# ATTACHMENT, DEFENSE MECHANISMS AND EMOTION USAGE IN CHILDREN IN INSTITUTIONS DURING MIDDLE CHILDHOOD WITHIN A SOUTH AFRICAN CONTEXT

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## Abstract

Although the importance of Attachment in the normal development of a child has repeatedly been shown (Bowlby, 1961; 1979) there is a limited amount of research into its relationships with the usage of defense mechanisms and emotions. This research, therefore, investigated the relationships between attachment type, defense mechanisms and emotions during middle childhood (8-12 years) in 64 children from 4 children's homes and 1 hospital in the Gauteng area. The children completed the Deferential Emotions Scale IV (DES-IV), the Attachment Story Completion Test (ASCT) and the Attachment Security Scale (ASS). The legal guardians of the children completed the Comprehensive Assessment of Defense Scale (CADS). Significant correlations were found to exist between the usage defense mechanisms and emotions. The results obtained from the analyses therefore suggest a complex interplay of relationships between attachment, defense mechanisms and emotion during middle childhood for the children in these institutions. For example, the research found that certain defense mechanisms and emotions were found to be correlated in a complex and interrelated system of interactions. Similarly, although no significant associations were found between attachment, defense mechanisms and emotions were found, the frequency distributions provided detailed information suggesting that attachment does influence the defenses used and emotion during middle childhood. These finding suggest that further research needs to be conducted in this area to further this knowledge base and to inform the caregivers and staff at institutions such as those included in the study.

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# Chapter One:

## 1.1 Introduction

The following research aimed to investigate and explore the relationships between attachment type, defense mechanisms and emotions during middle childhood (eight-twelve years) for a disadvantaged and clinical population in a South African context. Although there is a plethora of research into attachment, defense mechanisms and emotion respectively, there is limited research into the relationships between attachment type, defense styles and emotion specifically, particularly during middle childhood (Dwyer, 2005; Weinfield, 2005; Laible, 2005; Kerns, Abraham, Schlegelmilch & Morgan, 2007). There is also limited research exploring middle childhood which seeks to investigate and explain certain characteristic changes in a child's development and emotional experiences, which is vital knowledge regarding typical human development (Kerns *et al.*, 2007). Therefore, this research specifically sought to further the knowledge basis regarding the development of children as impacted by institutions. This furtherance of knowledge is of vital importance for the fostering of increased understanding on the inner workings of children from disadvantaged and clinical settings, in an attempt to improve the treatment of, community interaction with and development of children from these often overlooked communities globally and specifically in South Africa. Moreover, as Zilberstein (2008) states, there has been limited research into the development of attachment past six years of age, especially within children currently placed in children's homes.

There has undoubtedly been a significant amount of research into attachment, particularly during early childhood and infancy (for example Cassidy, 1986; Cassidy & Berlin, 1994; Izard, Haynes, Chisholm & Baak, 1991). However, there has been limited research into the development and characteristics of attachment during middle childhood. Emotion regulation and experience during childhood, like early attachment, has also received substantial attention within the field of research (Bretherton, Fritz, Zahn-Waxler, and Rideway, 1986; Cassidy, 1994). However, limited research has been conducted that specifically examines emotion during middle childhood and its relationships with both attachment type and defense mechanisms. There has, nevertheless, been mounting interest with respect to researching the fundamental interactions that occur between attachment and emotion (De Rosnay & Harris, 2002; Kerns, Abraham, Schlegelmilch & Morgan, 2007) but these do not acknowledge or investigate the effect of defense mechanisms. With respect to research conducted into defense mechanisms during childhood there has been a substantial amount of research investigating

the development from mature to immature defences in children for the duration of middle childhood and beyond (Cramer & Brilliant, 2001; Cramer, 1997). In contrast to this, there has been sparse research which explores how defense styles interact with attachment types and the specific experiences of emotions. Therefore, this research aimed at investigating middle childhood and at providing detailed information on the relationship between attachment type, defense styles and emotion range and intensity to attempt to fill in the above discussed gaps in the literature and theory.

The importance of knowledge surrounding attachment to primary caregivers, the use of defense mechanisms and the experience of emotions for normal psychological development and maturation during childhood, is indisputable. Bretherton *et al.* (1986) highlight the need for more in-depth research attention to be paid to the development of all forms of emotion during childhood. This is as a result of the importance of emotions in the development of normal psychological and social development across the lifespan, which has been repeatedly highlighted by various theorists and researchers (Bretherton *et al.*, 1986; DeOliveira *et al.*, 2004; Cassidy, 1994). Therefore, furthering our knowledge and understanding of the experience of emotions across development is of utmost importance in the conceptualisation of the way in which children perceive the people around them and their interpersonal relationships (Raikes and Thompson, 2008). The majority of research into attachment has investigated the children and infant's representations of their attachment relationship and attachment figure whereas little research has been conducted which investigates the secure base behaviour and the characteristics of all the attachment types (Kerns *et al.*, 2007).

Cassidy (1994) highlights the need for continued research into the often complex relationship between attachment and emotions as it is an integral part of a child's continued development. Emotion is perceived to be an essential element of attachment and the attachment relationship (Kerns *et al.*, 2007) and therefore further research needs to be conducted to fully understand the developmental changes to the relationship during the period of middle childhood. Middle childhood is a period of a person's development in which the internal working models associated with the formation and maintenance of attachment to caregivers are under transition and often subject to modification or alteration with respect to a child's interaction with their environment (Kerns, Abraham, Schlegelmilch & Morgan, 2005; Dubois-Comtois & Moss, 2008). Thus the importance of understanding how normal psychosocial elements of development, such as attachment type and defense styles interact to impact on children's use of emotions during middle childhood, is particularly vital to furthering our knowledge, especially concerning children in institutions and from clinical settings.

There is substantial evidence that defense mechanisms develop as a vital part of a development continuum and are continuously shifting throughout childhood, particularly during middle childhood (Cramer and Brilliant, 2001: Cramer, 1997). This change may be due to a number of reasons including, among others, increasing cognitive abilities and awareness (Cramer, 1997). However, although a link between the use of defense mechanisms and the ability to regulate emotions has been acknowledged (Sandstrom & Cramer, 2003), little is known of the impact of attachment in the developmental shifting of defenses and the consequential impact on emotion. The majority of the research into attachment, emotions and defenses has been conducted in Western countries and little research has been conducted in the developing world, such as South Africa (Tomlinson, Cooper & Murray, 2005). It is inarguable, given the evidence, that an important component of assisting those with attachment problems lies in the ability to assess and measure attachment behaviours and its impacts throughout the lifespan, including during middle childhood (Fairchild, 2006).

The following research, therefore, collected data through conducting interviews with 64 caregiver-child pairings at a variety of children's homes and clinics in and around the greater Johannesburg region. During the interview with the child's parents/caregiver the Comprehensive Assessment of Defense Styles (CADS) was administered. During the interviews with the children the Attachment Story Completion Test (ASCT), The Attachment Security Scale (ASS) and the Deferential Emotions Scale-IV (DES-IV) were administered. The data was then quantitatively assessed to determine and explore the different relationships between attachment type, defense style and emotional range and intensity.

# Chapter Two: Literature Review

## 2.1 Introduction

Attachment, defenses and emotion in children have been a subject of intensive debate and research for many years. This is as a direct result of attachment and its correlates repeatedly being shown to play a crucial role in human development across the lifespan (Bowlby, 1961; 1979; Bretherton, 1985; Kerns, Abraham, Schlegelmilch & Morgan, 2007). Therefore the following literature review will look at attachment theory and the presentation of attachment relationships, emotions and defense mechanisms and how each of these is characterised during middle childhood. The impact of culture and the context, on the development and presentation of attachment will also be discussed, principally with respect to those in relation to children from institutions or foster care. The review will also consider the literature on attachment, defense mechanisms and emotions and the interactions between these variables.

## 2.2 Attachment

The theory of attachment, according to its founder John Bowlby (1961; 1979), was grounded on the child's innate biological need for closeness both emotionally and in terms of proximity to the caregiver in order to survive. Attachment theory is largely believed to be unique within the spectrum of psychoanalytic theories as it closes the difference between general psychology and the more traditional psychodynamic theory (Fonagy & Target, 2003). Bowlby further believed that in order for mental health to be achieved and maintained across the lifespan it is imperative that the infant and child should experience a consistent, warm, pleasurable and close relationship with the primary caregiver (Bowlby, 1961; 1979). The object of attachment is often experienced by the child as being a source of protection from possibly dangerous or unwanted experiences and also to provide for their basic needs. When these needs are met sufficiently, security is believed to be reached (Ainsworth, Waters & Wall, 1978). Bowlby (1979) also placed relative importance on attachment to caregivers as an imperative contributor to later development and personality formation (Kaplan & Sadock, 2007). Attachment is, therefore, experienced by children as being a natural psychological and emotional connection with their caregivers who should present a place of safety and security (Bretherton, 1985).

Attachment-related behaviours are at their most evident in circumstances where the infant or child is scared of something, exhausted or physically unwell and these behaviours become

palpable when the child consequently seeks reassurance or affection from the caregiver, as is discussed in further detail below (Bretherton, 1985). Children, therefore, develop 'internal working models' of their caregivers based on the expected behaviours of the caregiver in circumstances when the child seeks reassurance-related behaviours (Bowlby, 1961; 1979; Cassidy, 1994). However, these internal working models are in constant revision, especially during middle childhood, where children's development is particularly swift (Bretherton, 1985). Therefore, a secure attachment is considered to be of utmost benefit to children's ability to explore their worlds as well as in their general range of cognition potential and their capacity for social interaction (Fonagy & Target, 2003). However, when the child's fear system is stimulated by sources of danger the child will automatically seek out the attachment figure for comfort, reassurance and a source of safety (Fonagy & Target, 2003). A secure attachment to at least one primary caregiver is thus imperative for the child's later ability to be self-sufficient (Sroufe, Fox & Pancake, 1983).

Although infants are able to express attachment related behaviours from birth, it is from the sixth month of the child's life that these behaviours are "integrated into a coherent system, organised around a particular figure or figures" (Bretherton, 1985. P.6). Therefore, a child is believed to seek out an attachment figure in times of stress or discomfort, whereas when they are in good spirits they will seek out a playmate. Nevertheless, an attachment figure can fulfil the two roles (Bretherton, 1985). However, as mentioned above, attachment behaviours are at their most evident when the child is frightened, tired or sick and their reactions to an attachment figure at such times are used in the diagnosis of attachment security or insecurity (Bretherton, 1985). Therefore, attachment behaviours "such as crying, clinging and searching that the infant displays at times of stress evoke responses in the attachment figure leading to greater proximity and contact to the attachment figure" (Stansfeld *et al.*, 2008. P. 517). How these behaviours are completed and expressed is closely related to the type of attachment the child has with the primary caregiver. The four main attachment types include secure, avoidant, ambivalent and disorganised (Fairchild, 2006). The insecure attachment classifications are further divided into: the avoidant, ambivalent and disorganised attachments which will be discussed in more detail below (Ainsworth, Waters & Wall, 1978).

Attachment security or insecurity is directly and positively linked to the accessibility of the caregiver to the child, as well as the caregiver's responsiveness to the child's needs (Solomon & George, 1999). The securely attached child will develop an internal working model which primes the child to expect that his or her emotional needs will be met and responded to

appropriately by the caregiver (Cassidy, 1994). This secure attachment to a primary caregiver is symptomatic of a balance being reached between the ability to explore actively in the completion of goals and the knowledge of the safety of the caregiver (Boris & Zeanah, 1999). Children with secure attachments have, therefore, been able to develop basic trust in their caregivers. In a study conducted by Matas, Arend and Sroufe (1978) it was found that securely attached children were more enthusiastic, confident, cooperative and persistent than the insecurely attached children. A secure attachment has also been correlated with the ability of children to express themselves in terms of their positive and negative personal characteristics, thus having a healthy sense of self (Cassidy, 1988). Securely attached infants were also found by van Ijzendoorn and Vliet Visser (2001) to have a higher intelligence (IQ) during kindergarten as a result of more highly developed problem-solving skills and as a result of thir ability to confidently explore their environment. Therefore, a secure attachment suggests that the child feels comfortable with expressing and experiencing feelings of intimacy and dependency as well as a lack of anxiety surrounding loss or separation (Stansfeld *et al.*, 2008).

In contrast to the above discussed securely attached child, the insecurely attached child will develop an internal working model that predisposes the child to expect that the caregiver will only selectively and unsatisfactorily attend to its emotional needs (Cassidy, 1994). These insecure attachments are usually formed as a result of a disturbance in the early attachment formation process in the early years (Stansfeld *et al.*, 2008). The insecure attachments are further divided into ambivalent, avoidant and disorganised attachments which will accordingly be discussed. Firstly, the **Ambivalent** attachment type is characterised by a "great desire to be close, anxiety about rejection and an awareness of wanting more intimacy than most people" (Stansfeld *et al.*., 2008, p. 517). Children with ambivalent attachments, as found by Cassidy (1988) tended to describe themselves with overt negative descriptions which highlighted the children's perceptions of their own lack of self-worth. Ambivalent attachments have also been related to increased disruptive behaviours in the classroom such as acting out, being withdrawn and often in having attention problems which are not easily controllable (Erickson, Sroufe & Egeland, 1985).

Secondly, the **Avoidant** type of attachment is associated with a lack of trust in relationships coupled with a tangible discomfort with intimacy and dependency (Stansfeld *et al.*, 2008). Avoidant attachments are also associated with an insistence on perfection in most areas of life, which may be viewed as a defensive avoidance technique (Cassidy, 1988). Disorganised attachments have been increasingly associated with the development of later

psychopathology (Boris & Zeanah, 1999). It is important, however, for one to take into account that changing life circumstances have been known to alter the basic qualities of the relationship (Bretherton, 1985).

Lastly, **Disorganised** attachments have also been correlated with a higher frequency of externalising and internalising behavioural problems (Bureau, Easlerbrooks & Lyons-Ruth, 2009). Disorganised attachments, as discussed further below, represent with a fundamental inability to regulate their emotions effectively and they therefore experience an increased negative effect and are unable to regulate this effect when with their attachment figure, thus impacting on the relationship (DeOliveira *et al.*, 2004). In the disorganised attachment, the child often fluctuates rapidly between the two extremes of having control and then suddenly losing control over the caregiver's behaviours (Koos & Gergely, 2001).

## 2.3 Attachment During Middle Childhood

Attachment behaviours are largely believed, with much debate, not to remain constant after the infancy period (Dwyer, 2005). Middle childhood refers to the period between eight and twelve years of age (Dwyer, 2005). According to Dwyer (2005), during middle childhood the "children are better able to understand that caregivers have their own goals, motivations, and feelings and can consider these factors when formulating plans to achieve their own attachment-related goals" (P.156). However, although the basic relationships with the attachment figures remain unchanged, the behaviours regulated by the attachment relationship may change (Bretherton, 1985). Hence, during middle childhood the child's internal working models begin to represent the on-going family interactions and the resulting understanding more than the historical relationship with their primary caregivers (Dubois-Comtois & Moss, 2008). This may be as a result of the child's continuing ability to more fully understand group dynamics and social interactions and the roles they play (Dubois-Comtois and Moss, 2008). The child's capacity for social cognition also improves during this period, which also impacts on its understandings and interactions (Dwyer, 2005). Middle childhood is therefore, as described by Kerns and Seibert (2011), a time of constant expansion of the child's social world, relationships, cognitions and social cognitions.

Children during middle childhood are also in the process of developing a more concrete sense of who they are and therefore are increasingly more willing and capable of managing their own behaviours and feelings (Dwyer, 2005). Attachment behaviours also begin to change during middle childhood, and they begin to interact and be impacted on more by external environmental elements and internal features associated with maturational factors

(Zilberstein, 2006). The children are becoming more able to accurately assess the behaviours of the attachment figure and their motives, and therefore are able to form improved coping abilities and learn to make better assessments as to what is dangerous (Bretherton, 1985). Although middle childhood is a period of transitions, growth and changes, there is evidence that the attachment relationship to the primary caregiver is still central to the life of the child (Kerns & Siebert, 2011). Although a theoretical distance is created between the parent and child as the child progresses into middle childhood and their lives become more complex, the parent is still able to function as a secure base for the child (Weinfield, 2005). This distance also occurs as a result of the children's increasing ability to form a solid sense of who they are as individuals and thus are more able to regulate their own behaviours without reliance on the attachment figure (Dwyer, 2005).

Therefore, the role of the parent or caregiver as a 'secure base' as in the traditional sense of attachment still remains as a child progresses through middle childhood, but is altered as the parents need to be able to provide both proximal and distal support for their child (Weinfield, 2005). This requires the parent to be able to allow the child to develop independence and ability to face different challenges whilst still providing a consistent and supportive base for their child (Weinfield, 2005). During middle childhood, the child is also now increasingly able to form new relationships with adults other than the attachment figure and is therefore more able to make comparisons and extrapolations regarding his or her own relationships (Dwyer, 2005). Therefore, the representations of relationships the child had previously are increasingly likely to become more sophisticated and generalised (Dwyer, 2005).

It also has been found that security in attachments with both mothers and fathers for children in middle childhood is correlated positively to their competence scholastically and with their relationships with their peers (Diener, Isabella, Behunin & Wong, 2008). Children with secure attachment were also found by Diener *et al.* (2008) to have a higher level of overall competence, as rated by their teachers in the classroom. This most likely occurs as a result of the fact that as the child's "affective-cognitive understanding grows, internal models of self, social partners, and the physical world increase in sophistication" (Bretherton, 1985, p. 12). Thus, middle childhood is a significant time in which the child is more active in its exploration of the immediate and extended family relationships as well as a period of the development of new friendships (Franco & Levitt, 1998).

Therefore, as seen in the discussion above, theories of early attachment formation have ascertained attachment to be imperative to the future and indeed current behaviour of children as they progress through life and the developmental demands which are placed upon them

(Kaplan & Sadock, 2007). There is increasing evidence from research that the pattern of attachment relationships that develop during infancy and childhood forms a blue print for relationships that develop in adulthood (Stansfeld, Head, Bartley & Fonagy, 2008). For example, those who experienced secure attachments during infancy and childhood are more likely to be able to develop and maintain stable and open relationships during adulthood as well, having the ability to build healthy and supportive social networks (Stansfeld *et al*., 2008). In contrast to this, insecurely attached children are more likely to have decreased abilities for stable relationships and may be more subject to relationships or marriages breaking down (Stansfeld, *et al.*, 2008). The impact of the child's rearing environment and context and how it can impact on the formation of attachments will subsequently be discussed below.

## 2.4 Attachment in Context

Attachment relationships between child and caregiver do not occur in a vacuum but are rather immersed within the social context in which they are formed and maintained (Stansfeld *et al.*, 2008; Dwyer, 2005). Aspects such as the personality of the parent, genetic predispositions and the mental health of the parents are all influential on the formation of attachments (Stansfeld *et al..*, 2008). There is increasing evidence for the argument that environment plays an important role in the formation and maintenance of attachment types, particularly in infants but also in older children (Bokhorst *et al.*, 2003). It was also found by Bokhorst *et al.* (2003) that a shared environment was a greater predictor of attachment formation than a genetic component, thus highlighting the importance of context in the development of attachments. For example Barbarin, Richter and deWet (2001) found that, in South African children, "ambient community violence was most consistently related to children's psychosocial outcomes" (p. 16). Barbarin (1999) also found that poverty is a highly influential risk factor for South African children with regards to their development. A recent study by Minde, Minde and Vogel (2006) has also highlighted the impact of culture and cultural traditions on the representations of attachment patterns as being more influential than the actual parent-child relations.

For example, the context in which a child grows up may determine the security of an attachment such as the level of life stress and anxiety (Sroufe, 1985). This has been found in situations of substantial poverty and lack of consistency such as in South Africa, where the caregivers and children are facing numerous pressures (Tomlinson, Cooper & Murray, 2005). This relates in a small number of cases of the caregiver's preoccupation with external

problems or difficulties and often limits their availability to attend to their child's needs (Tomlinson, Cooper & Murray, 2005). This material deficit is a substantial psychological stressor on the caregivers and most likely puts an unhealthy strain on the development of an attachment relationship (Stansfeld, 2008). Linked to the material strains placed on the family in the formation of attachments is the parent's attachment history and the higher the parent or caregiver's quality of attachment, the higher the likelihood of their child's adaptability (Cowan. Cowan & Mehta, 2009). It is therefore imperative when working with attachment and related values to always remain aware of the cultural implications and differences of the sample and population (Minde, Minde & Vogel, 2006).

Contexts such as children's homes and hospitals also impact on the formation and maintenance of attachments. Attachment disturbances have increasingly been studied and acknowledged as a result of the increasing atypical environments that children are being reared in (Zeanah & Smyke, 2008). A diagnosis of a Reactive Attachment Disorder (APA, 2002) is being increasingly provided for children that are living in institutions such as children's homes (Zeanah & Smyke, 2008). It is increasingly found that disturbances of attachments are increased with experiences of maltreatment and institutional care (Zeanah & Smyke, 2008). However, Smyke *et al.* (2010) found that children who were placed in foster care before twenty four months of age were more likely to develop secure relationships as foster care proved to be an important intervention which reduces the adverse effects of being institutionalised or maltreated. Similarly, children who were placed into foster care after being placed in an institution were able, in most cases, to recover with respect to their attachment (Smyke *et al.*., 2010). This highlights Bowlby's (1979) view that attachment security is subject to change as a result of life experience. These may include negative experiences such as trauma or later positive experiences such as having a reliable, consistent and dependable caregiver (Bowlby, 1961; 1979). Thus it is important for one to look at the variables of defense mechanisms during this period of a child's life as they too, like attachment, are constantly developing as the child progresses through middle childhood.

