

Linguistic Inquiry of Body Boundary Imagery and Primordial Mental Activity in Spontaneous Spoken and Written Language

By

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This thesis is submitted in partial fulfilment of the requirements for the degree of
Doctor of Philosophy.

June 2015

Declaration

I, Laura Annamaria Cariola, declare that this thesis is my own work, and has not be submitted in substantially the same form for the award of a higher degree elsewhere. Any sections of the thesis that have been published shall be clearly identified.

Chapter 5:

Cariola, L. A. (2014). Assessing the inter-method reliability and correlational validity of the Body Type Dictionary (BTD). *Literary and Linguistic Computing*, 29, 171-190.

Chapter 6:

Cariola, L. A. (2014). Lexical tendencies of High and Low Barrier personalities in narratives of everyday and dream memories. *Imagination, Cognition and Personality*, 34, 133-161.

Chapter 8:

Cariola, L. A. (2015). Semantic expression of the body boundary personality in person-centred psychotherapy. *International Body Psychotherapy Journal*, 14, 48-64.

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Abstract

The first aim of this thesis was to assess the reliability and validity of the Body Type Dictionary (BTD) (Wilson, 2006). Study 1 demonstrated that the BTD represents a valid and reliable computerised method to measure body boundary imagery, compared to Fisher and Cleveland's (1958) manual scoring system.

The second aim of this thesis was to explore the relationship between body boundary imagery and linguistic behaviours in the recall of elicited autobiographical memories. Study 2 showed that semantic content measured using the Linguistic Inquiry and Word Count (LIWC) (Pennebaker, Booth, & Francis, 2007) in High Barrier personalities is conceptually equivalent to primordial mental activity, whereas the semantic content of Low Barrier personalities is representative of conceptual thought. Study 3 assessed the semantic fields associated with barrier and penetration imagery in written autobiographical memories. The results identified that High Barrier personalities use more semantic fields representing container-schematic imagery and primordial mental activity, compared to the semantic fields related to conceptual thought in Low Barrier personalities.

The third aim of this thesis was to explore the relationship between body boundary imagery and linguistic behaviours in psychotherapy transcripts. Consistent with the assumption that the internalisation of social values and behavioural expectations represents the most important influence on the formation of body boundaries (Fisher & Cleveland, 1958), while acting as a primary cause of psychological disturbances (Rogers,

1951, 1961), Study 4 showed that barrier imagery was positively correlated with the semantic content associated with primordial mental activity but negatively correlated with the semantic content associated with conceptual thought, based on the verbal behaviour of High Barrier patients (N = 6) and Low Barrier patients (N = 6) attending person-centred psychotherapy.

Acknowledgments

I am grateful to my supervisor Dr. Andrew Wilson. It has been a privilege to have him as my supervisor. Without him this thesis would not have been possible.

I would like to thank Prof. Ian Parker (School of Management at University of Leicester) who was my external advisor. His psychodynamic insight and supportive conversation were helpful and enjoyable.

I would like to thank Prof. Robert Hogenraad (Psychology Department at Catholic University of Louvain) for our inspiring email conversations about content analysis and psychoanalysis. I would also like to thank Prof. Paul Chilton (Department of Linguistics and English Language at Lancaster University) for our thought-provoking conversations, which allowed me to learn more about the field of cognitive linguistics and its relationship to political discourses.

I would like to thank Dr. Costas Gabrielatos (Department of English & History at Edge Hill University) for being a great friend, and for sharing and laughing together about the ups and downs one does encounter in academic life.

I am grateful to my family for their financial and emotional support throughout my time as a student. I would like to thank Frank Pollick for his love and encouragement. Last but not least, I would like to express my gratitude to my beloved late cats, Tinka and Peppino, who unfortunately passed away to cat heaven (to reunite with their brothers and sisters) before I was able to complete this thesis — I always wanted to share this moment with them.

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List of Abbreviations

BTD	Body Type Dictionary
CLAWS	Constituent-Likelihood Automatic Word-Tagging System
CMT	Conceptual Metaphor Theory
LIWC	Linguistics Inquiry Word Count
LL	Log-Likelihood
MIP	Metaphor Identification Procedure
OED	Oxford English Dictionary
PROTAN	PROTocol Analyzer
RID	Regressive Imagery Dictionary
USAS	UCREL Semantic Annotation Tool

‘Mending Wall’ by Robert Frost (1874-1963)

Something there is that doesn't love a wall,
That sends the frozen-ground-swell under it,
And spills the upper boulders in the sun,
And makes gaps even two can pass abreast.
The work of hunters is another thing:
I have come after them and made repair
Where they have left not one stone on a stone,
But they would have the rabbit out of hiding,
To please the yelping dogs. The gaps I mean,
No one has seen them made or heard them made,
But at spring mending-time we find them there.
I let my neighbour know beyond the hill;
And on a day we meet to walk the line
And set the wall between us once again.
We keep the wall between us as we go.
To each the boulders that have fallen to each.
And some are loaves and some so nearly balls
We have to use a spell to make them balance:
‘Stay where you are until our backs are turned!’
We wear our fingers rough with handling them.
Oh, just another kind of out-door game,
One on a side. It comes to little more:
There where it is we do not need the wall:
He is all pine and I am apple orchard.
My apple trees will never get across
And eat the cones under his pines, I tell him.
He only says, ‘Good fences make good neighbours’.
Spring is the mischief in me, and I wonder
If I could put a notion in his head:
‘Why do they make good neighbours? Isn't it
Where there are cows?
But here there are no cows.
Before I built a wall I'd ask to know
What I was walling in or walling out,
And to whom I was like to give offence.
Something there is that doesn't love a wall,
That wants it down.’ I could say ‘Elves’ to him,
But it's not elves exactly, and I'd rather
He said it for himself. I see him there
Bringing a stone grasped firmly by the top
In each hand, like an old-stone savage armed.
He moves in darkness as it seems to me,
Not of woods only and the shade of trees.
He will not go behind his father's saying,
And he likes having thought of it so well
He says again, “Good fences make good neighbours.”

Chapter 1

Introduction

1.1 Aims of this Thesis

Reminiscent of the Freudian psychoanalytic assumption that perceives “the ego is primarily and foremost a bodily ego” (Freud, 1923, p. 26), the corporeal turn of embodiment in cognitive linguistics holds that language, mind and bodily experiences are closely intertwined (Lakoff & Johnson, 1980). Similarly, there is a longstanding tradition in psychological research to identify the phenomenological experiences and perceptual awareness associated with the human body image and bodily schema. Fisher and Cleveland’s (1956, 1958) body boundary concept represents a personality dimension that assumes individuals vary in their appraisals of their body boundaries. Their manual semantic content analysis scheme, which measures the finiteness and permeability of an individual’s body boundaries, has been applied to a wide range of psychological phenomena, including stress and coping, psychopathology, and psychosomatic responses (Fisher, 1986, 1970; Fisher & Cleveland, 1958).

Buck and Barden (1971) also showed that body boundary awareness would be dependent on the level of cognitive functioning to the extent that individuals recalling autobiographical memories associated with heightened levels of associative and hallucinatory thought (i.e., nocturnal dreams) would reflect more body boundary finiteness and permeability compared with the recall of autobiographical memories associated with logic and reality-orientated thought (i.e., everyday events). Although this thesis identified how levels of regressive cognitive functioning in the recall of autobiographical memories relate to the level of body boundary finiteness, and to some extent body boundary permeability, it has not been clarified how body boundary finiteness relates to linguistic expressions in the recall of autobiographical memories that vary in terms of the level of regressive cognitive functioning — i.e., narratives of everyday events and nocturnal dreams.

The aims of this thesis are threefold. The first aim is to assess the reliability and validity of the Body Type Dictionary (BTD) (Wilson, 2006) (see 5.2) which is a computer-assisted dictionary that measures the lexical frequencies of barrier and penetration imagery according to Fisher and Cleveland's (1956, 1958) manual scoring system.

The second aim is to explore and clarify the understanding of the relationship between body boundary awareness and linguistic behaviour in the recall of autobiographical memories of everyday events and nocturnal dreams by using content analytic and corpus-based approaches. Such content analytic and corpus-based approaches help to determine how High and Low Barrier personalities construct their autobiographical memories by exploring their regular patterns of semantic content (see 6.2) and their use of figurative language (see 7.2). Fisher and Cleveland (1958) provided empirical evidence that a distinction could be made between High Barrier personalities who would perceive their body boundaries as clearly bounded and differentiated from the environment and individuals, whereas Low Barrier personalities would lack such firm body boundaries. Therefore, the linguistic investigation of autobiographical memories generated by High and Low Barrier personalities might represent a contribution within this particular field of scientific interest by exploring and clarifying the relationship between body boundary awareness and language behaviour.

The third aim of this thesis is to explore the relationship between body boundary awareness and language behaviour in psychotherapy sessions. Thus, the thesis helps to assess the external validity of the identified language behaviour in relation to naturally occurring spoken language compared with experimentally derived written autobiographical memories. It also further explores the changes in body boundary finiteness and the verbal behaviour of High and Low Barrier patients attending person-centred psychotherapy. In summary, this thesis explores the hypothesis that an in-depth exploration of linguistic features associated with varying levels of body boundary finiteness might further the understanding of the relationship between body boundary awareness and the cognitive processes that underpin the verbal behaviour of autobiographical memories and psychotherapy sessions.

1.2 Boundaries in Social Relationships and Language

In human relationships, proverbs such as Robert Frost's (1914) phrase "*Good fences make good neighbours*", from his famous poem "*Mending Fences*", convey the intricate negotiations between closeness and intimacy, on the one hand, and security and ownership, on the other (Mieder, 2003). In this sense, the fence represents a boundary that protects individuals from harmful outside influences. The boundary is a symbol of interpersonal respect by maintaining psychological distance from one another and encouraging behaviour that is mutually adaptive and socially beneficial. Whereas the mutually agreed upon entering of interpersonal boundaries relates to closeness and intimacy, the unwanted and forced overstepping of boundaries is often associated with maladaptive behaviour that may lead to emotional and physiological harm.

As described by Wilber (1979, pp. 1-17), boundaries represent basic parameters of our identity and enable us to understand and define the existential question, "*Who am I?*". Spatial and territorial boundaries, including the structure of a fence or wall that encloses an area, differentiate the inside of the barrier, i.e., what is "mine", from what lies outside of it — what is "yours". Similarly, the skin of the human body is a boundary that clearly delineates the confinements of our identities and those of others. The inside of the skin boundary is the "self", and what lies outside of it is the "not-self"; thus, the perception of another skin boundary that envelops the human organism indicates the presence of the "other". Our psychological and emotional permeability often results in our sense of identity becoming intertwined with our perception of others' identities. It is part of human cognitive functioning to engage in shared meaning constructions and to identify with others' emotions and points of view, which may interfere with our experience to clearly differentiate between the "self" and "others". In this sense, the surface of the body boundary perceptually indicates the parameters of our identities, but the boundaries of the human mind are less clearly delineated. The porosity of the mind's boundaries is assumed to be indicative of our ability to maintain a functional sense by being in touch with the beliefs, experiences, thoughts, emotions, needs and wants of the self's inner life, while also being able to be open and to relate to the expressions and emotions of others (Whitfield, 1991). Whereas the awareness of one's and others' identities and property boundaries

typically informs our conscious reality, the loss of skin boundary awareness has been associated with altered states of consciousness (ASC), such as spiritual and mystical experiences, and dreaming and meditation (Freud, 1900). From this perspective, the conceptualisation of the “self” and “other”, in relation to the notion of “boundaries”, represents a complex system of intra- and inter-psychic processes.

In political and cultural domains, the conceptualisation of interpersonal and spatial boundaries represents an important issue that frequently occupies the media. Linguistic research has extensively investigated how the relationship between the “self” and “other” would be expressed in discursive representations. For example, (critical) discourse analysis has identified salient linguistic features associated with the construction of social self-other relations in cultural and political discourses, such as hate crime and racist-related discourses (e.g., Baker, Gabrielatos, & McEnery, 2013; Baker et al., 2008; Baker, Gabrielatos, & McEnery, 2013; Gabrielatos & Baker, 2008; Wodak, 2009, 2011; Wodak & Richardson, 2012) and discourses of political boundaries and border politics (e.g., Chilton, 1996; Khosravinik, Krzyzanowski, & Wodak, 2012; Wodak, 2010; Wodak & Krzyzanowski, 2011). Surprisingly, linguistic or psychology research have not investigated the relationship between boundary perception as a personality construct and its linguistic expression (e.g., semantic content and figurative language) in relation to written and spoken language.

Therefore, this thesis aims to identify how individuals with varying degrees of body boundary finiteness differ in their language behaviours. This identification was achieved by exploring the statistical relationships between Fisher and Cleveland’s (1956, 1958) construct of the body boundary personality in relation to the use of semantic content and cognitive schemas in the linguistic construction of written and spoken texts. In particular, Fisher and Cleveland’s (1956, 1958) body boundary personality construct is based on the premise that individuals differ in their body boundary awareness, which influences their tendencies to direct their visual attention onto the “definite structure, definite substance, and definite surface qualities to the bounding peripheries of things” (p. 58). Such heightened visual attention directed towards the definiteness of boundaries would be reflected in an increased occurrence of semantic references related to object boundaries, such as the mention of decorative surfaces and clothing items.

In addition, considering that the relationships among body boundaries, cognitive functioning and language represent a salient concept within psychoanalytic theory, this thesis also emphasises the theoretical relationship between body boundary awareness and modes of primordial and conceptual mental activity (Robbins, 2011). Based on Freud's (1923) theory that perceives a unity between body and psyche, externally derived bodily sensations and feelings are assumed to be conscious perceptions, whereas internally derived sensations relate to unconscious processes that are transformed into conscious perceptions and take the form of word presentations. Verbal expressions are then assumed to reflect residues of unconscious sensory perceptions that interact with meaning constructions, interpretative functions, and encoding and retrieval processes. Within the psychoanalytic framework, cognitive functioning in conscious everyday awareness relates to conceptual thought (secondary process), whereas the process of the unconscious relates to primordial thought (primary process).

The results of this empirical exploration challenge prevailing theories in cognitive linguistics and social and developmental psychology. Additionally, being unique in its methodology, this thesis employs a mixed-method approach to quantitatively assess the validity and reliability of the Body Type Dictionary (BTD) (Wilson, 2006) in a medium-sized data set. This thesis further uses a quantitative statistical approach to identify how body boundary awareness relates to primordial thought, using the Regressive Imagery Dictionary (RID) (Martindale, 1975, 1990). The Linguistic Inquiry and Word Count (LIWC) (Pennebaker, Booth, & Francis, 2007) is used to explore the semantic content associated in the verbal behaviour of High and Low Barrier personalities. In this sense, the thesis aims to explore the semantic tendencies associated with the body boundary personality construct and, in doing so, refines and provides an in-depth quantitative insight into the language behaviour of individuals who are classified as High and Low Barrier personalities.

1.3 Fisher and Cleveland's Body Image Boundary

The perception and appearance of the human body, the so-called "body image", has been given much attention in psychological research. According to Gallagher (2005, pp. 17-39), the concept of body image relates to the intentional states (e.g., beliefs,

concerns, emotional attitudes and perceptions), conceptual understanding, and self-referential intentionality that individuals hold about their body. Body schema represents a related and often times interchangeable concept to body image; however, whereas body image focuses on the perceptual faculty of being able to observe movement, the notion of body schema refers to the sensory-motor systems that enable and constrain the accomplishment of bodily movement within space that is not necessarily within an individual's conscious awareness (Gallagher, 2005). Body image and body schema represent a complex and interrelated construct. In healthy humans, conscious attention of the body varies greatly, to the extent that whole movements (e.g., the process of walking) are regulated and situated at the margins of bodily awareness where bodily movement can be controlled, whereas other movements (e.g., threading a sewing needle) often require conscious control and perceptual attention (Gallagher, 2005). Such an increased perceptual awareness of one's motor movements and bodily parts typically draws attention to the muscles and skin that comprise basic aspects of the body image and represent perceptual-field landmarks that enable an individual to cognitively differentiate the body in relation to other objects (Gallagher, 2005).

As much as individuals generally differ in their subjective experience of their own bodies, it is also a common idea that certain body sensations and parts assume more attention than others. Fisher and Cleveland (1958, p. x) conceptualised these attitudes and feelings of one's own body in terms of 'body image':

which refers to the body as a psychological experience, and focuses on the individual's feelings and attitudes toward his own body. It is concerned with the individual's subjective experience with his body and the manner in which he has organized these experiences.

Based on the insight that individuals vary in the appraisal of their body images, Fisher and Cleveland theorised that these differences are motivated by one's awareness of the skin boundary that differentiates between perceptual influences and stimuli that occur outside of the body and those processes and impressions that occur inside of the

self. A protective body boundary then allows the body to be seen as a separate entity in relation to the immediate environment, whereas people with a less definite body boundary perceive themselves as less differentiated entities, and vulnerable and open to external threats.

1.4. Research Questions

This thesis addresses a series of questions that have remained unanswered by current theories and research on body boundary imagery and primordial thought language:

1a) Does the lexical content of the BTI (Wilson, 2006) accurately measure barrier and penetration imagery relative to Fisher and Cleveland's (1956, 1958) manual scoring system of body imagery?

1b) Do the barrier and penetration imagery frequencies as measured using the BTI (Wilson, 2006) correlate with the frequencies of regressive imagery produced in various experimental conditions of text production?

2) To what extent does barrier imagery relate to the semantic content associated with primordial and conceptual cognition in different types of autobiographical memories, i.e., everyday and dream memories? How does the lexical content differ between High and Low Barrier personalities?

3) To what extent do High and Low Barrier personalities differ in their usage of semantic fields associated with container schemas in the written recall of different types of autobiographical memories (i.e., everyday and dream memories)?

4a) To what extent does body boundary finiteness relate to the lexical content associated with primordial and conceptual cognition in the verbal behaviour of patients attending person-centred psychotherapy?

4b) Given the relationship between the internalisation of parental and social values as the most important influence on the formation of body boundaries, and a primary cause of psychological disturbances, to what extent does psychotherapy have an effect

on frequency changes in barrier imagery and semantic content associated with primordial and conceptual cognition within the psychotherapeutic process?

1.5 Thesis Overview

This thesis is organised into nine chapters. Chapter 1 provides an introduction and background to the overall topic of boundaries as socio-psychological constructs. It then outlines Fisher and Cleveland's (1956, 1958) concept of the body boundary personality and how personality constructs have been explored using content analysis measures in psychiatric and psychological empirical research. It further discusses the aim of the research and the research questions that are explored in this thesis.

Chapter 2 provides a literature review of the theoretical concepts that serve as a focal point in this thesis — first, it outlines Fisher and Cleveland's (1956, 1958) body boundary constructs, and, second, it introduces the Freudian (1900) concept of primary and secondary processes, which represent the theoretical equivalent of primordial mental activity. This literature review will provide an overview of these theoretical concepts and relevant empirical research studies. Given the psychodynamic underpinnings of the primary process and body boundary awareness, the chapter will also provide theoretical insight into how both concepts are intertwined in the development of human cognitive functioning and emotion regulation.

Chapter 3 includes a literature review of the content analytic framework that is used in this thesis. It outlines the use of content analysis in psychological research and how it relates to the concept of lexical leakage (Spence et al., 1978). It further explores the use of computer-assisted content analysis in relation to the RID (Martindale, 1975, 1999), which measures the semantic content classified as primordial mental activity, and the BTD (Wilson, 2006), which measures the semantic frequencies of barrier and penetration imagery, as outlined by Fisher and Cleveland's (1956, 1958) manual content analysis scoring system.

Chapter 4 is a review of the tools used throughout this thesis, including the following computerised content analysis dictionaries: the RID (Martindale, 1975, 1990), the

BTD (Wilson, 2006) and the LIWC (Pennebaker, Booth, & Francis, 2007). The chapter also provides an outline of the PROToCol Analyzer (PROTAN) content analysis software program, which measures the occurrence of category-based lexical content (Hogenraad, Daubies, Bestgen, & Mahau, 2003), and the USAS tagger (Wilson & Rayson, 1993) of the web-based semantic annotation software package WMatrix (Rayson, 2008), which measures the occurrence of semantic fields in texts.

Chapter 5, 6, 7, and 8 contain the empirical work of this thesis that addresses the research questions. Chapter 5 is a quantitative assessment of the BTD's (Wilson, 2006) validity and reliability. It assesses to what extent the BTD represents a valid and reliable computerised method to measure body boundary imagery, compared to Fisher and Cleveland's (1958) manual scoring system. Chapter 6 is a quantitative analysis that examines the semantic tendencies in the everyday and dream memories of individuals who are classified as High and Low Barrier personalities. Chapter 7 is a quantitative analysis that examines the use of semantic fields and embodied figurative expressions of emotions in the everyday and dream memories of individuals who are classified as High and Low Barrier personalities. Chapter 8 is a quantitative analysis that explores the semantic tendencies in the verbal behaviour of patients in person-centred psychotherapy and assesses changes in body boundary finiteness and semantic tendencies in the verbal behaviours of individuals who are classified as classified as High and Low barrier patients.

Chapter 9 represents a general discussion of the results and outlines the thesis's methodological limitations and implications for future research.

Chapter 2

Literature Review: Primordial Mental Activity and the Body Boundary Personality

2.1 Introduction

This chapter aims to provide an overview of the literature relevant to this thesis by outlining the main concepts: Fisher and Cleveland's (1956, 1958) body boundary awareness and Freud's (1900) primary process. These key concepts are discussed by providing an overview of psychological- and psychodynamic-informed theories and empirical evidence. In particular, the literature review provides an outline of Robbin's (2011) formulation of primordial mental activity and conceptual thought, which is used in this thesis as a more socioculturally sensitive theoretical framework compared to Freud's (1900) conceptualisation of the primary and secondary processes. Due to the psychodynamic theoretical relationship between the body boundary concept and primordial mental activity, the literature review also outlines relevant relational psychodynamic theories that describe the relationship between the development of a coherent body boundary concept and primordial mental activity.

2.2 Body Boundary Awareness

This thesis focuses predominantly on the linguistic and cognitive underpinnings of body boundary imagery that relates to the containing and permeable qualities of the body and objects. Fisher and Cleveland introduced the body boundary concept as a psychological personality construct in the seminal study "*Body-image boundaries and style of life*" (1956) and the subsequent book "*Body Image and Personality*" (1958). According to Fisher (1958), the term "body image" refers to an individual's cognitive schema of his/her body and bodily boundaries.

Fisher and Cleveland (1958, p. 56) explained the concept of body boundaries by suggesting that

Perhaps people show wide differences in the degree to which they experience their body boundaries as definite and firm versus indefinite and vague. One could conceive of each individual as equating his body with a “base of operations”, a segment of the world that is specially his. His body would encompass his private domain and be the cumulative site for all of his past integrated experiences. It could be regarded as bounding and containing a complex system which has been developed to deal with the world. It would encompass a structure which the individual has built up in his attempts to make life satisfying for himself. Therefore, would one not expect that the sort of boundaries which the individual attributes to his body would tell a good deal about his over-all life-building operations? Would one not assume that the person who sees his body as an area highly differentiated from the rest of the world and girded by definite boundaries had constructed a different type of “base operations” from that of the person who regards his body as an area with indefinite boundaries?

In “*Body Experience in Fantasy and Behavior*”, Fisher (1970, p. 155) defines body boundaries by explaining that

a fundamental aspect of the body image is the manner in which the individual experiences the limits of his body.... [...] ... there is considerable variation in the firmness or definiteness persons ascribe to their body boundaries. At one extreme is the individual who views his body as clearly and sharply bounded, with a high degree of differentiation from non-self objects, and at the opposite pole is the person who regards his body as lacking demarcation or differentiation

from what is “out there”. Sharply differing concepts may exist as to how the space encompassed by one’s body is separated from the surrounding non-body space.

Based on these definitions, a protective body boundary enables the body to be observed as a separate entity in relation to the immediate environment, whereas people with a permeable body boundary perceive themselves as undifferentiated from their immediate environment and possibly vulnerable and open to external threats. A functional body boundary implies then that the body is perceived as a psychologically safe and protective place while remaining receptive to all that is positive and nurturing (Fisher, 1970). The ability to separate one’s body from external objects is assumed to represent a fundamental aspect of identity formation and adaptation to external influences (Fisher, 1958).

The theoretical concept of Fisher and Cleveland’s (1956, 1958) body image boundary originated from their qualitative observation that individuals vary in the appraisal of their own body image. Thus, they observed that patients with rheumatic arthritis showed significant concerns related to their bodies that were expressed in fantasies and wishes related to the body. These bodily concerns were also evident in their unusual number of unique Rorschach responses (Rorschach, 1921) that emphasised the containing, protective and surface-related features of the presented inkblot pictures. To test their observations, Fisher and Cleveland conducted an exploratory study of twenty-five male patients in a Veterans Administration hospital focussed on the behaviour patterns and fantasies that characterise these patients who presented with rheumatoid arthritis through the use of interviews and projective personality tests, such as the Rorschach inkblot test (Rorschach, 1921) and Thematic Apperception Test (TAT; Morgan & Murray, 1935), confirmed their hypothesis. Consistent with their observations, the analysis of the Rorschach responses showed an increased frequency of references related to containing, protective and boundary-defining characteristics of presented stimuli that were attributed to the peripheries of the patients’ percepts, such as “*knight in armour*”, “*turtle with a shell*”, and “*cocoon*”. Fisher and Cleveland interpreted these responses by proposing that the

patients' descriptions of the inkblots would reflect their phenomenological experience of their own body boundaries. For example, an individual diagnosed with rheumatoid arthritis would project the perceptions of his own body boundary as a hard shell that provides protection and thus mirrors "part of his total symptomatology, a stiffness of body musculature which imparts a certain hardness and exterior stiffness to his appearance" (Fisher & Cleveland, 1958, p. 55). Additionally, a qualitative analysis of the interviews revealed that patients with rheumatoid arthritis showed reservations in expressing negative emotions, such as anger and frustrations. The focus on enclosing peripheries and the rigid appearance of bodily stiffness might, on a psychosomatic level, reflect a defensive function by containing and controlling these negative emotions that are perceived as unacceptable, overwhelming or threatening. The body functions, then, as an enclosing container "whose walls would prevent the outbreak of these impulses" (p. 55). Drawing on Schilder (1935), the notion of experiencing one's own body image implies, then, a dimension of self-organisation and interpretative functions to interpret the external world (Fisher & Cleveland, 1958).

Based on these preliminary results, Fisher and Cleveland developed a manual scoring system that measures the frequency of lexical items that are assumed to relate to the definiteness and permeability of an individual's body boundaries. Barrier imagery measures the definiteness of body boundaries by emphasising the protective, enclosing, decorative, or concealing features of the boundaries of a definite structure, substance, or surface, whereas penetration imagery relates to the fragility, permeability, openness or destruction of definite boundaries. Based on this scoring system, a high frequency of boundary imagery corresponds with a High Barrier personality, whereas a low frequency of barrier imagery indicates a Low Barrier personality. Examples of barrier responses include "*a striped zebra*", "*a woman wearing a high-necked dress*", "*a tower with stone walls*", "*a man smoking a pipe*", and "*a pregnant woman*". The barrier category includes references to (a) clothing and body protection¹, (b) living things with special surfaces, such as shells or other

¹ The body boundary scoring system first introduced by Fisher and Cleveland in 1956 excluded clothing items except for clothing unusual in its covering or decorative function and also excluded all buildings and vehicles. The body boundary scoring system put forward by Fisher and Cleveland in 1958 contained all clothing items and all building and vehicles.

protective qualities, (c) enclosed geographical features, (d) living things with container qualities, (d) objects with overhanging and protective surfaces, (e) objects that are armoured or dependent on their containing properties, (f) objects that are being covered, surrounded or concealed, (g) objects with unusual container-like shapes, (h) buildings and vehicles, and (i) additional general barrier responses. The penetration responses, on the other hand, relate to the lack of such protective and enclosing boundaries. Examples of penetration responses include “*a man climbing through a window*”, “*an amputated arm*”, “*an open mouth*”, and “*a bleeding leg*”. The penetration category is based on (a) images that involve the penetration, disruption, or wearing away of the outer surfaces of things, (b) images that emphasise modes or channels for getting into the interior of things or for passing from the interior outward to the exterior, and (c) images that involve the surfaces of things as being easily permeable or fragile (pp. 61-62).

A series of related experiments also identified that individuals with psychosomatic symptoms related to the exterior of the body have higher barrier scores, indicating the defensiveness of the body's exterior, compared with individuals presenting with psychosomatic symptoms related to the interior of the body (Fisher & Cleveland, 1958). For example, a comparison of patients diagnosed with internal psychosomatic illnesses (i.e., stomach disturbances and ulcerative colitis) and individuals presenting with illnesses related to the exterior of the body (i.e., rheumatoid arthritis and neurodermatitis) showed that patients in the exterior category had higher frequencies of barrier scores whereas the interior group had lower frequencies of barrier scores and higher frequencies of penetration imagery scores, thus lending support to the hypothesis. In a second study, to identify whether barrier imagery scores were related to psychosomatic disorders, a group of individuals presenting with trauma-related injuries to the external layers of the skin (e.g., burns of the skin and chemically inflicted skin irritation) and patients with back injuries involving muscle pain were compared with individuals with psychosomatic disorders related to the exterior of the body (e.g., dermatitis). The results indicated that both psychosomatic groups had higher barrier scores than the corresponding groups of individuals with skin injuries and back pain. In summary, these results indicate that an increase of body boundary finiteness would be related to the exterior bodily regions as an indicator of an

underlying persistent psychosomatic cause compared with bodily disorders caused by a known external cause.

Fisher and Cleveland (1970, p. 206) defined the terms body exterior and interior by stating that

Body exterior is meant to include the skin, striated musculature, and the vascular components of these two systems. Body interior is considered to include all the internal viscera. This definition of body exterior versus body interior is intended to have purely locational or geographical implications and is not concerned with the embryonic origins of various body areas.

Furthermore, Fisher and Cleveland (1958) identified that barrier scores and penetration scores were not significantly correlated. This result was relatively surprising given that, theoretically, barrier scores relate to the firmness of boundaries and penetration scores relate to the permeability of boundaries and thus it could be expected that both scores would be negatively correlated. In light of the facts that penetration imagery scores did not show a negative correlation with barrier scores and that penetration score produced “valid results only in abnormal or extreme groups and that it was not differentiating within the normal adult range” (pp. 92-93), Fisher and Cleveland’s research studies focussed predominantly on the exploration of barrier imagery to assess the definiteness of body boundaries in healthy populations, whereas the function of penetration imagery has remained partly unclarified. Fisher (1970, p. 177) concluded that penetration imagery

cannot be experimentally linked with patterns of inside-outside body experience.

