REPRESENTATIONS OF SIGNIFICANT OTHERS
AND THE ACTIVATION OF INTERPERSONAL SCRIPTS

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DECLARATION

I, the undersigned, hereby declare that the work contained in this dissertation is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

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ABSTRACT

It is a general assumption in psychology that past social relationships and experiences influence present social behaviour. With attachment theory and current social-cognitive theory as conceptual basis, the present study focused on the association between past experiences with significant others and the current processing of interpersonal information. By means of a 2x3x4 experimental design the study investigated the influence of chronic accessibility and subliminal priming (of significant other representations) on the accuracy and speed of processing scripted interpersonal information. One hundred and thirty seven university students took part in two sessions no more than two weeks apart. In session one they completed the Attachment Style Questionnaire (ASQ; Feeny, Noller & Hanrahan, 1994), and provided the names of positive and negative significant others. According to a median split of the Confidence Scale of the ASQ, they were assigned to a chronic positive or a chronic negative group, assuming that the information based on predominantly positive or negative experiences with positive or negative significant others will be chronically more accessible. In session two, in an individual computer task, they were subliminally primed (33 ms) with a control word or the name of the positive or negative significant other to increase the accessibility of the appropriate memory structures. They were then asked to read a positive, negative, mixed or ambiguous script of an interpersonal event and complete a memory test of 36 interpersonal statements (nine positive, nine negative, nine ambiguous and nine filler statements). The accuracy and response time for every statement was recorded, and the response times of accurate responses for positive and negative scripts were included in the main analysis. Separate univariate analyses of the differences between positive and negative priming per polarity of chronic group and script supported the priming hypothesis. The average response time of the chronic negative group was fastest when they received a negative prime (p = .039), and the positive group was fastest when they received a positive prime (p = .000). The results of a two-way analysis of variance for chronic group and script showed a highly significant interaction effect between chronic group and script (p = .000). When the primes were congruent to the scripts, the chronic groups were significantly faster in recognising statements from a congruent script. The results supported the conjunctive model of priming. The implications of these findings for the understanding of the cognitive structures and processes involved in processing interpersonal information are discussed, with specific reference to relational schemas and attachment working models. Possible directions for future research as well as the application of the results are also described.

OPSOMMING

Dit is 'n algemene aanname in die sielkunde dat sosiale verhoudinge en ervarings uit die verlede 'n invloed het op huidige sosiale gedrag. Vanuit die bindingsteorie en die huidige sosiaal-kognitiewe teorie as konseptuele uitgangspunt, fokus die huidige studie op die assosiasie tussen ervaringe met betekenisvolle persone in die verlede en die huidige prosessering van interpersoonlike inligting. Met behulp van 'n 2x3x4 eksperimentele ontwerp is ondersoek ingestel na die invloed van chroniese toeganklikheid en subliminale opwekking (van geheuevoorstellings van betekenisvolle ander) op die akkuraatheid en spoed waarmee interpersoonlike tekste verwerk word. Eenhonderd-sewe-en-dertig universiteitstudente het deelgeneem aan twee sessies wat nie meer as twee weke na mekaar plaasgevind het nie. Tydens sessie een het die deelnemers die Attachment Style Questionnaire (ASQ; Feeny, Noller & Hanrahan, 1994) voltooi en die name van positiewe en negatiewe betekenisvolle persone voorsien. Op grond van die mediaan-verdeling van die Selfvertroue Skaal van die ASQ is die deelnemers toegewys aan 'n chronies positiewe of chronies negatiewe groep, met die veronderstelling dat inligting gebaseer op oorwegend positiewe of negatiewe ervarings met positiewe of negatiewe betekenisvolle ander deurlopend meer toegankilk sal wees. Tydens sessie twee, wat 'n individuele rekenaartaak behels het, is 'n subliminale stimulus (33 ms) van 'n kontrole-woord, of die naam van 'n positiewe of negatiewe betekenisvolle ander aan hulle aangebied om die toeganklikheid van die toepaslike geheue-strukture verder te verhoog. Daarna is hulle versoek om 'n positiewe, negatiewe, gemengde of dubbelsinnige teks van 'n interpersoonlike gebeurtenis te lees en 'n geheuetoets van 36 stellings te voltooi wat bestaan het uit nege positiewe, nege negatiewe, nege dubbelsinnige en nege neutrale stellings. Die akkuraatheid en reaksiespoed van elke stelling is gemeet en die reaksietyd van die akkurate response op stellings uit positiewe en negatiewe tekste is in die primêre ontleding ingesluit. Die resultate van onafhanklike eenveranderlike ontledings van die verskille tussen positiewe en negatiewe opwekking per polariteit van chroniese groep en teks, het die hipotese van opwekking ondersteun. Die gemiddelde responstyd van die chroniese negatiewe groep was die vinnigste wanneer hulle die negatiewe stimulus ontvang het (p = .039) en die van die positiewe groep was die vinnigste wanneer hulle die positiewe stimulus ontvang het (p = .000). Die resultate van 'n tweerigting variansieontleding van chroniese groep en teks het 'n beduidende interaksie tussen chroniese groep en teks aangedui (p = .000). Wanneer die opwekkingstimuli kongruent met die tekste was, was die chroniese groepe betekenisvol vinniger in die herkenning van stellings van die kongruente teks. Die resultate ondersteun 'n konjunktiewe model van opwekking. Die implikasies van die bevindinge vir die verstaan van die kognitiewe strukture en prosesse betrokke by die verwerking van interpersoonlike inligting word bespreek, met spesifieke verwysing na verhoudingskemas en die gebruiksmodelle in bindingsteorie. Riglyne vir toekomstige navorsing op die gebied word verskaf, en die implikasies vir die praktiese toepassing van die resultate word bespreek.

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CHAPTER 1   INTRODUCTION

1.1   Introduction

"One of the fundamental propositions of modern psychology has been that a primary determinant of how people understand and interpret new stimuli is past knowledge" (Sedikides & Skowronski, 1991; p. 169).

This phenomenon can indeed be observed in everyday social interaction. The features or the behaviour of a newly encountered person may remind one of another person, relationship or interpersonal experience from the past. Such reminders, and the associated expectations, emotions and even behavioural responses are not only based on past experiences, but also influence the present experience.

Stated in terms of social-cognitive theory, personal histories of social relationships and experiences are associated with unique sets of memories, beliefs and expectations that guide (a) how people construe their social world and (b) how they interact with others (Collins & Read, 1994). People will reconstruct past experiences in the present and even respond to the present situation in terms of this reconstruction.

In the next section, a brief historical review of this broad theme is presented, followed by an outline of the objectives of the present study.

1.2   Historical review

It has been a general assumption in psychology for many decades that present social behaviour and social relationships are profoundly influenced by past interpersonal relationships and experiences (see Baldwin, 1992; Bartholomew & Horowitz, 1991; Bowlby, 1969, 1973, 1980; Feeney & Noller, 1990; Freud, 1958/1912; Greenberg & Mitchell, 1983; Guidano & Liotti, 1983; Hazan & Shaver, 1987; Horowitz, 1991; Kelly, 1955; Kiesler, 1996; Luborsky & Crits-Christoph, 1990; Safran & Segal, 1990; Sullivan, 1953).

1.2.1 Psychoanalysis and object relations theory

In terms of the classical Freudian approach, the concept of transference involves the process by which a client in psychotherapy superimposes childhood fantasies and conflicts, based on unconscious psychosexual conflicts with a past significant other, onto the therapist (Freud, 1958/1912). Various developmental psychoanalytic and

object relations theorists expanded the concept of object relations, initially developed by Freud. Object relations theory is concerned with the content and organisation of mental representations of significant others (Diamond & Blatt, 1994; Westen, 1991). Sandler and Rosenblatt (1962) postulated that interpersonal experience lays the foundation for an internal representational world constructed from self- and object representations. This representational world acts as a cognitive map to navigate through different relationships.

Kernberg (1976) described an internalised object relation as including three parts: (a) an image of the other person, (b) an image of the self in interaction with the person, and (c) a feeling influencing both the self-image and the other image, derived from whatever motive or wish is relevant to the interaction. Securely attached young adults described their parents in a more differentiated, elaborated, and integrated manner than insecurely attached young adults did. Dismissing avoidant young adults tended to describe their parents in less differentiated terms, whereas preoccupied young adults provided portrayals that were more ambivalent (Levy, Blatt & Shaver cited in Reis & Patrick, 1996).

1.2.2 Attachment theory

Although Bowlby (1969), who originated attachment theory, focused extensively on parent-child relations in infancy and childhood, he also believed that people's childhood experiences influence their adult personalities and relationships. Attachment theory provides a rich theoretical framework to conceptualise the influence of past relationship experiences on current relationship beliefs, emotions and behaviour, and will be discussed more comprehensively in Chapter 2.

1.2.3 Interpersonal theory

Sullivan (1953) also insisted that human behaviour could only be understood in relation to its historical and current interpersonal contexts. He hypothesised that social behaviour is largely motivated by the desire to be securely related to significant others and assumed that children form personifications of themselves and significant others, based on early relationships with significant others. Dynamisms link the personifications of self and others according to typical relational patterns. The self-system, a secondary dynamism, develops as a product of interpersonal experience. In this model, transference is termed "parataxic distortion" or "parataxis", and involves

the use of such idiosyncratic personifications and dynamisms. The new person is experienced in terms of the significant other, and the interpersonal patterns learned with the significant other are experienced in the new relationship.

In current interpersonal theory a central position is accorded to a construct of self that is interpersonal and transactional in its development and functioning throughout life (Kiesler, 1996). Interpersonal theory incorporates an interactionist position in which a person's behaviours are the products of both predispositions toward transactions, as well as situational-environmental events. The environmental events is dominated by the way the person perceives it (the psychological environment) and the most important class of situations is that of other persons, especially significant others. Increasingly more emphasis is placed on the cognitive events that are central to human interactions (Kiesler, 1996). The interpersonal framework does not focus on the study of the behaviour of an individual in a particular social situation, but rather on the behaviour of persons relating to and interacting in a system with other persons.

Interpersonal behaviour encompasses not merely overt, observable transactions between two individuals; it refers also to the private, unobservable, symbolic (fantasised) interactions and dialogues between self and other. The study of these symbolic interactions attempts to understand not only the nature of the active cognitive schemas, for both the other member of the dyad and other persons more generally, but also the reciprocal relationships of each person's cognitive events to respective action-reaction sequences occurring in the arena of their conjoint behaviour (Kiesler, 1996).

1.2.4 Close relationships

The crucial difference between personal relationships and role relationships with no or little acquaintance is that personal relationships rely on their history. It is the cognitive representation of this history in both partners that provides continuity and allows for security and trust (Banse, 1999). A growing body of research on the attributions and attribution processes in close relationships focuses on the explanations perceivers construct about their significant others (Bradbury & Fincham, 1990; Collins, 1996; Fletcher & Fincham, 1991). Research by Collins (1996) also showed that individuals with different attachment styles are inclined to perceive,

interpret, and explain relationship events in ways consistent with the distinct nature of their models of self and other that have been developed in part on the basis of past experiences with significant others (see also Downey & Feldman, 1996).

1.2.5 Integrated approaches

Based on attachment and interpersonal theories, Safran (1990a, 1990b) developed a model of how repeated relationship experiences lead people to develop interpersonal schemas. It is defined as generic cognitive representations of self-other interpersonal events, rather than representations of self and others in isolation. Safran (1990a) assumed that humans have a wired-in propensity for maintaining relatedness to others and an interpersonal schema can be described as a program to maintain such relatedness.

Horowitz (1991) integrated psychodynamic insights with cognitive principles and argued that people learn role relationship models or schemas of self in interaction with another person. Role-relationship models are conceptualised as combinations of a self-schema, a schema for at least one other person and a script of transactions between them. The schemas of self and other each contain roles, characteristics, traits and value standards (Horowitz, 1991). According to Horowitz (1989) a role-relationship model can contain up to seven elements: a self-schema, the schema of the other, an anticipated action or expressed emotion of the self, the expected response of the other, the reaction of the self to the response of the other and the self-estimation of these reactions and the other's expected self-estimation of these reactions. Horowitz (1991) suggests that person schemata "are structures of meaning that integrate knowledge about self and others. These mental structures may operate consciously and unconsciously to organise thought, complex mood states, self-appraisal and interpersonal actions" (p.1).

Baldwin (1992) reviewed various constructs from diverse theoretical approaches, including psychoanalytic, sociological, family systems and cognitive perspectives, with the core idea that people internalise their experiences with others and this provide a context from which future social circumstances are imagined, approached and interpreted. The construct of mental representations suggests that these integrated representations are formed through actual interpersonal experience, but have an enduring quality and will provide a context from which future interpersonal

experience will be imagined, approached and interpreted. This construct has been used alongside many different but associated terms: e.g. "self-representation", "object representation", "internal working model", "introjected object", "internal object", "representational world", "psychical representation", "schema", "self-schema", "personal-construct system" "life history narrative", "core conflictual relationship theme", and "evocative memory". Each of these terms addresses the representational process in somewhat different language, although with remarkable conceptual overlap (Sperling & Lyons, 1994). The relational schema concept described by Baldwin will be discussed in Chapter 3.

1.3   Transference

Some psychodynamic theorists focus on the transference construct exclusively in the client-therapist relationship and also emphasise the particular importance of parental representations (Luborski & Crits-Christoph, 1990). The "transference" concept can also be understood in a broader sense, to refer to the transfer of memories, expectations or affects about relationships from one situation to another. Singer (1985) suggested that transference reflects the impact of an organised set of beliefs about other people or about oneself in relation to others. The more traditional understanding of transference, namely a particular response within the therapeutic relationship, can then be seen as only one subcategory within the wider array of transference responses (Chen & Andersen, 1999).

According to Reis and Patrick (1996), this seemingly simple notion of internalised relationships is in reality extraordinarily complex, because these mental representations co-ordinate nearly all the social, cognitive and motivational processes that regulate interpersonal behaviour. The research program by Susan Andersen and colleagues (see Andersen & Baum, 1994; Andersen & Cole, 1990; Andersen, Glassman, Chen & Cole, 1995; Andersen, Reznik & Manzella, 1996; Baum & Andersen, 1999; Chen & Andersen, 1999; Chen, Andersen & Hinkley, 1999; Glassman & Andersen, 1999a; Glassman & Andersen, 1999b; Hinkley & Andersen, 1996) demonstrated, under experimental conditions, the multi-faceted effects of prior experiences with significant others on present-day interpersonal life. The social-cognitive model of transference and the supporting research program will be reviewed in Chapter 3.

According to the social-cognitive model of transference (Andersen & Glassman, 1996) transference occurs in everyday social judgement and can be based on all types of significant others – a parent, sibling, other family member, best friend, romantic partner, former lover, mentor, etc. Although the process of transference operates uniformly across individuals, the content of transference depends on the particular significant other representation and differs across individuals. It is also assumed that the content of the representation need not be static, but may change over time (Andersen & Berk, 1998).

1.4   Objective of the present study

Despite the general assumption that an individual's social behaviour and social relationships are influenced by his or her mental representation of others and in particular the significant other people in his or her life, relatively little empirical studies have been done on how such "inner audiences" are invoked and the cognitive mechanisms that underlie their influence (Shah, 2003a).

The present study therefore empirically investigates the association between past experiences with significant others, the available significant other representations and the current processing of interpersonal information. It thereby aims to contribute to the understanding of how experiences with significant others are internally represented and subsequently activated to influence social perception and behaviour.

More specifically, the study will investigate the chronically accessible memory structures of individuals with different relationship histories, as well as the temporary activation of these structures by means of subliminal priming. The effect on the subsequent processing of congruent interpersonal information will also be examined. The study also aims to demonstrate that different elements of the structures representing interpersonal information are connected in memory. The interaction between the chronic accessibility and temporary activation of congruent information will also be studied.

1.5   Outline of dissertation

Theoretically the study is based within social-cognitive theory, and integrates the theory and basic empirical from the social-cognitive approach with concepts from attachment theory. Consequently, a selective review of attachment theory will be

presented in Chapter 2. The main emphasis will be on the concept of working models, also referred to as mental representations of the relational patterns with significant others (Perlman & Bartholomew, 1994). This will be followed in Chapter 3 by a review of the social-cognitive theory, with specific emphasis on the relational schema concept described by Baldwin (1992), and the social-cognitive model of transference formulated by Andersen and Baum (1994). Following a summary of the selected literature the problem statement, research questions, and the related objectives and hypotheses based on this review will be presented and discussed in Chapter 4. Chapter 5 describes the method of research, experimental design, participants, apparatus, measures and procedures. The results will be presented in Chapter 6, while Chapter 7 provides a discussion and interpretation of the findings in terms of the available research.

CHAPTER 2   ATTACHMENT THEORY

Attachment theory will be used as a theoretical framework to demonstrate how memory representations of early relationship histories shape how people think about and behave in subsequent interpersonal situations. The literature review will emphasise the role of internal representations in explaining different styles in the processing of interpersonal information.

2.1   The attachment system

According to attachment theory (Bowlby, 1969), children are born with an ethnologically determined need to seek and maintain proximity with caregivers. Several interconnected and highly adaptive regulatory systems are hardwired into human infants. The mechanism, through which proximity is achieved, is the regulation of emotional states. When the attachment system becomes activated, negative emotions will activate proximity seeking that will only be terminated once caregivers are sufficiently close or available and emotional contentment has been restored. Therefore, the systems designed to maintain proximity to caregivers, contain affective, cognitive and behavioural components.

According to Bowlby (1969) the attachment system serves a number of distinct functions: (a) proximity maintenance: staying near the caregiver; (b) separation protest: resisting separations from the caregiver; (c) safe haven: turning to the caregiver for comfort, support and reassurance, especially during times of stress or danger, and (d) secure base: engaging in exploring the environment and other non-attachment behaviour when feeling safe and secure because caregivers are sufficiently close or available.

In recent literature the attachment system has been conceptualised as (a) a state-based set of distressing symptoms that emerge when the attachment figure is not available, (b) a trait-based tendency to form particular relationships and respond to these relationships similarly, or as (c) an interactive process between two people in an ongoing relationship (Berman & Sperling, 1994). Hazan and Shaver (1994) described adult attachment in terms of (a) internal representations or models that guide interpersonal behaviour and information processing or (b) characteristic strategies that individuals use to maintain feeling secure. It is this enduring tendency

of an individual to respond in a characteristic style to relationship situations that is the focus of the present discussion.

2.2   Internal working models

As children develop their own history of attachment relationships, they develop mental representations of themselves and the significant people in their lives. Stern (1985) explained this process in the following way. After a person experienced a number of similar types of interpersonal interactions, these experiences are generalised to form a prototype or structure about the likely course of events in future. In this way, different interpersonal experiences become organised into representations of interactions that have been generalised. These representations reflect children's interactions with attachment figures and organise their memory in terms of their attempts to gain security, and the typical outcomes of such attempts (Main, Kaplan & Cassidy, 1985). Internal working models are expected to be fairly accurate reflections of the social reality as experienced by the individual (Bowlby, 1973).

Bowlby (1973) considered the representations to be "working" models because they (a) organise internal appraisals and interpersonal behaviours along lines adaptive in the person's earlier development, and (b) thereby shape the person's later social experiences in schema-consistent ways. Working models help individuals to process interpersonal information in a sufficient and self-protective manner (Lopez, 1995). Main et al. (1985) defined attachment working models as "a set of conscious and/or unconscious rules for the organisation of information relevant to attachment and for obtaining or limiting access to that information, that is, to information regarding attachment related experiences, feelings, and ideation" (pp. 66-67).

This internalised set of beliefs integrates perceptions of one's own competence and acceptability (self-model) together with expectations of the availability and responsiveness of attachment figures (other model). The model of self and model of others are likely to be complementary. Working models define the personal rules by which two individuals interact and allow the individual to anticipate what the other person will do. Because a new person could be perceived in terms of an existing model, the rules may or may not be accurate or appropriate. It still enables

individuals to act in new situations without having to experience it as completely unfamiliar (Main et al., 1985).

Collins and Read (1994) proposed that internal working models have four inter-related components: (a) autobiographical memories of attachment related experiences, including representations of specific interactions and episodes that can be reconstructed and reinterpreted; (b) beliefs, attitudes, and expectations about self and others, abstracted from attachment experiences; (c) a characteristic hierarchy of attachment-related goals and needs that become activated in particular social situations; and (d) a set of behavioural strategies and plans for achieving these attachment-related goals.

Berman and Sperling (1994) defined internal working models as cognitive-affective-motivational schemata built from the individuals' experience of their interpersonal world. (a) It can be predicted that working models will influence cognitive response patterns through the basic processes of selective attention, selective memory and recall, and selective inference and explanation (Collins & Read, 1994). (b) Working models are also likely to guide affective responses. (c) The cognitive and emotional processing of attachment-related information may elicit particular available behaviour responses that will serve the particular goals and needs of the individual. When the working model becomes activated, this behavioural response may be elicited automatically (Collins & Read, 1994).

It is therefore clear that internal working models must be fairly complex structures. Research to date demonstrated that they include or influence symbolic representations of people and relationships, social perception, affective predispositions, social behaviour, and defences. The major current challenges in the field of attachment research are to continue clarifying the construct of working models and finding ways to assess it reliably (Rothbard & Shaver, 1994).

2.3   Different attachment styles

Individual differences in attachment style observed in children and adults are attributed to different attachment experiences and the subsequent differences in working models of self and others. Traditionally researchers on attachment have focused on three attachment patterns, namely the secure, anxious-avoidant and anxious-ambivalent styles (Ainsworth, Blehar, Waters & Wall, 1978). Main et al.,

(1985) also identified three primary patterns: secure-autonomous, preoccupied-with-attachment, and dismissing-of-attachment. Hazan and Shaver (1987) proposed the three adult romantic analogues of the major styles. Main and Solomon (1985) proposed a fourth category termed disorganised, that contains elements of both the preoccupied and dismissing types. Bartholomew and Horowitz (1991) suggested that attachment categories may be considered as combinations of models of self and others, resulting in a fourfold categorisation: (a) secure and comfortable with intimacy and autonomy, (b) preoccupied with relationships, (c) dismissing of intimacy, and (d) fearful of intimacy. Work by Feeney, Noller and Hanrahan (1994) provided support for the four styles hypothesised by Bartholomew and Horowitz (1991), and was able to uncover two underlying dimensions reflecting models of self and models of others. They noted that the mental models of some individuals (the fearful group) combine all the aspects of insecurity. Although the central distinction between secure and insecure attachment was prominent, the insecure groups were not as clearly differentiated from one another, as the theoretical models of attachment would suggest.

2.4   Continuity in attachment styles

There have been impressive demonstrations of longitudinal (Elicker, Englund & Scroufe, 1992; Grossman & Grossman, 1991; Kirkpatrick & Hazan, 1994; Scarfe & Bartholomew, 1994) and even cross-generational continuity in attachment styles (Benoit & Parker, 1994; Fonagy, Steele & Steele, 1991; Main et al., 1985). This stability is usually attributed to the impact of internal working models because it explains how earlier interactions can be used to predict and control present and future interactions (Reis & Patrick, 1996).

During the early years of life, attachment models are still relatively open to change if the quality of care-giving changes. Given a consistent pattern of attachment experiences through childhood and adolescence, models become more established through repeated experience. Gradually the working model becomes more a property of the person than the relationship. Once formed, the working models tend to operate automatically and unconsciously, thereby making them even more difficult to change (Collins & Read, 1994).

According to Collins and Read (1994), several factors contribute to this stability. (a) As mentioned before, information-processing bias predisposes people to construe the world in ways that support their existing models. (b) People are also likely to create social environments that confirm their existing representations of self and others. (c) People may also select environments that are consistent with their expectations about self and others. Internal working models tend to resist change, particularly in the case of insecure models, which are thought to be rigid and inflexible (Crittenden, 1990).

2.5 Retrospective studies of early attachment relationships

Hindy and Schwarz (1994) demonstrated that anxious romantic attachment in males and females can be associated with a number of particular parental and family antecedents (for example hostility and control, rejection, low emotional attachment). In a study of attachment histories of college-age and older adult subjects (Hazan & Shaver, 1987), the recollections of childhood relationships with parents differed systematically across the secure, avoidant and anxious/ambivalent attachment groups. Secure subjects described respectful, responsive, caring, accepting, confident and undemanding mothers, whereas insecure (avoidant and anxious/ ambivalent) subjects described almost the opposite profile. Avoidant subjects described their mothers as being cold and rejecting, and anxious/ambivalent subjects described their fathers as having been "unfair". Feeney and Noller (1990) and Mikulincer, Florian and Tolmacz (1990) have replicated these results.

Rothbart and Shaver (1994) summarised the findings of several self-report studies as follows. (a) Adults classified as secure described their primary attachment figures in childhood as having been generally warm, responsive, available and sensitive. (b) Adults classified as anxious/ ambivalent described their parents as having been warm and loving part of the time, but also inaccessible, unresponsive, intrusive and inconsistent. Issues related to the type of care they received as children continued to preoccupy them as adults. They seem both enmeshed in these issues and resentful or angry toward parents because of it. (c) Avoidant adults described their parents as being less warm and nurturing, relatively uninvolved and at least somewhat rejecting when they were growing up.

Evidence from cross-sectional studies suggested that positive parent-child relationships are associated with more intimate peer relationships and greater interpersonal competence (Batgos & Leadbeater, 1994). College students who were securely attached reported higher levels of social competence and social support than an avoidant group (Kobak & Sceery, 1988). The assumption that early attachment relationships can be functionally related to subsequent adult attachment has thus far been explored by means of retrospective and mostly correlational methods, as well as through studies of intergenerational patterns in the attachment styles of adult parents and their children. Links between the nature of adult's current attachment styles and their retrospective accounts of relationship with parents have been demonstrated by several researchers (Brennan, Shaver, & Tobey, 1991; Carnelley, Pietromonaco, & Jaffe, 1994; Collins & Read, 1990; Feeney & Noller, 1990; Hazan & Shaver, 1987).

Due to the absence of prospective and longitudinal studies following the nature of attachment organisation from infancy to adulthood, the continuity hypothesis has not been critically tested (Hendrick & Hendrick, 1994). There are also concerns about the convergent validity and temporal stability of attachment measures (Lopez, 1995). Baldwin and Fehr (1995) also demonstrated the instability of attachment style ratings, but some of these concerns could be answered (see section 2.11 and Shaver & Norman, 1995).

2.6   Adult attachment behaviour

The major determinants of attachment styles might be similar in childhood and adulthood, originating from relationships with parents and elaborated on and changed in the context of subsequent important relationships (Rothbard & Shaver, 1994). The adult forms of attachment styles would presumably be more complex than the childhood forms. Mental representations of attachment become increasingly complex as relationships within and outside the family provide more opportunities to learn more about oneself and interactions with other people (Collins & Read, 1994). There are two other obvious differences between attachment processes during childhood and adulthood. Children form attachment bonds with parents, while adults form bonds with persons of similar age. Children typically have dependent, asexual attachments with their parents, while adults typically have reciprocal, sexual bonds (Perlman & Bartholomew, 1994).

In general it would be expected that secure adults view others as trustworthy and dependable, the self as lovable and worthy, and relationships as a source of support and comfort. Avoidant adults would be expected to view others as untrustworthy and undependable, the self as either unlovable or (defensively) too good for others, and relationships as either threatening to one's sense of control, not worth the effort or both. Anxious/ambivalent adults would be expected to view others as desirable relationship partners but as largely unpredictable. They should view the self as generally unlovable and close relationships as the primary way in which people can achieve a sense of security. Most of the results obtained by researchers were consistent with these predictions (Bartholomew & Horowitz, 1991; Collins & Read, 1990, 1994; Feeney & Noller, 1990; Hazan & Shaver, 1987).

The attachment system probably also plays an important part in the choice of marital partner and relationship patterns in marriage (Holmes, 1993). Secure subjects sought and provided more emotional and physical support in anxiety provoking situations than avoidant subjects (Simpson, Rholes & Nelligan, 1992). Secure and anxious avoidant subjects were more attracted to a high-disclosing partner than avoidant subjects and reported greater likelihood of disclosing to a high-disclosing partner than a low-disclosing partner (Mikulincer & Nachshon, 1991). Secure and anxious/ambivalent subjects revealed significantly more personal information to high- than to low-disclosing partners, and were significantly more disclosive to high-disclosing partners than were avoidant subjects (Mikulincer & Nachshon, 1991).

A number of studies also investigated patterns of information-processing associated with the different attachment styles. In a lexical decision task, Baldwin, Fehr, Keedian, Seidel and Thompson (1993) found that secure individuals were quicker to identify words associated with positive interpersonal outcomes, whereas avoidant individuals identified negative interpersonal words more quickly. Baldwin, Keelan, Fehr, Enns and Koh-Rangarajoo (1996) also provided results demonstrating the systematic availability and accessibility of mental models with secure and insecure individuals (see also section 4.2.1.2.1). More empirical evidence is however needed demonstrating that people filter interpersonal information through specific working models and then behave in accordance with such models.

2.7   Prototypes or exemplars

It is still a question whether internal working models are stored in memory as prototypes (abstract, summary generalisations about others in general) or exemplars (concrete examples of specific events, partners and relationships). The concept of the working model is weighted towards the view that infant relations with a primary caregiver form a dominant prototypic schema. Other alternative attachments are viewed as secondary and theorists speculate regarding the specific influence of multiple attachments on the working model (Levitt, Coffman, Guacci-Franco & Loveless, 1994). But prototype models have been challenged by alternative models suggesting that categories of information are not represented by a single prototype, but by varying exemplars of the category (Fiske & Taylor, 1991; Smith & Zárate, 1992). From an exemplar model perspective, expectations need not to be based on a specific prototype relationship, but on the degree of similarity between the new relation and one or more of several previous relationships. Exemplar based social network models can account readily for the existence of simultaneous multiple attachment relations (Levitt et al., 1994).

