allan (1994). They suggest that their "Others As Shamer" scale taps more into shame processes than the "Internal Shame Scale". Gilbert (1997) suggests that shame is related to feelings of inferiority and concerns about social ranking in groups. Recently, Gilbert and Miles (2000) have suggested that shame experiences lead to emotions of anxiety, anger and disgust with associated perceptions of being criticised, devalued and disapproved by others. They found that people who are shame-prone tend to be far more self-blaming when experiencing a social put-down or criticism.

The average endorsement rate (i.e., those responding "somewhat true", " very true" to the shame items) was 54%, with a range from 17% to 80%. Interestingly, the three shame items with the highest endorsement rates all came from the external shame factor, and the items with the three lowest rates came from internal shame factor. This provides further evidence that the two factors are tapping different aspects of shame.

Gender effects for these two aspects of shame were explored, and both male and female adolescents showed similar patterns across the two factors, with a higher external shame score. However, there were some important item differences between the sexes, with the biggest differences found in questions that asked about self-perceptions of body or looks. Here, endorsement rates for items such as "I feel ashamed of my body or part of it" or "I want to hide or conceal my body or parts of it" were higher for women than for

men. This suggested different domains of shame feelings for male and female teenagers, as well as an overall quantitative difference in the shame scale.

These gender differences are also reflected in many different studies of anxiety and depression in children and adolescents. As discussed in Chapter 2, Kashani and Orvaschel (1990) found that the prevalence rates for social anxiety (i.e., concerns with presentation of self to others and worries about being embarrassed) were much higher for adolescent girls than boys. McCauley et al (2001) suggest that girls tend to have higher levels of rumination with a tendency to think about themselves and social peer group, while boys tended to focus on activities like music and sport. This may explain the higher prevalence rates of depression in female adolescents. Thus, there may be a link between the differences between males and females in processing of shame, and the gender split for anxiety and depression.

5.3. Phenotypic associations between shame, emotional symptoms and behavioural problems

Shame, anxiety and depression symptoms
A correlation analysis showed that there were significant relationships between shame, and the measures of anxiety and depression. A strong relationship was found between external shame and the Spence Children's Anxiety Scale (SCAS) social anxiety scale. This further indicated that the external shame scales was more linked with social anxiety concerns of how the self is being viewed by others. A test of significance showed that the internal shame correlation with social anxiety was significantly lower than external shame.

There was a high correlation between internal shame and and the Mood and Feelings Questionnaire (MFQ - for depression). This suggested that internal shame may be tapping into depression, and involving more private rumination about the self and feelings of inadequacy. The external shame correlation with MFQ was significantly

lower than that for internal shame. Thus it seems from the correlation analysis that there are some indications of the two different shame scales tapping into slightly different aspects of mood state.

Shame and the cognitive style

Correlations were also calculated between the two shame scales and two measures of cognitive style associated with anxiety and depression using and the Child Attributional Style Questionnaire (CASQ), and the Childhood Anxiety Sensitivity Index (CASI). Correlations with the anxiety sensitivity index were fairly high whereas those with the attributional style measure were surprisingly low.

This may be due to subtle differences in the method of self-report used in the original CASQ studies (e.g., Nolen-Hoeksema, Girgus & Seligman, 1986; Seligman et al, 1984). In these studies, school classes of children and adolescents were asked to complete the CASQ, and each item was read aloud. Both the method and environment differs from the GENESiS 1219 study that is based entirely on self-report from home.

Shame and behavioural problems

Behavioural problems were assessed using the aggression and delinquency scales from the CBCL, and for these scales as with the emotional symptom scales there was a differential association with external and internal shame. . On the CBCL scales, internal shame had moderately high and significant relationships with the delinquency, aggression and overall externalising behaviour scales. External shame had significantly lower correlations with the three CBCL scales, which suggests that internal shame items such as "I feel ashamed of the sort of person I am" or "I feel ashamed of my ability to do things" may tap into feelings of self that are associated with externalising behaviour problems.

External shame items, which deal more explicitly with public perception of self physically and behaviourally, do not seem to be as highly correlated. It may be that the adolescents in this study disassociated external shame feelings in relation to behaving in a delinquent or aggressive style, while the internal feelings of failure are still maintained. It is also possible that externalising behaviour problems may be a response to such negative self-emotions in an attempt to boost self-image.