It will therefore be treated as an exploratory measure whose basic meaning is still a matter of uncertainty [...] There are suggestions that it is considerably more sensitive to immediate situational factors than the Barrier scores.

In relation to the situational factors, Fisher and Cleveland (1970) mention that penetration scores would be related to patients' familiarity with the inkblot test and thus possibly reflecting not only an individual's body attitude but also situational factors that influence an individual's ability to engage with the inkblot test, such as achievement motivation and feelings of anxiety. Fisher and Cleveland conclude that the penetration scores behaved slightly more reliably as a body boundary index in relation to hospitalized patients presenting psychosomatic disorders, compared to the healthy population, to the extent that penetration imagery scores relate reliably to the exterior-interior of the relevant psychosomatic disorder. A possible explanation could be that the psychosomatic disorders of hospitalized patients would outweigh the situational concerns (Fisher, 1970). To demonstrate the difficulty of explaining penetration scores in relation to the influences of the situational context, an experiment with healthy adult participants showed that individuals with higher penetration scores also showed difficulties in remembering words referring to bodily mutilation and death compared with individuals with lower penetration scores (Fisher, 1965).

As an alternative to the semantic classification of the penetration score index, Fisher and Cleveland (1970) draw attention to Cassell (1964) who proposed to include only semantic items that refer to the interior of the body and entry of the interior but to exclude references that do not relate directly to the body (e.g., 'shadow', 'doorway'). In fact, it has been also shown that such a modified penetration score would produce significant negative correlations with the barrier scores in projective test responses in the normal population.

2.2.1 Reliability of the body boundary scoring scheme

Fisher and Cleveland's body boundary concept is based on a reliable and valid scoring scheme. As outlined in Fisher (1970), inter-rater reliability studies produced Spearman rank correlation coefficients between .82 and .99 for barrier scores and between .86 and .97 for penetration scores (Fisher, 1986; Fisher & Cleveland, 1968).

With regard to changes in body boundary awareness over time, test-retest studies established coefficient values between .65 and .89 for barrier scores and between .63

and .89 for penetration scores (Fisher, 1970). Some studies, however, produced lower values. For example, Koschene (1965) identified a reliability value of .78 for barrier scores but only .18 for penetration scores in patients undergoing kidney transplant surgery by comparing pre- and post-surgery Rorschach responses. In this context, the low reliability value of penetration scores has been explained in relation to the situational context of individuals undergoing surgery. A reliability study conducted by Holtzman and colleagues (Holtzman, Thorpe, Swartz, & Herron, 1961) comparing responses within intervals of three weeks to up to one year has also obtained reliability values of only .40 for barrier scores. Additionally, Dorsey's (1965) split-half reliability study identified reliability values of barrier scores in one group of .67 and .43, indicating that the reliability values vary but that the reliability of the body boundary construct is typically greater.

2.2.1.1 Convergent validity

Many empirical studies have explored the body boundary concept in relation to psychological constructs as a means of identifying how individuals using higher frequencies of barrier imagery, or High Barrier personalities, would differ in their stable personality orientation, such as behaviour, preferences and values, compared with individuals using low frequencies of barrier imagery, or Low Barrier personalities. Empirical research (Fisher & Cleveland, 1958, 1970, 1986) has identified that High Barrier personalities are more independent, goal-persistent and achievement-orientated, emotionally expressive, spontaneous, less suggestible and less likely to be disturbed in stressful and frustrating situations. High Barrier personalities are also more independent, more likely to support group goals and to strive to achieve group cohesion, more likely to indicate a greater interest in socialising and communicating with others and more likely to choose careers that relate to people and social subjects (e.g., archaeology, sociology). It has also been shown that High Barrier personalities are characterised by an increase in skin resistance and electromyographic response (EMG) and reduced heart rate, blood pressure and cardiac output compared with Low Barrier personalities (Davis, 1960; Fisher, 1959 a, b). Based on these findings, Fisher (1986) concluded, by drawing on Lacy's (1959) review of studies on sensory stimuli, that an increased skin sensitivity and reduction of heart rate might be related to an increased openness to the

environment, whereas individuals with lower levels of openness might indicate the reverse pattern. In fact, Fisher and Cleveland (1958) identified that High Barrier personalities would be more open than individuals with Low Barrier personalities. Based on the perception that the body boundary would indicate “an interface between the individual and the outer world” (Fisher, 1970, p. 235), it has also been shown that High Barrier personalities are more receptive to externally derived stimuli and perceive these sense impression as more vivid than individuals with Low Barrier personalities, who invest less energy in externally derived perceptions. Such differences in the sensory experience might be related to heightened muscular and skin activation and tension in High Barrier personalities compared with Low Barrier personalities.

In contrast, Low Barrier personalities would express a heightened concern for the safety and security of places as a means of reinforcing their weak boundaries. Low Barrier personalities would also have a greater need to engage in solitary activities that reduce social contact and prefer careers that do not involve social themes (e.g., physics, computer sciences). Low Barrier personalities would have a preference for hierarchical group structures that avoid open conflict and lean on the presence of an authority figure and traditional values. Such a hierarchical group structure might take on a compensatory protective function for the vague body boundary. It has also been shown that delinquent individuals with Low Barrier personalities would have a tendency to exhibit adaptive forms of aggressive and impulsive behaviour compared with High Barrier personalities (Megaree, 1965).

Although High Barrier personalities have been identified to be more socially orientated than Low Barrier personalities, empirical research has produced inconsistent evidence whether High Barrier personalities would prefer greater physical distance in interpersonal situations (see Fisher, 1986). For example, some studies have shown negative correlations between barrier scores and distance scores (Greenberg, Aronow, & Rauchway, 1977; Twente, 1964), whereas other studies have shown that barrier scores were higher in communicative dyads characterized by greater distance, and in specific, that the distance to strangers was greater in relation to men but not women (Rauter, 1972; Sanders, 1976).

2.2.1.2 Other empirical findings

Recent empirical research used the body boundary scoring scheme to assess the influence of psychological trauma. For example, it has been shown that the Rorschach responses of abused girls include frequent references to sexual themes and an inflation of the frequency of penetration imagery, indicating the permeability and vulnerability of the protective qualities of their body boundaries (Leifer & Shapiro, 1991). The protective qualities of body boundaries and self-esteem improved in abused women attending body awareness group therapy (Mattson, Wilkman, Dahlgren, Mattson, & Armelius, 1998). Spiegelman and Spiegelman (1991) also identified that children of non-divorced parents had higher barrier and lower penetration scores than children of divorced parents, even years after the parental break-up, thereby indicating the persistence of body boundary changes associated with parental divorce. Research has also explored the relationship between body boundary definiteness and criminal behaviour, such as among sexual and violent offenders, indicated that paedophiles had higher levels of penetration scores, suggesting a dysfunctional self-other differentiation (Tardif & Van Gijseghem 2001; Weinberg, Shmushkevich, Barash, Lubin, & Kaplan, 2003). Psychological research has also explored the relationship between body boundary awareness and organising behaviour and experiences within Rorschach responses. Namely, it has been shown that barrier scores are positively related to human movement responses whereas penetration scores relate to colour responses (Toshikazu & Isao, 2000).

Although the body boundary concept has been used predominantly to assess the content of responses to projective tests, such as the Rorschach inkblot test and the TAT, more recent research has applied Fisher and Cleveland's body boundary scoring scheme to other text forms, such as narratives. Ruggeri and Saraceni (1981) explored the frequencies of barrier and penetration imagery in dream narratives. Historical and autobiographical writings have also been studied. Newbold (1986) assessed body boundary imagery in Suetonius' narrative of Emperor Caesar Nero's last hours. By using a reversed logic, however, Newbold theorised that Low Barrier personalities might project their body boundary perceptions in the form of writing, resulting in an inflation of both barrier and penetration imagery. Whereas the increase of penetration imagery would be indicative of their bodily vulnerability, the increase of barrier

imagery is assumed to be a compensatory drive for fantasies about feelings of bodily protection and security. Similarly, Haward (1987) constructed the so-called “Body Barrier Scale”, which is a pencil-and-paper questionnaire that supposedly measures body boundary finiteness based on the assumption that individuals with weak body boundaries show a preference to choose objects with protective exteriors. Conversely, Wilson (2006) identified that clothing fetishists, who are more likely to be Low Barrier personalities and therefore would use a greater number of Barrier and Penetration words in their writing, showed an inflation of barrier imagery but not penetration imagery. Thus, this result contradicted Newbold’s assumption that a weak bodily self-image would result in an inflation of both barrier and penetration imagery (see 3.4). Additionally, Wilson (2009a) showed that Haward’s (1987) Body Barrier Scale is weak in its construct validity and thus suggesting the questionnaire might not be adequate for its continued use.

2.2.1.3 Negative findings

Given Appleby’s (1956) observation that frequencies of barrier scores might be associated with verbal productivity, Fisher and Cleveland (1958) reasoned that an inflation of body boundary scores would be related to chance as well as the possibility that individuals using higher frequencies of barrier imagery might tend to produce longer and more complete answers to Rorschach stimuli.² A repeated measures study that compared responses with and without barrier imagery produced by the same participant indicated that barrier imagery was not related to word count (Fisher, 1970). Additionally, Fisher and Renik’s (1966) test-retest study that compared responses before and after the manipulation of body boundary definiteness through the use of suggestions that asked participants to focus on the exterior parts of their body did not identify a relationship between barrier imagery and word count. Empirical research found no relationship between body boundary scores and main Rorschach scoring systems. Conversely, if also inconsistently, some studies established a positive correlation between barrier scores and Rorschach test responses,

² As outlined by Fisher (1970), barrier scores have been shown to be positively correlated with achievement drive and task completion, which might influence the construction of longer and more complete projective test responses than individuals scoring low on barrier imagery.

including form quality, colour, shading, and human movements, yielding coefficients between .30 and .45 (Compton, 1964; Holtzman et al., 1961; Landau, 1960; Shipman, Oken, Grinker, Goldstein, & Heath, 1964; see Fisher 1970 and also O'Neill, 2005). Such a relationship between barrier imagery and human movement responses has been associated with an individual's levels of muscle tone, muscular activation and kinaesthetic awareness, which might be to some extent related to "the perceptual-imaginative process involved in the production on inkblot responses" (Fisher, 1970, p. 164).

In addition, empirical evidence established no relationship between the body boundary concept and a range of psychological phenomena. As outlined in Fisher and Cleveland (1958; see also Fisher, 1970), barrier and penetration imagery scores were not associated with intelligence measures in healthy adults or older female or male children; however, some very rare studies have identified a relationship between barrier scores and intelligence (Holtzman, 1965; Andrews, 1968; Cardone, 1967). Barrier responses have also not been associated with cognition that is original (Bachelis, 1965) or socially desirable (Crowne & Marlowe, 1964). Barrier and penetration scores have also not been found to be related to paper-and-pencil questionnaires measuring extraversion-introversion, religiosity, defence mechanisms, conservatism-liberalism, hostility, masculinity-femininity, locus of control and self-concept (Fisher, 1986). Fisher (1970) was also not able to identify a relationship between body boundary scores and psychodynamic themes using various experimental measures, such as speed of thematic recognition, word association and exposure to specific emotional themes. As noted by O'Neill (2005), word frequency measures have been frequently shown to be unrelated to paper and pencil measures gauging the same or related theoretical constructs (Bornstein, 2002).

Furthermore, the body boundary scoring system did not replicate with other body boundaries theories, such as the Hartmann body boundaries test (Hartmann, Harrison, & Zborowski, 2001). In this sense, Hartman's body boundary concept differs from Fisher and Cleveland's body boundary concept to the extent that the former measures the thickness of an individual's body boundaries. Based on this body boundary concept (Hartman et al., 2001, p. 348) an individual with very thick body boundaries has a clear sense of cognitive and perceptual focus, differentiates between thoughts

and emotions, and has a clear sense of temporal and spatial awareness and separateness; in contrast, an individual with very thin boundaries has difficulty focussing, is aware of thoughts and emotions simultaneously, and has a blurred sense of time and space.

2.2.1.4 Body boundary changes

Empirical research has also explored body boundary changes. As outlined in Fisher (1970), it has been shown that suggestions to direct one's awareness to exterior bodily regions (e.g., skin and muscles) increased barrier scores and reduced penetration scores, whereas suggestions to focus on interior bodily regions (e.g., stomach and heart) reduced barrier scores but increased penetration scores. Suggestions with a focus on exterior bodily regions also increased barrier scores in individuals with schizophrenia, whereas there were significant reductions in barrier scores when the focus of awareness was related to interior bodily regions. As outlined by Fisher (1986), barrier scores also increased with the heightened focus on one's personal identity (Statman, 1978), increased physical exercise (Smith, 1977) and experiences that relate to one's sense of self-importance (Roger, 1982) and exposure to threatening and stressful stimuli (e.g., Lavit, 1970a, b). Barrier responses also increased with the ingestion of laboratory-administered amphetamines (Clausen & Fisher, 1973) and LSD (McGlothlin et al., 1967); conversely, barrier scores decreased with the awakening from sleep (Fisher, 1976).

Exposure to hostile messages and negative self-evaluations disrupt body boundaries and thus result in lower frequencies of body boundary responses. However, women showed greater resiliency than men, who showed a decline in their finiteness after having been exposed to hostile tape messages (Fisher, 1970, 1971; Tatyrek, 1977). Although women typically tend to have higher barrier scores and lower penetration scores than do men (Fisher, 1970, 1986; Hayslip, Cooper, Dougherty, & Cook, 1997), body boundary regulation after the exposure to hostility were explained in relation to stereotypical gender roles. Therefore, men would be biologically predisposed and socialised from an early age to engage in behaviour that include notions of hostility, violence and aggression. Exposure to hostile messages would then provoke hostile feelings, whereas the opportunity to vent these angry feelings would not halt the

reduction of body boundary violations. Women, however, have an increased focus on the containing qualities of their bodies due to its ability to give birth. Women are also socialised to respond in a stereotypically feminine, non-hostile manner, which indicates a greater adaptation to and accommodation of environmental hostility. Conversely, it was also shown that women had a reduction in barrier scores after mastectomies (Sanger, 1978), whereas a shift from the pregnant to the postpartum-state is accompanied by a decrease in penetration scores (Karmel, 1975).

As to development changes in body boundary awareness, it has been shown that barrier scores increase from the onset of 5 to 6 years to the age of 20 (Fisher, 1986), but body boundary scores decreased in middle-aged and elderly adults (Hayslip et al., 1997), which might be related to the process of aging, changes of inter- and intra-psychic process as well as the exposure to cultural influences and mass media messages about aging (see O'Neill, 2005, p. 165).

2.2.2 Criticism of the body boundary concept

Fisher and Cleveland's (1956, 1958) body boundary concept has also been directly criticised by various scholars. For example, Wylie (1961) put forward that the body boundary scoring system would represent an interesting theory; however, the body boundary score might be more indicative of an individual's cognitive and perceptual processes rather than relating to one's body boundary experience. In this view, there would be a lack of evidence suggesting that the measured frequencies of body boundary scores would truly represent measuring an individual's unconscious bodily experiences (Fisher, 1963). Fisher (1970, p. 167) states that the criticism cannot be dismissed, but it is debatable.

Despite these limitations, which are inherent in all novel theoretical formulations, the body boundary concept has been shown to be positively correlated with psychological and medical phenomena of body behaviour, such as ability to cope with phantom limb sensations, changes in body size and touch threshold after sensory isolation, and concerns related to skin and bodily vulnerability. Additionally, and according to Fisher (1963) most convincingly, a series of studies further provided evidence that an inflation of barrier score relates to an increased awareness of the exterior bodily

regions (e.g., skin and muscle), whereas low barrier scores are associated with an increased awareness of interior dimensions of the body (e.g., stomach and heart; see Fisher, 1986, 1970). Based on Cassell's (1966) study that identified a relationship between bodily focus and selective perception, Fisher (1970) also showed that individuals with High Barrier personalities were faster to perceive external bodily regions than individuals with Low Barrier personalities when shown pictures with an exposure time between 0.2 to 0.4 seconds. To answer the assumption that the body boundary concept would merely relate to perceptual processes, Fisher (1963) further asserted that no empirical relationship has been established between the body boundary scores and perceptual differences or other cognitive variables, including intelligence scores, verbal productivity, simplicity-complexity dimensions, figure judgment, conventional Rorschach determinants, rigidity and authoritarianism. Conversely, Fisher (1963) acknowledged that more research is necessary to explore the body boundary concept in more detail and thus to obtain insight into the influence of situational variables on one's body boundary experience.

2.2.3 Theories on the development of body boundaries

Although Fisher and Cleveland (1958) stated that they were not able to define a clear theoretical construct that would explain body boundary formation, they aligned their empirical research findings in relation to existing psychoanalytic and social psychological theories that provided an informed and theoretically coherent account of the function of early socialisation experiences on the development of body boundaries.

Based on previous findings in which High Barrier individuals tended to express more definitely positive or negative attitudes towards parental figures in TAT responses than Low Barrier individuals, Fisher and Cleveland (1958) conducted a series of empirical studies to investigate familial patterns of body boundary finiteness as well as to explore to what extent the development of body boundary finiteness would be related to the influence of parental figures' ability to provide clearly defined models of social relating as well as moral and interpersonal expectations that would represent a scaffold to develop a well-defined identity. Initial results showed that barrier scores

between spouses were similar³, as were scores between parents and their adolescent children, whereas barrier responses between parents and children were only directionally, but not significantly, correlated. Consistent with their expectations, further results consistently indicated the importance of early socialisation experiences between the child and parent figures as a central influence in the acquisition and development of body boundaries. One of the most important findings showed that the degree of an individual's body boundary finiteness is largely influenced by the social values of at least one parental figure that defines the interactions within family environments. For example, mothers of High Barrier individuals scored lower on maladjustment and rigidity scales than mothers of Low Barrier individuals. In TAT responses, mothers of High Barrier individuals used more High Aspiration themes associated with close family communication and the use of frequent definite stories. In this context, Fisher and Cleveland (1958, pp. 259-260) concluded that an individual with less finite body boundaries would likely have grown up in a family atmosphere characterised by instability, insecurity and tension and have experienced a restrictive range of permitted behaviours, whereas individuals with finite body boundaries would have mothers who provided a secure model and a strong sense of values as well as the ability to maintain stable and intimate relationships. Individuals with low barrier scores also described that they perceived their parents as threatening, destructive and anxiety-provoking, which, according to Fisher and Cleveland (1958), might have impinged on the formation of functional body boundaries and thus the development of a coherent self and bodily schema that differentiates between the internal ("the me") and external ("the non-me").

Given the importance of the internalisation of familial and social values and behavioural expectations as central influences in body boundary formation, Fisher and Cleveland (1958) acknowledged Freud's (1923) topographic model in which an individual's "ego" develops alongside the ability to differentiate the bodily and psychic self from the not-self, whereas the "superego" is based on the internalisation of the parents' moral standards as a means to secure their presence and affection as

³ Because barrier scores did not differ between short- and long-term married spouses, Fisher and Cleveland (1958, p. 252) put forward that similarity patterns between spouses would be related to selective-mating processes rather than intimate interaction processes.

well as to reduce feelings of guilt and shame. By drawing on the personality frameworks as outlined by early social psychologists (Mead, 1934; Parsons & Bales, 1955), Fisher and Cleveland (1958) further proposed that the internalisation of simultaneous and dynamical interactions and plural relationships in the immediate family environment would bring about more complex social systems, which would be then generalised to other social situations and groups. The internalisation of these familial social systems would precede the internalisation and organisation of the social groups' attitudes into even more complex internal social structural systems that assume the formation of multiple social selves. An individual's personality would then reflect a generalised and organised social system based on the sum of all experienced social and group attitudes and behaviours (Fisher & Cleveland, 1958, p. 350). The body would then assume the function of an experiencing object of these internalised social structures that essentially represent the parameters of an individual's central personality. These internalised social structures are then communicated to the environment in the form of linguistic behaviour. For example, High Barrier individuals grew up in an environment with mother figures who had clear-cut and stable expectations to the extent that High Barrier individuals would internalize these expectation patterns and use utterances to communicate their clear and meaningful expectations that are consistent with their well-defined body boundaries; in contrast, Low Barrier individuals had mother figures who had inconsistent and less meaningful expectations and thus the individuals would express erratic and ambiguous expectations that are consistent with their internalised poorly-defined bodily structures (pp. 353-354). Therefore, linguistic expression represents an embodied extension of one's body boundary formation that comprises the internalised social systems and expectation patterns that vary in their degree of stability and finiteness.

In addition, Fisher and Cleveland (1958, pp. 348-350) proposed that infants have first and foremost a bodily identity to the extent that during the first years of life they experience their social environment primarily in form of their mother's sensitive bodily interactions and communication. The mother's loving attitude would then be expressed by their ability to satisfy their infant's expectations and meet its bodily needs. The infant's early bodily-based relationship with its mother's is assumed to be internalised and represent the formational blueprint of early social-relational schemas

and the development of a coherent social self and bodily schema that are contained by the body boundary, which assumes the function of a screen upon which the individual would project his or her feelings of security or the lack thereof.

This view is largely consistent with relational psychodynamic theories of child development. Relational psychoanalytic theories generally agree that the formation of a coherent self and bodily schema develops in early infant socialisation experiences. For example, Klein's (1935, 1946) object relational theory holds that in the infant-mother separation, or the so-called paranoid-schizoid position, the infant experiences annihilatory anxieties and aggressive impulses when the mother fails to provide the infant with the feeding "good" breast. The infant tries then to protect itself from these negative emotions by fragmenting its internal emotional perception of its mother by projecting the emotions of anger and anxiety onto the mother's "bad" breast. The infant experiences these unwanted and projected negative emotions as persecutory and external dangers that threaten to destroy the remaining good emotions that maintain its positive self-concept. The development of a stable and positive self-concept marks, then, the onset of the so-called depressive position in which the infant feels guilty for its destructive fantasies that were directed towards the "bad" and "good" loving mother, thus leading to the integration of the previously projected aggressive impulses as an integral part of a coherent self-concept (Klein, 1935).⁴

Another relational theory by Winnicott (1965, 1971) posits that the "good enough mother" (primary maternal preoccupation) facilitates a holding and facilitating environment through her sensitive interaction (e.g., holding, touching, rocking) and communication (e.g., smiling, talking, singing) with the infant (Wright, 1991). The infant's experience of eliciting and observing the mother's empathic responses then results in the formation of the infant's coherent identity and body image. The formation of a separate self and body image starts with the onset of the mother failing to satisfy its expectations, and the infant loses its illusion of being the creator of the object and perceives the mother as a separate "other". The infant then uses a

⁴ Although the integration process begins during infancy, it is assumed to continue throughout a person's life, allowing the individual to integrate the split "good" and "bad" parts in his or her personality and thus to seek self- and other-whole object integration.

transitional object, such as a blanket, as its first not-me possession that fills the intermediate area, the so-called transitional space, between itself and the mother. The transitional object comforts the infant as much as it serves to survive its maltreatment by the infant who acts out its anger and frustrations that are experienced as a response to the experience of separation in this transitional separation period. The creative handling of the transitional object results in a gradual differentiation between the perceptions of external reality and the fantasies of internal reality, thus resulting in the integration of a coherent bodily self and the formation of a “true self” (Winnicott, 1970). In contrast, the formation of a “false self” and dysfunctional bodily schema is associated with an emotionally unavailable “not-good enough” mother who fails to adapt to the infant’s needs in form of adequate feeding and a safe holding environment. Repeated experience of the maternal failure to adequately attend to the infant’s needs is traumatising and interferes with the infant’s sense of continuous self and bodily schema. The lack of an adequate maternal mirroring response results in the infant being left with its overwhelming feelings of uncontained anxiety and distress, which may develop into a false-self personality structure that is characterised by inauthentic and compliant responses that are removed from the individual’s authentic needs and the impulses of the true self.

Ogden (1989) also stressed that the containing qualities of the “good enough” holding environment in early infancy allow the infant to organise its primitive sense-orientated experiences in relation to its skin boundary. Thus, the infant becomes aware of its skin boundary through its mother’s loving care and handling, wherein the infant not only introjects its transformed projected anxieties but also her containing function, which allows the infant to create an internal containing space by setting itself apart from the environment and other objects. The disturbed development of the primal skin, however, may result to the second skin formation that wards off these anxieties as an attempt to construct an alternative holding skin container of the self-boundary through the use of reassuring rhythmic movements and muscular tensions (Bick, 1968). The defective formation of a containing skin formation results, then, in a split-off self that has been referred to as infantile psychotic disintegration or autistic unintegration (Meltzer, 1975).

Consistent with the view that infants’ early experiences of maternal care represent one

of the most important factors in the development of the body boundary, Anzieu's (1989) concept of the skin-ego and psychic envelope states that the skin encloses the self while maintaining the ability to regulate the internal processes with the external environment. Anzieu (1989) stated that the skin-ego has several functions, including the maintenance and containment of the internal process (e.g., thoughts and emotions), the protection of the ego from outside threats, the experience and maintenance of sexual excitation and the regulation of communication with the social environment.

In addition, the infant's early relationship with its mother provides a developmental blueprint for its social relating and the development of a coherent social self-schema, as well as the formation of multiple social selves (Benjamin, 1992; Bollas, 1987; Mitchell, 1993). The coherence of a social self is reinforced through inter-social mirroring that prevents the notion of fusion, which is a loss of boundaries to a regressive state of de-differentiation (Pines, 1998) (see 2.3). The coherent self is then communicated on a linguistic level to its social environment with linguistic expressions, representing an appropriately homologous mirroring of the child's internal world and mood (Bollas, 1987). On the contrary, an infant's experience of an insufficient transformation of its projected anxieties is assumed to result in a schizoid position expressed at the word level "where language is dissociated from feeling, and where the moods of the internal world are almost registered in the subject's way of being" (Bollas, 1987, p. 37). A socially based view of infant development also demonstrates a continuity, rather than a binary contingency, of an evolving 'me' and 'not-me' awareness.

Robbins (2011) argued that Klein's object relational theory might not form a set of separate developmental stages; rather, it represents an integration process that begins during infancy and is assumed to continue throughout a person's life, allowing the individual to integrate the split "good" and "bad" parts in his or her personality and thus to seek self- and other-whole object integration. Therefore, the emotional development of Klein's (1935, 1946) paranoid-schizoid and depressive positions is analogous to Freud's primary and secondary processes of cognitive functioning (see 2.3). The paranoid-schizoid position and primary process are based on perceptions in which aspects of the self and others remain undifferentiated, whereas in the

depressive position and secondary process, the self and other are recognised as differentiated entities (Robbins, 2011). The view that the primary and secondary processes represent related and intersected cognitive functioning processes resembles Bion's (1962) alpha function theory, which suggests that in the paranoid-schizoid position, the mother symbolises a containing function, where her secure ego boundaries (alpha function) transform the infant's intolerable emotions and sense impressions into more tolerable forms and material of conscious thought processes. The absence of such a maternal container, on the other hand, leads to the reinforcement of the uncontained projected anxieties that continue to exist as nameless projections, resulting in the development of a fragmented self-image in which alpha elements (primary process) predominate.

Additionally, various psychological theories proposed the notion of a bounded self. For example, Popplestone's (1963; see also Hawkins & Popplestone, 1964) exoskeletal defence suggests that individuals would modify or enhance their body boundaries as a means to protect an individual's psychological integrity from external threats. Such modifications and enhancements include the strengthening of the body (e.g., body building), drawing attention to the sexual features of the body (e.g., cosmetics) or the use of protective objects (e.g., amulets). Burris and Remple's (2004; see also Remple & Burris, 2006; Burris & Remple, 2010) amoebic self theory postulates that the human self and its survival are based on a psychological structure similar to the single-celled amoeba. The self and not-self comprise three distinct domains. The bodily domain comprises a skin that enables to differentiate the self from the not-self, to protect the inside of the body from external threats and invasions, as well as to facilitating self-expansion. The social domain relates to the interactions and relationships with others that are assumed to be protective or threatening to the self. The spatial-symbolic domain enables individuals to make use of abstract cognition about others, object, locations and other concepts that assume the function of symbolic identity markers.

2.3 The Primary and Secondary Thought Processes

First mentioned in the "*Project for a Scientific Psychology*" (1895) and subsequently re-introduced in "*The Interpretation of Dreams*" (1900), Freud proposed that human

psychological functioning consists of three levels of consciousness: the 'Conscious' (Cs.), 'Preconscious' (Pcs.) and 'Unconscious' (Ucs.) systems. The conscious level relates to our immediate awareness, thoughts and sense impressions of reality. The preconscious level relates to unconscious but not repressed information, including memories, knowledge and sense impressions, that are available to consciousness. The Unconscious level relates to information, such as memories, drives and fantasies, that are not accessible to consciousness, or are only accessible after resistances have been removed, such as through the process of psychotherapy (Rycroft, 1995). The unconscious has access to consciousness only through the preconscious; in other words, "...the system Pcs. stands like a screen between the system Ucs. and consciousness" (Freud, 1900, p. 615).

Freud further suggested that the conscious and unconscious are based on distinct yet juxtaposed modes of mental processes within the psychic apparatus. The primary process functions in relation to the principles of displacement and condensation, for which, in the latter, one image might be combined with two or more images to form a combined image, whereas in the former, one image might be replaced by another image; alternatively. As expressed by Freud (1915), the dynamics of the unconscious operate "by the process of displacement [where] one idea may surrender to another its whole quote of cathexis; [whereas] by the process of condensation it may appropriate the whole cathexis of several ideas" (p. 186).