2.8   Network of working models

It is an important premise of attachment theory that the attachment bond is primarily to a specific figure (or small group of figures), but this does not mean that only one working model is available. Children can have somewhat different models for mothers and fathers (Fox, Kimmerly & Schafer, 1991). Bowlby even visualised the coexistence of incompatible models – for example "the good mother who lets me come near to her (if I look after her)", and "the bad mother who rejects me and makes me angry (and who I'll try not to think about)" – which lead to sudden changes of mood and poor adaptation (Holmes, 1993). A small child's attachments can usually be described as hierarchically, with the mother on top, followed by the father (or rarely the other way around), grandparents, siblings, godparents, and so on.

Collins and Read (1994) proposed that individuals can have different separate models of attachment that can best be considered as a hierarchical network of interconnected models. On top of the hierarchy is the default model that corresponds to the most general representations about people and the self, abstracted from a history of relationship experiences. Further down are models that correspond to

particular kinds of relationships and lowest in the hierarchy are the most specific models corresponding to particular partners and relationships. Models higher in the hierarchy will fit a wide range of situations, but will be less useful in guiding perception and behaviour in a particular situation. The different models in the attachment network are expected to share many elements and to be connected through different associations. Particular models within the network should also differ in terms of their degree of elaboration and connectedness. Models of major attachment figures are likely to be more central in the network structure, and more elaborated and better connected than other models. Models that develop early in one's relationship history will contribute to the structure of all subsequent models. The attachment network of different people will also vary according to their relative network size (more or less models) and network density (more or less relatedness amongst the models). As people move in and out of relationships, these experiences result in the formation of more general and abstract models of self and others (Collins & Read, 1994).

Many attachment theorists regard the structure of this network also as of primary importance. Main (1991) theorised that attachment insecurity is characterised by a lack of coherent integration among multiple inconsistent models. Inner working models are fundamentally concerned with metacognition - monitoring and co-ordinating multiple accessible models and memories so as to allow individuals to interact appropriately and satisfyingly with others (Crittenden, 1990; Main, 1991).

2.9   Activation of working models

Which model becomes activated to guide perception and behaviour is likely to be a trade-off between different features of the situation as well as the characteristics of the models in the attachment network. The strength of the model, the match between the model and the situation and the specificity of the model will all be important. Models that are quite central in the network, and that has been used quite often in the past can be considered to be stronger. Characteristics of the interaction partner, the nature of the relationship and the goals salient in the situation are features that will determine the match between the situation and a particular model. If a more specific model can be linked to the current situation, then it will be preferred over models that are more general (Collins & Read, 1994). A study demonstrating that one's model for the opposite sex parent is a better indicator of aspects of a romantic

relationship than the model for the same sex parent, can be regarded as support for this view of differential activation (Collins & Read, 1990). The study by Baldwin et al., (1993) demonstrating accessibility effects for attachment styles has already been mentioned. According to Bartholomew (1994) the question still needs to be answered whether a hierarchy of attachment models exist and under what conditions these models are likely to be activated.

2.10 Review of working models

Bowlby (1973) referred to internal models as "working" models, and therefore it can be understood that they are at least potentially modifiable by new information. He depicted healthy internal working models as subject to constant revision and change in the light of experience. In the first years of life, attachment models are relatively open to change, but they become solidified through repeated experience. Substantial changes in the care-giving environment may lead to changes in the working models, which may be observable in different behaviours. It cannot be assumed that only the care-giving environment directly determines children's social behaviour, because then it would be difficult to understand cross-situational consistency in the absence of the attachment figure and longitudinal resistance to change. It also seems unlikely to attribute consistencies in attachment styles primarily to innate temperament, because many children exhibit different attachment styles with their mothers and fathers (Rothbard & Shaver, 1994).

Bretherton (1987) speculated why internal working models in insecure attachment are particularly resistant to change. Mental structures are organised hierarchically from low level event scripts (Schank, 1982), such as "When I hurt myself my mother comes to comfort me", through intermediate generalisations like "My mother is usually there when I need her" to basic assumptions "My mother is a loving person; I am loveable and loved". Insecure individuals not only have negative core assumptions, but may also not be able to revise these models in the light of experience, because communication between different levels of the hierarchy is distorted and restricted (Holmes, 1993).

2.11 Measuring adolescent and adult attachment

The Adult Attachment Interview is an hour-long semi-structured clinical interview that probes the attachment-related experiences of adult mothers. Respondents are

questioned about their early relationships with their parents. The interview transcripts are subsequently rated and respondents assigned to autonomous (secure), enmeshed (anxious), detached (avoidant), or unresolved (disorganised) attachment categories (George, Kaplan & Main cited in Lopez, 1995). Most investigators however needed a more economical measure of attachment style.

Hazan and Shaver (1987) developed a single-item categorical measure of attachment designed to classify persons into secure, avoidant, or anxious/ambivalent attachment styles. Subjects are asked to identify their own attachment style from three paragraphs describing the three styles. In most populations the three styles are observed in unequal proportions, with approximately 55% secure, 25% avoidant and 20% anxious/ambivalent subjects (Hazan & Shaver, 1994). The scale has enjoyed widespread use, despite questions about its reliability. Baldwin and Fehr (1995) pooled the test-retest data from ten samples and reported that 17.2% of the subjects who reported to be secure at Time 1 changed their preference at Time 2. Of the subjects indicating the avoidant style 33% changed at Time 2, as well as 55% of the anxious/ambivalent subjects. Baldwin and Fehr (1995, p. 259) considered three possible explanations for the findings: "a lack of long-term continuity in people's attachment behaviour, a lack of reliability in the measurement of truly stable attachment styles, or the presence of short-term instability in individuals' 'states of mind' with respect to attachment." In line with their conceptualisation of cognitive structures representing interpersonal experience (see section 3.3.1) they preferred the latter explanation.

Collins and Read (1990) objected to the fact that the categorical nature of the Hazan and Shaver (1987) scale assumed that the three attachment styles were mutually exclusive and that it was impossible to indicate to what degree a style characterises the behaviour of a person. They developed the 18-item Adult Attachment Scale as a more sensitive index of the dimensions underlying adult attachment styles. Factor analysis yielded three dimensions (a) comfortable with closeness, (b) can depend on others, and (c) anxious or fearful about being abandoned or unloved (Bradford & Lyddon, 1994). This measure could be considered as a revision of the Hazan and Shaver scale in an attempt to improve its psychometric properties.

Bartholomew and Horowitz (1991, see section 2.3) suggested a fourfold categorisation: (a) secure and comfortable with intimacy and autonomy, (b)

preoccupied with relationships, (c) dismissing of intimacy, and (d) fearful of intimacy. They developed self-report prototypes of the four attachment styles, similar in format to the Hazan and Shaver (1987) forced choice measure. Respondents are asked to rate on a seven-point scale the degree to which they resemble four items – representing secure, preoccupied, fearful-avoidant or dismissing-avoidant attachment styles.

Feeney et al. (1994) developed the Attachment Style Questionnaire (ASQ) as a broad-based measure able to accommodate the different dimensions of attachment as well as the different possible styles needed to describe the individual differences in attachment. They also wanted to design a measure suitable for young adolescents or others with little or no experience of romantic relationships.

Sixty-five items were developed and administered to 470 university students. A five-factor solution accounted for 43.3% of the total variance, with the following factors: Confidence (in self and others), Discomfort with Closeness, Need for Approval, Preoccupation with Relationships, and Relationships as Secondary (to achievement). The Confidence scale represented secure attachment and each of the other four scales represented a particular aspect of insecure attachment. A 40-item measure, called the Attachment Style Questionnaire (ASQ), remained after certain complex items or those with low loadings were removed. Feeney et al. (1994) reported high levels of internal consistency for the five factors with coefficient alphas of .80 (Confidence), .84 (Discomfort with Closeness), .79 (Need for Approval), .76 (Preoccupation with Relationships) and .76 (Relationships as Secondary). The test-retest reliability over a period of approximately ten weeks was .74 (Confidence), .74 (Discomfort with Closeness), .78 (Need for Approval), .72 (Preoccupation with Relationships) and .67 (Relationships as Secondary).

As far as validity is concerned, all pair wise correlations between the five scales of the ASQ were significant. The Confidence scale correlated negatively with the other four scales; and all four scales measuring aspects of insecurity were positively intercorrelated (Feeney et al., 1994). The Hazan and Shaver (1987) scale divided subjects into secure, avoidant and anxious/ambivalent groups. The secure subjects (according to the Hazan and Shaver measure) scored significantly higher on the Security scale than any of the other groups ($F(2,292) = 32.69$, $p < .0001$). The results provided strong support that the ASQ measures attachment styles similar to those

originally conceptualised by Hazan and Shaver (1987). The subjects in the secure group had high self-esteem and were confident about their relationships with other people; they were comfortable with closeness and saw relationships as important (Feeney et al., 1994). They clearly had positive attitudes towards themselves and others.

Feeney et al. (1994) also tested 137 eighth-grade students and compared the results of the five scales of the ASQ with the three scales from the ICPS Family Functioning Scale. The results supported the theory relating attachment style to quality of parenting. High scores on the Confidence scale were associated with reports of high family intimacy, democratic parenting, and low levels of family conflict.

2.12   Discussion of attachment theory

Personal histories of social relationships and experiences guide how people construe their social world and how they interact with others. The essence of the continuity assumption of attachment theory is that the quality of early relationships is functionally related to subsequent adult attachment style and interpersonal competencies (Bowlby, 1988). This continuity is explained by means of internal working models, based on own memories of attachment-related experiences and including beliefs and expectancies about the self and others.

Adults classified with secure attachment styles report their primary attachment figures in childhood as warm and responsive to their needs and they can recall various examples of such experiences. The working models representing these experiences could well be very accessible and influential in assessing present social situations. Adults classified as insecure report the opposite history, experiencing their parents as cold, rejecting, unresponsive or inconsistent. They still in the present report lower levels of social competence and social support than adults with a secure attachment style.

However, despite these promising results and support for the attachment theory, many questions still remain. For example, the distinctions between the different types of insecure attachment styles are not as clear as between the secure and insecure styles, and the temporal stability of the measurements of attachment styles is also less reliable.

Although the theory about the structure and organisation of internal working models is one of the best developed components of attachment theory, Reis and Patrick (1996) is also of the opinion that relatively few studies have investigated their precise nature. Can empirical research clarify the structure and processes of working models? What is the nature of the network structure of attachment working models, and which model becomes activated to guide perception and behaviour? It should also be demonstrated to what degree working models operate at a conscious or an automatic level. Although most available studies assess the descriptive content of internal working models with explicit measures, the impact of working models on social perception and judgment is most likely to be outside awareness. The chronic accessibility of working models would be expected to induce the automatic processing of interpersonal information, including procedural knowledge.

Holmes (1993) argued that Bowlby's concept of working models acts as a possible bridge between psychoanalysis and cognitive science. For a more detailed analysis of the questions above one can turn to the interface between attachment theory and social-cognitive theory and research. It will be valuable to continue studying the social-cognitive processes associated with the activation, operation and revision of attachment working models. It remains important to demonstrate that members of different adult attachment categories possess different internal models of self, others and attachment relationships that have developed out of previous relationships with important attachment figures.

Bartholomew and Thompson (1995), however, cautioned that attachment should be considered as one aspect of relational behaviour, and probably also in only certain relationships, namely parent-child and long-term sexual relationships. One should be cautious in applying the concept to all social relationships that could probably be better understood in terms of other conceptual models.

CHAPTER 3   SOCIAL-COGNITIVE THEORY AND RESEARCH

3.1   Introduction

Allport (1968) defined social psychology as "an attempt to understand and explain how the thoughts, feelings, and behaviour of individuals are influenced by the actual, imagined, or implied presence of others" (p.3). Social cognition research developed as one of the dominant approaches within social psychology and typically focuses on how social information is perceived, interpreted, stored in memory and recalled. Social cognition research has been described as a study of how people make sense of other people and themselves (Fiske & Taylor, 1991). In this chapter, the influence of relationships with significant others on the processing of social information will be discussed from the perspective of social cognition theory and research.

The notion that people's mental representations of their social world are important has a long history in psychology (see Kelly, 1955). Of late, this idea has been supported by the advent of modern cognitive psychology that regarded mental representations as empirically demonstrable concepts. A mental representation can be defined as an encoding of information or knowledge that can be retained in memory, accessed and used in various ways (Smith, 1998). Because there are different kinds of knowledge, there are most likely different kinds of representations as well. Within social psychology literature there are presently various theoretical contributions about the existence of multiple forms of social representation, and different new methods have been adapted or developed to examine these representations empirically. The mental representations of each individual may be an articulation of individual cognitive activity, related to personal needs and goals, but may also be culturally pervasive and the product of social construction (Levine, Resnick & Higgins, 1993).

The first section of this chapter will be a selective review of the basic constructs in social-cognitive theory. The latter part will focus on recent developments in the study of representations of interpersonal relationships, as well as the representations of significant others. Recent research in these two areas will also be reviewed.

3.2   Social-cognitive theory

Understanding the nature of cognitive structures and cognitive processes can provide insight into complex social phenomena. It is an important task for social-cognitive

research to specify the interactive effects between the different factors influencing cognitive structure activation (Sedikides & Skowronski, 1991). It is useful for the present discussion to start of with the distinction between different types of cognitive structures (different ways in which knowledge is represented in memory), and the basic cognitive processes (mental processes operating on those structures).

3.2.1 Social-cognitive structures

A cognitive structure can generally be described as a mental representation of an object or an idea. Carlston and Smith (1996) proposed multiple forms of cognitive representation as a basic principle in social cognition. Social knowledge is therefore likely to be cognitively represented in a variety of different ways, implicating different kinds of cognitive processes and even different cognitive systems or brain structures. They urged that new and more sophisticated models of representation be developed to accommodate the complexities raised in current social theory and research.

3.2.1.1 Declarative and procedural knowledge

Kihlstrom and Cantor (1983) draw a general distinction between the different ways social knowledge can be represented. (a) Declarative knowledge about the self and others can easily be made accessible and includes (i) semantic knowledge (facts and meanings stated as general propositions or constructs about the self and others; their traits and characteristics; prototypes for situations or exemplars), as well as (ii) episodic knowledge (memories for specific experiences or autobiographical events from the person's past). (b) Procedural knowledge about the self and other refers to cognitive and motor skills that are not easily described, but executed with expertise. It consists of if-then decision rules or productions derived from processing information about the self and others (for example: "if he greets me, then he is friendly"; or "if I do this, he will not approve of it").

Therefore, all the different representations of specific people or objects, social constructs, semantic categories, event memories, scripts and procedures can be described as examples of cognitive structures, representing social knowledge.

3.2.1.2 Elaborative and relational processing

There is another fundamental distinction to be taken into consideration when discussing social memory structures. It is the difference between individual-item (or elaborative) versus relational (or organizational) processing. In social research it

equals the distinction between (a) focusing on the unique and idiosyncratic characteristics of the person and forming a personal exemplar or (b) focusing on the category-typical characteristics of the person, the similarities and relations to other possible group members and deriving a category average, prototype or stereotype (Carlston & Smith, 1996; Smith & Zárate, 1992). In general, the type of processing depends on the stimulus characteristics as well as the perceiver's characteristics and goals. It is therefore also implied that although the mental representations of the perceiver can vary in form and content, they will be somehow linked or connected to each other.

The associative network model is one metaphor for the interconnections among concepts. In this model the concepts are represented as nodes and the connections between concepts as links between the nodes. Activation of one concept cues the activation of related concepts. Although individual nodes are fairly elementary without meaningful internal structure, larger meanings can be constructed by combining different nodes. The network model can also explain priming and retrieval effects through the spreading activation mechanism (Collins & Loftus, 1975). A concept that is activated spreads the activation over various links to its connected concept nodes. The excitation at these nodes approaches the threshold needed for activation (the priming process) and when it reaches the threshold, a response is generated (the retrieval process). The person memory model includes many of these features (Wyer & Srull, 1989).

3.2.1.3   Schemas

As mentioned previously, Kelly (1955) postulated that each individual perceives events through the filter of highly personal and idiosyncratic constructs. People create this framework of patterns or templates from a history of frequent experience with certain types of social behaviour in their environment. They then attempt to fit these personal constructs on the significant individuals and other experiences in their lives.

The schema is probably the most generic of all cognitive structures and has a long history in psychology. The concept was originally used in experimental and developmental psychology (Bartlett, 1932; Piaget, 1955), but has come to refer more broadly to the mental structures which individuals use in the cognitive processing of

internal and external events. Fiske and Linville (1980) define a schema as a cognitive structure of organised prior knowledge, abstracted form experience with specific instances. A schema contains both the attributes of the concept and the relationships among the attributes (Fiske & Taylor, 1984). The schema concept can be used to conceptualise various information-processing phenomena. It guides the processing of new information and the retrieval of stored information. When stimulus information presents a sufficient match to a schema of a perceiver, the particular schema can be retrieved from memory and used in a top-down manner to complete the fragmentary cues of the stimulus. In this way prior knowledge is used to interpret new input information. Schemas often persist even in the face of conflicting evidence (Fiske & Taylor, 1984). An activated schema can also direct attention to particular stimulus information. A schema is assumed to be most influential in social perception if it has been activated in some way. Taylor and Winkler (cited in Singer & Salovey, 1991) proposed four stages in schema development. (a) A schema begins as an encoding of a single example that represents the general case. (b) At the second stage, the importance of the most representative or the stereotypical attributes of the person, event or group are overestimated. (c) At the relative expert stage, the person becomes more attentive to inconsistencies between preconceived knowledge and schema-incongruent information. (d) During the last stage, the features of the schema are over learned, the subunits of the schema become tightly linked and processing become automatic and largely out of awareness of the individual. The schema concept can be extended to include self-schemas (to be discussed later), person schemas, role schemas, event schemas and procedural schemas.

Although the schema concept has been very influential in social theory and research, the concept knowledge unit has also been used to refer to the basic structure representing information. Within social-cognitive research, the concept social construct is also often preferred in referring to the basic unit of social knowledge. Social constructs often studied are types of persons, stereotypes and roles. The concepts cognitive representation, knowledge unit, social construct, cognitive structure and cognitive schema are all closely related. The schema concept differs from the others in implying a close relationship between its constituent parts or attributes.

3.2.1.4   Person schemas

Person schemas can be described as an individual's understanding of typical or specific individuals. It is composed of traits and goals and helps to categorise others and to remember schema relevant behaviour (Fiske & Taylor, 1984). People may also be represented in terms of more individuated concepts or attributes on the one hand or social categories like traits or groups on the other (Brewer, 1988). Dual memory theories suggested that people would recall and use both behavioural or trait representations to understand information about other people (Srull & Wyer, 1989). Considerable research demonstrated that people spontaneously generate trait representations from behaviours (Newman & Uleman, 1989). Apart from trait categorisation, there has also been recognition of the way that people categorise others in social groups in terms of gender, race and other attributes. Stereotyping can be understood as the categorisation of target individuals and the attribution of category-typical traits to those that are categorised (Zárate & Smith, 1990). Trait generation and stereotyping can occur automatically (Devine, 1989; Newman & Uleman, 1989).

A social role is the set of appropriate norms and behaviours expected of a person in a particular social position. A role schema is the cognitive structure that organises a person's knowledge about these appropriate behaviours (Fiske & Taylor, 1991). Cantor, Mischel and Schwartz (1982) proposed that people learn prototypes for situations that help them anticipate how an interaction will proceed and therefore allow them to plan their actions accordingly. One can think about stereotypes as a particular kind of role schema that organises people's expectations about other people who fall into certain social categories (Fiske & Taylor, 1991).

A "proper name" of a specific person or exemplar can also operate as a social construct (Smith & Zárate, 1992). Relatively less work has been done on individual-person exemplars (Higgins & King, 1981; Smith & Zárate, 1992) or "n-of-one" constructs, which denote a single individual. Work by Andersen et al. (1995) demonstrated that an activated individual person exemplar, based on a significant other, could also be used to interpret new individuals. Significant other representations are by definition not only frequently thought about, but also highly important, familiar and self-relevant. This will be discussed in more detail in section 3.3.2.

3.2.1.5   Self-schemas

A self-schema can broadly be defined as a cognitive structure representing information about the self. It is derived from past experiences and organises and guides the processing of self-related information (Markus, 1977). Markus (1977) also demonstrated that if a person has a firm idea about the self in some domain of behaviour, domain relevant information is processed efficiently and consistently. Rogers (1981) has demonstrated improved recall for self-descriptive information. Markus (1990) documented the development of self-schemas, emphasising the context of significant interpersonal experiences and the role of parent and peer relations in self-development (see also Stern, 1985). Markus and Wurf (1987) have described the self-concept as a self-system that includes goals, incentives, plans, and scripts for behaviour, as well as self-schemas in particular behavioural domains. People are therefore assumed to have multiple self-schemas. From all the available knowledge about the self, only a small subset is activated at any given time, to produce the working self-concept of the moment (Markus & Kunda, 1986). Banaji and Prentice (1994) also presented the notion that the working self-concept can change as a function of the social context. Markus and Smith (1981) noted that self-schemas provide a frame of reference for judgments and evaluations of others. According to the implicit personality theory (Sneider, 1973), people interpret their social world according to a personal organised body of knowledge, that includes expectations about what attributes of personality typically co-occur in other people.

3.2.1.6   Scripts

A script or event schema is a representation of knowledge about a coherent sequence of events in a well-known situation or context. A script contains inferences about the potential occurrence of a set of events and the order of these events (Abelson, 1981). The script model is built on if-then cognitive sequences that can operate in an autonomous way. The experience of one event is expected with a high probability to be followed by other events in a consistent order. Scripts for social situations include both procedural knowledge (helping to guide social behaviour), as well as semantic-declarative knowledge (helping to think about and understand the situation) (Cantor & Kihlstrom, 1985). People are assumed to abstract scripts from repeated experience with similar situations and then to apply them to the understanding of new experiences. An interpersonal script can be defined as a

cognitive structure representing a sequence of actions and events that define a stereotypical relational pattern (Baldwin, 1992).

Social information need not only be represented in semantic form. Visual images can also be a form of social representation (Brewer, 1988), and can influence people's perceptions and behaviours (Lewicki, 1985). Affective responses can also be regarded as material represented in memory and recalled and implemented in interpreting new information. In social cognition models it makes an important contribution in understanding emotional reactions to situations or particular individuals (Carlston, 1994; Wyer & Srull, 1989).

It is clear that people have a large variety of cognitive structures, based on past experience that can be applied to new stimulus input. Available cognitive structures can be activated to various degrees and employed in the processing of new stimulus input. Knowledge structures provide meaning, organisation and predictability to social events (Strauman, 1991).

3.2.2 Social-cognitive processes

The following section reviews the fundamental processes proposed by social-cognitive theory to operate on the information represented in the cognitive structures.

3.2.2.1 Controlled versus automatic processes

It has been demonstrated that actions frequently and consistently practiced, require less conscious attention to be performed (Shiffrin & Schneider, 1977). Social-cognitive theorists and researchers (see Bargh, 1996) also acknowledged this distinction between controlled and automatic processing. (a) Controlled cognitive processes are assumed to be effortful, intentional, consuming extensive cognitive capacity and therefore relatively slow. In contrast, (b) automatic processes are assumed to be fast, effortless, unintentional and relatively capacity-free. Historically, automatic processes was said to be strictly unintentional, outside awareness, uncontrollable and consuming minimal attention resources. Bargh (1996) argued that very few demonstrations of automatic processes satisfied all four these criteria and proposed a less mutually exclusive view of controlled versus automatic processes.

Several studies demonstrated that self-relevant information is capable of being processed in a non-conscious manner (Bargh, 1982; Bargh & Pratto, 1986, Bargh & Thein, 1985; Bargh & Tota, 1988). Automaticity develops as a reflection of the

regularities in the social world of the person involved. This regularity should be reflected in a high frequency as well as consistency in associative activation (Bargh, 1996). People also develop a certain chronic framework for interpreting and encoding the behaviour of others that can operate at an automatic level (Higgins, King & Mavin, 1982). Social judgments being performed increasingly efficiently can also be conceptualised as procedural learning (Smith & Lerner, 1986). From a number of steps that have to be performed effortful and in serial order, the procedure can become automotive and all the component processes can operate in parallel with minimal attention needed (Bargh, 1996). This process can be conceptualised using the if-then sequence proposed by Anderson (1983). *If* certain conditions are present in the cognitive environment, *then* the process associated will be completed. The differentiation between the controlled and automatic processes may contribute to the present review of the influence of social memory based on repeated and consistent interpersonal experiences in the past.

3.2.2.2 Accessibility and availability

It has been mentioned that different knowledge structures are available to be used in identifying and responding to a stimulus. Social-cognitive theorists have attempted to identify the factors that determine which information will be activated. The accessibility of stored constructs describes the likelihood that it will be used in information processing (Higgins & King, 1981). Accessibility can be understood as the activation potential of available knowledge (Higgins, 1996). Knowledge accessibility refers to the level of knowledge activation before the stimulus input from either momentary sources of temporary accessibility or long-term sources of chronic accessibility. The effect of subliminal priming on subsequent stimulus categorisation is clearly an accessibility effect (Bargh & Pietromonaco, 1982). The availability however, refers to whether or not some particular knowledge is actually stored in memory. Availability is therefore a necessary condition for accessibility. If knowledge is not available, it cannot be accessible.

3.2.2.3 Applicability

Knowledge activation does not depend only on the accessibility of stored knowledge. There is also a further variable that will influence the likelihood that some stored knowledge will be activated, namely the fit or applicability between the stored

knowledge and the presented stimulus (Bruner, 1957). The greater the overlap between features of the stored knowledge and the attended features of the stimulus, the greater the applicability of the knowledge to the stimulus and the greater is the likelihood that the knowledge will be activated in the presence of the stimulus (Higgins, 1989).

Various factors can influence which factors are attended to in any given point in time. There are different types or levels of applicability. (a) A behavioural description can be described as unambiguous stimulus information when only one alternative construct is applicable to it. (b) A behavioural description is ambiguous when at least two alternative constructs are equally applicable to it. (c) It is vague when no construct has more than weak applicability to it. (d) It is inconsistent when the construct is clearly not applicable to it. (e) A behavioural description is contrary as stimulus information when the applicability of a competing alternative construct is both strong and stronger than the target construct's applicability (Higgins, 1996).

Higgins and Brendl (1995) proposed that higher levels of accessibility could compensate for lower applicability. In conditions of vague stimulus description, subjects still demonstrated construct related impressions, because the accessibility of the construct was very high. Applicability concerns the attended features of the stimulus and not all features of a stimulus receive equal attention. Various factors can influence which factors are attended to at any given moment. The salience of a particular stimulus refers not only to the important features of the stimulus, but also to the prior goals or expectancies of the subject. The goals can create an active set in a perceiver that will direct more attention to some features of a stimulus than others. Pre-exposure characteristics of stored knowledge and the level of knowledge activation can influence which features of a stimulus will receive more attention.

3.2.2.4　Temporary accessibility

Priming was developed in experimental cognitive psychology as a tool to investigate the content and structure of cognitive representations. It refers to procedures that stimulate or activate identified stored knowledge (Higgins, 1996). One of its effects is to increase the probability of using that knowledge when responding to a subsequent stimulus (see experiments by Higgins, Rholes & Jones; 1977; Srull & Wyer, 1979). This basic phenomenon of increasing the accessibility of knowledge and observing

the consequences of that activation on some aspect of information-processing, has been replicated many times using a wide variety of priming methods, types of responses and types of stimuli (see Higgins, 1996, p.138 for a review). This research has included single word semantic priming (presenting a concept stored in semantic memory), stories or thematically related stories (Radcliff & McKoon, 1988), and pictures of significant others (Baldwin, 1994; Baldwin, Carrell & Lopez, 1990). Cognitive structures can be activated with conscious awareness or even without any conscious involvement (Erdley & D'Agostino, 1988; Lombardi, Higgins, & Bargh, 1987: Martin, 1986). Bargh and Pietromonaco (1982) used subliminal techniques to expose different groups of subjects to hostility-related words. The rated hostility of a stimulus person in a subsequent session was dependant on the number of times the subject had been primed with the hostility-related word.

Recent priming refers to the transient or temporary activation of stored knowledge to produce a knowledge-related effect. This effect was also demonstrated with subliminal priming (Bargh & Pietromonaco, 1982; Devine, 1989). Studies supported the conclusion that the effect of recent priming tends to decrease as the delay from priming to stimulus exposure increases. When there is a competing accessible construct, the effect of recent priming on judgement can disappear in a couple of minutes. It has been demonstrated in different studies that the priming effect increased as a result of an increase in the frequency of priming (Srull & Wyer, 1979, 1980). Higgins, Bargh and Lombardi (1985) as well as Lombardi et al. (1987) compared recent and frequent priming. After a short delay, the recently primed construct was more prominent, but after a longer delay, the frequently primed construct was used more often.

3.2.2.5 Chronic accessibility

The chronic accessibility of a construct refers to the readiness of the construct to be activated, even with minimal temporary sources of activation present (Bargh & Pratto, 1986; Higgins & King, 1981). Some constructs might have been activated so frequently in the past that they become chronically active or accessible (Higgins, 1989, 1996; Sedikides & Skowronski, 1991). Other determinants of chronic accessibility include chronic expectations, goals and needs, recent and frequent prior activation of the construct, and the construct's interconnectedness with other stored constructs (Higgins, 1996).