## 2.5 Defense Mechanisms

The predominantly psychoanalytic concept of defense mechanisms has proven to be critical to the understanding of normal psychosocial human development, normal functioning and maladjustment (Porcerelli, Thomas, Hibbard & Cogan, 1998). Defense mechanisms were originally considered to be a form of psychopathology, but this view was later reformulated as understanding grew that defenses were a part of a human's normal unconscious

functioning (Freud, 1954). Freud (1954) states in his series of letters to Wilhelm Fliess that: "the inclination towards defence is detrimental, however, if it is directed against ideas which are able, in the form of energy, to release fresh unpleasure" (p. 147). Thus, during the course of a human's normal functioning certain unwanted or unpleasurable emotions become connected to certain drives and further to aspects of the child's superego functioning (Brenner, 1981). This, therefore, results in the use of defense mechanisms by the ego in an attempt to minimise these unwanted or harmful emotions and to try to eliminate them; therefore, they are seen as being specialised mechanisms employed by the human for self-protection and maintenance (Brenner, 1981). Thus defenses are used as an attempt to protect the ego from both the external and internal world of the person (Freud, 1950).

Children will employ ego defense mechanisms either to avoid or to help manage a stressful or difficult circumstance or to aid in the maintenance of their self-esteem. This occurs at an unconscious level (McWilliams, 1994; Cassidy & Brilliant, 2001). Consequently, defensive mechanisms will be used in an attempt by the ego to protect oneself from danger, from feelings of unwanted or pathological anxiety and also in moments of unpleasure (Freud, 1950). Anxiety and depression have been the two main affects associated with the pleasure principle prompting the use of defense mechanisms (Brenner, 1975). According to Freud (1989) defense mechanisms are largely employed to relieve the child of the sense of anxiety, and if these mechanisms of defense fail the child, symptom formation will occur. This ability to employ defense mechanisms at times of anger, anxiety or depression was seen by Freud (1989) to be a sign of strong and largely appropriate ego functioning in the child. Defense mechanisms are therefore employed to protect the developing ego from states of unpleasure, thus defense mechanism such as denial, regression and symptom formation are employed in an attempt to foster a balance between the ego and superego (Freud 1989).

Anna Freud (1989) describes defense mechanisms as being largely unconscious to the child and therefore employed automatically, however, she viewed their results as being apparent only to a trained observer. She viewed these mechanisms of defense as protecting the individual from the emotional results of the continual conflict between the ego and the id, in which the ego attempts to limit the inappropriate id impulses from entering into consciousness to obtain gratification (Freud, 1995). According to Freud (1995) "affects must submit to all the various methods to which the ego resorts in its attempts to master them, i.e. they must undergo a metamorphosis (p. 32). These attempts at mastery, namely the defense mechanisms, employed by the ego are limited in number and according to the age and ego strength of the individual, different defense mechanisms will be employed at different times

according to what is required from them (Freud, 1995). A certain defense mechanism will also be employed by the child as a result of their cognitive developmental level which impacts on the level of complexity of the child's mental processes and the ability to understand his innate psychological responses (Cramer, 1983).

Research into defense use by children has uncovered a possible developmental sequence in the use of certain defense mechanisms. In this model the primary defence mechanisms in use during middle childhood were predominately denial, projection and identification (Cramer and Brilliant, 2001; Cramer 1997; Porcerelli, Thomas, Hibbard and Cogan, 1998; Cramer, 2007). There also appears to be a gender difference in use of defense mechanisms with girls tending to use more internalising defenses such as repression and boys using more externalising defenses such as denial (Tallandini & Caudek, 2010). A child may be aware of the occurrence of defense mechanisms within his or her behaviour but is not aware of the underlying reasons for their existence, the drive behind their formation and the emotions underlying them (Tallandini & Caudek, 2010). These defense mechanisms will therefore remain effective until such time as the child becomes conscious of the defense and will thus need a new defense to achieve the same aims (Cramer and Brilliant, 2001).

This developmental progression of defense mechanisms may be broken up into immature defense mechanisms (e.g. denial and projection) and mature defences (e.g. sublimation and suppression) (Cramer, 1997). The child's progression from immature to mature defences has been associated with the child's cognitive and emotional development and maturation (Cramer, 1997). Cramer (1997) has found that the average child's change from denial to projection occurs between eight and nine years, after which identification is steadily used more frequently than projection. However, the defenses of projection and identification have been found to be used more frequently than denial during childhood into adolescence and that their usage increases with age (Cramer, 2007). This is as denial, ignoring or misrepresenting thoughts or experiences, is seen to be a largely immature defense which predominates during early childhood (Cramer, 2008). Whereas projection, the attributing of unwanted or negative parts of oneself or thought onto another, and identification, the changing of the self to resemble someone looked up to, are seen to be more mature defenses which require more advanced cognitive abilities (Cramer, 2007; 2008).

Therefore, the developmental theory of defenses implies that at every critical developmental stage of a child's life there will not only be several defense mechanisms being used but that the strength of these defense mechanisms will change and mature with the child's increasing age (Cramer & Brilliant, 2001). Tallandini and Caudek (2010) found a negative relationship

between age and the number of defence mechanisms used; for example, as the child's age increased, the number of defense mechanisms employed decreased. Cramer and Brilliant (2001) hypothesise this is a result of the child's developing understanding of the defense mechanisms it employs, thus once the child gains intrinsic understanding of its dominant defense mechanism it will be replaced by one that is not consciously understood. Porcerelli *et al.* (1998) expand on this and state that as children move through normal mental and psychological development, they will begin to adapt more cognitively complex and mature defense mechanisms. Therefore defense mechanisms "relate to central aspects of the emotional lives of children and manifest themselves differently depending on age, gender, temperament, and verbal skills" (Tallandini & Caudek, 2010. p. 542). Linked to the use of defense mechanisms and attachment type are the emotions that underlay both factors and this will now be discussed in more detail below.

## 2.6 Emotions

Emotions are critical in the internal supervising and guiding systems and emotion systems are thus used to evaluate situations and to stimulate human actions and reactions (Bretherton *et al.*, 1986). Izard (1983) offers the widely accepted opinion that emotions play a vital role in the motivational structure of people as well as in interaction with their society and broader culture. Izard *et al.* (2011) supports this view of emotions through commenting that: "different emotion feelings have different motivational functions and are likely to lead to different effects" (p. 45). The emotions experienced are linked to a certain level of consciousness which is closely related to a cognitive process (Izard, 1983). This cognitive process in turn is then linked to the cultural influences which play an important role in what emotions are acceptable and at what level (Izard, 1983). Therefore, the deferential emotions theory acknowledges the occurrence of a jointly causal interaction between a person's emotions and his or her cognitions as well as the impact of the culture of a person (Blumberg & Izard, 1986).

Izard's deferential emotions theory views emotions as being a crucial element of human adaptation and that they play a vital role in the formation of both personality and interpersonal relationships (Izard *et al.*, 1991). Linked to this is the central role played by emotions in the development of an infant's and child's attachment relationship (Izard *et al.*, 1991). Deferential emotions theory also proposes that the pattern of emotions experienced are related to an integrated collection of emotions in which there is one dominant emotion which is experienced by the person as being more intense and more frequent than others (Blumberg

& Izard, 1986). The emotions in the often unique collection are therefore all interrelated and thus if one emotion is activated then the other emotions in the similar set will also be activated as a result (Blumberg & Izard, 1986). Similarly according to Bretherton *et al.* (1986) emotions and all emotional signals "permit individuals to interpret, predict, and influence the behaviour and motivations of companions (unless there is a deliberate attempt to mislead or deceive)" (p. 530).

The deferential emotions theory links the above mentioned interaction between emotions and their cognitions to the development of certain emotion influenced personality traits of an individual (Izard, Libero, Putnam and Haynes, 1993). Izard (1983) expands the description of the differential emotions theory in stating that "the experiential component of emotion is a quality of consciousness or feeling and at this level the emotional state is invariant across cultures" (p. 310). However, as children develop and become more mature cognitively and emotionally, the culture in which they are immersed will influence to some degree the expression of certain emotions determined by the child's age, social status, gender, family structure and a number of other such variables (Izard, 1983). Therefore the age of a child and the stage of development will influence the child's use of emotions as a form of expression which is triggered by a certain event or situation (Izard, 1983).

The regulation of emotion by children will impact on how the emotion is utilized in their everyday function, but does not change the core aspects of that emotion (Izard, Stark, Trentacosta, & Schultz, 2008). In order for the child to achieve adaptive functioning, according to Izard *et al.* (2011), he or she must be able to use constructive emotion utilization, which is largely as a result of a good knowledge of emotions and their differing aspects. Izard *et al.* (2008) propose two forms of emotions: firstly basic emotions (interest, joy and anger), which are present during infancy and early childhood; and more complicated emotion schemas that emerge later in the child's development, requiring more complex regulation and utilization techniques. Thus, once a child has acquired an adequate knowledge of emotions and has the support from their social environment, he will be able to regulate emotions more effectively to express himself (Izard *et al.*, 2008). Children are continually assessing internal and external cues of emotion and as time progresses through middle childhood, the child begins to use it more accurately to guide its responses to others' behaviour (Izard *et al.*, 2008). Thus, "as infants' and young children's cognitive capacities develop, they form emotion schemas associating significant others, trust, and felt care" (Izard *et al.*, 2008, p. 158). Therefore the preceding discussion of emotion, defenses and attachment has alluded to a set of underlying characteristics between attachment, defense mechanisms

and emotions. Consequently the possible interplays between the three variables will be brought together and discussed below.

## 2.7 Attachment, Emotion and Defense Mechanisms

As a result of the above discussion it is thus important for one to now look at the relationships and important interplay between attachment, emotion and defense styles. Attachment has long had a relationship with emotion and has been the subject of research in previous years (Kerns *et al.*, 2007; Cassidy, 1994; Izard *et al.*, 1991). For example, securely attached people and children tend to use their emotions more effectively to help minimise their stress and to promote the formation of more positive emotions (Kafetsois, 2004). A secure attachment also allows for easier and more appropriate regulation of emotions (Kerns *et al.*, 2007). This as a consequence of the child's ability to seek out help from the attachment figure when experiencing distressing emotions and receive assistance with respect to how to regulate emotions effectively and are thus able to use an open and flexible emotional knowledge (Hageskull & Bohlin, 2004).

However, those with insecure attachments tend to use emotion regulation schemas which promote the use of negative emotions and thus experience situations in a more disjointed manner (Kafetsois, 2004). This relationship between attachment and emotion is possibly best seen in the tendency for an avoidant attached child's to severely limit his or her emotional expressions, particularly around the caregiver (Cassidy, 1994). This is believed to be linked to the child's desire to minimise the relationship particularly through the limiting of negative emotions (Cassidy, 1994). Ambivalent attachments are, however, characterised by extreme negative emotions such as inconsolable distress when separated from caregivers and anger directed towards the caregiver (Cassidy, 1994).

Disorganised attachments have been associated with a fundamental pathology in the regulation of and understanding of human emotion (DeOliveira, Bailey, Moran & Pederson 2004). This is linked to a result of the emotional regulation abilities of the child being seen as part of its strategies employed to maintain certain relationships and behaviours with the attachment figure (DeOliveira *et al.*, 2004). Morris, Silk, Steinberg, Myers and Robinson (2007) have supported this hypothesis by highlighting the importance of the role played by the family, especially the parents or caregivers, in a child's learning how to regulate his or her emotions. This supports Kerns *et al.*'s (2007) findings that children with secure attachments displayed more positive emotions and those children with insecure attachments displayed more negative emotions, even after accounting for the temperament of the child. Therefore,

emotions and the regulation of emotions may be seen as a strategy used in an attempt to maintain the relationship they have developed with their primary caregiver (DeOliveira *et al.*, 2004).

Attachment is commonly seen as a means of the reduction of anxiety through the perception of the caregiver as a secure base from which they are able to seek comfort and reassurance (Kaplan & Sadock, 2007). Thus, this correlates with the role played by the defense mechanisms and the relationship between attachment and defenses becomes increasingly apparent. Ainsworth and Ainsworth (1958) highlight how a person may use defense mechanisms in an attempt to alleviate feelings of insecurity which are being subjectively experienced. As children develop and transition into middle childhood they learn to self soothe more effectively to reduce their insecurity and learn to rely on themselves more than on the attachment figure (Ainsworth & Ainsworth, 1958). Thus, in a secure attachment the mother provides the initial soothing and calming presence and may act in a similar form to an ego defense mechanism in the reduction of unpleasurable emotions such as anxiety or distress (Kaplan & Sadock, 2007). As Brenner (1981) states: "when unpleasure is aroused or threatens to be aroused, one does whatever one can do to avoid or reduce it. When one desires gratification and pleasure one does whatever one can to achieve it" (p. 564).

Wolmer, Laor and Cicchetti (2001) determined, in their study, that a child's ability to form secure attachments and the capacity for emotional development is related to the mother's ability to form relationships with her child. The child's ability to effectively and openly express emotion depends largely on the attachment relationship with the parent and how the child believes the parent will respond (Cassidy, 1994). Thus, negative emotions are less likely to be expressed by a securely attached child and when the child does express negative emotions the child will use more open, direct and appropriate means of expressing the emotion (Cassidy, 1994). Therefore, the communication from an attachment relationship with a caregiver provides the child with an understanding of emotions and how to organise their emotional responses effectively and appropriately (Cassidy, 1994). De Rosnay and Harris (2002) also highlight the importance of their finding of a relationship between attachment type and the understanding of emotions. There is also a link between the use of emotions and their regulation as a way of preserving their relationships with their attachment figure (DeOliveira *et al.*, 2004). As mentioned above, this link is largely due to the child's dependence on the attachment figure for help during highly negatively charged emotional experiences and the ways of coping learned from this interaction which will determine the child's later regulation of emotion (Hagekull & Bohlin, 2004).

Kerns *et al.* (2007) discovered a relationship between secure attachments, more positive emotions, more effective emotion regulation; and insecure attachment types such as disorganised and ambivalent, negative emotions and emotional regulation. Similarly, children with secure attachments have been found to be less likely to avoid talking about or acknowledging their negative emotions (Waters, Virmani, Thompson, Meyer, Raikes and Jochem, 2010). This was most likely due the caregiver's acceptance of the child's emotion and outlook of life in general (Waters *et al.*, 2010). Thus, with this knowledge one is able to connect this to the use of certain kinds of defense mechanisms. For example, when negative emotions are experienced one will seek to decrease the negative emotions possibly through defense mechanisms or attachment seeking behaviour (Diener, Mangelsdorf, McHale & Frosch, 2002).

Therefore, when defense mechanisms are used effectively, they assist in the management of stress, of disappointment or sadness and any negative emotions that threaten our sense of well-being (Cramer, 2008). Therefore, as mentioned above, progression through immature to mature defences is closely linked to the child's emotional development (Cramer, 1997). Dubois-Comtois and Moss (2008) found that children in insecure attachment relationships with their primary caregivers which were not emotionally open were more likely to use immature defensive behaviours such as denial. Children with disorganised attachments show a dysfunction in their ability to effectively use defenses (Koos & Gergerly, 2001). It is, as a result, possible for one to hypothesise that attachment behaviours in themselves, and their relationship to emotions, are representations of a complex integration of defense mechanisms as seen in their role played in attempting to regulate caregiver responses and interactions.

Therefore the above literature review has discussed attachment and the theoretical underpinnings of the developments of attachment relationships. It has also discussed attachment during middle childhood, and how the representation of attachment changes as the child progresses through childhood into early adolescence. As attachment cannot be separated from the context in which it is both formed and maintained, the impact of environment and context, as relevant to this research, was also looked at in the above literature review. Defense mechanisms and defenses during middle childhood and their presentations were also discussed. The Deferential Emotions Theory and its discussions on emotion and the characteristics of emotion during childhood were also discussed above. Finally, the above literature review attempted to bring the previously mentioned variables together and discuss how attachment, defense styles and emotions are interlinked, as well as the relationships between them as seen in theory and research. The above literature review has also shown and

discussed the possible relationships between the three variables and the reasons for the relationships.

# Chapter Three: Methodology

## 3.1 General Research Design

Due to the nature of the data collected, this study was quantitatively conducted using statistical analysis to determine the associations between the nominal variables as well as the correlational relationships between the interval scales of emotion and defense mechanism usage. Therefore, this study is a correlational design as it is examining the relationships between all the variables to better understand how they interact (Devlin, 2006). The research therefore used statistical techniques to investigate the relationships between attachment type, defense styles and emotional range and intensity as experienced during middle childhood.

## 3.2 Research Questions

The research questions for this study were as follows:

1. What is the correlation between the defense mechanisms used by the participants in this study?
2. What is the correlation between the emotions used by the participants in this study?
3. What is the correlation between the defense mechanisms and the emotions used by the participants in this study?
4. What are the associations between attachment and the frequency of emotions used by the participants in this study?
5. What are the associations between attachment type and the frequency of defense mechanisms?
6. What are the associations between the type of emotion and the maturity of defense mechanisms?

## 3.3 Sample

The sample used in this study was 64 caregiver/legal guardian and child pairings. Non-probability purposive sampling was used to obtain the sample. The children represent a diverse collection of socio-economic and cultural backgrounds as the children and parent groupings came from a variety of different children's organisations and a government hospital. These organisations include the government hospital (n=33), Children's Home A (n=10), Children's Home B (n=4), Children's Home C (n=7) and Children's Home D (n=10). The sample was evenly distributed between boys (n=31) and girls (n=33).

## 3.4 Procedures

Permission to conduct the study by the University of the Witwatersrand and at the respective organisations and institutions was first obtained. Once the permission had been granted in the case of the Hospital (Appendix Fourteen) the parents or primary caregivers of the children attending an initial intake consultation or assessment were approached by either personnel working at the hospital or the researcher. The parent or legal guardian was then invited to participate in the study where it was explained in detail what the research entails and a brief description of what the research is investigating – that is "how children feel inside and interact with the world". The parent was then taken into a private consultation room and received a comprehensive letter (Appendix Six) providing information on the study and what was required of him or her and the child. The letter contained vital information pertaining to the nature of the research and all ethical considerations that had been put into place to ensure confidentiality, the right to withdraw at any stage and information regarding the actual study.

The parent was subsequently asked to sign a consent form (Appendix Ten) which provided permission to interview both the parent and the child. A short demographic questionnaire (Appendix Five) was filled in by both the researcher and the parent to gain information regarding the child's age, date of birth and gender. The researcher then asked the parent to fill in a short demographic questionnaire before the CADS (Appendix Two) was administered. The researcher assisted the parent in the completion of the CADS and was available to explain the questions if required by the parent. The interview process with the parent did not take longer than 20 minutes and occurred whilst the child was being interviewed by the therapist so as to limit the amount of time used for the research. The child was then interviewed in the same room whilst the parent was consulting with the therapist. The child

also received a letter (Appendix Nine), tailored specifically for children, which explained the research and what was to be expected through their participation and was then asked to sign an assent form (Appendix Eleven). The researcher then administered the ASCT (Appendix One), DES-IV (Appendix Three) and the ASS (Appendix Four) to the child. The interview with the child took approximately 30 minutes depending on the child's responses to the respective instruments.

Once permission had been gained from the respective children's homes (Appendices Fourteen to Seventeen) to conduct research, the researcher then gained consent (Appendix Twelve) from each of the home's caregivers prior to commencing interviews. The caregivers and the children were invited to participate in the study and were able to refuse their participation with no consequences. The researcher interviewed the primary caregivers, ward mothers or house mothers of the children participating in the research. During the interview the information sheet (Appendix Eight) was provided and read to the caregiver and the CADS was administered for each respective child participating in the study. The caregivers were also asked to provide demographic information for each participating child under their care. The researcher then interviewed the child. The child also received an information sheet (Appendix Twelve) which was read out, assent (Appendix Thirteen) was gained and the ASCT, DES-IV and ASS were administered to the child, as in the hospital setting. Triangulation was achieved by collecting information from a variety of sources such as parents, children, and caregivers as well as through the use of different instruments.

Once the data has been collected and the final research report finalised all institutions or organisations will receive a copy of the report and a detailed description of the final overall results gathered in the study. The researcher's contact details will be provided on the research report and the information letters, should there be any further queries regarding the research.

## 3.5 Instruments

The research used a number of instruments specifically chosen to gain necessary information, measure attachment type, and the experience of emotions and the use of defense mechanisms during middle childhood in the sample used in this study.

*i) Demographic Questionnaire*

A short demographic questionnaire was completed during each interview process by the caregiver or legal guardian of the child. The questionnaire required the parent/caregiver to

provide specific information regarding the child's age, date of birth and gender. The demographic questionnaire was completed with the assistance of the researcher.

*ii) Attachment Story Completion Test*

The Attachment Story Completion Test (ASCT) was specifically chosen for this study as it makes use of doll play narratives which technique was created for middle childhood and uses the child's developing ability to use language to directly access the child's internal working models of the primary caregivers, thus classifying into an attachment type (Bretherton, Ridgeway and Cassidy, 1990). The Attachment Story Completion Test (ASCT) uses play therapy related acting out of attachment related issues through the use of narratives specifically chosen to insight attachment behaviours (Fairchild, 2006). The validity of the use of doll play narratives has been confirmed by correlations between the stories told by the children and the interactions with their primary caregivers (Dubois-Comtois & Moss, 2008). The ASCT was the main instrument used by the researcher to diagnose the attachment types of the children participating in the study. The attachment type was classified according to a specific set of requirements and characteristics which are specific to each of the respective attachment types. Granot and Mayseless (2001) have successfully adapted Bretherton, Ridgeway and Cassidy's (1990) Attachment Story Completion Task for the assessment of attachment during middle childhood. This adaptation of the original ASCT was necessary as this age group has been largely under-researched due to lack of an adequate and reliable measurement of attachment in older children. The diagnosis and classification of the children into an attachment type was assisted by the research supervisor, a practicing clinical psychologist, who has expertise in the field of attachment types during childhood.