Primary process thinking is also assumed to develop ontologically earlier than the secondary process. The primary process refers to the infantile and irrational 'id' state that acts upon the pleasure principle as a means of increasing feelings of satisfaction and discharging unpleasant free-floating energies and tensions of the unconscious through the employment of wish-fulfilment (Rycroft, 1995, p. 138). Freud described that initially, the discharge of tension and its feelings of satisfaction are experienced in the form of an immediate hallucinatory but transient relief of tensions that is independent of external reality. The ineffectiveness of such a hallucinatory relief of tension motivates the development of a reality-orientated secondary system that enables the coordination of bodily movements and regulates the communication of emotional and internal physiological states with the social environment as a means of bringing about physical and affective responses in others that would permanently

satisfy one's needs and thus increase feelings of satisfaction (Freud, 1900, p. 565, pp. 598-599; see also Boag, 2012). Such a secondary process is assumed to develop alongside the developing 'ego' and the emerging adaptation to social and moral conventions, as well as verbal and symbolic thought formation (Rycroft, 1995, p. 138). Thus, the child initially engages with its environment in unconscious pre- and non-verbal object presentations and then gradually develops the capacity for preconscious and conscious thought based on word presentations that form the material of conscious memory traces, thoughts and mood states (Freud, 1915; Loewald, 1978).

Although primary and secondary thought processes might be perceived as distinctive and antagonistic forms of cognitive functioning, the primary and secondary processes represent a continuum of cognitive functioning for which "no sharp line of distinction separates them" (Fromm, 1979, p. 99). In this sense, the primary and secondary thought processes are intertwined in various ways, which has been referred to as the 'tertiary process' (Arieti, 1964, 1966, 1967). Rycroft (1968) also posited that the primary and secondary processes are not distinctive forms of mental functioning that divide the human psyche into two sub-divided structures. He perceives the mind as a unified entity in which object and word representations can be used by either the primary or secondary process once formed. Primary process content is often present in everyday conscious awareness, and vice versa. For example, some traces of unconscious tensions and pleasures are present in everyday consciousness, such as fantasising, sexual instincts, creative thinking and aesthetic pleasures (Freud, 1900, 1911, 1915). Similarly, Freud (1905) argued that the primary process combined interacts with elements of the secondary process through the principles of displacement and condensation in linguistic representations, such as "slips of the tongue", in which previously repressed unconscious thoughts and motivations are unintentionally expressed in conscious speech production (see 3.2.4). These intertwined mechanisms of the primary and secondary process can also produce comical effects and laughter as a means of releasing repressed and unconscious tensions, and therefore increasing pleasure and positive emotions. Martindale (1990, pp. 67-68) also related the primary process functioning to the creative processes in language, with particular reference to tropes of everyday speech, which make use of

different levels of displacement and condensation particular to each type of trope, such as

...irony [asserting one thing while meaning the opposite], synecdoche [part-for-whole or whole-for-part symbolism], metonymy [the use of an associatively connected word or concept for another], litotes [the expression of an affinity by negating the contrary], hyperbole [the expression of a concept by a more extreme one], metaphor [equation on the basis of similar attributes] and metalepsis [the use of a combination of the preceding tropes].

The use of tropes is based on the ability to maintain a sufficiently high level of discursive elaboration consistent with a high level of primary process functioning to increase “associative probability and conceptual similarity” (Martindale, 1990, p. 25). Similar to the mechanisms of the primary process in the creative construction of tropes, Martindale (1990) proposed that discourses with a higher level of primary process functioning would include fusions of words and phrases that do not follow the syntactic or semantic rules of secondary thought and thus impinge on the ability to communicate efficiently and meaningfully, whereas discourses with a low level of primary process functioning would be highly coherent and logically organised by obeying the rules of secondary thought.

2.3.1 Empirical research on the primary and secondary processes

The primary and secondary processes have been explored in empirical research. One of the earliest experiments by Fisher and colleagues (Fisher, 1956; Fisher & Paul, 1959; Shevrin & Fisher, 1967; see also Shevrin, 2001) identified that visual images which were exposed to participants for up to 1000 milliseconds, so-called subliminal visual images, would then be transformed in the mind based on the principles of the primary process at the moment of perception. Out of this view, Fisher reasoned that the unconscious would register many images at a preconscious level during the day that would be then incorporated in manifest dream content.

In addition, Holt (1956, 1960, 2002, 2005a) explored the metaphysical concepts and clinical theories of the primary process by studying the language used in clinical observations. He constructed a reliable and valid scoring system for Rorschach responses to measure primary and secondary processes. Based on the hypothesis that repressed infantile wishes would influence the perceptual-interpretative processes of Rorschach responses in relation to operating unconscious drives, Holt (1966, 1976, 2002) investigated the primary process content of Rorschach responses which yielded a 2-factor structure of features in primary processes. Holt interpreted that the first factor would respond to formal expressions of the primary process comprising categories that measure more extreme forms of repressed sexual and aggressive wishes, whereas the second factor is closer to the secondary process and relates to the expression of intelligence and relatively unthreatening and socialised forms of wishes. Based on this classification, for example, Rorschach responses with Level 1 libidinal content of oral images (i.e., oral images that assume sexually charged associations) relate to themes of the early orally receptive period of development, such as references to sucking and nursing (e.g., *“Animal sucking from this red part”*), whereas Level 2 oral images are milder and non-specific (e.g., *“Animals drinking water”*) (see Holt, 2005b, pp. 229-230).

Experimental studies employing non-verbal tasks to measure primary and secondary processes have also provided evidence that the primary process would develop ontologically earlier than the secondary process. Thus, results have consistently shown that primary process thinking predominates in pre-schoolers and that at the age of 7 years a shift occurs to secondary process thinking (Brakel & Shevrin, 2005; Brake, Shevrin, & Villa, 2002). It has also been shown that shifts from the secondary process to primary process occur in states of increased anxiety (Brakel, Kleinsorge, Snodgrass, & Shevrin, 2000; Brakel, 2004; Brakel & Shevrin, 2005) thus confirming the Freudian psychoanalytic assumption that anxiety would lead to an increase in primary process activity due to a failure of the unconscious defensive mechanism (Freud, 1926).

Most importantly, neurological theories have established a biological basis of the primary and secondary process. For example, Carhart-Harris and Friston (2010)

suggest that Freud's descriptions of the primary and secondary processes are consistent with activation patterns of the default mode of hierarchical cortical systems and their reciprocal exchanges with the subordinate brain systems that resemble the function of the ego. The optimising function of sensory information in the super-ordinate systems represses free-energy that is associated with brain activity of primary process states, such as dreaming, hallucinogenic states and psychosis. The dynamic interaction between higher and lower brain functions in the development of consciousness as well as self and other relating is also emphasised by Schore's (2009, 2011, 2012) regulation theory which draws attention on the differential processing of the right- and left-brain hemispheres. Thus, the relational and abstract processes of the left-side function and the emotional subjective experiences of the right-hemisphere interact dynamically to construct a coherent self-image and the ability to engage in intersubjective meaning construction. These neurological propositions might be however not too surprising, given that Freud was trained in neuro-anatomy; thus, his theory of the primary and secondary processes might have been grounded on a neurobiological basis.

2.3.2 Criticisms of the primary and secondary thought processes

Freud's theory of the primary and secondary processes received some criticism, which led to various formulations to revise the functions of the primary and second processes (Holt, 2005a; see also Verheule et al., 2011). Rapaport (1951) felt that the primary and secondary processes represent a continuum. He stressed that the thought experiences closer to the primary process are more implicit and loosely organised, whereas the reality principle of the secondary process would result in stable and explicit thought representations. Noy (1969) noted the egocentricity and self-centeredness of the primary process and the importance of corrective feedback in secondary process thought as a means of assimilating and integrating new information into an existing self-schema. Based on the Freudian assumption that the secondary process overlays the primary process, Holt (2005a, b) also suggested that primary process thinking is activated when the adaptive control mechanisms of the secondary process, which organise and monitor experiences according to internal standards and socially moral values, are transiently inactive, such as during dreaming, stress and drug-induced states. The level of monitoring mechanisms, however, might be

moderated by personality type; for example, a rigid personality might have more stringent standards and thus engage in less primary process activation than a relaxed person, whereas individuals with schizophrenia might reflect permanently low functioning of monitoring mechanisms. In contrast, Epstein (1994) proposed that the notion of the unconscious is obsolete in favour of an experimental cognitive unconscious that relies on various levels of automatically organising experiences that are different to the primary and secondary process principles. Epstein also criticised that the primary and secondary processes do not account for evolutionary developments of maladaptive systems of organising experiences. Conversely, Brakel and Shevrin (2003; see also Brakel, 2009; Vanheule et al., 2011) argued that the primary and secondary processes have distinctive evolutionary functions that contribute to adaptive and maladaptive forms of organising experience. Further criticisms and commentary on the primary and secondary processes have been provided by Martindale (1975, 1990) and Robbins (2011), which will be discussed in the following sections (see 2.3.3 and 2.3.4)

2.3.3 Martindale's concept of primordial and conceptual thought

Alternative theoretical concepts that assume some degree of similarity with Freudian primary process thought have been proposed from a number of disciplines. Particularly in relation to this study that focuses on the semantic content classified as primordial and conceptual thought language (see 3.3), Martindale (1975, 1990) proposed the descriptive labels of 'primordial thought' for the primary process and 'conceptual thought' for the secondary process as a means to avoid the Freudian psychoanalytic framework because it would "not concern us" (Martindale, 1990, p. 92). In this sense, the concepts of primordial and conceptual thought are interchangeable with Freud's primary and secondary processes. Martindale (1975) did not agree with the Freudian view that the primary process would be related to the defence mechanisms, such as repression and wish-fulfilment and thus he preferred to use the terms primordial and conceptual thought as "convenient labels for different types of cognition and perception" (p. 16) associated with the concept of regression in ASC. Martindale's study focussed primarily on the behavioural patterns associated with primordial and conceptual thought compared with the interpretative focus of the psychoanalytic tradition. Whereas psychoanalysis aims to uncover individuals'

personalities and the unconscious motives that inform their behavioural decisions and affective functioning, Martindale's conceptualisation of primordial and conceptual thought emerged out of his interest to explore creative cognition in literary texts, art and aesthetic experiences, being influenced by Kris's (1952) biphasic cycle of creative cognition, which assumes that "creative people [tend] to alternate better between primary and secondary thought than uncreative people" (Martindale, 1999, p. 138).

According to Martindale (1975, pp. 16-17), the dynamic mental activities of primordial thought are concrete, irrational, free-associative, autistic, unrelated to logic, spatiotemporally constrained, and free from social and moral conventions (West, 1991). Primordial thought is the principal awareness that young children have, and it has also been associated with the cognitive functioning of ASC, including daydreaming, nocturnal dreaming, and hypnotic, meditative, psychotic, neurotic, mystical and drug-induced hallucinatory states. In contrast, conceptual thought relates to the abstract principles of grammar and logic, time and space, social conventions and general knowledge, and problem solving and analytic abilities typical of everyday reality in older children and adults.

Martindale (1990) also noted that the descriptive concepts of primordial and conceptual thought aim to include the dichotomous forms of cognitive functioning that have been proposed by various theories that are not associated with a psychoanalytic framework, including "Werner's (1948) 'dedifferentiated' versus 'differentiated', Jung's (1963) 'Eros' versus 'Logos', McKellar's (1957) 'autistic' versus 'rational' thinking, Berlyne's (1965) 'autistic' versus 'directed' thinking, and Wundt's (1896) 'associationistic' versus 'intellectual' thought" (p. 57). Apart from these theories, other theories related to the Freudian primary and secondary thought concepts have also been put forward by various other disciplines. For a detailed overview of theoretically related constructs, see Table 1.

Table 1 Theoretically-related constructs to the Freudian primary and secondary process

Author	Outline of theoretical assumption
Wundt (1896)	‘Associative thought’ enables one to make connections between concepts and ideas, whereas ‘intellectual’ thought relates to the analytic process of logic thought and the strategic implementation and testing of ideas.
Lévy-Bruhl (1910)	The ‘primitive mentality hypothesis’ proposes two different forms of cultural mental functioning – i.e., the so-called irrational ‘primitive’ and a rational and civilized ‘Western’ mind.
Goldstein (1939)	Mental functioning is primarily motivated by the need to self-actualize which is based on the dynamic organization of three processes - firstly an equalization process that reduces tension of drives, secondly a process to satisfy one’s desire and needs, and thirdly the process of self-actualization.
Langer (1942)	It can be differentiated between ‘discursive processes’ that emphasize the spatiotemporal-linear arrangements of symbols with fixed meaning, whereas ‘non-discursive presentations’ are based on symbols that lack fixed meaning, such as emotion, mood, mental tensions
Werner (1948)	‘Syncretic thought’ relates to the cognitive functioning in children and primitive cultures that is global and dedifferentiated in which various levels of perceptions, such as sensori-motor impressions and affect, are fused. In contrast, the process of cognitive development would result in greater levels of stabilization of and differentiation between impressions.
Maslow (1957)	‘B-cognition’ (being-cognition) relates to the non-judgmental and accepting form of thought that occurs in self-actualization experiences and in which the self is seen as one with the world, whereas ‘D-cognition’ (deficiency-cognition) relates to judgmental thought processes and in which the self and others are perceived as distinctive separate entities.
McKellar (1957)	‘A-thinking’ (autistic thought) is subjective and imaginative and might lack a concrete and rational purpose, whereas ‘R-thought’ (rational thought) is objective, logic and purposeful.
Piaget (1953, 1954); Piaget & Inhelder, 1956; Inhelder & Piaget, 1958)	It can be differentiated between successive stages of cognitive development in children. The mental activities of the early ‘sensori-motor stage’ (0-24 months) are undifferentiated and characterized by egocentrism to the extent that the child is unable to perceive the same event from a different point of view. The development of symbolic thought takes place in successive stages during which the child forms internalized mental images through continues behavioural imitations until the ‘formal operational stage’ (11 years – onwards).
Author	Outline of theoretical assumption
Sorokin (1957)	It can be differentiated between different sociocultural forms of thought, for which the ‘ideational thought’ is spiritual, ‘sensate thought’ is materialistic, and ‘idealistic thought’ represents a combination of both forms.
Jung (1963)	‘Logos’ might be perceived as the ability to analyse, differentiate and reason logically, whereas ‘eros’ represents the ability to relate and synthesize.
Berlyne (1965)	‘Autistic thinking’ is assumed to be irrational and context-dependent,

	whereas ‘directed thinking’ relates to the transformation symbolic structures.
Neisser (1967)	Based on the assumption that individuals would not be able to process multiple properties in the visual field simultaneously, ‘preattentive processes’ relate to the global and unfocussed processing of objects, whereas ‘focal attention’ relates to the narrow attention on selected objects.
Bogen (1969a, b); Bogen, & Bogen (1969)	‘Appositional thought’ relates to the concrete and free-associative processes of the right-brain hemisphere, whereas ‘propositional thought’ relates to the rational and abstract processes of the left-brain hemisphere that underpin the analysis of syntax and semantic mathematics.
Klinger (1971)	By drawing on Skinner’s operant condition paradigm (1935), ‘respondent sequencing’ relate to the involuntary responses that are unconcerned by external feedback and associated with the cognitive process of dreaming and fantasy states, whereas ‘operant sequencing’ relates to instrumental behaviour and problem solving processes.
Aulagnier (1975)	Three inter-related processes of mental functioning can be differentiated. The ‘primal process’ is based on pictographic representations of relational schemas, the ‘primary process’ is based on relational fantasies and the ‘secondary process’ which is based on the labelling of abstract and concrete concepts.
Matte-Blanco (1975, 1988)	Mental activity is based on a so-called bi-logic that dynamically combines two logic systems of mental activity, for which ‘symmetrical logic’ is assumed to be irrational, whereas ‘asymmetrical logic’ obeys the rules of everyday common logic.
Bucci (1997)	Multiple code theory extends Freud’s primary process theory as a general framework of the processing of emotions and its adaptive and maladaptive manifestations. It differentiates between ‘subsymbolic processing’ referring to dynamically organized sensori- somatic-motor modalities, and ‘symbolic imagery’ and ‘verbal codes’ that combined enable one to express emotional experiences and comprehend and respond to these experiences expressed by others.
Johnstone (2009)	Drawing on Lacan’s psychoanalytic theory, ‘ <i>lalangue</i> ’ relates to unconstrained sound processes, whereas <i>la langue</i> relates to the conscious language processes that obey to the rules of grammar.
Kristeva (1984)	Linguistic signification is based on the pre-oedipal ‘ <i>semiotic thought</i> ’ that is cyclic, unrepressed, rhythmic and driven by the discharge of bodily tension whereas the ‘ <i>symbolic thought</i> ’ is repressed, time linear, grammatically structured and based on socially negotiated signs.

Given the relationship between primordial thought and everyday creative processes, as in the construction of tropes and levels of discursive elaborations (see 2.3), Martindale (1981, 1990, 1995) formulated a neuroscientific model, the so-called neural-network theory, which conceptualises changes in cognitive functioning in relation to shifts along the primordial-conceptual thought continuum. In particular, Martindale based the rationale of his neural-network theory on Mendelsohn’s (1976) theory that holds the level of creativity to be moderated by the focus of attention, with

greater attentional ability resulting in a greater conceptual distance between associated elements. From this context, Martindale proposed that defocused attention produces activation patterns over a large number of neural nodes with flat associative hierarchies, resulting in over-inclusive and creative associations between concept units compared with focused attention, which produces an inhibited activation pattern and steep association hierarchies that bring about stereotypical and uncreative associations between concepts. Thus, defocused attention and flat associative hierarchies would represent a feature associated with primary thought cognition, whereas focused attention would be related to conceptual thought cognition. Empirical evidence supports this theory, such that creative individuals produce continuous and novel responses in the word association test while non-creative individuals run out of responses (Martindale, 1990).

2.3.4 Robbin's formulation of primordial mental activity and conceptual thought

Robbins (2011) criticised the sociocultural bias associated with the formulation of the primary and secondary processes. Psychodynamic literature often conceptualises the primary process as immature, pathological and hierarchically subordinate to the mature and reality-orientated secondary process. Such a view, he argued, would mirror a Western bias that reflects a self-centric and dualistic worldview that differentiates between the inner self and external other in which objectivity, rationality and morality are regarded as virtues, whereas unconscious mental activity that forms a normative part of socio-centric spiritual cultures is viewed as immature, irrational and disruptive to social order.

Largely informed by Freud's psychoanalytic theory (1895, 1900, 1915), the concept of primary thought has been conceptualised based on clinical formulations of acute psychosis. This view perceives the mental activities of the primary process to represent a pathological bias compared with perceiving that it is a normative part of human mental activity. The devaluation of unconscious experiences and the pathological context of psychodynamic theories might have also contributed to the view that spiritual experiences are psychopathological symptoms. Due to the similarity of phenomenological attributes of religious and psychotic experiences,

including intense subjectivity, loss of ego-boundaries, distortions of time sense, perceptual changes and intense affective experiences (Buckley, 1981), spiritual experiences and pathological symptoms are often difficult to differentiate from one another (Lukoff, 1985). In particular, the occurrence of bizarre delusions is a main symptomatic criterion in the diagnosis of schizophrenia. The fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (APA, 2000) defines bizarreness in delusions as “involving a phenomenon that the person’s culture would regard as totally implausible” (p. 821). Empirical research, however, has also shown that the occurrence of spiritual and psychotic experiences might vary culturally such that some “unusual beliefs” might be normative within subcultures (Peters et al., 1999). Because of an increasing ethnic diversity within the population of individuals diagnosed with mental health problems, there has been a call for a more individualised and socioculturally sensitive diagnostic system (Turner, Lukoff, Barnhouse, & Lu, 1995). The fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (APA, 2000) included a new category titled “Religious and Spiritual Disorders” that allows for differential diagnoses of Mystical Experiences with Psychotic Features (MEPF) and Psychotic Disorders with Mystical Features (Lukoff, Lu, & Turner, 1992; see also Lukoff, 1985). From this perspective, Robbins’s criticism of the primary and secondary processes is consistent with contemporary developments of psychiatric theory that reflect a shift towards a socioculturally sensitive evaluation of spiritual and psychotic experiences and related psychopathological disorders.

Robbins further noted that Freud did not clarify to what extent the primary and secondary processes represent distinctive or inter-related forms of mental functioning. Another criticism is that Freud confused the cognitive process of dreaming with the primary process without acknowledging that dreaming represents a happening event and the encoding of the dream into language and thought would not be equivalent to the integration of everyday recollective experiences. The recall of dreams in waking conscious states would then involve the cognitive mechanisms associated with the secondary process, which does not communicate the essence of the dream because “the meaning of the dream is inherent in the action or experience itself and the re-casting is another kind of activity entirely” (p. 18). Thus, Robbins (2011) proposed a model of mental activity based on the concepts of ‘primordial mental activity’ and

‘conceptual thought,’ where the former represents a distinctive form of mental activity that interacts with conceptual thought. In this view, primordial mental activity is assumed to be psychosomatic to the extent that it is motivated by bodily sensations and sensory perceptions and the presence of unprocessed, raw emotions and an inability to accept reality. Experiences are holistic, fragments are combined into isomorphic entities, and personal narratives are fragmented and only relate vaguely to time, logic and causality. Communication is concrete and lacks self-reflective functioning, and the self is experienced as undifferentiated relative to others and the environment. In contrast, conceptual thought is assumed to develop in the first decade of life and it enables one to engage in reflective thinking about the self and body as well as to identify specific emotion states and to adapt to reality. Personal narratives are coherent as well as reflective of integrated thought and emotions that obey time and causality. Communication is self-reflective and symbolic, and the self is perceived as separated and individuated relative to others.

Robbins also assumed a dynamic perspective by proposing that the level of adaptive integration of primordial mental activity into conceptual thought is dependent on childhood experiences and the sociocultural context, whereas dissociation between both forms of mental activity is associated with the development of mental illness. Due to the relevance to contemporary developments of psychiatric theories and the increasing sociocultural sensitivity to provide differential diagnoses of psychotic and spiritual disorders associated with primordial mental activity, as well as the critique of Freudian theory on the distinctiveness and interrelation of the primary and secondary processes, this study uses Robbins’s (2011) formulation and refers to ‘primordial mental activity’ for the primary process and ‘conceptual thought’ for the secondary process.

2.4 Conclusion

This chapter outlined the theoretical background of Fisher and Cleveland’s (1956, 1958) body boundary personality, and also Freud’s (1900) primary and secondary processes. The literature review has provided an overview of the reliability and validity of Fisher and Cleveland’s (1958) manual scoring system measuring barrier and penetration imagery and outlines the personality characteristics and physiological correlates associated with the High and Low Barrier personalities. The literature

review also provided an overview of the Freudian primary process and how it relates to Martindale's (1975, 1990) formulation of primordial thought and mentions alternative theories related to the primary-secondary process continuum. It also attempted to provide a thorough review of empirical research studies that explored primordial mental activity, including developmental, neuroscientific and psychological experiments. Furthermore, the literature review stated the theoretical criticisms the primary process has received from various scholars and provides a psychodynamic perspective of how the development of body boundaries is intertwined with dynamic process of primordial mental activity and secondary thought. Special attention has been given to Robbins's (2011) critical evaluation of the sociocultural bias of the primary process in the psychiatric literature and his proposed formulation of 'primordial mental activity' and 'conceptual thought'. Most importantly, the body boundary concept and primordial mental activity represent central foci that inform the theoretical framework and content-analytic research methodology of this study, which is further outlined in the methodological literature review in Chapter 3.

Chapter 3

Methodological Literature Review: Content Analysis and the Unconscious

3.1 Introduction

This chapter outlines the development and use of content analysis of written and spoken text. It will outline the development of content analysis in psychology and linguistics and then focus on personality research, narrative psychology and empirical research within the realm of psychotherapy. This literature review will provide a theoretical and methodological background in relation to the research methodology of the thesis. The studies in this thesis make use of computer-assisted content analysis in relation to the RID (Martindale, 1975, 1990) and BTM (Wilson, 2006), whereas other semantic content will be measured using the LIWC (Pennebaker et al., 2001). In particular, the BTM represents a computerised version of Fisher and Cleveland's (1958) original manual scoring system of barrier and penetration imagery (see 2.2), the RID measures the frequencies of semantic content classified to represent primordial mental activity and conceptual thought (see 2.3.4), and the LIWC (see 4.2.3) measures semantic content classified into 80 semantic categories, including function words and psychological processes. The literature review also provides a background how content analysis relates to the process of unconscious language use, also referred to as the lexical leakage hypothesis (Spence et al., 1978).

3.2 Content Analysis

The methodology of content analysis has been defined as “a research technique for the objective, systematic, and quantitative description of the manifest content of communication” (Berelson, 1952, p. 18). While the term ‘content analysis’ has been defined in multiple ways, the ideas of grounded scientific and systematic objectivity, as well as reliability and validity, represent the most defining characteristics and requirements for content analysis as an acceptable empirical research method for the analysis of spoken and written texts (see Table 2).

Table 2 Definitions of the term ‘content analysis’

Author	Definition
Kaplan (1943, p. 230)	The technique known as content analysis ... attempts to characterise the meanings in a given body of discourse in a systematic and quantitative fashion.

Stone, Dunphy, Smith, & Ogilvie (1966, p. 5)	Content analysis is any research technique for making inferences by systematically and objectively identifying specified characteristics within texts.
Holsti (1969, p. 25)	Content analysis is any technique for making inferences by systematically and objectively identifying specified characteristics of messages.
Weber (1990, p. 9)	Content analysis is a research method that uses a set of procedures to make valid inferences from text.
Riffe, Lacy, & Fico (1998, p. 20)	Quantitative content analysis is the systematic and replicable examination of symbols of communication, which have been assigned numeric values according to valid measurement rules, and the analysis of relationships involving those values using statistical methods to describe the communication, draw inferences about its meaning or infer from the communication to its context both production and consumption.
Neundorff (2002, p. 1)	Content analysis may be briefly defined as the systematic, objective, quantitative analysis of message characteristics.
Neundorff (2002, p. 10)	Content analysis is a summarising, quantitative analysis of messages that relies on the scientific method (including attention to objectivity-intersubjectivity and hypothesis testing) and is not limited as to the types of variables that may be measured or the context on which messages are created or presented.
Krippendorff (2004, p. 18)	Content analysis is a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use.

Reliability refers to a content analysis method that continuously produces the same results when applied to the same text. Reliability in manual content analysis is of foremost importance to the extent that the semantic contents of a coding category do not represent “idiosyncratic results of the coder’s subjective judgment” (Tinsley & Weiss, 1975, p. 359) but that the semantic classification of a coding category would be consistent with the agreement of other coders. In this sense, a high reliability of semantic coding classification represents one of the most important features of scientific research, because it indicates that the lexical content of the coding scheme is accurate and consistent with the underlying theoretical construct it aims to measure (Krippendorff, 2004, p. 18). In relation to computerized content analysis, a high reliability of the lexical coding scheme would be indicative of the reliable application of a computerised measurement that is theoretically based on the same lexical scoring scheme. Repeated coding of the same text using the same reliable and valid lexical

coding content scheme would then result in consistently replicable results (Rourke et al. 2000; Weber 1990), for which computerized coding provides the advantage of reliably producing the same frequency of lexical content in a time efficient manner. The use of coding schemes that yield reliable results also allows researchers to make valid interpretations of the results as well as “to accomplish what the research set out to do” (Rosenthal & Rosnow, 1984, p. 76) (for a detailed discussion on reliability and validity in content analysis, see Lovejoy, Watson, Lacy, & Riffe, 2014).

3.2.1 Content analysis and psychology

Content analysis has been employed in psychological research to explore the attitudes and personality characteristics that underpin the spoken and written language of individuals. In this way, content analysis may be framed as an explanatory model of language, in which word frequencies within verbal content are used to make inferences about psychological functioning (Viney, 1983; Diefenbach, 2001; Pennebaker, Mehl, & Niederhoffer, 2003). There is a longstanding tradition in the clinical assessment of psychopathology to rate the verbal content of patients through the use of projective tests as a means to infer their psychological mental states (Morgan & Murray, 1935; Rorschach, 1921). These projective tests are assumed to operate on the principle that the participants will project some unconscious aspects of their life experience and emotions into ambiguous stimuli in the spontaneous responses that come to mind (Rosenthal & Rosnow, 1984, p. 478). Responses to projective tests have been standardised into specific scoring systems. For example, drawing on Murray’s (1938) concept of need-achievement, McClelland and colleagues (1953) proposed the ‘Need Achievement’ scoring system based on their observation that a person’s need and achievement motives would be reflected in response to the TAT. In addition, a variety of standardised Rorschach scoring systems have been developed to explore people’s unconscious motives, drives and thoughts (Exner, 1969, 2003; Bornstein & Masling, 2005). The use of projective tests in psychological assessment, however, has been widely criticised because of their inherent lack of validity and reliability (e.g., Aiken, 2003; Anastasi & Urbina, 1997; Gregory, 2004). For example, one of the earliest criticisms of the Rorschach test indicated that the manual scoring of the Rorschach responses would produce different results depending on the researchers’ scientific or clinical focus (Levy & Orr, 1959).

This concern led to scrutiny of the credibility of the Rorschach test within the scientific community, which continues today. Much of this criticism has been focussed specifically on the clinical limitations of the Comprehensive System, which has led to confusion between the scoring method of patients' responses and the test itself (Exner, 2003; Masling & Bornstein, 2005). This criticism has also led to arguments that projective tests are instruments that merely seek to explore and describe underlying personality functioning and organisation that are reflected in decision-making processes assumed to be in operation during the process of interpreting the inkblots. In this sense, researchers have argued that projective tests do not share the criteria of validity and reliability compared to theory-driven psychometric tests that objectively measure personality traits (Exner, 2003; Weiner, 1994). Similarly, this criticism relates to possible lack of reliability and validity of projective tests, such as the Rorschach test rather than the limitations of content analysis.

Whereas psychiatric assessments focus predominantly on the scoring of verbal behaviour reflected in projective test responses, the use of manual content analysis measures has also assumed some popularity within the realm of personality psychology by exploring linguistic features in naturally occurring everyday language. One of the earliest content analysis studies was conducted by Weintraub (1981, 1989), who identified particular linguistic features and associated phrases in samples of free speech. For example, a correlational analysis explored language features in relation to Freudian defence mechanisms (Freud, 1965). The results showed a positive relationship between text lengths and negatives (e.g., never, no, not) and found that retractors (e.g., although, but, however) indicate defensive speech patterns by being "negated, denied and retracted" (Weintraub, 1981, p. 35). He also identified semantic markers that differentiate between psychopathological and behavioural disorders, such as depression, alcoholism and binge eating disorder. Most interestingly, Weintraub assumed a quantitative psycho-historical approach to language analysis. He did so by comparing the linguistics and verbal behaviours of past American presidents – such as John F. Kennedy, Lyndon B. Johnson, and Richard M. Nixon – to their personality profiles and leadership styles. Weintraub also explored the language patterns of the "Watergate" transcripts (Weintraub, 1981, 1989).