Higgins et al. (1982) directly examined how individual differences in chronic accessibility influenced the processing of behavioural information. Persons were regarded to be chronic on a construct if they listed that feature first when asked to list the traits of people that they liked, disliked, sought out, avoided and frequently encountered. In a supposedly unrelated experiment about one week later subjects read an essay with trait-related descriptions of a target person. It was found that subjects were significantly more likely to include information related to traits on which they were chronic when they were asked for their spontaneous impressions of the target person and to recall the behavioural descriptions. Higgins et al. (1982), as well as Lau (1989), replicated these results. Bargh and Pratto (1986) also demonstrated that the chronically accessible constructs of subjects were indeed at a higher level of activation readiness than their inaccessible constructs. Higgins and Brendl (1995) investigated chronic accessibility as a continuous variable and found a strong positive relationship between higher chronicity scores and the frequency of construct related responses.

The work by Markus (1977) on self-schemas has already been mentioned. Independent schematics (individuals with the independence construct central to their self-description) processed independent-related stimulus information faster and more consistently than independent aschematics did. Being schematic for a particular construct can be regarded as equivalent to this construct being chronically accessible. Bargh (1982) demonstrated similar results with people chronic towards the construct independence on reaction time measurements allocated to a dichotic listening task. The study supported the notion that chronic accessibility can be associated with processing efficiency normally associated with automatic processing (Bargh, 1982), as did an information overload study by Bargh and Thein (1985). Similar results from by Baldwin et al. (1993) supported the chronic accessibility effects of interpersonal constructs.

3.2.2.6 Interaction between temporary and chronic accessibility

Greater temporary accessibility (as a function of priming) and greater chronic accessibility (as an individual difference) predict higher accessibility and stronger responses to stimulus information. The interaction between temporary and chronic activation was studied from the social-cognitive perspective. Bargh, Bond, Lombardi and Tota (1986) selected subjects, chronic or nonchronic, for the construct "kind" and

then subliminally primed or did not prime them in a seemingly unrelated experiment. Chronic accessibility had a reliable effect even in the priming condition, but did not interact with it. A study by Higgins and Brendl (1995) supported this result. The chronicity effect was nonsignificantly stronger within the priming condition. These studies demonstrated that chronicity and priming could have independent and interactive effects on judgements. Although chronic and temporary sources of accessibility may be viewed as equivalent, Carlston (1991) cautioned that they might reflect different cognitive mechanisms. Temporary accessibility may involve higher levels of residual activation, while chronic accessibility may involve greater interconnectedness within the associative structure. Construct activation and application can occur based on chronic sources, transient sources or some combination of the two. Increases in the contribution from any of these sources are thought to produce corresponding increases in activation (Bargh et al., 1986; Higgins & Brendl, 1995).

Research, therefore, supported the findings that the following factors can cause cognitive structure activation: a person's expectations, motivations and goals, how recently or frequently a structure has been activated, the relation between the structure and other structures that have recently been activated, and inherent and relational features of stored constructs (Sedikides & Skowronksi, 1991).

3.2.2.7   Assimilation and contrast effects

Several other factors beyond knowledge accessibility also determine how increased accessibility from recent priming will influence subsequent stimulus judgements. One such factor is people's awareness of the priming events themselves. Higgins et al. (1985) found that the assimilation effect of recent priming was stronger among subjects who did not remember the recent prime. In a study where the subjects were fully aware of the priming tasks or they remembered the priming events at the time when they made the stimulus judgement and completed the priming tasks, a contrast effect was found (Martin, 1986). However, when the subjects believed that the priming task had been interrupted, the assimilation effect was found (Martin, 1986). Lombardi et al. (1987) replicated the results by Higgins et al. (1985) with a strong contrast effect among subjects that remembered the priming events. Newman and Uleman (1990) also found a contrast effect when the primes were blatantly given to subjects before they were asked to interpret ambiguous behaviour. Moskowitz and

Roman (1992) and Strack, Schwarz, Bless, Kubler and Wanke (1993) obtained a similar pattern of results. In the impression formation study by Strack et al. (1993), they found that if people were primed with a trait name (for example hostility), their impressions of an ambiguous target person were consistent with the prime (they saw the person as hostile), unless they have been reminded of the priming event. When they were reminded, there ratings showed a contrast effect (they saw the person as not hostile). Assimilation effects of priming are more likely when people are not aware of the priming events at the time when they make their judgement of the stimulus. When subjects are aware of the attempts to introduce bias or control their attention and thinking, they consciously override the effect by discounting it or compensating for it. Other researchers proposed that simple awareness of the priming episodes does not necessarily lead to their suppression. It may only happen when the priming is associated with negative effects or they are perceived to be unrepresentative (Strack, 1992). People will also attempt to control priming effects when they are motivated to be accurate. The assimilation effect in priming research has been fairly reliable as long as the prime is kept unobtrusive, subtle or subliminal. The contrast effect in priming research can be avoided by a subliminal presentation of the priming stimulus.

3.2.2.8   Relation between prime and stimulus

Applicability (discussed in section 3.2.2.3) refers to the level of fit between the stored knowledge and the presented stimulus. Smith and Branscombe (1987) investigated whether the relation between the specific content of the prime and the content of the stimulus information also influences the strength of the priming effect on behavioural judgements. Priming by traits words did not have any effect on behavioural judgements after a fifteen minute delay, but priming by behavioural descriptions produced an assimilation effect. The study demonstrated that priming effects could also be a function of prime-stimulus similarity.

3.2.3 Information-processing consequences

In this review the discussion will now focus on the functional consequences of the activation of cognitive structures on subsequent processing of social information.

3.2.3.1   Representation consistent attention

The higher the accessibility of a stored knowledge unit or construct, the more likely it is that stimulus information related to that knowledge will receive attention. Individuals with high chronic accessibility for a particular trait were less able to ignore that construct when it appeared in a Stroop task (Bargh & Pratto, 1986). Individuals whose chronic accessibility for particular objects were relatively high, or whose accessibility of these objects was temporarily increased, were more likely to notice these objects (Roskos-Ewoldson & Fazio, 1992). Work by Cohen (1981) and Markus (1977) demonstrated that people are more likely to notice information that can be assimilated into their existing knowledge about self and others, especially if the latter are highly accessible (Bargh, 1984; Higgins et al., 1982). The results of an experiment by White and Carlston (1983) supported the impact of activated cognitive structures on attention and recognition in social interactions.

3.2.3.2   Representation consistent encoding

The activation of cognitive structures affects a person's ability to encode relevant social information and also the nature and content of the encoding derived from that information (Bargh et al., 1986; Bargh & Thein, 1985; Higgins et al., 1977; Sedikides & Skowronksi, 1991). The effects of cognitive structure activation on social encoding appear to be automatic and not a strategic or controlled effect (Lombardi et al., 1987; Martin, 1986).

3.2.3.3   Representation consistent memory

The studies by Higgins et al. (1982) supported the conclusion that stimulus information related to more chronically accessible constructs is remembered better than stimulus information related to less accessible constructs. Subjects' memory and impressions of a target person's behaviour were influenced by their chronically accessible constructs. The same findings were supported by the work of King and Sorrentino (1988). The speed and confidence in the memory processing of self-relevant information, demonstrated by Markus (1977), has already been mentioned. Bower and Gilligan (1979) demonstrated the improved recall and recognition of self-relevant information.

3.2.3.4   Representation consistent affect

Research on schema-triggered affect has demonstrated that when an affect-laden social category (e.g. stereotype) is activated, it will influence how a target person, categorised in these terms, is evaluated (Fiske & Pavelchak, 1986). The affect or evaluation (e.g. liking or disliking) linked to the representation, will also be applied or experienced towards the target person. The higher the accessibility of a stored knowledge unit, the more likely a stimulus event will produce feelings related to that knowledge. Strauman and Higgins (1987) primed desired-self attributes that were discrepant from subjects' actual-self attributes and it produced dejection-related or agitation-related emotions.

3.2.3.5   Representation derived evaluation and judgment

The higher the accessibility of a stored knowledge unit, the more likely a stimulus event will be judged in relation to that knowledge. Studies by Devine (1989), Duncan (1976) and Lewicki (1985) demonstrated this effect. In studies by Srull and Wyer (1979, 1980) subjects with activated hostility-relevant constructs perceived an ambiguous stimulus person's behaviour as more hostile than the subjects with less active hostility-relevant constructs. The theory of schema-triggered affect proposes that the overall tone of a significant other representation may be transferred to a new person (Fiske & Pavelchak, 1986). The activation and application of a significant-other representation to a new person should lead to evaluations of the person derived from the representation. Work by Andersen and Baum (1994) and Andersen et al. (1996) in support of this proposition will be discussed in section 3.3.2.3.8. This is analogous to what has been demonstrated upon activation of a social category or stereotype.

3.2.3.6   Representation consistent behaviour

Lau (1989) found that candidate choice in an election was related to political orientation, especially for individuals with chronically accessible political constructs. Fazio and Williams (1986) also studied an election and found that voting behaviour of individuals could be predicted by their attitudes towards the candidates. Carver, Ganellen, Froming and Chambers (1983) demonstrated that subjects with activated aggression-relevant constructs judged a stimulus person as more aggressive and behaved more aggressively in a different context than subjects in whom the

aggression-related constructs were less active. Neuberg (1988) exposed subjects to neutral or competitive subliminal primes before they engaged in a laboratory game in which players could act either cooperatively or competitively. The subliminal competitive primes not only increased the frequency or competitive behaviour, but also the intensity of the competitive behaviour in the particular subjects. Pre-measured personality dispositions also had an effect on the results. People already predisposed to be competitive became significantly more competitive if they were shown the words, whereas people who were predisposed to be non-competitive actually behaved slightly less competitively when primed. Bargh, Chen and Burrows (1996) demonstrated the behavioural effects of non-consciously primed traits and stereotypes. They concluded that the activation of perceptual representations can be related to automatic social behaviour. Lewicki (1985) had participants interact with an unpleasant confederate, and in a seemingly unrelated situation, approach two receptionists – one of which resembled the unpleasant confederate from the earlier encounter. Participants who had the earlier encounter were far less likely than control participants (without the earlier unpleasant encounter) to walk to the receptionist that resembled the unpleasant confederate. On the basis of physical resemblance, person schemas and interpersonal expectancies were activated.

3.2.3.7 Information processing effects of temporary and chronic activation

In their review on cognitive structure activation, Sedikides and Skowronski (1991) concluded that temporarily and chronically activated cognitive structures do not appear to have substantial different judgmental and behavioural effects.

3.2.4 Summary of social-cognitive theory

The discussing in section 3.2 focused on the basic concepts describing structures that represent social information, as well as the processes that operate on these structures. Social information can broadly be represented as declarative knowledge (knowledge in propositional form that can readily be reported) or procedural knowledge (knowledge in production form based on repeated social-cognitive activity). Multiple social-cognitive structures can be differentiated primarily on the basis of their content or domain (e.g. self-schemas, person schemas) or the complexity of their internal structure (e.g. social construct, schema, interpersonal script). The spreading activation mechanism explains the interconnection between

different structures and the relationship between different elements of a cognitive schema. The accessibility of different cognitive structures describes the level of activation and the likelihood that it will be used in the processing of social information. Accessibility can be based on chronic sources, temporary sources or a combination of both. The results form available research is not clear on the interaction in the contributions of these different sources. When people are aware of the attempt to bias or control their responses (e.g. through a priming stimulus), a contrast effect can replace the expected assimilation effect. In studies using subliminal methods, participants do not report being aware of the priming stimuli. Different studies have demonstrated the representation consistent information-processing effects of activated social-cognitive representations or structures. It is very likely that the same basic principles that govern other social constructs also guide the activation and use of representations of significant-others and relationships with significant-others, which will be the focus of discussion in the next section.

3.3 Representations of significant others and self-with-significant-other relationships

The discussion on attachment theory (see Chapter 2) emphasised the influence of early relationships with significant others on later social behaviour. According to attachment theory, it is important to experience connection, nurturance and acceptance in the relationship with significant others (Baldwin & Sinclair, 1996; Holmes & Rempel, 1989). Social-cognitive theory proposes that the mental representations (working models of significant others and relationships with significant others) play a key role in explaining the influence of early relationships on current processing of interpersonal information (Andersen & Glassman, 1996). This review will now focus on the nature of representations of self-with-significant-other relationships (section 3.3.1) and representations of significant others (section 3.3.2).

3.3.1. Relational schemas

Several theorists mentioned in Chapter 1 (for example Bowlby, 1969; Freud, 1958/1912; Horowitz, 1991; Kiesler, 1996; Luborsky & Crits-Christoph, 1990; Safran & Segal, 1990; Sullivan, 1953) proposed various constructs based on the notion that people develop cognitive structures representing patterns in their interpersonal relationships. Baldwin (1992) proposed a social-cognitive model of how people think

about their significant relationships and its effects on their sense of self and their relationships. He attempted to integrate social-cognitive models with other classic traditions in psychology, for example the interpersonal and attachment theory traditions. Baldwin (1992) argued that despite considerable progress in studying isolated aspects of social cognition, (e.g. self-schemas, person perception and social scripts), important questions still remained about the inter-dependency of two or more of these domains.

3.3.1.1 Theoretical model

After a review of the relevant literature, Baldwin (1992) theorised that self-with-significant-other information is represented in memory in relational schemas. A relational schema can be defined as a cognitive structure representing regularities in patterns of interpersonal relatedness. The focus is placed on cognition about relationships, rather than about the self or the other person in isolation. "The assumption is that people develop working models of their relationships that function as cognitive maps to help them navigate their social world" (Baldwin, 1992, pp. 461-462).

Relational schemas are hypothesised to include three elements, namely self-schemas, associated significant other schemas, and interpersonal scripts. The interpersonal scripts reflect knowledge about expected patterns of interaction between the self and others that have been learned through past interactions with these others. In this manner the relational schema concept endeavours to explain the influence of past social experiences on current experiences.

Baldwin (1992) defined the self-schema and other-schema components of the relational schema, as generalisations about the self and other in particular relational contexts that are used to guide the processing of social information. It has already been mentioned (section 3.2.1.5) that people have multiple self-schemas. Specific self-schemas are hypothesised to be associated with representations of specific other people. The self as experienced in that particular relationship is a similar concept to the representation of self-with-other as introduced by Ogilvie and Ashmore (1991). They emphasised how the self is experienced in different relationships. Their self-with-other unit was defined as "a mental representation that includes the set of personal qualities (traits, feelings and the like) that an individual

believes characterises his or her self when with a particular other person" (Ogilvie & Ashmore, 1991, p. 290). It can be assumed that self-schemas and other schemas are linked in an associative network with other declarative and procedural knowledge relevant to the particular relational context, such as the interpersonal script and episodic memories of when the script was activated (Baldwin, 1992). The self-with-other schema and the other schema can also be associated with a particular interpersonal script. The interpersonal script part of a relational schema is composed of knowledge about likely sequences of action, represented as if-then contingencies. As people get to know someone else, they learn to anticipate how the person will act in certain situations and how the person will react to their behaviour (Baldwin, 1992).

Although people have multiple relational schemas available, their learning history will determine which relational schemas are typically used to encode social information. The more chronically accessible schemas will play a more dominant role in the processing of social information. Although some stability should be derived from a person's preferred or chronically most accessible relational schema, different relational schemas can be activated. They can be associated with different memories, expectations, interpretations, emotions and behavioural tendencies. This can explain different attachment orientations in different relationships or interpersonal situations (Baldwin & Fehr, 1995). Baldwin et al., (1996) found that people reported different attachment orientations in different significant relationships. Baldwin (1992) also proposed that people would take the particular relational context into consideration in their perception of self and others. Person A might be viewed differently in Situation A than in Situation B. In the same way, different aspects of the self become accessible in different contexts.

The three elements of the relational schema are thought to be structurally associated in memory such that schematicity in each element and in the entire structure exists. The latter can be termed conjoint schematicity. Priming or activation of one element of the relational schema will spread conjointly to the other elements. Baldwin (1992) predicted information-processing effects for all three elements in the relational schema. Relational schemas will direct people's attention to specific kinds of interpersonal information, leading them to ignore or forget other schema irrelevant experiences. Baldwin (1992) also speculated about the motivational and affective implications of relational schemas. Apart from the internal states associated with a

relational schema, there might be strong motivation to achieve or avoid a particular interaction that is partly based on past experience.

3.3.1.2   Empirical support for the relational schemas model

Elements of the relational schema model have received support in research studies employing a range of methods. Baldwin and collaborators conducted research to examine the content, structure and function of relational schemas across a number of interpersonal contexts. Often the focus was on people's schemas for their closest significant relationships (Baldwin, 1999). Some of the research was based on self-report data, but one of the advantages of conceptualising interpersonal expectancies as relational schemas, is that it can also be examined using the experimental paradigms of the information-processing approach.

3.3.1.2.1 Assessing the content of relational schemas

The relational schema model proposed that the cognitive mechanism underlying attachment styles are expectations about interactions with significant others. In a study by Baldwin et al. (1993, study 1) subjects first generated if-then or behaviour-and-response pairs in the interpersonal domains of dependency, closeness and trust (for example: "if I depend on my partner, he or she will support me"). Subjects were asked to imagine being in the situation with a romantic partner and to rate the positive and negative outcomes according to how often the partner would respond that way. The results demonstrated a meaningful relationship between subjects' self-reported attachment style (secure, anxious/ambivalent or avoidant) and their expectations about likely patterns of interaction in the domains of trust and closeness. The attachment style of the subjects was measured with the forced choice attachment measure of Hazan and Shaver (1987).

In a second study by Baldwin et al. (1993, study 2) subjects with different attachment styles performed a lexical decision task in which target words represented either positive or negative interpersonal outcomes and sentences established the interpersonal contexts (trust, closeness and dependency). The prediction was that placing the words in meaningful interpersonal contexts would overall lead to faster response times, and that this effect would be strongest when outcomes matched the subject's attachment style. The overall main effect for relatedness was only marginally significant, but in the predicted direction ($F(1,29) = 3.67$, $p = .065$). For

targets selected to match the expectancies of the attachment styles, there was indeed a significant relatedness effect ($F(1,30) = 4.40$, $p < .025$). These two studies provided evidence that interpersonal expectations, expressed as if-then contingencies, could be different in persons with different attachment styles. Subjects with different attachment styles gave different estimates of the likelihood of various positive and negative outcomes in response to expressions of trust and closeness seeking (Baldwin et al., 1993).

In a number of studies Baldwin and co-workers also used self-report research to reveal that the content of *if… then…* social expectations correlate with specific individual differences. Baldwin and Keelan (1999) studied gender differences in expectancies of friendliness and dominance. Women expected more affiliative responses to their friendly behaviour ($F(1,178) = 9.10$, $p < .01$) and their submissive behaviour ($F(1,178) = 7.19$, $p < .05$) towards other. High self-esteem individuals (measured with the Rosenberg Self-Esteem Inventory) also expected more affiliative responses to their friendly behaviour towards others ($F(1,178) = 9.10$, $p < .01$). Fehr, Baldwin, Collins, Patterson and Benditt (1999) found gender differences in the anticipated response to the expression of anger in close relationships. Women were more likely to expect that when they express aggression directly their partner would deny responsibility ($p < .10$) or mock them ($p < .05$). In contrast, men were likely to expect that that their partner would express hurt feelings ($p < .001$), avoid ($p < .10$) or reject them ($p < .001$) when they express aggression more directly. People with social anxiety expected others to respond by dominating or rejecting them, even when they would act in a warm and friendly manner towards the others (Baldwin & Fergusson, cited in Baldwin, 1999). This kind of research investigated the interpersonal expectations that may enhance the understanding of the "social-cognitive maps" that people use to navigate their social behaviour. It is a serious limitation that all these studies relied only on self-report methodology. What people say they would do in anger situations, for example, may differ from what they would actually do.

Baldwin et al., (1996, studies 1 & 2) demonstrated that subjects' self-reported general attachment style was related to (a) the percentage of their significant relationships that fitted their particular attachment style descriptions ($F(2,342) = 140.32$, $p < .001$), (b) the ease with which they could generate exemplar relationships matching these

descriptions ($F(2,546) = 7.64$, $p < .01$) and (c) their interpersonal expectations in these relationships ($F(4,584) = 10.63$, $p < .001$). Participants with secure attachment styles (a) were most likely to report secure relationships, (b) could more easily identify examples of secure relationships, and (c) had the most positive relationship expectancies overall ($F(4,342) = 3.17$, $p < .05$). The results demonstrated the availability and accessibility of relational schemas. Most people however reported multiple styles of relating, supporting the idea of having multiple interpersonal models and ways of relating to available others.

Although analysing the content of verbal reports has proven useful in studying the content of relational schema, this method is limited to beliefs and motives that individuals can consciously experience and articulate (Shaver, Collins & Clark, 1996). Baldwin et al. (1996, study 3) primed different types of attachment experiences through visualising the face of a person with whom the person had a secure, avoidant or anxious-ambivalent relationship. As predicted, the selective priming affected participants' attraction to potential dating partners who displayed particular attachment behaviour ($F(4,142) = 2.46$, $p < .05$). There was no significant effect when attraction ratings were analysed in terms of self-reported attachment style and the result is therefore difficult to reconcile with the view that attachment styles are essentially stable dispositions.

3.3.1.2.2 Priming studies with relational schemas

One of the fundamental assumptions of the relational schema construct is the conjoint schematicity or associative links between the different elements of the schema. Baldwin (1999) agreed with the assertion by Higgins and Bargh (1987) and Segal, Hood, Shaw and Higgins (1988) that evidence of spreading activation is needed before one can claim the existence of a schema. This will demand that one element of the hypothesised schema be primed and measures taken to demonstrate that the activation has spread to the other elements. Dependant measures that can assess this activation can be reaction time tasks, lexical decision tasks, Stroop tasks or other impression formation tasks. Subliminal priming, also in combination with reaction time and other related tasks, have an advantage over self-report measures, because it may avoid some of the problems with asking persons to report on their cognitive processes. It may also provide some insight into the automatic cognitive processes of subjects (Bargh & Pietromonaco, 1982; Erdley & D'Agostino, 1988).

Priming studies can activate a specific relational schema through guided visualisation of the significant other or exposure to the name or characteristic features of the significant other. The effects of this activated relational schema on information-processing or behaviour can then be observed (Baldwin, 1995). Baldwin and co-workers demonstrated the spreading activation between the other schema and the self-schema elements of relational schemas in a number of experimental studies (Baldwin, 1994; Baldwin et al., 1990; Baldwin & Holmes, 1987; Baldwin & Sinclair, 1996).

In a study by Baldwin and Holmes (1987) forty undergraduate women visualised the faces of either two campus acquaintances or two older members of their family. After a short discussion (a time interval of over ten minutes), the subjects were asked to take part in a seemingly unrelated experiment of reading a sexually permissive piece of fiction and responding on how much they liked it. Participants primed with a parental figure reported less enjoyment (M = 4.02) of the sexually charged written passages than did participants who were primed with the representation of a friend (M= 4.82, F(1,36) = 4.46, p < .05). This finding suggested that the activation of the representation of a familial significant other versus a friend differentially influenced participants' self-evaluative standards. In the debriefing after the study, the subjects overwhelmingly denied awareness that the "private audiences" that were primed had any connection with their responses to the passage (Baldwin & Holmes, 1987). The results supported the assumption that the visualisation prime served as a cue in activating cognitive structures representing significant others and one's relationship with them. The primed relational schema apparently shaped the subjects' sense of what kind of behaviour were acceptable.

It was hypothesized that cognitive structures representing interpersonal information could be activated with more subtle or even minimal primes. In two related studies (Baldwin et al., 1990), stimuli representing disapproval by significant authority figures were presented as primes below the level of the subjects' awareness. In study 1 sixteen graduate students were subliminally exposed (two milliseconds pictorial prime followed by a masking slide for ten milliseconds) with (a) the disapproving face of their program director, or (b) the smiling face of a post-doctoral fellow. After the experiment the subjects were asked to guess what had been flashed on the screen, but nobody was able to report accurately on the actual nature of the experimental

stimuli. The students who were subliminally exposed to the disapproving face of their director rated their research ideas less favourably ($M = 72.7$) than those who were exposed to the approving face of a post-doctoral fellow ($M = 79.9$, $t(15) = 1.84$, $p < .05$) (Baldwin et al., 1990, study 1). The findings supported the prediction that even very limited exposure to positive or negative evaluative stimuli of an interpersonal nature can affect self-evaluation. The sample size and the uncertainty about the direction of the effect limited the study. Without a control condition it was impossible to indicate whether the disapproving or smiling face was responsible for more of the variance.

In a similar study (Baldwin et al., 1990, study 2), forty-six female Roman Catholic participants were asked to read two passages: (a) a filler story about a local park area and (b) the same passage describing a woman's sexual dream portraying a permissive attitude toward sexuality that was also previously used by Baldwin and Holmes (1987). Then the subjects were subliminally exposed (approximately four milliseconds) to (a) the disapproving face of Pope John Paul II, (b) the disapproving face of an unfamiliar person, or (c) a plain white card. Subjects were designated as high or low practicing following a median split procedure based on their post-experiment ratings of their involvement in their religion. The participants subliminally exposed to the disapproving face of the Pope evaluated themselves less positively on a subsequent self-concept inventory than did their counterparts who were exposed to the disapproving face of a non-significant other or the control stimulus ($F(2, 40) = 3.38$, $p < .05$). The effect of the Pope stimulus was limited to those subjects who considered themselves highly involved in their religion ($F(2, 40) = 3.41$, $p < .05$) (Baldwin et al., 1990). Subliminal exposure to the disapproving face of a personally significant other had an effect on subsequent self-evaluation. This experiment ruled out the alternative explanation that simply the exposure to a disapproving face caused the effect. Therefore, the brief exposure to the disapproving face of a recognised significant other could activate pre-existing cognitive structures representing negative evaluation by people who are personally important. The results supported the hypotheses that a pattern of interacting observed over time in a relationship, became represented as a regular pattern of relating between the self and the significant other. The effect of activating one element of the structure could be demonstrated in another element of the structure. A

possible alternative interpretation remains that the nature of the stimulus (a disapproving face of a significant other) could activate an affective process of some kind. This alternative can only be ruled out if stimuli are presented that are more neutral in nature, or stimuli that can be experienced in a positive or negative light.

Names have been used occasionally in social cognition research to prime social constructs. Herr (1986) briefly exposed subjects to the names of hostility-related people (for example the boxer Joe Frazier or the dictator Adolf Hitler), and those primed were more likely to apply hostility in subsequent impression-formation tasks.

Baldwin (1994, study 1) asked thirty-three undergraduate subjects to provide the name of a highly critical person who currently did not like them, and one of a very accepting person who did like them. One name or the other was then presented to them subliminally (16 milliseconds with a mask of 100 milliseconds) during a computer exercise. The subjects were then asked to perform a very difficult task and their self-evaluations and momentary mood were assessed. No subject was able to report accurately on the priming stimuli. This provides evidence that the masking procedure was effective in rendering the names inaccessible to conscious awareness. The participants primed with the name of a contingent accepting relationship reported lower levels of momentary self-esteem (M = 63.27) than participants primed with the name of a non-contingent relationship (M = 71.22, $F(1,31)$ = 5.58, p < .05). Although the self-evaluative and the social-evaluative concerns of those in the critical-other condition were raised, the effect of the prime did not spread to the subjects' self-report of mood. The subliminal presentation of the name of a critical significant other activated a schema for the other person (critical other), a schema for the self ("I am inadequate"), and a script for a possible interaction ("If I do not perform well, he/she criticises and reject me") (Baldwin, 1994). Unfortunately, the lack of neutral-prime or no-prime control conditions in the experiment makes it impossible to infer whether the contingent or non-contingent prime is responsible for the experimental effects. Baldwin (1994) also suggested that future research should include such control conditions.

Baldwin and Sinclair (1996) used a lexical decision task to examine people's speed in processing acceptance and rejection target words in success and failure contexts. In study 1, low self-esteem individuals recognised rejection words quicker in the failure context than in a success context ($F(1, 52)$ = 4.69, p < .05). Thus, low self-

esteem individuals had a chronically accessible relational schema, in which success and failure are associated with acceptance and rejection respectively. It was suggested by study 3 that, by means of guided visualisation of an accepting or evaluative person, contingent-acceptance relational schemas would be activated. Contingent-prime participants recognised rejection words significantly faster in the failure than in the success context (t(19) = 2.38, p = .01, one-tailed). It was concluded that the acceptance or contingent prime temporarily activated a relational schema in which failure was associated with rejection. In study 3, no self-esteem effects were found, suggesting that the situational prime were more influential than the individual differences between subjects.

Baldwin and Meunier (1999) did an experiment to demonstrate that interpersonal structures may be triggered by contextual and incidental cues in the environment. Classical conditioning paradigms examined the possibility of creating associations between neutral cues and specific relational schemas so that presentation of the cue activates the relational expectancies. The activation of the relational schemas were tested by conducting a lexical decision task with forty-two participants of different attachment orientations while a specific tone sequence, previously conditioned with visualising a non-contingently accepting or a contingently accepting significant person, were played in the background. The conditioned stimulus had an impact on how people processed interpersonal information. In both cases the contingent conditioned stimulus activated an expectancy of contingent evaluative feedback. For participants higher in the preoccupied orientation, the stimulus led them anticipate an if-then link between failure and rejection (F(3,37) = 5.91, p < .05) and for those higher in the secure orientation a link between success and acceptance (F(3,36) = 6.96, p < .05). The two avoidant attachment conditions (fearful and dismissing) did not contribute to the prediction of conditioning effects. There was no non-conditioned stimulus or neutral-conditioned stimulus control conditions in the experiment. The results have also not yet been replicated.

In a study by Pierce and Lydon (1998) subliminal presentation of positive or negative interpersonal words was used to activate positive and negative interpersonal expectations. The experimental priming manipulation influenced participants' affect, support seeking and coping responses when faced with an imagined stressful event. The activation of positive interpersonal expectations increased reports of seeking

emotional support ($t(45) = 2.68$, $p < .01$, $r = .37$) and decreased the use of self-denigrating coping ($t(45) = 2.12$, $p < .05$, $r = .30$). The activation of negative interpersonal expectations decreased reports of positive affect ($t(45) = 2.48$, $p < .01$, $r = .35$) and tended to impede growth-oriented coping ($t(45) = 1.54$, $p < .07$).