During the administration of the ASCT in the interview the researcher used a standardized set of dolls and various props to present the beginnings of various stories with attachment related themes to the child. The children were then asked to tell the researcher "what will happen next" and complete the story as they wished. The gender of the child was matched to that of the child in the story being told and completed, thus for female children a girl was the main character in the story and for male children a boy was used. Culturally neutral names were also used in the stories. The seven story narratives used in the ASCT are 1) the child spills juice during dinner, 2) the child hurts a knee and bleeds after falling off a rock, 3) something frightening is seen after going to bed, 4) the mother leaves the child with a sitter for a few days and 5) the mother and child are reunited after the three day separation, and two additional stories as introduced by Kerns (2007) 6) the child requires assistance with the completion of a homework task and 7) the child has a fight with a friend. The children were

then classified as belonging to one of four attachment types: Secure, Avoidant, Ambivalent and Disorganized according to a strict set of criteria provided by Kerns (2007). This scale has not been standardised in South Africa at the time of completion.

*iii) The Comprehensive Assessment of Defence Styles*

The Comprehensive Assessment of Defense Style (the CADS) is: "a measure to assess adaptive and maladaptive defensive behaviour in children and adolescents based on observer reports" (Wolmer, Laor and Cicchetti, 2001, p. 369). The CADS required the parent of the child to answer 26 likert type scale questions regarding their child's behavioural tendencies. According to Laor, Wolmer and Cicchetti (2001) the CADS is useful in the assessment of the child's use of defensive behaviour and focuses specifically on difficult situations the child may encounter. The CADS has been proven to have both strong validity and reliability (See Laor, Wolmer and Cicchetti, 2001). This instrument tests for both mature and immature defences which tend to change as the child matures psychologically (Cramer, 1997). Wolmer *et al.* (2001) conclude that: "the assessment of defences with the CADS is efficient in terms of time and requires no special professional training for coding responses" (p. 375). The defense mechanisms were then categorised as being mature or immature according to the responses provided in the likert type scale as based on the defense mechanism literature (Freud, 1995; 1989).

*iv) Deferential Emotions Scale –IV*

The Differential Emotions Scale (the DES-IV) was used in the study to assess the range and intensity of the emotions experienced by each respective child. The DES-IV required the children to rate how often they felt a certain emotion in the last week, ranging from "never" to "very often" (Blumberg & Izard, 1986). The researcher did assist the children in their completion of the DES-IV as some of the children did not have the necessary literary skills to read and complete the questionnaire unassisted. A child-friendly visual card was also used to aid the child in choosing their most accurate response. The DES-IV scales were used by the researcher to assess an individual's experiences of the fundamental emotions, and the intensity of these (Izard and Blumberg, 1986). The DES assessed for the presence and intensity of the twelve fundamental emotions as identified by Izard *et al.*'s (1993) deferential emotion scale which are: joy, surprise, interest, fear, sadness, anger, contempt, disgust, shame, embarrassment (or shyness), self-directed hostility and guilt. The experience of emotions was provided according to to the likert type scale with a score ranging between 0

(Never) and 4 (Very often) as to how often a certain emotion was experienced during the last week, so as to make it more accessible to the child participant.

*v) Attachment Security Scale*

The Attachment Security Scale (ASS) (Kerns *et al.*, 1996) was only used in the study to aid in the classification of the children as either being securely or insecurely attached. The ASS was also used to validate the attachment classifications as found through the ASCT when the attachment classification was not clear according to the criteria provided by Granot and Mayseless (2001) and Kerns *et al.* (2007). Thus the ASS acted as a classification check for the classifications into attachment types using the ASCT. The ASS is a 15 point questionnaire which requires the self-report of the perception of the child's attachment security. The ASS asks simple questions such as: "some kids find it easy to trust their mom/dad BUT other kids are not sure if they can trust their mom/dad". The ASS therefore assesses the degree to which the child perceives the attachment figure as being responsive to their needs and available to the child, the ability and tendency for a child to rely on the attachment figures in times of stress or need and the child's perception of the ease in which it is able to communicate its feelings and interests in the communication with the figure (Kerns & Aspelmeier, 2001).

## 3.6 Methods of Analysis

Once all the interviews were completed and the data was collected the data was quantitatively assessed with respect to the relationships between attachment type, defense style and emotional range and intensity during middle childhood using statistics. The Attachment Story Completion Test (ASCT) responses for each child were assessed and classified as either securely or insecurely (avoidant, ambivalent or disorganised) attached providing nominal data. This classification was completed using the detailed guidelines provided by Granot and Mayseless (2001) and Kerns *et al.* (2007) and the criteria highlighted for each of the four attachment types. According to these guidelines, a secure relationship was characterised by the parent-child relationship being portrayed as being warm and as providing the child with a sense of security (Granot & Mayseless, 2001; Kerns *et al.*, 2007). However, in an insecure attachment a visible distance between the child and the attachment figure was narrated in the story stem and the parent was not shown to provide a sense of stability or security (Granot & Mayseless, 2001; Kerns *et al.*, 2007).

As a number of the story stems pose the problem of a possible conflict interaction or an expression of negative emotions: a secure attachment was seen to provide a 'happy ending'

where the problem was resolved and there was an ability to return to normality, however an insecure attachment there was either an embellishment of the conflict or a denial/avoidance of the negative emotions (Granot & Mayseless, 2001; Kerns *et al.*, 2007). The openness of the expression of emotions and the reactions of the protagonists a well as the coherence of the story provided were assessed according to the criteria and a final decision was made as to whether the child had a secure, avoidant, ambivalent or disorganised attachment (Granot & Mayseless, 2001; Kerns *et al.*, 2007). To provide inter-rater reliability the researcher consulted colleagues to ensure the correct attachment type was given to the child. The ASS responses were also taken into consideration when scoring the ASCT if doubt arose as to the correct attachment type.

The DES-IV provided information regarding the emotions experienced by the child in the past week on the self-report scale which required the child to choose an option of increasing intensity (zero being never and five very often) on a likert type scale, a score was obtained for each emotion experienced. Nominal categories for the frequency of the experience of emotions was acquired between separating low (below 2.5) and high (2.5 and above) scores for each emotion score.

The CADs provided numerical information pertaining to the child's use of immature or mature defense styles. The primary caregiver or legal guardian of the child was required to complete 26 questions on a scale ranging between zero (never) to four (frequently) based on their child's reactions and behaviours. Nominal categories were obtained for the frequency of the use of defense mechanism by dividing the scores into high frequency (above 2) and low frequency (2 and below). A test of normality and parametric assumptions was carried out to determine the correct statistical analysis for the data collected. Therefore, due to the nominal (categorical) data that will be provided for the attachment type and the interval data provided by the defense and emotion (positive and negative) variables a set of Pearson's correlational analyses were conducted to investigate the relationships between emotions and defense mechanisms. The associations between attachment and emotional frequency, between attachment and defense mechanism frequency and between the frequencies of the type of emotion (positive and negative) and the maturity (mature and immature) of defense mechanisms were assessed using a series of chi squared tests of association.

### 3.7 Ethical Considerations

This research dealt with a vulnerable population and therefore it was imperative that certain ethical considerations were in place in order to protect the children and caregivers participating in the study. The research was granted ethical clearance by the University of the Witwatersrand. At all times the research process was overseen by a clinical psychologist and the researcher worked closely with the staff at all institutions. The child and caregiver were interviewed in safe, secure and private rooms and were not subject to any external stressors while they were participating in the research. If, at any stage during the interview process, the child or caregiver seemed distressed about the content of the interview or by the interview itself the interview was immediately stopped and appropriate steps taken. However, this only occurred once during the interview process. All participants received a detailed information sheet (one for the caregiver and one for the child) which informed that participant about exactly what the participation entailed, on the researcher contact details and on information pertaining to the nature of the research.

Most of the facilities or organisations involved in the research do offer inexpensive or free counselling services to the children and caregivers, and if those were not offered the participants were informed of organisations were they could seek counselling. All questions in the instruments being used during the interviews had been thoroughly checked to limit the possibility of evoking highly emotional or distressful responses. The researcher was, however, acutely aware throughout the interview process of any questions or tasks which may be problematic and continuously monitored reactions closely. If at any stage the child appeared to be distressed, the interview was prepared to immediately terminate the interview and to make an appropriate referral. This, however, did not occur during the interview process. The researcher required the informed consent of the caregiver and the informed assent of the child to be provided prior to any interviews being conducted. Participants were also informed of the security of their information and responses. The participants were also informed of any possible risks and benefits in participating in the study before taking part in the interview process. Each organisation used in the study will be provided with a copy of the final research report.

## Chapter Four: Results

The following results represent the statistical analyses conducted in order to investigate the relationships between attachment type, emotions and defense mechanisms during middle

childhood. The first set of analyses conducted were the one way frequencies, the summary statistics and the descriptive statistics for the data collected for the 64 children assessed. The distribution of the data was then analysed to determine normality and were found to be within the normal range, allowing for the use of parametric statistics to be used. A set of Pearson's correlations were conducted to explore the relationships between the use of emotions and defense mechanisms during middle childhood. The first set of Pearson's correlations conducted was to investigate the relationships between the different defense mechanisms employed by the participants. The next set of Pearson's correlations was conducted to research the relationships between the different emotions. The third, and final, set of Pearson's correlations was conducted to investigate the relationships between the usage of defense mechanisms and emotions during middle childhood.

The final sets of statistical analyses run on the data received for the sample were a set of chi squared tests of association. The first set was run to explore the relationships between the attachment types and the frequency of emotions used. The second sets of associations that were investigated through chi squared tests of associations were the relationships between the type of attachments and the frequency of the use of defense mechanisms. The last chi squared tests of association that were conducted investigated the associations between the type of emotion (positive or negative) and the maturity of defense mechanisms (mature or immature), as used during middle childhood.

### 4.1 Descriptive Statistics

Firstly the one way frequencies, summary statistics and descriptive statistical analyses were run of the data to determine its characteristics. Thus table 1 below summarises the results obtained for the DES-IV (Emotions) and table 2 summarises the results obtained for the CADS (Defenses). Eleven secure attachments were found within the sample, with 54 having insecure attachments. The insecure attachments were broken down into 27 avoidant, 15 ambivalent and 11 disorganised type of attachments. The sample's age range was between eight to twelve years with an even distribution of: 14 eight year olds, 10 nine year olds, 10 ten year olds, 15 eleven years and 15 twelve year olds. The genders of the participants were equally distributed between boys (n=33) and girls (n=31).

*i) Mean Distribution of Emotions*

Table 1 (below) provides information regarding the usage of emotions through their means and standard deviations. As seen in Table 1 (below), the three positive emotions that received

the highest mean scores were: enjoyment (μ=2.6718; SD=1.322), interest (μ=2.16; SD=1.26) and surprise (μ=2.09; SD=1.26). The highest mean scores for the negative emotions were for disgust (μ=1.97; SD=1.31), Fear (μ=1.97; SD=1.42) and Guilt (μ=1.91; SD=1.32) with the lowest scoring emotion was shame (μ=1.64; SD=1.41).

**Table 1: Mean Distribution for Emotions (DES-IV) Scores**

| Variable | Mean | Standard Deviation | Minimum | Maximum | N |
|---|---|---|---|---|---|
| Interest | 2.1562 | 1.2626 | 0 | 4 | 64 |
| Enjoyment | 2.6718 | 1.3220 | 0 | 4 | 64 |
| Surprise | 2.0937 | 1.2563 | 0 | 4 | 64 |
| Sadness | 1.7812 | 1.3147 | 0 | 4 | 64 |
| Anger | 1.8750 | 1.4198 | 0 | 4 | 64 |
| Disgust | 1.9687 | 1.3089 | 0 | 4 | 64 |
| Contempt | 1.6562 | 1.2751 | 0 | 4 | 64 |
| Fear | 1.9687 | 1.4250 | 0 | 4 | 64 |
| Guilt | 1.9062 | 1.3179 | 0 | 4 | 64 |
| Shame | 1.6406 | 1.4070 | 0 | 4 | 64 |
| Shyness | 1.7343 | 1.1580 | 0 | 4 | 64 |
| Hostility | 1.6718 | 1.5019 | 0 | 4 | 64 |
| Total Emotions | 23.125 | 7.0452 | 7 | 42 | 64 |
| Total Positive | 6.9218 | 2.4057 | 1 | 12 | 64 |
| Total Negative | 16.2968 | 6.7557 | 0 | 34 | 64 |

*ii) Mean Distributions of Defense Mechanisms*

Table 2 (below) provides the mean distributions for the defense mechanisms scores obtained for the participants in the current study. The highest mean scores were for altruism (μ=1.94; SD=1.49), devaluation (μ=1.96; SD=.9407), idealisation (μ=1.98; SD=.99) with identification (μ=2.2; SD=.77) having the highest mean score. The lowest mean scores were for the defense mechanisms were humour (μ=1.44; SD=.79) and denial (μ=1.44; SD=.89).

**Table 2: Mean Distribution for Defense (CADS) Scores**

| Variable | Mean | Standard Deviation | Minimum | Maximum | N |
|---|---|---|---|---|---|
| Altruism* | 1.9375 | 1.4919 | 0 | 3 | 64 |
| Denial | 1.4375 | 0.8886 | 0 | 3 | 64 |
| Devaluation | 1.9609 | 0.9407 | 0 | 3 | 64 |
| Humor* | 1.4375 | 0.7933 | 0 | 3 | 64 |
| Idealization | 1.9843 | 0.9900 | 0 | 3 | 64 |
| Identification* | 2.2031 | 0.7661 | 0 | 3 | 64 |
| Omnipotence | 1.8671 | 0.8391 | 0 | 3 | 64 |
| Passive aggressive | 1.7734 | 0.9753 | 0 | 3 | 64 |
| Projection | 1.7187 | 1.0259 | 0 | 3 | 64 |
| Somatization | 1.1953 | 0.8462 | 0 | 3 | 64 |
| Splitting | 1.8671 | 1.0586 | 0 | 3 | 64 |
| Suppression | 1.1718 | 1.0586 | 0 | 3 | 64 |
| Withdrawal | 1.8047 | 0.9743 | 0 | 3 | 64 |
| Total Immature | 16.9765 | 4.7796 | 5.5 | 27.5 | 64 |
| Total Mature | 5.5 | 1.8082 | 1 | 9 | 64 |
| Total Defense | 22.5625 | 5.0249 | 12 | 34.5 | 64 |

## 4.2 Correlations Between Defense Mechanisms

The next analysis that was conducted was a parametric Pearson's correlation to investigate the relationships between the defense mechanisms used by the participants as well as to gain information regarding the strength of the relationships of the statistically significant relationships. The results provided by the Pearson's correlation between the defense mechanisms are shown in Table 3. Of all the significant relationships found between the different defense mechanisms, all were positive. This means that, for every significant relationship found by the analysis, as the usage of one of the defenses increased the

significantly related defense also increased. This relationship also applied when the usage decreased in one of the defenses, it also decreased in the significantly correlated defense mechanism.

The table of correlations (See Table 3 below) shows that there were fourteen significant correlations between the defense mechanisms themselves with an additional nine significant correlations between the defense mechanisms and the total scores for immature defense mechanisms. There were also five significant correlations between the defense mechanisms and the total score for mature defense mechanisms. Of these correlations, only four classified as having weak correlational strengths. In total fifteen of these correlations were within the moderate relationship range, five within the strong relationship strength range and only two relationships fell within the very strong strength range of correlational relationships. These relationships will now be discussed in further detail below. The weak correlations were concerning: altruism and humour (r=.20; p=.018); passive aggressiveness and omnipotence (r=.27; p=.032); idealisation and the total for mature defenses (r=.25; p=.042) and finally between identification and the total for mature defenses (r=.042; p=<0.0001).

The correlational relationships of moderate strength were found between: devaluation and omnipotence (r=.29; p=.0016); projection and devaluation (r=.34; p=.0046); devaluation and splitting (r=.43; p=.0004); humour and suppression (r=.36; p=.0032); humour and denial (r=.31; p=.0124); as well as between omnipotence and splitting (r=.34; p=.0065). The stronger moderate relationships (above 0.4) were between: devaluation and splitting (r=.43; p=.0004); passive aggressiveness and somatisation (r=.47; p=<.0001); passive aggressiveness and splitting (r=.44; p=.0003); and lastly between somatisation and splitting (r=.48; p=<.0001). Furthermore there were also moderate correlations between: denial and the total for immature defenses (r=.34; p=.0053); idealisation and the total for immature defenses (r=.34; p=.0065); omnipotence and the total for immature defenses (r=.36; p=.0035); Suppression and the total for mature defenses (r.33; p=.0087); and finally the strongest being that of withdrawal and the total for immature defenses (r=.43; p=.0004). Very strong correlational relationships were found between splitting and the total for immature defenses (r=.71; p=<.0001), between altruism and the total for mature defenses (r=.74; <.0001) as well as between the use of humour and the total for the use of mature defense mechanisms (r=.74; p=<.0001).

The following diagram (Figure 1 on page 37) provides a visual representation of the interactions found between the significant correlations from the first set of Pearson's correlations, between the different defense mechanisms as reported by the CADs. As

illustrated in the diagram, splitting appears to have the most correlations between all of the defense mechanisms and that humour and its correlates are separate from the main set of interactions. Thus, humour, altruism, splitting and denial are correlated separately from the other defense mechanisms, thereby forming a separate interaction and pattern of the defenses that may occur in isolation. This will be discussed in further detail during the discussion below.