Given the time-consuming scoring of manual content analysis, computerised content analysis represents a major technological development to provide a valid and reliable scoring of linguistic features. The General Inquirer (Stone, Dunphy, Smith, & Ogilvie, 1966) was the first computer-assisted content analysis program to use a number of content coding schemes, including the Harvard Third Psychological Dictionary, the Stanford Political Dictionary and McClelland and colleagues' (1953) Need-Achievement dictionary, among 14 other dictionaries (Stone, Dunphy, Smith, & Ogilvie, 1966, p. 140-141). Other custom dictionaries were also developed as psychological diagnostic tools to assess the lexical content within written and spoken text samples. Paige (1966) and O'Dell (1978) used the General Inquirer to re-analyse Allport's (1965) case study "Letters from Jenny", which assessed the personality of Jenny Gove Masterson based on a collection of letters. By comparing free speech samples with TAT responses, the General Inquirer content analysis program and the Harvard III Psychosocial Dictionary have been applied as diagnostic tools to assess linguistic expressions in a number of psychological and psychiatric disorders, including psychosomatic disorders (Oxman, Rosenberg, Schnurr, & Tucker, 1988), object relatedness (Rosenberg, Blatt, Oxman, McHugo, & Ford, 1994), depression (Schnurr, Rosenberg, & Oxman, 1992), and schizophrenia (Taylor, Reed, & Berenbaum, 1994).

Gottschalk and colleagues developed a series of diagnostic tools using specific psychoanalytically derived content analysis categories that relate to unconscious thoughts and emotions underlying communication (Gottschalk, 1969, 1974). By relating symptoms and features of psychiatric and neuropsychological disorder to the linguistic content of 5-minute samples of free speech that were obtained from purposefully ambiguous instructions to simulate a projective test procedure, it was possible to develop a series of reliable and valid content analysis scales that would measure semantic content associated with particular psychological constructs, such as anxiety (Gleser, Gottschalk, & Springer, 1961), hostility (Gottschalk & Gleser, 1969), social alienation-person disorganisation (Gottschalk & Gleser, 1969), cognitive impairment (e.g., Gottschalk, Eckhardt, & Feldman, 1979), hope (Gottschalk, 1974), positive emotions (Gottschalk, Springer, & Gleser, 1961), depression (Gottschalk & Hoigaard-Martin, 1986), achievement striving (Gottschalk & Gleser, 1969) and narcissism (Gottschalk, 1988; for a detailed review of these content analysis scales,

see Gottschalk & Gleser, 1969, and also Gottschalk, 1995). The majority of these content analysis scales were later adapted into a computer-assisted content analysis software package (i.e., PCAD - Psychiatric Content Analysis and Diagnosis, 2000), which tags the lexical content and syntax of a text corpus in just a few minutes. This software package provides a less time consuming and more reliable rating method compared to manual scoring, which can be both laborious and erroneous. Empirical research has also shown that the Dresdner Angstwörterbuch (DAW) (Berth, 2001; Berth & Suslow, 2001), which is a German lexical computerised measure based on Gleser's original anxiety scale (Gleser et al., 1961), represents a more reliable and valid measure compared to Gottschalk and Gleser's manual scoring system.

Whereas Gottschalk and colleagues developed language-based diagnostic tools to identify psychological structures and dimensions, Laffal (1965) constructed the Concept Dictionary of English. This dictionary classified semantic items into one to five of 168 categories. Each category is assumed to represent a meaning concept that is schematically distinguishable from another concept category, and "most concepts can be subdivided into smaller areas of meaning or joined into larger domains" (Laffal, 1995, p. 340). For example, the category 'clean' would comprise words referring to personal cleanliness and grooming, i.e., 'comb', 'wash', and 'towel', as well as words referring to the elimination of dirt, i.e., 'purification', 'cleanliness', and 'dusting' (Laffal, 1969, p. 8; see also Laffal, 1995). Conversely, the Concept Dictionary of English did not classify function words, such as articles, conjunctions and pronouns, into categories.

In contrast to Laffal's (1965) Concept Dictionary of English, which was focussed exclusively on the classification of semantic items referring to objects, persons, verbs, adjectives and adverbs, Pennebaker and colleagues developed the LIWC (Pennebaker, Francis, & Booth, 2001; Pennebaker, Booth, & Francis 2007), which measures the frequencies of 80 predefined types of semantic items and syntactic content categories (see 4.2.3). This dictionary ascribes importance to function words in the analysis of language and thus reflects an emphasised humanistic focus in language analysis by giving importance to the mentioning of humans and living beings in spoken and written texts. Content analyses using the LIWC have been shown to be particularly useful within the realm of health psychology. For example, the LIWC has been used

to explore the language in the expressive writing of traumatic events based on the hypothesis that inhibited expressions of traumatic events are associated with the development of psychosomatic processes (Pennebaker, 1997; Pennebaker & Beall, 1986; Pennebaker, Kiecolt-Glaser, & Glaser, 1988; Petrie, Booth, & Pennebaker, 1995; Shea, Burton, & Girgis, 1993).

Pennebaker and King (1999) identified that the linguistic dimensions of the LIWC relative to various text types showed a four-factor structure, classified as ‘Immediacy’, ‘Making Distinctions’, ‘Social Past’ and ‘Rationalisation’. The first factor ‘Immediacy’ included first-person singular pronoun words (e.g., I, me, mine) and discrepancy words (e.g., should, would, could) but fewer articles (e.g., a, an, the) and words of more than six letters. The second factor ‘Making Distinctions’ was characterized by more exclusion words (e.g., but, without, exclude), tentative words (e.g., maybe, perhaps, guess) and negations (e.g., no, not, never), but fewer inclusion words (e.g., and, with). The third factor ‘Social Past’ comprised more past tense verbs (e.g., went, ran, had), social references (e.g., mate, talk, they, child) but fewer present tense verbs (e.g., is, does, hear) and positive emotion words (e.g., love, nice, sweet). The fourth factor ‘Rationalisation’ included more insight words (e.g., think, know, consider) and causation words (e.g., because, effect, hence), but fewer negative emotion words (e.g., hurt, ugly, nasty).

In relation to the Big Five personality measure (Costa & McCrea, 1992), the semantic variables of the factor ‘Immediacy’ correlated negatively with the personality trait ‘Openness to Experience’, and the semantic variables of the factor ‘Making Distinctions’ correlated negatively with the personality traits ‘Extraversion’ and ‘Conscientiousness’. A more detailed analysis also showed that ‘Neuroticism’ correlated positively with negative emotion words and negatively with positive emotion words. Extraversion correlated positively with positive emotion words and references to social processes, and agreeableness was also positively correlated with positive emotion words and negatively correlated with negative emotion words. Given these findings, Pennebaker and King concluded that “people would express themselves reliably across time and situations” (p. 1308). Despite the relatively weak effect sizes, language style could be used to assess personality dimensions within social psychology.

The LIWC has also been applied to a wide range of demographic categories, such as gender-associated language (Newman, Groom, Handelman, & Pennebaker, 2008), age (Pennebaker & Stone, 2003), social status (Kacewicz, Pennebaker, Davis, Jeon, & Grasser, 2009), and culture (Chung & Pennebaker, 2005); relationship related matters, such as relationship satisfaction (Slatcher, Vazire, & Pennebaker, 2008); linguistic style matching (Niederhoffer & Pennebaker, 2002) and natural conversations (Mehl & Pennebaker, 2003); individual and cultural life stressors (Pennebaker & Lay, 2002; Stone & Pennebaker, 2002); cognitive and behavioural tendencies, such as deceptive language behaviour (Newman, Pennebaker, Berry, & Richards, 2003); and semantic content in depression and suicidal tendencies (Rude, Gortner, & Pennebaker, 2004; Stirman & Pennebaker, 2001), to name a few. Because of Pennebaker's extensive empirical research, it was possible to identify the function of semantic features in relation to a wider range of dimensions that comprise the personal and social everyday of human beings.

3.2.2 Lexical leakage in quantitative content analysis

Consistent with formal models of human cognition and consciousness that assume behaviour to correspond to sensory attention and internal motivations (Wang, Patel, & Patel, 2013), the conceptual basis of dictionary-based content analysis, and, to a certain extent, the conceptual basis of projective tests is the idea that the perception of our environment, such as objects, events and people, triggers unconscious associations and thoughts that influence our linguistic representations. The occurrence of unconscious associations was first explored by Freud's (1901) concept of the "slip of the tongue", or so-called *parapraxis*. In the Freudian theory, a slip of the tongue would represent an instance of a lexical mistake, through which previously repressed unconscious thoughts and motivations are unintentionally expressed in the manifest content of language. For example, a dinner guest might thank the host "for the hostility" and thus expressing feelings of discomfort experienced during the dinner.

The notion of unconscious thought material expressed in conscious speech production represents the underlying premise of lexical leakage. The occurrences of these lexical leakages are based on the assumption that "a person's choice of words is influenced

not only by semantic and syntactic constraints with a particular speech context, but also by unconscious mental processes and states” (Spence et al., 1978, p. 141). Slips of the tongue, as well as spoonerisms, are perceived as speech errors that represent strong manifest traces of unconscious thought. Lexical leakages are subtle traces and “do not result in obvious dislocations of the surface structure [...] and can be defined as the choice of words which is influenced by unconscious and preconscious background factors, but which conforms to both syntagmatic and paradigmatic constraints” (Spence, 1980, p. 146). Various features are used to identify the presence of lexical leakages — first, a semantic overlap between word choices in relation to the surrounding context; second, statistical evidence of semantic frequencies; and third, the presence of subtle semantic errors. In relation to semantic overlaps between the choice of word in the target sentence and surrounding context, Spence (1980, p. 147) differentiates between intended leakage as found in a newspaper headline: “Hostility of Icelanders to American base melts a bit”, and unintended leakages such as in the following classified advertisement: “Radiation oncology - Growth positions – Edward W. Sparrow Hospital”. Statistical evidence of semantic frequencies can be simply obtained through a simple word count of specific lexical markers to prove a hypothesis. Semantic errors are indicted through the use of words that displace other more suitable word choices and thus appear slightly forced in the syntagmatic sentence frame, for example “I have already said that Britain holds the key to this key-problems of Franco-German relations”.

By drawing on psychodynamic theories that assume a relationship between externally and internally sourced stimuli and verbal behaviour, such as Freudian (1900) dream theory and free associations (Deutsch & Murphy, 1955), Spence and colleagues’ (1978) empirical content analysis study examined the word choices in the interview transcripts of women at risk of cervical cancer. The results showed that women diagnosed with cervical cancer used significantly fewer hope-connotative words compared to women who did not receive a cancer diagnosis. Hope- and hopeless-connotative words were also more prominent in patients who were open about their concerns related to cancer than in patients who were defensive about the possibility of cancer. Hope-connotative words were associated with pathological diagnosis when neither the patients nor the doctors were aware of the diagnosis at the time of the interview. The association between pathology and word usage can be explained via a

stress/illness approach that assumes that lexical changes are related to physical changes. An individual who feels hopeless would be more likely to have a negative state of mind and to develop an illness. In an embodied cognition approach, it is assumed that an individual's physical and mental well-being would affect their lexical choices (Spence et al., 1978, p. 144). Similarly, in relation to a non-illness context, lexical leakage can be then extended to an individual's state of mind, unconscious attitudes and emotion states that would affect subtle lexical choices in spoken and written texts.

3.2.3 Content analysis and psychotherapy

The qualitative analysis of psychotherapeutic dialogues has received much attention within the fields of linguistics and psychology (e.g., Flader & Wodak-Leodolter, 1979; Wodak, 1981; Labov & Fanshel 1977). Although some early content analysis explored the language of patients diagnosed with schizophrenia (Marsden, 1965; Scheflen, 1973), it was not until technological advancements that empirical research to systematically investigated and described language behaviour through the use of quantitative content analysis within the psychotherapeutic context. As outlined by Kächele and colleagues (2009; pp. 333-341), classical Freudian psychoanalysis differentiated between the patients' manifest content and the latent content of language. The manifest content of language typically refers to the denotative meaning of a recalled dream event, whereas the latent meaning relates to the connotative and 'unconscious' symbolic meaning of the dream content (Freud, 1900). Whereas psychoanalysis' focus was predominantly on interpreting the meaning of patients' recalled dream event through the process of dream-work, a quantitative content analysis positions the manifest content of patients' and therapists' language within the psychotherapeutic dialogue as a focal point. This represents a departure from the Freudian view that emphasises the interpretation of patients' symbolic meaning of their latent content within the analytic discourse and a move towards patients' concrete experiences and thoughts communicated in their language.

After studying the early works of Spence (1968, 1969, 1970, 1973), who initially suggested the employment of content analysis of psychotherapy transcripts settings, Mergenthaler and Kächele (1985) proposed that content analytic methodologies for

the systematic analysis of psychotherapeutic settings would enable us to understand the underlying psychological processes associated with the point at which patients gain clarifying insights into their psychological processes (Kächele, Schachter, & Thomä, 2009; Mergenthaler & Kächele, 1996). To further the development of content analysis of natural language in psychotherapy research, Mergenthaler and Kächele (see Mergenthaler, 1985; Mergenthaler & Kächele, 1991) constructed the Ulm Text Bank, which represents a collection of psychotherapy session transcripts. The Text Bank enables researchers to obtain easy access to psychotherapy material as well as to compare and contrast the results of different methodological approaches and analyses (Kächele et al., 2009, p. 342).

Mergenthaler, in collaboration with Bucci (1999), also identified linguistic markers that measure referential activity. Referential activity refers to the function of multiple and diverse components within the human cognitive information-processing system that connects the sub-symbolic sensory representations that includes perceptual images and emotional experiences, with the verbal system which includes phonemic features that adhere to morphological and syntactic rules of language organisation (Bucci, 1984, 1997; Bucci & Freedman, 1978). Based on extensive empirical research, Mergenthaler and Bucci found that language dimensions that measure high levels of referential activity are typically related to the concreteness, clarity and specificity of the speakers' mental imagery, whereas language related to low referential activity is assumed to be abstract and vague. The valid and reliable computerised referential activity dictionary (CRA) (Mergenthaler & Bucci, 1993; Bucci, 1995) measures semantic content classified as high-CRA and low-CRA. The high-CRA category contains words that relate to concrete and spatial relations, such as function words (third-person pronouns, prepositions, articles, adverbs, and spatial representations), as well as references related to emotions and cognitive processes. The low-CRA category contains words that relate to logical relations, including conjunctions and modifiers.

The semantic markers associated with high and low referential activity represent key components of the Therapeutic Cycle Model (TCM) (Mergenthaler, 1996), which reliably measures the dynamical changes of referential activity as a means to identify emotional-cognitive changes during psychotherapeutic settings, including both single

psychotherapy sessions and multiple psychotherapeutic sessions (Lepper & Mergenthaler, 2008). Within the TCM, high levels of referential activity relate to measures of Emotional Tone (ET), and low levels of referential activity relate to measures of Abstraction (AB). Empirical research has identified four distinctive and sequential phases that describe the emotion-cognitive regulation of the TCM. In the Relaxation phase (i.e., low emotion and high abstraction), patients use descriptive speech that is unrelated to any problems. In the Reflection phase (i.e., low emotion and high abstraction), patients reflect upon their problems without relating them to their emotions. In the Experiencing phase (i.e., high emotion and low abstraction), patients express positive and negative emotions without gaining any reflective insights. In the Connecting phase (i.e., high emotion and high abstraction), patients reflect upon their problems while expressing both positive and negative emotions. The TCM model has been applied to a wide variety of linguistic features such as metaphors (Gelo, 2007; Gelo & Mergenthaler, 2003), as well as different conditions in psychotherapeutic settings such as eating disorders (Fonato, 2004), sexual offenders (Böhmer, Mergenthaler, & Pfafflin, 2011), and attachment types (Buchheim & Mergenthaler, 2000).

More recent empirical studies have focussed on the dynamic interactions of language behaviour in psychotherapy dialogues (e.g., Salvatore & Tschacher, 2012; Nitti et al., 2010; Salvatore & Freda, 2011). For example, Salvatore and colleagues (Gennaro et al., 2011; Salvatore et al., 2010) explored the use of a two-stage semiotic model to conduct a so-called “Discourse Flow Analysis”, which identifies the underlying dialogic networks of psychotherapeutic conversations as a means to gain further insights into patients’ symbolic meaning processes.

3.3 Content Analysis Measuring Primordial Thought Language

3.3.1 Development of the RID

Colin Martindale (1975, 1981, 1990) devoted considerable effort to exploring primordial and conceptual thought in human cognitive functioning (see 2.2.2). He devised a content analysis scheme, the RID (Martindale, 1975, 1999), that classifies semantic content to measure primordial thought language and conceptual thought language (see 4.2.2). Martindale (1981, pp. 296-297) conceptualises primordial and

conceptual thought in the form of a continuum of mental functioning. Primordial thought is at one end of the continuum; it is concrete, irrational, free-associative, autistic and unrelated to logic and spatio-temporal constraints as well as free from social and moral conventions. It is the principal form of awareness in young children and in cognition related to altered states of consciousness, including dreams, creativity, psychotic and drug-induced states, religious experiences and hallucinations. In contrast, conceptual thought is at the other end of the continuum; it is abstract and related to reality, common sense, and grammatical rules as well as to the constraints of both time and space and social and moral conventions. The RID comprises 29 'Primordial Thought' categories in total, 7 'Secondary Thought' categories, and 7 'Emotion' categories. Primordial thought is based on the sum of the following 5 sub-categories: 'Drive', 'Regressive Cognition', 'Perceptual Disinhibition', 'Sensation' and 'Icarian Imagery' (for more details, see 4.2.2).

The primordial and conceptual language categories of the RID were based on Holt's (1968) coding scheme measuring regressive cognition in the Rorschach inkblot test (Rorschach, 1921), Pine's (1962) coding scheme measuring regressive cognition in the TAT, (Morgan & Murray, 1935), and, to some extent, the measurement of Sentience (Kalin, McClelland, & Kahn, 1965; Martindale, 1979, p. 140). In particular, the coding schemes measuring regressive cognition in projective test responses have been applied to explore the relationship between regressive cognitive functioning and creative cognition. Individuals using more regression have higher scores on imaginative production on a series of experimental tasks (e.g., Pine & Holt, 1960; see Lerner, 1998, pp. 257-258). In this context, Martindale (1975, 1990) explored primordial cognitive functioning in literary texts based on the assumption that high frequencies of primordial thought language would be indicative of heightened levels of artistic creativity. Empirical research using the RID has consistently provided evidence for this interpretation. For example, greater right brain hemisphere activation, which is associated with creativity, has been associated with a high frequency of primordial thought language in adults (Galín, 1974; Martindale, Covello, & West, 1986). Hines and Martindale (1973) also confirmed the theory of the psychoanalytic aesthetic, which proposes that highly creative individuals would use more primordial thought language than non-creative individuals (Kris, 1952). Higher frequencies of primordial thought language have also been identified in the stories of

young children than in the stories of adults (West, Martindale, & Sutton-Smith, 1985). The same finding also holds for stories written under the influence of psychotropic drugs, as opposed to the stories of control groups (Martindale & Fisher, 1977; West, Martindale, Hines, & Roth, 1983); fetish stories, compared to normative romantic stories (Wilson, 2002); the poetry of writers with pathological disorders versus that of poets without pathological disorders (Martindale, 1975); and the folktales of primitive cultures, in contrast to those of more complex cultures (Martindale, 1976). The results largely confirmed the theory-driven underpinnings of the research hypothesis and thus indicated external validity.

3.3.2 Validity of the RID

Martindale (1975) conducted a factor analysis of the semantic content classified as primordial thought language and conceptual thought language. The first factor comprises positive loadings on semantic content related to ‘Conceptual Process’ and negative loadings related to ‘Icarian Imagery’. The second factor comprises positive loadings related to ‘Drive’ and ‘Regressive Imagery’ and negative loadings related to ‘Emotions’. According to Martindale (1975, p. 145), the first factor reflects a polarity between abstraction and concreteness that represents the cognitive dimensions of regressive cognitive functioning. In contrast, the loading of the second factor comprises the continuum ranging from ‘Drives’ to ‘Emotions’ and thus represents the direct expression of ‘Drives’ compared to a sublimated expression. Taking into consideration that the first factor comprises one-third of the variance related to categories classified as ‘Regressive Imagery’, Martindale concluded that the factor analysis showed that the classification of RID’s categories would have an acceptable level of construct validity.

Benjafield and Muckenheim’s (1988) historico-developmental study further identified that the lexical items classified as primordial thought language had earlier dates of entry in the Oxford English Dictionary (OED) than lexical items classified as conceptual thought. They believed that words and concepts that are related to ontologically earlier developmental stages reflect the historical development of language itself. The concurrent validity of the German, Latin and Portuguese translations of the RID have also been gauged by Wilson (2011), who identified the greatest validity in the Latin translation, followed by the German and Portuguese

translations. Using Wilson's (2011) methodology to assess validity, the RID has also been translated and validated in Hungarian (Pólya & Szász, 2013).

3.3.3 Uses of the RID

Martindale applied the RID to explore the narrative pattern of primordial thought language in literary text, including night journey narratives, mystical salvation narratives and religious salvation narratives, to mention a few (Martindale, 1973, 1974, 1987, 1987; West 1991). The term "narrative pattern analysis", in this context, refers to a quantitative approach that statistically determines the longitudinal behaviour of primordial thought language (or any other types of semantic content) of a given text (Martindale, 1987). The night journey represents a mystical theme that revolves around a hero who encounters obstacles and problems in the real world before commencing his otherworldly journey into the mystical world. The narrative peak of the hero's journey is represented by his victory and triumph over the evil antagonists that attempt to thwart the hero's success in finding a treasure and gaining virtue. The end of the narrative is often depicted in the hero returning to the temporal world as a self-actualised and reborn human being (Martindale, 1978; West, 1991).

Given the relationships between creativity and primordial thought language (Martindale, 1990), Hogenraad and Orieane (1983; 1985-1986) have explored the frequency of primordial thought language and concrete language in internal monologues, proposing that primordial thought in monologues would represent a mode of thought similar to cognitive processes associated with inventiveness. High frequencies of primordial thought language in interior monologues were correlated positively with the use of congruent markers (e.g., *and*) but they were correlated negatively with markers of incongruence (e.g., *but*).

As a means to explore scientific creativity, Hogenraad also applied the RID, in combination with the Motive Dictionary (Hogenraad, 2006), to scientific texts of a selection of science journals. The results demonstrated that creativity and need for affiliation showed a positive trend in only two journals (i.e., *Psychological Review* and *Journal of Applied Psychology*) but there was a negative trend in the remaining journals, which might indicate a stagnation of creativity in applied social sciences due

to an increased individualism. Hogenraad also used the RID to explore pressure toward novelty in political discourses (Hogenraad, 2007; Hogenraad, Tousignant, Castano, bestgen, & Dumoulin, 1997). Such pressure towards novelty is assumed to generate a sense of potential optimism and excitement in political speeches, which is of importance in times when political leaders engage in war and attempt to resolve conflicts with other nations. For example, Hogenraad (2007) demonstrated that in political texts related to historical wars, such as World War I, World War II, the Anglo-American intervention in Iraq, the risk of war could be predicted by a significant increase of primordial thought language and a reduction of concrete thought.

In addition, the RID has been applied in relation to narrative psychology as a means to identify speakers' psychological states and how they "give sense and meaning to the events of their environment [...] and their interrelationships" (László, 2008, p. 64) (see also László, 2002, 2007). Such a narrative content analytic approach would provide an empirical and systematic method to explore the structural properties of narratives, including temporal patterns, perspective, coherence, and plot complexity, to name a few, associated with speakers' psychological states and processes (László, 2008, pp. 64-65). For example, Ehmann et al. (2007) measured the relationship between subjective time experience and the recall of personal life narratives. László and colleagues also alluded to Berlyne's arousal theory (1971, 1974; see Martindale, 1990) that positions arousal as the neurological motive to resolve cognitive uncertainty, which Martindale (1975) associated with an inverse relationship to cognitive regression. Therefore, Cupchik and László (2008) explored how the level of arousal in short stories would relate to the participants' cognitive understanding as well as to their subjective involvement or objective detachment in relation to the presented characters' experiences and the protagonists' point of view. The level of arousal in the presented stories was measured using the subcategory 'arousal' of the RID's emotion category. The results showed that stories that provided greater insights into the characters' experiences and reflected the protagonists' point of view were read more slowly compared to stories that used more of the 'arousing' words of the RID's emotion category. They were also judged to elicit greater levels of surprise, thus confirming Berlyne's arousal theory (1971, 1974) that assumes a relationship between arousal level and the resolution of cognitive uncertainty.

Within psychotherapeutic settings, Stigler and Pokorny (2001) used the RID to explore the relationship between dream imagery elaboration and the frequencies of primordial thought language in the language of patients and psychotherapists. The results showed an increase of primordial mental language but a decrease of secondary thought language in dream imagery elaboration. Progressive therapy sessions also indicated an increase in secondary thought language and a decrease in primordial thought language.

3.4 Content Analysis Measuring Body Boundaries

Wilson (2006) devised the computer-assisted BTM, which measures barrier and penetration imagery as outlined by Fisher and Cleveland's (1956, 1958) manual scoring of body boundary imagery (see 2.3 and 4.2.1). Thus, the coding of the BTM followed Fisher and Cleveland's scoring system of Rorschach protocols to populate categories it drew on some of the semantic categories of the USAS semantic tagger (Wilson & Rayson, 1993; Rayson & Wilson, 1996) and synonyms and hyponyms through the use of the WordNet software (Fellbaum, 1998). In total, the BTM comprises approximately 550 lexical entries for Barrier imagery and 228 entries for Penetration imagery. In contrast to Fisher & Cleveland's (1956, 1958) scoring system, the BTM does not contain multiword units. This is because most content analysis software packages only identify single word units. Due to the lack of context-sensitive coding, the reliability and validity of the BTM has not been assessed yet; however, the reliability and validity assessment of the RID represents an empirical focus of this thesis (see 5.2).

Based on Newbold's (1984) hypothesis that individuals with Low Barrier personalities would use more barrier imagery, such as clothing items, to overcompensate and protect their fragile bodily self-image as well as more penetration imagery indicative of their weak bodily boundaries, compared to individuals with High Barrier personalities, the BTM has been applied to the rubber boot fetish stories in comparison to the Romance and Love story section of the Freiburg-LOB (FLOB) Corpus of British English (Hundt et al., 1998). Taking into consideration that rubber boot stories would reflect an emphasis on clothing items, entries for 'boots(s)', 'Wellington(s)' and 'welly/wellies', were removed. The results,

consistent with the research hypothesis, demonstrated that the rubber boot stories used significantly higher frequencies of barrier imagery but lower frequencies of penetration imagery compared to the romance and love stories. Therefore, Wilson concluded that fetishism would be associated with an increase of barrier imagery; conversely, the low frequencies of penetration imagery might contradict Newbold's assumption that a weak bodily self-image might be reflected in an inflation of both barrier and penetration imagery simultaneously. The results also reflected the possibility that barrier and penetration imagery represent independent personality dimensions within the body boundary personality concept (Fisher & Cleveland, 1956, 1958).

Given that West (1991) identified that the Bible follows a five-stage pattern of primordial mental activity measured through the RID, thus mirroring the five stage of Christian mystical development as proposed by Underhill (1911), Wilson (2009b) applied the BTM to the Douay-Rheims Bible. The results demonstrated that penetration imagery also followed a five-stage curve, which confirms the hypothesis that an increase of primordial mental activity would coincide with a weakening of the body boundary finiteness in religious experiences as a form of ASC. Such a relationship between primordial mental activity and body boundary finiteness has been identified in relation to other forms of ASC, including dreams (Ruggeri & Saraceni, 1981), extra-sensory perception (Schmeidler & LeShan, 1970) and hypnosis (Saraceni, Ruggeri, & Filocamo, 1980). In line with these findings, Buck and Barden (1971) also showed that autobiographical memories of nocturnal dreams have higher frequencies of barrier imagery and penetration imagery compared to autobiographical memories of everyday memories.

The BTM has also been applied to compare body boundary imagery in autobiographies of religious-mystical and psychotic experiences (Cariola, 2012a, b).

3.5 Conclusion

This chapter outlined the origins and uses of content analysis in psychological research with particular reference to the analysis of verbal behaviour in relation to personality assessment and the diagnosis of psychopathological dimensions. The literature review also provided an overview of content analysis and its recent

developments within psychotherapeutic settings. Given the central focus of the body boundary personality and primordial mental activity in this thesis, special attention has been given to providing a comprehensive introduction of the BTD (Wilson, 2006), which represents a computerised content analysis measure based on Fisher and Cleveland's (1956, 1958) manual scoring system of barrier and penetration imagery, as well as to summarising Martindale's (1975, 1990) RID, which measures the frequencies of lexical items classified to represent primordial thought and conceptual thought. While this chapter focussed on theory and application of computerised content analysis within psychological research, the next chapter provides an outline of the methodological and technical details relevant to the computerised content analysis used in this thesis.

Chapter 4

General Methodology

4.1 Introduction

Chapters 2 and 3 provided an overview of the theoretical and empirical background relevant to this thesis. These chapters outlined Fisher and Cleveland's (1956, 1958) body boundary personality and the psychodynamic concept of primordial mental activity. This chapter aims to provide a description of the research methodology employed in this thesis. In particular, this chapter has two main parts. The first part describes the customised computer-assisted content analysis dictionaries that are used to analyse the texts' semantic content. As described in Chapter 3, the BTM (Wilson, 2006) measures the frequencies of barrier and penetration imagery; the RID (Martindale, 1975, 1990) computes the frequencies of primordial mental activity; and the LIWC (Pennebaker et al., 2007) calculates the frequencies of other semantic content. The second part of this chapter outlines the computerised content analysis processes that calculate the semantic content frequencies.

However, it has to be mentioned that the studies in this thesis have differential foci. Therefore, the studies' individual method sections will provide more relevant and specific methodological details (e.g., the employed data, experimental procedures and statistical analyses). In Chapter 5, Study 1 (see 5.2) has a methodological focus to assess the BTM's (Wilson, 2006) reliability and validity. In Chapter 6, Study 2 (see 6.2) aims to explore the semantic content, as measured with the LIWC, in the narratives of everyday and dream memories of High and Low Barrier personalities. In Chapter 7, Study 3 (see 7.2) examines the semantic fields and figurative language in the narratives of everyday memories and dream memories of High and Low Barrier personalities. Subsequently, in Chapter 8, Study 4 (see 4.2) explores the strengths of association between barrier imagery and semantic content, as measured with the LIWC, in the verbal behaviour of patients attending person-centred psychotherapy.