Murphy and Zajonc (1993) found that subliminal priming or preactivating participants with a happy face increased their liking of neutral Chinese ideographs. Banse (1999) extended this technique and primed participants with the first names or faces of relationship partners, their own names or faces or neutral control words and unknown faces. The visibility of the primes was manipulated by either masking them or not. It was investigated how the different priming conditions modulated the evaluation of immediately following neutral Chinese letters. In the low visibility condition, the letters were more positively evaluated when they were preceded by the name or face of the relationship partner than when they were preceded by the participant's name or face ($F(2, 198) = 8.53$, $p < .001$). The subliminal activation of the cognitive representation of relationship partners evoked a positive reaction from participants. In the high visibility condition, a similar but stronger effect was found for face primes, and no effect for name primes. In this condition the nature of the stimulus played a more conscious role in determining the participants' responses to the stimulus.

Mikulincer, Hirschberger, Nacmias and Gillath (2001, study 5) subliminally primed participants with the names of a positive attachment figure, the name of a close person, a known person or an unknown person. The participants made higher liking ratings of Chinese ideographs following the priming with the attachment person ($M = 4.12$), than the close person ($M = 3.67$), the known person ($M = 3.46$) or the unknown person ($M = 3.64$, $F(3,123) = 7.88$, $p < .01$).

3.3.1.3 Discussion of relational schema model

Smith (1984) asked for a single, more general, social-cognitive model that could integrate different social-cognitive domains. The relational schema construct (Baldwin, 1992) integrated contributions from various theoretical paradigms in one social-cognitive formulation. It was hypothesised that relational schemas are based on repeated interactions with significant others and are constituted by the self-schema, other schema and interpersonal script components operating in close interaction. Priming of one element is expected to spread to the other. Multiple

relational schemas could be available to most people and could become available in different social contexts. Any one model may be more or less chronically accessible and play a more dominant role in the processing of social information.

The study by Baldwin et al. (1993) matched attachment styles (chronic accessibility) with interpersonal contexts and target words to demonstrate facilitated processing of social information in related conditions. This is a good example of a study acknowledging different factors that may be involved in determining the contribution of past experiences.

The priming studies that were done in their research program demonstrated the effects of subliminal exposure to the faces of personally significant persons on subsequent self-evaluation tasks. Although the primes were personally significant, they were in most cases general stimuli presented to all participants and not based on the specific significant others of individual participants. The effects could be ascribed to the nature of the stimuli and not the personal history with significant others. Banse (1999) primed participants with the first names of relationship partners, but investigated a very general response reaction. None of the studies investigated the effect of priming with significant others (the other schema component of the relational schema) on the processing of interpersonal scripts (the script component of the relational schema). It is also important to note that most of these studies were done without considering variations in attachment style. The relational schema model contributed to the present study in providing the relational schema as a theoretical construct describing regularities in past interpersonal relatedness, influencing the current processing of interpersonal information. The priming studies that were done with relational schemas provided a paradigm for investigating the different elements of a working model.

In the next section a discussion on the representations of significant other is presented. It will contribute to the understanding of the features of representations of significant others and its influence on the prosessing of social information.

3.3.2 Representations of significant others

This review has already emphasised the role of significant others in the social development of individuals (Chapter 2), as well as the cognitive representation of interpersonal relationships (section 3.3.1). This section will focus on the way that

significant others are represented in memory. It can be assumed that representations of significant others is part of a network of interconnected social constructs. The contribution of the social-cognitive model of transference, as introduced by Andersen and Baum (1994), will be reviewed. Andersen and co-workers have done extensive work investigating the cognitive representation of significant others and the effects of activating those stored representations on the processing of social information.

3.3.2.1   Social-cognitive model of transference

Information about a specific person, in this case a significant other, can operate as a social construct representing an individual person. The central argument of the social-cognitive model of transference is that mental representations of significant others develop from numerous interactions with these individuals. The relationships with significant others are often characterised by stronger emotional bonds, more positive experiences and frequent interactions (Shah, 2003a). Significant other representations are of relevance to the self and are often laden with affect. People have numerous interactions with their significant others, and should be highly familiar with them. Therefore representations of significant others will have numerous features and share associative links with many other constructs (Andersen, Glassman & Gold, 1998; Prentice, 1990). The significant other representations are also connected with the representations of the self by means of self-significant other or relational linkages (similar to the proposal by Baldwin, 1992).

This representation or exemplar of a significant other person, based on past experiences, can be activated and applied to a new person. As a result, interactions with this new person will be experienced as if he or she was the significant other. This activation of stored representations about a significant other and the application to a new person constitute the fundamental process by which transference occurs (Chen & Andersen, 1999).

The same basic principles thought to govern other social constructs (see section 3.2) similarly guide the activation and use of significant other representations. Overall the social-cognitive model on transference suggests that significant other representations will have a chronic readiness to be activated. However, recent activation or priming of a significant-other representation further increases the likelihood that the representation will be activated and applied to a newly encountered person.

Furthermore, the resemblance or applicability between the target person and the stored knowledge about the significant other also increase the likelihood that the representation of the significant other will be activated and applied to the new person (Chen & Andersen, 1999). People will be more likely to remember a newly encountered person in terms of an applicable significant-other representation. They will report that they had learned something about the new person that they actually had inferred from the relevant significant-other representation (Baum & Andersen, 1999). Chen and Andersen (1999) regarded these memory effects as the basic index of representation derived transference. When some information about a new person reminds a perceiver of a significant other, the stored representation of the significant other comes consciously or unconsciously to mind, colouring the perceiver's interpretations of and responses toward the new person (Chen & Andersen, 1999).

Although significant other representations are expected to operate like other constructs (Higgins & King, 1981) and exemplars (Smith & Zárate, 1992), they are assumed to be especially affectively and motivationally laden (Andersen et al., 1998). The activation and application of a significant-other representation to a new person should also lead to evaluations of that person derived from the representation. In line with the proposal of the theory of schema-triggered affect, the overall tone of a significant other representation may be transferred to a new person (Fiske & Pavelchak, 1986). The social-cognitive model of transference proposes that significant-other representations also include information about motivations, and expectations experienced previously in relationships with significant others.

The model also assumes that representations of self and significant others are linked in memory. When the significant-other representation is activated, aspects of the self that have been experienced in the relationship with the significant other will also be activated. This can be demonstrated in terms of motivations, affect, roles and expectations that the person experiences in relation to the significant other. Significant other resemblance in a new target person should lead to shifts in the working self-concept toward the self when with the relevant significant other (Chen & Andersen, 1999). The best evidence for this will involve changes in the working self-concept, in the direction of the self-when-with-the-significant-other. People will become the version of themselves that they are when they are with the significant other.

The model also has a motivational basis, because it recognises that people's motivations for satisfaction and security will influence their relationships with their significant others and will therefore also be represented in their representations of self, significant others and the self in relation to significant others (Chen & Andersen, 1999).

3.3.2.2   Basic experimental paradigm

Andersen and Baum (1994) are of opinion that "the unequivocal demonstration of transference involves the independent assessment of a previously formed mental representation, presumably of a significant other, and the demonstration that this specific representation can be applied to another person" (p. 465). Andersen and co-workers used a basic experimental design to conduct their research program. Idiographic methods were used to assess the idiosyncratic content of people's representations of their significant others. These descriptors were then used as stimuli in a nomothetic experimental design. The use of a combined idiographic-nomothetic methodology made it possible to track normative processes generalising across people, while using idiographic information (Chen & Andersen, 1999).

In a pre-test session, participants were asked to generate descriptive sentences about a significant other, and if needed about other control constructs as well. These descriptors were later used as stimulus materials in a nomothetic experiment. In most of the experiments participants were asked to name two significant others ("someone you know very well, have known for a long time, and is very important in your life", p. 1112). One was to be a positive significant other ("someone you like very much and feel good about, someone in whose presence you feel happy and great about yourself, and someone you want to be close to, want to share your feelings with, and do not want to distance yourself from", p. 1112), and the other was to be a negative significant other ("someone you do not like very much and do not feel very good about, someone in whose presence you feel unhappy and bad about yourself, and someone you do not want to be close to, want to avoid sharing your feelings with, and want to distance yourself from", p. 1112) (Andersen et al., 1996).

Complete one-to-one participant yoking across conditions was used – meaning that each participant in the experimental condition was yoked with a participant in the control condition, so that the control participant was exposed to the exact significant

other features of this experimental participant. The yoking procedure completely controlled the nomothetic content of the target features presented across conditions, leaving only differences in idiographic meaning. This control made it possible to draw conclusions about the basic processes emerging in the significant other resemblance condition, ruling out the possibility that just anyone's significant other features might be able to produce such effects (Andersen & Baum, 1994).

In the learning phase of the experiment, conducted in a separate session, normally about two weeks later, participants learned descriptive sentences about one or more target persons. One target always resembled the significant other participants had described earlier. After learning about the target person(s), participants took part in the test phase of the experimental session. They completed a variety of dependant measures, including a standard recognition-memory test composed of representation-derived descriptive sentences (as well as some filler sentences) that were or were not presented about each target in the learning phase (Chen & Andersen, 1999).

For every target person, the participants' recognition-memory responses and their confidence ratings for representation-derived descriptors that were not actually presented in the learning phase, served as measure of the representation-derived transference. The more representation-derived responses and higher confidence in the significant-other-resemblance condition relative to the control condition(s) served as the basic index of representation-derived memory and inference.

3.3.2.3 Empirical support of social-cognitive model of transference

3.3.2.3.1 Identification of significant others

In the study by Andersen and Baum (1994) a group of fifty undergraduate students, when asked to identify the significant other people in their lives, listed family members (33% - of which about half were parents), close friends (44%) and romantic partners (14%). Most of the romantic partners were considered to be positive (86%), and the non-parental significant others of their parents' age that were listed (for example extended family or non-family) were mostly negative. Another group of forty-seven subjects (Andersen et al., 1995) named family members (44% - including 22% mothers and 9% fathers), close friends (48%) and romantic partners (8%) as significant others. They identified acquaintances (30%), not-so-close friends (28%)

and various working people (42%) as non-significant others. These results supported the notion that parents (especially mothers) and close friends are the positive significant others in the lives of students.

3.3.2.3.2 Accessibility of significant other representations

In a feature-listing task with twenty-three participants, they listed more attributes describing a significant other than attributes describing three other social categories (non-significant other, stereotype or trait) ($F(3,63) = 9.60$, $p < .0001$) (Andersen & Cole, 1990, study 1). This implied that representations of significant others are richer in associations than the other social categories or that the associations are at least more accessible. In a similar study, the latency period to list features of a significant other was significantly shorter than any other condition ($t(19) = 3.33$, $p < .001$) (Andersen & Cole, 1990, study 2). These results suggested that the features of significant others are easier to retrieve than the features of related stereotypes and traits.

3.3.2.3.3 Representation consistent memory effects

Andersen and Cole (1990) demonstrated evidence for the representation-derived inference and memory. In study 3 (Anderson & Cole, 1990), participants had to generate at least fourteen descriptive items for people from each of four social categories (significant other, non-significant other, stereotype and trait). In a seemingly unrelated "memory" experiment, ten features were presented to them about each of four fictional people, of which six were taken from the items generated above. In a recognition memory test the participants had to indicate which of fifteen statements were earlier presented as descriptive of that particular fictional person. This was an ideographic extension of the false positive memory paradigm introduced by Cantor and Mischel (1977). The recognition confidence ratings of category descriptive items that have not been presented in the learning trails were averaged for every category and compared. The participants were significantly more confidant that they have seen category descriptive features that were not presented to them when it was features of the own significant other rather than from any other category ($t(20) = 2.64$, $p = .01$). The recognition confidence ratings of category descriptive features that were indeed presented to them were also higher when a significant other representation was activated at encoding ($t(20) = 2.31$, $p = .025$) (Andersen &

Cole, 1990, study 3). The activation of a significant-other representation by an unfamiliar, fictional target person led to significantly more false-positive recognition errors in remembering information about this person, than did the activation of any other category. The activation also led to better memory of the information that had actually been presented during the learning trials. They succeeded in their general research goal of activating a significant-other representation and eliciting bias in the processing of social information or social behaviour.

This result has been replicated in numerous studies, using designs varying the number of target persons about whom participants learn, the control conditions used and the manner in which participants are exposed tot the descriptors about the target persons (Andersen & Baum, 1994; Andersen & Cole, 1990; Andersen et al., 1995; Andersen et al., 1996; Glassman & Andersen, 1999b; Hinkley & Andersen, 1996). Perceivers were more likely to assume that a new person had features consistent with their significant other than features of non-significant others they knew or of social categories they used (Andersen & Cole, 1990; Andersen et al., 1995). These results were demonstrated whether the significant other representations were positively or negatively toned (Andersen & Baum, 1994).

3.3.2.3.4 Chronic accessibility

It has been demonstrated that significant-other representations are highly familiar, frequently thought about, and of relevance to the self (Andersen & Glassman, 1996; Andersen et al., 1998). Therefore it was proposed that significant-other representations are very likely to be chronically accessible. Studies demonstrated that the basic inference and memory effects have persisted and may even exacerbate over time (Glassman & Andersen, 1999b). Participants completed a recognition-memory test immediately after learning about new people and again two to three weeks later. The participants expressed greater confidence in having learned representation-consistent attributes that were not presented to them in the significant-other condition relative to the control conditions across both administration times ($F(3,48) = 12.60$, $p < .0001$). The predicted transference effect increased from the immediate measurement ($t(16) = 2.60$, $p < .01$) to the two to three week follow-up measurement ($t(16) = 4.18$, $p < .0005$). The participants demonstrated greater recognition confidence in all the experimental conditions overall at the follow-up measurement ($M = 2.29$), compared to the immediate measurement ($M = 1.57$).

Glassman and Andersen (1999b, study 2) attempted to rule out the possibility that the effects in the follow-up measurement were due to the repeated administration of the memory test. The first and only administration of the memory test took place during the follow-up session. The expected effect was found ($F(3,60) = 6.35$, $p < .0008$) as participants expressed greater confidence in having learned representation-consistent attributes not presented to them in the significant-other condition ($M=2.67$) relative to the control conditions ($M = 2.24$). The memory effect favouring the target person resembling the own significant other was therefore also present two weeks after the exposure. The duration of such effect demonstrated the chronic accessibility of significant other representations.

3.3.2.3.5 Chronic accessibility and priming sources of activation

The presence versus absence of priming was manipulated in a study to examine whether chronic and priming sources of activation combined to elicit transference (Andersen et al., 1995, study 1). Forty-seven participants took part in a pre-test session in which they identified and described a significant other and a non-significant other. In the experimental session that immediately followed the pre-test session (priming condition) or followed several weeks later (no-priming condition) they learned about four new target persons that resembled their own significant other, their own non-significant other, a yoked participant's significant other or a yoked participant's non-significant other. Afterwards they completed a standard recognition-memory test. Participants showed greater representation-derived recognition memory about the target resembling their own significant other, relative to their non-significant other and each of the yoked-participants' targets ($F(1,43) = 9.37$, $p < .004$). These findings held across priming conditions, suggesting the chronic accessibility of the significant-other representation. For targets resembling the participants' significant others, the representation-derived inference and memory were greater in the priming condition than the non-priming condition ($F(1,43) = 6.56$, $p < .01$). The data demonstrated that both chronic and transient priming sources of activation contributed in an additive manner to the activation of significant-other representations (Andersen et al., 1995). The transient sources of activation could be understood to be the presence or absence of advanced priming and the presence or absence of the triggering stimulus in the target person. Andersen et al. (1995, study 2) replicated the results of study 1, but added a no-trigger significant other condition,

(the target resembled a significant other of a yoked participant, but the recognition memory test involved features of one of the participant's significant others), a someone else's significant other condition and a loose set of self-generated person descriptors. The participants showed more false memory confidence when the target resembled the participant's own significant other than in the remaining conditions ($F(3,87) = 12.14$, $p < .0001$). The data indicated that significant other activation occurred even when it was not provoked by target cues in the no trigger condition in comparison to the other control conditions ($t(29)$ 3.30, $p < .005$) (Andersen et al., 1995, study 2).

Shah (2003a, study 1) investigated the commitment of participants to the goals the significant others had for them. Priming with the name of a significant other had a stronger effect when the participants reported being close to the primed person compared to when they were relatively distant. This suggested that the nature of the relationship with the significant other moderated the commitment of participants to the goals the significant others had for them. The closeness to the significant other could also support the suggestion that the representation of the significant other was frequently used and therefore chronically activated. In a similar experiment (Shah, 2003a, study 2) measuring the accessibility of goal related words in a lexical decision task, the effect of priming the concept "father" also increased with the degree to which participants were closer to their fathers and with the degree to which their fathers were perceived to value their pursuit of these goals ($B = 0.046$, $F(1,42) = 5.24$, $p < .05$).

3.3.2.3.6 Chronic accessibility and applicability sources of activation

The social-cognitive model of transference predicted that applicability sources of activation would increase the likelihood that the relevant significant other representation be activated and applied to the person. This prediction was studied by manipulating the presence versus absence of applicability (Andersen et al., 1995). In the pre-test session participants were asked to name and generate descriptive statements for two different significant others. They also generated one descriptive sentence for each of a diverse list of well-known individuals, to provide stimuli for a new "no representation" control condition. Participants learned about four target persons in the learning phase. In the applicability condition, participants learned about a target person who resembled one of their significant others and received

descriptive statements from the same significant other as test items. In the no-applicability condition, the target resembled one of the yoked participants' significant others, but the participant received descriptive statements from the other own significant other as test items. In the first control condition descriptive statements from a yoked participants' significant other were presented as target descriptive statements as well as test items. In the second control condition, descriptive statements from the "no representation" condition were presented as target descriptive statements as well as test items. As predicted, greater representation derived memory was demonstrated in the applicability condition relative to the non-applicability condition. In the non-applicability condition there was evidence of greater representation derived memory than in the each of the control conditions. Therefore, evidence for the chronic accessibility of significant-other representations was also demonstrated. Overall, this study demonstrated that a significant other representation is more likely to be activated and applied to a new person when the new person bears some resemblance to the significant other and thus "triggers" the representation. This process occured even though significant other representations were chronically accessible and likely to be used (Andersen et al., 1995).

Chen et al. (1999) examined the hypotheses that increasing degrees of applicability would combine with chronic accessibility of significant other representations to produce increasing activation of these representations. No applicability effect was found, but greater representation consistent memory for targets resembling significant others demonstrated the chronic accessibility of significant other representations. Because there was a degree of applicability in all the experimental conditions, the results could not be explained as only a result of chronic accessibility.

It was difficult to distinguish between knowledge activation and knowledge use when knowledge was at least partly been activated on the basis of applicability cues from the target person. In such a case, the applicability cues did not only activate the knowledge, but were also part of the task that demonstrated the use of the knowledge (Chen et al., 1999). Knowledge activation could also take part during the memory test.

3.3.2.3.7 Unconscious activation of significant other representations

In an experiment by Glassman and Andersen (1999a) participants were brought under the impression that they were interacting in a computer task with another participant, while they were simultaneously subliminally exposed to descriptors of either their own significant other, the significant other of another participant, or a self-generated no-representation control group. In a subsequent impression-rating task, participants were asked to rate several features in terms of how descriptive they were of their "computer partner". When the subliminal stimuli described their own significant other, the participants were to more likely to indicate that their "computer partner" had other features of their significant other in addition to those that were subliminally presented to them ($F(2,111) = 3.59$, $p = .03$). In a direct comparison between the own significant other group ($M = 5.86$) and the significant others of another participant group ($M = 4.82$), the effect was significant ($t(71) = 2.45$, $p < .02$). A manipulation check confirmed that the participants were not conscious of the stimuli (Glassman & Andersen, 1999a, study 1). The central findings of study 1 were replicated with similar differences between the own significant other group ($M = 5.70$) and the significant others of another participant group ($M = 4.82$, $F(1,74) = 4.22$ $p = .04$) (Glassman & Andersen, 1999a, study 2). The findings demonstrated that significant other representations could be activated by the subliminal presentation of features of significant others.

Shah (2003a, study 1) demonstrated that when participants received a subliminal prime (55 milliseconds) with the name of their mothers, they rated significantly more commitment to the goals that their mother had for them, compared to a prime of a control word ($B = 1.19$, $F(1,34) = 9.31$, $p < .01$) or the name of a friend ($B = 0.93$, $F(1,34) = 9.03$, $p < .01$). The analysis also provided evidence that when participants reported being close to their mother, priming them with the name of their mother had a significantly stronger effect compared to the friend prime ($B = 0.83$, $F(1,34) = 5.28$, $p < .01$) or the control prime ($B = 1.17$, $F(1,34) = 5.12$, $p = .01$). Closeness to the friend moderated the priming effect in a similar way.

3.3.2.3.8 Representation consistent evaluation

In a between subjects design Andersen and Baum (1994) asked fifty participants to describe both a significant other about whom they feel very positively and one about

whom they feel very negatively. Two weeks later, in a "different experiment" about "social interaction" half of the subjects learned about a target person that resembled their own positive or negative significant other and the other half about a target person that resembled someone else's positive or negative significant other. They then completed an evaluation measure of the target person and a recognition memory test. The recognition memory test again confirmed that the recognition-confidence ratings for category descriptive features that were not presented were higher when the target resembled their own significant other ($F(4,46) = 14.63$, $p < .0004$). On the evaluation measure, subjects rated the target persons more positively when they resembled their positive significant other ($M = 4.72$), rather than the significant other of someone else ($M = 4.21$, $t(46) = 3.47$, $p < .005$). The target person resembling the own negative significant other were also rated more negatively ($M = 3.39$) than the target resembling another person's negative significant other ($M = 4.17$, $t(46) = 5.09$, $p < .0005$). The participants expressed more representation-consistent evaluation toward the target person when the target resembled their own significant other (Andersen & Baum, 1994). In this study the subjects listed their significant other features two weeks in advance and the transference phenomenon occurred even when the significant other was not primed immediately in advance. It suggested that the significant other representations were chronically accessible, although the representation relevant features of the target persons also acted as possible sources of temporary activation.

In research examining the representation-derived evaluation in transference, participants were asked to name and describe positively and negatively evaluated significant others. Representation-derived evaluation was then examined by manipulating significant-other resemblance and the evaluative tone of the significant other representation in the experimental setting. In a "real" social context where the target person was allegedly seated next door and a personal interaction was imminent, participants tended to evaluate new persons as a function of whether or not the new persons resembled a positively or negatively toned significant other (Andersen & Baum, 1994; Andersen et al., 1996). People liked a new person that resembled a positively toned significant other more than a negatively toned significant other. The effect, however, did not hold up in all experimental conditions (Andersen & Baum, 1994; Andersen et al., 1996).

3.3.2.3.9 Representation consistent affect

The Andersen and Baum (1994) experiment was also used to study the transfer of transient schema-triggered affect. The participants felt slightly less depressed when targets resembled their own positive significant other (M = -.20) compared to their own negative significant other (M = .01), but the pattern was non-significant.

Andersen et al. (1996) designed a study to investigate the assumptions that motivations, expectations and affect experienced previously in relationships with significant others, can be activated and applied to other persons. Participants' facial expressions were covertly videotaped as they learned each descriptive statement about the new target person. This provided a non-verbal measure of the affect experienced by the participant upon encoding the descriptive statements. Two judges, blind to the condition, rated participants' facial expressions for pleasantness as they read each descriptor (Andersen et al., 1996). Participants responded with more positive affect when they were learning about the target that resembled their positively toned significant other in comparison to the negatively toned significant other (t(76) = 1.73, p = .045). This pattern did not emerge when the target resembled the yoked participant's significant others. Analyses were also conducted to ascertain whether the participants' affect was responsive to the valence of the target descriptive statements. Participants displayed more positive affect when they were exposed to the positive descriptive statements of a target person resembling their negatively valenced significant other. However, they responded to negative descriptive statements of the positively valenced target person with especially positive facial affect. The negative descriptive statements in relation to the positive significant other moved the participants to respond with positive affect. This pattern was not present in the affective response to the yoked participant's significant other. The study however did not demonstrate any difference in participants' self-report of their own subjective mood state.

3.3.2.3.10 Representation consistent motivation

The study by Andersen et al. (1996) also examined the motivation to interpersonal closeness of participants, by assessing their desire to approach the target person rather than avoid him or her. In the pre-test session, participants were asked to name a positively toned significant other whom they felt close to and wanted to be still

closer to, and a negatively toned significant other whom they did not feel close to and from whom they wanted to be even more distant. After learning about the new target person, the participant's self-reported motivation for interpersonal closeness with the target person was assessed. The results showed that participants were more motivated to approach the target persons who resembled their own positively toned significant other (M = 3.96) relative to the target resembling their negatively toned significant other (M = 2.62, $t(76)$ = 3.72, $p < .001$). This pattern did not occur for the yoked participant's significant other.

3.3.2.3.11 Representation consistent expectancies

Andersen et al. (1996) assessed participants' expectancies of being accepted or rejected by a new target person that resembled a positively or negatively toned significant other. At pre-test, the participants indicated that the positively toned significant other would demonstrate more liking and the negatively toned significant other would demonstrate more rejection towards them. As predicted, the participants expected the target persons, that resembled their positively toned significant others, to like them more (M = 4.85) than the target persons that resembled their negatively toned significant others (M = 3.83, $t(76)$ = 2.46, $p < .01$) (Andersen et al., 1996).

3.3.2.3.12 Representation consistent role relations

Interpersonal roles and scripts can help to define relationships with significant others. The social-cognitive model of transference suggests that the roles one experiences in a relationship with a significant other are included in the linkages between the representations of the self and the significant other in memory. When a target person resembles a perceiver's significant other, role information linking the significant other with the self should also be activated.

Baum and Andersen (1999) investigated the hypothesis that if the person acts incongruent to the expected role relationship, the expectations and goals of the perceiver might be disrupted, leading to negative affect. When a significant other relationship is positive, and the target person acts in congruence to that role, the perceiver might experience a relatively positive mood state. In the pre-test session, participants were asked to generate positive and negative descriptive statements about positively toned significant others who were authority figures to them. Participants then learned about a new target person resembling their own or a yoked

participant's significant other. All the participants anticipated an interaction with the target person in which the person was in the role of either an "expert" or a "beginner" (Baum & Andersen, 1999). When the target resembled their own positively toned significant other and was in an incongruent role relative to the significant other, participants reported increased depressed mood (M = .296). When the target was in a congruent role, it was reflected in the non-depressive reported mood state of the participant (M = -0.166, t(55) = 1.77, p < .05). These differences did not emerge in the yoked participants' significant-other condition. The results demonstrated that information about the typical role relationship with significant others can be stored in memory as part of significant other representation (Baum & Andersen, 1999). Interpersonal roles experienced previously in relationships can provide structure for the affect experienced in new relationships with other people (Chen & Andersen, 1999).

3.3.2.3.13 Significant other representations and goal pursuit

The work by Shah (2003a, study 1) described in section 3.3.2.3.5 and 3.3.2.3.7, demonstrated that the subliminal activation of participants' representations of their significant others automatically increased their commitment to the goals that these individuals have for them. Shah (2003a, study 2) demonstrated that participants' closeness to their father, the perceived value their father placed on the task goal and the priming with their father's name significantly predicted the persistence of the participants on the task (B = 1.57, F(1,43) = 4.31, p < .05), as well as their performance on the task (B = 1.58, F(1,43) = 4.18, p < .05). The results provided evidence that participants' representations of significant others may have motivational effects, affecting goal accessibility, goal commitment, goal persistence and goal performance. Apart from replicating the findings of study 2, Shah (2003a, study 3) also revealed that participants primed with the name of a significant other that would not want them to do well, performed significantly worse in persistence (B = -1.01, F(1,108) = 6.24, p = .01) and performance (B = -1.01, F(1,108) = 5.36, p < .05) than participants in the control condition. As participants' closeness to this significant other increased, the negative effect of this priming became more negative for goal persistence (B = -0.65, F(1,108) = 4.24, p < .05) and goal performance (B = -0.87, F(1,108) = 4.12, p < .05). The priming effect with the names of significant others were however significantly weakened as the number of other goals increased that the

participants' significant other also had for them (B = -0.035, $F(1,43)$ = 4.86, p < .050) (Shah, 2003a, study 4). Similar results were found with goal persistence and goal performance.

3.3.2.3.14 Significant other representations and the self

The social-cognitive model of transference assumes that representations of significant others are associated with the self in memory. The relationship between the self and the significant other defines the linkages between the representation of significant others and the representations of the self (Andersen & Glassman, 1996; Andersen, Reznik & Chen, 1997) (see also Baldwin in section 3.3.1.2.2). A study by Hinkley and Andersen (1996) tested the hypothesis that when a significant-other representation is activated, predictable shifts in the content and evaluation of the working self-concept will take place. In the pre-test session, participants provided general self-descriptions as a measure of their general working self-concepts. Then participants listed positive and negative descriptive statements for a positively and a negatively toned significant other. They also generated statements describing the way they are when with each of the significant others. In the experimental session participants learned descriptive statements about a new target person allegedly sitting next door, that resembled their own or a yoked participant's positively or negatively toned significant other. Participants were asked to describe themselves as they "are now" by generating self-descriptive statements. Participants were also asked at the pre-test and experimental session to classify each of their working-self-concept descriptive statements as positive or negative. These evaluations were used as a measure of self-evaluation (Hinkley & Andersen, 1996). The basic inference and memory effect was again demonstrated and implied that any other effects that emerged did so in the context of transference. The degree of overlap between participants' general self-concept and their self-with-significant-other was calculated on an item-by-item basis at the pre-test session and after exposure to the experimental manipulation. Participants' working self-concept did overlap more with the self-with-significant-other when the target person resembled the participant's own significant other rather than a yoked participant's significant other ($F(1,75)$ = 4.30, p = .04). In the context of transference, perceivers appeared to become the self they are when with the relevant significant other (Hinkley & Andersen, 1996). Participants perceived their overlapping working self-descriptive statements as more positive

when the target resembled their own positively toned significant other rather than their own negatively toned significant other ($F(1,75)$ = 11.91, p < .001). The difference was not found in the yoked participants' significant other condition (Hinkley & Andersen, 1996). Although the overall overlap was quite low, the working self-concept of participants shifted in the direction of the self-with-the-significant-other when the target person resembled the participant's own significant other (Hinkley & Andersen, 1999).