**Table 3: Correlation Results of Defense Mechanisms (all at 95% significance)**

| | ALTURUISM* | DENIAL | DEVALUATION | HUMOR* | IDEALIZATION | IDENTIFICATION* | OMNIPOTENCE | PASSIVE AGGRESSION | PROJECTION | SOMATISATION | SPLITTING | SUPPRESSION | WITHDRAWAL | TOTAL IMMATURE | TOTAL MATURE | DEFENCE TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ALTURUISM*** | | **-0.0237** | **-0.1160** | **0.2931** | **0.2083** | **0.1716** | **0.0231** | **-0.1548** | **-0.2266** | **-0.2083** | **-0.1378** | **0.1887** | **-0.0693** | **-0.1040** | **0.7433** | **0.1804** |
| | **1** | **0.8523** | **0.361** | **0.0187** | **0.0985** | **0.1751** | **0.8558** | **0.2217** | **0.0717** | **0.0984** | **0.2774** | **0.1352** | **0.5862** | **0.4132** | **<.0001** | **0.1537** |
| DENIAL | -0.0237 | 1 | -0.0139 | 0.3110 | 0.2188 | 0.0414 | 0.0982 | 0.0858 | 0.0670 | 0.1033 | 0.0741 | 0.1544 | 0.2245 | 0.3447 | 0.1633 | 0.3895 |
| | 0.8523 | | 0.9128 | 0.0124 | 0.0823 | 0.7449 | 0.4401 | 0.5002 | 0.5987 | 0.4166 | 0.5604 | 0.2231 | 0.0744 | 0.0053 | 0.1973 | 0.0015 |
| **DEVALUATION** | **-0.1160** | **-0.0139** | **1** | **-0.2103** | **-0.0858** | **0.1253** | **0.3868** | **0.2092** | **0.3496** | **0.2240** | **0.4295** | **-0.1950** | **0.3287** | **0.5261** | **-0.1466** | **0.4386** |
| | **0.361** | **0.9128** | | **0.0953** | **0.4998** | **0.3236** | **0.0016** | **0.097** | **0.0046** | **0.0751** | **0.0004** | **0.1225** | **0.008** | **<.0001** | **0.2477** | **0.0003** |
| HUMOR* | 0.2931 | 0.3110 | -0.2103 | 1 | 0.1451 | 0.0680 | 0.1359 | 0.0393 | -0.1089 | -0.0268 | -0.0763 | 0.3625 | -0.1609 | 0.0089 | 0.7381 | 0.2839 |
| | 0.0187 | 0.0124 | 0.0953 | | 0.2524 | 0.593 | 0.284 | 0.7578 | 0.3917 | 0.8331 | 0.5486 | 0.0032 | 0.2039 | 0.9443 | <.0001 | 0.023 |
| **IDEALIZATION** | **0.2083** | **0.2188** | **-0.0858** | **0.1451** | **1** | **0.1963** | **-0.0139** | **0.0551** | **0.0099** | **0.1503** | **0.2293** | **0.0376** | **0.0862** | **0.3369** | **0.2549** | **0.4022** |
| | **0.0985** | **0.0823** | **0.4998** | **0.2524** | | **0.1199** | **0.9129** | **0.6652** | **0.9378** | **0.2357** | **0.0684** | **0.768** | **0.4982** | **0.0065** | **0.0421** | **0.001** |
| IDENTIFICATION* | 0.1716 | 0.0414 | 0.1253 | 0.0680 | 0.1963 | 1 | 0.0901 | 0.05415 | 0.0660 | 0.2205 | 0.0833 | 0.2057 | 0.059 | 0.0863 | 0.4785 | 0.2538 |
| | 0.1751 | 0.7449 | 0.3236 | 0.593 | 0.1199 | | 0.4788 | 0.6708 | 0.604 | 0.0799 | 0.5129 | 0.1029 | 0.6433 | 0.4978 | <.0001 | 0.0429 |
| **OMNIPOTENCE** | **0.0231** | **0.0982** | **0.3868** | **0.1359** | **-0.0139** | **0.09012** | **1** | **0.2684** | **0.1924** | **0.0520** | **0.3367** | **0.0033** | **0.1359** | **0.3598** | **0.1494** | **0.4010** |
| | **0.8558** | **0.4401** | **0.0016** | **0.284** | **0.9129** | **0.4788** | | **0.032** | **0.1277** | **0.683** | **0.0065** | **0.9789** | **0.2842** | **0.0035** | **0.2385** | **0.001** |
| PASSIVE AGGRESSION | -0.1548 | 0.0858 | 0.2092 | 0.0393 | 0.0551 | 0.0541 | 0.2684 | 1 | 0.6129 | 0.4724 | 0.4353 | -0.0220 | 0.0699 | 0.5507 | -0.0205 | 0.5183 |
| | 0.2217 | 0.5002 | 0.097 | 0.7578 | 0.6652 | 0.6708 | 0.032 | | <.0001 | <.0001 | 0.0003 | 0.8625 | 0.5828 | <.0001 | 0.8719 | <.0001 |
| **PROJECTION** | **-0.2266** | **0.0670** | **0.3496** | **-0.1089** | **0.0099** | **0.0660** | **0.1924** | **0.6129** | **1** | **0.4919** | **0.5116** | **-0.1369** | **0.0957** | **0.5629** | **-0.1462** | **0.4837** |
| | **0.0717** | **0.5987** | **0.0046** | **0.3917** | **0.9378** | **0.604** | **0.1277** | **<.0001** | | **<.0001** | **<.0001** | **0.2807** | **0.4515** | **<.0001** | **0.2489** | **<.0001** |
| SOMATISATION | -0.2083 | 0.1033 | 0.2240 | -0.0268 | 0.1503 | 0.2205 | 0.0520 | 0.4724 | 0.4919 | 1 | 0.4828 | 0.1110 | 0.0903 | 0.6362 | -0.0641 | 0.5710 |
| | 0.0984 | 0.4166 | 0.0751 | 0.8331 | 0.2357 | 0.0799 | 0.683 | <.0001 | <.0001 | | <.0001 | 0.3822 | 0.4776 | <.0001 | 0.6144 | <.0001 |
| **SPLITTING** | **-0.1378** | **0.0741** | **0.4295** | **-0.0763** | **0.2293** | **0.0833** | **0.3367** | **0.4353** | **0.5116** | **0.4828** | **1** | **0.1233** | **0.2327** | **0.7055** | **-0.0881** | **0.6458** |
| | **0.2774** | **0.5604** | **0.0004** | **0.5486** | **0.0684** | **0.5129** | **0.0065** | **0.0003** | **<.0001** | **<.0001** | | **0.3316** | **0.0642** | **<.0001** | **0.4885** | **<.0001** |
| SUPPRESSION | 0.1887 | 0.1544 | -0.1950 | 0.3625 | 0.0376 | 0.2057 | 0.0033 | -0.0220 | -0.1369 | 0.1110 | 0.1233 | 1 | 0.0869 | 0.2141 | 0.3254 | 0.3067 |
| | 0.1352 | 0.2231 | 0.1225 | 0.0032 | 0.768 | 0.1029 | 0.9789 | 0.8625 | 0.2807 | 0.3822 | 0.3316 | | 0.4946 | 0.0893 | 0.0087 | 0.0137 |
| **WITHDRAWAL** | **-0.0693** | **0.2245** | **0.3287** | **-0.1609** | **0.0862** | **0.059** | **0.1359** | **0.0699** | **0.0957** | **0.0903** | **0.2327** | **0.0869** | **1** | **0.4276** | **-0.0923** | **0.3688** |
| | **0.5862** | **0.0744** | **0.008** | **0.2039** | **0.4982** | **0.6433** | **0.2842** | **0.5828** | **0.4515** | **0.4776** | **0.0642** | **0.4946** | | **0.0004** | **0.468** | **0.0027** |
| TOTAL IMMATURE | -0.1040 | 0.3447 | 0.5261 | 0.0089 | 0.3369 | 0.0863 | 0.3598 | 0.5507 | 0.5629 | 0.6362 | 0.7055 | 0.2141 | 0.4276 | 1 | -0.0394 | 0.9251 |
| | 0.4132 | 0.0053 | <.0001 | 0.9443 | 0.0065 | 0.4978 | 0.0035 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0893 | 0.0004 | | 0.7567 | <.0001 |
| **TOTAL MATURE** | **0.7433** | **0.1633** | **-0.1466** | **0.7381** | **0.2549** | **0.4785** | **0.1494** | **-0.0205** | **-0.1462** | **-0.0641** | **-0.0881** | **0.3254** | **-0.0923** | **-0.0394** | **1** | **0.3340** |
| | **<.0001** | **0.1973** | **0.2477** | **<.0001** | **0.0421** | **<.0001** | **0.2385** | **0.8719** | **0.2489** | **0.6144** | **0.4885** | **0.0087** | **0.468** | **0.7567** | | **0.007** |
| DEFENSE TOTAL | 0.1804 | 0.3895 | 0.4386 | 0.2839 | 0.4022 | 0.2538 | 0.4010 | 0.5183 | 0.4837 | 0.5710 | 0.6458 | 0.3067 | 0.3688 | 0.9251 | 0.3340 | 1 |
| | 0.1537 | 0.0015 | 0.0003 | 0.023 | 0.001 | 0.0429 | 0.001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0137 | 0.0027 | <.0001 | 0.007 | |

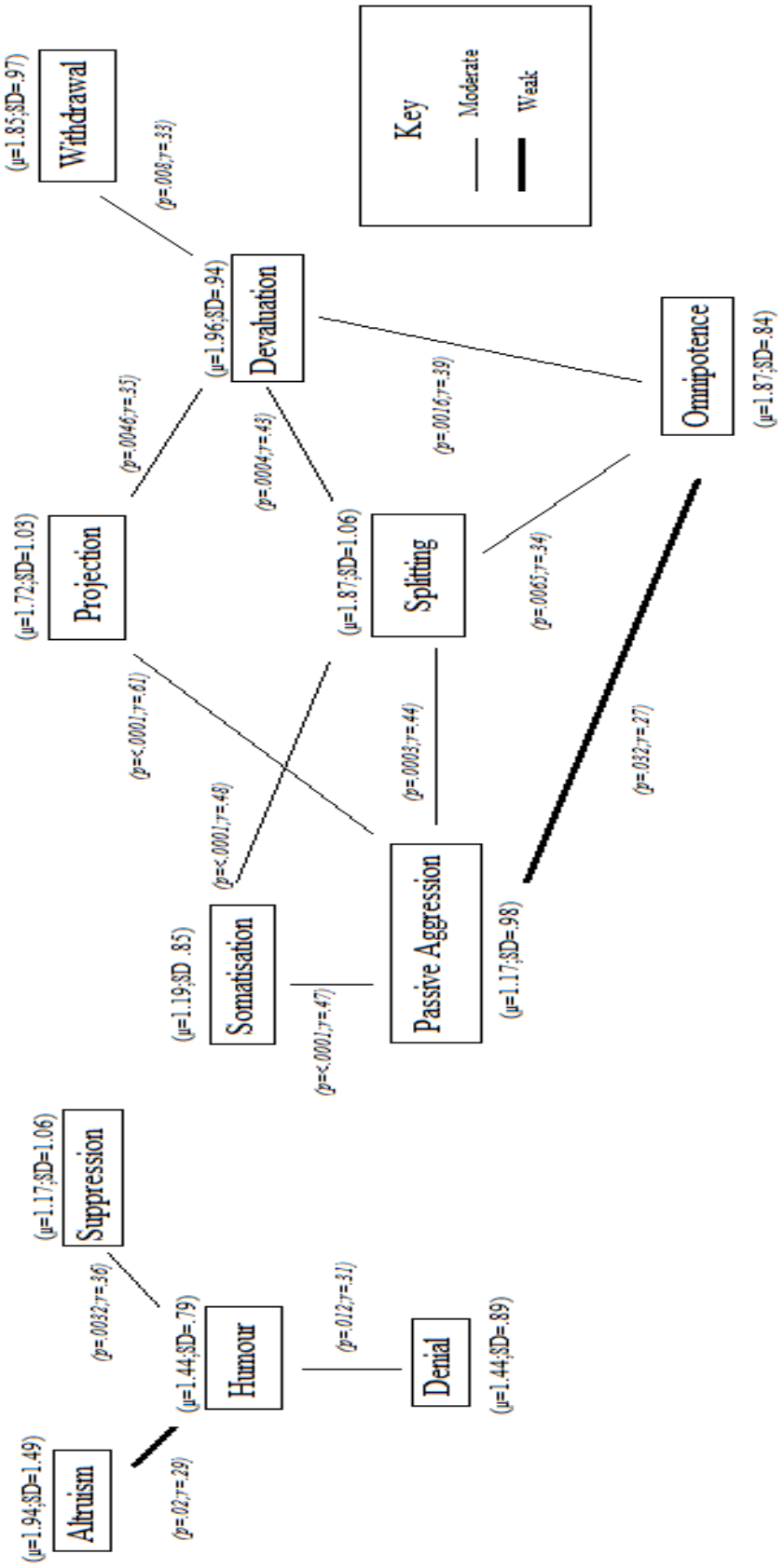


**Figure 1: Defense Mechanism Pearson Correlations Interaction Diagram**

## 4.3 Correlations Between Emotions

A second Pearson's correlation analysis (see Table 4) was conducted to investigate the relationships between the usages of the different emotions by the participants. Overall the results showed that there were thirty four significant relationships between all the emotional variables assessed. Of the relationships found to be significant, thirteen were exclusively between the different emotions tested. Nine of the relationships were between and emotion and the total score for emotions. Scores for positive and negative emotions were also correlated and eight of the significant relationships were between emotions to the negative emotions total with a total of three to the total for positive emotions. Of the total significant correlations found between the different emotions, eight were of weak strength and twelve were considered to have moderate strength. Ten of the significant correlations had a strong correlation and four had very strong correlational strengths. These different significant correlations will be discussed below.

Firstly, weak positive correlational relationships were found between surprise and the total emotional score (r=.26; p=.039); sadness and contempt (r=.29; p=.0196); sadness and guilt (r=.29; p=.02); Anger and the total for emotion (r=.53; p=<.0001); disgust and contempt (r=.29; p=.0209); contempt and shame (r=.25; p=.0477); contempt and hostility (r=.28; p=.025); and finally between guilt and shame (r=.32; p=.009). Secondly moderate positive correlational relationships were found between the following emotions: surprise and contempt (r=.35; p=.0049); sadness and fear (r=.47; p=.0001); sadness and shame (r=.40; p=.001); anger and contempt (r=.35; p=0049); disgust and shame (r=.46; p=.0001); disgust and shyness (r=.31; p=.0131); contempt and the total score for emotions (r=.44; p=.0003); contempt and the total score for negative emotions (r=.38; p=.0017); fear and the total for negative emotions (r=.47; p=<.0001); shyness and the total score for emotions (r=.48; p=<.0001); and lastly between shyness and the total score for negative emotions (r=.48; p=<.0001). The only negative moderate correlation was between sadness and enjoyment (r=-.34; p=.0064).

Thirdly strong positive correlational relationships were found between the following emotions: interest and the total score for positive emotions (r=.61; p=<.0001); enjoyment and the total score for positive emotions (r=.60; p=<.0001); surprise and the total score for positive emotions (r=.67; p=<.0001); sadness and the total score for emotions (r=.53; p=<.0001); anger and the total score for negative emotions (r=.59; p=<.0001); disgust and the total score for emotions (r=.62; p=<.0001); disgust and the total score for negative emotions (r=.58; p=<.0001); guilt and the total score for emotions (r=.53; p=<.0001); guilt and the total score for negative emotions (r=.57; p=<.0001); shame and the total for emotions (r=.63; p=<.0001); hostility and the total for emotions (r=.50; p=<.0001); and finally between hostility and the total for negative emotions (r=.55; p=<.0001). It is interesting to note that the large majority of the significant strong positive correlations between emotions were between the emotions and the total score for emotions, the total score for negative emotions and the total score for positive emotions. The only very strong relationship between emotions was the correlation between shame and the total score for negative emotions (r=.71; p=<.0001).

Figure 2 (on page 41) provides a visual representation of the interactions found to exist between the emotions, as reported by the children during the administration of the DES-IV. Figure 2 provides a diagram of the significant correlations as found by the second set of Pearson's correlations that were found to exist in the usage of emotions by the participants in the study. It is interesting to note the influential role played by contempt with the experiencing of the other emotions tested.

**Table 3: Correlation Table for Emotions**

| | INTEREST* | ENJOYMENT* | SURPRISE* | SADNESS | ANGER | DISGUST | CONTEMPT | FEAR | GUILT | SHAME | SHYNESS | HOSTILITY | EMOTIONS TOTAL | TOTAL POSITIVE | TOTAL NEGATIVE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **INTEREST*** | **1** | **-0.0068** | **0.1707** | **0.0400** | **-0.0686** | **0** | **-0.1435** | **0.0115** | **-0.1436** | **-0.0304** | **0.1916** | **-0.1064** | **0.1280** | **0.6102** | **-0.0706** |
| | | **0.9573** | **0.1774** | **0.7535** | **0.59** | **0.2662** | **0.2577** | **0.9276** | **0.2574** | **0.8113** | **0.1292** | **0.4024** | **0.3134** | **<.0001** | **0.579** |
| ENJOYMENT* | -0.0068 | 1 | 0.1048 | -0.2793 | -0.0813 | 0.1682 | -0.0114 | -0.0308 | -0.0817 | -0.1753 | -0.0059 | -0.0231 | 0.1033 | 0.6006 | -0.1275 |
| | 0.9573 | | 0.4097 | 0.0254 | 0.5226 | 0.1838 | 0.9283 | 0.8091 | 0.521 | 0.1658 | 0.9625 | 0.8562 | 0.4165 | <.0001 | 0.3152 |
| **SURPRISE*** | **0.1707** | **0.1048** | **1** | **-0.1026** | **0.0422** | **0.0983** | **0.3474** | **-0.1401** | **0.0149** | **0.0103** | **-0.0698** | **-0.0255** | **0.2586** | **0.6694** | **0.0153** |
| | **0.1774** | **0.4097** | | **0.4194** | **0.7402** | **0.4395** | **0.0049** | **0.2692** | **0.9065** | **0.9351** | **0.5831** | **0.8415** | **0.039** | **<.0001** | **0.9041** |
| SADNESS | 0.0400 | -0.2793 | -0.1026 | 1 | 0.2911 | 0.3371 | -0.0644 | 0.4706 | 0.2902 | 0.4029 | 0.1697 | 0.1640 | 0.5255 | -0.1861 | 0.6131 |
| | 0.7535 | 0.0254 | 0.4194 | | 0.0196 | 0.0064 | 0.6127 | <.0001 | 0.02 | 0.001 | 0.18 | 0.1953 | <.0001 | 0.1409 | <.0001 |
| **ANGER** | **-0.0686** | **-0.0813** | **0.0422** | **0.2911** | **1** | **0.2284** | **0.1424** | **0.1627** | **0.4686** | **0.3267** | **0.2304** | **0.2707** | **0.5855** | **-0.0586** | **0.5864** |
| | **0.59** | **0.5226** | **0.7402** | **0.0196** | | **0.0694** | **0.2614** | **0.1987** | **<.0001** | **0.0084** | **0.0669** | **0.0305** | **<.0001** | **0.6452** | **<.0001** |
| DISGUST | -0.1410 | 0.1682 | 0.0983 | 0.3371 | 0.2284 | 1 | 0.2882 | 0.1611 | 0.1546 | 0.4591 | 0.3085 | 0.2288 | 0.6235 | 0.0697 | 0.5754 |
| | 0.2662 | 0.1838 | 0.4395 | 0.0064 | 0.0694 | | 0.0209 | 0.2033 | 0.2223 | 0.0001 | 0.0131 | 0.0689 | <.0001 | 0.5837 | <.0001 |
| **CONTEMPT** | **-0.1435** | **-0.0114** | **0.3474** | **-0.0644** | **0.1424** | **0.2882** | **1** | **-0.0846** | **0.2166** | **0.2485** | **0.1414** | **0.2799** | **0.4412** | **0.0997** | **0.3842** |
| | **0.2577** | **0.9283** | **0.0049** | **0.6127** | **0.2614** | **0.0209** | | **0.5062** | **0.0855** | **0.0477** | **0.265** | **0.025** | **0.0003** | **0.4328** | **0.0017** |
| FEAR | 0.0115 | -0.0308 | -0.1401 | 0.4706 | 0.1627 | 0.1611 | -0.0846 | 1 | 0.2266 | 0.1843 | 0.1487 | 0.0470 | 0.4225 | -0.0840 | 0.4675 |
| | 0.9276 | 0.8091 | 0.2692 | <.0001 | 0.1987 | 0.2033 | 0.5062 | | 0.0718 | 0.1449 | 0.2406 | 0.712 | 0.0005 | 0.509 | <.0001 |
| **GUILT** | **-0.1436** | **-0.0817** | **0.0149** | **0.2902** | **0.4686** | **0.1546** | **0.2166** | **0.2266** | **1** | **0.3239** | **0.1290** | **0.2007** | **0.5397** | **-0.1124** | **0.5718** |
| | **0.2574** | **0.521** | **0.9065** | **0.02** | **<.0001** | **0.2223** | **0.0855** | **0.0718** | | **0.009** | **0.3096** | **0.1118** | **<.0001** | **0.3762** | **<.0001** |
| SHAME | -0.0304 | -0.1753 | 0.0103 | 0.4029 | 0.3267 | 0.4591 | 0.2485 | 0.1843 | 0.3239 | 1 | 0.2035 | 0.3038 | 0.6306 | -0.1069 | 0.7127 |
| | 0.8113 | 0.1658 | 0.9351 | 0.001 | 0.0084 | 0.0001 | 0.0477 | 0.1449 | 0.009 | | 0.1068 | 0.0147 | <.0001 | 0.4005 | <.0001 |
| **SHYNESS** | **0.1916** | **-0.0059** | **-0.0698** | **0.1697** | **0.2304** | **0.3085** | **0.1414** | **0.1487** | **0.1290** | **0.2035** | **1** | **0.2046** | **0.4846** | **0.0608** | **0.4789** |
| | **0.1292** | **0.9625** | **0.5831** | **0.18** | **0.0669** | **0.0131** | **0.265** | **0.2406** | **0.3096** | **0.1068** | | **0.1048** | **<.0001** | **0.6332** | **<.0001** |
| HOSTILITY | -0.1064 | -0.0231 | -0.0255 | 0.1640 | 0.2707 | 0.2288 | 0.2799 | 0.0470 | 0.2007 | 0.3038 | 0.2046 | 1 | 0.5049 | -0.0818 | 0.5557 |
| | 0.4024 | 0.8562 | 0.8415 | 0.1953 | 0.0305 | 0.0689 | 0.025 | 0.712 | 0.1118 | 0.0147 | 0.1048 | | <.0001 | 0.52 | <.0001 |
| **EMOTIONS TOTAL** | **0.1280** | **0.1033** | **0.2586** | **0.5255** | **0.5855** | **0.6235** | **0.4412** | **0.4225** | **0.5397** | **0.6306** | **0.4846** | **0.5049** | **1** | **0.2590** | **0.9163** |
| | **0.3134** | **0.4165** | **0.039** | **<.0001** | **<.0001** | **<.0001** | **0.0003** | **0.0005** | **<.0001** | **<.0001** | **<.0001** | **<.0001** | | **0.0387** | **<.0001** |
| TOTAL POSITIVE | 0.6102 | 0.6006 | 0.6694 | -0.1861 | -0.0586 | 0.0697 | 0.0997 | -0.0840 | -0.1124 | -0.1069 | 0.0608 | -0.0818 | 0.2590 | 1 | -0.0991 |
| | <.0001 | <.0001 | <.0001 | 0.1409 | 0.6452 | 0.5837 | 0.4328 | 0.509 | 0.3762 | 0.4005 | 0.6332 | 0.52 | 0.0387 | | 0.4357 |
| **TOTAL NEGATIVE** | **-0.0706** | **-0.1275** | **0.0153** | **0.6131** | **0.5864** | **0.5754** | **0.3842** | **0.4675** | **0.5718** | **0.7127** | **0.4789** | **0.5557** | **0.9163** | **-0.0991** | **1** |
| | **0.579** | **0.3152** | **0.9041** | **<.0001** | **<.0001** | **<.0001** | **0.0017** | **<.0001** | **<.0001** | **<.0001** | **<.0001** | **<.0001.** | **<.0001** | **0.4357** | |