4.2 Content Analysis

In Chapters 5 (see 5.2), 6 (see 6.2) and 8 (see 8.2), the data set's semantic content was tagged using computerised content analysis dictionaries – i.e., the BTM, RID and LIWC.

4.2.1 Body Type Dictionary (BTD)

The BTD (Wilson, 2006) is a computerised dictionary that calculates the frequency of semantic items that are classified as barrier imagery and penetration imagery. The BTD is conceptually based on Fisher and Cleveland's (1958) manual scoring system of High and Low Barrier personalities. It has to be mentioned that the body boundary scoring system first introduced by Fisher and Cleveland in 1956 excluded clothing items, except for clothing that was unusual in its covering or decorative function, and all buildings and vehicles. The body boundary scoring system put forward by Fisher and Cleveland in 1958 included all clothing items, buildings and vehicles; however, it excluded references to buildings that had a social or educational function compared with physical buildings, such as a 'church' or 'university'.

The BTD contains 551 entries for barrier imagery, 231 entries for penetration imagery, and 70 exception words that prevent the erroneous matching of ambiguous word stems, all of which are assigned to 12 semantic categories (Wilson, 2006). Table 3 shows the BTD's semantic categories and examples of semantic items.

Table 3 Semantic categories and examples of barrier and penetration imagery in the BTD (Wilson, 2006)

BARRIER IMAGERY	Examples of semantic items
Clothing items	Dress, robe, costume
Animal with distinctive or unusual skins, including shelled creatures	Alligator, badger, peacock, snails, shrimp

Enclosed openings in the earth	Valley, ravine, canal
Unusual animal containers	Bloated, kangaroo, pregnant
Overhanging or protective surfaces	Umbrella, dome, shield
Armoured objects or objects dependent on their own walls	Armour, battleship, ship
Things being covered, surrounded or concealed	Covered, hidden, behind
Buildings	Bungalow, cathedral, tower
Enclosed vehicles	Car, ship, truck
Things with unusual container like shapes or properties	Bagpipes, chair, throne
Unique structures	Tent, fort, hut
Miscellaneous barrier words	Basket, bubble, cage
PENETRATION IMAGERY	
Reference to the mouth being opened or used for intake or expulsion	Eating, tongue, yawning
Reference to evading, or bypassing or penetrating through the exterior of an object	Autopsy, fluoroscope, x-ray,
References to the body wall being broken, fractured, injured and damaged, including degeneration of surfaces	Bleeding, stabbed, wounded, withered
Openings in the earth that have no set boundaries	Abyss, fountain, geyser
All openings	Anus, doorway, entrance
Things which are insubstantial and without palpable boundaries	Ghost, mud, shadow
Transparency	Crystal, see-through, transparent
Miscellaneous penetration words	Broken, frayed, hole

4.2.2 Regressive Imagery Dictionary (RID)

The RID (Martindale, 1975, 1990) is a computerised content analysis dictionary that measures the frequencies of primordial thought language, conceptual thought language and emotion language. The RID contains approximately 3,200 words and roots that are assigned to 29 ‘Primordial Thought Language’ categories, 7 ‘Secondary Thought Language’ categories, and 7 ‘emotion’ categories. In particular, primordial thought language is measured as the sum of the ‘Drive’, ‘Regressive Cognition’, ‘Perceptual Disinhibition’, ‘Sensation’ and ‘Icarian Imagery’ sub-categories. Empirical research has produced consistent evidence showing that the RID is a valid and reliable tool for measuring primordial and secondary thought language (Martindale, 1990; see also Wilson, 2011). Table 4 shows the RID’s semantic categories and examples of semantic items.

Table 4 Semantic categories and examples of primordial and secondary thought language in the RID (Martindale, 1975, 1990)

PRIMORDIAL THOUGHT LANGUAGE	Examples of semantic items
Drive	
Oral	Breast, drink, lip
Anal	Sweat, rot, dirty
Sex	Lover, kiss, naked
Sensation	
General sensation	Fair, charm, beauty
Touch	Touch, thick, stroke
Taste	Sweet, taste, bitter
Odour	Breath, perfume, scent
Sound	Hear, voice, sound
Vision	See, light, look
Cold	Cold, winter, snow
Hard	Rock, stone, hard
Soft	Soft, gentle, tender
Defensive Symbolization	
Passivity	Die, lie, bed
Voyage	Wander, desert, beyond
Random movement	Wave. Roll, spread
Diffusion	Shade, shadow, cloud
Chaos	Wild, crowd, ruin
Regressive Cognition	
Unknown	Secret, strange, unknown
Timelessness	Eternal, forever, immortal
Conscious alteration	Dream, sleep, wake
Brink-passage	Road, wall, door
Narcissism	Eye, heart, hand
Concreteness	At, where, over
Icarian Imagery	
Ascend	Rise, fly, throw
Height	Up, sky, high
Descend	Fall, drop, sink
Depth	Down, deep, beneath
PRIMORDIAL THOUGHT LANGUAGE	Examples of semantic items
Icarian Imagery	
Fire	Sun, fire, flame
Water	Sea, water, stream
SECONDARY THOUGHT LANGUAGE	
Abstraction	Know, may thought
Social behaviour	Say, tell, call
Instrumental behaviour	Make, find, work
Restraint	Must, stop, bind
Order	Simple, measure, array

Temporal references	When, now, then
Moral imperatives	Should, right, virtue
EMOTIONS	
Positive affect	Cheerful, enjoy, fun
Anxiety	Afraid, fear, phobic
Sadness	Depression, dissatisfied, lonely
Aggression	Angry, harsh, sarcasm
Expressive behaviour	Art, dance, sing
Glory	Admirable, hero, royal

4.2.2.1 Lexical overlap between RID and BTD

It has to be noted that there is a slight overlap between the BTD and the lexical items categorised as primordial thought language in the RID. In total, 5.34 per cent (171) of body boundary items, i.e., 2.03 per cent (65) of barrier imagery items and 3.31 per cent (106) of penetration imagery items, were identical to the lexical content of the primordial thought language category. Thus, the overlapping lexis was removed from the RID dictionary, and a modified version of the RID was used to assess the strengths of association between body boundary imagery and primordial thought language in Study 1 (see 5.2).

4.2.3 Linguistic Inquiry and Word Count (LIWC)

The Linguistic Inquiry and Word Count (LIWC) text analysis program (Pennebaker et al., 2007) calculates the frequencies of predefined types of semantic content. The LIWC is based on approximately 4,500 words and word stems that are assigned to 80 semantic categories. The semantic categories are based on the following categories: ‘Function Words’, ‘Psychological Processes’ and ‘Personal Concerns’. Each of these categories has sub-categories. For example, as noted by Tausczik and Pennebaker (2010, pp. 27-28), the ‘function words’ category includes to the ‘articles’ sub-category, which is made up of three words (i.e., a, an, the). Grammatically based categories are based on the classification of semantic items that relate to objective grammatical conventions; however, the semantic content of other categories, such as ‘emotions’, is made of semantic items that rely on the researchers’ subjective judgment. To minimise the interference of the researchers’ subjectivity, a comprehensive list of semantic items was constructed for all coding categories. Two separate inter-rater agreements were then carried out to determine the reliable

classification of the semantic items into the LIWC coding categories. The final inter-rater agreement ranged from 93 to 100 per cent.

In addition, the LIWC dictionary is hierarchically organised such that one word can be ascribed to different main categories and sub-categories. For example, the word “*abandoned*” forms part of three psychological process categories, i.e., overall affect words, negative emotion words, and sadness words, and two syntactic categories, i.e., past tense verbs and verbs. The LIWC has been shown to be a valid and reliable content analysis dictionary to measure semantic content in written and spoken texts. A previous version of the LIWC (2001) (Pennebaker & Francis, 1999) has also demonstrated the content and construct validity of this content analysis program (Pennebaker & Francis, 1992; Pennebaker et al., 2001). The newest version, the LIWC (2007), has also shown itself to have sufficient external validity to the extent that judges’ ratings and the LIWC’s objective word counts produced a good level of agreement (Pennebaker et al., 2007). Table 5 shows the LIWC’s semantic categories and examples of semantic items.

Table 5 Semantic categories and lexical examples in the Linguistic Word Count Inquiry (Pennebaker et al., 2007)

SEMANTIC CATEGORIES	Examples of semantic items
Function words	
Pronouns	I, them, itself
Personal pronouns	I, them, her
1st person singular	I, me, mine

1st person plural	We, us, our
2nd person	You, your, thou
3rd person singular	She, her, him
3rd person plural	They, their, they
Impersonal pronouns	It, itself, those
Articles	A, an, the
Common verbs	Walk, went, see
Auxiliary verbs	Am, will, have
Past tense	Went, ran, had
Present tense	Is, does, hear
Future tense	Might, will, gonna
Adverbs	Very, really, quickly
Prepositions	To, with, above
Conjunctions	And, but, whereas
Negations	No, not, never
Quantifiers	Few, many, much
Numbers	Second, thousand
Swear words	Damn, piss, fuck
Psychological Processes	
Social processes	Mate, talk, they, child
Family	Daughter, husband, aunt
Friends	Buddy, friend, neighbour
Humans	Adult, baby, boy
Affective processes	Happy, cried, abandon
Positive emotion	Love, nice, sweet
Negative emotion	Hurt, ugly, nasty
Anxiety	Worried, fearful, nervous
Anger	Hate, kill, annoyed
Sadness	Crying, grief, sad
Cognitive processes	Because, know, ought
Insight	Think, know, consider
Causation	Because, effect, hence
Discrepancy	Should, would, could
Tentative	Maybe, perhaps, guess
Certainty	Absolute, always, never
Inhibition	Block, constrain, stop
Inclusive	And, with, include
Exclusive	But, without, exclude
SEMANTIC CATEGORIES	Examples of semantic items
Psychological Processes	
Perceptual processes	Observing, heard, feeling
See	View, saw, seen
Hear	Ear, listen, hearing
Feel	Feels, hand, touch
Biological processes	Eat, blood, pain
Body	Cheek, hands, spit
Health	Clinic, flu, pill
Sexual	Horny, love, incest

Ingestion	Dish, eat, pizza
Relativity	Area, bend, exit, stop
Motion	Arrive, car, go
Space	Down, in, thin
Time	End, until, season
Personal Concerns	
Work	Job, majors, xerox
Achievement	Earn, hero, win
Leisure	Cook, chat, movie
Home	Apartment, kitchen, family
Money	Audit, cash, owe
Religion	Altar, church, mosque
Death	Bury, coffin, kill

4.2.4 PROTAN content analysis software program

The content analysis dictionaries were applied to the data through the use of the PROTOcol Analyzer (PROTAN) content analysis software program that measures the occurrence of category-based lexical content in a text (Hogenraad et al., 2003). A lemmatisation process reduces inflected words to their base forms. For example, ‘agrees’, ‘agreed’, and ‘agreeing’ are reduced to ‘agree’. Subsequently, the lexical content is then matched against the predefined categories of the computerised content analysis dictionaries (i.e., BTD, RID, LIWC). Due to PROTAN’s technical restrictions, brackets, hyphens and dashes were deleted from the corpus text. The apostrophes used in contractions (i.e., negations and personal pronouns with auxiliary verbs) were substituted with the original grammatical forms, whereas apostrophes that marked a possessive case were deleted.

PROTAN produces a sum token count that shows the overall word count and a type token count that shows how many different lexical items are being used in a text segment. Additionally, PROTAN computes different counts of lexical frequencies. The density count shows how many different lexical items (i.e., word types) match each dictionary category, and the frequency count represents how many lexical items in total (i.e., word tokens) match a dictionary category. However, text segments often differ in their overall text lengths, for which PROTAN offers a density rate and frequency rate that controls for overall running words in a segment. However, a density frequency count is primarily used as a means to neutralise the effects of high

frequencies of repetitive lexical items within a short text segment (Hogenraad, Bestgen, & Durieux, 1992; Wilson, 2008). Given that the studies in this thesis were interested in exploring the total frequencies of lexical items and their statistical relationships to other linguistic variables, a frequency rate was used. The frequency rate was calculated with the following formula:

$$Frequency\ rate = \sqrt{\frac{frequency\ count}{no.\ of\ tokens\ in\ segment}} \times 1000$$

where the ‘frequency count’ represents the overall number of words that match a specific dictionary category, and the ‘no. of tokens in segment’ is the overall word count.

4.3 Semantic Field Annotation

In Chapter 7 (see 7.2), the USAS tagger (UCREL⁵ Semantic Annotation Tool) (Rayson et al., 2004) of the web-based semantic annotation software package WMatrix (Rayson, 2008) measured the semantic content of the narratives of everyday and dream memories in High and Low Barrier personalities. As outlined by Wilson and Rayson (1993), the USAS input is based on data that is first part-of-speech annotated by the CLAWS tagger (Constituent-Likelihood Automatic Word-Tagging System) (Garside & Smith, 1997). The part-of-speech annotated data are then read into the USAS tool, which matches each word and multi-word expression of a text to the pre-defined semantic field tags. The USAS tagger then computes the keyness comparison of the semantic tags between two datasets using a contingency table with the semantic tag frequencies. Log-likelihood (LL) statistics are then calculated for each semantic tag comparison to identify its level of statistical significance. Based on the LL statistics of the semantic tag comparison’s contingency table, the USAS tool ranks the semantic tags. The greater LL values, which indicate greater relative frequency differences compared with another datasets, are ranked higher than lower LL values on the keyness list (Rayson, 2008). The USAS tagger is also able to rank

⁵ UCREL is the acronym for the University Centre for Computer Corpus Research on Language.

the semantic tags that are significantly overused or underused in one dataset compared with the other dataset.

The USAS semantic tagger is assumed to have a categorisation accuracy of 91 to 92 per cent (Rayson et al., 2004). Originally, the USAS was based on McArthur's Longman Lexicon of Contemporary English (1981), a thesaurus-type classification of word sense that categorised 15,000 words into 14 semantic codes, which were further divided into 127 group codes and 2,411 set codes. Over the years, the USAS's tag set has been revised considerably, and its current scheme comprises 21 major discourse fields that are divided into 332 categories, based on approximately 37,000 words and 16,000 multi-word units (Archer, Wilson, & Rayson, 2002; Piao, Rayson, Murdaya, Wilson, & Garside, 2006). Table 6 shows the 21 major semantic fields.

Table 6 USAS 21 semantic fields

A General and abstract terms	B The body and the individual	C Arts and crafts	E Emotion
F	G	H	I

Food and framing	Government and the public domain	Architecture, buildings, houses and the home	Money and commerce in industry
K Entertainment, sports and games	L Life and living things	M Movement, location, travel and transport	N Numbers and measurement
O Substances, materials, objects and equipment	P Education	Q Linguistic actions, states and processes	S Social actions, states and processes
T Time	W The world and our environment	X Psychological actions, states and processes	Y Science and technology
Z Names and grammatical words			

4.4 Conclusion

This chapter outlined the general content analytical methodology employed in this study. It provides an overview of the employed computerised content analysis dictionaries, of which the BTM measures the frequencies of semantic classified as barrier and penetration imagery, the RID calculates the frequencies primordial mental activity and conceptual thought, and the LIWC computes the content of other semantic categories. Efforts have also been made to explain the computerised processes of the PROTAN and WMatrix software programs that calculate the frequencies of semantic categories and semantic fields, which will be used in the empirical studies of the following chapters.

Chapter 5

Exploring the Reliability and Validity of the BTM

5.1 Introduction

The BTM is a computerized content analysis dictionary that gauges the frequencies of barrier and penetration imagery in spoken and written texts. Although the BTM has been employed in some empirical content analysis studies (e.g., Wilson, 2006; 2009; Cariola, 2012a,b), its validity has not been assessed yet. This chapter represents a detailed account of the BTM's reliability and validity assessment. An inter-rater reliability assessment aimed to identify whether the BTM represents a reliable computerised method to measure body boundary imagery when compared to Fisher and Cleveland's manual scoring system. A correlational validity assessment further explored how the frequencies of barrier and penetration imagery are related to the context-dependent level of regressive cognition.

The advancement of computer technology has contributed to the development of computer-assisted text analysis dictionaries, such as the LIWC (Pennebaker, Francis & Booth, 2001) and the RID (Martindale 1975, 1990), that can be applied using sophisticated content analysis software packages (e.g., Protan) (Hogenraad et al., 2003). As outlined in Chapter 3, these dictionaries have been used in both psychological and literary research (see 3.2). The application of these dictionaries has many advantages over manual scoring systems. As noted by various authors (e.g., Krippendorff, 2004; Neuendorf, 2002), the most obvious benefits of computerised scoring are a time-efficient applications and an objective measure for assessing the linguistic content of a large text corpus. In contrast, manual scoring is often a very time consuming task, and scorers must obtain an acceptable proficiency level in the scoring conventions in order to conduct an equally time-consuming content annotation. Manual scoring is also prone to human error, such as omitting lexical items or phrases, whereas computerised methods reliably reproduce the same frequency of semantic content. Computerised content analysis methods, however,

have been criticised for not measuring up to the human ability to detect and understand associative meanings. Manual scorers are often able to identify linguistic meanings that are implied through the textual context. Computerised content analysis systems, on the other hand, often score individual lexical items and phrases without the ability to resolve polysemy and understand the underlying associative meanings at the lexical and phrase levels, because “meaning is often partly determined by context” (Viney, 1983, p. 558). It has, however, been demonstrated that computerised scoring of single lexical items, such as the General Inquirer, produce reliable results when disambiguating polysemous meanings by using classifying algorithms (Kelly & Stone, 1975; Rosenberg, Schnurr & Oxman, 1990).

Evidence has also shown an adequate convergence between human-based context-sensitive ratings and lexically based computerised scoring. For example, Gottschalk and Gleser (1969) had human raters divide a text into phrases that were then coded based on context, themes, syntax and lexical content related to content classifications from psychological dimensions, such as anxiety. Subsequently, a computerised program, called Psychiatric Content Analysis and Diagnosis (PCAD) (Gottschalk and Gleser, 2002), was developed to measure anxiety and other psychiatric dimensions (see Gottschalk, 1995). The Dresdner Angstwörterbuch (DAW) (Berth, 2001; Berth & Suslow, 2001) is a German computerised measure that tags anxiety-related individual words and short phrases such as idioms, and it has been shown to be as a reliable and valid measure compared Gottschalk and Gleser’s manual- and computer-assisted scoring of anxiety-related phrases.

Given the technical differences between manual and computerised scoring schemes, the study of this chapter aimed to assess the reliability and validity of the BTM to determine whether the lexical content of the computer-assisted BTM is equivalent to Fisher and Cleveland’s manual scoring system.

5.2 Study 1: Assessing the Inter-Coder Reliability, Inter-Method Reliability and Correlational Validity of the BTD*

5.2.1 Aim of this study

The purpose of this study is fourfold. The first part of this study aimed to assess the inter-coder reliability of the BTD (Wilson, 2006). The construction of a content analysis coding scheme relies primarily on the researcher's judgment regarding how to code the lexical content of a coding category. The quantitative assessment of the reliability of a coding scheme verifies that "the obtained ratings are not idiosyncratic results of the coders' subjective judgment" (Tinsley & Weiss, 1975, p. 359). A content analysis coding scheme is deemed reliable to the extent that different coders have a shared understanding of the lexical content and classification categories that result in a high coding agreement (Neuendorf, 2002). A high coding agreement indicates that the lexical content of the coding scheme is accurate and consistent with the underlying theoretical construct it aims to measure. Repeated coding of the same text using the same content classification scheme produces consistently replicable results (Rourke et al. 2000; Weber, 1990). Such a high coding agreement is indicative of content validity within the semantic categories "to the degree that it is sensitive to the relevant semantical distinctions in the data being analysed" (Krippendorff, 1980, p. 73). A low inter-coder agreement, on the other hand, might be indicative of ambiguities and weaknesses in the lexical content. It may also indicate other problems, including random inaccuracies related to insufficient training of the coders, cognitive differences among the coders, ambiguities in the coding instructions, or weaknesses in the research methodology based on an insufficient theoretical foundation (Kolbe & Burnett, 1991; Weber, 1990). A sufficient inter-rater agreement based on the manual annotation of a lexical coding scheme would also predict a reliable application of a computerised measurement theoretically based on the same lexical scoring scheme. This computerised scoring would then represent an alternate

* Published article: Cariola, L. A. (2014b). Assessing the inter-method reliability and correlational validity of the Body Type Dictionary (BTD). *Literary and Linguistic Computing*, 29, 171-190.

coding scheme that would result in a high strength of associations with the manual scoring when applied to the same texts (Jackson, 2011 p.69). Therefore, the second purpose of this study explores the inter-method reliability of the BTM in order to verify whether the lexical content of the computer-assisted BTM represents an adequately equivalent measure to Fisher and Cleveland's (1956, 1958) manual scoring system.

Considering the theoretical relationship between body boundary imagery and regressive imagery (see 1.1 and 3.4), the third purpose of this study examines the correlational validity of the BTM in relation to frequencies of primordial thought language as measured using the RID across all of the experimental conditions — i.e. responses to the Rorschach inkblot test and picture response test, narratives of everyday memories and dream memories and dream interpretations. A content analysis classification scheme has correlational validity to the degree to which it correlates with measures of other related variables (Krippendorff, 2004). Correlational validity is based on both convergent and discriminant validity (Campbell & Fiske, 1959). Convergent validity is based on the notion that a content analysis measure should have strong and positive correlation with the same or a theoretically related measure, whereas discriminant validity is based on the notion that a measure should correlate negatively (Krippendorff, 2004, pp. 320-321).

The fourth purpose of this study is to assess the scoring consistency of barrier and penetration imagery. Fisher and Cleveland (1956, 1958) theorised that barrier personality types represent stable personality traits; therefore, it can be assumed that individuals would produce consistent frequencies of barrier imagery in different types of text production.

5.2.1.1 Hypotheses

Based on the assumption that manual coding of barrier and penetration imagery using Fisher and Cleveland's scoring system should produce an acceptable level of inter-rater agreement, the first hypothesis (H1) of this study predicted that coded barrier and penetration imagery using Fisher and Cleveland's scoring system would be positively correlated with BTM computerised measures of the same linguistic

variables, thus indicating inter-method reliability. Given that ASC, such as projective test responses and dream states, have higher levels of primordial cognitive functioning and lower levels of conceptual thought compared to everyday waking consciousness and analytic tasks (see 2.3), the second hypothesis (H2) was based on the assumption that primordial thought language would increase from primordial to conceptual thought functioning across the level of regressive functioning associated to the experimental conditions in the full dataset – i.e., Rorschach responses, responses to the Picture response task, narratives of dream memories, narratives of everyday memories and dream interpretations. The third hypothesis (H3) predicted that barrier and penetration imagery would be positively correlated with primordial thought language across all of the experimental conditions. In relation to the assessment of consistency of computerized scoring, the fourth hypothesis (H4) predicted that computer-assisted frequency measures for the linguistic variables (i.e., barrier, penetration and sum body boundary imagery) would be significantly correlated with the frequency measures for the same linguistic variables across all of the experimental conditions in the full dataset and thus indicating the stability of barrier personality as a stable personality trait as put forward by Fisher and Cleveland (1956, 1958).

5.2.2 Method

5.2.2.1 Participants

The participants in this study were recruited from an e-mail that was randomly sent to a number of academic departments within British Universities, and subsequently the e-mail was distributed to the students. A total of 769 native British English speakers participated in the study, although 243 participants who provided incomplete or irrelevant responses were removed from the sample. In total, the responses of 526 participants (358 females, 168 males) aged between 17-64 years ($M = 25.47$, $SD = 10.63$) were used for further analysis, of which 526 participants provided responses to the Rorschach and picture response task, 488 participants provided a written narrative regarding an everyday memory, 450 participants provided a written narrative regarding a dream memory, and 427 participants provided an interpretation of a recalled dream memory.

The Rorschach responses ($N = 526$) had a total token count of 83,160 words with a mean of 158.10 words per response ($SD = 96.43$) and the picture response task had a total token count of 277,997 words with a mean of 528.51 words per response ($SD = 309.97$). The narratives for everyday memories ($N = 488$) had a total token count of 71,831 words with a mean of 147.19 words per response ($SD = 97.27$), and the narratives of dream memories ($N = 450$) had a total token count of 62,005 words with a mean of 137.79 words per response ($SD = 125.16$). Dream interpretations ($N = 427$) had a total token count of 41,535 words with a mean of 97.27 words per response ($SD = 50.63$).

5.2.2.2 Experimental procedure

The online survey was produced with the web-based software ‘Survey Monkey’ (<http://www.surveymonkey.net>). The study’s online questionnaire included an initial briefing that outlined the purpose of the research project (see Appendix 1). Once participants decided to participate in the experiment, they disclosed their demographic information, including gender, age and native language. Then, participants were asked to write open-ended written responses to three types of experimental conditions, as follows – i.e., two types of projective tests (i.e., Rorschach inkblot test and picture response task), two types of autobiographical memory recall tests (i.e., an everyday memory recall and a dream recall) and a dream interpretation test. Completion of the experiment was not timed, and participants were informed that they could re-enter and complete their survey at any time. At the end of the experiment, participants were thanked and presented with a debriefing that explained the purpose of the study. The study obtained full ethical approval by the Ethics Committee at Lancaster University.

5.2.2.3 Stimuli

Two different types of projective tests were used in this study – i.e., the Rorschach inkblot test (Rorschach, 1921) and a picture response task (as an alternative to the TAT test). The Rorschach inkblot test represents a traditional projective test based on the presentation of ten symmetrically shaped inkblots, of which seven inkblots are black-and-white and the remaining three inkblots are in colour. The picture response task used in this study was based on four photographs. Whereas the Rorschach test is

based on the analysis of participants' freely-associated interpretations of the inkblot percepts, the original TAT test (Morgan & Murray, 1935) typically presents a set of drawings that participants are asked to freely associate with a narrative that follows a classical Aristotelian narrative structure (i.e., definite beginning, middle and ending). For the purpose of this study, four pictures were selected that were related to the implied visual ambiguity of barrier and penetration imagery (see Figures 1-4). The pictures were selected according to their visual body boundary content, which included barrier imagery (e.g., clothing items) and penetration imagery (e.g., bombarded houses). The pictures are intended to elicit freely associated narratives that would provide insight into Fisher and Cleveland's assumption that individuals project their own body boundary awareness onto external perceptions. Based on this assumption, the narratives of High Barrier personality types would reflect an inflated body boundary imagery focus as compared to narratives of Low Barrier personality types. All of the pictures were taken from the online photo management application <http://www.flickr.com>, and were publicised with "no known restrictions on publication".



Figure 1 Picture 1 of picture response task

http://www.flickr.com/photos/powerhouse_museum/3640355880/



Figure 2 Picture 2 of picture response task

<http://www.flickr.com/photos/osucommons/5139906857/>



Figure 3 Picture 3 of picture response task

<http://www.flickr.com/photos/statelibraryofnsw/3294694544/>



Figure 4 Picture 4 of picture response task

<http://www.flickr.com/photos/statelibraryqueensland/4292454948/>

5.2.2.4 Data

The assessment of inter-coder reliability and inter-method reliability was based on 53 participants' open-ended responses to the Rorschach response task. This sub-sample represents a random selection from the full corpus ($N = 526$) and is based on the suggestion that an assessment of inter-coder reliability should ideally include at least 10% of the full sample size (Lacy and Riffle, 1996). The Rorschach responses from the sub-sample ($N = 53$) had a total text length of 8,618 words with a mean of 162.60 words per response ($SD = 107.07$).

5.2.2.5 Manual and computer-assisted coding of body boundary imagery

The words and phrases from the sub-sample ($N = 53$) were manually coded using Fisher and Cleveland's body boundary coding scheme. Two coders, one male native-British English speaker and one male non-native British English speaker with a near-native proficiency, both of whom were undergraduate linguistics students, conducted the manual coding of the barrier and penetration imagery.

Both coders were made familiar with manual text annotation, the theoretical background for Fisher and Cleveland's body boundary concept and the semantic content of the body boundary scoring system prior to this study. The training process for the coders consisted of a briefing regarding the annotation task. Given that body boundary imagery represents a latent semantic variable that requires coders to use their subjective mental schemas, an initial pre-training session was conducted that involved a detailed and comprehensive explanation of the theoretical background of Fisher and Cleveland's (1956, 1958) body boundary concept and its lexical content classification scheme. Both coders were provided with a number of handouts outlining the theoretical basis for and the coding scheme of body boundary imagery to familiarise themselves with the underlying theoretical and semantic contents of barrier and penetration imagery. A training session was scheduled for one week later, which involved an initial open discussion and clarification of the body boundary concept and its semantic classification. Coders were given some text samples to exercise the annotation of body boundary imagery. Once the coders felt familiar with the body

boundary concept and coding scheme, a small sub-sample of the data was used to train the manual annotation of barrier and penetration imagery. The results were compared and discussed to assume an even ‘calibration’ between the coders, and any remaining questions and difficulties were clarified (Neuendorf 2002).

For the coding, the coders were given the sub-sample of (N = 53) Rorschach responses to independently and manually annotate the lexical items and phrases that were classified as barrier and penetration imagery. The researcher and the coders agreed that a 2-week period was required to complete the annotation task. At the beginning of the process, the coders were not informed about the purpose and hypotheses of the study to reduce possible confounding biases that could impact the coding and, in turn, the validity of the results (Neuendorf, 2002, Orne, 1962). To counteract the tendency to comply with demand characteristics from the experimental situation, the coders were told that they should not determine the research hypothesis and the relevance of body boundary imagery within the framework of the research project (Rosenthal & Rosnow, 1984). Once the annotated Rorschach responses were returned to the researcher, both coders were thanked for their participation and debriefed about the experimental purpose of the study.

As described in the method section of Chapter 4 (see 4.2.2.1), due to a slight overlap that exists between the lexical items of the BTM, and the RID, the overlapping lexis was excluded from RID to assess the correlational validity. The BTM, RID and the modified RID were applied to the texts using the PROTAN content analysis software program. The computerized content analysis procedure is identical as described in the method section of Chapter 4 (see 4.4). The raw frequency count was the most suitable for assessing inter-coder agreement given that the frequency count represents an equivalent to the coders’ manual frequency count for barrier and penetration imagery, which facilitates statistical comparisons. The inter-method reliability and correlational validity of the BTM was assessed using a frequency rate (see 4.2.4).