3.3.2.4 Discussion of the social-cognitive model of transference

Relationships with significant others are not only characterised by a history of frequent interactions, but also by its emotional significance and relevance to the self-concept of the individual.

Baldwin (1992) theorised that the self-with-significant-other information is represented in memory in the form of relational schemas. Various information-processing effects were predicted based on the relational schema. Although the information-processing predictions of Chen and Andersen (1999) are similar, they refer to these effects as representation-derived rather than schema-triggered effects, because they do not take a similar stand on the internal architecture or schematicity of significant-other representations. They focus on the unique characteristics of every person's experience in forming a personal exemplar or construct. The ideographically generated, rather than experimenter-generated stimulus material, acknowledged the individual nature of the significant other representations. Even as the closeness of the individual to the significant other increases, the influence of the significant other representation follow suit (Shah, 2003a, study 3).

It could be assumed that representations of significant others are connected to many other social constructs in memory. Andersen and Cole (1990) demonstrated the relative ease with which participants could retrieve features of significant others. Due to its high accessibility, significant other representations can provide a structure for the experience of new relationships with other people. After their review of several studies in their research program, Andersen and Berk (1998, p. 81) concluded: "…it has been shown, that mental representations of significant others serve as storehouses of information about given individual's from one's life, and can be activated (made ready for use) and applied to (used to interpret) other individuals,

and that this is especially likely when the new individual in some way resembles a significant other".

The studies reviewed in section 3.3.2 revealed the multi-faceted ways in which past experiences with significant others can play a role in present interpersonal behaviour. Memory effects, as well as the transfer of affect, expectations and motivation, have been demonstrated. Significant other representations have been associated with shifts in working self-concept as well as improved goal performance and perseverance.

Most of the studies in the research program by Andersen used feature based approaches that view mental representations as composed of lists of features and attributes. The use of a representation in interpreting a stimulus is then a function of the overlap between the feature-based cues in the stimulus and the feature-based knowledge in the representation. This approach can be contrasted with the theory-based approach where a single target cue may activate a whole theory concerning the significant other (Chen & Andersen, 1999). In the theory-based approach, the overlap in features is unnecessary to demonstrate the representation-consistent effect. The units of knowledge that constitutes the match between the representation in memory and the activating stimulus still need to be clarified.

The chronic accessibility of a social construct, as well as the measure of transient activation, could contribute to its readiness for non-conscious processing. Chronic accessibility refers to its readiness for use in social perception, even in absence of triggering cues. Possible transient sources of activation are significant other relevant attributes in a stimulus person, other triggering cues, advanced priming and even subliminally presented or non-consciously perceived stimuli. The study by Andersen et al. (1995) demonstrated that chronic and temporary activation contributed in an additive manner to the activation of significant-other representations. Because there was a degree of applicability of features in all the experiments, the chronic accessibility factor could not be completely isolated.

Glassman and Andersen (1999a) presented features of a significant other at a subliminal level to participants in an effort to activate a significant other representation in a situation of limited information. The results confirmed the prediction of Chen and Andersen (1999) that transference might occur whether the

perceiver is aware of the resemblance between the new person and a significant other or not. However, the presence of assimilation and contrast effects demonstrated that awareness of a priming stimulus might lead a perceiver to try and avoid interpreting a new person in terms of a significant-other representation, especially if the perceiver is of opinion that such an interpretation would be inappropriate or irrelevant.

CHAPTER 4   PROBLEM STATEMENT AND OBJECTIVES

This chapter presents a summary of the literature reviewed in Chapters 2 and 3. Based on this summary, certain under researched areas will be identified, followed by specific research questions to be addressed in the present study. The objectives of the study and the hypotheses to be investigated will then be presented. The chapter will conclude with a discussion of the operasionalisation of the variables in the present study.

4.1   General summary of review

The present study investigates the social-cognitive structures and processes involved in the influence of past social experiences on present processing of social information, as outlined in Chapter 1. The preceding review of selected theoretical contributions and research studies not only provided a theoretical framework and rationale for the study, but also provided information on appropriate methods and procedures in order to operationalise the research questions.

4.1.1 Attachment theory and working models

Attachment theory provides a useful general framework for understanding the influence of past relationship experiences. As children mature, they develop mental representations of themselves, the world and the significant people in their lives. These representations or working models reflect their past interactions with attachment figures and therefore also organise current interactions in terms of prior history. Past interactions with the significant others in their lives constitute the bulk of the experiences used as the content of working models. There has been limited empirical work investigating the structure and processes of working models.

4.1.2 Secure and insecure attachment styles

Attachment research (see Feeny et al., 1994) has drawn a prominent distinction between secure and insecure attachment as two primary clusters. In retrospective studies, people with secure attachment styles described their primary attachment figures as warm, responsive, available and sensitive. In comparison, insecure attachment was associated with cold, rejecting, unfair or inconsistent attachment figures. It can be expected that the content of working models, including the significant other representations of people with secure versus insecure attachment styles, are significantly different and they process social information differently.

Baldwin et al. (1993, study 2) demonstrated that persons with different attachment styles could be differentiated in terms of their effectiveness in processing expectations of others. Persons with different attachment experiences demonstrated varied attraction to potential dating partners (Baldwin et al., 1996, study 3). A distinction can be drawn between participants with secure and insecure attachment styles and it can be assumed that they have different histories of attachment experiences available to them. It still needs to be demonstrated that representations of positive significant others are chronically available in participants with secure attachment styles and that they influence the processing of congruent interpersonal information. The same question applies to the demonstration of the availability of negative significant others in the working models of people with insecure attachment styles.

4.1.3 Three elements of relational schemas

Apart from working models there have been a number of suggestions concerning the structure of interpersonal cognition. Although the content of working models have not been specified, attachment theory dictates that a self-element, other-person element and interaction-element be included. The theoretical contribution of Baldwin (1992) shares the assumption that working models of relationships act as cognitive maps for people's social worlds. He proposed that self-with-significant-other information is represented in memory in relational schemas. The relational schemas concept also highlights the influence of past social experiences on current experience. A relational schema is hypothesised to include three elements, namely the self-schemas, associated significant other schemas, and interpersonal scripts. In the present study it is assumed that interpersonal relationships are represented in memory structures consisting of these three independent but closely connected elements. Although the self-schema and the significant other representation has received attention in empirical research, just a few investigations focused on the interpersonal script element in isolation or in combination with the other two elements (see studies by Baldwin et al., 1993; Baldwin & Keelan, 1999; Fehr et al., 1999).

4.1.4 Significant other representations

The work by Andersen and colleagues (Chen et al., 1999) provided a theoretical model and research paradigm for the investigation of significant other

representations. Significant other representations are prominent examples of the person schema element of relational schemas. The significant other representation was considered to be a single case or individual-person exemplar, which could be investigated like any other social construct. Their research emphasised the richness in associations, the distinctiveness and the accessibility of significant other representations (Andersen & Cole, 1990). In the present study it is assumed that a representation of a specific significant other can be stored in memory and is linked to many other associations related to that person.

4.1.5 Information-processing effects of relational schemas

The activation of schemas proposes certain information-processing consequences, such as greater sensitivity to representation consistent information, improved information-processing efficiency, and improved memory. Information-processing effects were predicted for all three elements of the relational schema (Baldwin, 1992). There have been numerous studies of the processing effects of the self-schemas and person-schemas. The work of Andersen and associates (for example Andersen, et al., 1996; Andersen & Baum, 1994; Baum & Andersen, 1999; Chen & Andersen, 1999; Glassman & Andersen, 1999a; Hinkley & Andersen, 1996) documented a variety of processing effects of significant other representations. Although most studies dealt with the self-schemas and person-schemas elements in isolation, Baldwin et al. (1990) and Hinkley and Andersen (1996) demonstrated the effect of activating significant other representations on the experience of the self. There is a need for studies demonstrating information processing effects of interpersonal scripts associated with significant other representations.

4.1.6 Conjoint schematicity of different elements

The three elements of the relational schema are thought to be structurally associated in memory, such that activating one element could spread to another element and indeed the entire structure, referred to as conjoint schematicity. Baldwin supported his claim towards a unified relational schema with three different elements with evidence demonstrating that when one element of the relational schema was primed, the activation spread to other elements (Baldwin, 1994; Baldwin, et al., 1990; Baldwin & Holmes, 1987; Baldwin & Sinclair, 1996). In a number of these studies this effect has been demonstrated utilising subliminal priming methodology. It has not yet been

demonstrated that priming of the other-schema element could lead to measurable information-processing effects related to the interpersonal script element.

4.1.7 Network of multiple schemas

People have a variety of attachment experiences and therefore different models can become activated under different circumstances to guide interpersonal perception and behaviour. Stated in terms of relational schemas, people have multiple self-schemas, multiple presentations of others and different scripts of likely sequences of action between the self and other. Their personal learning history will determine which relational schemas are used more often to encode particular social information. It is very likely that these relational schemas are linked to each other in a network of different schemas. Some schemas might be very broad and general, while others might be very specific to particular circumstances. There is still much to learn about the structure of working models and how they are connected to each other. An investigation of the chronic accessibility and temporary activation of the different elements of a working model will be a valuable contribution.

4.1.8 Chronic accessibility of schemas

Certain chronically accessible schemas will play a more dominant role in processing social information. According to social-cognitive theory, chronic accessibility refers to the continuous readiness of a construct to be activated by even minimal sources of activation. Some constructs have been activated so frequently in the past, or may be connected to so many other constructs, that it has a high probability of being activated by an external or internal stimulus. The chronic accessibility of significant other representations has already been demonstrated (Glassman & Andersen, 1999b). Based on the attachment theory, it is very likely that persons with a secure attachment orientation, have extended experience of positive interactions with positive significant others. Their representations of a positive significant other as well as their scripts of positive interpersonal interactions are predicted to be chronically accessible and fairly dominant. The inverse could be predicted to be true of people with an insecure attachment orientation. Activation of one element of the relational schema could spread to activation of the other.

4.1.9 Temporary activation through priming

Apart from chronic accessibility and spreading activation, there are many other possible sources of construct activation, including present goals and needs, recent activation and level of applicability. Priming of social constructs, a procedure that activate identified stored knowledge, have been demonstrated in the form of single word semantic priming, trait words, names, stories, pictures of significant others, guided visualisation of significant others and exposure to lists of features. The use of advanced priming should also be investigated within a social context. In a sense it is analogous to being reminded about a significant other just before speaking to a target person with characteristics corresponding to the significant other. In the real world it is often not only the immediate resemblance to the significant other that may be triggering the transference response, but also other means of advanced priming. The use of a proper name of a significant other has demonstrated promise in activating significant other representations (Baldwin, 1994; Shah, 2003a). It should be investigated further in a controlled experiment.

4.1.10 Subliminal priming

Although most of the priming studies utilised supraliminal primes, a number of studies also demonstrated the use of subliminal priming (Baldwin, 1994; Baldwin et al., 1990; Banse, 1999; Bargh & Pietromonaco, 1982; Erdley & D'Agostino, 1988; Pierce & Lydon, 1998; Shah, 2003a, 2003b). The information-processing effect of subliminal priming is a reflection of processing in a non-conscious or automatic manner. A number of studies (Bargh, 1982; Bargh & Pratto, 1986, Bargh & Thein, 1985; Bargh & Tota, 1988) demonstrated that self-relevant information could be processed in a non-conscious manner. The subliminal priming of constructs also avoids the contrast effect that has been demonstrated where participants become aware of attempts to influence their judgements or other responses. Studies by Higgins et al. (1985), Higgins and Bargh (1987), Moskowitz and Roman (1992), Newman and Uleman (1990), and Strack et al. (1993) confirmed the contrast effect. Based on the review, the use of subliminal priming methodology as a means of temporary activation is recommended.

4.1.11 Interaction of chronic and temporary activation

The accessibility or pre-activation of a representation can be from several sources – chronic activation, recent activation or current goals (Bargh, 1996). Both greater temporary and chronic accessibility predict higher accessibility and stronger responses to stimulus information. Bargh et al. (1986) studied the interaction between temporary and chronic activation by selecting subjects chronic or nonchronic for a construct and then subliminally priming them or not in a seemingly unrelated experiment. The outcome of the study was inconclusive. They recommend that chronic and temporary sources of accessibility should be viewed as equivalent and that chronicity and priming could have independent and interactive effects on judgements. In the field of interpersonal or relational schemas only Baldwin et al. (1990) used a similar procedure to Bargh et al. (1986) when they classified participants in high and low religious practicing groups and primed them with the face of a religious leader. The studies by Andersen et al. (1995) and Glassman and Andersen (1999), investigating the chronic and temporary accessibility of significant other representations, used a time delay of about two weeks to operationalise chronic accessibility. Further investigation of the interaction between chronic accessibility and temporary activation is needed, as well as the effect of the applicability of stimulus material on activation.

4.1.12 Explicit and implicit procedures

Most available studies of working models made use of self-report data or explicit cognitive tasks. There has been a general lack of suitable methodologies other than self-report. Direct observation of behaviour played a prominent role in early research about infant-mother attachment (Ainsworth & Bowlby, 1991). Adult participants are prone to interfering effects when they are being observed in an experimental setting. The presence of contrast effects in priming research has already been discussed. The expectation that working models may very well function on an automatic level, opens up the possibility of utilising research methods that rely on implicit processes. The subliminal priming with names of significant others can be useful in investigating the non-conscious operation of working models.

4.1.13 Overlapping features

Most of the research on the social–cognitive model of transference utilised overlapping features as stimulus cues for the activation of the significant other representations. The features listed by the participants overlapped with the features presented as stimulus cues. The transference phenomenon was then derived when participants indicated with confidence during the test phase that features, listed during the learning phase but absent during the target presentation, were indeed present. In most of these experiments the features were presented in supraliminal presentation, although the participants were ignorant to the real purpose of the experiment. When overlapping features are used, it is difficult to rule out implicit learning or even repetition priming effects as possible sources of the transference effect. The feature-based approach can be contrasted with a theory-based approach, where significant other representations can consist of different elements, which need not overlap at all. Certain elements can be used as priming stimuli and different elements can be used as an index of transference. Hinkley and Andersen (1996) demonstrated that representations of significant others are linked to representations of the self. It should be possible to activate significant other representations with simple but relevant priming stimuli (for example, first names of significant others) and demonstrate the spreading activation to another aspect (for example, the processing of typical interpersonal interactions). The priming paradigm of activation, used by Baldwin (1994) in investigating relational schemas, avoids the possible compromising effects of using overlapping features and will also be used in the present study.

4.1.14 Ideographic and nomothetic methods

Belsky and Cassidy (1994) observed that in attachment research the primary focus is on the origin of individual difference. In social-cognitive research the focus is mainly on understanding cognitive mechanisms in general and with little attention to explaining individual difference. They recommend that these two fields of study should be increasingly integrated. In the majority of studies by Baldwin and co-workers (except Baldwin and Holmes, 1987) a nomothetic design was used, applying a single experimenter generated priming stimulus to all the participants. Although activation effects have been demonstrated, it could not be ascribed to priming with a personally generated stimulus from a personal relationship (for example a name of a specific significant other). The emphasis of the research paradigm used by Andersen

and co-workers (see Chen & Andersen, 1999) was on the significant other representation as an individual-person exemplar. In the learning phase the content of a particular significant other representation was established by ideographic methods. During the subsequent testing phase this information was utilised in a nomothetic design. In this manner the theoretical demand of individualised content of personal cognitive constructs could be reconciled with the rigour of an experimental design. The same sequence as Andersen and co-workers will be used in the present study.

4.2 Problem statement and research questions

Different theoretical orientations have put forward the notion that personal histories of social relationships and experiences guide how people construe their social world and how they interact with others. Within social-cognitive research there has been a recent emphasis on how social-cognitive processes are shaped by social histories and interpersonal contexts (Baldwin, 1997). Utilising concepts and research methods derived from cognitive psychology, social-cognitive researchers have empirically investigated the social-structures and processes involved in the influence of past social experiences on present social functioning. However, despite the general acceptance of this assumption and various theoretical formulations, limited empirical research has been done to demonstrate this assumption under experimental conditions.

4.2.1 Problem statement

The summary of the literature review (section 4.1) highlighted these shortcomings in the existing research on the role of past knowledge on present social behaviour and social relationships.

a) Despite the contribution of attachment theory, there has been limited empirical work investigating the structure and processes of working models, particularly regarding the chronic accessibility and temporary activation of the different elements of working models.

b) Based on attachment theory, it is very likely that persons with a secure attachment orientation have extensive experience of positive interactions with positive significant others. From a social-cognitive perspective, representations of positive significant others as well as their scripts of positive interpersonal interactions are chronically accessible in participants with secure

attachment styles and they influence the processing of congruent interpersonal information. The same applies for representations of negative significant others and participants with insecure attachment styles. This theoretical proposition needs to be demonstrated empirically.

c) From a relational schema perspective, it has been proposed that a working model has three components, the self-schema, the other-schema and the interpersonal script. Although both the self-schema element of the relational schema and the significant other representation have received attention in empirical research, only a few investigations focused on the interpersonal script element in isolation or in combination with the other two elements. There is a need for studies, which investigate the information-processing effects of interpersonal scripts associated with significant other representations.

d) It has not yet been demonstrated that priming of the significant other schema element of a relational schema could lead to measurable information-processing effects related to the interpersonal script element.

e) The outcome of previous studies on the effect of chronic and temporary sources of accessibility was inconclusive. Further investigation of the interaction between chronic accessibility and temporary activation is therefore needed, as well as further studies on the effect of the applicability of stimulus material on activation.

Additionally, the literature review also indicated certain shortcomings in the methodology used up to now. These shortcomings and recommended new directions were taken into consideration in the present study.

a) The use of a proper name of a significant other has demonstrated promising results in activating significant other representations (Baldwin, 1994; Shah, 2003a) and should be investigated further in a controlled experiment.

b) The use of subliminal priming methodology as a means of temporary activation is recommended and the subliminal priming with names of significant others can be useful in investigating the non-conscious operation of working models.

c) The priming paradigm of activation used by Baldwin (1994) in investigating relational schemas avoids the possible compromising effects of using overlapping features and will also be used in the present study.

d) Andersen and co-workers used a combination of ideographic and nomothetic methods to reconcile individualised content of personal cognitive constructs with standardised experimental procedures. The same sequence of activities will be used in the present study, but in combination with a priming technique.

4.2.2 Research questions

Based on the preceding summary of shortcomings in existing research, the following research questions were formulated.

a) Will target interpersonal information in scripted form (positive or negative target script) be processed more efficiently when it is consistent with the chronically accessible relational schemas (part of a secure or insecure attachment style)?

b) Will the target interpersonal information in scripted form be processed more efficiently when relational schemas consistent to the target information are temporary activated by a subliminal semantic priming stimulus also consistent to the target?

c) Will the subliminal activation of a significant other element of the relational schema through conjoint schematicity lead to measurable information-processing effects in the interpersonal script element of the schema?

d) Will the information-processing effects of chronic accessibility, temporary subliminal priming and applicability of target information remain independent or combine in an interactive manner?

e) Will the different levels of applicability of the scripted target information (unambiguously positive, unambiguously negative, ambiguous or mixed/contrary) influence the information-processing effects?

4.3 Objectives of the present study

The present study focuses on the recent emphasis in social-cognitive research on how social-cognitive processes are shaped by social histories and interpersonal contexts (Baldwin, 1997). It is based on social-cognitive theory and aims to integrate

the theory and basic empirical paradigms from the relational schema model and the social-cognitive model of transference with concepts from the attachment theory tradition. It focuses on social-cognitive structures and processes involved in the influence of past social experiences on present social functioning, and investigates the structure and processes of the working models of individuals with secure and insecure attachment orientations.

In particular, this study will investigate

a) the structure of working models by demonstrating the conjoint schematicity of different elements of the relational schema;

b) the chronic accessibility of the working models of individuals with secure and insecure attachment orientations;

c) whether significant other representations could be activated outside of awareness to facilitate the subsequent conscious processing of interpersonal information;

d) through response time effects in a priming paradigm, whether the person-schema and interpersonal script elements of a relational schema are connected;

e) the combining effect of chronic accessibility, advanced priming and the nature of the target stimulus on the processing of scripted information, and

f) the individuals nominated as primary positive significant others by participants with secure and insecure attachment styles.

4.4   Hypotheses

The hypotheses are related to the basic theoretical assumption that participants with a history of particular relationship experiences (chronic accessibility), will process congruent relationship information (an applicable interpersonal script) more efficiently when they are primed with information from a significant other with whom they share some of these relationship experiences. The following hypotheses will be investigated:

a) The main hypothesis about the interaction between chronic accessibility, temporary activation and script applicability predicts that chronic positive participants will process scripted positive interpersonal information more

efficiently when they are primed with the name of a positive significant other than when they are primed with the name of a negative significant other or a control prime. Similarly, chronic negative participants will process scripted negative interpersonal information more efficiently when they are primed with the name of a negative significant other than when they are primed with the name of a positive significant other or a control prime. (This hypothesis combines all the independent variables and can be regarded as the main hypothesis of the study).

b) The priming hypothesis predicts that participants will process scripted positive interpersonal information more efficiently when they are primed with the name of a positive significant other than when they are primed the name of a negative significant other or a control prime. Similarly, participants will process scripted negative interpersonal information more efficiently when they are primed with the name of a negative significant other than when they are primed with the name of a positive significant other or a control prime.

c) The chronic accessibility hypothesis predicts that participants with a history of positive interactions (positive relational schemas chronically available) will process scripted positive interpersonal information more efficiently than participants with a history of negative interactions. Similarly, the chronic accessibility hypothesis also predicts that participants with a history of negative interactions (negative relational schemas chronically available) will process scripted negative interpersonal information more efficiently than participants with a history of positive interactions.

d) The script applicability hypothesis predicts that the level of applicability of the target script to the chronically available relational schema will facilitate the processing of the scripted information.

In addition, the following will also be investigated.

a) In line with the priming hypothesis it will be explored whether participants primed with the name of a positive significant other indicate more often that positive statements, not presented in the target script, were indeed presented to them, than participants primed with a negative significant other or a control prime. Similarly, participants primed with the name of a negative significant

other will indicate more often that negative statements, not presented in the target script, were indeed presented to them, than participants primed with a positive significant other or control prime.

b) It will be investigated whether, as can be expected form attachment theory, the majority of participants will nominate a parent or close family member as the primary positive significant other.

c) Similarly, it will be investigated whether securely attached participants will be more likely to nominate a parent as primary positive significant other compared to insecurely attached participants, as predicted by attachment theory.

4.5   Operasionalisation of present study

The processing of social information depends on the characteristics of the perceiver as well as the characteristics of the stimulus. Based on attachment theory and previous research it can be predicted that individuals with secure and insecure attachment styles have different relationships histories. Secure people have experienced multiple warm, responsive and supportive interactions. The representations of these interactions and the significant others involved are therefore chronically accessible. The inverse is true for insecure people. In the present study chronic accessibility for relational schemas of positive or negative significant others will be operationalised as a score on an attachment style measure. Chronic accessibility is an independent variable in the present study.

These positive or negative significant other representations can be activated even further through a priming procedure as a source of temporary activation. Temporary accessibility will be operationalised as the subliminal presentation of the name of a positive or negative significant other. Temporary activation is also an independent variable in the present study.

Through conjoint schematicity the representation of the positive or negative significant other should be linked to the scripts of interactions with that significant other. The conjoint priming effect suggests that when the representation of the significant other is primed, the related interpersonal scripts also become activated and it will be measurable in the efficiency of processing of the interpersonal information. The applicability of the stimulus information will be operationalised as the

presentation of positive, negative or ambiguous interpersonal information. The valence of the target interpersonal script is the third independent variable in the study.

The three independent variables in the present study will be (a) chronic accessibility (secure or insecure attachment style), (b) temporary activation (subliminal priming with the name of a positive or negative significant other), (c) target interpersonal script (the script will describe a positive, negative, mixed positive and negative or ambiguous interpersonal interaction. The dependant variables will be the accuracy and reaction time in processing the target interpersonal script.

Although the focus of the present study will be on the effects of the activation of significant other representations of university students, there is no reason to expect that the underlying structures and processes will differ from the general population.

CHAPTER 5   METHOD

5.1   Overview

The present study examines the influence of chronic accessibility and subliminal temporary activation of significant other representations on the accuracy and speed of processing scripted interpersonal information, congruent to the significant other representation or not.

A group of 137 university students participated in two sessions that took place no more than two weeks apart. During the first session participants completed a biographical questionnaire and the Attachment Style Questionnaire (ASQ; Feeney et al., 1994). The second session entailed an experiment conducted on an individual basis on a personal computer. The experiment was a fully crossed two (chronic accessibility: dominant positive significant other versus dominant negative significant other) times three (prime identity: positive significant other, negative significant other or control prime) times four (script stimulus: positive script, negative script, ambiguous script or mixed script) between subjects design. The independent variables were chronic accessibility, temporary subliminal activation and nature of the script presented. The dependant variables were response accuracy and reaction time.

All the material, to which the participants were exposed to, including the experimental task on the computer program, was available in Afrikaans and English. At the start of the study participants could indicate their language preference and continue to perform all the tasks in that language.

Permission was obtained from the office of the registrar of Stellenbosch University to conduct the research project on campus and to invite students as participants.

5.2   Session one

5.2.1 Participants

One hundred and thirty-seven ($N = 137$) university students took part on invitation in session one of the study. They were recruited by the researcher with general notices been put up in four Stellenbosch University student residences, inviting students to participate in a study about the processing of relationship information. The participants volunteered to take part without any monetary reward. Their ages ranged

from 18 to 24 years, with a mean age of 19.93 years (SD = 1.16). The majority of the participants (88%) were Afrikaans speaking and 12% (n = 16) were English speaking.

Fifty-three (39%) were female students with ages ranging from 18 to 23 years (M = 19.83, SD = 1.07). Forty-six of the females were Afrikaans speaking (87%) and the other seven English speaking (13%). Eighty-four (61%) of the participants were males with ages ranging from 18 to 24 years (M = 20.00, SD = 1.22). Seventy-five of the males were Afrikaans speaking (89%) and the other nine English speaking (11%).

Participants were assigned to the chronic positive (n = 69) or chronic negative (n = 68) condition by means of a separate median split for males and females on the Confidence Scale of the ASQ (Appendix A). The median of the scores of all the participants was 33. The median of the scores of the female participants was 33 (minimum = 20, maximum = 45) and the median of the male scores was 34 (minimum = 18, maximum = 46). Forty-two males and 27 females were assigned to the chronic positive group and 42 males and 26 females were assigned to the chronic negative group.

5.2.2 Materials and apparatus

Session one was conducted in a group format. There were five groups of between 18 and 37 participants each. Every participant received a booklet (Appendix B) that explained the procedures, asked for some biographical details, and also included the ASQ.

5.2.3 Measures

5.2.3.1 Biographical details

Biographical details, as well as the information concerning participants' significant others, were gathered by means of self-report.

Participants were asked to indicate their sex (male or female), age (in years) and language preference (Afrikaans or English) in the appropriate blocks in the booklet.

They also provided self-generated participant codes to enable the experimenter to prepare the appropriate experimental material for the computer task in session two. No identifying personal details were requested.

The concept "significant other" was explained in the booklet and space was provided for participants to list the names of a number of the most important people in their lives. They were also requested to write down, in the spaces provided in the booklet, the actual first names of the single most important positive and the most important negative significant other and the role they play in their lives.

5.2.3.2   Attachment Style Questionnaire

The ASQ is a 40-item questionnaire developed by Feeney et al. (1994) as a measure of different attachment styles that could be used with young adolescents. The rationale, development as well as the reliability and validity data of the ASQ were discussed in Chapter 2.

5.2.4 Procedure

Upon their arrival at the laboratory the experimenter introduced the participants to the research project by reading the first paragraph from the booklet. They were then requested to write down a personal, self-generated eight figure participant number in the experimental booklets. This was used to identify them during session two.

Aided by the text in the booklets, the experimenter explained the concept of significant others to the participants and requested them to compile a list of the significant people in their lives. The text in the booklet also distinguished between positively valenced and negatively valenced significant others and participants were requested to write down the actual first names and roles of the most dominant positive and most dominant negative significant other in their lives.

Participants then completed the ASQ. They were requested to write down or memorise their participant number. They handed back the booklets to a research assistant and were invited to take part in the second part of the experiment. They could select a specific time on specified days during the following two weeks to complete the individual computer task of session two.

The experimenter scored the ASQ, assigned each participant to an experimental condition, generated an individual computer number for every participant, and included the name of the appropriate significant other in the computer program running the second priming experiment. Participants were assigned to the chronic positive or chronic negative condition by means of a median split for the male group and the females group. The median of the scores of all the participants on the

Confidence Scale of the ASQ was 33. The median of the scores of the female participants was 33 (minimum = 20, maximum = 45), and the median of the male scores was 34 (minimum = 18, maximum = 46). All male participants with scores above the median for the male group and all female participants with scores above the median for the female group were assigned to the chronic positive condition. Participants with scores below the two median values were assigned to the chronic negative group.