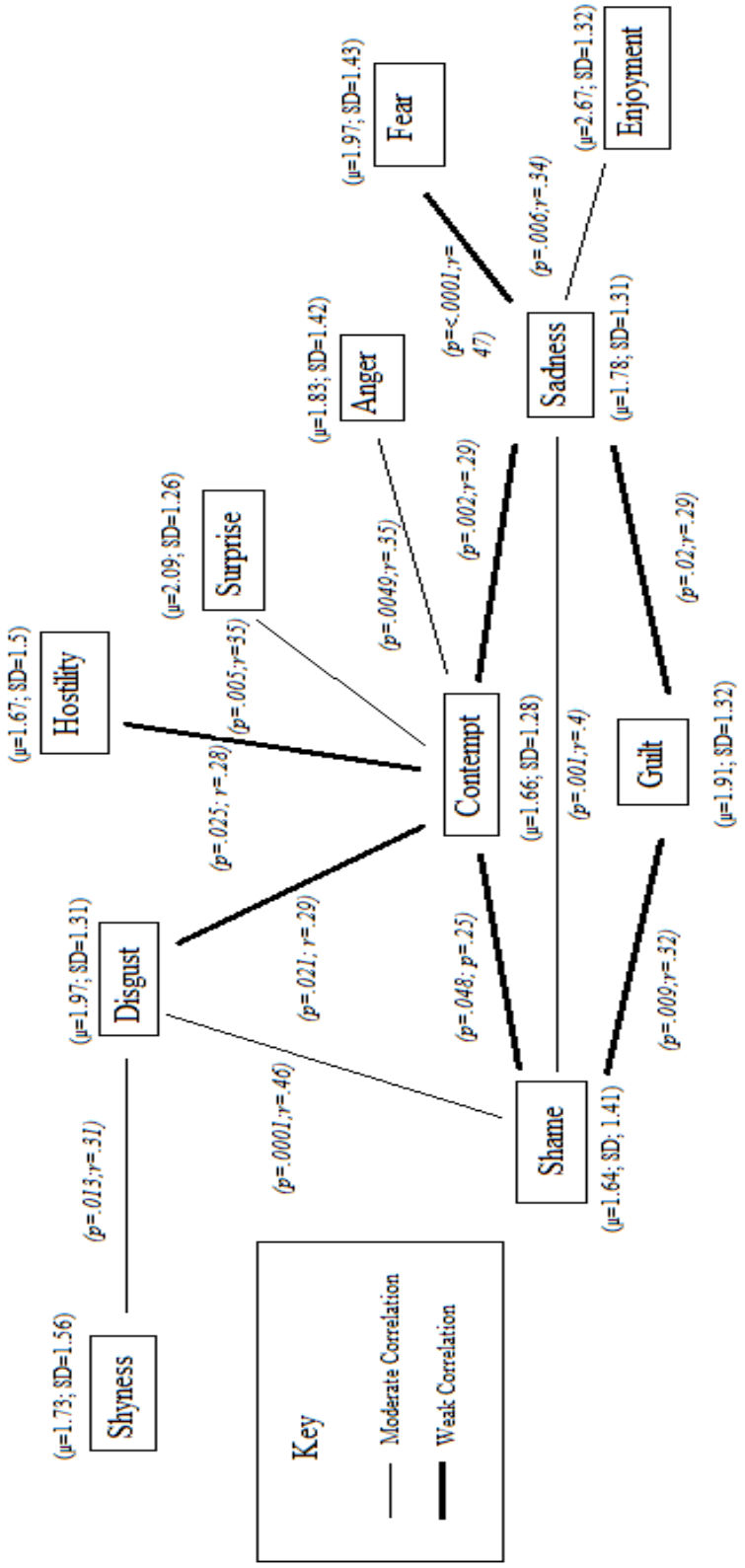


**Figure 2: Emotions Pearson Correlations Interaction Diagram**

## 4.4 Correlations Between Defense Mechanisms and Emotions

A Pearson's correlation was also conducted to explore the relationships between the defense mechanisms and emotions of the participants (see Table 5, below). In total there were thirteen significant correlations between the defense mechanisms and the emotions. Of those correlations nine were of moderate strength. There were no strong or very strong significant correlations between defense mechanisms and emotions. Negative correlations also greatly outnumbered positive relationships between the two variables.

The two moderate positive significant correlations were found between the following: fear and idealisation (r=.26; p=.0371); and sadness and somatisation (r=.29; p=.0172). The moderate negative correlations were found between the following defenses and emotions: contempt and idealisation (r=-.26; p=.04); hostility and splitting (r=.011; p=-.32); the total score for emotions and suppression (r=-.29; p=.0253); the total score for negative emotions and suppression (r=-.27; p=.033); the total score for immature defense mechanisms and hostility (r=-.25; p=.04); and lastly between the total score for immature defense mechanisms and contempt (r=-.25; p=.0451). Figure Three below provides the visual diagrammatic representation of the results obtained by the third set of Pearson's correlations to be found between the emotions and defense mechanisms.

**Table 4: Correlation table for Emotions and Defenses**

| | ALTURISM | DENIAL | DEVALUATION | HUMOR | IDEALIZATION | IDENIFICATION | OMNIPOTENCE | PASSIVE AGGRESSION | PROJECTION | SOMOTISATION | SPLITTING | SUPPRESSION | WITHDRAWAL | TOTAL IMMTURE | TOTAL MATURE | TOTAL DEFENSES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **INTEREST*** | **0.0229** | **0.0751** | **0.1012** | **-0.0555** | **0.1748** | **0.0894** | **0.0712** | **0.1216** | **0.2553** | **0.2088** | **0.0494** | **-0.0501** | **-0.0586** | **0.2412** | **0.0312** | **0.2461** |
| | **0.8569** | **0.555** | **0.4259** | **0.6628** | **0.167** | **0.4823** | **0.5756** | **0.3383** | **0.0417** | **0.0976** | **0.6981** | **0.6942** | **0.6452** | **0.0548** | **0.8061** | **0.05** |
| ENJOYMENT | 0.1444 | -0.1762 | 0.0481 | 0.0750 | -0.1618 | -0.1178 | 0.1752 | 0.1088 | 0.0873 | -0.1509 | -0.0041 | -0.0781 | -0.3832 | -0.0652 | 0.0896 | -0.0219 |
| | 0.2549 | 0.1635 | 0.7057 | 0.5557 | 0.2014 | 0.3538 | 0.1661 | 0.392 | 0.4926 | 0.2338 | 0.9743 | 0.5393 | 0.0018 | 0.6082 | 0.4812 | 0.8633 |
| **SURPRISE** | **0.1546** | **0.1124** | **-0.0599** | **-0.0207** | **-0.1386** | **0.1021** | **0.0577** | **0.0349** | **0.0866** | **0.0779** | **-0.0179** | **0.1547** | **-0.1339** | **-0.0128** | **0.1048** | **0.0418** |
| | **0.2225** | **0.3762** | **0.6378** | **0.8708** | **0.2747** | **0.4221** | **0.6502** | **0.7843** | **0.4961** | **0.5405** | **0.888** | **0.222** | **0.2914** | **0.9198** | **0.4098** | **0.7429** |
| SADNESS | 0.0492 | 0.2069 | -0.0007 | 0.1966 | 0.1856 | 0.1847 | -0.1652 | -0.0872 | -0.0363 | 0.2969 | -0.1263 | -0.0295 | 0.0342 | 0.0345 | 0.1435 | 0.0861 |
| | 0.6992 | 0.1009 | 0.9955 | 0.1195 | 0.142 | 0.1439 | 0.192 | 0.4931 | 0.7755 | 0.0172 | 0.3197 | 0.8166 | 0.7881 | 0.7865 | 0.2579 | 0.4983 |
| **ANGER** | **0.1069** | **0.0416** | **0.1717** | **-0.0056** | **-0.0018** | **0.0483** | **-0.0364** | **0.0417** | **-0.0257** | **0.0279** | **0.0388** | **-0.1386** | **0.0623** | **0.1059** | **0.0371** | **0.1056** |
| | **0.4003** | **0.7442** | **0.1748** | **0.9647** | **0.9886** | **0.7047** | **0.775** | **0.7434** | **0.8397** | **0.8266** | **0.7608** | **0.2747** | **0.6243** | **0.4045** | **0.771** | **0.4059** |
| DISGUST | -0.029 | -0.0854 | 0.1516 | -0.0321 | -0.1271 | 0.0203 | -0.1066 | -0.1626 | -0.1313 | 0.0459 | -0.0826 | -0.1965 | -0.0484 | -0.0737 | -0.0469 | -0.0757 |
| | 0.8201 | 0.5022 | 0.2316 | 0.8009 | 0.3169 | 0.8734 | 0.4015 | 0.1992 | 0.301 | 0.7182 | 0.5163 | 0.1196 | 0.704 | 0.5628 | 0.7126 | 0.5521 |
| **CONTEMPT** | **-0.1663** | **-0.1505** | **0.0335** | **-0.1744** | **-0.2574** | **-0.0820** | **-0.1844** | **-0.1090** | **-0.1236** | **-0.1784** | **-0.1974** | **-0.1730** | **-0.0485** | **-0.2513** | **-0.2030** | **-0.3149** |
| | **0.1889** | **0.2351** | **0.7922** | **0.168** | **0.04** | **0.5192** | **0.1446** | **0.3909** | **0.3304** | **0.1584** | **0.1179** | **0.1714** | **0.7035** | **0.0451** | **0.1075** | **0.0113** |
| FEAR | -0.0015 | 0.0577 | 0.1814 | -0.1364 | 0.2612 | 0.2111 | 0.0502 | -0.0124 | 0.0563 | 0.1888 | 0.1412 | -0.1857 | -0.0844 | 0.1805 | -0.0338 | 0.1643 |
| | 0.9902 | 0.6505 | 0.1514 | 0.2824 | 0.0371 | 0.094 | 0.6937 | 0.9223 | 0.6581 | 0.1351 | 0.2655 | 0.1417 | 0.5068 | 0.1535 | 0.7904 | 0.1945 |
| **GUILT** | **-0.1880** | **0.0976** | **0.0495** | **-0.1931** | **-0.1429** | **0.0964** | **-0.0422** | **-0.1883** | **0.0470** | **-0.0390** | **-0.0398** | **-0.1361** | **0.0782** | **-0.1200** | **-0.2097** | **-0.1980** |
| | **0.1368** | **0.4428** | **0.6973** | **0.1263** | **0.2598** | **0.4484** | **0.7402** | **0.1361** | **0.7119** | **0.7592** | **0.7548** | **0.2834** | **0.539** | **0.3447** | **0.0961** | **0.1167** |
| SHAME | -0.0499 | -0.1371 | -0.0056 | -0.1588 | -0.1378 | -0.0917 | -0.2047 | -0.0952 | -0.1326 | -0.0495 | -0.0407 | -0.1816 | 0.0058 | -0.1771 | -0.1965 | -0.2313 |
| | 0.6949 | 0.2798 | 0.9646 | 0.2101 | 0.2775 | 0.4707 | 0.1046 | 0.4541 | 0.2961 | 0.6973 | 0.7494 | 0.1509 | 0.9632 | 0.1615 | 0.1196 | 0.0658 |
| **SHYNESS** | **-0.0626** | **-0.0009** | **-0.0114** | **-0.0077** | **0.0041** | **-0.0742** | **-0.1934** | **-0.0377** | **0.0241** | **0.1846** | **0.0039** | **-0.2081** | **-0.0467** | **0.0275** | **-0.0720** | **0.0151** |
| | **0.6228** | **0.9943** | **0.9283** | **0.9513** | **0.9738** | **0.5597** | **0.1257** | **0.7672** | **0.8497** | **0.1441** | **0.9755** | **0.0988** | **0.714** | **0.829** | **0.5718** | **0.9053** |
| HOSTILITY | -0.0215 | 0.0414 | -0.0575 | -0.0353 | -0.1010 | -0.0596 | -0.1944 | -0.0341 | -0.1127 | -0.1534 | -0.3158 | -0.2285 | -0.1095 | -0.2542 | -0.0467 | -0.2517 |
| | 0.8657 | 0.7452 | 0.6515 | 0.7815 | 0.4268 | 0.6398 | 0.1236 | 0.7889 | 0.375 | 0.226 | 0.011 | 0.0693 | 0.3887 | 0.0426 | 0.7137 | 0.0448 |
| **TOTAL EMOTIONS** | **-0.0063** | **0.0155** | **0.1159** | **-0.1058** | **-0.0819** | **0.0627** | **-0.1473** | **-0.0796** | **-0.0075** | **0.0789** | **-0.1156** | **-0.2795** | **-0.1374** | **-0.0736** | **-0.0772** | **-0.0874** |
| | **0.9604** | **0.9028** | **0.3618** | **0.4053** | **0.5196** | **0.6222** | **0.2454** | **0.5317** | **0.9531** | **0.5353** | **0.3628** | **0.0253** | **0.2788** | **0.5628** | **0.544** | **0.4921** |
| TOTAL POSITIVE EMOTIONS | 0.1721 | 0.0013 | 0.0482 | 0.0012 | -0.0695 | 0.0355 | 0.1638 | 0.1418 | 0.2272 | 0.0673 | 0.0143 | 0.0115 | -0.3113 | 0.0840 | 0.1204 | 0.1389 |
| | 0.1737 | 0.9918 | 0.7048 | 0.9922 | 0.5849 | 0.7806 | 0.1957 | 0.2634 | 0.0709 | 0.5968 | 0.9106 | 0.9276 | 0.0123 | 0.5091 | 0.3433 | 0.2736 |
| **TOTAL NEGATIVE EMOTIONS** | **-0.0457** | **0.0142** | **0.0925** | **-0.0838** | **-0.0266** | **0.0269** | **-0.1899** | **-0.1243** | **-0.0943** | **0.0739** | **-0.1096** | **-0.2669** | **-0.0392** | **-0.0880** | **-0.1091** | **-0.1179** |
| | **0.7195** | **0.9113** | **0.4671** | **0.5103** | **0.8342** | **0.8323** | **0.1327** | **0.3277** | **0.4585** | **0.5614** | **0.3886** | **0.033** | **0.758** | **0.4892** | **0.3906** | **0.3534** |

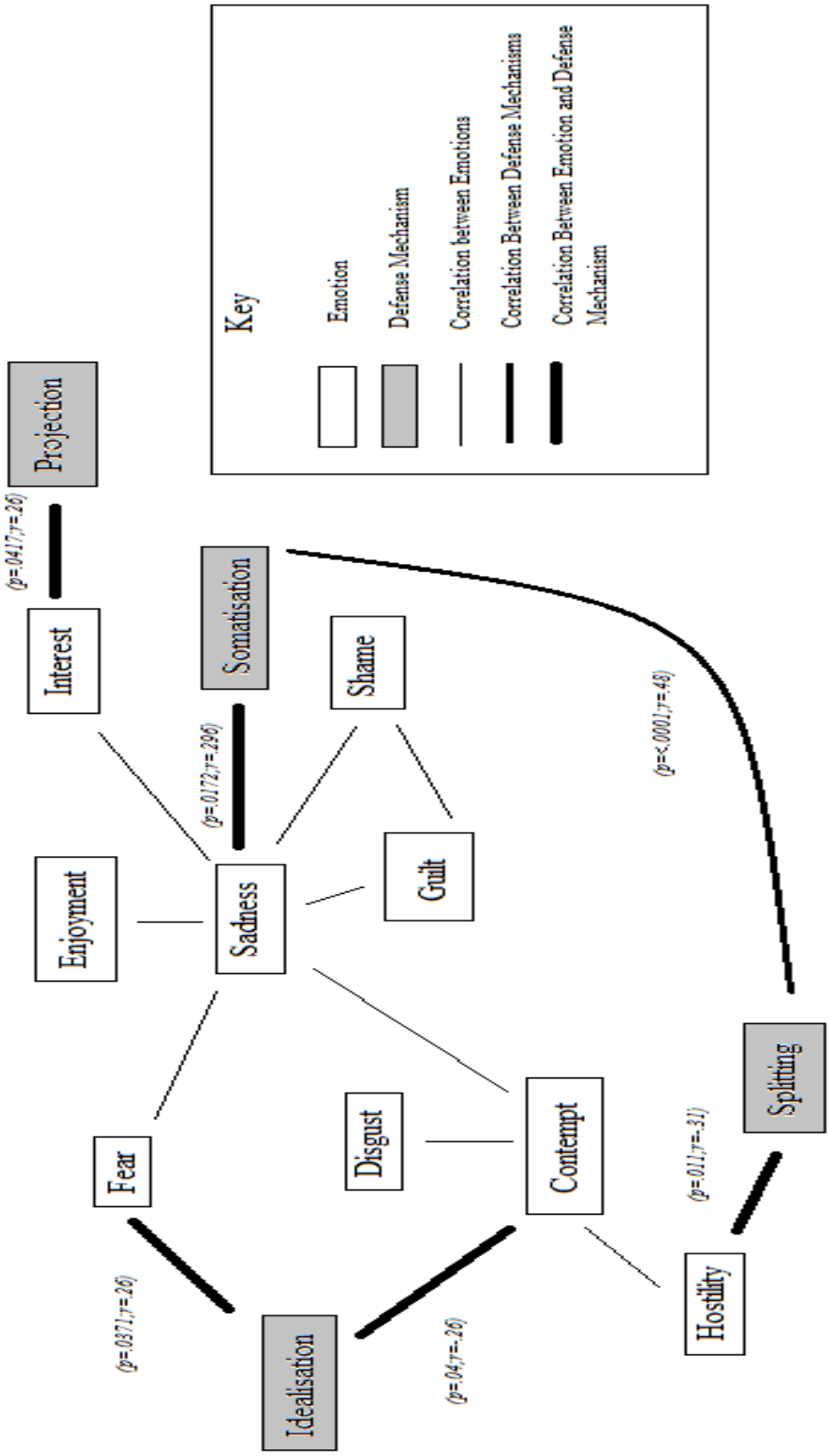


**Figure 3: Diagram of Emotions and Defense Mechanisms Pearson's Correlation Results**

## 4.5 Associations Between Attachment and Frequency of Emotions

The emotions were subsequently categorised into nominal variables by separating the scores along the median into a low frequency usage of the emotion and a high frequency usage of the emotion category. A series of chi squared tests of analyses were conducted to investigate whether there were any significant associations between attachment type and the emotions experienced during middle childhood for the sample.

| Variable | N | df | $\chi^2$ | P-Value | Phi Coefficient |
|---|---|---|---|---|---|
| Interest | 64 | 3 | 2.7036 | 0.4396 | 0.2055 |
| **Enjoyment** | **64** | **3** | **4.7144** | **0.1939** | **0.2714** |
| Surprise | 64 | 3 | 6.7579 | 0.08 | 0.3250 |
| **Sadness** | **64** | **3** | **1.1636** | **0.7617** | **0.1348** |
| Anger | 64 | 3 | 1.040 | 0.7916 | 0.1275 |
| **Disgust** | **64** | **3** | **2.1368** | **0.5445** | **0.1827** |
| Contempt | 64 | 3 | 2.7080 | 0.4389 | 0.2.57 |
| **Fear** | **64** | **3** | **1.7683** | **0.6219** | **0.1662** |
| Guilt | 64 | 3 | 3.1138 | 0.3744 | 0.2206 |
| **Shame** | **64** | **3** | **0.8813** | **0.8299** | **0.1173** |
| Shyness | 64 | 3 | 2.2152 | 0.8299 | 0.1173 |
| **Hostility Inward** | **64** | **3** | **3.6606** | **0.3005** | **0.2392** |
| Total Emotion | 64 | 3 | 0.8944 | 0.8268 | 0.1182 |
| **Total Positive** | **64** | **3** | **2.0848** | **0.5550** | **0.1805** |
| Total Negative | 64 | 3 | 4.7847 | 0.1883 | 0.2734 |

**Table 5: Chi Squared table for ASCT-frequency of Emotion**

As seen in Table 6 above, no significant associations were found between the attachment type and the frequency of emotions. This is most likely attributed to the relatively low sample size and the large discrepancies between the different groupings for attachment type (secure, avoidant, ambivalent and disorganised). However, despite there not being any statistically significant associations, a number of observations may be made with respect to the analyses and the breakdown of the percentages and numbers. A few examples of the most noteworthy findings will now be discussed. For example, across all of the chi squared tests of association conducted, there was a higher usage of negative emotions across the attachment types. The secure attachment group experienced a higher percentage (81%) of a high intensity of enjoyment, whereas the disorganised attachment category displayed the lowest use of a high

frequency of enjoyment (36%). The secure attachment group also presented with the highest percentage for the overall high level of the total score for positive emotions with sixty four percent with the disorganised showing the highest percentage at the higher levels (64%). There was also a tendency towards a lower frequency usage of surprise across the four attachment types (67%), with the secure (81%) and disorganised (90%) attachments showing the lowest percentages.

Interestingly, the disorganised attachment experienced the lowest tendency to use a limited amount of the emotion, sadness (81%). Across all the emotions tested, the avoidant attachment type repeatedly experienced low occurrences of the emotions, especially the negative emotions, whereas for enjoyment they reported experiencing it more often than not. The secure attachment type reported low intensities of anger (77%), contempt (81%), fear (63%), guilt (55%), shame (64%), shyness (82%), and hostility (55%). As expected the avoidant attachment group of children reported low levels of emotions across the board, with the exception of a relatively high level of enjoyment experienced (59%). The ambivalently attached children also presented with a reasonably equal distribution between high and low levels of surprise but reported very low levels of negative emotions, particularly sadness (73%), guilt (73%) and shame (80%). Finally, the disorganised attachment also presented with very low intensities of all emotions except for feeling a high level of guilt (70%).