Shame and BMI

There was a significant difference between internal and external shame in their relationship to Body Mass Index (BMI). This was a surprising finding, given that three out of the four bodily shame items were on the internal shame scale. Much of the research conducted by Andrews and her colleagues primarily investigated the links between bulimia and anorexia with childhood abuse, psychopathology and shame (e.g., Andrews, Brewin, Rose & Kirk, 2000; Andrews and Hunter, 1997). Their focus tended to be about shame in women who were *underweight*, while the results of the current study indicated that shame increased with weight in a normal community based sample.

In these results there were no significant differences between the male and female adolescents whether they were underweight or at normal weight. Shame scores tended to be greater for both sexes only in the overweight BMI category. Although there were just five female participants in the mild to moderate obesity group, there was a trend suggestive of an increased shame score. This finding indicated that shame feelings increase with weight rather than the reverse. Of course theses differences could be due to many of Andrews' studies working with either specific populations such as students, or with clinical samples including patients with PTSD and bulimia.

There have been numerous studies linking depression and obesity in adolescents (e.g., Ge, Elder, Regnerus, Cox, 2001; Goodman, 1999, Pesa, Syre, Jones, 2000.). It is possible that the external shame scale is tapping into concerns about how others view

the physical self, which is reflected in the significant relationship between this scale and the MFQ depression scale. Unfortunately, on cross-sectional data it is not possible to explore causal relationships. One other explanation for the differences between the current study and Andrews' research might be that overweight people avoid thinking about their bodily shame (e.g., items such as "I avoid looking at myself in the mirror"), while underweight people might ruminate on such thoughts.

5.4. Genetics of shame

Univariate model of external and internal shame

Univariate analyses were conducted for both shame scales, incorporating tests for sex differences in the genetic and environmental contributions to the variance in these scales. External shame was significantly influenced by both additive genetics (a^2 - 42%) and nonshared environment (e^2 - 58%), whereas the effects of common environment were not significant. Results for the internal shame scale were similar (a^2 - 44%, c^2 - 0%, e^2 - 56%).

It was surprising that common environment had such a negligible influence on either of the shame scales. It was expected that shame experiences would be highly influenced by familial, communal, and societal/cultural factors. If this were the case, then these factors would be seen in the common environment variable. This finding seems to suggest that to the extent such influences operate on shame, they must interact with genetic influences.

Bivariate model of shame

The bivariate model explored to what extent the genetic, common environment and nonshared environmental factors were shared by the two shame scales. In contrast to the univariate models, there was a difference between male and female adolescents in how genetic, common and nonshared environment influence external and internal shame. In particular, males showed a higher additive genetic component for external shame (a^2=

.49) than the female adolescents (a^2=.33). However, this still represents a significant heritability effect for external shame, and there was little difference between male and female genetic influence on internal shame (a^2=.52, a^2=.49 respectively). This discrepancy between the sexes indicates that female adolescents are more susceptible to specific environmental factors such as weight and body shape. This would seem to fit with studies such as Fredrickson, Roberts, Noll, Quinn and Twenge (1998) who found that female student wearing a swimsuit were more susceptible to self-conscious emotions.

There is a significant correlation between external and internal shame (r=.61). The components of this relationship were explored in the bivariate analysis, which produced a bivariate heritability of 62% for males and 45% for females. This represents the proportion of the correlation between external and internal shame that is explained by similar genetic factors. The bivariate common environment proportion was similar for both sexes (female: 9%, male: 10%). And the bivariate nonshared environment proportion reflected the differences reported above, with the female adolescents showing a much higher effect of 46% in comparison with males (28%).

5.5. Methodological issues

There are some important methodological issues that need to be raised about the current study, and these results need to be interpreted with appropriate caution. First, the GENESiS 1219 study included self-report data. As discussed in Chapter 2, there are differences between child and parental/teacher reporting (e.g., Thapar and McGuffin, 1994) in reporting of anxiety and depression symptoms. It would be useful to see this data extended to include reports from other significant raters.

The design of the current study was cross-sectional and this has inherent shortcomings that might limit the applicability of the results. It is not possible to make causal statements regarding the association between shame and other measures. It is feasible to

postulate that being anxious makes you much more aware of self and leads to greater feelings of shame. The model suggested in the thesis is that shame is an unbearable emotion that causes anxiety responses as an attempt to avoid feeling ashamed in front of other people (e.g., Kaufman, 1989; Lewis, 1971). While this is a plausible explanation of the significant correlation between external shame and social anxiety, in comparison to the lower (although still significant) internal shame and social anxiety, it is not possible to establish such a causal relationship definitively in a cross-sectional design.