5.3   Session two

5.3.1 Participants

One hundred and thirteen students (n = 113) took part in session two of the study. Twenty-four of the 137 participants from session one did not make an appointment for session two or did not turn up for their individual appointment. The data of another four participants were incomplete and were not used in the subsequent analysis. The demographic profile of the remaining 109 participants did not differ from that of the participants in session one. Their ages ranged from 18 to 24 years (M = 19.95, SD = 1.16). Sixty five percent (n = 71) were male and 35% (n = 38) were female. Ninety-two percent of the participants (n = 100) were Afrikaans speaking and 8% (n = 9) English speaking. The median split of the Confidence Scores on the ASQ for the participants that took part in session two was also 33.

The gender or language preference of the participants did not significantly influence the presented results either singularly or interactively and will not be discussed any further.

Table 5.1 shows the assignment of the 109 participants to the twenty-four cells of the 2x3x4 experimental design. Apart from inclusion in the broad chronic positive or chronic negative group based on their scores on the ASQ Confidence Scale, all the other cells were filled on a random basis. Thirty-eight participants received the positive priming stimulus, 38 received the negative priming stimulus and 33 received the control stimulus. Twenty-eight participants received the positive script, 27 participants received the negative script, and two groups of 25 each received the mixed script or ambiguous script respectively.

Table 5.1

Assignment of Participants (N = 109) to Experimental Conditions

Chronic accessibility	*n*	Priming stimulus	*n*	Script presented	*n*
positive	51	positive	17	positive	3
				negative	5
				mixed	4
				ambiguous	5
		negative	18	positive	4
				negative	6
				mixed	5
				ambiguous	3
		control	16	positive	4
				negative	4
				mixed	5
				ambiguous	3
negative	58	positive	21	positive	6
				negative	4
				mixed	6
				ambiguous	5
		negative	20	positive	6
				negative	4
				mixed	5
				ambiguous	5
		control	17	positive	5
				negative	4
				mixed	4
				ambiguous	4

5.3.2 Material and apparatus

A research assistant matched the participant code and computer code of the participants but was blind to the group or condition of the participants. The experimental task was run by a computer program, which also provided all the necessary instructions and trial runs (see Appendix C). The experimental task was performed on an individual basis, privately in a quiet and well-lighted room with a table and a personal computer. The research assistant was available in the room next door if the participant experienced any difficulties.

5.3.2.1 Primes

The first name of the positive or negative significant other for each participant was presented on the computer screen in white letters on a black background. A set of random consonants were used as a control stimulus and also presented as white letters on a similar black background.

5.3.2.2 Masks

To mask the names, pattern masks (containing scrambled consonant letters) were superimposed. The length of the name mask was adjusted for each participant so that it covered the stimulus name or the control stimulus.

5.3.2.3 Priming procedure

The prime words were presented in alternation with the letter masks. The word *READY* appeared on the screen for 1500 milliseconds, followed by the presentation of the mask for 100 milliseconds, followed by the name of the significant other that appeared on the screen for 33 milliseconds. Then the mask appeared again for 100 milliseconds, followed by the priming stimulus, and so on. The name was presented 20 times, 33 milliseconds at a time for a total exposure of 0.66 seconds. The presentation was completed with a mask of 100 milliseconds.

5.3.2.4 Target script stimulus

Vignettes of interpersonal transactions each including nine stimulus statements were formulated in paragraph format. These statements together formed a script of a positive, a negative, a mixed or an ambiguous interpersonal transaction. These scripts were compiled based on the results of a pilot study done earlier with a similar group of participants about the action components of their interpersonal transactions with positive and negatively valenced significant others. In the first phase of the pilot study participants were asked to nominate positive and negative significant others and describe the content of typical interactions with them in a scripted sequence. In the second phase, a group of participants rated the action components derived from the previous phase as positive, negative or ambiguous. The target scripts eventually selected are shown in Appendix D. In the present study participants were instructed to imagine these statements being directed at them and to read it carefully, because they would have to answer questions about it. The appropriate vignette was

presented in paragraph format on the computer screen for forty seconds, and then followed by a pattern mask.

5.3.2.5 Responses

Thirty-six statements (nine statements each from the positive, negative and ambiguous interpersonal transactions, as well as nine filler statements) were presented one by one on the screen in an order that was balanced randomly across all participants. Six of the nine statements per group could be presented to some participants (depending on their assignment to a target script stimulus), but three of the nine statements were not presented to any participant. Each single statement was kept on the screen for five seconds or until the participant gave an answer by pressing the appropriate key on the keyboard. The software running the experiment on the computer recorded the reaction time from the appearance of the statement on the screen to the participant's response. If the participant did not respond within five seconds, it was recorded as *no response* and the participant were requested to proceed to the next statement. All 36 statements are showed in Appendix E.

5.3.2.6 Apparatus

The experiment was run on a personal computer with a fast monitor (85 Hz). A computer program was developed to run the experiment. The keys *1* and *2* on the right number field of the computer keyboard were used as response keys for "*YES*" and "*NO*" respectively. The reaction time was measured to a millisecond. Participants pressed the *Ente*r key on the right number field to proceed to the next statement when they were ready.

5.3.3 Procedure

Upon their arrival participants were directed individually to the personal computers to perform the experiment. After instructing them how to use the computer program, the program requested them to clear their minds from other current concerns in their lives and to attend to what will be presented to them. To enable them to do that, they should focus at the centre of the computer screen. The word *READY* and a row of flashing letters were presented. "It is thought by some researchers that flashing stimuli facilitate attention. All you need to do is look at the figures in the centre of the screen".

After a short practice trial that primarily assisted participants to learn how to respond by means of the appropriate keys on the computer keyboard, participants viewed the flashing stimuli, that is the experimental manipulation aiming to subliminally activate the significant other representations. Participants were assigned to three priming conditions: the positive significant other, the negative significant other or the control condition.

The different stimuli were presented during the experiment in the following sequence:

a) The word *READY* as a target focus appeared first on the screen for 1500 milliseconds.

b) It was followed by the presentation of the masking configuration for 100 milliseconds.

c) Then followed the subliminal presentation of the name of a positive or negative significant other or a control word for 33 milliseconds.

d) The sequence was concluded with the presentation of the masking configuration for 100 milliseconds.

e) The presentation of subliminal prime and the mask was repeated twenty times.

f) The presentation was completed with a mask of 100 milliseconds.

Following the attention-facilitating exercise the stimulus script action parts were presented in the form of a short vignette on the computer screen. It was a vignette of an interpersonal transaction including the nine stimulus statements and was formulated in paragraph form. The participants were instructed to imagine these statements being directed at them and to attend to them carefully, because they will have to answer questions about it. The vignette was presented on the computer screen for forty seconds, and then followed by the letter mask.

The paragraph with scripted interpersonal information was followed by a repeat presentation of the experimental manipulation. The word *READY* appeared again as a target focus on the screen for 1500 milliseconds, followed by the presentation of the masking configuration for 100 milliseconds, the subliminal presentation of name or control word for 33 milliseconds. The subliminal prime and the masking configuration were again repeated twenty times.

The participants then had to indicate whether any of 36 response statements that were presented to them in random balanced order, were indeed presented to them during the earlier presentation of the scripted paragraph or not. They were asked to respond as quickly as possible by pressing the appropriate key on the keyboard. The statements appeared on the computer screen for five seconds. Participants could indicate that they were ready for the next statement by pressing the Enter key on the keyboard. If the participants did not respond within five seconds, they were requested by the computer program to proceed to the next statement. The sequence of the priming stimuli, masks, target scripts and response statements are graphically presented in Figure 5.1.

Screens displayed

1. Focus
2. Name of significant other (positive, negative or control)
3. Pattern mask of scrambled consonants
4. Target script (positive, negative, mixed or ambiguous)
5. Pattern mask
6. Focus
7. Name of significant other (positive, negative or control)
8. Pattern mask of scrambled consonants
9. Statements 1 to 36 (in random order, 5 seconds each)

1 READY

2 ADRIAN

3 ZBXSJD

Repeated 20 times

1500 ms

33 ms

100 ms

4 I already know you for quite some time. I hear you have thought about an excellent idea again. I will enjoy ....

5 KDJSHFR

40 s

100 ms

6 READY

7 ADRIAN

8 ZBXSJD

Repeated 20 times

1500 ms

33 ms

100 ms

9 I hear you have thought about an excellent idea again.

5 s

Figure 5.1. Sequence in presentation of primes, masks, target scripts and response statements.

After they had responded to all 36 statements, the computer program asked another set of questions to determine the significance of stimulus presentation to the participants (see section 5.3.4.3).

They were also asked to type their names and addresses if they wish to receive a summary of the main results of the research report. The participants were thanked for their co-operation. After the completion of the study, all participants that indicated interest received a full written debriefing and a summary of the research report containing the results of the experiment by mail.

5.3.4 Measures

5.3.4.1 Response accuracy

The 36 *Yes* or *No* responses of each participant to all 36 statements were recorded. The computer program stored information on the sequence with which the statements were presented to every participant. It also stored information on whether each of the 36 statements was indeed presented as one of the nine statements in the script that the participant received. A response was recorded as accurate when the participant indicated that a statement was present or absent in the script, depending on whether that particular statement was presented or not.

5.3.4.2 Reaction time

Reaction time for every response was measured. If the participant did not respond within five seconds, it was recorded as no reply.

5.3.4.3 Checks on the manipulation

Until the formal debriefing, participants were ignorant of the real aim of the experimental task and the nature of the subliminal stimulus. Cheesman and Merikle (1985) argued that one of the best indicators of awareness is simply the subjects' own report of what they saw, which is also what the present awareness assessment measured.

Participants were asked a number of questions to investigate their knowledge of the presence of the subliminal presentation and the significance of the stimulus presentation (see Appendix F).

CHAPTER 6   RESULTS

6.1   Overview

Apart from the objectives and hypotheses of the present study, this chapter will outline the results for the nomination of significant others and for the manipulation checks (indicating the participants' awareness of the subliminal stimuli and their experience of the valence of the target scripts). The analysis of the effects of the three independent variables (chronic accessibility, temporary activation and valence of target script) will then be presented, followed by an exploration of "false memory" responses where participants indicated that statements not actually presented to them, were present.

6.1.1 Objectives

The present investigated the social-cognitive structures and processes involved in the influence of past social experiences on present social functioning. It can also be described as an investigation of the working models of individuals with secure and insecure attachment orientations.

In particular, this study investigated

a) the structure of working models by demonstrating the conjoint schematicity of different elements of the relational schema;

b) the chronic accessibility of the working models of individuals with secure and insecure attachment orientations;

c) whether significant other representations could be activated outside of awareness to facilitate the subsequent conscious processing of interpersonal information;

d) through response time effects in a priming paradigm, whether the person-schema and interpersonal script elements of a relational schema are connected;

e) the combining effect of chronic accessibility, advanced priming and the nature of the target stimulus on the processing of scripted information, and

f) the persons nominated as primary positive significant others by participants with secure and insecure attachment styles.

6.1.2 Hypotheses

The hypotheses are related to the basic theoretical assumption that participants with a history of particular relationship experiences (chronic accessibility), will process congruent relationship information (an applicable interpersonal script) more efficiently when they are primed with information from a significant other with whom they share some of these relationship experiences. The following hypotheses will be investigated:

a) The main hypothesis about the interaction between chronic accessibility, temporary activation and script applicability predicts that chronic positive participants will process scripted positive interpersonal information more efficiently when they are primed with the name of a positive significant other than when they are primed with the name of a negative significant other or a control prime. Similarly, chronic negative participants will process scripted negative interpersonal information more efficiently when they are primed with the name of a negative significant other than when they are primed with the name of a positive significant other or a control prime. (This hypothesis combines all the independent variables and can be regarded as the main hypothesis of the study).

b) The priming hypothesis predicts that participants will process scripted positive interpersonal information more efficiently when they are primed with the name of a positive significant other than when they are primed the name of a negative significant other or a control prime. Similarly, participants will process scripted negative interpersonal information more efficiently when they are primed with the name of a negative significant other than when they are primed with the name of a positive significant other or a control prime.

c) The chronic accessibility hypothesis predicts that participants with a history of positive interactions (positive relational schemas chronically available) will process scripted positive interpersonal information more efficiently than participants with a history of negative interactions. Similarly, the chronic accessibility hypothesis also predicts that participants with a history of negative interactions (negative relational schemas chronically available) will

process scripted negative interpersonal information more efficiently than participants with a history of positive interactions.

d) The script applicability hypothesis predicts that the level of applicability of the target script to the chronically available relational schema will facilitate the processing of the scripted information.

In addition, the following will also be investigated.

a) In line with the priming hypothesis it will be explored whether participants primed with the name of a positive significant other indicate more often that positive statements, not presented in the target script, were indeed presented to them, than participants primed with a negative significant other or a control prime. Similarly, participants primed with the name of a negative significant other will indicate more often that negative statements, not presented in the target script, were indeed presented to them, than participants primed with a positive significant other or control prime.

b) It will be investigated whether, as can be expected form attachment theory, the majority of participants will nominate a parent or close family member as the primary positive significant other.

c) Similarly, it will be investigated whether securely attached participants will be more likely to nominate a parent as primary positive significant other compared to insecurely attached participants, as predicted by attachment theory.

6.2   Nomination as significant others

In session one participants were asked to nominate significant other people in their lives. The concept of significant others was explained as those people that have an important influence in their lives. Mostly it will be people that they know quite well in the present or knew quite well in the past. Significant others can broadly be divided into two groups of people. Positive significant others can be very supporting and people feel good about themselves in their presence. The actions and opinions of negative significant others also influence people, but they are often negative and critical and therefore often cause people to feel bad about themselves. Participants were asked to name a positive and negative significant other from their lives.

6.2.1 Positive significant others

In line with the findings of other studies in this field more than half the participants (52.9%) nominated a parent as their positive significant other. Mothers were nominated in about two thirds of these cases as the positive significant other (64%). In 32.2% of cases a friend or romantic friend were nominated. Table 6.1 presents a summary of the positive significant others nominated by the all participants that took part in session one.

Table 6.1

Positive Significant Others Nominated by Total Group (N = 135) and by Male (n = 82) and Female (n = 53) Participants

Positive significant other	Males (n = 82) %	Females (n = 53) %	Total group (N = 135) %
mother	27.7	43.4	33.8
father	22.9	13.2	19.1
brother/ sister	9.6	3.8	7.4
other family member	3.6	7.6	5.0
lecturer/ coach / counsellor	1.2	3.8	2.1
romantic friend	9.6	13.2	10.9
female friend	7.2	9.4	8.1
male friend	18.1	5.7	13.2

6.2.2 Negative significant others

Table 6.2 presents a summary of the negative significant others nominated by the participants.

Table 6.2

Negative Significant Others Nominated by Total Group (N = 135) and by Male (n = 82) and Female (n = 53) Participants

Negative significant other	Males (*n* = 82)	Females (*n* = 53)	Total group (*N* = 135)
	%	%	%
mother	3.7	5.7	4.4
father	22.0	20.8	21.5
brother/ sister	3.8	13.2	9.6
other family member	7.2	3.8	5.9
lecturer/ coach / counsellor	4.9	3.8	4.4
romantic friend	8.5	3.8	6.6
female friend	12.2	34.0	20.8
male friend	34.2	15.1	26.6

Friends constituted more than half (54%) of the negative significant others nominated. Parents were nominated a negative significant other in a quarter of the cases (25.9%), and in the majority of those cases (83%) they referred to fathers. The findings supported the notion from attachment theory that members of their primary family are the most important positive significant others in the lives of a group of young adults.

6.2.3 Confidence Scale and significant others

Further analysis indicated that 59.7 % of participants higher in confidence (according to median split on ASQ Confidence Scale) nominated a parent as their positive significant other (40.3% for mother, 19.4% for father). Only 17.8% of the chronic positive group regarded their friends to be their first nomination of a positive significant other. In comparison, 30.5% of the participants lower in confidence nominated a parent as their positive significant other (20.3% for mother, 10.2% for father). In the chronic negative group, 35.6% regarded their friends as their first nominated positive significant other. This finding supports the notion that a close relationship with parents can be associated with a sense of security in self and others. There were no significant differences between participants higher or lower in confidence in the nomination of their negative significant others.

6.3   Checks on the manipulation

After the completion of session two of the study, all participants answered a number of questions about their experience of the experimental conditions (see Appendix F). The answers highlighted their level of awareness of the subliminal priming stimulus as well as their experience of the valence of the target script. To establish that the priming stimuli were subliminal, no one of the participants should report any conscious recognition of it. It is also important to establish whether the participants could identify when a positive, negative, mixed or ambiguous script was presented to them.

6.3.1 Awareness of subliminal presentation

Some of the questions assessed the participants' awareness of the subliminal priming stimuli. The responses of 108 participants on those questions are presented in Table 6.3.

Table 6.3

Awareness of Subliminal Priming Stimuli (N = 108)

Question	Yes	No
	%	%
Did the concentration exercises help you to focus your attention on the task that you had to do?	62.0	38.0
Were you suspicious about the nature of the flashing symbols?	48.1	51.9
Do you think any information was presented to you during the flashing symbols?	17.6	82.4
Do you think there was any relation between session one and session two?	64.8	35.2

The majority (62%) of participants were of the opinion that the flashing stimuli assisted them in focusing their attention on the task. It can be concluded that the experiment succeeded in drawing the attention of the participants to the centre location on the monitor screen where the stimuli were presented.

Almost half of the participants (48%) indicated that they were somewhat suspicious of the flashing stimuli and when being asked, 18% responded that information could have been presented to them during the flashing stimuli. None of them however

reported any conscious recognition of the subliminal stimuli or could even come close to accurately guessing the content of the subliminal information presented. Almost 65% were of the opinion that there might have been some or other connection between sessions one and two of the study. It can be concluded that the priming stimuli were indeed subliminal and none of the participants reported any conscious awareness of the content presented.

6.3.2 Experience of the different target scripts

Participants were randomly allocated to the different experimental conditions (Table 5.1). Table 6.4 presents the responses of participants in the different experimental conditions about their experience of the valence or polarity of the content of the interpersonal scripts presented to them.

Table 6.4

Experience of Target Scripts of Total Group (N = 109) and Participants in Different Subgroups

Participants		Content of target script			
		positive	negative	positive and negative	neutral
		%	%	%	%
	all (*N* = 109)	43	44	54	15
Script					
	positive (*n* = 28)	100	4	11	18
	negative (*n* = 27)	0	100	48	3
	ambiguous (*n* = 25)	44	28	72	36
	mixed (*n* = 28)	29	46	89	7
Prime					
	positive (*n* = 38)	42	42	61	18
	negative (*n* = 37)	46	41	57	16
	control (*n* = 34)	41	50	44	15
Chronic					
	positive (*n* = 51)	37	51	61	12
	negative (*n* = 57)	49	39	49	19

The results provide evidence that the participants attended to the scripts and was aware of the content presented them. All participants recognised the content of the script as positive behaviour when a positive script was presented to them. The same applied to the participants that received a negative script. The majority of participants that received the ambiguous (72%) and mixed (89%) scripts were of opinion that the scripts included positive and negative behaviour towards them.

In general, participants that received the subliminal presentation of the name of a positive or negative significant other did not differ significantly from each other in their conscious experience of the scripts presented to them. The subliminal prime did not influence their conscious awareness of the content of the script. They were however more likely than those that received a control prime to indicate that the scripts were both positive and negative towards them (61% and 57% compared to 44%). This result may indicate an interference of non-conscious processing in conscious experience.

Participants in the chronic positive group experienced the scripts generally as more negative towards them (51% compared to 39%), and participants in the chronic negative group experienced the scripts as more positive towards them (49% compared to 37%). This might indicate a contrast effect.

6.4   Average reaction time of participants

Every participant made 36 responses; therefore there were 3924 responses in total for the 109 participants. On average, it took participants 2.85 seconds to respond. The average time per response for participants in the different experimental groups is presented in Table 6.5. Participants in the chronic negative group generally responded faster than those in the chronic positive group ($F(1,3922) = 98.88$; $p < 0.001$). Priming had a significant effect on reaction time ($F(2,3921) = 15.23$; $p < 0.001$), most likely because the negative priming group responded slower than those in the other groups. Participants primed with a control stimulus responded faster than those primed with the name of a positive or negative significant other. This could mean that the subliminal priming with the names of significant others slightly interfered with the response of participants. Participants receiving the ambiguous script responded the fastest of all the subgroups (2.62 seconds) and significantly faster than the participants receiving the other scripts ($F(3,3920) = 22.77$; $p < 0.001$).

Table 6.5

Average Response Time of Total Group (N = 109) and Participants in Different Conditions

	All	Chronic		Prime			Script			
	(N = 109)	positive (n = 58)	negative (n = 51)	positive (n = 38)	negative (n = 38)	control (n = 33)	pos. n = 28	neg. (n = 27)	amb. n = 25	mix. n = 29
Average response time	2.85	3.03	2.68	2.79	3.00	2.74	2.83	2.91	2.62	3.00

6.5   General accuracy of responses

The general accuracy of responses was also investigated. A response was recorded as accurate when participants indicated correctly whether a statement was present (nine statements) or absent (27 statements) in the scripts presented to them. A summary of these results is presented in Table 6.6.

Participants in the prime control condition (27.85 out of the 36 responses) were more accurate than participants in the two experimental priming conditions (prime positive = 25.97 and prime negative = 26.26). This result was true for the responses to the positive, negative, ambiguous and filler statements and might indicate that the subliminal priming stimuli had a debilitating effect on the general accuracy of participants.

As could be expected, participants in the ambiguous (26.36) and mixed (24.14) script conditions experienced more difficulty in accurately determining the presence or absence of the target statements presented to them, compared to those receiving the negative (27.63) and positive (28.54) scripts.

The accuracy of participants in indicating the presence or absence of the nine positive, negative, ambiguous and filler statements, is also recorded in Table 6.6. Participants in the chronic positive group were more accurate than the chronic negative group in determining whether positive statements were presented (6.67 compared to 6.36). In turn, participants in the chronic negative group were more accurate than the chronic positive group in indicating whether negative statements were presented (7.62 compared to 6.75).

Table 6.6

Average Number of Correct Responses of Total Group (N = 109) and Participants in Different Conditions

	All	Chronic		Prime			Script			
	(*N* = 109)	positive (n = 58)	negative (n = 51)	positive (n = 38)	negative (n = 38)	control (n=33)	pos. (n =28)	neg. (n =27)	amb. (n = 25)	mix. (n = 29)
Statements										
positive	6.50	6.67	6.36	6.29	6.50	6.76	6.18	8.00	6.16	5.72
negative	7.21	6.75	7.62	7.00	7.24	7.42	8.82	6.07	7.44	6.52
ambiguous	6.54	6.14	6.90	6.68	6.16	6.82	6.89	7.07	6.60	5.66
filler	6.39	6.06	6.67	6.00	6.37	6.85	6.64	6.48	6.16	6.24
all	26.64	25.61	27.55	25.97	26.26	27.85	28.54	27.63	26.36	24.14

The average reaction time of participants was influenced by valence of script with participants receiving ambiguous scripts the fastest of all. The general accuracy of responses was influenced by valence of scripts (participants receiving mixed scripts were least accurate), by priming condition (participants receiving a control prime were more accurate) and attachment style (less secure participants were more accurate). These findings will be discussed in Chapter 7. The main analysis of the effects of the independent variables on the dependant variables and the possible interactions between conditions will now be presented.

6.6 Analysis of effect of independent variables

The main analysis was conducted in a stepwise manner. Firstly, the accuracy of participants in terms of the number of correct and incorrect responses was analysed. Then, by analysing the reaction time of correct responses under the various experimental conditions, the availability of the script information was analysed per chronic group.

6.6.1 Analysis of accuracy of responses

Table 6.7 shows the accuracy of participants per chronic group in remembering the presence and absence of the statements from the various scripts. A "no response" was coded when participants did not answer within five seconds.

Table 6.7

Accuracy of Responses per Chronic Group and Script (n = 3924)

Chronic	Script	Accuracy	Statement absent	Statement present	Total
negative	negative	incorrect	70	26	96
		correct	250	80	330
		no response	4	2	6
	positive	incorrect	70	25	95
		correct	382	126	508
		no response	7	2	9
	ambiguous	incorrect	99	17	116
		correct	278	107	385
		no response	1	2	3
	mixed	incorrect	120	32	152
		correct	276	99	375
		no response	9	4	13
positive	negative	incorrect	76	27	103
		correct	310	106	416
		no response	19	2	21
	positive	incorrect	85	11	96
		correct	205	86	291
		no response	7	2	9
	ambiguous	incorrect	101	15	116
		correct	194	80	274
		no response	2	4	6
	mixed	incorrect	144	29	173
		correct	228	97	325
		no response	6		6

The differences in the number of correct responses between negative and positive scripts per chronic group were highly significant (see Table 6.8). The chronic negative participants were in general more accurate than expected in indicating

whether the statements from the positive script were presented to them or not. The opposite was true of the chronic positive participants. They were more accurate than expected in indicating whether the statements from the negative script were presented to them or not.

Table 6.8

Number of Correct Responses per Chronic Group and Negative
and Positive Script

Chronic	Script	Observed n	Expected n	X^2	p
negative	negative	330	419.0	22.10	< .001
	positive	508	419.0		
positive	negative	416	353.5	37.81	< .001
	positive	291	353.5		

Differences in the number of incorrect responses between negative and positive scripts per chronic group were very small (see Table 6.5) and not statistically significant ($p > .10$). Overall, when the responses from participants were correct, the difference between the chronic groups, given the differences in the negative and positive scripts, was significant ($X^2 = 58.02$; $p < .01$). This was not the case when the responses were incorrect.

Differences in the number of correct responses between the participants receiving the ambiguous and mixed scripts were only significant for the chronic positive group and only at 4% level (See Table 6.9).

Table 6.9

Number of Correct Responses per Chronic Group and Ambiguous and Mixed Script

Chronic	Script	Observed n	Expected n	X^2	p
negative	ambiguous	385	380.0	0.13	$p = .717$
	mixed	375	380.0		
positive	ambiguous	274	299.5	4.34	$p = .037$
	mixed	325	299.5		

Differences in the number of incorrect responses between ambiguous and mixed scripts were highly significant for the chronic positive group ($X^2 = 11.24$; $p < .001$), and for the chronic negative group ($X^2 = 4.84$; $p = .028$). Overall, however, when

responses were incorrect, the difference between the chronic groups, given the differences in the ambiguous and mixed scripts, was not statistical significant ($X^2 = 0.57$; $p > .010$).

On the basis of these results the further analysis was based on the correct responses only, and the negative and positive scripts were used as levels for the factor script. This decision was supported by the difficulty caused by two possible explanations for incorrect responses. (a) Participants could indicate in the memory test that statements were presented to them as part of the particular script, although it was not presented. (b) Participants could indicate in the memory test that statements were not presented to them as part of the particular script, although it was indeed presented. Shah (2003a) also commented on additional difficulty interpreting interpreting the response time of incorrect responses in terms of accessibility effects (see also Bargh, Chaiken, Govender & Pratto, 1992 and Fazio, 1990).

6.6.2 Analysis of response times

The priming paradigm suggests that congruent priming facilitates the response to a target. Thus, the response time to remember the script statement accurately should be shorter when the prime is congruent with the script.

Figure 6.1 presents the relationship between the three levels of priming per level of script and chronic group. The response times are based on accurate or correct responses only. For reasons of completeness, all conditions are presented.
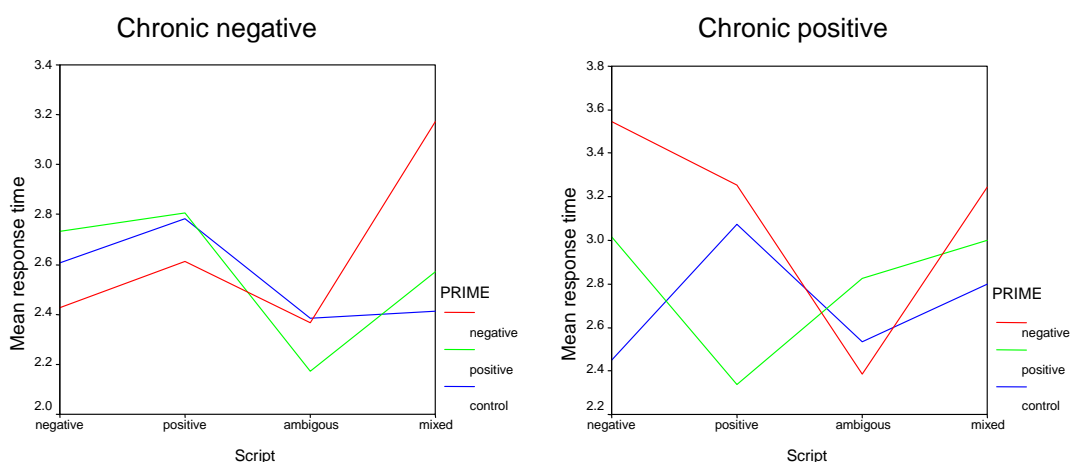
Figure 6.1. Response time of accurate responses per level of priming and script per chronic group.

The response time of participants in the chronic negative group, who received negative scripts, were the fastest when they received a negative prime. The response time was slowest when they received a positive prime. This finding is in line with the priming hypothesis.

Participants in the negative chronic group responded very fast to indicate the presence or absence of statements from ambiguous scripts. This effect seems to be a result of the script condition, as it was true for all three priming conditions.

The participants from the chronic positive group were also comparatively fast to indicate the presence or absence of statements from ambiguous scripts. Their response time, when they received a positive script, was also the fastest if primed with a positive significant other, offering further support for the priming hypothesis. Again, when receiving a positive script, their response time was also the slowest when primed with a negative prime.

The corresponding means, standard errors and 5% confidence levels for each chronic group per level of priming and script, are presented in Table 6.10.