## 4.6 Association Between Attachment and Frequency of Defense Mechanisms

A series of chi squared tests of associations were also conducted to investigate whether there were any significant associations between the attachment type (secure, avoidant, ambivalent ad disorganised) and the frequency of the use of defense mechanisms. No significant results were obtained which suggests that there are no significant associations between attachment type and the frequency of use of defense mechanisms during middle childhood as seen in Table 7 (on page 47)

| Variable | N | df | $\chi^2$ | P-Value | Phi Coefficient |
|---|---|---|---|---|---|
| Altruism | 64 | 3 | 2.8213 | 0.4200 | 0.2100 |
| **Denial** | **64** | **3** | **0.6543** | **0.8839** | **0.1011** |
| Devaluation | 64 | 3 | 1.1130 | 0.7739 | 0.1319 |
| **Humor** | **64** | **3** | **1.6582** | **0.6463** | **0.1610** |
| Idealization | 64 | 3 | 4.9056 | 0.1788 | 0.2769 |
| **Identification** | **64** | **3** | **5.4949** | **0.1389** | **0.2930** |
| Omnipotence | 64 | 3 | 0.3331 | 0.9537 | 0.0721 |
| **Passive aggressive** | **64** | **3** | **4.7206** | **0.1934** | **0.2716** |
| Projection | 64 | 3 | 3.4435 | 0.3282 | 0.2320 |
| **Somatization** | **64** | **3** | **3.5505** | **0.3143** | **0.2355** |
| Splitting | 64 | 3 | 4.3816 | 0.2231 | 0.2617 |
| **Suppression** | **64** | **3** | **1.5095** | **0.6801** | **0.1536** |
| Withdrawal | 64 | 3 | 2.7166 | 0.4374 | 0.2060 |
| **Total Immature** | **64** | **3** | **4.7251** | **0.1931** | **0.2717** |
| Total Mature | 64 | 3 | 1.6396 | 0.6504 | 0.1601 |
| **Total Defense** | **64** | **3** | **1.2199** | **0.7482** | **0.1381** |

**Table 6: Chi Squared ASCT-Defenses**

Thus, as with the above discussed results obtained with the associations between emotion and defense style, although there were no significant associations, the results obtained do provide valuable information regarding the distribution and interactions of defenses and attachment. Throughout all of the attachment styles there was a high frequency use of defense mechanisms with three quarters of the usage of defense mechanisms being within the high range. Although the secure (36%) and disorganised (36%) attachment groups displayed the limited usage of defense mechanisms, the avoidant group (78%) used the most defenses. There was not an overall discrepancy between the usage of mature and immature defenses.

The securely attached group had a reasonably equal distribution between the discrepancies between usages of the immature defenses, but did show a relatively large tendency towards a high level usage of mature defenses (82%). This high usage of mature defenses was seen in their tendency towards high levels of altruism (82%), humour (64%) and with all the securely attached children experiencing high levels of identification (100%). The secure attachment group also had a very low usage of somatisation (91%), suppression (73%), denial (64%) and of suppression (73%). The avoidant category used high levels of: denial (74%), devaluations

(63%), identification (67%), passive aggression (63%), projection (67%) and high levels of splitting (74%). They also experienced low frequencies of passive somatisation (63%) and suppression (67%). The ambivalently attached children were reported to use low levels of denial (67%) and somatisation (63%), and high levels of: devaluation (60%), idealisation (73%), identification (67%), passive aggression (63%), projection (67%), splitting (67%) and withdrawal (73%). Lastly the disorganised attachment group were reported to experience low levels of denial (64%), passive aggression (73%), projection (64%), somatisation (73%) and suppression (73%). However, those in the disorganised classification category also experienced relatively high levels of altruism (73%), idealisation (64%) and very high levels of identification (83%).

## 4.7 Associations Between Type of Emotion and the Maturity of Defense Mechanisms

Three chi squared test of association were conducted to investigate whether there were significant associations between the intensity or frequency of emotions and the frequency of defense mechanisms as experienced in the sample. No significant associations were found to exist between the emotions and defenses of the sample (see Table 8 and 9 below). As discussed above, this is most likely as a result of the comparatively small sample size. However, the phi coefficients provided do show that there are very weak negative correlations between the positive emotions (phi=-.11), the negative emotions (phi=-.13) and the immature defenses. Thus, as the usage of emotions increases, the use of defense mechanisms decreases and vice versa.

| Variable | N | DF | $\chi^2$ | P-value | Phi coefficient |
|---|---|---|---|---|---|
| **Total Emotion** | **64** | **1** | **0.3166** | **0.5737** | **0.0703** |
| Total Positive Emotions | 64 | 1 | 0.7824 | 0.3764 | -0.1106 |
| **Total Negative Emotions** | **64** | **1** | **1.0585** | **0.3036** | **-0.1286** |

**Table 7: Chi Squared results for Emotion and Immature Defenses**

An analysis of the frequencies provided by the chi squared tests of association highlight that low levels of total emotion experienced are linked to low levels of immature defense mechanisms (63%). However, this was also the case for a high level of immature defense use (56%), suggesting that a low usage of emotions is overall correlated with low usage of immature defense mechanisms. A high usage of positive emotions was linked to a low use of immature defenses (63%) as well as with high levels of mature defense usage (69%). Low

usage of positive emotions was linked to a low use of immature defenses (37%). High levels of mature defenses were linked to experiences of both low (74%) and high intensities of negative emotions (67%).

| Variable | N | DF | $\chi^2$ | P-value | Phi Coefficient |
|---|---|---|---|---|---|
| **Total Negative Emotions** | **64** | **1** | **0.4194** | **0.5172** | **-0.0810** |
| Total Positive Emotions | 64 | 1 | 0.4170 | 0.5184 | -0.0807 |

**Table 8: Chi Squared results for motions and Mature Defenses**

Low experiences of negative emotions were connected to low levels of the use of mature defenses (26%). However, high (69%) and low (76%) usage of positive emotions was also linked with high usage of mature defense mechanisms. When broken down into the different mature defenses, positive emotion was connected to high usage of altruism (61%), low use of humour (58%) and high usage of identification (56%).

# Chapter Five: Discussion

## 5.1 Discussion of Results

This study was one of the first of its kind to be conducted in relation to a sample of children in institutions within South Africa and to specifically explore the relationships between attachment type, emotion and defense mechanisms during middle childhood. Limited research has been conducted on exploring these variables during middle childhood in a population from a variety of children's homes and from a clinical setting. The results obtained from this study do suggest a number of significant correlations between the use of defense mechanisms and emotions. However, no significant associations were found between attachment type and the frequency of the use of defense mechanisms or emotion. Similarly, no significant associations were found to exist between the frequency or intensity of emotions and defense mechanisms. This lack of significant associations, where they would previously be expected is likely to be as a result of the relatively small sample size for the statistical measures used. However, the frequency distributions did provide valuable insight into the interactions between the different categorical variables. The results obtained from the study are discussed below.

The following discussion will look at the characteristics of the participants of the study and their attachment classifications. The following will also discuss the associations between attachment types and the frequency of emotions experienced by the participants. The associations between the attachment types and the frequency of the defense mechanisms employed by the participants will also be discussed. Similarly, the following discussion will conclude with a deliberation about the associations between the usage of emotions and the maturity of defense mechanisms used by the participants of the study.

*i) The Characteristics of the Sample*

An analysis of the results gained by the descriptive statistics of the sample provides interesting information regarding the distribution of attachment as found in children in children's homes and from a clinical setting. Only eleven (17%) of the sixty four children involved in the study were classified by the Attachment scale as being securely attached with a substantial fifty four of the children being insecurely attached (83%). Zeanah and Smyke (2008) provide a possible explanation for this occurrence by stating that disturbances in attachment relationships most typically arise from abnormal rearing conditions and

environments (see also Tomlinson, Cooper & Murray, 2005). Stansfeld *et al.* (2008) support this view and have hypothesised that material deprivation may negatively impact on the psychological stress of both the parent and the child, thus resulting in difficulties in developing healthy relationships between the parents and the child. As a large number of the children tested in the children's homes and the hospital do come from financially insecure backgrounds, it is likely that this may be a factor influencing the low levels of secure attachments. Stansfeld *et al*. (2008) go further to describe how:

> "emotional warmth may be less easy to maintain with children and harshness with children more frequent in parents exposed to socially adverse conditions because living in adversity provokes worry, disappointment, frustration, and anxiety that interferes in relations with children as well, of course, as social adversity making it more difficult to provide adequate housing, food, clothing and other resources for children" (P. 517).

Therefore, given that many of the children have such disadvantaged backgrounds, it is not unforeseen that the majority of the children participating in the study presented with insecure story stems and thus attachment styles.

The breakdown of the attachment styles as found in this study was: 17 % secure, 42% avoidant, 24% ambivalent and 17 % disorganised. This is in contradiction to Tomlinson, Cooper and Murray's (2005) findings of 61.9% secure, 4.1% avoidant, 8.2% ambivalent and 25,8% disorganised infants from a peri-urban settlements within South Africa. Therefore, one may query as to what occurred between 18 months and 8 years of age to drastically alter the results of the attachments, despite the different samples used. One possible explanation may be, as discovered by Weinfield, Sroufe and Egeland (2000), that the security of early attachments is not stable and it is subject to change due to a vulnerability to difficult and/or chaotic life experiences. Many of the children placed in institutions, or brought to the hospital with difficulties, have experienced such adverse conditions and although their physical needs may have been met adequately, many did not receive adequate emotional support (van den Dries, Juffer, van Ijzendoorn & Bakermans-Kranenburg, 2009). Many of these children have experienced some form of separation from their original primary caregiver or a loss of their parents or legal guardians with whom they may have previously had secure attachments which were altered due to the trauma of separation. As Bowlby (1961, 1979) theorised, this will have a greatly negative impact on the child's ability to form secure and healthy attachments in the future with their other possible caregivers. Bureau, Easlerbrooks and Lyons-Ruth (2009) also found in their study into attachment disorganisation, that children with higher disorganised attachments were more likely to come from clinical settings, especially when one of the referrals was related to a parent-child relational problems.

Therefore, high levels of insecure attachments are to be expected in a sample such as that used for the purposes of this investigation.

*ii) Correlations Between Defense Mechanisms*

An analysis of the results found for the correlations between the use of defense mechanisms in the current sample show that splitting appears to have the most correlations between all of the defense mechanisms and that humour and its correlates are separate from the main set of interactions. This is most likely as a result of the very nature of altruism being a mature defense mechanism, and that its interactions with altruism, suppression and denial respectively often occur in isolation from the other defenses. Cramer (2007) found that the defense mechanisms of projection and identification were used more frequently than denial in children and that the usage of these two defenses increases with age, particularly as the child progressed through into adolescence (also see Porcerelli *et al*, 1998). However, identification and projection are not presented as having significant correlations with the other defenses suggesting that they most likely occur in isolation.

The mean distribution of the scores received for defense mechanisms does support this claim as they suggest that the defenses of identification and projection were experienced to a greater extent than denial. Cramer (1997; 2007) found in their study into the developmental change of defense mechanisms that immature defenses are more commonly associated with earlier life with mature defenses in later life. Therefore, as middle childhood is a period of complex development (Dubois-Comtois & Moss, 2008; Granot & Mayseless, 2001), it was expected that there would be a combination of both mature and immature defense mechanisms. The results indicate that two of the mature defense mechanisms, altruism and idealization received the highest mean scores whereas humour was one of the lowest.

As discussed above, Cramer (2007; 1997) and Porcerelli *et al.* (1998) view the usage of the defense mechanisms of identification and projection to be more frequent than that of denial during middle to late childhood. In the current study projection was strongly correlated to the total score for immature defenses, suggesting that it was commonly used within the sample. Projection was also strongly correlated to the usage of passive aggressiveness and moderately with devaluation. These results therefore suggest that when projection is being employed, so are, to a large extent, the defenses of passive aggressiveness and devaluation. Interestingly, passive aggression was also strongly correlated to the immature defense mechanism total score, and moderately with somatisation as well as splitting. There were no significant correlations between the defenses with identification, and more importantly not with the total

score for defense use, suggesting that it was not commonly employed by the participants. However, as identification is classified as a mature defense and taking into account that a large proportion of the sample was still below eleven, this is not wholly unexpected. Denial, on the other hand, the defense as proposed by Cramer (2007; 1997) to be used less often than projection and identification, was correlated to the use of the mature defense, humour as well as with the total for immature defenses signifying a high usage.

As the child develops through middle childhood, the specific defense mechanisms employed steadily develop into more advanced and complex forms of that defense (Cramer, 1997). Thus, although a number of immature defense mechanisms were employed by the participants in this study, the correlations between the different defenses suggest that their usage may be more advanced than previously expected. Immature defenses have also been associated with clinical samples, such as some of the children used in this study (Laor, Wolmer & Cicchetti, 2001), and it is therefore expected that more immature defenses would be used given the sample age and characteristics (Porcerelli *et al.,* 1998). These developments and complex interplay between the defenses as found in this study and others (Cramer, 2007; 1997) highlights how the increasing cognitive abilities of the children develops into a set system of defense mechanisms being employed. This increasing cognitive ability of the children also impacts on their awareness of their usage of defense mechanisms which results in different defenses being employed (Cramer and Brilliant, 2001; Porcerelli *et al,* 1998). Thus, the defense mechanisms used by the participants have a number of significant correlations with each other, suggesting a complex interplay between the defenses, possibly as a result of their increasing awareness of the defenses they are using.

*iii) Correlations Between Emotions*

The deferential emotions theory highlights the casual relationships as between emotions, and between emotions and cognition, therefore a specific and unique pattern of emotions is developed (Blumberg & Izard, 1986). Accordingly, although there is generally a key emotion that is experienced most often, it is linked to a set of emotions that are activated when the key emotion is experienced (Blumberg & Izard, 1986; Izard, 1993; Izard, 1983). The theory also holds that all emotions have basic motivational underpinnings and that the experiences of emotions are continuous and stable in nature (Izard *et al,* 1993; Izard, 1983). For example, the emotion fear will be influenced or motivated by a certain motivational state (Izard, 1993), which for the purposes of this research may be with respect to attachment behaviours and the utilisation of defense mechanisms. Therefore, the finding that certain emotions were

significantly correlated with other emotions is expected, and gives insight into the relationships between their activations and underlying motivations.

Significant positive correlations of at least moderate strength were found between the experiences of the following emotions: Surprise and contempt; sadness and enjoyment; sadness and fear; sadness and shame; anger and contempt; disgust and shame; and lastly between disgust and shyness. These correlations are interesting, especially as Izard (1983) described emotion regulation as being "the power of one emotion to control another emotion" (P. 307). For an example, related to the results obtained by the research, the emotion of shame will be discussed. Shame is perceived as being a painful emotion because it is felt as an attack on the worth of the self and therefore, it is seen as common for defense mechanisms to be employed to protect the self from experiencing pain (Turner, 2009). Shame is especially influential to behaviour during childhood, (Turner, 2009) and it is therefore not surprising that is was very strongly correlated to the total for negative emotions, and moderately with disgust and sadness. Nonetheless, shame did receive the lowest mean score, suggesting that it was the emotion experienced the least often. This is not entirely unforeseen, especially when considering that is believed that when shame is denied, possibly through defense mechanisms, that more violent emotions may take its place, such as hostility and disgust which are in turn correlated to a number of other emotions (Turner, 2009).

Significant correlations were also found between the total for positive emotions and interest, enjoyment and surprise, as expected as they were the only positive emotions tested for by the Deferential Emotions Scale-IV. Correspondingly the negative emotions of disgust, guilt, shame and hostility were found to be strongly and significantly correlated to both the total score for all emotions as well as the total negative emotions score. Sadness and shyness were also correlated strongly to the total with shyness and anger with the total negative score obtained for all the emotions. Therefore, one may deduct that these were the most common emotions experienced emotions by the sample collected with shame having the highest correlation with the total emotions as well as the highest correlation to the total negative emotions, which is likely as a result of the above discussed sense of shame as being particularly painful and a sense of something internally not being good enough (Turner, 2009).

*iv) Correlations Between Emotions and Defense Mechanisms*

More correlations were expected to be found between emotions and defense mechanisms as defense mechanisms, in essence, are used when protecting the individual from unpleasure or

emotions that are not welcomed or are potentially harmful to the individual (Brenner, 1981). However, the very nature of defense mechanisms may account for the reasonably low levels of negative emotions reported by the children as well as the relatively small amount of significant or strong correlations between the defense mechanisms and emotions. Moderate positive correlations were found between fear and idealisation as well as sadness and somatisation. Thus, as the emotion of fear increases, so does the use defense of idealisation and the same with sadness and somatisation. It may indicate that the main defense employed when a child is fearful of someone, that idealisation is employed to limit the negative aspects of the fear by making the feared object a looked up to object. Similarly as feelings of sadness increase, so does the likely hood that the child will experience feelings of being sick or pain, possibly in an attempt to illicit support, attention or sympathy from a caregiver. This supports the findings of Hagekull and Bohlin (2004) in that somatisation is mainly predicted by early negative emotionality, which is linked to insecure attachments. Thus, these interactions are seen to link attachment behaviours to defense use and emotionality.

However negative significant correlations were found to exist between contempt and idealisation. Therefore, as the emotion increases the use of the defense mechanism decreases, and vice versa. Consequently as the child uses more idealisation they feel less contempt. These interactions between the defense mechanisms and emotions show how they may be used as strategies to maintain or illicit attachment behaviours, as is discussed in more detail below. Negative correlations were also found between immature defenses and hostility, negative emotions and suppression and immature defense mechanisms and contempt. Defense mechanisms are viewed as attempting to "deny, avoid, or cognitively restructure aspects of a stressful situation to manage negative emotions" (Sandstrom & Cramer, 2003). The results obtained regarding the interactions between positive emotions, negative emotions, immature defenses and mature defenses will be discussed in more detail below.

*v) Associations Between Attachment and Frequency of Emotions*

The results conducted suggest that there are no significant associations between attachment type and the frequency of emotions used during middle childhood. Depressive emotions have previously been associated to the insecure attachments (Stansfeld *et al.,* 2008; Kerns *et al,* 2007), therefore, it was expected that this would be found within the current study. Similarly Kerns *et al*. (2007) also found that children with secure attachments to at least one primary caregiver expressed and experienced a higher level of positive emotions. This was seen in the results with the securely attached children repeatedly experiencing high and in some cases the highest levels or frequencies of the positive emotions. It is also likely, however, that the

securely attached children were more able to openly admit to the frequency of their experiences of negative emotions as they are able to employ more effective means of regulating such emotions (Cassidy, 1994; Raikes & Thompson, 2008). Securely attached children have been associated to a decreased likelihood of avoiding discussing or talking about negative emotions as well as having a greater understanding of those emotions by Waters *et al.* (2010). This was seen in study through the securely attached children's ability to report experiencing some levels of negative emotions such as hostility, sadness and anger, although they were of lower levels as compared to the insecure attachments.

Insecure attachments are largely associated with the experiencing of depressive type symptoms and emotions such as sadness (Stansfeld *et al.*, 2008). However, avoidant attachments by nature have been associated with a minimisation of emotional experiences, both positive and negative (Cassidy, 1994). The minimisation of negative emotions by this group is hypothesised as being a strategy employed by the child to minimise the relationship with the attachment figure (Cassidy, 1994). The above results from this study found similar patterns in the avoidant attached classified children's use of emotions in that they were consistently reporting to experience low rates of all emotions. Curiously, however, they also reported having experienced high levels of enjoyment relative to their experiences of other emotions, possibly as a result of the need to regulate how they appear to both the assessor and in general to their attachment figures. This is linked to their usage of the defense mechanisms of denial, devaluation and projection as is discussed in further detail below.

Cassidy (1994) correlated ambivalent attachments with more intensive experiences of both positive and more frequently negative emotions. The heightening of negative emotions is seen to be a strategy employed by ambivalent attachments to illicit attention from a seemingly uninterested or unavailable caregiver (Cassidy, 1994; Cassidy & Berlin, 1994). The ambivalently attached group in this study, however, reports generally experienced emotions that were evenly distributed between high levels and low levels, and in the case of sadness, guilt and shame very low levels. Although, they did report reasonably high levels of enjoyment, however, this may be as a result of their lack of self-awareness with respect to their emotionality and a desire to display a positive view of themselves during the research process. These ambivalently attached children also presented with a high usage of idealisation and withdrawal which will be impacting on their ability to accurately express their experiences of emotions.

The disorganised attachments were linked to very low levels of all emotions except for reporting to feel guilt very often. Disorganised attachments are most commonly associated

with an essential inability and dysfunction to effectively regulate their emotions (DeOliveira *et al*., 2004). They generally experience intense negative emotions but do not have the capability to regulate them effectively (DeOliveira *et al*., 2004). Thus, one would expect that they would have reported higher levels of all negative emotions as found by Kerns *et al.* (2007). However, like the ambivalently attached children, they have not developed effective emotional understanding modelled to them by their caregiver, thus may have had difficulty vocalising or understanding the emotions. However, the high level of guilt or of 'feeling sorry for something they have done' is indicative of the dysregulation of their emotions. Therefore, the findings of the above investigation into attachment and emotion do support the expected findings that "emotion regulation and quality of attachment are closely linked" (Cassidy, 1994).

*vi) Associations Between Attachment and Frequency of Defense Mechanisms*

As seen in the discussion linked to attachment and emotion, the ambivalently attached children were seen to rely on a number of strategies to maintain and control their emotionality and thus their attachment figure's attention (Cassidy, 1994; Cassidy & Berlin, 1994). It is therefore not unanticipated that this group displayed high levels of and a wide range of both immature and mature defense mechanisms, which included high levels of devaluation, idealisation, identification, passive aggressiveness, projection, somatisation and suppression. The secure and disorganised attachments showed the lowest use of defense mechanisms with the avoidant group using the highest. This is expected for the secure and avoidant groups, given the above discussion, however, it is interesting to note that the disorganised attachment group also showed an equally low use of defense mechanisms as the securely attached. The securely attached children also used a higher frequency of mature defences, such as altruism and humour with all of the securely attached children using high levels of identification, as expected. They also experienced low levels of somatisation, denial and suppression. The most frequently used defense mechanism of the securely attached group was the mature defense, identification.