Interestingly, although the exploratory factor analysis indicated that the two shame scales were orthogonal to each other, there was still a significantly high correlation between them. Rather than using factor scores for the two shame scales, the internal and external shame scales were generated by summing the actual scores to responses for items in each scale. This allows for easier replication in future studies, but if the factor scores had been used, there may not have been a high correlation between the two scales.

There were also changes made to the Experience of Shame Scale in order to fit it in within the limited space demands of the GENESiS 1219 questionnaire. This may have contributed to the differences found between the current study and the use of the scale by Andrews, Qian and Valentine (2002). First, there were only 12 items instead of the original 24, and the rating scale was reduced from a 4-point to a 3-point scale.

Finally, there are limitations in the twin/sibling design, partly as a result of necessary assumptions made in analysing this type of data. One assumption is that assortative mating is negligible. That is, the parents of the children are no more alike in shame-proneness than random individuals. If there is selective mating then this would increase the non-MZ sibling correlation. Collecting parental responses to the shame scale could test this assumption.

It is also assumed that twins and sibling pairs share common environment factors such

as similar family, community and societal influences. It is possible that common environment is greater for MZs than DZs, and for DZs than sibling pairs. If this were the case it is possible to interpret the greater similarity of MZ twins as being due to environmental factors. The equal environments assumption was reviewed by Bouchard and Propping (1993) who found that the assumption seems to be a reasonable one for most traits. For example, Bouchard studied MZ and DZ twins reared apart on a variety of personality measures and found that there were little differences between MZ twins reared apart or together. He argues that shared environmental influences appear to be quite small for personality traits, and thus greater similarities between MZ twins are likely to be due to genetic factors.

5.6. Future research directions

The limitations discussed above suggest possible future research directions for shame in adolescents. One obvious path of research is to conduct further multivariate statistical analyses to explore the shared genetic influences across shame, depression, anxiety and BMI. This could reveal the proportion of genetic influence that is shared across all these different variables. Other future research directions include modifications to the design of the current study.

Methodological changes

Some of the basic methodological changes to the current study might include using interviews, parental and teacher reports, and alternative groups of adolescents. Interviews can provide qualitative as well as quantitative information about shame processes in individuals. This might have provided some additional information about the links between shame and other mood states like depression and anxiety. Interviews might also make the study more clinically relevant.

Parental and teacher reports would be a useful way in which to validate the adolescent's responses. The way in which an individual perceives their own self-worth and

competence might not be reflected in how other people, in particular parents and teachers, see them. A simple addition to the study of a measure of academic, sporting and social success might be able to investigate the gap between self-perception and reality. Alternatively, additional reports from others around the individual could include siblings and friends and their evaluation of the individual's competence and worth across a variety of dimensions such as being a friend, or being a generous person.

This kind of change could be done if the study incorporated a different population sample, say from a school environment. A school-based study could incorporate academic, sporting and other social achievements, as well as providing opportunities for sibling, friend and teacher based reports of the individual. This would provide ample opportunity to study the influence of shame in different environments (i.e., home vs. school), as well as how shame processes relate to various school-based activities.

Longitudinal studies

The main way of establishing causal relationships between variables is to use a longitudinal design. For example in such a design it would be possible to see whether the shame scales taken at one time-point could predict measures of anxiety or depression at a second time-point in the future. Such a prospective study might be able to establish causal effects. Of course, the best kind of longitudinal design would be to start from childhood and make predictions from early measures of shame or negative self-evaluation about later personality and self-identity development.

Clinical studies

Two kinds of clinical studies might be useful for clarifying the causal role of shame in psychopathology. First, it might be useful to work with a clinical sample, both with questionnaires and interviews to ascertain the links between shame and current diagnosis. It might be useful to work with groups of anxious and depressed adolescents and explore whether the different shame scales would be able to distinguish between

them. It is not surprising that anxiety an depression are related to feelings of shame, but it may be possible with such clinically based studies to determine whether anxiety is an avoidant response to shame, while depression is consequence to feeling shame. This difference may be an important element of developing psychotherapeutic tools for working with shame.