Table 6.10

Response Time per Chronic Group, Prime and Script

Chronic	Prime	Script	*M*	*SD*	95% Confidence Interval	
					Lower Bound	Upper Bound
negative	negative	negative	2.43	.101	2.229	2.624
		positive	2.61	.079	2.456	2.767
		ambiguous	2.37	.089	2.191	2.539
		mixed	3.17	.095	2.988	3.360
	positive	negative	2.73	.100	2.534	2.927
		positive	2.81	.078	2.653	2.959
		ambiguous	2.17	.091	1.993	2.351
		mixed	2.57	.089	2.394	2.744
	control	negative	2.61	.101	2.411	2.808
		positive	2.78	.087	2.612	2.955
		ambiguous	2.38	.101	2.187	2.582
		mixed	2.41	.100	2.216	2.610
positive	negative	negative	3.55	.085	3.379	3.711
		positive	3.25	.106	3.046	3.460
		ambiguous	2.39	.121	2.148	2.624
		mixed	3.24	.099	3.048	3.437
	positive	negative	3.02	.090	2.840	3.192
		positive	2.34	.117	2.110	2.568
		ambiguous	2.83	.097	2.637	3.017
		mixed	3.00	.120	2.766	3.236
	control	negative	2.45	.096	2.258	2.635
		positive	3.07	.101	2.874	3.271
		ambiguous	2.53	.119	2.301	2.767
		mixed	2.80	.091	2.622	2.980

In Figure 6.2 the effects of priming are graphically presented only for the negative and positive scripts and per chronic group. The figure demonstrates support for the priming hypothesis. The response time of participants in the chronic negative group, who received negative scripts, were the fastest when they received a negative prime. The response time was slowest when they received a positive prime. The response time of participants in the chronic positive group, who received positive scripts, were the fastest when they received a positive prime. The response time was slowest when they received a negative prime.
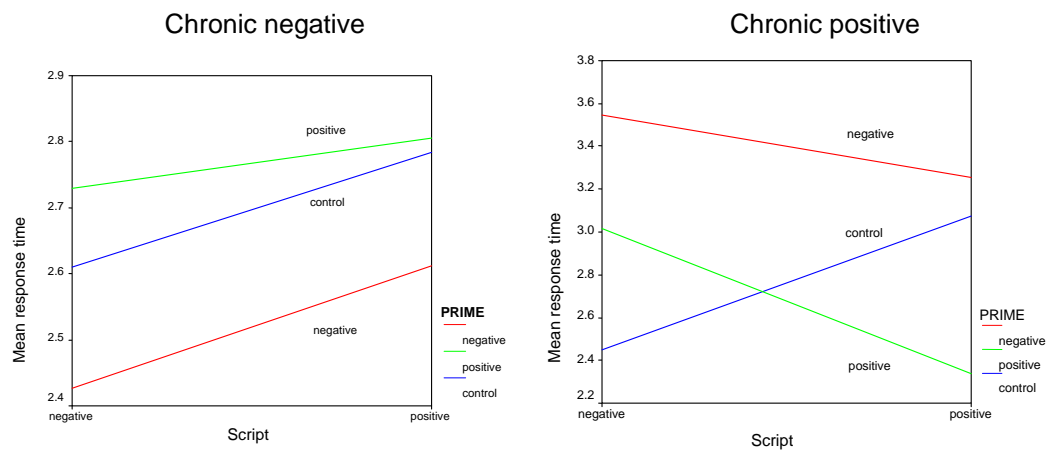
Figure 6.2. Accurate response time per level of priming and negative and positive script for each chronic group.

Separate univariate analyses of variance were done for the differences between positive and negative priming. The level of significance of the mean differences of the response times per polarity of script and group is shown in Table 6.11.

Table 6.11

Significance of Differences Between Positive and Negative Priming per Polarity of Script and Group

Chronic	Script	(I) Prime	(J) Prime	*df*	*F*	*p*
negative	negative	positive	negative	1,219	4.3	.039
		control	negative	1,217	1.58	.210
		control	positive	1,218	.64	.424
	positive	positive	negative	1,360	2.98	.084
		control	negative	1,322	2.49	.116
		control	positive	1,328	.04	.843
positive	negative	positive	negative	1,293	14.33	.000
		control	negative	1,275	75.70	.000
		control	positive	1,258	21.00	.000
	positive	positive	negative	1,180	43.68	.000
		control	negative	1,206	1.47	.226
		control	positive	1,191	29.17	.000

It appears from Table 6.11 that in the chronic negative group, only the absolute difference between negative and positive priming with a negative script was significant (p = .039). In the chronic positive group, only the difference between control and negative priming with a positive script was not significant (p > .10).

The congruencies of the priming effects can be deducted from Figure 6.2. In the chronic negative group, congruent priming only appears when prime and script are negative. The response time is faster than in the prime control condition. There is, however, no congruent priming when prime and script are positive. Likewise, discongruent priming appears when a negative script is positively primed.

In the chronic positive group, congruent priming only appears when prime and script are positive. There is, however, no congruent priming when prime and script are negative. Likewise, discongruent priming appears when a positive script is negatively primed or when the script is negative and the prime is positive. The mean response times are slower than the mean response time in the prime control condition.

The following conjunctive structure can be used to describe the relationship between 'chronic' and 'script' when priming effects occur (see Table 6.12). In a conjunctive model of categorisation, two or more characteristics should both or all be present

before the concept qualifies to be a member of that category. It is a more complex level of organisation than only the presence or absence of a single characteristic (Benjafield, 1994). In a conjunctive model of priming all the dimensions should be above a particular minimum to have effect and the different dimensions could not compensate for each other.

Table 6.12

Conjunctive Model of Script and Chronic Group on Priming

	Chronic positive	Chronic negative
Prime is positive Script is positive	Congruent priming effect	No priming effect
Prime is negative Script is negative	No priming effect	Congruent priming effect
Prime is negative Script is positive	Discongruent priming effect	No priming effect
Prime is positive Script is negative	No priming effect	Discongruent priming effect

The rationale of the conjunctive model is that script and chronic group must have the same polarity in order for the prime to have either a congruent or a discongruent effect.

The next analysis was conducted to evaluate the differences between the chronic groups as a function of their response time to negative and positive scripts when their responses were accurate and the prime congruent to the script. (Congruent primed scripts refer to all cases where the polarity of the prime was equal to the polarity of the script). In Table 6.13 the results of a two-way analysis of variance (ANOVA) (chronic x script) are presented.

Table 6.13

Results of Two-way Analysis of Variance for Chronic Group and Script

Source	*df*	*F*	*p*
CHRONIC	1	10.946	.01
SCRIPT	1	17.654	.00
CHRONIC x SCRIPT	1	64.952	.00
Error	528		

The results in Table 6.13 show the two main effects for chronic group ($p = .01$) and script ($p = .00$), and a highly significant interaction effect between chronic group and negative and positive scripts ($p < .001$).

Table 6.14 and Figure 6.3 below provide insight in the interactive relationship between chronic group and script. When responses are correct and the primes congruent to the scripts, the chronic negative group was significantly faster than the chronic positive group when they had to recognise statements from a negative script ($F(1,292) = 8.352$; $p = .004$). Likewise, the chronic negative group was significantly slower then the chronic positive group when they had to recognise statements from a positive script ($F(1,236) = 68.28$; $p < .001$). The results therefore support the conjunctive model of priming as was proposed.

Table 6.14

Interactive Relationship in Response Times Between Chronic Group and Negative and Positive Script

Chronic	Script	N	M	SD	95% Confidence Interval	
					Lower Bound	Upper Bound
negative	negative	110	2.43	.103	2.224	2.629
	positive	184	2.81	.080	2.650	2.963
positive	negative	156	3.55	.087	3.375	3.715
	positive	82	2.34	.119	2.104	2.573
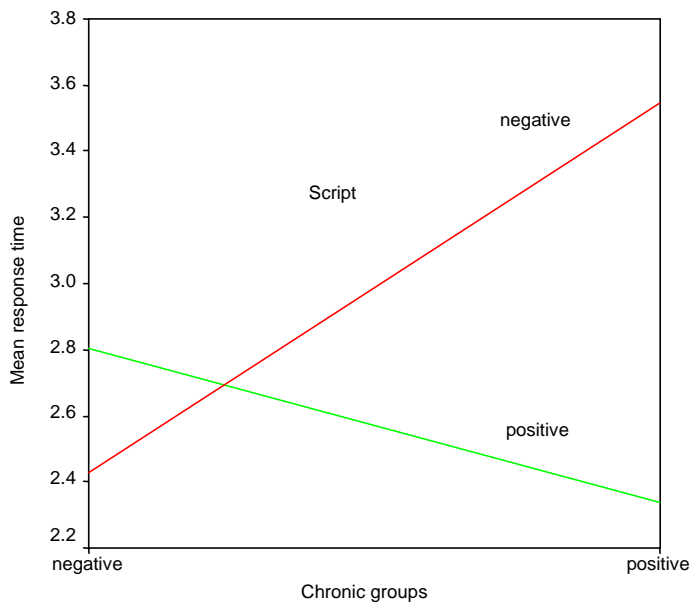
Figure 6.3. Mean response time per chronic group when script is positive or negative.

In Figure 6.4, the mean response times (based on correct responses only) per group are plotted for the ambiguous and mixed script. The mean response times of the chronic negative and chronic positive groups differed significantly for both ambiguous and mixed scripts respectively ($F(1,657) = 16.86$; $p < .001$, and, $F(1,698) = 9.881$; $p < .002$).
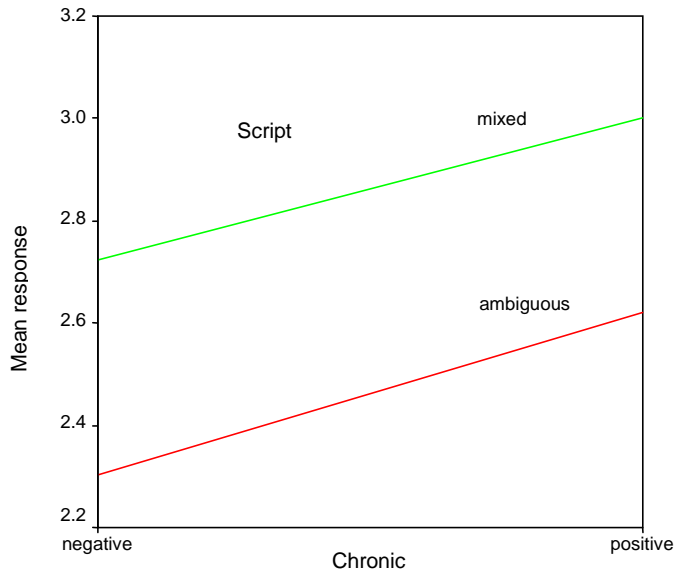
Figure 6.4. Mean response time per chronic group when script is ambiguous or mixed.

In addition, participants from both chronic groups, found it easier to decide whether a statement from an ambiguous script was presented before compared to a statement from a mixed script. In contrast to findings concerning positive and negative scripts (Figure 6.3), the interaction between script (mixed or ambiguous) and chronic group (negative or positive) was not significant ($F(1,1355) = 0.98$; $p = .754$) (see also Table 6.15).

Table 6.15

Interactive Relationship in Responses Times Between Chronic Group and Ambiguous and Mixed Script

				95% Confidence Interval	
Chronic	Script	*M*	*SD*	Lower Bound	Upper Bound
negative	ambiguous	2.30	.055	2.195	2.412
	mixed	2.72	.056	2.613	2.833
positive	ambiguous	2.62	.065	2.492	2.748
	mixed	3.00	.060	2.885	3.120

The same effect is not present as was observed with the positive and negative scripts.

In the concluding part of the results section, a number of other trends in the response pattern of participants will be presented.

6.7   Average number of *yes* responses

The average number of "yes" responses to the 36 statements was also explored. A "yes" response refers to a participant indicating that a particular statement was presented as part of the script, which was presented to him/her. Therefore a "yes" response could be accurate or not. Although it was stated previously that the ambiguous and mixed groups were least accurate in their responses, they were more likely to indicate that a statement was presented. This could also be an indication of their uncertainty in distinguishing between statements that was presented and those that were not. It is also of interest that the chronic positive group in general recorded more "yes" responses than the chronic negative group.

Investigating the "yes" responses to positive and negative statements showed that the chronic positive and chronic negative groups demonstrated a contrast effect. The chronic positive group gave more "yes" responses to negative statements and the chronic negative group gave more "yes" responses to positive statements. The priming groups, however, followed the intuitive pattern, with the positive prime group giving more "yes" responses to positive statements and the negative prime group giving more "yes" responses to negative statements.

Table 6.16

Average Number of Yes Responses by Total Group (N = 109) and by Participants in Different Conditions

	Chronic		Prime			Script				All
Statements	positive	negative	positive	negative	control	positive	negative	ambiguous	mixed	
positive	3.98	4.31	4.39	4.26	3.76	7.50	0.74	2.80	5.28	4.16
negative	2.06	1.50	1.53	1.89	1.88	0.00	4.96	0.00	2.00	1.76
ambiguous	1.06	1.24	1.32	1.05	1.09	0.00	0.00	5.04	0.00	1.16
filler	2.20	2.22	1.97	2.26	2.42	2.21	1.96	2.44	2.24	2.21
all	14.98	13.10	13.87	14.61	13.39	13.21	12.37	14.96	15.38	13.98

6.8   Statements not presented

In a number of studies (see Andersen & Baum, 1994; Andersen & Cole, 1990; Andersen et al., 1995; Andersen et al., 1996; Glassman & Andersen, 1999b; Hinkley & Andersen, 1996) the nomination of representation consistent items, not presented to the participants, were used as an index of representation activation. In the present study, three positive and three negative items consistent with the positive and negative scripts, were also included in the memory test, but not presented to any participant. There were also three filler items that were not presented to any participant. The responses on these items for all the participants and for the different subgroups are presented in Table 6.17.

Table 6.17

Average Number of Statements not Presented but Recalled by Total Group (N = 109)
and by Participants in Different Conditions

Participants	Statements		
	positive	negative	filler
All	1.31	0.67	0.77
Chronic			
positive	1.17	0.87	0.96
negative	1.42	0.51	0.61
Prime			
positive	1.49	0.66	0.91
negative	1.47	0.77	0.70
control	0.91	0.58	0.66
Script			
positive	2.15	0.00	0.42
negative	0.17	1.83	0.64
ambiguous	1.12	0.44	1.12
mixed	1.62	0.54	0.89

Participants were much more likely to indicate that the positive statements were presented to them as part of the script than the negative statements. This was true for all conditions, apart from the participants that received the negative script. Although the trends are in the predicted direction, participants receiving a positive prime (1.49) were only slightly more likely to indicate that the three positive statements were presented to them, than participants receiving the negative prime (1.47). The same applies to the selection of the negative statements by participants receiving the negative prime (0.77) in comparison to those receiving the positive prime (0.66).

6.9   Summary of results

Separate univariate analyses of the difference in response times of accurate responses between positive and negative priming per polarity of chronic group and script indicated support for the priming hypothesis. This hypothesis stated that chronic positive participants would process scripted positive interpersonal information more efficiently when they are primed with the name of a positive significant other than when they are primed with the name of a negative significant other or a control

prime. Similarly, chronic negative participants would process scripted negative interpersonal information more efficiently when they are primed with the name of a negative significant other than when they are primed with the name of a positive significant other or a control prime. The average response time of the chronic negative group was fastest when they received a negative prime (p = .039), and for the positive group was fastest when they received a positive prime (p = .000). The results of a two-way analysis of variance for chronic group and script showed a highly significant interaction effect between chronic group and script (p = .000). When the primes were congruent to the scripts, the chronic groups were significantly faster in recognising statements from a congruent script.

CHAPTER 7   DISCUSSION

7.1   Outline of discussion

In this chapter, support for the main hypothesis of the study will first be considered. Then the effect of the three independent variables (temporary activation, chronic accessibility and interpersonal script) will be discussed in the light of previous findings. The results concerning the combination of temporary and chronic activation, significant others, and a discussion of some unexpected results will conclude the first part of this chapter.

In the second part of the chapter some implications of the findings for theory, research and therapeutic application will be considered. The limitations of the study will be discussed and recommendations will be made for future research in this area.

7.2   Support for main hypothesis

The general aim of the present study was to investigate the social-cognitive structures and processes involved in the influence of past social experiences on the present processing of social information under controlled experimental conditions.

The main hypothesis stated that chronic positive participants would process scripted positive interpersonal information more efficiently when they are primed with the name of a positive significant other than when they are primed with the name of a negative significant other or a control prime. Similarly, chronic negative participants would process scripted negative interpersonal information more efficiently when they are primed with the name of a negative significant other than when they are primed with the name of a positive significant other or a control prime.

The results demonstrated support for this hypothesis and participants with a history of particular relationship experiences (secure or insecure attachment styles), processed congruent relationship information (positive or negative interpersonal script) more efficiently when they were primed with information from a significant other with whom they share some of these relationship experiences (name of positive or negative significant other).

7.3   Temporary activation

The temporary activation of a relational schema was the first independent variable in the present study. Recent activation of a social construct increases the likelihood that

the construct will be used to interpret new information. Priming can be considered as one form of temporary activation (Higgins, 1996). The priming paradigm suggested that congruent priming would facilitate information-processing.

7.3.1 Evidence for temporary activation

The results of the present study (see Table 6.11) supported the priming hypothesis and indicated that participants in the chronic positive group processed positive scripts significantly faster when they were primed with the name of a positive significant other than when they were primed the name of a negative significant other. The same effect was found for chronic negative participants, who responded to negative scripts significantly faster when primed with a negative significant other compared to a positive significant other.

This support for the priming hypothesis was obtained with a minimal prime in the form of a subliminal presentation (33 milliseconds) of the name of a significant other. In their responses to the manipulation checks (see Table 6.3) participants did not report any recognition of the contents of the subliminal priming. The subliminal presentation of the name of the positive or negative significant other also did not influence participants' conscious experience of the different target scripts (see Table 6.4). The priming stimuli were clearly unobtrusive.

Apart from the reaction time effects, a number of trends in the results also supported the priming hypothesis. Participants primed with the control stimulus were more accurate in their recognition of statements presented to them than participants primed with positive or negative significant others (see Table 6.6). Although participants were unaware of the prime, it might have introduced some bias in the responses. Participants primed with the name of a positive significant other indicated more often that positive statements were presented to them (4.39), than participants primed with a negative significant other (4.26), or a control prime (3.76). Participants primed with the name of a negative significant other also indicated more often that negative statements were presented to them (1.89), than participants primed with a positive significant other (1.53), or a control prime (1.88) (see Table 6.16). The direction of these trends may represent a tendency to indicate that prime congruent statements were presented as part of the script. This tendency received further support from the responses of participants to statements not presented to them.

Participants primed with the name of a positive significant other indicated more often that positive statements, that were not present in the script, were indeed presented to them (1.49), than participants primed with a negative significant other (1.47) or control prime (0.91). Participants primed with the name of a negative significant other also indicated more often that negative statements, not presented to them, were indeed presented (0.77), than participants primed with a positive significant other (0.66) or control prime (0.58) (see Table 6.17). These results are similar to those reported by Andersen and co-workers using different research methods. Therefore both the main analysis and a number of trends supported the priming effect of a subliminal stimulus.

The use of subliminal priming assists in avoiding the contrast effect when participants become aware of attempts to bias or control their responses and consciously discount it or compensate for it (see Strack et al., 1993). The accessibility effects of the subliminal priming of social constructs have been demonstrated in social cognition research (Bargh & Pietromonaco, 1982; Devine, 1989). Murphy and Zajonc (1993) primed participants with happy faces, Pierce and Lydon (1998) with subliminal positive or negative interpersonal words, and Herr (1986) with the names of hostility-related people. Baldwin et al. (1990) primed participants subliminally with the face of an authority figure, and Shah (2003, study 2) with the word "father". In comparison, the present study demonstrated priming effects with an ideographic priming stimulus – the name of a significant other specific to the participant. The prime had no general evaluative (e.g. well-known hostility-related name) or general affective content (e.g. picture of a serious or happy face or the word "father"). The present results supported the work by Baldwin (1994) who primed participants with the name of a highly critical or accepting person, Banse (1999) who primed participants with the name or face of a romantic partner, or Shah (2003a, study 1) and Mikulincer et al. (2001, study 4) who primed participants with names of significant others.

In the present study the names of significant others were generated in session one. There was a number of days delay between sessions one and two and the names were not mentioned in session two. Therefore it seems as if it can be stated with confidence that there could not have been any residual activation of the priming word and the priming effects could only be explained by the subliminal exposure of the name of the personally specific significant other. It is possible that the same

significant other, although generally experienced as positive (or negative) could also have been involved in interactions with the participant, which the latter experienced as very negative (or positive). The influence of the target script will be discussed later.

7.3.2 Response time effects

The priming effects (as well as the chronic accessibility and target script effects) were measured in terms of response or reaction time. Response time is generally used in social cognition research as indication of the speed of cognitive processing. Faster response times are an indication of facilitated processing and high levels of availability of constructs. Slower response times may indicate additional processing, low availability or even emotional interference. Higgins et al. (1982) demonstrated faster response times in memory tasks for chronically accessible constructs. The speed of processing self-relevant information was significantly faster in studies by Markus (1977). In the present study, the faster response times in the memory task could indicate the heightened availability of the significant other representation and associated information.

7.3.3 Activation of cognitive structures

Smith and Zárate (1992) reviewed evidence that a proper name, as an exemplar of one, could also operate as a social construct. Andersen et al. (1995) demonstrated that an activated individual person exemplar could be used to interpret new individuals. In the present study, the activation of an individual person exemplar facilitated the processing of an interpersonal script. According to the spreading activation paradigm (Collins & Loftus, 1975) other information (available in cognitive structures) linked in a network to the name of the significant other, was also activated.

The research program of Andersen and co-workers (reviewed in section 3.3.2) explored the qualities of significant other representations and its effects on the processing of interpersonal information. Significant other representations share many associations with many other constructs. Stored representations of significant others can be activated and applied to new others (Andersen, et al., 1998). In the present study, it was hypothesised that significant other representations are closely associated with the representations of many typical transactions between the index

person and the significant other. The present study extended previous research in demonstrating that activated significant other representations can facilitate the processing of congruent interpersonal scripts.

Therefore, the present results supported the notion of Baldwin (1992) that relational schemas are based on repeated interactions with significant others and are constituted by three interrelated elements (self-schema, person-schema and interpersonal script). The present results demonstrated, with response time effects in a priming paradigm, that the person-schema and interpersonal script are connected. Therefore, the present results satisfy the requirement of Higgins and Bargh (1987) that one element of a hypothesised schema must be primed and measures taken demonstrating that the activation has spread to another element, before the existence of a schema can be claimed.

The present results correspond to the components of working models as proposed by Collins and Read (1994) (see section 2.2) and provide some insight into the structure and processing of working models.

7.4   Chronic accessibility

The chronic accessibility of a relational schema was the second independent variable in the present study. Chronic accessibility refers to the readiness of a construct to be activated and used in the processing of information even with minimal temporary activation (Higgins, 1996). The lower threshold for activation might be the result of frequent activation of the construct in the past or the high level of connectedness with other constructs.

7.4.1 Evidence of chronic accessibility

The results of the present study supported the hypothesis that target interpersonal scripts will be processed more efficiently when they are consistent with chronically accessible relational schemas. When the responses were accurate, and prime congruent to the script, chronic group had a significant effect on response time ($p =$ .01) (see Table 6.13 and Figure 6.3).

Apart from the reaction time effects in the main analysis, a number of trends in the results also supported the chronic accessibility hypothesis. The average response time of the chronic negative group responding to negative scripts was 2.43 seconds, and the average response time to positive scripts was 2.81 seconds (see Table

6.14). The average response time of the chronic positive group responding to positive scripts was 2.34 seconds, compared to 3.55 seconds when responding to negative scripts (see Table 6.14).

7.4.2 Secure and insecure attachment

In the present study, chronic accessibility was operasionalised as secure and insecure attachment styles. The distinction between secure attachment and insecure attachment in general is well supported in literature, although the different insecure groups are not as clearly differentiated as suggested by theory (Feeny et al., 1994). After a meta-analysis Baldwin and Fehr (1995) reported satisfactory test-retest results for the secure group. In most populations secure and insecure participants were in almost equal proportions (Hazan & Shaver, 1994), supporting the decision in the present study to use a median split of the confidence scale of an attachment style measure. The recollections of childhood relationships with parents differed systematically between secure and insecure groups (see section 2.5). Based on different histories of repeated interactions, the significant other representations of the secure and insecure groups could be expected to be different and associated with different interpersonal scripts. The relational schemas and the working models of these groups could be considered to be different (depending on the preferred theoretical perspective).

7.4.3 Comparison to past findings

Baldwin et al. (1993) explored the relational schemas underlying attachment styles and demonstrated the chronic accessibility of interpersonal constructs by means of self-report and lexical decision tasks. Baldwin et al. (1990) differentiated between high and low practising religious students when priming them with the face of a prominent religious leader. This could be stated as a difference between high and low chronic accessibility for religious constructs.

Glassman and Andersen (1999b) operasionalised chronic accessibility for significant other representations as the delayed measurement of transference effects. Their use of over-lapping features at the learning and measurement phase might have compromised their findings (see section 7.10.2).

The use of attachment style as operasionalisation of chronic accessibility for different interpersonal scripts with significant others was a new development and was

supported by the results. It extended the work by Baldwin et al. (1996) where self-reported attachment style was related to the ease with which participants could generate exemplar relationships matching these styles.

7.5   Interpersonal script

The valence of the interpersonal script presented to participants was the third independent variable of this study. A script could be defined as a representation of knowledge about a coherent sequence of events in a well-known situation or context. People are assumed to abstract scripts from repeated experience with similar situations and then to apply them to the understanding of new experiences. Baldwin (1992) defined an interpersonal script as a cognitive structure representing a sequence of actions and events that define a stereotypical relational pattern. The script is structurally connected to the self-schema and the representation of a significant other. All three elements are predicted to demonstrate information processing effects.

7.5.1 Evidence of script applicability

The results of the manipulation check demonstrated that the participants were well aware of the content and polarity (positive, negative, ambiguous or mixed) of the scripts presented to them (see Table 6.4). When responses were accurate and the prime congruent with the script, the polarity of the script had a significant effect on the response time (p = .00, see Table 6.13). Chronic positive participants were significant faster in responding to the positive script than the negative script, and chronic negative participants were significantly faster in responding to the negative script.

Apart from the reaction time effects in the main analysis, a number of trends in the results also supported the script applicability hypothesis. Although only six positive statements were included in the positive script presented to participants, they indicated during the memory test that they received an average of 7.5 positive statements during the script presentation. Participants that received negative scripts followed the same pattern in their responses to negative statements, although not as extreme (see Table 6.16). Participants receiving positive scripts gave more "yes" responses to positive statements not presented to them (2.15) than to any other

scripts. Participants receiving negative scripts responded more "yes" to negative statements not presented to them (1.83) than to any other scripts (see Table 6.17).

Participants that received the mixed scripts were the least accurate of all the participants in responding to the presence or absence of all statements (see Table 6.6), and they gave more "yes" responses to all statements than any other script (15.38 "yes" responses, see Table 6.16). These results clearly demonstrated their uncertainty about which statements were presented to them. The most likely explanation is that the mixed scripts did not have a clear polarity that could assist recognition of the statements.

7.5.2 Past findings on scripts and applicability

Fehr et al. (1999) explored typical interpersonal scripts dealing with anger in close relationships. Baum and Andersen (1999) found that role relationships could be stored in memory as part of significant other representations. Positive affect is experienced when other people behave according to the representation consistent role relations. The present study extended the earlier research by empirically demonstrating a link between attachment style and congruent interpersonal scripts.

Knowledge activation does not depend only on the accessibility of stored knowledge, but also on the applicability between the stored knowledge and the presented stimulus. The greater the overlap between features of the stored knowledge and the attended features of the stimulus, the greater is the likelihood that the knowledge will be used in the processing of the stimulus (Higgins, 1989). Andersen et al. (1995) demonstrated that applicability of the target stimulus to the significant other representation lead to greater representation consistent memory effects, but the study by Chen et al. (1999) could not show increasing memory effects with increasing levels of applicability. Smith and Branscombe (1987) demonstrated that priming effects could also be a function of the prime-stimulus similarity. In the present study, there were no similarities in the observable features of the stimuli, but a definite relationship proposed on theoretical grounds between the primes (names of significant others), the stimuli (interpersonal scripts) and the available memory structures (attachment working models).

It was possible that the content of the target scripts presented to the participants activated the available scripts in memory (working models of the attachment style),

which facilitated the processing of the scripted information. It can explain the effect of the polarity of the presented scripts on their processing, but still does not explain the priming effects that were found. The present study is a demonstration of the pre-activation of cognitive structures. The discussion will now focus on the interaction between chronic and temporary accessibility.

7.6   Chronic and temporary accessibility

The main hypothesis of the present study stated that chronic positive participants would process scripted positive interpersonal information more efficiently when primed with the name of a positive significant other, with the equivalent hypothesis that chronic negative participants would process scripted negative interpersonal information more efficiently when primed with the name of a negative significant other (see section 4.4). The combining effect of chronic and temporary accessibility was also investigated.

7.6.1 Past findings on chronic and temporary accessibility

There are not many studies available in the field of interpersonal relationships that combine chronic and temporary activation. Bargh et al. (1986) selected participants, chronic or non-chronic for a particular construct, and subliminally primed them or not in a seemingly unrelated experiment. Chronic accessibility had a reliable effect, but did not interact with the priming. In a study by Higgins and Brendl (1995) the effect of chronicity was non-significantly stronger within the priming condition. In the study by Andersen et al. (1995) participants learned about the features of a significant other and the researchers compared the results of immediate measurement (temporary activation or priming condition) and delayed measurement (chronic accessibility condition). The temporary activation and chronic accessibility contributed in additive manner to activation.