As briefly deliberated upon above, with respect to the discussion regarding the associations between attachment type and the frequency of emotions, defense mechanisms have been shown to play an important role in the regulation of emotion. The avoidant attachment children exhibited high level usage of predominantly immature defenses such as denial, devaluation and projection. However, they also were reported to experience low levels of somatisation, passive aggression and suppression. The most frequently experienced defense mechanisms for the avoidant group were denial and splitting. Interestingly, splitting was

closely linked to the emotion of hostility, see above discussions. The ambivalently attached participants, like the avoidant group, also made use of a large number of defense mechanisms with a collection of both mature and immature defenses. The most frequently used defense mechanisms for the ambivalent attachments were idealisation and withdrawal. The defense mechanism of idealisation was correlated to the emotions of fear and contempt. The disorganised attachments were linked with exceptionally high levels of identification and altruism, but also low levels of the other immature defenses.

*vii) Associations Between Type of Emotions and the Maturity of Defense Mechanisms*

Therefore, as discussed in detail above, emotions have a complex set of correlations and interactions between them, as do defense mechanisms; it is thus necessary to discuss how the positive or negative emotions were linked to the use of immature or mature defense mechanisms. Indeed, the very act of emotion regulation is seen to function in similar ways as defense mechanisms (Koole, 2009). This as emotion regulation also seems to place more emphasis on the decreasing of the negative emotions rather than on the increasing of positive emotions (Koole, 2009). However, no significant associations were found to exist between positive and negative emotions; and maturity of defense mechanisms employed during middle childhood. As with the other association analyses conducted, this is most likely to be a direct result of the comparatively small sample size. Research into the relationship between defenses and psychological adjustment has found that children who rely more on the use of immature defenses, particularly denial, report feeling higher levels of negative emotions such as anxiety and depression (Sandstrom & Cramer, 2003). However, children who use the more mature defense of identification reported higher levels of competence and self-assurance (Sandstrom & Cramer, 2003).

## 5.2 Implications of the Research

Understanding children's homes, clinical settings and other such atypical rearing environments impact on children's development, especially during middle childhood, is vital to understanding the ways in which they are able or unable to recover from difficulties or unhealthy developmental characteristics (Smyke *et al.*, 2010). For example, the current study found that children from children's homes and from a clinical setting within a South African context were more likely to have insecure attachments than secure attachments. As an increasing number of South African children are being placed in children's homes and being referred to clinical settings for therapy and assessment due to a variety of reasons such as

becoming orphaned due to HIV/Aids, increasing violence levels among others, it is imperative to the future functioning of the country to understand the impact the institutions are having on the children.

Therefore, the above discussion suggests that various steps to try to help the children overcome these difficulties needs to be taken to limit the negative effects these rearing environments may have on their later development and functioning. A number of significant correlations were found to exist between and within the defense mechanisms and emotions as experienced by this group of children during middle childhood. This provided information regarding the patterns that develop and how these may be interacting together with the child's attachment security to impact on the child's daily and future functioning. Although no significant associations were found between the frequency of the usage of emotions and defense mechanisms (most likely due to a relatively small sample size), a large amount of valuable information was obtained from the frequency distributions. Overall, the above research does suggest that attachment type, defense mechanisms and emotions are interlinked in a complex set of relationships that have been explore but do necessitate further detailed research and investigation in the future.

## 5.3 Limitations of the Research

The relatively small sample size likely had the biggest effect on the lack of significant associations between the variables. This as the data was divided into four different attachment types which limited the possible number in each subsequent association. The current research study likewise did not include a measure of the cognitive functioning of the participants, which may be a contributor to the portrayal of attachment stories, the ability to express emotions and the usage of defence mechanism maturity. Similarly, this research did not account for temperament or personality of the children, which may be an extraneous variable both with respect to the security of their attachment and their emotionality (Hagekull & Bohlin, 2004; Izard *et al.,* 1993; Sroufe, 1985). Minde, Minde and Vogel (2006) have found that verbal representations of attachment are closely linked to cultural variables. Therefore, this research may have been limited in its ability to account for cultural variations in the attachment stories. This is largely as a result of the instruments being used in the study not having been adequately validated or standardised upon a South African study or population. Consequently, the need for the instruments used in the study to be extensively validated on a South African sample as it is unclear if the use of these specific tests impacted on the results.

The research relied on self-reports by the children regarding their experiences of emotion during the last week, this may have impacted on the results gained, due to the defensiveness of the children to expressing their use of negative, or more undesirable emotions. Therefore, a different form of assessment of emotions and the frequency of their occurrence may be used in further research into emotion during childhood to obtain more realistic results. This research was also limited in that the diagnosis of the attachment story completion test responses coupled with attachment security scales in some instances were classified to a large extent with others in the profession, a more blind procedure with some method of checking the diagnoses is required for more valid classifications. This may include using a system of third party professionals to classify the children or a number of individuals discussing the possible attachment classifications. Although the above research was intentionally and specifically looking into the relationships between attachment, defense mechanisms and emotion for children in children's homes and from a clinical setting, it was limiting to the extent to which the research would be applicable to all children within middle childhood rather than the participants used within this specific research study.

## 5.4 Directions for Future Research

Future research into attachment, defense mechanisms and emotion, particularly during middle childhood, need to use a larger sample size, as the sample size significantly impacted on the statistical results obtained. Further and future research into the relationships and associations between attachment, defense mechanisms and emotion during middle childhood will need to look into samples which represent broader participants that extend from research purely into children from children's homes and clinical settings. More information needs to be collected regarding the interactions and connections found between attachment, defenses and emotions to allow for definite and generalizable conclusions to be made regarding the relationships. This is important so as to provide more valid and reliable information regarding these interactions that can be applied to larger groups of children and that are not limited to a select group of relatively unique children. It is also important for further, more detailed and expansive research to be conducted into attachment, defenses and emotions both globally and within South Africa so as to determine if the findings of the above research are also occurring in other countries or whether this is only a characteristic of South African children. Future research should also look into researching the impact of cognitive ability of the child on these variables as well as on how the child's specific temperament and/or personality typology may impact on the results found and discussed. As mentioned briefly above, research into the

applicability of the instruments used in the current study for use on a South African sample or population needs to be conducted.

## 5.5 Conclusion

Therefore, in conclusion, the relationships between attachment type, defense mechanisms and emotion were explored in the above research study. The results showed a number of significant correlations in and between the defense mechanisms and the emotions as used during middle childhood. However, no significant associations were found between attachment type and the frequency of emotions used, between attachment type and the frequency of emotions used as well as no significant associations between the frequency and type of emotions with the frequency and maturity of defense mechanisms. However, the lack of significant associations is most likely indicative of a relatively small sample size and a number of important observations regarding the frequency distributions provided detailed insight into the interactions between the different variables under investigation in this study. Thus, the above study does suggest a complex interplay between attachment, defenses and emotions within children from difficult backgrounds such as children's homes and a clinical setting within South Africa, but this needs to be investigated further with all populations.

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# 7. Appendices

## 7.1 Child Demographics Questionnaire

CHILD DEMOGRAPHICS

CODE: _____

SITE (for administrative purposes): _____

AGE: _____

GENDER: _____

CULTURAL BACKGROUND: _____

FAMILY GENOGRAM: _____

## 7.2 Parent Information Letter for the Legal Guardians at the Hospital

**School of Human and Community Development**

*Private Bag 3, Wits 2050, Johannesburg, South Africa*

*Tel: (011) 350-2632*

Dear Parent or Legal Guardian,

My name is Renate Gericke, and I am doing research for the purposes of obtaining a Doctorate degree at the University of the Witwatersrand. I would like invite you to participate in the study.

I am interested in understanding the way children aged between 8 and 12 feel inside themselves better by looking at a number of variables. The variables I am looking at include how secure a child feels in his or her relationship with you, the number of different feelings s/he tends to have, how intense s/he feels things, how your child manages his or her feelings and how s/he views important people in his or her world. This will help me to answer how different children manage their anxieties and conflicts, and how different children anticipate others will respond to them. Better understanding of how children feel inside themself will aid psychologists in helping children.

Participation in this research will entail you and your child being interviewed by me or a student under my supervision, namely Thato Mmatli, Nonhlanhla Nkosi, Megan Robinson or Lexi Plitt. The interview will last about 45 minutes and will be done while you or your child are being interviewed during the initial history intake or psychological assessment. Thus, while the clinic staff are interviewing your child, Thato, Nonhlanhla, Megan, Lexi or I will interview you and while the clinic staff are interviewing you, we will interview your child. The parent questionnaire consists of 28 items and the child questionnaire of 44 items. The parent questionnaire includes questions such as rating how true the following statement is 'Easily provoked, and reacts by loosing his temper.' These questions will help me to answer how your child manages his feelings. The child questions include 'How often in your daily life do you feel mad at somebody?' Should you wish to participate in the study but would prefer to do so on a different day, we will arrange a time more convenient to you and provide transport costs to do so. Alternatively, you may choose to complete the additional tasks during a follow up session to the clinic, for example before receiving assessment feedback or before doing the psychological or psychiatric assessment. Approximately 100 parent-child couples will be interviewed from hospitals in the greater Johannesburg region. Participation is voluntary, and no person will be advantaged or disadvantaged in any way for choosing to participate or not participate in the study. You may refuse to answer any questions you would prefer not to, and you may choose to withdraw from the study at any point.

All of your responses will be kept confidential. Although direct quotes might be used, no information that could identify you would be included in the research report. Access to the questionnaires will be restricted to me, Nonhlanhla, Lexi and Megan although only I will have access to all the information. I also ask for permission to access your hospital records. For the duration of the study, all questionnaires will be stored safely in a location with restricted access. These records will be kept for two years after the research has been examined should publications arise or six years if no publications arise, and then destroyed. Where publications arise, group results and not your individual results will be reported.

The results of the research will be reported in the research report, and may also be published in journal articles. After completion of the project the clinic will receive a summarised copy of the research report which they can make available to you. Alternatively you can contact me to discuss the findings.

Unfortunately children who have sustained a brain injury or who have been diagnosed with aspergers or autism are excluded from this study as it introduces a unique set of circumstances that needs to be investigated separately.

If you agree to participate and provide permission for your child to participate in the research, you will be asked to sign the attached consent form and your child the assent form. This research has been granted ethic clearance by the Medical and the Human Research Ethics Committee of the University of the Witwatersrand (clearance number: M10561). If you experience any problems with the research or would like to report any complaints, you can do so by contacting Ms Anisa Keshav on 011 717 1234.

My research supervisor is Prof Carol Long, a lecturer at the Department of Psychology, University of the Witwatersrand. Her contact telephone number is (011) 717-4510 and her e-mail address carol.long@wits.ac.za.

Your participation in this study would be greatly appreciated.

Yours faithfully,

Renate Gericke

T: 011 717 4555

Email: renate.gericke@wits.ac.za

## 7.3 Child Information Letter for of the Hospital

**School of Human and Community Development**

*Private Bag 3, Wits 2050, Johannesburg, South Africa*

*Tel: (011) 350-2632*

Hi.

My name is Renate Gericke, and I am doing research as part of a degree at the University of the Witwatersrand and I would like to invite you to participate in the research.

Research is a way to learn the answer to a question. My questions are what kinds of feelings do you have, what do you do with your feelings and how do you feel about people in your life. This will help me to understand what goes on inside of you better. I will do this by asking a few questions and inviting you to tell me some stories. I will ask you about your relationship with your mom and dad or whomever looks after you the most, what feelings you have had in the past week and what feelings you have the most strongly, for example, 'How often in your daily life do you feel mad at somebody?' In knowing the answers to these questions we will be in a position to better help children with their feelings.

If you agree to answer the questions, Nonhlanhla, Thato, Megan, Lexi or I will sit with you. It will take about 45 minutes to complete while your mom or caregiver is being interviewed by the clinic staff. I also ask to look at your hospital records. If you would like to participate in the study but would prefer to do so on a different day, you can do so. Participating in the study is up to you, and you will not get into any trouble if you choose not to. You may refuse to answer any questions you don't want to, and you may choose to pull out of the study at any time.

Even though Nonhlanhla, Thato, Megan, Lexi or I will know who you are, no-one else will know what your answers are. The hospital clinic may ask me how you did overall in order to help you better with the things you are struggling with but they won't tell anyone else.

If you agree to participate in the research, please sign the attached assent form.

Thank-you,

Renate Gericke

T: 011 717 4555

Email: renate.gericke@wits.ac.za

## 7.4 Information Letter for the Legal Guardians of the Children's Homes

**Participant information sheet**

**School of Human and Community Development**
*Private Bag 3, Wits 2050, Johannesburg, South Africa*
*Tel: (011) 350-2632*

Dear Parent,

My name is Renate Gericke, and I am doing research for the purposes of obtaining a Doctorate degree at the University of the Witwatersrand. I would like invite you to participate in the study.

I am interested in understanding the way children aged between 8 and 12 feel about themselves and others better by looking at a number of variables. The variables I am looking at include how secure a child feels in his or her relationship with you, the number of different feelings s/he tends to have, how intense s/he feels things, how your child manages his or her feelings and how s/he views important people in his or her world. This will help me to answer how different children manage their anxieties and conflicts, and how different children anticipate others will respond to them. Better understanding of how children feel inside will aid psychologists in helping children.

Participation in this research will entail your child being interviewed by me or a masters student under my supervision, namely Lexi Plitt or Megan Robinson. The interview will last about 45 minutes during which time I will administer the following tests to your child, Attachment Story Completion Test, Thematic Apperception Test, Similarities subtest, Differential Emotions Scale and Attachment Security Scale. The child questions include 'How often in your daily life do you feel mad at somebody?' The parent questionnaire includes questions such as rating how true the following statement is 'Easily provoked, and reacts by loosing his temper.' These questions will help me to answer how your child manages his feelings. A summary of the research findings will be sent to all participating schools.

Approximately 150 parent-child couples will be interviewed from schools in the greater Johannesburg region. Participation is voluntary, and no person will be advantaged or disadvantaged in any way for choosing to participate or not participate in the study. You may refuse to answer any questions you would prefer not to, and you may choose to withdraw from the study at any point.

All of your responses will be kept confidential. Although direct quotes might be used, no information that could identify you would be included in the research report. Access to the questionnaires will be restricted to me, Lexi and Megan although only I will have access to all the information. For the duration of the study, all questionnaires will be stored safely in a location with restricted access. These records will be kept for two years after the research has been examined should publications arise or six years if no publications arise, and then destroyed. Where publications arise, group results and not your individual results will be reported.

The results of the research will be reported in the research report, and may also be published in journal articles.

Your participation in this study would be greatly appreciated. If you agree to participate, please sign the attached consent form and complete the attached Comprehensive Assessment of Defense Style questionnaire.

Yours faithfully,

Renate Gericke
Clinical psychologist
T: 011 717 4555
Email: renate.gericke@wits.ac.za

## 7.5 Information Letter for the children of the children's homes

**Participant information sheet: child version**


**School of Human and Community Development**
*Private Bag 3, Wits 2050, Johannesburg, South Africa*
*Tel: (011) 350-2632*

Hi.

My name is Renate Gericke, and I am doing research as part of a degree at the University of the Witwatersrand and I would like to invite you to participate in the research.

Research is a way to learn the answer to a question. My questions are what kinds of feelings do you have, what do you do with your feelings and how do you feel about people in your life. This will help me to understand what goes on inside of you better. I will do this by asking a few questions and inviting you to tell me some stories. I will ask you about your relationship with your mom and dad or whomever looks after you the most, what feelings you have had in the past week and what feelings you have the most strongly, for example, 'How often in your daily life do you feel mad at somebody?' In knowing the answers to these questions we will be in a position to better help children with their feelings.

If you agree to answer the questions, Lexi, Megan or I will sit with you. It will take about 40 minutes to complete while your mom or caregiver is being interviewed by the clinic staff. If you would like to participate in the study but would prefer to do so on a different day, you can do so. Participating in the study is up to you, and you will not get into any trouble if you choose not to. You may refuse to answer any questions you don't want to, and you may choose to pull out of the study at any time.

Even though Lexi, Megan or I will know who you are, no-one else will know what your answers are. The hospital clinic may ask me how you did overall in order to help you better with the things you are struggling with but they won't tell anyone else.

If you agree to participate in the research, please sign the attached assent form.

Thank-you,

Renate Gericke

T: 011 717 4555
Email: renate.gericke@wits.ac.za

## 7.6 Consent form for the legal guardians at the hospital

### Interview consent form

**School of Human and Community Development**

*Private Bag 3, Wits 2050, Johannesburg, South Africa*

*Tel: (011) 350-2632*

I, _____, consent to be interviewed by Renate Gericke, Nonhlanhla Nkosi, Thato Mmatli, Lexi Plitt or Megan Robinson for their investigation of love, hate and others feelings in relation to attachment security experienced by children, and I understand:

- the nature and purpose of this study;
- that Renate will access my hospital records;
- that participation in this interview is voluntary;
- that I may refuse to answer any questions I would prefer not to;
- that I may withdraw from the study at any time;
- that no negative consequences will arise if I decide to withdraw or if I decline participation;
- that no identifying information will be included in the research report, and my responses will remain confidential;
- that direct quotes may be used in the published work based on this research; however, no identifying information will be used so as to protect my identity;
- that there are no direct benefits to participating in this study;
- that there are no known risks associated with this study.

I confirm that I satisfy the research inclusion criteria, as specified in the participant information sheet.

Signed: _____

Date: _____

## 7.7 Assent form for the children at the hospital

### Interview assent form

**School of Human and Community Development**

*Private Bag 3, Wits 2050, Johannesburg, South Africa*

*Tel: (011) 350-2632*

I, _____, assent to be interviewed by Renate Gericke, Nonhlanhla Nkosi, Thato Mmatli, Lexi Plitt or Megan Robinson for their investigation of love, hate and others feelings felt in relation to how secure I feel in the world, and I understand:

- what this research is about;
- that Renate will read my hospital file;
- that participation in this interview is voluntary;
- that I may refuse to answer any questions I would prefer not to;
- that I may withdraw from the study at any time;
- that there will be no negative consequences if I decide later that I don't want to take part;
- that my name or any information that could identify me won't be used in the research;
- where quotes are used no-one will be able to tell that they are my words;
- that there are no direct benefits to participating in this study;
- that there are no known risks associated with this study.

Signed: _____

Date: _____

## 7.8 Assent form for the children at the children's homes

### Interview assent form

**School of Human and Community Development**

*Private Bag 3, Wits 2050, Johannesburg, South Africa*

*Tel: (011) 350-2632*

I, _____, assent to be interviewed by Renate Gericke, Lexi Plitt or Megan Robinson for their investigation of love, hate and others feelings felt in relation to how secure I feel in the world, and I understand:

- what this research is about;
- that participation in this interview is voluntary;
- that I may refuse to answer any questions I would prefer not to;
- that I may withdraw from the study at any time;
- that there will be no negative consequences if I decide later that I don't want to take part;
- that my name or any information that could identify me won't be used in the research;
- where quotes are used no-one will be able to tell that they are my words;
- that there are no direct benefits to participating in this study;
- that there are no known risks associated with this study.

Signed: _____

Date: _____

## 7.9 Permission Letter from Rahima Moosa Mother and Child Hospital

DEPARTMENT OF HEALTH

PRIVATE BAG X20
NEWCLARE
2112

Enquiries: Mrs. S. Jordaan
Tel: (011) 470 – 9030/4
Fax: (011) 477 4117

School of Human & Community Development
University of the Witswatersrand
Private Bag 3
WITS 2050

Re: Permission to conduct a comprehensive needs assessment on relationship and interrelationship between attachment types, emotion, ego functioning, object relations and typical defenses employed.

Dear Renate Gericke

Permission is granted for you to conduct the above research as indicated in your request provided:

1. The Rahima Moosa hospital will not in anyway incur or inherit costs as a result of the said study.
2. Your study shall not disrupt services at the study site.
3. Strict confidentiality shall be observed at all times.
4. Informed consent shall be solicited from patients participating in your study.
5. NO file should leave the records department and/or the hospital premises.

Arrangement will be made with recordkeeping clerks so that you could occupy space in their department.

Kindly forward this office with the results of your study on completion of the research.

Yours sincerely,

pp

CHIEF EXECUTIVE OFFICER
SJ/cj. 2010-07- 20

ADDRESS: Cnr. FUEL & OUDSTHOORN STREET CORONATIONVILLE 2093

## 7.10 Permission Letter from Johannesburg Children's Home

I, Narisha Govende,

in the position of Director

hereby grant Renate Gericke permission to conduct her research in our home. (Johannesburg Childrens' Home)

Govede

Signed

24/1/11

Date.

THANK-YOU FOR YOUR TIME.

## 7.11 Permission Letter from Abraham Kriel Children's Home

I, Yolandé Bosman,

in the position of Program Manager : Social Work

hereby grant Renate Gericke permission to conduct her research in our home. (Abraham Kriel Childrens' Home)

Signed

10 / 02 / 2011

Date.

THANK-YOU FOR YOUR TIME.

## 7.12 Permission Letter from TLC children's home

I, GEERDINA (THEA) THERESA FRANCISCA JARVIS

in the position of FOUNDER / DIRECTOR

hereby grant Renate Gericke permission to conduct her research in our home. (The Love of Christ Ministries)

Signed

19/01/2011

Date.

THANK-YOU FOR YOUR TIME.