5.2.2.6 Statistical analysis

Statistical calculations were performed with the statistical language and software of “R” (R Development Core Team, 2011) using the `kripp.alpha {irr}` function in the

package (Garmer, Lemon, Fellows, & Singh, 2012). Inter-coder reliability is assessed by calculating the agreement between the coders' annotations of the semantic items (Lombard, Snyder-Duch, & Bracken, 2002). Although a variety of different coefficients have been suggested for assessing inter-coder agreement of nominal data (e.g., Percentage agreement, Cohen's kappa, Scott's pi, Spearman rho, Pearson r, etc.), there is not a single approach that represents the best statistical methodology, because every statistical procedure has strengths and weaknesses (Lombard, Snyder-Duch, & Bracken, 2010). Krippendorff's alpha (Krippendorff, 2004) is the preferred method for measuring inter-coder agreement of linguistic data given that it is not based on nominal measures (i.e., ordinal, interval and ratio measures) (Passonneau, 2006). The linguistic variables in this study were based on an ordinal measure. In particular, the alpha coefficient produces a more reliable agreement measure as compared to other coefficients. This procedure controls for differences in disagreement and expected agreement (Artstein & Poesio, 2007, p.17). The interpretation of Krippendorff's alpha assumes that correlation coefficients above $\alpha = .80$ are acceptable, whereas values below $\alpha = .80$ down to $\alpha = .67$ are difficult to interpret and may only allow researchers to make tentative conclusions (Fleiss, 1981; Neundorff, 2002; Krippendorff, 2004). The alpha coefficient is calculated based on the following formula:

$$\alpha = 1 - \frac{D_o}{D_e}$$

where D_o is the observed disagreement and D_e is the expected disagreement.

This coefficient assumes two points of reference, which, in the absence of observed disagreement, becomes $D_o = 0$ and $\alpha = 1$, thereby indicating perfect agreement. If the presence of observed agreement and disagreement is due to chance and expected disagreements are equal, then $D_o = D_e$ and $\alpha = 0$, thereby indicating an absence of reliability (Krippendorff, 2004).

All statistical calculations assessing the inter-method reliability and concurrent validity of the BTD were performed using the R:commander {Rcmdr} package (Fox,

2005). A Shapiro-Wilk test showed that the majority of the linguistic variables in the sub-sample ($N = 53$) and full dataset ($N = 526$) were not normally distributed. Therefore, a repeated measures Friedman test (Friedman, 1937) with a post-hoc Wilcoxon signed rank test was also applied to the data to compare the frequencies of barrier, penetration and sum body boundary imagery, as well as primordial and conceptual thought language between the experimental conditions. A two-tailed non-parametric Spearman's rank correlation coefficient (Spearman, 1904) was used to assess the alternate-form reliability and scoring consistency of barrier, penetration and sum body boundaries across the experimental conditions, as well as to provide an additional calculation of the inter-rater reliability assessment of body boundary imagery.

5.2.3 Results

5.2.3.1 Inter-coder reliability

A Krippendorff alpha inter-coder analysis indicated an acceptable inter-coder agreement between coder 1 and coder 2 for barrier imagery $\alpha = .85$, penetration imagery $\alpha = .87$ and sum body boundary imagery $\alpha = .90$. An additional series of Spearman rank correlation coefficients also identified positive correlations between coder 1 and coder 2 for barrier imagery, $\rho = .89$, $p < .001$, penetration imagery, $\rho = .87$, $p < .001$, and sum body boundary imagery, $\rho = .91$, $p < .001$. These acceptable inter-coder agreements indicate that both coders had a sufficiently similar understanding and ability to code the sub-sample of Rorschach responses in relation to Fisher and Cleveland's body boundary scoring system. Thus, they provided reliable body boundary coding to compare with the computerised coding of the body boundary imagery. The manually coded Rorschach responses can be used to assess the inter-method reliability between the computerised and manual scoring systems for body boundary imagery.

5.2.3.2 Inter-method reliability

The descriptive statistics demonstrate that coder 1 noted less barrier and sum body boundary imagery, but slightly more penetration imagery than coder 2 (see Table 7).

Both coders showed moderately high correlation coefficients between manually coded barrier, penetration and sum body boundary imagery. Such discrepancies in coding frequencies might be indicative of differences in the subjective interpretation of the body boundary concept, as well as random annotation omissions.

Table 7 Descriptive statistics for manual coding provided by coders 1 and 2, and computer-assisted coding of the body boundary imagery

N = 53	Variable	Mean	SD
Coder 1	Barrier	4.53	1.78
	Penetration	2.92	2.14
	Boundary sum	5.73	1.96
Coder 2	Barrier	4.81	2.31
	Penetration	2.82	2.17
	Boundary sum	5.97	2.32
BTD	Barrier	4.82	1.97
	Penetration	2.43	2.04
	Boundary sum	5.75	2.01

Despite these annotation differences, there was an acceptable strength of association between individual coders and the computerised coding of the body boundary imagery. Coder 1 showed consistently lower correlation coefficients than coder 2; however, the correlation coefficients remained moderately high between the individual manually coded barrier, penetration and sum body boundary imagery and the computerised scoring (see Table 8). The correlation coefficients between the manually and computer-coded lexis were also moderately high when the manually coded variables were averaged (see Table 9). The results indicate that the computerised coding of the body boundary content is an acceptable equivalent to the manual coding of Fisher and Cleveland's scoring system, with the exception that the BTD is better at identifying barrier imagery than penetration imagery, and thus the first hypothesis (H1) was confirmed.

Table 8 Spearman rank correlation coefficients for manual coding provided by coders 1 and 2, and the computerised coding of the body boundary imagery

		Coder 1	Coder 2
Barrier	Coder 1	-	
	Coder 2	.825**	-
	BTD	.822**	.844 **
Penetration	Coder 1	-	
	Coder 2	.835**	-
	BTD	.672**	.743**
Sum boundary	Coder 1	-	
	Coder 2	.893**	-
	BTD	.840**	.864**

Notes: * $p < .05$ level, ** $p < .01$ level

Table 9 Spearman rank correlation coefficients for the manual and computerised coding of the body boundary imagery

		Manual/BTD
Barrier	1. Manual	-
	2. BTD	.871**
Penetration	1. Manual	-
	2. BTD	.735**
Sum boundary	1. Manual	-
	2. BTD	.879**

Notes: * $p < .05$ level, ** $p < .01$ level

5.2.3.3 Correlational validity

Descriptive statistics indicated that barrier, penetration imagery and sum body boundary imagery, as well as primordial thought language, were highest in the Rorschach responses and lowest in dream interpretations, whereas conceptual thought language was highest in dream interpretations and lowest in Rorschach responses (see Tables 10 and 11).

Table 10 Descriptive statistics (i.e., mean, median, standard deviation and interquartile range) for the body boundary imagery across all of the experimental conditions

		Mean	Median	SD	IQR
Rorschach (N = 526)	Barrier	5.22	5.17	1.90	2.22
	Penetration	2.83	3.06	2.07	4.18
	Sum body boundary	6.30	6.30	1.85	2.29
Picture response (N = 526)	Barrier	4.32	4.33	1.15	1.47
	Penetration	1.98	2.12	1.11	1.26
	Sum body boundary	4.89	4.88	1.10	1.44
Everyday (N = 488)	Barrier	2.20	2.43	2.18	3.69
	Penetration	1.43	.00	1.92	2.86
	Sum body boundary	3.11	3.28	2.37	4.81
Dream (N = 450)	Barrier	3.31	3.75	2.45	5.01
	Penetration	1.45	.00	1.95	2.95
	Sum body boundary	4.00	4.41	2.59	3.15
Dream interpretation (N = 427)	Barrier	1.69	.00	2.17	3.63
	Penetration	.74	.00	1.47	.00
	Sum body boundary	2.21	2.37	2.32	4.24

Table 11 Descriptive statistics (i.e., mean, median, standard deviation and interquartile range) for the primordial thought language across all of the experimental conditions

		Mean	Median	SD	IQR
Rorschach (N = 526)	Primordial thought	14.28	14.40	1.82	2.45
	Conceptual thought	5.27	5.49	2.10	2.21
	Primordial modified	13.72	13.86	1.82	2.37
	Conceptual modified	5.26	5.48	2.09	2.18
Picture response (N = 526)	Primordial thought	9.63	9.53	1.73	1.95
	Conceptual thought	8.76	8.81	1.31	1.28
	Primordial modified	9.28	9.24	1.29	1.66
	Conceptual modified	8.71	8.80	.99	1.22
Everyday (N = 488)	Primordial thought	8.49	8.72	2.40	2.86
	Conceptual thought	9.37	9.47	2.03	2.59
	Primordial modified	8.24	8.34	2.30	2.67
	Conceptual modified	9.38	9.45	2.02	2.59
Dream (N = 450)	Primordial thought	10.15	9.95	2.46	3.20
	Conceptual thought	8.63	8.66	1.89	2.34
	Primordial modified	9.73	9.66	2.21	3.05
	Conceptual modified	8.62	8.66	1.87	2.36
Dream interpretation (N = 427)	Primordial thought	8.28	8.45	2.46	2.83
	Conceptual thought	10.03	10.00	1.91	2.34
	Primordial modified	8.10	8.37	2.48	2.90
	Conceptual modified	10.04	10.00	1.92	2.29

A Friedman test indicated a significant difference in the frequencies of body boundary and primordial thought language across the response types ($p < .001$). A post-hoc analysis with a paired-sample Wilcoxon signed-rank test identified the directions of the significant differences for primordial thought language and body boundary imagery across the experimental conditions (see Tables 12 and 13). The results indicated that barrier, penetration and sum body boundary imagery were significantly greater in the Rorschach responses and the picture response task when compared to narratives of everyday memories, narratives of dream memories and dream interpretations. However, there were no significant differences between narratives of everyday memories and narratives of dream memories for penetration imagery.

Similar to barrier and penetration imagery, the results indicated that primordial thought language was significantly greater in the Rorschach responses and the picture response task when compared to narratives of everyday memories, narratives of

dream memories and dream interpretations. Primordial thought language did not differ substantially between narratives of everyday memories and dream interpretations. Conceptual thought language showed the reverse trend when compared to primordial thought language. Thus, dream interpretations and narratives of everyday memories had significantly higher frequencies of conceptual thought language when compared to the Rorschach responses, the picture response task and narratives of dream memories, but there were no significant differences for this factor between the picture response task and narratives of dream memories. Although narratives of dream memories had a slightly higher yet insignificant frequency of primordial thought language when compared to the picture response task, the increase in primordial thought language across conditions (i.e., responses to the Rorschach inkblot test and picture response task, narratives of everyday memories and dream memories, and dream interpretations), and thus supports the second hypothesis (H2). Similar to the proportional increase in primordial thought language and barrier and penetration imagery from the Rorschach responses to dream interpretations, conceptual thought language was most evident in dream interpretations and lowest in the Rorschach responses. This finding suggests a proportional decrease in conceptual thought language in the expected direction of primordial to conceptual thought.

Table 12 Wilcoxon signed-rank test results for body boundary imagery between the experimental conditions

	Comparison	Sig.
Barrier imagery	Rorschach > Picture response > Dreams > Everyday > Dream interpretation	**
Penetration imagery	Rorschach > Picture response > [Dreams = Everyday] > Dream interpretation	**
Sum boundary imagery	Rorschach > Picture response > Dreams > Everyday > Dream interpretation	**

Notes: * $p < .05$ level, ** $p < .01$ level

Table 13 Wilcoxon signed-rank test results for primordial and conceptual thought language between the experimental conditions

	Comparison	Sig.
Primordial thought	Rorschach > Dreams > Picture response > [Everyday = Dream interpretation]	**
Conceptual thought	Dream interpretation > Everyday > [Dreams = Picture response] > Rorschach	**

Notes: * $p < .05$ level, ** $p < .01$ level

A series of Spearman rank correlation coefficients indicated a consistent positive correlation between penetration imagery and primordial thought language across all of the experimental conditions (except for Rorschach responses and dream interpretations) (see Table 14). This finding reflects a convergent validity regarding both barrier imagery and penetration imagery with primordial thought language that is consistent with the third hypothesis (H3). The results demonstrated that barrier imagery was positively correlated with primordial thought language across all of the conditions (except for Rorschach responses). Conversely, there was a consistent negative correlation between barrier imagery and conceptual thought language across all of the experimental conditions, which implies that barrier imagery represents a theoretical concept measuring a different construct than conceptual thought language. Similarly, penetration imagery was negatively correlated with conceptual thought language in the majority of experimental conditions (except for Rorschach responses and dream interpretations), which indicates discriminant validity. The results also showed that barrier and penetration imagery were not significantly correlated (except for narratives of dream memories).

Table 14 Spearman rank correlation coefficients for body boundary imagery and primordial and conceptual thought language between the experimental conditions

Experimental condition	Linguistic variable	1.	2.	3.
Rorschach (N = 526)	1. Primordial thought	-		
	2. Conceptual thought	-.351**	-	
	3. Barrier imagery	.011	-.202**	-
	4. Penetration imagery	-.003	-.010	-.014
Picture response task (N = 526)	1. Primordial thought	-		
	2. Conceptual thought	-.188**	-	
	3. Barrier imagery	.258**	-.164**	-
	4. Penetration imagery	.243**	-.191**	.016
Everyday narratives (N = 488)	1. Primordial thought	-		
	2. Conceptual thought	-.434**	-	
	3. Barrier imagery	.251**	-.241**	-
	4. Penetration imagery	.203**	-.119**	.058
Dream narratives (N = 450)	1. Primordial thought	-		
	2. Conceptual thought	-.337**	-	
	3. Barrier imagery	.104*	-.226**	-
	4. Penetration imagery	.232**	-.202**	.185**
Dream interpretations (N = 427)	1. Primordial thought	-		
	2. Conceptual thought	-.186**	-	
	3. Barrier imagery	.115*	-.110*	-
	4. Penetration imagery	.009	-.012	.073

Notes: * $p < .05$ level, ** $p < .01$ level

5.2.3.4 Consistency of scoring

A Spearman rank correlation coefficient was applied to the data to assess the scoring consistency of the barrier, penetration and sum body boundary imagery across the experimental conditions (see Table 15). The results showed that barrier imagery in the Rorschach responses displayed a modest positive correlation with the picture response task, and barrier imagery also correlated positively between narratives of dream memories and dream interpretations. A positive correlation between Rorschach responses and the picture response task is also in accordance with other studies that identified correlations between Rorschach and TAT responses (e.g. Ackerman, Hilsenroth, Clemence, Weatherhill, & Fowler, 2001). Conversely, penetration imagery modestly correlated in the narratives for dream memories and dream interpretations only. Sum body boundary showed a modest positive correlation between the Rorschach responses and the picture response task, the picture response

task and narratives of everyday memories, and sum body boundary also correlated between dream narratives and dream interpretations. The effect sizes in all correlations were low. The effect size, however, was higher in the positive correlation for barrier and sum body boundary imagery between dream memories and dream interpretations which might be related to the thematic similarity between both text types, for which most typically the dream interpretation would evaluate the recalled dream memory. Inconsistent with the fourth hypothesis (H4), barrier, penetration and sum body boundary imagery reflect only a weak consistency of scoring across the experimental conditions.

Table 15 Spearman rank correlation coefficients of computer-assisted coding body boundary imagery between experimental conditions

		1.	2.	3.	4.
Barrier	1. Rorschach (BTD) (N = 526)	-			
	2. Picture response task (BTD) (N = 526)	.140**	-		
	3. Everyday (BTD) (N = 450)	.053	.069	-	
	4. Dream (BTD) (N = 488)	.090	.018	-.009	-
	5. Dream interpretation (N = 427)	-.034	.057	-.045	.343**
Penetration	1. Rorschach (BTD) (N = 526)	-			
	2. Picture response task (BTD) (N = 526)	.011	-		
	3. Everyday (BTD) (N = 488)	.054	.073		
	4. Dream (BTD) (N = 450)	-.003	.005	.038	-
	5. Dream interpretation (N = 427)	.014	-.012	-.026	.322**
Sum boundary	1. Rorschach (BTD) (N = 526)	-			
	2. Picture response task (BTD) (N = 526)	.159**	-		
	3. Everyday (BTD) (N = 450)	.022	.107*	-	
	4. Dream (BTD) (N = 488)	.065	-.052	-.008	-
	5. Dream interpretation (N = 427)	.001	.061	.028	.310**

Notes: * $p < .05$ level, ** $p < .01$ level

5.2.4 Discussion and conclusion

The results of this study showed that the BTD represents a reliable computer-assisted content analysis scheme for quantitatively measuring the frequencies of barrier and penetration imagery in a text. Both coders produced sufficient inter-coder agreement with regard to the manually coded barrier and penetration words and phrases. The first experiment yielded a sufficient inter-method reliability between the manually coded

Rorschach responses and the computerised coding based on the same dataset. In this sense, the BTM represents a reliable computerised measurement of lexical content classified as barrier and penetration imagery with regard to Fisher and Cleveland's original manual scoring system.

Despite the acceptable level of inter-coder agreement for barrier, penetration and sum body boundary imagery between the coders, the first experiment indicated that one coder had a lower correlation coefficient compared to the second scorer regarding the coding of penetration imagery. However, the averaged manually coded variables indicated an acceptable level of reliability for barrier, penetration and sum body boundary imagery. In particular, the discrepancy in the correlation coefficients between the manual and computerised coding schemes highlights the inherent difficulties associated with manual coding, including differences in the subjective understanding of the content, insufficient experience and low proficiency levels of the coder. Manual coding is typically time-consuming and coders may experience concentration problems and fatigue when annotating a larger text. This may increase the propensity for human error in the scoring process, such as omitting lexical items or phrases. In contrast, the mechanical process of computerised coding has a greater consistency and thus results in a reliable measurement of the lexical content. Although manual coding provides better validity due to its context-sensitive coding of words and phrases compared to the computerised scoring (Deffner, 1986), the moderate correlation coefficients between the manual and computerised coding systems for barrier and penetration imagery indicate that the BTM's tagging of context-independent singular lexical items produced a reliable measurement of body boundary imagery when compared to the context-dependent coding of phrases and lexis based on the linguistic sensitivity of the human coders.

The second part of this study explored the correlational validity of the BTM in relation to primordial thought language as measured by the RID. As expected, the results indicated that primordial thought language increased in the expected direction of primordial thought to conceptual thought across all of the experimental conditions, whereas conceptual thought reflected the reverse trend in relation to primordial regression. Similarly, barrier and penetration imagery showed an increase in the same direction as primordial to conceptual thought functioning. The correlation matrix also

showed that barrier and penetration imagery were moderately positively correlated with primordial thought and negatively correlated with conceptual thought language across the majority of the experimental conditions.

These results lend empirical support to the Freudian idea that primordial thought cognition predominates in freely associated thinking and dreaming states (Buck & Barden, 1971; Freud, 1900; Stigler & Pokorny, 2001) and provide empirical evidence that typical everyday awareness and conscious reasoning may reflect a distinctively different mode of cognitive thought when compared to dreaming states and freely associated thinking, which are involved in the interpretations of projective stimuli. Drawing on a psychodynamic theoretical framework, it can be argued that individuals project their unconscious material onto the free-associative stimulus, such as the inkblot, and onto the so-called dream screen in dreaming states (Lewin, 1946). This focus on the internal projective screen might facilitate the projection of one's own body boundaries onto the depicted projective test stimuli. Simultaneously, heightened primordial cognitive functioning lowers defence mechanisms, which then increases the flow of unconscious thought material entering conscious awareness (Freud, 1900). The lowering of defence mechanisms and greater permeability between unconscious and conscious thought awareness might be reflected in an increased frequency of penetration imagery. Barrier imagery also proportionally increases in the direction of primordial to conceptual thought functioning, which suggests that barrier imagery functions as an compensatory function to differentiate the self from the other, as hypothesised by Wilson (2009, p. 13) and thus serving to provide a dichotomous classification, such as differentiating between "real" and "imaginary" or "internal" and "external". Considering that both barrier and penetration imagery might be moderated by regressive cognition levels, it may be that barrier and penetration imagery increase simultaneously but that this increase is not only related to an individual's need to compensate for a weak body boundary as a personality trait; it may be that the individual's weakening of body barriers is also associated with context-dependent regressive cognitive functioning (Newbold, 1984; Haward, 1987). This context-dependent variable related to body boundary awareness has been demonstrated in previous body boundary experiments. For example, the administration of psychotropic drugs, which typically increase primordial functioning (Martindale & Fisher, 1977; West, Martindale, Hines, & Roth, 1983), increased the

frequency of barrier imagery (McGlothlin et al., 1967), whereas hypnosis increased the frequency of penetration imagery (Freundlich & Fisher, 1974).

Empirical evidence suggests that regressive cognition levels may be related to affective and individual differences. For example, results from a cognitive categorisation test measuring attributional and relational similarities that mapped onto primordial and conceptual thought principles showed a simultaneous increase in primordial process categorisation and levels of anxiety in anxious individuals (Brakel & Shevrin, 2005; Kleinman & Russ, 1988), which confirms the Freudian psychoanalytic assumption that overwhelming anxiety leads to an increase in primordial process activity as a regressive defence mechanism (Freud, 1926). One of the most consistent findings suggests that creative individuals, particularly men, have controlled access to primordial cognition than less creative individuals (Kris, 1952; Holt, 2002). A positive relation between creativity and thought suppression (Merkelbach, Horselenberg & Muris, 2001) has been identified that might be related to dissociations regarding trauma experiences (Van den Hout et al., 1996; Muris & Merckelbach, 1997). Hence, the interaction of individual differences and differences in life histories may represent a complex dynamic system that interacts with the overall cognitive and affective organisation of text production to a similar extent as it interacts with the encoding and recall processes of autobiographical memories.

Thus, the results of this study provide empirical evidence that body boundary awareness may be also dependent on the level of dedifferentiation as opposed to being a stable personality trait, as suggested by Fisher and Cleveland. Although Rorschach responses had the highest levels of primordial regressions, primordial thought language did not show a positive correlation with penetration imagery or barrier imagery. This lack of a correlation may be related to the relatively short text sizes of the Rorschach responses, which limit the occurrence of thematically diverse vocabulary items, when compared to the other experimental conditions that resulted in greater text sizes. The dream interpretations had the lowest level of regressive cognition, such that low frequencies of primordial thought language and penetration imagery may have caused the lack of a correlation between these variables.

The third part of this study assessed of consistency of scoring. The lack of correlations between barrier, penetration and sum body boundary imagery scores across the experimental conditions suggests a lack of scoring consistency at first glance. Thus, the concept of Low and High Barrier personality types as stable personality traits that are reflected through the consistent use of barrier imagery frequencies across all of the linguistic conditions appears to be challenged by the results of this study. The low scoring consistency of barrier and penetration imagery may be due to the relatively restricted lexical content of the body boundary categories, which are not always present in the content of a visual task interpretation (i.e., Rorschach response and picture response task) or in recalled autobiographical memory (i.e., narratives of everyday memories and dream memories). In fact, body boundary imagery represents only a small proportion of the overall words used in Rorschach responses (3.49%), in the picture response task (2.36%) in narratives of everyday memories (2.70%), in narratives of dream memories (4.54%), and in dream interpretations (1.03%). The restrictiveness of the body boundary lexical content was also evident in the narratives for dreams and in the dream interpretations. Although both text types are assumed to share at least some of the thematic dream, the correlation coefficient effect size was only moderate, which provides some indication that lexical content might be context dependent (Schnurr, Rosenberg, Oxman, & Tucker, 1986).

Overall, the results of this study confirmed the research hypotheses and indicated that the BTM provides an acceptable level of inter-method reliability in relation to Fisher and Cleveland's manual scoring system. Moreover, body boundary imagery indicated correlational validity with primordial thought language.

Chapter 6

Assessing the Semantic Content in Narratives of Everyday and Dream Memories of High and Low Barrier Personalities

6.1 Introduction

Chapter 5 demonstrated the validity and reliability of the BTM. It also identified a relationship between body boundary awareness and primordial thought functioning by measuring body boundary imagery and regressive language in projective responses and autobiographical memories. These findings provided some supporting evidence for the Freudian theory that assumes the body, unconscious thought, and language to be interrelated (Freud, 1923). In particular, the study indicated that the frequencies of barrier and penetration imagery vary depending on the level of regressive cognitive functioning associated with the language production task. This finding also challenged Fisher and Cleveland's (1958) assumption that body boundary finiteness would represent a stable personality trait. For example, responses to projective tests showed higher levels of regressive cognitive functioning and therefore indicated higher frequencies of barrier and penetration imagery in comparison to dream recall. Given these findings, this chapter aims to assess the semantic content used by individuals with Low and High Barrier personalities when reporting autobiographical memories that differ in their level of cognitive regressive functioning (Freud, 1900) — i.e., everyday and dream memories.

6.1.2 Remembering the Past

Autobiographical writings are personal interpretative representations of how “individuals construct past events and actions in personal narratives to claim identities and construct lives” (Riessman, 1993, p. 2). The sharing of autobiographical memories is of social importance, as it allows an individual to establish interpersonal

closeness and intimacy with others. When telling autobiographical narratives, it is possible to share one's values and beliefs of how one interprets past events and how these experiences may have influenced one's decisions and perhaps explain one's present and future existence. Barclay (1994, pp. 66-67, see also Bluck, Alea, Habermas, & Rubin, 2005) holds that the recall of autobiographical memories has adaptive functions: to maintain a coherent self-schema, as well as to regulate feelings and thoughts, and to explore the self in all its imaginative facets.

The recall of autobiographical memories can also be perceived as a reflection of identity formation (McAdams, 1993, 2001) by giving some meaning and causality to our existence and explaining how various past events and facts may have contributed to the formation of the "self" and the way in which we currently think, feel and behave (Conway, 1990; Conway & Rubin, 1993). Empirical research proposes that autobiographical memories have three broad functions of identity formation: 1) a 'directive function', which assumes the self-concept to be related to attitudes, problem-solving skills (Bluck & Alea, 2002; Pillemer, 1998, 2003) and future predictions based on past learning experiences (Bluck & Glück, 2004; McCabe, Capron, & Peterson, 1991; Pratt, Arnold, Norris, & Filyer, 1999) as temporal references; 2) a 'self-function', which assumes self-continuity (Bluck & Alea, 2005; Bluck & Levine, 1998) and affective self-regulation (Pasupathi, 2003; Wilson & Ross, 2003); and (3) a 'social self-function', which assumes the social sharing of memories as an intimate, social-bonding and empathic process (Nelson, 1993; Pillemer & White, 1989).

In addition, autobiographical reasoning presupposes the presence of an operating coherent self-concept that engages with its environment and encodes visual, auditory and kinaesthetic sense impressions that are reflected in coherent memory representations of personal narratives that relate to sociocultural conventions (McLean & Fournier, 2008; Nelson & Fivush, 2004). A coherent self may act as a goal-oriented motivational force to retrieve specific memories that reflect and maintain our current self-image (Conway, 2005). The emergence of a coherent self-concept is assumed to coincide with the development of language, symbolic play and social cognition (Howe, Courage, & Edison, 2003), as well as the development of internally coherent memory representations of complex plot structures in personal

narratives (Lehnert, 1981; McLean & Fournier, 2008). Typically, the ability to narrate a temporally and thematically coherent and emotionally meaningful personal narrative is gradually acquired by children within a social context, such as the process of family communication and speech instruction. In this sense, healthy adults have an inherent sense of narrative coherence and story grammar (Applebee, 1978; Mandler & Johnson 1977). it reflects a socio-psychological shift from an intentional focus to an interpretative focus (Haden, Haine, & Fivush, 1997; Habermas & Bluck, 2000; McKeough, & Genereux 2003).

6.1.2 Constructing the past

Episodic memories relate to the acquisition and retention of past personal events that comprise explicit contextual information, including time, space and emotions (Tulving, 1972, 1983, 1985). Autobiographical memories represent a type of episodic memory to the extent that they contain an individual's life experiences and semantic content related to everyday general knowledge (Williams, Conway & Cohen, 2008).

Cognitive psychological research has identified that the retrieval and construction of autobiographical memories involves complex, dynamic and interactive cognitive processes. Retrieval of personal experiences is not reducible purely to quasi-computerised internal cognitive processes; they are also phenomenological experiences embodied in the form of emotions, movements and sense impressions (Merleau-Ponty, 1945). Cognitive psychology assumes a constructivist model of autobiographical memory based on the assumption that autobiographical memory structures relate to hierarchical organisations of thematic and temporal knowledge (Conway 1997; Conway & Bekerian, 1987). Autobiographical memories are not stored as invariables story schemas, but exist as cue-sensitive activation patterns that retrieve temporary thematic and temporally coherent mental representations regulated through working-memory processes (Anderson & Conway, 1993). Based on this theoretical model (Conway 1992; Conway & Bekerian, 1987) autobiographical knowledge structures can exist at three hierarchical levels:

First, 'general lifetime period knowledge' represents the top level of the autobiographical hierarchy and thus provides a content frame of the event, e.g., "*last*

year”. It represents spatio-temporal knowledge, in relation to the place and duration of an event, and thematic knowledge, such as knowledge of significant others, actions, activities and goals that are generalised to specific events and retrieved from memory in relation to specific lifetime-associated knowledge cues. Lifetime periods may overlap, and may also be thematically structured in relation to specific life domains, such as family, work, and so on (Conway, 1992; Linton, 1986). Second, ‘general and extended event knowledge’ represents the second hierarchical level, e.g., “*travelling to Spain*”. It shares the common feature of implying summaries of extended events that represent less explicit content details and may also encompass a series of related or repeated memory events (Barsalou, 1988; Conway & Bekerian, 1987; Robinson, 1992). Third, ‘event specific knowledge’ (ESK) assumes the lowest level of autobiographical knowledge, e.g., “*eating out in a restaurant in Spain*”, and represents a more detailed information in relation to the lifetime period and general knowledge event, activating sensory-perceptual cues (Conway & Rubin, 1993), such as odour (Bonfigli, Kodilja, & Zanutini, 2002). These sensory-perceptual clues facilitate an increase in retrieved details even in old age (Maylor, Carter, Hallett, 2002), and allow differentiation between imagined and experienced events (Johnson, Foley, Suengas, & Rye, 1988).