A second type of clinical study would be to examine the role of shame in a clinical sample by using a psychotherapeutic intervention specifically designed at reducing shame responses and increasing positive self-evaluation. In this kind of intervention the aim would be to produce healthy self-identities by using cognitive behavioural strategies to identify and challenge shame induced thinking. Alternatively, strategies for developing therapeutic rapport could be expanded to deal with the obstacles to therapeutic alliance that shame creates (e.g., Retzinger, 1998).

Family and adoption designs

Changes to the twin/sibling design would provide more robust methods of disentangling environment and genetic influences. It might be useful to include parental measures of shame, anxiety, depression and BMI to see whether there are inherited characteristics across generations. Another way of looking at environmental effects would be to include half-siblings and stepsiblings, and adopted sibling into the genetic design.

Half-siblings have a lower genetic and common environment, and stepsiblings are not genetically related and have a low-shared environment. Adoption studies allow a zero genetic correlation and a high-shared environment. All these iterations of genetic and common environment correlations make it possible to disentangle heritable and environmental influences.

5.6 Conclusions

There have been very few studies explicitly studying the role of shame in adolescents, and none looking at the genetics of shame. Even with the caveats of the limitations with the study, shame seems to be highly genetically influenced. This result may be interpolated into Gilbert's theoretical evolutionary psychology perspective that shame has an important role in determining social ranking in groups. Shame is a quintessential social emotion – it can only be constructed within the framework of relationships, and yet there are still genetic influences.

In literature the message of the adolescent in or against his or her own peer group has been repeated for centuries. Modern culture is certainly no different in this regard. Take for example this extract from a current pop song:

> Never win first place, I don't support the team
> I can't take direction, and my socks are never clean
> Teachers dated me, my parents hated me
> I was always in a fight cuz I can't do nothin' right
>
> Everyday I fight a war against the mirror
> I can't take the person starin' back at me
> I'm a hazard to myself
>
> Don't let me get me
> I'm my own worst enemy
> It's bad when you annoy yourself
> So irritating
> Don't wanna be my friend no more
> I wanna be somebody else ...
>
> ... Doctor, doctor won't you please prescribe me somethin
> A day in the life of someone else?
> Cuz I'm a hazard to myself

from "Don't let me get me", Pink (2002)

The song reflects the desire to be a different person because the current self is not good enough or perhaps even a "hazard to myself". The conflict between the actual self and idealised self is fraught with such painful feelings and decisions about how to be an individual in a family or peer-group context. They are likely to have consequences for adult psychopathology.

The two shame scales used in the current thesis might reflect this dichotomy. The internal shame scale may be tapping into perceptions of actual self and the desire of self to be and look different, while the external shame scale may be capturing the quality of what the ideal self should be in relation to the social environment. In adolescence, when self-identity is dynamic and for many teenagers still uncomfortable, shame-based evaluations may be critical markers for either current or future mental health difficulties.

This study is the first large-scale community-based sample investigating shame with adolescents. There appears to be important links between shame and body mass, anxiety and depression. Although levels of shame vary between female and male adolescents, the same genes seem to be responsible for individual differences in shame. Clearly, the role of the genetics in shame needs to be further explored, perhaps in conjunction with examining the heritable influences of depression and anxiety.

While there is substantial genetic influence on shame, this does not represent a predetermination of whether a person actually develops a shame-prone personality. Genetic influences do not preclude environmental mediation, and this may explain the gender differences between the male and female adolescents for experiencing shame.

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Appendix I

Inventory items presented in the format of the questionnaire sent to participants of the study.

Measures included:

1) Child Attributional Style Questionnaire (CASQ)
2) Childhood Anxiety Sensitivty Index (CASI)
3) Spence Children's Anxiety Scale (SCAS)
4) Mood & Feelings Questionnaire (MFQ)
5) Life Event Scale
6) Child Behaviour Checklist (CBCL) (with embedded shame items)
7) Puberty, height and weight items

Here are some situations. Try to imagine that these situations have just happened to you.

For each situation, there are also two possible reasons for why the situation might have happened. Put a cross in the box next to the most likely reason to explain why the situation happened to you.

Sometimes both reasons may be true, and sometimes both may sound false. You may never have been in some of these situations. Even so, try to pick one reason that seems to explain why the situation happened to you. There are no right or wrong answers.