## 7.13 Permission Letter from Jacaranda Children's home

27/01 2011 11:01 FAX 0001/0002

Jakaranda
Kinder en Gesinsorg Maatskappy
Child and Family Care Centre
Reg. Kinderhuis/Children's Home

Privaatsak/Private Bag x11
Lynn East
0039
Talitha Kumi str
East Lynne

Tel:(012) 800-4700
Faks/Fax:(012) 800-4443
www.jacarandachildren.co.za

NPO Reg. nr 001-649NPO
Art.21 Mpy./ Sec. 21 Co. Reg nr: 2001/016848/08

FAKS / FAX

AAN / TO : University of Witwatersrand

VIR AANDAG / FOR ATT : Renate Cericke

DATUM / DATE : 27/1/11

FAKSNO / FAX NO : 011 7174559

TOTAAL BL'E (INSL HIERDIE EEN) /
TOTAL PAGES (INCL THIS ONE) : 2

BOODSKAP / MESSAGE :

Renate

The consent for you research. Permission was granted

Groetemre

VRIENDELIKE GROETE / KIND REGARDS

I, Gerda v/d Merwe,

in the position of Manager: Social Work Services

hereby grant Renate Gericke permission to conduct her research in our home.

Signed

27/1/11

Date.

**THANK-YOU FOR YOUR TIME.**

## 7.14 Medical Ethics Clearance Certificate

**UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG**
Division of the Deputy Registrar (Research)

**HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)**
R14/49 Miss Megan M Robinson

| | |
|---|---|
| **CLEARANCE CERTIFICATE** | M110748 |
| **PROJECT** | The Relationship between Attachment Type, Defense Style and the Range amd Intensity of Emotions Experiences durig Middle Childhood |
| **INVESTIGATORS** | Miss Megan M Robinson. |
| **DEPARTMENT** | Psychology Department |
| **DATE CONSIDERED** | 29/07/2011 |
| **M1107480DECISION OF THE COMMITTEE*** | Approved unconditonally |

**Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.**

**DATE** 08/08/2011 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Ms Renate Gericke

---

**DECLARATION OF INVESTIGATOR(S)**

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**
PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

## 7.15 Distribution Analyses: Tests for Normality

### Distribution analysis of: TOTIMM, TOTMAT, DEFTOT, EMTOT, TOT_POS, TOT_NEG

**The UNIVARIATE Procedure**

**Variable: TOTIMM**

| Basic Statistical Measures | | | |
|---|---|---|---|
| **Location** | | **Variability** | |
| **Mean** | 16.97656 | **Std Deviation** | 4.77961 |
| **Median** | 17.50000 | **Variance** | 22.84468 |
| **Mode** | 17.50000 | **Range** | 22.00000 |
| | | **Interquartile Range** | 6.75000 |

**Note: The mode displayed is the smallest of 2 modes with a count of 5.**

| Basic Confidence Limits Assuming Normality | | | |
|---|---|---|---|
| **Parameter** | **Estimate** | **95% Confidence Limits** | |
| **Mean** | 16.97656 | 15.78265 | 18.17047 |
| **Std Deviation** | 4.77961 | 4.07126 | 5.78868 |
| **Variance** | 22.84468 | 16.57517 | 33.50886 |

| Tests for Location: Mu0=0 | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Student's t** | **t** | 28.41497 | **Pr > \|t\|** | <.0001 |
| **Sign** | **M** | 32 | **Pr >= \|M\|** | <.0001 |
| **Signed Rank** | **S** | 1040 | **Pr >= \|S\|** | <.0001 |

| Tests for Normality | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Shapiro-Wilk** | **W** | 0.984751 | **Pr < W** | 0.6156 |
| **Kolmogorov-Smirnov** | **D** | 0.090927 | **Pr > D** | >0.1500 |
| **Cramer-von Mises** | **W-Sq** | 0.073303 | **Pr > W-Sq** | >0.2500 |
| **Anderson-Darling** | **A-Sq** | 0.397369 | **Pr > A-Sq** | >0.2500 |

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### Distribution analysis of: TOTIMM, TOTMAT, DEFTOT, EMTOT, TOT_POS, TOT_NEG

**The UNIVARIATE Procedure**

**Fitted Normal Distribution for TOTIMM**

| Parameters for Normal Distribution | | |
|---|---|---|
| **Parameter** | **Symbol** | **Estimate** |
| **Mean** | Mu | 16.97656 |
| **Std Dev** | Sigma | 4.779611 |

| Goodness-of-Fit Tests for Normal Distribution | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Kolmogorov-Smirnov** | **D** | 0.09092734 | **Pr > D** | >0.150 |
| **Cramer-von Mises** | **W-Sq** | 0.07330252 | **Pr > W-Sq** | >0.250 |
| **Anderson-Darling** | **A-Sq** | 0.39736937 | **Pr > A-Sq** | >0.250 |

| Quantiles for Normal Distribution | |
|---|---|
| **Percent** | **Quantile** |

| | Observed | Estimated |
|---|---|---|
| **1.0** | 5.50000 | 5.85752 |
| **5.0** | 9.00000 | 9.11480 |
| **10.0** | 10.00000 | 10.85124 |
| **25.0** | 13.25000 | 13.75276 |
| **50.0** | 17.50000 | 16.97656 |
| **75.0** | 20.00000 | 20.20036 |
| **90.0** | 22.00000 | 23.10188 |
| **95.0** | 24.00000 | 24.83832 |
| **99.0** | 27.50000 | 28.09560 |

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## Distribution analysis of: TOTIMM, TOTMAT, DEFTOT, EMTOT, TOT_POS, TOT_NEG

**The UNIVARIATE Procedure**

**Variable: TOTMAT**

| Basic Statistical Measures | | | |
|---|---|---|---|
| **Location** | | **Variability** | |
| **Mean** | 5.500000 | **Std Deviation** | 1.80827 |
| **Median** | 5.500000 | **Variance** | 3.26984 |
| **Mode** | 6.500000 | **Range** | 8.00000 |
| | | **Interquartile Range** | 2.00000 |

| Basic Confidence Limits Assuming Normality | | | |
|---|---|---|---|
| **Parameter** | **Estimate** | **95% Confidence Limits** | |
| **Mean** | 5.50000 | 5.04831 | 5.95169 |
| **Std Deviation** | 1.80827 | 1.54028 | 2.19003 |
| **Variance** | 3.26984 | 2.37246 | 4.79624 |

| Tests for Location: Mu0=0 | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Student's t** | **t** | 24.33265 | **Pr > \|t\|** | <.0001 |
| **Sign** | **M** | 32 | **Pr >= \|M\|** | <.0001 |
| **Signed Rank** | **S** | 1040 | **Pr >= \|S\|** | <.0001 |

| Tests for Normality | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Shapiro-Wilk** | **W** | 0.95577 | **Pr < W** | 0.0222 |
| **Kolmogorov-Smirnov** | **D** | 0.118252 | **Pr > D** | 0.0246 |
| **Cramer-von Mises** | **W-Sq** | 0.169102 | **Pr > W-Sq** | 0.0138 |
| **Anderson-Darling** | **A-Sq** | 1.03218 | **Pr > A-Sq** | 0.0096 |

Generated by the SAS System ('Local', XP_PRO) on 19 September 2011 at 09:59:30 AM

## Distribution analysis of: TOTIMM, TOTMAT, DEFTOT, EMTOT, TOT_POS, TOT_NEG

**The UNIVARIATE Procedure**

**Fitted Normal Distribution for TOTMAT**

| Parameters for Normal Distribution | | |
|---|---|---|
| **Parameter** | **Symbol** | **Estimate** |
| **Mean** | Mu | 5.5 |

| Std Dev | Sigma | 1.80827 |
|---|---|---|

| Goodness-of-Fit Tests for Normal Distribution | | | | |
|---|---|---|---|---|
| Test | Statistic | | p Value | |
| Kolmogorov-Smirnov | D | 0.11825168 | Pr > D | 0.025 |
| Cramer-von Mises | W-Sq | 0.16910250 | Pr > W-Sq | 0.014 |
| Anderson-Darling | A-Sq | 1.03218020 | Pr > A-Sq | 0.010 |

| Quantiles for Normal Distribution | | |
|---|---|---|
| | Quantile | |
| Percent | Observed | Estimated |
| 1.0 | 1.00000 | 1.29333 |
| 5.0 | 2.00000 | 2.52566 |
| 10.0 | 2.50000 | 3.18261 |
| 25.0 | 4.50000 | 4.28034 |
| 50.0 | 5.50000 | 5.50000 |
| 75.0 | 6.50000 | 6.71966 |
| 90.0 | 8.00000 | 7.81739 |
| 95.0 | 8.00000 | 8.47434 |
| 99.0 | 9.00000 | 9.70667 |

Generated by the SAS System ('Local', XP_PRO) on 19 September 2011 at 09:59:30 AM

## Distribution analysis of: TOTIMM, TOTMAT, DEFTOT, EMTOT, TOT_POS, TOT_NEG

**The UNIVARIATE Procedure**

**Variable: DEFTOT**

| Basic Statistical Measures | | | |
|---|---|---|---|
| Location | | Variability | |
| Mean | 22.56250 | Std Deviation | 5.02494 |
| Median | 23.00000 | Variance | 25.25000 |
| Mode | 22.50000 | Range | 22.50000 |
| | | Interquartile Range | 7.00000 |

| Basic Confidence Limits Assuming Normality | | | |
|---|---|---|---|
| Parameter | Estimate | 95% Confidence Limits | |
| Mean | 22.56250 | 21.30731 | 23.81769 |
| Std Deviation | 5.02494 | 4.28023 | 6.08580 |
| Variance | 25.25000 | 18.32037 | 37.03702 |

| Tests for Location: Mu0=0 | | | | |
|---|---|---|---|---|
| Test | Statistic | | p Value | |
| Student's t | t | 35.92084 | Pr > \|t\| | <.0001 |
| Sign | M | 32 | Pr >= \|M\| | <.0001 |
| Signed Rank | S | 1040 | Pr >= \|S\| | <.0001 |

| Tests for Normality | | | | |
|---|---|---|---|---|
| Test | Statistic | | p Value | |
| Shapiro-Wilk | W | 0.980496 | Pr < W | 0.4057 |
| Kolmogorov-Smirnov | D | 0.120038 | Pr > D | 0.0218 |
| Cramer-von Mises | W-Sq | 0.092956 | Pr > W-Sq | 0.1397 |
| Anderson-Darling | A-Sq | 0.50333 | Pr > A-Sq | 0.2066 |

Generated by the SAS System ('Local', XP_PRO) on 19 September 2011 at 09:59:30 AM

## Distribution analysis of: TOTIMM, TOTMAT, DEFTOT, EMTOT, TOT_POS, TOT_NEG

**The UNIVARIATE Procedure**

**Fitted Normal Distribution for DEFTOT**

| Parameters for Normal Distribution | | |
|---|---|---|
| **Parameter** | **Symbol** | **Estimate** |
| **Mean** | Mu | 22.5625 |
| **Std Dev** | Sigma | 5.024938 |

| Goodness-of-Fit Tests for Normal Distribution | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Kolmogorov-Smirnov** | **D** | 0.12003810 | **Pr > D** | 0.022 |
| **Cramer-von Mises** | **W-Sq** | 0.09295642 | **Pr > W-Sq** | 0.140 |
| **Anderson-Darling** | **A-Sq** | 0.50332965 | **Pr > A-Sq** | 0.207 |

| Quantiles for Normal Distribution | | |
|---|---|---|
| | **Quantile** | |
| **Percent** | **Observed** | **Estimated** |
| **1.0** | 12.0000 | 10.8727 |
| **5.0** | 14.5000 | 14.2972 |
| **10.0** | 15.0000 | 16.1228 |
| **25.0** | 18.7500 | 19.1732 |
| **50.0** | 23.0000 | 22.5625 |
| **75.0** | 25.7500 | 25.9518 |
| **90.0** | 28.5000 | 29.0022 |
| **95.0** | 29.5000 | 30.8278 |
| **99.0** | 34.5000 | 34.2523 |

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## Distribution analysis of: TOTIMM, TOTMAT, DEFTOT, EMTOT, TOT_POS, TOT_NEG

**The UNIVARIATE Procedure**

**Variable: EMTOT**

| Basic Statistical Measures | | | |
|---|---|---|---|
| **Location** | | **Variability** | |
| **Mean** | 23.12500 | **Std Deviation** | 7.04521 |
| **Median** | 23.00000 | **Variance** | 49.63492 |
| **Mode** | 23.00000 | **Range** | 35.00000 |
| | | **Interquartile Range** | 8.00000 |

| Basic Confidence Limits Assuming Normality | | | |
|---|---|---|---|
| **Parameter** | **Estimate** | **95% Confidence Limits** | |
| **Mean** | 23.12500 | 21.36516 | 24.88484 |
| **Std Deviation** | 7.04521 | 6.00109 | 8.53259 |
| **Variance** | 49.63492 | 36.01307 | 72.80512 |

| Tests for Location: Mu0=0 | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Student's t** | **t** | 26.25899 | **Pr > \|t\|** | <.0001 |
| **Sign** | **M** | 32 | **Pr >= \|M\|** | <.0001 |
| **Signed Rank** | **S** | 1040 | **Pr >= \|S\|** | <.0001 |

| Tests for Normality | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Shapiro-Wilk** | **W** | 0.984041 | **Pr < W** | 0.5774 |
| **Kolmogorov-Smirnov** | **D** | 0.088231 | **Pr > D** | >0.1500 |
| **Cramer-von Mises** | **W-Sq** | 0.069879 | **Pr > W-Sq** | >0.2500 |
| **Anderson-Darling** | **A-Sq** | 0.420672 | **Pr > A-Sq** | >0.2500 |

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## Distribution analysis of: TOTIMM, TOTMAT, DEFTOT, EMTOT, TOT_POS, TOT_NEG

**The UNIVARIATE Procedure**

**Fitted Normal Distribution for EMTOT**

| Parameters for Normal Distribution | | |
|---|---|---|
| **Parameter** | **Symbol** | **Estimate** |
| **Mean** | Mu | 23.125 |
| **Std Dev** | Sigma | 7.045206 |

| Goodness-of-Fit Tests for Normal Distribution | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Kolmogorov-Smirnov** | **D** | 0.08823124 | **Pr > D** | >0.150 |
| **Cramer-von Mises** | **W-Sq** | 0.06987939 | **Pr > W-Sq** | >0.250 |
| **Anderson-Darling** | **A-Sq** | 0.42067190 | **Pr > A-Sq** | >0.250 |

| Quantiles for Normal Distribution | | |
|---|---|---|
| | **Quantile** | |
| **Percent** | **Observed** | **Estimated** |
| **1.0** | 7.00000 | 6.73540 |
| **5.0** | 12.00000 | 11.53667 |
| **10.0** | 14.00000 | 14.09621 |
| **25.0** | 19.00000 | 18.37308 |
| **50.0** | 23.00000 | 23.12500 |
| **75.0** | 27.00000 | 27.87692 |
| **90.0** | 32.00000 | 32.15379 |
| **95.0** | 36.00000 | 34.71333 |
| **99.0** | 42.00000 | 39.51460 |

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## Distribution analysis of: TOTIMM, TOTMAT, DEFTOT, EMTOT, TOT_POS, TOT_NEG

**The UNIVARIATE Procedure**

**Variable: TOT_POS**

| Basic Statistical Measures | | | |
|---|---|---|---|
| **Location** | | **Variability** | |
| **Mean** | 6.921875 | **Std Deviation** | 2.40571 |
| **Median** | 7.000000 | **Variance** | 5.78745 |
| **Mode** | 6.000000 | **Range** | 11.00000 |
| | | **Interquartile Range** | 3.50000 |

| Basic Confidence Limits Assuming Normality | | |
|---|---|---|
| **Parameter** | **Estimate** | **95% Confidence Limits** |

| | | | |
|---|---|---|---|
| **Mean** | 6.92188 | 6.32095 | 7.52280 |
| **Std Deviation** | 2.40571 | 2.04918 | 2.91361 |
| **Variance** | 5.78745 | 4.19914 | 8.48910 |

| Tests for Location: Mu0=0 | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Student's t** | **t** | 23.01813 | **Pr > \|t\|** | <.0001 |
| **Sign** | **M** | 32 | **Pr >= \|M\|** | <.0001 |
| **Signed Rank** | **S** | 1040 | **Pr >= \|S\|** | <.0001 |

| Tests for Normality | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Shapiro-Wilk** | **W** | 0.970962 | **Pr < W** | 0.1358 |
| **Kolmogorov-Smirnov** | **D** | 0.102805 | **Pr > D** | 0.0912 |
| **Cramer-von Mises** | **W-Sq** | 0.127752 | **Pr > W-Sq** | 0.0469 |
| **Anderson-Darling** | **A-Sq** | 0.739634 | **Pr > A-Sq** | 0.0514 |

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## Distribution analysis of: TOTIMM, TOTMAT, DEFTOT, EMTOT, TOT_POS, TOT_NEG

**The UNIVARIATE Procedure**

**Fitted Normal Distribution for TOT_POS**

| Parameters for Normal Distribution | | |
|---|---|---|
| **Parameter** | **Symbol** | **Estimate** |
| **Mean** | Mu | 6.921875 |
| **Std Dev** | Sigma | 2.405712 |

| Goodness-of-Fit Tests for Normal Distribution | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Kolmogorov-Smirnov** | **D** | 0.10280503 | **Pr > D** | 0.091 |
| **Cramer-von Mises** | **W-Sq** | 0.12775172 | **Pr > W-Sq** | 0.047 |
| **Anderson-Darling** | **A-Sq** | 0.73963358 | **Pr > A-Sq** | 0.051 |

| Quantiles for Normal Distribution | | |
|---|---|---|
| | **Quantile** | |
| **Percent** | **Observed** | **Estimated** |
| **1.0** | 1.00000 | 1.32535 |
| **5.0** | 3.00000 | 2.96483 |
| **10.0** | 4.00000 | 3.83883 |
| **25.0** | 5.50000 | 5.29925 |
| **50.0** | 7.00000 | 6.92188 |
| **75.0** | 9.00000 | 8.54450 |
| **90.0** | 10.00000 | 10.00492 |
| **95.0** | 11.00000 | 10.87892 |
| **99.0** | 12.00000 | 12.51840 |

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## Distribution analysis of: TOTIMM, TOTMAT, DEFTOT, EMTOT, TOT_POS, TOT_NEG

**The UNIVARIATE Procedure**

**Variable: TOT_NEG**

| Basic Statistical Measures | | | |
|---|---|---|---|
| **Location** | | **Variability** | |
| **Mean** | 16.29688 | **Std Deviation** | 6.75578 |
| **Median** | 17.00000 | **Variance** | 45.64063 |
| **Mode** | 14.00000 | **Range** | 34.00000 |
| | | **Interquartile Range** | 8.50000 |

| Basic Confidence Limits Assuming Normality | | | |
|---|---|---|---|
| **Parameter** | **Estimate** | **95% Confidence Limits** | |
| **Mean** | 16.29688 | 14.60933 | 17.98442 |
| **Std Deviation** | 6.75578 | 5.75456 | 8.18207 |
| **Variance** | 45.64063 | 33.11497 | 66.94624 |

| Tests for Location: Mu0=0 | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Student's t** | **t** | 19.29828 | **Pr > \|t\|** | <.0001 |
| **Sign** | **M** | 31.5 | **Pr >= \|M\|** | <.0001 |
| **Signed Rank** | **S** | 1008 | **Pr >= \|S\|** | <.0001 |

| Tests for Normality | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Shapiro-Wilk** | **W** | 0.989394 | **Pr < W** | 0.8598 |
| **Kolmogorov-Smirnov** | **D** | 0.101308 | **Pr > D** | 0.0992 |
| **Cramer-von Mises** | **W-Sq** | 0.053428 | **Pr > W-Sq** | >0.2500 |
| **Anderson-Darling** | **A-Sq** | 0.31166 | **Pr > A-Sq** | >0.2500 |

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## Distribution analysis of: TOTIMM, TOTMAT, DEFTOT, EMTOT, TOT_POS, TOT_NEG

**The UNIVARIATE Procedure**

**Fitted Normal Distribution for TOT_NEG**

| Parameters for Normal Distribution | | |
|---|---|---|
| **Parameter** | **Symbol** | **Estimate** |
| **Mean** | Mu | 16.29688 |
| **Std Dev** | Sigma | 6.755785 |

| Goodness-of-Fit Tests for Normal Distribution | | | | |
|---|---|---|---|---|
| **Test** | **Statistic** | | **p Value** | |
| **Kolmogorov-Smirnov** | **D** | 0.10130838 | **Pr > D** | 0.099 |
| **Cramer-von Mises** | **W-Sq** | 0.05342846 | **Pr > W-Sq** | >0.250 |
| **Anderson-Darling** | **A-Sq** | 0.31165981 | **Pr > A-Sq** | >0.250 |

| Quantiles for Normal Distribution | | |
|---|---|---|
| | **Quantile** | |
| **Percent** | **Observed** | **Estimated** |
| **1.0** | 0.0000 | 0.58057 |
| **5.0** | 4.0000 | 5.18460 |
| **10.0** | 7.0000 | 7.63899 |
| **25.0** | 12.5000 | 11.74017 |
| **50.0** | 17.0000 | 16.29688 |
| **75.0** | 21.0000 | 20.85358 |
| **90.0** | 23.0000 | 24.95476 |
| **95.0** | 27.0000 | 27.40915 |

| | | |
|---|---|---|
| **99.0** | 34.0000 | 32.01318 |