7.6.2 Conjunctive model

The results of the present study supported a conjunctive model of script and chronic accessibility on priming. In the chronic negative group, congruent priming only appeared when the prime and the script were negative. The response times were faster than those of the control condition. Likewise, in the chronic positive group, congruent priming only appeared when the prime and the script were positive. The target script and the chronic group had to be congruent for the prime of the same

polarity to have an effect. In a conjunctive model all the dimensions should be above a particular minimum to have effect and the different dimensions cannot compensate for each other. Therefore, in the present study a more complex relationship between temporary activation and chronic accessibility is proposed, than merely an additive relationship.

The question by Carlston (1991), whether temporary and chronic sources of construct activation are equivalent or not, cannot be answered by the results of the present study. It can be stated that the results of the present study indicate a conjunctive model, where both elements are indeed necessary. The availability of information is a necessary condition for chronic accessibility, and temporary activation is dependant on the applicability of the information. Information-processing is indeed a product of the individual and the situation.

7.7   Unconscious processing

The results of the present study demonstrated that significant other representations could be activated outside of awareness to facilitate the subsequent conscious processing of interpersonal information. The results supported Glassman and Andersen (1999a) in their demonstration of the unconscious activation of significant other representations. It also complemented the findings of Higgins et al. (1982), showing that people can interpret the behaviour of others at an automatic level, as well as the results by Smith and Lerner (1986), demonstrating that social judgements can be considered as procedural learning.

Social cognition in real life situations often involves various higher mental processes. Bargh (1996) mentioned for example that stereotyping involves stereotype activation (which is a relatively uncontrollable cognitive process) and stereotype use (which is a relatively controllable cognitive process). The cognitive processing of relationship information involves declarative and procedural knowledge. The conscious and non-conscious processes may at times influence each other, but at other times operate according to different rules.

7.8   Findings concerning significant others

The present study also explored the significant others that were identified by the participants. According to attachment theory, it was expected that the majority of participants in the present study would nominate a parent or close family member as

the primary positive significant other. When Andersen et al. (1995) asked a group of 47 undergraduate students to consider the significant other people in their lives, they listed family members (44%) of whom 22% were mothers and 9% fathers, close friends (48%) and romantic partners (8%). In the present study 65% of the students nominated a family member as the primary positive significant other. Thirty-four percent nominated their mothers and 20% nominated their fathers. Twenty-one percent of the students nominated friends and 11% listed romantic friends. Family members and parents in particular are important significant others for university students. The results of the present study supported the prediction based on attachment theory, as well as earlier findings about the identification of positive significant others. The present study also asked participants to list negative significant others. Fifty-four percent nominated friends, demonstrating the importance of peer relationships. A further 22% of the male and 21% of the female participants listed their fathers as the primary negative significant other. This is in agreement with results by Fox et al. (1991) who concluded, after a meta-analysis of attachments to mother and father, that 31% of the people reported a secure attachment to one parent and an insecure attachment to the other. This supports the view that people can have multiple attachments in a complex network of attachment relations. Although certain working models or relational schemas will be more accessible than others, different models or schemas can be activated towards different people.

According to attachment theory it was also expected that securely attached participants would be more likely to nominate a parent as primary positive significant other, than the insecurely attached participants.

Sixty percent of the securely attached participants in the present study nominated a parent as primary positive significant other (40% mother and 19 % father). In comparison 36% of the insecurely attached participants nominated a friend as primary positive significant other and only 30% nominated a parent (20% mother and 10% father). There was no difference in their proportional nomination of negative significant others. This finding supports the importance of secure primary relations in the development of social confidence as proposed by attachment theory. In the results of the present study there were also a number of unexpected findings that is more difficult to explain, which will now be mentioned.

7.9 Unexpected findings

7.9.1 Chronic group and accuracy

In general the chronic negative group, the more insecure participants, were more accurate than the chronic positive group in determining the presence or absence of scripted statements in the memory test, with an average of 27.55 compared to 25.61 correct responses (Table 6.6). The chronic negative group were significantly more accurate in determining the presence or absence of scripted statements when they received a positive script than when they received a negative script ($p < .001$, Table 6.8). The chronic positive group was more accurate when they received a negative script rather than a positive script ($p < .001$, Table 6.8). This result might be in support of the suggestion by Bargh and Thein (1987) and Fiske and Taylor (1991) that at the expert level of schema development, people will favour schema inconsistent material and remember it better than schema consistent material. In this particular case the expert schema could refer to the chronically available interpersonal script. In general the chronic positive participants remained more accurate (6.67) than chronic negative participants (6.63) in identifying positive statements (Table 6.6), and chronic negative participants remained more accurate (7.62) than chronic positive participants (6.75) in identifying negative statements (Table 6.6).

7.9.2 Chronic group and assessment of scripts

In the manipulation check the more securely attached participants reported that in general the scripts described more negative behaviour (51%) than positive behaviour (36%). The less securely attached participants reported that the scripts described more positive behaviour towards them (49%) than negative behaviour (39%). A similar explanation to section 7.9.1 is probably warranted. The behaviour that was contrary to their more accessible working models or relational schemas made a more lasting impression on the participants.

7.10 Implications of the findings

7.10.1 Implications for theory

The results of the present study contribute to the theoretical understanding of the influence of past relationship history on the current processing of interpersonal information. Socialisation history or family background maintains certain constructs,

mental sets, relational schemas or working models at a state of high readiness through the frequent activation of those constructs. Through priming by an internal or external event certain of these constructs, schemas or models can be pre-activated. The incoming information (target or stimulus statements) will be processed in terms of the relevant activated schemas or models, which in turn will influence the organisation and retention of that material. The present study proposes a conjunctive model stating that chronic accessibility, target applicability and temporary activation should be present, congruent and above a particular minimum to have an effect on the processing of information. The relationship between the chronic accessibility and temporary activation of social constructs is seemingly more complex than merely an additive one.

In agreement with Smith and Zárate (1992) and Andersen et al. (1995) the present study provided evidence that a proper name can also operate as a social construct and be activated to facilitate the processing of interpersonal information. This activation can take place with a minimal prime and outside conscious awareness. The results also provided empirical evidence for the relational schema notion of Baldwin (1992) by empirically demonstrating with response time effects in a priming paradigm that a person-schema (in this case a significant other representation) and an interpersonal script are connected. The results contribute to the understanding of the nature of chronically accessible relational schemas and working models of people with secure and insecure attachment styles, by demonstrating a link between attachment style and the processing of congruent interpersonal scripts.

7.10.2 Implications for methodology

The present study combined the research paradigms of two prominent researchers in the field of relationship representations (Baldwin, 1992) and significant other representations (Andersen, et al. 1997). The standard research paradigm of Baldwin and co-workers involved the following steps in a single session: (a) measurement of chronic accessibility (e.g. attachment style); (b) subliminal presentation of experimenter generated stimulus; (c) presentation of a task in an interpersonal domain consistent to chronic accessibility or priming stimulus, and (d) measurement of task performance. The standard research paradigm of Andersen and co-workers (as detailed in section 3.3.2.2) involved the following step in sessions one: (a) learning about the features of significant others (e.g. features ABCDEF); and the

following steps in session two: (b) presentation of features of an unknown target person (e.g. features ABCGHI); (c) presentation of a test of the features of the target person (e.g. features ABDEGH), and (d) measurement of the participant's certainty of recall of features not actually presented (e.g. features DE). The present study was an integration of the two approaches and was conducted in the following way (see chapter 5 for details). Session one involved the following steps: (a) learning about the names of positive and negative significant others; and (b) measurement of chronic accessibility (attachment style). The following steps formed part of the second session: (c) subliminal presentation of the name of significant other; (d) presentation of the target interpersonal script; (e) presentation of a test with statements from different scripts; and (f) measurement of the accuracy and reaction time of responses.

The integration of the two research paradigms advanced the available methodology in the following ways. (a) The use of the combination of ideographic and nomothetic techniques (from the Andersen-paradigm) ensured that personalised priming stimuli could be used. Personalised priming stimuli are not possible in the single session Baldwin-paradigm. (b) The study used the advanced measurement of chronic accessibility and the subliminal priming (from the Baldwin-paradigm) to ensure representation consistent priming and avoid the contrast effect to priming. (c) The study did not use the overlap of features in the learning and test phase, as was done by Andersen. In the Andersen-paradigm implicit learning, repetition priming or the associations between features cannot be ruled out as possible sources of transference effects. The present study used a theory-based approach (and not a feature based approach) in hypothesising associations between chronic cognitive structure, priming stimulus and target interpersonal script. (d) In the tradition of priming research (and most of the Baldwin studies), the present study also used response time measurements as a direct assessment of priming effects. (e) The integration of the two research paradigms made it possible to investigate the three independent variables chronic accessibility, temporary subliminal activation and valence of target script in one experimental design.

7.10.2 Implications for application

The conjunctive model of priming and the experimental design of the present study can be applied in social cognition research to investigate stereotypes for social

categories and prototypes for social situations. The priming paradigm can be used to assess people's stereotypical expectations of scripted interpersonal behaviour of people in other social categories.

Although the present research is not primarily a clinical study, the investigation of the mental representation of interpersonal behaviour is in a number of ways relevant to the clinical field. Many theories of emotional disorders refer to the interpersonal dimension. Dysfunctional interpersonal behaviour and relationships problems are one of the hallmarks of personality-disordered people. Exploring relationship expectations can also be of value for people with a history of conflictive or abuse relationships. Many therapists looking for the core cognitive construct in depression have begun to study interpersonal structures (e.g. Guidano & Liotti, 1983; Safran & Segal, 1990). Hooley and Teasdale (1989) found that the best predictor of relapse in unipolar depressive patients was how critical they think their significant others were. It is possible to investigate this hypothesis in a therapeutic context, by priming a patient with a certain significant other person and assessing the effect on the processing of interpersonal information (Baldwin, 1992). Priming and assessing performance in cognitive processing tasks can be of important diagnostic value in investigating interpersonal expectations. It can be an alternative to self-report or behaviour observation methods.

After a review of the literature, Sperling and Lyons (1994) indicated that the modes of therapy that focus on correcting dysfunctional mental representations, appear to fall in the following categories: (a) therapies that provide alternative representations of interpersonal functioning through relational modelling within the therapist-patient relationship; (b) therapies with a more specific application of relational modelling or reparenting, through establishing a corrective emotional attachment with the parent or primary caretaker, that competes with the dysfunctional representations; (c) therapies that aim to cognitively and emotionally evaluate and change mental representations and the defences that maintain them; and (d) therapies that focus specifically on the reconstruction of representational narratives. Some of these therapies put more emphasis on the therapist-patient relationship, while others focus more explicitly on changing mental representations through interpersonal or cognitive techniques.

Bowlby (1988) has always been quite clear on the therapeutic implications of the attachment approach:

> A therapist applying attachment theory sees his role as being one of providing the conditions in which his patient can explore his representational models of himself and his attachment figures with a view to re-appraising and restructuring them in the light of the new understanding he acquires and the new experiences he has in the therapeutic relationship. (p. 138)

The eventual therapeutic aim will be the modification of interpersonal representations, which will affect the experience and processing of current interpersonal behaviour, which then further modify these representations (Lopez, 1995).

7.11   Limitations of the present study

In the present study it was decided to use a subliminal prime to avoid the contrast effects often reported when participants are aware of the primes and the aim of the experiment. The priming effect reported in the present study was relatively small compared to the effects of chronic accessibility and the target script. A larger priming effect could probably be achieved with a more significant prime, e.g. a visualisation prime, but that would risk the contrast effect.

The chronic accessibility variable was limited to two attachment styles, based on the median split of the Confidence Scale of the ASQ, to avoid the controversy about the test-retest stability of the avoidant and anxious/ambivalent attachment styles. A possible solution could be to use the fourfold categorisation of Bartholomew and Horowitz (1991) and develop a different set of target scripts congruent to every category. This approach will also broaden the emphasis of the present study on the positive or negative scripts.

The central component of the relational schema, namely the self-schema, was not directly assessed or included as a variable in the present study. The target person, with whom every person is most familiar, is the self. The cognitive representation of the self contains components or categories that have a significant influence on the person's schemas of significant others and scripts of the interactions with those significant others. The chronic accessibility effects demonstrated in the present study

by participants with secure or insecure attachment styles, could be seen as an indirect indication towards the influence of self-schemas on the processing of interpersonal information.

Although the underlying structures and processes in the activation of significant other representations of university students will not be different from the general population, the contents of their relational schemas is expected to be quite different from pre-adolescent children, as well as from adults in longer term relationships or in parent roles themselves.

7.12 Recommendations for future directions

It is important to replicate the present study to confirm the results that were obtained. The conjunctive model of priming can be applied to explore other elements of relational schemas or working models as well.

The present study investigated chronic accessibility, temporary activation and script applicability in a between subject design. The same variables can be investigated in a within subject design where the same participant receive different primes and different target scripts. The representations of positive and negative significant others can be activated within the same person. The co-existence of seemingly incompatible models e.g. "good parent" and "bad parent" can be investigated in persons with different attachment styles.

Baldwin et al. (1993) investigated different attachment styles with lexical decision task methods and target words representing outcomes in specific interpersonal contexts. From the perspective of the conjunctive model of priming, the study can be adjusted slightly. Participants can be primed with a significant other, a particular interpersonal script can be the context and the target word can remain the outcome. In this manner, the conjunctive model of priming can be tested in a different experimental design.

It has been mentioned (see section 7.11) that the experimental design used in the present study can be applied to the fourfold categorisation attachment styles proposed by Bartholomew and Horowitz (1991). Participants can be assigned to one of four chronic accessibility groups, namely (a) secure and comfortable with intimacy and autonomy, (b) preoccupied with relationships, (c) dismissing of intimacy, and (d) fearful of intimacy and their cognitive processing of different category congruent

target scripts can be investigated. The following category congruent scripts can serve as examples: scripts expressing trust or mistrust, acceptance or rejection, attraction or avoidance, dependence or independence.

Another follow-up study would be to compare the effects of priming participants with the names of positive or negative valenced significant others that they have nominated, to priming them with generic names of significant others (e.g. "father" or "mother") as was done by Shah (2003a). The work by Shah (2003a) demonstrated that priming participants with generic names of significant others (for example "father") could demonstrate effects, but the effects increased with the degree to which participants reported themselves to be closer to the significant other. The results of the present study demonstrated that some participants regarded their fathers as positive significant others and other participants had the opposite view.

The central importance of the self-schema (mentioned in section 7.11) has been mentioned. It is possible that prominent working models might involve a self-component that operate as an overriding metacognitive strategy in categorising significant others and interpersonal scripts. This notion can be formulated in theory and empirically investigated.

7.13   Final summary

This study investigated the influence of past social experiences on the present processing of social information under controlled experimental conditions. The results demonstrated support for the primary hypothesis that people with a history of particular relationship experiences, will process congruent relationship information more efficiently when they are primed with information from a significant other with whom they share some of these relationship experiences. Participants with more secure attachment histories processed congruent interpersonal script more efficiently when they were subliminally exposed to the name of a significant other with whom they share positive experiences. The equivalent result was achieved for participants with more insecure attachment histories. Apart form demonstrating the implicit effects of significant others on social interaction, this result also provided evidence through cognitive processing effects in a priming paradigm that the person-schema and interpersonal script are connected in a relational schema as proposed by Baldwin (1992). The results of the present study also demonstrated a highly significant

interaction effect between category of attachment style and interpersonal script in the processing of interpersonal information. A conjunctive model of priming was proposed to describe a more complex relationship between chronic activation and temporary activation.

The present study employed fairly simple priming and target stimuli, because the more varied the stimulus information, the more numerous will be the schematic categories activated and the more complex the cognitive representation of the information. Carlston (1994) provided an associated systems model to further our understanding of the complex interrelationships among different forms of construct representation. Carlson and Smith (1996) stated that: "Memory by its very nature is reconstructive, and retrieval efforts generally obtain a 'mush' that can be taken apart into components only with great difficulty and uncertainty" (p. 203). They concluded that the memories we experience as retrievals from our past, the perceptual world we consciously experience, and the judgments we make about persons are all constructed from information drawn from many sources and from many mental representations. The objective of the present study was to broaden our understanding of certain components of this "mush" in the social memory of people!

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Appendix A   Items of Confidence Scale (ASQ)

Items of the Confidence Scale of the Attachment Style Questionnaire

Item 1:

Overall, I am a worthwhile person

Item 2:

I am easier to get to know than most people

Item 3:

I feel confident that other people will be there for me when I need them

Item 19:

I find it relatively easy to get close to other people

Item 31:

I feel confident about relating to others

Item 33:

I often worry that I do not really fit in with other people (reverse score)

Item 37:

If something is bothering me, others are generally aware and concerned

Item 38:

I am confident that other people will like and respect me

Scale:

1 = totally disagree

2 = strongly disagree

3 = slightly disagree

4 = slightly agree

5 = strongly agree

6 = totally agree

Range of scores: maximum = 48

minimum = 8

Appendix B   Instructions and Worksheet Session One

PROCESSING OF RELATIONSHIP INFORMATION

Thank you for your willingness to participate in our project on the processing of information about relationships. The first session will ask some questions about the significant people in your life and your relationship with them. This will take about 20 to 30 minutes. In the second session we will utilize a computer task to investigate how you process information about possible interactions with other people. It will take less than 10 minutes of your time. We hope that it will be enjoyable to participate. You will help us to gather valuable data.

All information will be dealt with confidentially and the information of individual participants will never be made known to anybody. Do ask us if you have any questions or uncertainty about this matter.

In the space provided, indicate whether you are male or female, your age and whether you would like to complete the project in English or Afrikaans.

BIOGRAPHICAL DETAILS

MALE	
FEMALE	

AGE	

AFRIKAANS	
ENGLISH	

The project consists of two investigations and we would like to ensure that the same people take part in sessions one and two. In the space provided write down your student number, or if you do not want to do that, any eight number code that you will have to remember until the second session.

PARTICIPANT CODE							

INTRODUCTION TO SIGNIFICANT OTHERS

Significant others are the people in our lives that have an important influence on us. We have to deal with them quite often or had to deal with them regularly at some time in our past. We mostly cannot ignore their opinions, although we do not necessary agree with them. Mostly it is people that we presently know quite well or knew quite well in the past. In other words, people that have an important influence in our lives either presently or in the past. They are mostly family and friends, but can also be other people.

Significant others can broadly be divided into two groups of people. We experience some significant others as very supporting of us, and they make us feel good about ourselves. We can describe them as positive significant others in our lives. The actions and opinions of other important people in our lives do influence us as well, but they are often negative and critical towards us. Then they make us feel bad about ourselves and give rise to negative feelings towards them.

In the space provided, compile a short list with the first names of the most important significant other people in your life. Write down the actual name of the most important positive significant other at P and the actual name of the most important negative significant other at N. Also indicate his/her role in your life, e.g. Mother, friend, partner.

POSSIBLE SIGNIFICANT OTHER PERSONS	
MOSTLY POSITIVE	NEGATIVE AT TIMES
P	N
ROLE IN YOUR LIFE	ROLE IN YOUR LIFE
P	N

Please complete the following questionnaire and write your responses on the answer sheet.

ATTACHMENT STYLE QUESTIONNAIRE

Show how much you agree with each of the following items by rating them on this scale:

1 = totally disagree   **2 = strongly disagree**

3 = slightly disagree   **4 = slightly agree**

5 = strongly agree   **6 = strongly agree**

1. Overall, I am a worthwhile person.
2. I am easier to get to know than most people.
3. I feel confident that other people will be there for me when I need them.
4. I prefer to depend on myself rather than other people.
5. I prefer to keep to myself.
6. To ask for help is to admit that you're a failure.
7. People's worth should be judged by what they achieve.
8. Achieving things is more important than building relationships.
9. Doing your best is more important than getting on with others.
10. If you've got a job to do, you should do it no matter who gets hurt.
11. It's important to me that others like me.
12. It's important to me to avoid doing things that others won't like.
13. I find it hard to make a decision unless I know what other people think.
14. My relationships with others are generally superficial.
15. Sometimes I think I am no good at all.
16. I find it hard to trust other people.
17. I find it difficult to depend on others.
18. I find that others are reluctant to get as close as I would like.
19. I find it relatively easy to get close to other people.
20. I find it easy to trust others.
21. I feel comfortable depending on other people.
22. I worry that others won't care about me as much as I care about them.
23. I worry about people getting too close.
24. I worry that I won't measure up to other people.

Show how much you agree with each of the following items by rating them on this scale:

1 = totally disagree　　　　　**2 = strongly disagree**

**3 = slightly disagree**　　　　　**4 = slightly agree**

5 = strongly agree　　　　　　**6 = strongly agree**

25. I have mixed feelings about being close to others.

26. While I want to get close to others, I feel uneasy about it.

27. I wonder why people would want to be involved with me.

28. It's very important to me to have a close relationship.

29. I worry a lot about my relationships.

30. I wonder how I would cope without someone to love me.

31. I feel confident about relating to others.

32. I often feel left out or alone.

33. I often worry that I do not really fit in with other people.

34. Other people have their own problems, so I don't bother them with mine.

35. When I talk over my problems with others, I generally feel ashamed or foolish.

36. I am too busy with other activities to put much time into relationships.

37. If something is bothering me, others are generally aware and concerned.

38. I am confident that other people will like and respect me.

39. I get frustrated when others are not available when I need them.

40. Other people often disappoint me.

ANSWER SHEET

ITEM 1		ITEM 15		ITEM 29	
ITEM 2		ITEM 16		ITEM 30	
ITEM 3		ITEM 17		ITEM 31	
ITEM 4		ITEM 18		ITEM 32	
ITEM 5		ITEM 19		ITEM 33	
ITEM 6		ITEM 20		ITEM 34	
ITEM 7		ITEM 21		ITEM 35	
ITEM 8		ITEM 22		ITEM 36	
ITEM 9		ITEM 23		ITEM 37	
ITEM 10		ITEM 24		ITEM 38	
ITEM 11		ITEM 25		ITEM 39	
ITEM 12		ITEM 26		ITEM 40	
ITEM 13		ITEM 27			
ITEM 14		ITEM 28			

CLOSING

Thank you for taking part in session one. Please put the worksheet and questionnaire in the envelope provided. Have you written down your participant code where you can remember it? The computer task will take place on (. . . . .) at (. . . . .). It will take less than 10 minutes of your time.

Appendix C   Instructions of Computer Task Session Two

Introduction

Thank you for your willingness to participate in our second investigation. Can you remember your participant code from the first session? Trace your participant code on the list provided and identify the corresponding computer number. You will have to type this number into the computer.

[Provide list with participant codes and computer numbers].

When the program ask your computer number, type the three numbers and one letter that you have received. Then press ENTER.

Type your computer number.

Well done.

When you need to answer *yes* or *no* during the exercise, type 1 (for *yes*) or 2 (for *no*) on the numeric keyboard on the right of the keyboard in front of you. Do you notice the numbers (1) and (2)? Answer the question that will follow by answering *yes* (1) or *no* (2).

Are you male? *(Are you female?)*

Well done.

This exercise will investigate how you process information about possible behaviour of other people towards you.

It is very important that you clear your mind of all the events that is currently happening in your life and try to focus for the following few minutes on the tasks that will be presented to you.

Researchers have recommended that flashing stimuli can be used to facilitate attention and concentration. This will also be done in this experiment. All you have to do is to focus on the figures in the middle of the screen. The word READY will be presented first, followed by the concentration exercise.

After the concentration exercise, you will be required to read a paragraph very carefully. The paragraph will describe the behaviour of a person in a particular situation towards you. Read the paragraph with attention, because you will have to answer some questions about it. You will receive only a limited period of time to read the paragraph.

Are you ready to proceed with the concentration exercise and the paragraph? Type (1) for *yes* or (2) for *no*.

[Presentation of subliminal prime].

Read the paragraph carefully.

[Presentation of interpersonal script].

Now you have to indicate whether the following statements were present in the paragraph or not. Indicate your answer by typing (1) for *yes* or (2) for *no*. Read every statement carefully and decide whether it was part of the paragraph presented to you.

You will have only have a limited number of seconds before the next question will appear. Answer as quickly as you can. Answer by typing (1) if the statement was part of the paragraph or (2) if it was not. Before you answer the statements, we will repeat the concentration-exercise. Focus your attention on the figures in the middle of the screen. Are you ready to proceed?

[Presentation of subliminal prime].

[Presentation of 36 statements in random order].

Thank you for your help until now. Please answer the following questions on your experience of taking part in this experiment.

Answer the following question by typing the keys (1) for *yes* or (2) for *no*.

[Presentation of checks on the manipulation]. (See Appendix F).

Thank you for your valuable contribution and good luck with your studies.

Appendix D   Scripts Presented

POSITIVE SCRIPT

I already know you for quite some time. (F1) I hear you have thought about an excellent idea again. (P1) I will enjoy listening to what you plan to do. (P3) I will help you with pleasure if you need it. (P4) You can decide whether to take my advice or not. (F4) You always listen very carefully to what I tell you. (P6) I am certain you will take the best decision again. (P7) I am proud of the way you have dealt with this matter. (P9) I will keep in touch with you about this matter. (F6)

NEGATIVE SCRIPT

I already know you for quite some time. (F1) I hear you have thought about an absurd idea again. (N1) I do not even want to listen to what you intend to do. (N3) I am tired of having to rescue your mistakes. (N4) You can decide whether to take my advice or not. (F4) You never even listen to what I have to tell you. (N6) I am certain that you will take the wrong decision again. (N7) I am disappointed about the way you dealt with this matter. (N9) I will keep in touch with you about this matter. (F6)

AMBIGUOUS SCRIPT

I have to deal with you quite often. (F2) I hear that you have thought about a different idea. (A1) I will have to talk straight about what you plan to do. (A3) There are a number of ways you could deal with this matter. (A4) I know you have your own opinion about this matter. (F5) You do not always listen equally well to what I say to you. (A6) I think you have to consider very well before you take a decision. (A7) I do have mixed feelings about the way you dealt with this matter. (A9) I will remember how you dealt with this matter. (F9)

MIXED SCRIPT (1)

I have to deal with you quite often. (F2) I hear you have thought about an excellent idea again. (P1) I do not even want to listen to what you intend to do. (N3) I will help you with pleasure if you need it. (P4) I know you have your own opinion about this matter. (F5) You never even listen to what I have to tell you. (N6) I am certain you will take the best decision again. (P7) I am disappointed about the way you dealt with this matter. (N9) I will remember how you dealt with this matter. (F9)

MIXED SCRIPT (2)

I have to deal with you quite often. (F2) I hear you have thought about an absurd idea again. (N1) I will enjoy listening to what you plan to do. (P3) I am tired of having to rescue your mistakes. (N4) I know you have your own opinion about this matter. (F5) You always listen very carefully to what I tell you. (P6) I am certain that you will take the wrong decision again. (N7) I am proud of the way you have dealt with this matter. (P9) I will remember how you dealt with this matter. (F9)

The statement numbers in brackets refer to the numbers in Appendix E and were not presented to the participants, but are included here for identification of the statements. Mixed script (1) and mixed script (2) are equivalent versions.

Appendix E   36 Statements in Memory Test

STATEMENTS			
Positive	Negative	Ambiguous	Filler
P1	N1	A1	F1
I hear you have thought about an excellent idea again	I hear you have thought about an absurd idea again	I hear that you have thought about a different idea	I already know you for quite some time
P2	N2	A2	F2
I really would like to discuss this idea with you	I do not want to discuss this idea with you	I am available to discuss this matter with you	I have to deal with you quite often
P3	N3	A3	F3
I will enjoy listening to what you plan to do	I do not even want to listen to what you intend to do	I will have to talk straight about what you plan to do	I obviously have my own opinion on this matter
P4	N4	A4	F4
I will help you with pleasure if you need it	I am tired of having to rescue your mistakes	There are a number of ways you could deal with this matter	You can decide whether to take my advice or not
P5	N5	A5	F5
I will gladly support this plan	I can not support this endeavour at all	I first have to consider carefully what you plan to do	I know you have your own opinion about this matter
P6	N6	A6	F6
You always listen very carefully to what I tell you	You never even listen to what I have to tell you	You do not always listen equally well to what I say to you	I will keep in touch with you about this matter
P7	N7	A7	F7
I am certain you will take the best decision again	I am certain that you will take the wrong decision again	I think you have to consider very well before you take a decision	I wonder what your decision will be
P8	N8	A8	F8
I am certain that you will make a success of this matter as well	I am certain that you will fail in this matter as well	I am very certain that you will have to work very hard on this	I do have an influence on the decisions that you make
P9	N9	A9	F9
I am proud of the way you have dealt with this matter	I am disappointed about the way you dealt with this matter	I do have mixed feelings about the way you dealt with this matter	I will remember how you dealt with this matter

Appendix F   Checks of the Manipulation

a) In the paragraph that you have read, was the behaviour of the person positive towards you? (YES or NO)

b) Was the person behaving negatively towards you? (YES or NO)

c) Was the person behaving both positively and negatively towards you? (YES or NO)

d) Was the person behaving in a neutral way towards you? (YES or NO)

e) Did the concentration exercises help you to focus your attention on the task that you had to do? (YES or NO)

f) Were you suspicious about the nature of the flashing symbols? (YES or NO)

g) Do you think any information was presented to you during the flashing symbols? (YES or NO)

h) What information do you think was presented to you during the flashing symbols? (Type the information and end by typing ENTER twice.)

i) Do you think there was any relation between Session 1 (the questionnaires about significant other) and Session 2 (the paragraph about the behaviour of another person that you had to read and remember)? (YES or NO)

j) Do you want to receive a full debriefing of the experiment and the results? (YES or NO) (Type your name and address here. End by typing ENTER twice)