1	You get an "A" on a test.	I am smart. . . . . ☐
		I am good in the subject that the test was in . . . . ☐
2	Some people that you know say that do they do not like you.	Once in a while people are mean to me . . . . ☐
		Once in a while I am mean to other people . . . . ☐
3	A good friend tells you that he hates you	My friend was in a bad mood that day . . . . ☐
		I wasn't nice to my friend that day . . . . ☐
4	A person steals money from you.	That person is not honest. . . . . ☐
		Many people are not honest. . . . . ☐
5	Your parents tell you something that you make is very good.	I am good at making some things. . . . . ☐
		My parents like some things I make. . . . . ☐
6	You break a glass.	I am not careful enough. . . . . ☐
		Sometimes I am not careful enough. . . . . ☐
7	You do a project with a group of others and it turns out badly.	I don't work well with people in that particular group. . . . . ☐
		I never work well with groups. . . . . ☐
8	You make a new friend.	I am a nice person. . . . . ☐
		The people that I meet are nice. . . . . ☐
9	You have been getting along well with your family.	I am usually easy to get along with when I am with my family. . . . . ☐
		Once in a while I am easy to get along with when I am with my family. . ☐
10	You get a bad mark in school.	I am not a good student. . . . . ☐
		Teachers give hard tests. . . . . ☐
11	You walk into a door and you get a bloody nose.	I wasn't looking where I was going. . . . . ☐
		I have been careless lately. . . . . ☐
12	You have a messy room.	I did not clean my room that day. . . . . ☐
		I usually do not clean my room. . . . . ☐
13	Your mother makes you your favourite dinner.	There are a few things that my mother will do to please me. . . . . ☐
		My mother usually likes to please me. . . . . ☐
14	A team that you are on loses a game.	The team members don't help each other when they play together. . . . ☐
		That day the team members didn't help each other. . . . . ☐
15	You do not get your chores done at home.	I was lazy that day. . . . . ☐
		Many days I am lazy. . . . . ☐
16	You go to an amusement park and have a good time.	I usually enjoy myself at amusement parks. . . . . ☐
		I usually enjoy myself in many activities. . . . . ☐
17	You go to a friend's party and you fun. have fun	Your friend usually gives good parties. . . . . ☐
		Your friend gave a good party that day. . . . . ☐
18	You have a substitute teacher and she likes you.	I was well behaved during class that day. . . . . ☐
		I am almost always well behaved during class. . . . . ☐

19	You make your friends happy.	I am usually a fun person to be with. . . . . ☐
		Sometimes I am a fun person to be with. . . . . ☐
20	You put a hard puzzle together.	I am good at putting puzzles together. . . . . ☐
		I am good at doing many things. . . . . ☐
21	You try out for a sports team and do not make it.	I am not good at sports. . . . . ☐
		The others who tried out were very good at sports. . . . . ☐
22	You fail a test.	All tests are hard. . . . . ☐
		Only some tests are hard. . . . . ☐
23	You score a goal in a football game.	I got the shot just right. . . . . ☐
		The goalkeeper was easy to beat. . . . . ☐
24	You do the best in your class on a paper.	The others in my class did not work hard on their papers. . . . . . ☐
		I worked hard on the paper. . . . . ☐

CASI items

**Please put a cross in the box under the word that describes how often you
react this way. Remember to put a cross in only one box.**

		None	Some	A lot
1	I don't want other people to know when I'm afraid.	☐	☐	☐
2	When I cannot keep my mind on my schoolwork, I worry that I might be going crazy.	☐	☐	☐
3	It scares me when I feel "shaky".	☐	☐	☐
4	It scares me when I feel like I am going to faint.	☐	☐	☐
5	It is important for me to stay in control of my feelings.	☐	☐	☐
6	It scares me when my heart beats fast.	☐	☐	☐
7	It embarrasses me when my stomach growls (makes noise).	☐	☐	☐
8	It scares me when I feel like I am going to throw up.	☐	☐	☐
9	When I notice that my heart is beating fast, I worry that there might be something wrong with me.	☐	☐	☐
10	It scares me when I have trouble getting breath.	☐	☐	☐
11	When my stomach hurts, I worry that I might be really sick.	☐	☐	☐
12	It scares me when I cannot keep my mind on schoolwork.	☐	☐	☐
13	Others my age can tell when I feel shaky.	☐	☐	☐
14	Unusual feelings in my body scare me.	☐	☐	☐
15	When I am afraid, I worry that I might be crazy.	☐	☐	☐
16	It scares me when I feel nervous.	☐	☐	☐
17	I don't like to let my feelings show.	☐	☐	☐
18	Funny feelings in my body scare me.	☐	☐	☐

SCAS (Spence) Items

Please put a cross in the box under the word that shows how often
each of these things happen to you. Remember to put a cross in only
one box.