In addition, it has been proposed that general lifetime periods and general event knowledge belong to a general knowledge base. It has been found that ESK is retrieved analogically, indicating that it may be part of a different memory system (Anderson & Conway, 1993). Conway and Pleydell-Pearce (2000) identified a three-stage neurological activation pattern of autobiographical memories, which confirms the model of the three hierarchical levels of autobiographical knowledge structures. The results indicated that the frontal lobe areas were activated in complex autobiographical retrieval processes, whereas cortical activation shifted to the anterior temporal lobe during the retrieval of thematic and temporal knowledge. In contrast, the retrieval of event-specific details and the maintenance of mental memory representation were significantly associated with increased activity in the occipital and posterior temporal areas, indicating involvements in effortful retrieval processes (Conway & Turk, 1999; Botzung et al., 2008).

Due to the selective bias of memory retrieval, autobiographical memories are encoded and then continuously reconstructed and reinterpreted in relation to current operating goal-structures and intentional states. These include wishes, beliefs and needs of the working self, stored knowledge structures, and previous experiences as a means to maintain a coherent self-image (Conway & Pleydell-Pearce, 2000). Autobiographical memories may be then perceived as phenomenological “transient interpretations or comprehensions of an experience rather than a veridical record of the external attributes of an experience” (Conway, 1997, p. 75). The notion of a self may suggest an additional subjective self-awareness dimension, referred to as the conceptual self, in relation to an abstract knowledge structure representing personal beliefs, attitudes and values, reflecting possible selves that inform the individual of the immediate social environment. From an evolutionary perspective, the retrieval of previous experiences related to specific situations allows adaptation and survival (Conway, 2005). The goal structure of the working memory is assumed to be moderated through personal relevance, such as exceptionally positive experiences (Singer & Salovey, 1993), power and intimacy motivations (McAdams, 1982; Woike et al., 1999), implicit and explicit motives (Woike, 1995), cognitive dissonance theory (Festinger, 1957), and discrepancy theory (Higgins, 1987) to maintain a functional and coherent self that is consistent with a current goal-attainment. Memories may also be distorted and accessing cues may be reinterpreted in order to preserve the goal-attainment structure of the working memory. Conway and Playdell-Pearce (2000) explained this in relation to the psychoanalytic concept of defence mechanisms as a means to ward off feelings of shame and guilt.

6.1.3 *Recalling dream memories*

Similarly to everyday autobiographical memories, dream memories represent a type of episodic memories. Memory fragments of dreams, however, are not necessarily complete memories, but they “mimic the flow of waking perceptual experiences [...] semantic information, undergo binding over time such as illusions of a first person perspective and a sense of continuous present are maintained” (Nielsen & Stenstrom 2005, p. 1287). In particular, Johnson and colleagues (Johnson, Kahan, & Raye, 1984) suggested that dream recall is based on the cognitive processes that underpin reality monitoring. The concept of reality monitoring (Johnson & Raye, 1981) determines to

what extent memory traces are generated from internal or external sources. Empirical research extensively explored reality monitoring to identify whether and how participants differentiated between internally and externally generated memories (Johnson et al., 1988; Suengas & Johnson, 1981; Johnson, Hashtroudi, & Lindsay, 1993). Experimental results consistently showed that reality monitoring represents a dynamic two-stage decision process in which imagined (internal) events, and real (external) events inform each other, because internal and externally derived memories differ in their phenomenological features. In the first stage, an individual would indicate that the characteristics of a memory trace would be typically consistent with the classes of internal or external derived memory cues. The second process relies on the presence of supporting contextual memories and general knowledge related to the memory event. In particular, it has been consistently demonstrated that externally sourced memories include more perceptual details, such as details related to colours and sounds, as well as contextual information, such as time and place. On the other hand, internally sourced memories include more features associated with cognitive processes, such as references related to thinking and remembering. Given the cognitive processes of reality monitoring, it might be reasonable to propose that autobiographical memories might then essentially consist of factual memory traces.

Dream recall is based on memory traces that are deficient in conscious cognitive processes. It is difficult to assess these processes in relation to typically external or internal classes of memory sources, and therefore, we rely predominantly on the embedding of supporting memories and general knowledge. The notion of memory accuracy of dreams has been explored in experimental research. For example, it has shown that they can be encoded, recalled and reported similar to waking experiences (Horton, 2011a). It has also been shown that rehearsal of dreams reduced significantly the detail of dream memories, and that the rehearsal might reinforce their phenomenological experience to the extent that the previously rehearsed dream memories would be recalled rather than the original dream experiences (Horton, 2011b). This discrepancy between actual and imaginary representation of the past has been commonly described as autobiographical and narrative truth (Spence, 1982), for which “the former refers to events that actually occurred in the rememberer’s past, whereas the latter assumes that the described events may or may not have actually happened in the (historical) past but are believed to be true (in the psychological

sense) by the rememberer” (Payne & Blackwell, 1998, p. 32). Thus, the narrative accounts of personal experiences are typically somewhat inaccurate and transformed by the actual act of writing about one’s personal experiences (Ronai, 1992). Conversely, errors in autobiographical memories might not necessarily represent a grave problem within a psychodynamic framework. Instead, they are perceived as evolving meaning constructs that align with new insights and developments (Galatzer-Levy, 1997). The “recalled” memories may then be perceived as a phenomenological reality that is congruent with the here-and-now of relating to the self and the world. Therefore, the linguistic expression of one’s personal experiences might represent a shift away from the exploration of the objectively accurate representation of internal sensations, feelings and thoughts towards a subjective and person-centred focus that emphasises an individual’s psychological facets and cognitive processes. These psychological facets include values, beliefs and needs. The cognitive processes involved are associated with retrospective interpretations as well as memory errors and distortions that are essentially unique to an individual’s point of view about his or her existence and past life (Olney, 1981). Consistent with Freudian psychoanalytic theory (1923), an author-centred perception positions the self at the junction between the personal experience and the semiotic system of language, for which “an autobiography...more than a history of the past...intentionally, or not, a monument of the self as it is becoming, a metaphor of the self at the summary moment of composition” (Olney, 1981, p. 35).

6.2 Study 2: Assessing the Semantic Content as Measured using the LIWC in Autobiographical Memories of High and Low Barrier Personalities^{*}

6.2.1 Aim of this study

This study aims to explore the stability of the semantic content used by individuals with Low and High Barrier personalities when reporting autobiographical memories that vary in their associated degrees of regressive cognitive functioning (Freud, 1900), i.e., everyday and dream memories. The presence of similar semantic content across both autobiographical memory types would suggest that Barrier personalities represent a dynamic personality trait that is moderated by the level of primordial cognitive functioning, which, however, does not affect the stability of individuals' semantic expressions. Although this study primarily explores whether individuals with Low and High Barrier personalities verbalise their autobiographical memories differently, it may also be possible to relate this study's findings to existing cognitive theories evident in dream research, which are however not explored and discussed within the framework of this study.

Consistent with Freudian theory (1900), previous research identified an increase of primordial thought language in the elaboration of dream imagery (Stigler & Pokorny, 2001). Dream research has also associated an increase of regressive cognitive functioning in dream states with neurological processes. Thus, Solms (1997) put forward that a deactivation of frontal regions would reduce cognitive inhibition resulting in the perception of unrelated and irrational sensory images, whereas an activation of the temporal regions relates to an increased processing of sensory perceptions and emotions. These neurological differences between waking and dream states have also been associated with an inhibition of self-reflective processes in dream states (Hobson, 1988; Hobson & McCarley, 1977; see also Kahan, LaBerge,

^{*} Published article: Cariola, L. A. (2014). Lexical tendencies in High and Low Barrier personalities in narratives of everyday and dream memories. *Imagination, Cognition and Personality*, 34, 133-161.

Levitan & Zimbaro, 1997; Kahan & LaBerge, 2011). Despite such a cognitive discontinuity between waking and dream cognition, it has also been proposed that dreams would reflect aspect of individuals' everyday life, such as everyday concerns, life experiences and emotions (Domhoff, 2003; Schredl, 2003; see also Hobson & Schredl, 2011). Although this study focuses on the semantic content of dream narratives, evidence for semantic similarity in the narratives of everyday and dream memories between the Low and High Barrier personalities would then also confirm the continuity between waking and dream states.

6.2.1.1 Hypotheses

Based on the assumption that the self in primordial mental activity is not perceived as psychically differentiated from others and that High Barrier personalities meanwhile show an increased openness to others and the external environment, the first hypothesis (H1) is that High Barrier personalities will use higher frequencies of first-person plural pronouns, as well as inclusion words, thus indicates an increased group-focus. Conversely, Low Barrier personalities reflect, consistent with conceptual thought, heightened self-differentiation and thus the second hypothesis (H2) predicts that Low Barrier personalities will use higher frequencies of first-person singular pronouns thus indicates an increased self-focus. By relating Low Barrier personalities to conceptual thought, which is characterised by coordinated mental activity, emotional awareness, and integrated thought, the third hypothesis (H3) predicts that Low Barrier personalities will use lower frequencies of verb forms (i.e., common verbs, auxiliary verbs, present tense, past tense and future tense), as well as references related to cognitive processes (such as insight, causation, discrepancy, tentativeness, certainty, inhibition and exclusion words) and affective processes (such as positive emotions and negative emotions).

In contrast, High Barrier personalities are characterised by heightened skin sensitivity and receptivity to environmental sensory stimuli, and primordial thought makes an increased use of somatosensory sensations, so the fourth hypothesis (H4) predicts that High Barrier personalities will use higher frequencies of perceptual process (such as seeing, hearing and feeling) and references related to relativity (such as space and motion) and prepositions, as well as bodily processes (such as body, health, sexual

and ingestion). Given the outgoing nature of High Barrier personalities, the fifth hypothesis (H5) predicts that High Barrier personalities will use higher frequencies related to personal concerns (i.e., work, achievement, leisure, home, money, religion and death). Given that an increase of penetration imagery has been associated with primordial cognitive functioning, and an specific with an increased awareness of the interior of the body, as demonstrated in Study 1 (see 5.2) (see also Wilson, 2009), the sixth hypothesis (H6) predicts that in High and Low Barrier personalities, penetration imagery will be correlated positively with semantic content associated with primordial thought and bodily references (such as body, health, sexual and ingestion) in both Barrier types and in both autobiographical memory types.

6.2.2 Method

6.2.2.1 Data, objective measures and content analysis

As discussed in Chapter 4 (see 4.2.3), the BTD's barrier imagery category and penetration imagery category, as well as the LIWC (Pennebaker et al., 2007) were applied to the narratives of everyday memories (N = 488) and narratives of dream memories (N = 450) using the PROTAN content analysis software (Hogenraad et al., 2003).

6.2.2.2 Statistical analysis

Initial descriptive statistics regarding the frequencies of barrier imagery revealed that the narratives for everyday memories had a frequency rate mean of 2.20 and a frequency rate median of 2.43 (SD = 2.18), whereas those for dream memories had a frequency rate mean of 3.29 and a frequency rate median of 3.75 (SD = 2.45). Consistent with the methodology discussed by Fisher and Cleveland (1958), the median value for the barrier imagery frequency for each memory type was used to divide the narratives of everyday and dream memories into two equivalent parts. Barrier scores less than the median values were categorised as 'Low Barrier personalities', whereas Barrier scores greater than the median values were categorised as 'High Barrier personalities'.

After the data were divided into two equal parts, it was revealed that the Low Barrier personalities ($N = 244$) had a frequency rate mean of .34 ($SD = .75$) and that the High Barrier personalities ($N = 244$) had a mean of 4.10 ($SD = 1.31$) for the Barrier frequencies in the narratives of everyday memories, whereas the Low Barrier personalities ($N = 225$) had a mean of 1.30 ($SD = 1.55$) and the High Barrier personalities ($N = 225$) had a mean of 5.29 ($SD = 1.24$) for the Barrier frequencies in the narratives of dream memories (see Tables 22 and 23).

An independent samples Mann-Whitney U test was used to compare the median frequencies of the semantic variables between High and Low Barrier personalities in the narratives of everyday memories and narratives of dream memories. Subsequently, a Spearman rank correlation coefficients (Spearman, 1904) was used to assess the strengths of association between penetration imagery and the semantic variables of High and Low Barrier personalities in narratives of everyday memories and narratives of dream memories.

6.2.3 Results

6.2.3.1 Assessing the semantic content in Barrier personalities

The descriptive statistics of barrier imagery of narratives of everyday memories and narratives of dream memories in High and Low Barrier personalities can be see in the Tables 16 and 17.

Table 16 Descriptive statistics (mean, median, standard deviation and interquartile range) of semantic content of High and Low Barrier personalities in narratives of everyday memories

Narratives of Everyday Memories (N = 488)								
<i>Linguistic variable</i>	Low Barrier (N = 244)				High Barrier (N = 244)			
	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>IQR</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>IQR</i>
Body boundaries								
Barrier imagery	.34	.00	.75	.00	4.10	3.69	1.31	1.72
Penetration imagery	1.34	.00	1.83	2.63	1.53	.00	2.00	3.04
Function words	25.09	25.13	1.03	1.34	24.70	24.81	1.04	1.31
Pronouns	13.52	13.67	1.89	2.26	12.83	13.00	1.78	2.42
Personal pronouns	11.36	11.51	2.30	2.68	10.97	11.06	1.94	2.35
1 st singular pronouns	8.76	9.13	2.59	2.82	8.15	8.38	2.33	3.34
3 rd singular pronouns	4.09	4.18	3.57	7.16	3.77	3.88	3.30	6.47
2 nd pronouns	.78	.00	1.49	.00	.92	.00	1.72	1.55
1 st plural pronouns	2.27	.00	2.66	4.30	2.85	2.68	2.90	5.08
3 rd plural pronouns	1.42	.00	2.14	3.11	1.61	.00	1.96	3.26
Impersonal pronouns	6.92	7.14	2.06	2.39	6.37	6.48	1.95	2.62
Articles	7.57	7.47	1.93	2.47	8.36	8.34	1.76	2.63
Verbs	12.42	12.62	1.91	2.00	11.78	11.99	1.69	2.09
Auxiliary verbs	9.61	9.74	1.73	1.91	8.86	8.88	1.71	2.03
Past tense verbs	9.32	9.59	2.25	2.61	9.46	9.71	2.00	2.50
Present tense verbs	9.84	10.00	2.08	2.11	9.47	9.49	1.61	2.09
Future tense verbs	.92	.00	1.46	2.19	.60	.00	1.23	.00
Adverb	6.79	7.07	2.03	2.11	6.54	6.78	2.13	2.19
Conjunctions	8.68	8.86	1.73	1.76	8.83	8.79	1.51	1.67
Prepositions	11.18	11.30	1.69	1.99	11.71	11.72	1.46	1.98
Negations	3.73	4.23	2.27	2.64	3.21	3.46	2.01	2.17
Quantifiers	5.02	5.24	2.22	2.18	4.75	4.96	1.95	2.45
Numbers	2.35	2.63	2.30	3.85	2.54	2.85	1.93	3.98
Swear	.28	.00	.86	.00	.26	.00	.87	.00
Psychological processes								
Social	9.69	10.14	3.25	3.85	9.22	9.64	2.92	3.50
Family	1.17	.00	2.18	2.26	1.38	.00	2.08	2.88
Friends	1.61	.00	2.19	3.21	1.40	.00	1.80	3.01
Humans	1.60	.00	2.06	3.04	1.66	.00	1.89	3.16
Affect	7.69	7.73	1.87	1.87	6.99	7.07	1.93	2.40
Positive emotions	5.83	6.06	2.13	2.27	5.32	5.46	2.83	3.07
Negative emotions	4.10	4.32	2.49	2.83	3.67	3.94	2.11	2.61
Anxiety	1.33	.00	1.81	2.82	1.34	.00	1.75	2.85
Anger	1.49	.00	1.94	3.09	1.11	.00	1.64	2.63
Sadness	1.14	.00	1.74	2.41	1.22	.00	1.63	2.68
Cognitive processes	12.99	13.10	1.93	2.30	12.44	12.51	1.81	2.09
Insight	4.69	5.23	2.38	2.36	3.74	3.93	2.14	2.42
Causation	3.08	3.63	2.05	4.49	2.88	3.14	1.84	2.15
Discrepancy	2.22	2.80	1.98	3.68	1.83	2.33	1.81	3.27

Narratives of Everyday Memories (N = 488)								
<i>Linguistic variable</i>	Low Barrier (N = 244)				High Barrier (N = 244)			
	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>IQR</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>IQR</i>
Tentativeness	3.91	4.32	2.30	2.70	3.40	3.68	1.96	2.03
Certainty	3.82	4.26	2.36	2.90	3.24	3.60	2.17	3.16
Inhibition	1.07	.00	1.62	2.45	1.40	.00	1.72	2.91
Inclusion	7.68	7.84	2.55	3.14	8.42	8.34	1.99	2.62
Exclusion	3.83	4.27	2.23	2.47	3.53	3.83	1.87	2.00
Perceptual	4.30	4.73	2.19	2.66	4.81	4.83	2.14	2.51
Seeing	1.58	.00	1.91	3.04	2.64	2.94	2.15	4.11
Hearing	1.90	2.09	1.99	3.57	1.67	.00	2.07	3.13
Feeling	2.11	2.50	2.00	3.41	2.06	2.47	1.84	3.41
Biological process	3.56	3.53	2.61	3.45	4.26	4.54	2.60	2.98
Body	1.38	.00	1.81	2.86	2.16	.00	2.08	3.28
Health	1.22	.00	2.08	2.42	1.37	.00	2.14	2.65
Sexual	.79	.00	1.49	.00	.80	.00	1.44	1.59
Ingestion	1.20	.00	2.09	2.40	1.74	.00	2.08	3.28
Personal concerns								
Work	2.91	2.95	2.55	4.71	2.72	2.95	2.21	4.15
Achievement	2.83	3.05	2.25	4.61	2.57	2.86	2.01	3.98
Leisure	2.56	2.63	2.59	4.28	3.23	3.34	2.55	4.91
Home	.90	.00	1.59	2.08	2.23	2.56	2.04	3.79
Money	.99	.00	1.70	2.28	1.34	.00	1.87	2.78
Religion	.41	.00	1.12	.00	.54	.00	1.21	.00
Death	.36	.00	1.14	.00	.39	.00	1.23	.00
Relativity	11.83	11.82	2.20	2.89	13.00	13.21	1.83	2.33
Motion	4.04	4.32	2.30	2.81	5.45	5.48	1.85	2.22
Space	7.11	7.20	2.19	2.61	8.10	8.25	1.76	2.22
Time	7.91	8.00	2.09	2.46	8.00	8.07	2.95	2.49

Table 17 Descriptive statistics (mean, median, standard deviation and interquartile range) of semantic content of High and Low Barrier personalities in narratives of dream memories

Narratives of Dream Memories (N = 450)								
<i>Linguistic variable</i>	Low Barrier (N = 225)				High Barrier (N = 225)			
	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>IQR</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>IQR</i>
Body boundaries								
Barrier imagery	1.30	.00	1.55	3.04	5.29	5.00	1.24	1.76
Penetration imagery	1.09	.00	1.86	2.60	1.81	1.71	1.98	3.32
Function words	26.23	25.26	1.00	1.15	24.95	25.02	.86	1.15
Pronouns	13.79	13.80	1.65	2.13	12.90	12.91	1.52	1.89
Personal pronouns	11.61	11.69	1.74	2.17	10.96	10.95	1.70	2.08
1st singular pronouns	9.79	10.13	2.09	2.11	8.95	9.02	2.96	2.16
3rd singular pronouns	2.67	.00	3.22	5.19	3.07	2.92	3.00	5.24
2nd pronouns	.36	.00	1.24	.00	.39	.00	1.10	.00
1st plural pronouns	1.94	.00	2.71	3.76	2.25	1.98	2.52	4.16
3rd plural pronouns	1.60	.00	2.19	3.12	1.83	.00	2.13	3.62
Impersonal pronouns	7.14	7.30	2.07	2.23	6.37	6.59	2.28	2.31
Articles	7.83	7.94	2.09	2.16	8.80	8.94	1.71	2.18
Verbs	12.17	12.29	1.63	1.91	11.70	11.60	1.52	1.96
Auxiliary verbs	9.73	9.76	1.83	2.29	9.26	9.26	1.52	2.10
Past tense verbs	9.44	10.10	2.78	2.46	9.33	10.06	2.83	2.45
Present tense verbs	9.04	9.19	2.01	1.99	8.71	8.85	1.93	1.94
Future tense verbs	.51	.00	1.34	.00	.30	.00	.88	.00
Adverb	6.25	6.33	1.94	2.15	6.07	6.12	1.93	2.22
Conjunctions	8.83	8.86	1.74	2.01	9.00	8.89	1.39	1.88
Prepositions	11.47	11.66	1.77	1.99	11.78	11.77	1.44	1.97
Negations	3.62	4.05	2.27	2.60	3.28	3.68	2.00	2.18
Quantifiers	4.39	4.54	2.26	2.67	4.41	4.60	2.07	2.37
Numbers	1.80	.00	1.93	3.47	1.86	2.08	1.90	3.19
Swear	.11	.00	.62	.00	.08	.00	.46	.00
Psychological processes								
Social	8.45	8.77	3.21	3.66	8.41	8.73	2.93	3.29
Family	.94	.00	1.77	.00	1.47	.00	2.09	3.19
Friends	1.77	.00	2.23	3.59	1.37	.00	1.93	2.91
Humans	2.06	2.17	2.26	3.66	1.94	2.05	2.07	3.58
Affect	6.52	6.79	2.20	2.55	5.79	6.07	2.89	2.10
Positive emotions	4.58	4.97	2.60	3.06	3.98	4.33	2.49	2.77
Negative emotions	3.74	4.05	2.52	3.11	3.39	3.70	2.20	2.74
Anxiety	1.50	.00	1.95	3.04	1.45	.00	1.79	2.88
Anger	1.28	.00	1.94	3.00	1.21	.00	1.68	2.72
Sadness	.91	.00	1.60	1.95	.82	.00	1.43	1.87
Cognitive processes	12.86	12.87	1.89	2.29	12.72	12.80	1.83	2.13
Insight	4.66	5.00	2.45	2.69	4.19	4.60	2.26	2.52
Causation	2.64	3.07	2.17	4.12	2.61	2.94	1.95	4.00
Discrepancy	1.62	.00	1.93	3.32	1.50	.00	1.76	3.04

Narratives of Dream Memories (N = 450)								
<i>Linguistic variable</i>	Low Barrier (N = 225)				High Barrier (N = 225)			
	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>IQR</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>IQR</i>
Tentativeness	4.07	4.34	2.34	2.98	3.70	4.04	2.33	2.58
Certainty	3.19	3.43	2.41	4.96	3.14	3.41	2.04	2.36
Inhibition	1.23	.00	1.76	2.84	1.44	.00	1.81	2.83
Inclusion	7.95	8.13	2.31	2.76	8.58	8.45	1.92	2.27
Exclusion	3.94	4.41	2.49	2.76	3.97	4.13	2.05	2.16
Perceptual	4.17	4.54	2.50	2.69	4.30	4.60	2.36	2.80
Seeing	2.22	2.39	2.33	3.87	2.63	3.02	2.21	4.17
Hearing	1.25	.00	1.80	2.89	1.34	.00	1.81	2.80
Feeling	1.63	.00	2.04	3.15	1.70	.00	1.88	3.16
Biological process	3.51	3.95	2.81	5.47	3.75	3.94	2.38	2.94
Body	2.24	2.58	2.30	4.10	2.41	2.74	2.18	3.93
Health	.62	.00	1.37	.00	.70	.00	1.42	.00
Sexual	.77	.00	1.81	.00	.53	.00	1.30	.00
Ingestion	.90	.00	1.83	.00	1.31	.00	2.01	2.77
Personal concerns								
Work	2.30	2.03	2.67	4.03	2.25	2.34	2.38	3.79
Achievement	2.33	2.64	2.24	4.02	2.28	2.57	2.10	3.77
Leisure	4.54	4.78	2.50	2.97	4.29	4.12	2.13	2.61
Home	1.41	.00	2.08	3.07	2.96	3.11	2.70	5.13
Money	.76	.00	1.68	.00	.81	.00	1.64	.00
Religion	.23	.00	.89	.00	.27	.00	.89	.00
Death	.53	.00	1.36	.00	.47	.00	.121	.00
Relativity	12.09	12.19	2.22	2.76	12.99	13.66	1.94	2.40
Motion	4.39	4.76	2.21	2.71	5.19	5.33	2.13	2.00
Space	8.31	8.33	2.15	2.59	9.35	9.39	1.79	2.41
Time	6.95	7.29	2.22	2.13	6.72	6.85	1.81	2.48

The results of a series of Mann-Whitney U tests comparing the semantic content as measured using the LIWC between High and Low Barrier personalities in narratives of everyday memories and narratives of dream memories can be seen in the Tables 18 and 19.

Table 18 Mann-Whitney U test results of semantic content of High and Low Barrier personalities in narratives of everyday memories

Narratives of Everyday Memories (N = 488)		
<i>Linguistic variable</i>	<i>Difference</i>	<i>Sig.</i>
Barrier imagery	LB < HB	**
Penetration imagery	LB < HB	ns
Function words	LB > HB	**
Pronouns	LB > HB	**
Personal pronouns	LB > HB	**
1 st singular pronouns	LB > HB	**
3 rd singular pronouns	LB > HB	ns
2 nd pronouns	LB < HB	ns
1 st plural pronouns	LB < HB	*
3 rd plural pronouns	LB < HB	ns
Impersonal pronouns	LB > HB	**
Articles	LB < HB	**
Verbs	LB > HB	**
Auxiliary verbs	LB > HB	**
Past tense verbs	LB < HB	ns
Present tense verbs	LB > HB	**
Future tense verbs	LB > HB	**
Adverb	LB > HB	ns
Conjunctions	LB < HB	ns
Prepositions	LB < HB	**
Negations	LB > HB	**
Quantifiers	LB > HB	ns
Numbers	LB < HB	ns
Swear	LB > HB	ns
Psychological processes		
Social	LB > HB	*
Family	LB < HB	ns
Friends	LB > HB	ns
Humans	LB < HB	ns
Affect	LB > HB	**
Positive emotions	LB > HB	*
Negative emotions	LB > HB	*
Anxiety	LB < HB	ns
Anger	LB > HB	*
Sadness	LB < HB	ns
Cognitive processes	LB > HB	**
Insight	LB > HB	**
Causation	LB > HB	*
Discrepancy	LB > HB	*
Tentativeness	LB > HB	**
Certainty	LB > HB	*
Inhibition	LB < HB	*
Inclusion	LB < HB	**

Narratives of Everyday Memories (N = 488)		
<i>Linguistic variable</i>	<i>Difference</i>	<i>Sig.</i>
Exclusion	LB > HB	*
Perceptual	LB < HB	ns
Seeing	LB < HB	**
Hearing	LB > HB	ns
Feeling	LB > HB	ns
Biological process	LB < HB	**
Body	LB < HB	**
Health	LB < HB	ns
Sexual	LB < HB	ns
Ingestion	LB < HB	**
Personal concerns		
Work	LB > HB	ns
Achievement	LB > HB	ns
Leisure	LB < HB	**
Home	LB < HB	**
Money	LB < HB	*
Religion	LB < HB	ns
Death	LB < HB	ns
Relativity	LB < HB	**
Motion	LB < HB	**
Space	LB < HB	**
Time	LB < HB	ns

Notes: LB = Low Barrier, HB = High Barrier, * $p < .05$ level, ** $p < .01$

Table 19 Mann-Whitney U test results of semantic content of High and Low Barrier personalities in narratives of dream memories

Narratives of Dream Memories (N = 450)		
<i>Linguistic variable</i>	<i>Difference</i>	<i>Sig.</i>
Barrier imagery	LB < HB	**
Penetration imagery	LB < HB	**
Function words	LB > HB	**
Pronouns	LB > HB	**
Personal pronouns	LB > HB	**
1st singular pronouns	LB > HB	**
2nd pronouns	LB < HB	ns
3rd singular pronouns	LB < HB	ns
1st plural pronouns	LB < HB	ns
3rd plural pronouns	LB < HB	ns
Impersonal pronouns	LB > HB	**
Articles	LB < HB	**
Verbs	LB > HB	**
Auxiliary verbs	LB > HB	**
Past tense verbs	LB > HB	ns
Present tense verbs	LB > HB	**
Future tense verbs	LB > HB	ns
Adverb	LB > HB	ns
Conjunctions	LB < HB	ns
Prepositions	LB < HB	ns
Negations	LB > HB	*
Quantifiers	LB < HB	ns
Numbers	LB < HB	ns
Swear	LB > HB	ns
Psychological processes		
Social	LB > HB	ns
Family	LB < HB	**
Friends	LB > HB	*
Humans	LB > HB	ns
Affect	LB > HB	**
Positive emotions	LB > HB	**
Negative emotions	LB > HB	ns
Anxiety	LB > HB	ns
Anger	LB > HB	ns
Sadness	LB < HB	ns
Cognitive processes	LB > HB	ns
Insight	LB > HB	*
Causation	LB > HB	ns
Discrepancy	LB > HB	ns
Tentativeness	LB > HB	ns
Certainty	LB > HB	ns
Inhibition	LB < HB	ns
Inclusion	LB < HB	**

Narratives of Dream Memories (N = 450)		
<i>Linguistic variable</i>	<i>Difference</i>	<i>Sig.</i>
Exclusion	LB < HB	ns
Perceptual	LB < HB	ns
Seeing	LB < HB	*
Hearing	LB < HB	ns
Feeling	LB < HB	ns
Biological process	LB < HB	ns
Body	LB > HB	ns
Health	LB < HB	ns
Sexual	LB > HB	ns
Ingestion	LB < HB	**
Personal concerns		
Work	LB > HB	ns
Achievement	LB > HB	ns
Leisure	LB > HB	ns
Home	LB < HB	**
Money	LB < HB	ns
Religion	LB < HB	ns
Death	LB > HB	ns
Relativity	LB < HB	**
Motion	LB < HB	**
Space	LB < HB	**
Time	LB > HB	*

Notes: LB = Low Barrier, HB = High Barrier, * $p < .05$ level, ** $p < .01$

Although High Barrier personalities used higher frequencies of inclusion words (e.g., and, with, include), High Barrier personalities also used more first-person plural pronouns (e.g., we, us, our) that emphasise group membership in narratives of everyday memories only and thus the first hypothesis (H1) was partly maintained. The following everyday narrative reflects a shift from a self-focus to increased use of first person plural pronouns to establish group membership: “*I went to stay in a tower in the middle of the countryside recently. It was something I had been wanting to do for years, because you can see this tower from miles away. The views from the roof were amazing, especially at sunset and sunrise. It was lovely to pretend we lived there, just for a couple of days. In the early morning we saw a little fox cub outside, and I am sure there must have been lots of other wildlife we did not see. We will definitely do it again*”. Such collective group references might be related to a lack of self-other differentiation and over-inclusive thinking associated with primordial mental activity, compared with an increased self-focus associated with conceptual

thought, in which the self exists as a differentiated entity relative to others (Robbins, 2011). In contrast, Low Barrier personalities used more first-person singular pronouns (e.g., I, me, mine) in both memory types reflecting a greater emphasis on the self, compared to a heightened group focus, and therefore, the second hypothesis (H2) was maintained. Such an increased self-focus compared to High Barrier personalities can be seen in the following dream memory: *“I am running a 10k race in a couple of months. Recently I had a dream about this event and the dream involved me struggling through the race. I ran the race previously, however I had been doing lots of training for it that time, and so it had not been a problem. In my dream I was worried about not being able to complete the race as I was running with other friends who were naturally fitter than me”*.