Never | Sometimes | Often | Always

		Never	Sometimes	Often	Always
1	I worry about things	☐	☐	☐	☐
2	I am scared of the dark	☐	☐	☐	☐
3	When I have a problem, I get a funny feeling in my stomach	☐	☐	☐	☐
4	I feel afraid	☐	☐	☐	☐
5	I would feel afraid of being on my own at home	☐	☐	☐	☐
6	I feel scared when I have to take a test	☐	☐	☐	☐
7	I feel afraid if I have to use public toilets	☐	☐	☐	☐
8	I worry about being away from my parents	☐	☐	☐	☐
9	I feel afraid that I will make a fool of myself in front of people	☐	☐	☐	☐
10	I worry that I will do badly at my schoolwork	☐	☐	☐	☐
11	I am popular amongst others my own age	☐	☐	☐	☐
12	I worry that something awful will happen to someone in my family.	☐	☐	☐	☐
13	I suddenly feel as if I can't breathe when there is no reason for this.	☐	☐	☐	☐
14	I have to keep checking that I have done things right. (e.g. the switch is off, the door is locked) .	☐	☐	☐	☐
15	I feel scared if I have to sleep on my own	☐	☐	☐	☐
16	I have trouble going to school in the mornings because I feel nervous or afraid	☐	☐	☐	☐
17	I am good at sports	☐	☐	☐	☐
18	I am scared of dogs	☐	☐	☐	☐
19	I can't seem to get bad or silly thoughts out of my head	☐	☐	☐	☐
20	When I have a problem, my heart beats really fast	☐	☐	☐	☐
21	I suddenly start to tremble or shake when there is no reason for this	☐	☐	☐	☐
22	I worry that something bad will happen to me	☐	☐	☐	☐
23	I am scared of going to the doctor or dentist	☐	☐	☐	☐
24	When I have a problem, I feel shaky	☐	☐	☐	☐
25	I am scared of being in high places or lifts	☐	☐	☐	☐
26	I am a good person	☐	☐	☐	☐
27	I have to think of special thoughts to stop bad things from happening (like numbers or words) ..	☐	☐	☐	☐
28	I feel scared if I have to travel in the car, on a bus or train	☐	☐	☐	☐
29	I worry what other people think of me	☐	☐	☐	☐

30 I am afraid of being in crowded places (e.g., shopping centres, the movies, buses, busy playgrounds). ☐ ☐ ☐ ☐

31 I feel happy. ☐ ☐ ☐ ☐

32 All of a sudden I feel really scared for no reason at all. ☐ ☐ ☐ ☐

33 I am scared of insects or spiders. ☐ ☐ ☐ ☐

34 I suddenly become dizzy or faint when there is no reason for this. ☐ ☐ ☐ ☐

35 I feel afraid if I have to talk in front of my class. ☐ ☐ ☐ ☐

36 My heart suddenly starts to beat too quickly for no reason. ☐ ☐ ☐ ☐

37 I worry that I will suddenly get a scared feeling when there is nothing to be afraid of. ☐ ☐ ☐ ☐

38 I like myself. ☐ ☐ ☐ ☐

39 I am afraid of being in small closed places, like tunnels or small rooms. ☐ ☐ ☐ ☐

40 I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order) ☐ ☐ ☐ ☐

41 I get bothered by bad or silly thoughts or pictures in my mind. ☐ ☐ ☐ ☐

42 I have to do some things in just the right way to stop bad things happening. ☐ ☐ ☐ ☐

43 I am proud of my schoolwork. ☐ ☐ ☐ ☐

44 I would feel scared if I had to stay away from home overnight. ☐ ☐ ☐ ☐

MFQ Items

**Please put a cross in the box under the word that shows how often
each of these things happen to you. Remember to put a cross in only one box.**

And how often have you felt or acted in this way over the past two weeks.

		Never	Sometimes	Often	Always
45	I felt miserable or unhappy.	☐	☐	☐	☐
46	I didn't enjoy anything.	☐	☐	☐	☐
47	I felt so tired I just sat around and did nothing.	☐	☐	☐	☐
48	I was very restless.	☐	☐	☐	☐
49	I felt I was no good anymore.	☐	☐	☐	☐
50	I cried a lot.	☐	☐	☐	☐
51	I found it hard to think properly or concentrate.	☐	☐	☐	☐
52	I hated myself.	☐	☐	☐	☐
53	I was a bad person.	☐	☐	☐	☐
54	I felt lonely.	☐	☐	☐	☐
55	I thought that nobody really loved me	☐	☐	☐	☐
56	I thought I could never be as good as others.	☐	☐	☐	☐
57	I did everything wrong.	☐	☐	☐	☐

Life Event Items

Here is a list of events that might have happened to you recently.

Please put a cross in the box if the event has happened to you in the <u>past year</u>.

1 Outstanding personal achievement (special prize) . ☐

2 Finding an adult that really respects you. ☐

3 Stopping the use of drugs. ☐

4 Becoming involved with drugs. ☐

5 Death of a close friend. ☐

6 Being hospitalised for illness or injury. ☐

7 Being sent away from home. ☐

8 Deciding to leave home. ☐

9 Becoming an adult member of a church. ☐

10 Failing to achieve something you really wanted. ☐

11 Appearance in juvenile court. ☐

12 Recognition for excelling in a sport or other activity . ☐

13 End of a problem between you and your parents. ☐

14 Start of a new problem between you and your parents ☐

15 Suspension from school. ☐

16 Failing end of year exams. ☐

17 Move to a new school district. ☐

18 Beginning the first year of GCSEs. ☐

19 Being told you are very attractive by a friend. ☐

20 Mother beginning to work outside the home. ☐

21 A new adult moving into your home. ☐

22 Change in father's job so he has less time home. ☐

23 End of a problem between your parents. ☐

24 Start of a new problem between your parents. ☐

25 Major decrease in your parents' income. ☐

26 Major increase in your parents' income. ☐

27 Loss of a job by your father or mother. ☐

28 Hospitalisation of a brother or sister. ☐

29 Birth of a brother or sister. ☐

30 Remarriage of a parent to a stepparent. ☐

31 Hospitalisation of a parent. ☐

32 The death of a grandparent. ☐

33 Marital separation of your parents. ☐

34 Divorce of your parents. ☐

35 The death of a brother or sister. ☐

36 The death of a parent. ☐

37 Getting married. ☐

38 Getting pregnant or fathering a pregnancy. ☐

39 Getting your first permanent job. ☐

40 Getting your first summer job. ☐

41 Being responsible for a road accident. ☐

42 Getting your first driver's license. ☐

43 Being invited to join a social organisation. ☐

44 Being accepted at the university of your choice. ☐

45 Completing sixth form. ☐

46 Being told to break up with a boy/girl friend. ☐

47 Finding a new boy/girl friend. ☐

48 Being invited by a friend to break the law. ☐

49 Breaking up with a boy/girl friend. ☐

50 Going out with someone for the first time in your life ☐

CBCL: Aggression & Delinquency

Note: Shame items are included in this scale. They

Below is of a list of items that describe common feelings and emotions experienced by teenagers.

For each item please tick whether this is <u>very true</u> or <u>often true of you</u>, <u>somewhat</u> or <u>sometimes true of you</u>, or <u>not true of you</u> now, or during the past 6 months.

		Not true	Somewhat true	Very true
1	I argue a lot.	☐	☐	☐
2	I worry about what other people think when I say something stupid	☐	☐	☐
3	I am mean to others.	☐	☐	☐
4	I destroy my things.	☐	☐	☐
5	I destroy things belonging to others.	☐	☐	☐
6	I am generally on my own. I generally play alone or keep myself to myself	☐	☐	☐
7	I disobey my parents.	☐	☐	☐
8	I try to cover-up or conceal some of my personal habits	☐	☐	☐
9	I am disobedient at school.	☐	☐	☐
10	I don't feel guilty after doing something I shouldn't	☐	☐	☐
11	I try to be nice to other people I care about their feelings	☐	☐	☐
12	I get into many fights	☐	☐	☐
13	I feel ashamed of my body or part of it	☐	☐	☐
14	I hang around with kids who get in trouble	☐	☐	☐
15	I lie or cheat	☐	☐	☐
16	I have one good friend or more	☐	☐	☐
17	I physically attack people	☐	☐	☐
18	I would rather be with older kids than with kids my own age	☐	☐	☐
19	I worry about what other people think of my manner with others	☐	☐	☐
20	I run away from home	☐	☐	☐
21	I steal at home	☐	☐	☐
22	I feel ashamed of the sort of person I am	☐	☐	☐
23	I usually share with others (e.g., food, pens games, etc.)	☐	☐	☐
24	I scream a lot	☐	☐	☐
25	I set fires	☐	☐	☐
26	I steal from places other than home	☐	☐	☐
27	I worry about what other people think of my appearance	☐	☐	☐

		Not true	Somewhat true	Very tr.
28	Other people my age generally like me.	☐	☐	☐
29	I think about sex too much	☐	☐	☐
30	I feel ashamed of my ability to do things.	☐	☐	☐
31	I have a hot temper.	☐	☐	☐
32	I tease others a lot.	☐	☐	☐
33	I am helpful if somebody is hurt, upset or feeling ill	☐	☐	☐
34	I swear or use dirty language.	☐	☐	☐
35	I threaten to hurt people.	☐	☐	☐
36	I worry about what other people think of me when I do something wrong	☐	☐	☐
37	I use alcohol or drugs for non medical purposes medical use	☐	☐	☐
38	Other children or young people pick on me or bully me	☐	☐	☐
39	I cut classes or skip school	☐	☐	☐
40	I avoid looking at myself in the mirror	☐	☐	☐
41	I brag.	☐	☐	☐
42	I try to get a lot of attention.	☐	☐	☐
43	I am kind to younger children.	☐	☐	☐
44	I am jealous of others.	☐	☐	☐
45	I scream a lot.	☐	☐	☐
46	I feel ashamed when I fail at something that is important to me	☐	☐	☐
47	I show off or clown.	☐	☐	☐
48	I am stubborn.	☐	☐	☐
49	I often volunteer to help others (e.g. parents, teachers, children).	☐	☐	☐
50	My moods or feelings change suddenly	☐	☐	☐
51	I talk too much.	☐	☐	☐
52	I want to hide or conceal my body or parts of it	☐	☐	☐
53	I am louder than other kids.	☐	☐	☐
54	I get on better with adults than with children my own age	☐	☐	☐
55	I feel ashamed when I say something stupid	☐	☐	☐

Puberty, height & weight items

All teenagers change and develop physically, mentally and emotionally.

The physical growth and development of your body is an especially important part of the growing process. Since it is normal for boys and girls to go through these physical changes at different times, we are interested in learning whether you are experiencing any of these changes.

1   What is your sex?   Female ☐   Male ☐

2   When were you born?   Day ____ ____   Month ____ ____   Year ____ ____

3   How tall are you?   Feet _____   Inches _____   **OR**   Metres/cm _____

4   What do you weight?   Stones _____   Pounds _____   **OR**   Kilograms _____

Please read each question carefully, and answer by ticking one box for each question.

	Not yet begun	Barely begun	Definitely begun	Is completed			Very upset	Upset	Somewhat upset	Somewhat pleased	Pleased	Very pleased
5 Would you say that your growth-spurt (more growth than usual) has:	☐	☐	☐	☐	**5a** And how do you feel about this?		☐	☐	☐	☐	☐	☐
6 Would you say that your body hair (underarm & pubic) growth has:	☐	☐	☐	☐	**6a** And how do you feel about this?		☐	☐	☐	☐	☐	☐
7 Has your skin begun to change (especially spots etc.)?	☐	☐	☐	☐	**7b** And how do you feel about this?		☐	☐	☐	☐	☐	☐

BOYS ONLY

8 Has your voice begun to change?	☐	☐	☐	☐	**8b** And how do you feel about this?		☐	☐	☐	☐	☐	☐
9 Have you begun to grow hair on your face?	☐	☐	☐	☐	**9b** And how do you feel about this?		☐	☐	☐	☐	☐	☐

GIRLS ONLY

10 Have your breasts begun to grow?	☐	☐	☐	☐	**10b** And how do you feel about this?		☐	☐	☐	☐	☐	☐

11 Have you begun to menstruate (to have monthly periods)?   **11b**   And how do you feel about this?

PLEASE TICK ONE BOX   ☐ YES   ☐ NO   ☐ ☐ ☐ ☐ ☐ ☐

12 If you have begun to menstruate, what was the month and year of your first menstruation (period)?

MONTH _____   YEAR _____