Partly consistent with the third hypothesis (H3), Low Barrier personalities also used higher frequencies of common verbs and auxiliary verbs (e.g., am, will, have) with a focus on present tense, and, relative to narratives of everyday memories, there was a marked future-directed concern. An inflation of cognitive processes in narratives of everyday memories, including insight words (e.g., think, know, consider), demonstrates heightened levels of self-reflection, as well as an increased ability to make causal inferences that are communicated in the narratives, e.g., *“Well I went to the interview and to be honest from the start I was not feeling (Insight) great, it did not last long and I did not seem (Insight) to be getting the kind of responses I wanted, I do not think (Insight) I was what they were looking for and to be honest after walking through their offices I am glad honestly, it was like watching drones I just cannot see me in that kind of environment “*.

Increases in certainty (e.g., always, never), causation (e.g., because, effect, hence), negations (e.g., no, not, never), exclusion (e.g., but, without, exclude), tentativeness (e.g., maybe, perhaps, guess), as well as an increase in discrepancy (e.g., should, would, could), in Low Barrier personalities might indicate greater accuracy and thus factual truthfulness relative to the narratives' content, which can be seen in the following everyday memory: *“We took a girl we hardly (Tentativeness) knew round to friends for dinner. She turned out to be extremely (Certainty) strange and told some (Tentativeness) fantastic stories about her life and family. We had a funny and entertaining evening. Later my husband, who is a doctor, told me that she had a*

psychological condition and nothing (Exclusion) she had told us was true (Certainty). I felt bad that I had so enjoyed the evening and that it was somehow (Tentativeness) wrong to have found what she told me so entertaining, like I was judging her disability somehow (Tentativeness). I could (Discrepancy) not (Exclusion) quite (Tentativeness) analyse how (Causation) I felt about the whole situation and wished (Discrepancy) that he had not (Exclusion) told me in a way“.

High Barrier personalities, in contrast, used higher frequencies of inclusion words (e.g., and, with, include) in both narrative types and thus might reflect a tendency to recall over-generalised memories that focus on continuous temporal movement, as well as emphasising the separateness and of object boundaries, e.g., “[...] We (first-person plural) were taking water out of the sea bucketful by bucketful, and (Inclusion) then at the other end of the production line we (first-person plural) were putting it back into (Inclusion) the sea further up the coast. Someone came (Motion) to tell me off for missing a meeting, but I told them I could not come (Motion), I was part of the production line and (Inclusion) an aeroplane had crashed so we (first-person plural) had to help”. High Barrier personalities also used higher frequencies of inhibition words (e.g., block, constrain, stop) in narratives of everyday memories, indicating the blockage of movement, e.g., “...I tried to get them to stop kicking him as they had cornered and surrounded him. He had fallen to the ground and was curled into a ball to try and protect his face [...]”.

That Low Barrier personalities used higher frequencies of affect words (e.g., happy, cried, abandoned), including increased frequencies of positive emotions (e.g., love, nice, sweet) in both memory types, and negative emotion words (e.g., hurt, ugly, nasty) in narratives of everyday memories might indicate the ability to identify, tolerate, and communicate emotional states that are not acknowledged by individuals with High Barrier personalities. The difference between memories using affective processes between Barrier personalities can be seen in the following Low Barrier personalities’ everyday memory — “I cannot remember much of it, but my boyfriend was shouting at me and accusing me of cheating (Negative emotion) on him. I was very upset (Negative emotion), but he just kept shouting. His friend (Positive emotion) was also accusing me and saying that he had seen texts that I had sent to guys and replies that I had from guys and I knew I had not done anything. Then my friends

(Positive emotion) were they are shouting at me demanding that I tell the truth (Positive emotion)”.

In line with Fisher and Cleveland’s (1958) finding that neurotic individuals would show a slight inflation of barrier imagery compared to normal controls, psychodynamic-informed empirical research has associated the inability to activate emotion schemas with a neurotic personality organisation that reflects an inhibition in evaluating externally and internally sourced insights, thus resulting in turning away from symbolic reality and dissociation from emotional awareness (Bucci, 1997). Such a distancing from the self and symbolic reality might be further indicated in an inflation of first person plural pronouns reflecting emotional distancing (Pennebaker & Lay, 2002), as well as the use of articles (e.g., a, an, the) in High Barrier personalities, reflecting the tendency to objectify as a characteristic of the concreteness in primordial mental activity (Bucci, 1997; Mergenthaler & Bucci, 1993; Loewald, 1978), e.g., *“I drove to Pateley Bridge to have a meeting with Charlie about the possibility of doing some workshops together. I left a lot of time for the drive because I was a bit concerned that the car might not make it because of the exhaust, but it was OK. We had a nice lunch and as usual talked (mostly me!) about interesting ideas in the area of our common interest, then we went for a walk and carried on talking [...]*”. Conversely, an inflation of first-person singular pronouns and negative emotion words, as indicated in Low Barrier personalities’ recall of everyday memories, has also been associated with neuroticism (Pennebaker, Mehl, & Niederhoffer, 2003).

As predicted by the fourth hypothesis (H4), High Barrier personalities also used more seeing references (e.g., view, saw, seen) and bodily references (e.g., hand, eat, spit) in narratives of everyday memories, as well as references to ingestion (e.g., dish, eat, pizza) in both memory types. Relativity references (e.g., area, exit, stop), such as spatial words (e.g., down, in, thin) and motion words (e.g., arrive, car, go), were also inflated in both memory types, as well as prepositions (e.g., to, with, above) with regard to narratives of the everyday memories of High Barrier personalities, reflecting the psychosomatic characteristic of primordial functioning motivated by somatosensory impressions (Robbins, 2011), e.g., *“I had this crazy dream last night – at (Space) first I did not think I was dreaming. I came (Motion) downstairs to get a*

drink (Ingestion), because I had woken up (Space) in (Space) the middle (Space) of the night thirsty (Body/Ingestion), to find the kitchen (Ingestion) light (Perceptual process) was on (Space). My mum was stood there in (Space) the kitchen (Ingestion), stuffing her face (Body) with coffee (Ingestion) and walnut cake. I mean, it is just not the sort of thing she would do. She looked (Seeing) up (Space) at (Space) me with a really guilty expression, and then went (Motion) back to the cake. I just got my drink (Ingestion) and went (Motion) back to bed.”

In addition, the semantic tendencies of Low Barrier personalities reflect similarities to Pennebaker and King's (1999) factor dimensions of 'immediacy' and 'making distinctions'. 'Immediacy' is based on high frequencies of first-person singular pronouns and discrepancy words and low frequencies of articles and words of more than six letters. 'Immediacy' is also correlated negatively with the need for achievement, which might be related to the tendency of High Barrier personalities to be more goal- and success-oriented, compared to Low Barrier personalities. 'Making distinctions' is based on high frequencies of discrepancy words, exclusion words, tentativeness, and negations but low frequencies of inclusion. 'Making distinctions' is also negatively correlated with the need for affiliation. Taking into consideration that the semantic content of Low Barrier personalities reflects levels of 'immediacy' and 'making distinctions', the accuracy of the narratives in Low Barrier personalities might be perceived as more factually reliable than the narratives of High Barrier personalities.

High Barrier personalities also used higher frequencies related to personal concerns, such as home references (e.g., apartment, kitchen, house), which could indicate the shielding qualities of house-related features. High Barrier personalities also used higher frequencies of references related to leisure activities (e.g., cook, chat, movie), indicative of the out-going nature associated with High Barrier personalities, and in relation to narratives of everyday memories, an increased use of references related to money (e.g., audit, cash, owe), which might suggest a materialistic focus and thus the fifth hypothesis (H5) was partly confirmed. An increase in leisure activities in High Barrier personalities also refers to recreational activities, which include creative expression, commonly associated with primordial processes, which can be seen in the following excerpt from an everyday memory: *“I went to a concert (Leisure) in*

London and my two friends from uni and we queued for 7 hours outside so we could get to the front. We turned up outside Brixton Academy in the morning and there was already a huge queue, which was very annoying! Loads of foreign people who had travelled and were following the band (Leisure) kept trying to push in so we complained and a really nice security guard let us straight in at the front of the queue [...]“.

6.2.3.2 Correlations between penetration imagery and semantic content in Barrier personalities

A series of Spearman rank correlation coefficients explored the strengths of associations between penetration imagery and the semantic content in narratives of everyday and narratives of dream memories (see Table 20). Consistent with the sixth hypothesis (H6), the results demonstrated that penetration imagery correlated positively but inconsistently with some semantic variables associated with primordial mental activity, such as affective processes, in the narratives of everyday memories and narratives of dream memories of High and Low Barrier personalities. Penetration imagery also correlated positively with bodily references, such as health and ingestion, in the autobiographical memories of both Barrier personality types, which confirms Fisher and Cleveland's (1958) evidence that relates penetration imagery to the internal bodily concerns.

Table 20 Spearman rank correlation coefficients of penetration imagery and semantic content in High and Low Barrier personalities' narratives of everyday and dream memories

	Narratives of Everyday Memories		Narratives of Dream Memories	
<i>Linguistic variables</i>	<i>Low Barrier</i>	<i>High Barrier</i>	<i>Low Barrier</i>	<i>High Barrier</i>
Function words				
1st singular pronouns	-.162**	-.036	-.117	.016
1st plural pronouns	.195**	-.113	.094	.030
Verbs	-.100	-.110	-.161*	-.082
Auxiliary verbs	-.069	-.003	-.187**	-.115
Future tense	-.014	-.030	-.152*	.013
Adverb	.005	-.136*	-.069	-.085
Articles	.052	.138*	.182**	.103
Psychological processes				
Affect	-.194**	-.258**	-.211**	-.028
Positive emotions	-.140**	-.306**	-.081	-.052
Negative emotions	-.043	.050	-.131*	-.039
Cognitive processes	.033	-.145**	-.052	-.006
Certainty	.013	-.131*	-.077	.079
Discrepancy	-.020	-.010	-.132*	.051
Inclusion	.097	-.037	.179**	.059
Inhibition	.027	.056	.146*	-.016
Insight	-.034	-.140**	-.195**	-.010
Perceptual processes	-.024	.083	.107	.248**
Hearing	.031	-.009	.085	.181**
Feeling	-.014	.047	.089	.199**
Relativity	.082	-.072	.232**	.048
Motion	.140*	-.009	.168*	.074
Space	.124	.113	.206**	.108
Personal concerns				
Home	.210**	.050	.211**	.271**
Money	.109	-.072	-.062	-.140*
Body	.188**	.448**	.187**	.256**
Health	.153*	.293**	.198**	.056
Ingestion	.343**	.156*	.263**	.169*
Death	-.020	.078	.197**	.089

Notes: * $p < .05$ level, ** $p < .01$ level

6.2.4 Discussion and conclusion

In summary, the results of this study largely supported the research hypotheses. Autobiographical memories of High Barrier personalities contained a high degree of semantic content associated with primordial mental activity, such as group-related references, biological and somatosensory processes, and spatial references. Low Barrier personalities, however, showed an increase of semantic content related to conceptual thought, such as self-references and references related to affective and cognitive processes. Overall, the semantic content of Barrier personalities remained relatively similar across memory types, confirming Pennebaker and King's (1999) conclusion that lexical choices remain relatively stable across time and writing topics. The semantic stability of Barrier personalities in both autobiographical memory types confirms the continuity hypothesis, which proposes that waking and dreaming experiences have similar semantic content given that dreaming reflects activities, concerns, thoughts and emotions that are related to waking states (Domhoff, 2003; Hobson & Schredl, 2011; Schredl, 2003).

Given the high degree of semantic content associated with primordial mental activity in High Barrier personalities, it appears that body boundary awareness may, to some extent, represent the embodiment of the Freudian modes of cognitive functioning in relation to the external bodily functions of barrier imagery (Fisher & Cleveland, 1956, 1958). Most importantly, the results of this study provide insight into the role of body definiteness in the context of language production and the function of body boundary awareness as a personality trait. Although the results of Study 1 (see 5.2) suggested that body boundary awareness varies according to the degree of regressive cognitive functioning associated with the language production situation, the results of this study showed that the memories of High and Low Barrier personalities contain similar semantic content across memory types that vary in their levels of regressive cognitive functioning. Such a stable expression of semantic choices may show then that Barrier personality represents a dynamic personality trait that interacts with the situational level of regressive cognitive functioning but also indicating that regressive cognitive functioning is intertwined differently with everyday waking consciousness in both High and Low Barrier personalities.

That the semantic content of Barrier personalities remains relatively stable across memory types might also be due to the comparable cognitive processes engaged in the linguistic construction of these memories. Under this assumption, episodic memory traces of both memory types are retrieved from the knowledge base, followed by analogous transformations of the meaning units into structural event sequences (Conway & Bekerian, 1987; Conway & Pleydall-Pearce, 2000; Conway, 2009; Johnson, 1992; Nielsen & Stenstrom, 2005; Tulving, 1985; 2002). These sequences would take the form of linguistically coherent narrative forms associated with the genre of autobiographical memories (Fairclough, 1992; Levelt, 1999; Rubin, 2006; Wodak, 1981). In this sense, Barrier personality might also influence the interpretation of the personal experience as well as moderating the encoding and retrieval of information. For example, a Low Barrier personality might emphasize the self and one's emotions to gain an interpretative insight into the personal experience, but not necessarily mentioning other people, whereas a High Barrier personality would focus on other persons, motion processes and achievements to the exclusion of other features, such as emotional insight.

The semantic content of Low and High Barrier personalities' narratives of dream memories did not differ significantly in regards to semantic items measuring cognitive processes. Such a lack of differences in cognitive processes might be due to similar memory-specific phenomenological experiences caused by the heightened primordial mental activity of dream states, whereas in everyday experiences conceptual thought is more prevalent at the point of encoding. Given the neurological differences associated with regressive cognitive functioning that vary between waking and dream states (Solms, 1997), narratives of dream memories typically describe the development of non-causal event chains in which unrelated images and concepts freely interact on the internal dream screen, whereas event transactions in waking experiences are perceived as more logical (Kahan & LaBerge, 2011).

A dreamer's agency is also suspended when in a dreaming state, whereas narratives of everyday experiences provide implicit insights and plausible justifications that link event chains and position the narrator as an active and evaluative agent. This view is fairly consistent with dream research showing that higher-order cognitive processes, including reflective awareness, are suspended during dreaming due to

neuropsychological differences in REM sleep compared to waking states (Hobson, 1988; Hobson & McCarley, 1977). However, Kahan (1994) showed that narratives of dreams often do not mention reflective awareness and other meta-cognitive processes; therefore, dream self-reports may provide better insight into dreamers' processes. Kahan and LaBerge (2011) also provided evidence that self-reflective functioning does not differ between waking and dream states.

Furthermore, regarding the function of body boundary awareness as a personality trait, the increased presence of inclusion words, such as first person plural pronouns, reflects a group-orientated focus in High Barrier personalities but an increased self-focus in Low Barrier personalities. Because the body boundary defines the existence of the "other" by categorically differentiating the self from the non-self, the body boundary might function as a contact membrane that facilitates social contact and categorises the self and other individuals into social groups. Social categorisation and social comparison typically accentuate the perception of similarities and differences among group members (Tajfel, 1959; Tajfel & Wilkes, 1963). The accentuation of similarities and differences is also typically associated with primordial mental activities in which the process of splitting involves gross exaggeration of difference (Rayner, 1995). Such a categorical classification based on group membership has been for example identified in political discourse (Cariola, 2013). High Barrier political parties reflect a tendency to construct blame discourses that polarize between a "good" self and a culpable "bad" other social group, whereas Lower Barrier political parties employ solution-focused discourses that recognize conflicting interests between social groups. Group categorization also emphasises a social identity characterised by a reduced subjective experience of the self due to the context-dependent external group focus that limits the expression of salient self-images (Hoggs & Abrams, 1988). This decreased expression of one's subjective experiences might explain the reduced presence of affective content and cognitive evaluation in the narratives of High Barrier personalities.

Low Barrier personalities, in contrast, emphasise personal identity, focusing on subjective expressions that are more independent of social context. Such a lower expression of subjective experiences might explained in relation to High Barrier personalities who perceived others in early socialization experiences as approving,

supportive and source of love and thus resulting in a heightened externally focussed social identity. In contrast, the emphasized personal identity that focuses on internal subjective expressions in Low Barrier personalities might reflect a greater independency of social evaluation due to a lack of having received supporting responses and fewer internalizations of parental values (Fisher & Cleveland, 1958). The communicative expression and interest in other group members in High Barrier personalities, compared to Low Barrier personalities, would then assume the function of gaining acceptance by other group members and to influence group values, as well as to reduce external threats, rather than the mere sharing of experiences of the inner self to another human being. Consistent with this reasoning, Fisher and Cleveland (1958, p. 212) stated that the increased group focus in High Barrier groups "...influenced them [the judges] in their preference for members of these groups a personal friends".

A social-evaluation orientated expression of personal insights, such as emotion expression, as well as an increased use of inhibition words, might indicate that the behaviour of High Barrier personalities is more easily conditioned in relation to rewarding or punishing responses in their social environment. The empirical exploration of punishment-reward activated or inhibited behaviour has been given much attention in health psychological research, which consistently identified inhibited emotional responses and the development of physical and mental disorders (Pennebaker, 1989; Pennebaker & Beall, 1986; Pennebaker & Chung, 2011; Traue & Pennebaker, 1993).

Moreover, these results are also consistent with autobiographical memories associated with inter-sociocultural differences. As pointed out by Conway and Jobson (2012), individuals with a conceptual self that is aligned with a collective culture would recall memories that focus on routine events and social interactions that are emotionally neutral, whereas individuals from individualistic cultures recall autobiographical memories with a focus on detailed and self-focused content that emphasises subjective experiences, such as emotions, preferences and internal states.

The perception of others as similar to or different from oneself in terms of age, gender, or level of acquaintance, to mention several influencing factors, also vastly

influences how individuals expand or contract their immediate personal boundaries and organise their space to regulate and protect their social interactions with others (Goffman, 1971; Hall, 1966; see also Horner, 1983). Social distance theories generally agree that interpersonal closeness is directly proportional to the emotional closeness of the parties involved. Thus, intimate interpersonal relationships are the most rewarding to the individual and assume a closer distance among friends, family members and social acquaintances, with strangers at the greatest distance. The idea of increasing intimacy, then, typically implies the gradual removal of vertical personal boundaries and the diminishing of horizontal spatial boundaries as individuals move further into each other's personal space, shedding layers like an onion, as proposed by the social penetration theory (Altman & Taylor, 1973). In disagreement with these social distance theories, the results of this study propose that interpersonal closeness is associated with diminishing horizontal spatial boundaries, leading to greater penetration of the body boundary membrane, or interface (Fisher, 1970) and activating the heightened skin and muscular sensitivity associated with High Barrier personalities (Fisher, 1970). The penetration of the body boundary membrane by another human being would then provide an external focus in the form of a heightened sense of social identity. However, the less sensitive body boundary membrane that is evident in the Low Barrier personalities results in lower levels of penetration and, therefore, in a heightened self-focus that is independent of external social influences. Consistent with the results of this study, penetration imagery has consistently been associated with internal organs (Fisher & Cleveland, 1958), and, therefore, may relate to involuntarily internal muscular movements that are active in both High and Low Barrier personalities. In this sense, Fisher and Cleveland's (1956, 1958) body boundary concept resonates, to some extent, with neuropsychological theories (Porges, 2011; Schore, 2000), which argue that early socialisation and environmental conditions are the strongest influences on the development of the central nervous system. This system regulates external and internal bodily processes and moderates emotions, social communications, social relationships, inhibition and adaptive processes that are associated with the right brain hemisphere.

Chapter 7

A Corpus-based Assessment of Semantic Fields in Narratives of Everyday and Dream Memories of High and Low Barrier Personalities

7.1 Introduction

Chapter 6 showed that High Barrier personalities use higher frequencies of semantic content associated with primordial mental activity, such as group-related references, biological and somatosensory processes, and spatial references. In contrast, Low Barrier personalities showed an increased level of semantic content related to conceptual thought, such as self-references and references related to affective and cognitive processes. High and Low Barrier personalities also used similar semantic content in both memory types, although they were variable in their levels of regressive cognitive functioning. This variability suggests that a barrier personality is a dynamic personality trait that interacts with the situational level of regressive cognitive functioning. This chapter provides a quantitative analysis to identify the usage of semantic fields and figurative expressions to provide some further insight into the language behaviour of High and Low Barrier personalities when recalling everyday and dream memories. In particular, this chapter aims to relate Fisher and Cleveland's (1958) exterior-interior model, which consistently demonstrates a heightened awareness of exterior bodily parts but a reduced awareness of the interior parts of the body in High Barrier patients, with Lakoff and Johnson's (1980) cognitive view that humans would be predisposed to view their environment via a visual in-out orientation because of their conscious experience of perceiving themselves as being contained and bounded by an external skin boundary. This aim is achieved by exploring the relationship between body boundary finiteness and the use of semantic fields related to the container-schematic imagery that organises our perceptual focus and visual experiences.

7.1.1 The exterior-interior model of body boundary awareness

Fisher and Cleveland's body boundary concept of personality has consistently identified the psycho-physiological and autonomic features associated with the degree of body boundary finiteness. Thus, the body boundary concept of personality originates from Fisher and Cleveland's (1958) qualitative observation that patients with rheumatic arthritis had marked concerns, expressed as fantasies and wishes, related to their bodies. This observation was also evidenced by their unusual number of unique Rorschach responses emphasising the containing, protective and surface-related features of the presented inkblot pictures — for example “*cave with rocky walls*”, “*flower pot*”, or “*turtle with a shell*”.

These observations and initial findings were first confirmed in their empirical study. Thus, individuals presenting with chronic illnesses of their exterior bodily parts (i.e., rheumatoid arthritis, neurodermatitis and conversion symptoms) had higher barrier scores compared to individuals with disorders of their interior body parts (i.e., stomach disturbances and ulcerative colitis). Such an exterior-interior model of body boundary awareness has been explored further by empirical research studies. For example, individuals with definite body boundaries have been shown to have a high reactivity in their muscles and skin but a low reactivity in their interior bodily sites (i.e., heart rate) compared to individuals with less definite body boundaries. Another study showed that individuals with exterior bodily symptoms (i.e., arthritis) have a higher Galvanic Skin Response and a lower heart rate than individuals with interior bodily symptoms (i.e., duodenal ulcers) to stressful exposures (Fisher & Cleveland, 1960; Williams, 1962). Children with rheumatoid arthritis also had higher barrier scores than children with asthma (Cleveland, Reitman, & Brewer, 1965), and a study comparing Japanese individuals with hypochondriac complaints related to their external bodies (e.g., skin itchy, joint aches) had higher barrier scores than individuals with interior complaints (e.g., heart throbs, stomach aches). Based on these results, Fisher (1970) concluded that individuals with definite body boundaries have a propensity to develop psychosomatic disorders in the exterior parts of the body, whereas individuals with indefinite body boundaries tended to develop psychosomatic disorders related to the interior body parts.

In addition, an extensive study by Fisher and Fisher (1964) demonstrated a consistent relationship between high barrier scores and an external orientation of bodily experiences. For example, verbal reports of the bodily sensations related to the exterior sites of the body (e.g., skin, muscle) were positively correlated with barrier scores compared to interior body sensations (e.g., heart, stomach). Individuals with more definite body boundaries also showed a tendency to recall emotions with reference to external bodily sensations than to interior bodily sensations. In another experiment, the barrier scores were positively correlated with the recall of word clusters related to exterior bodily sensations (e.g., “*skin cold*”) compared with interior bodily sensations (e.g., “*heart beat*”). A study by Cassell (1966) confirmed these results, demonstrating that individuals using more barrier imagery would recognise pictures of exterior bodily parts (e.g., finger, forehead) more quickly than pictures of interior bodily regions (e.g., heart, stomach). Fisher & Renike (1966) also demonstrated that individuals who were asked to focus their awareness on their exterior body sensation showed an increase in the use of barrier imagery during projective responses compared to a control group. Some studies, however, were unable to replicate the exterior-interior model explained by Fisher (1970) in relation to possible methodological problems, such as erroneous participant recruitment, irregularities of the body boundary imagery scoring and inaccuracies of the symptoms’ exterior-interior classification (e.g., Sherick, 1964; Eigenbrode & Shipman, 1960; Barendregt, 1961).

7.1.2 The Body and the container in embodied cognition

Formal models of human cognition and consciousness consider the human brain as a referential system that coordinates sense impressions (e.g., our visual and auditory attention and kinaesthetic senses) sourced from the external environment and internal motivations; to that end, recurrent, temporary and reflexive behaviours, including verbal behaviours, represent the responses corresponding to the referential system (Wang et al., 2013)⁶.

⁶ Wang et al. (2013) also posit that visual attention comprises both conscious and subconscious selective mental processes and that attention is a fundamental characteristic of human intelligence.

This view is largely consistent and complementary with Johnson's (1987) cognitive linguistics theory, which suggested that image schemas are continuous and analogous structures that coherently organise our mental representations, cognitive processes and generalised knowledge, enabling us to comprehend and reason about our physical world. These image schemas are embodied to the extent that they are realised in our ability to visually observe our environment, to move our bodies through space and to manipulate objects in our environment. In this sense, image schemas are not prepositional by their relation to abstract structures or physical processes that describe spatial truth prepositions (e.g., "*The cat sits on the mat*"). In contrast, Johnson (1987) conceptualises image schemas as pre-conceptual and dynamical structuring processes of general sensory perceptions, bodily experiences and activities. For example, image schemas can be used to structure and organise various elements of non-spatial situations and events through the use of spatial prepositions (e.g., "*The light is out*").

One of the most basic image schemas that embody our bodily experience is the container schema, which is related to the spatial and temporal structure of physical containment and boundedness, expressed for example by the English proposition 'in' (e.g., "*The cat is in the house*") (see Figure 5). The gestalt structure of the container schema is made up of an inside, an outside and a boundary (Lakoff & Johnson, 1999). According to Johnson (1987; see also Lakoff & Johnson, 1980), human beings are predisposed to experience their bodies as physically contained and bounded by an enveloping skin boundary. This in-out orientation of our bodily experience is also apparent in our cognitive organisation of the environment as a three-dimensional container. In fact, Lakoff and Johnson (1980, pp. 29-30) argue that the container schema is the most pervasive cognitive schema because to the human instinct to mark off territories by defining clear boundaries, such as by walls and fences. Territorial behaviours enable humans to quantify their properties based on the spatial size contained within a bounded space. Common conceptualisations of the container schemas are multi-modal and therefore occur in relation to various contexts and event states (Lakoff & Johnson, 1980, 1999). For example, visual attention is defined as a bounded visual field (e.g., "*Peter has him in sight*"), whereas ontological metaphors relate to actions and activities (e.g., "*Mary run out of energy*"), as well as emotion states (e.g., "*Peter fell in love*") conceptualised as definite and bounded spaces.

As noted by Johnson (1987, p. 22), the in-out orientation of the containment schema adheres to five structural entailments — i) containments involves the protection from or resistance to external forces, ii) containment limits forces within the container, iii) the contained object is fixed to a location, iv) the fixed object is visible or invisible to an observer, and v) containment is transitive to the extent that if B is in A, and if C is in B, C is also in A.

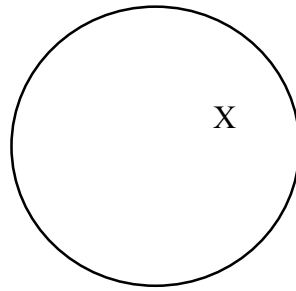


Figure 5 Container schema

7.1.3 Cognitive Metaphor Theory (CMT)

Conceptual Metaphor Theory (CMT) states that embodied image schemas represent the basis of conceptual metaphorical expressions (Lakoff & Johnson, 1980). The OED (2014) defines a metaphor as “a figure of speech in which a name or descriptive word or phrase is transferred to an object or action different from, but analogous to, that to which it is literally applicable”. Consistent with these definitions, which assume an “A is B” schema, cognitive linguists have defined metaphors as “the phenomenon whereby we talk and, potentially, think about something in terms of something else” (Semino, 2008, p. 1).

The idea of something signifying something else captures the essence of the conceptual metaphor, which “consists of two conceptual domains, in which one domain is understood in terms of the other” (Kövecses, 2010, p. 4). For example, the metaphorical expression “*beaming with joy*” organises the experience of a highly positive emotional state (conceptual domain A) in terms of a ray or shaft of light (conceptual domain B). In this sense, the conceptual domain (A) represents the source

domain (in this case HAPPINESS), which is then mapped onto the conceptual domain (B) domain, the target domain, (in this case LIGHT), giving rise to the conceptual mnemonic of the mapping as HAPPINESS IS LIGHT (see Kövecses, 2010, p. 97).

CMT also puts forward that the correspondence between source and target domains in the construction of the conventional metaphors that occur in everyday English expressions are not random occurrences or poetic instances. Instead, CMT holds that embodied image schemas would be active in the systematic regulation of the mapping mechanisms between source and target domains (Lakoff & Johnson, 1980, 1999). It is therefore assumed that the schematic mappings of conceptual metaphors would reveal our thought patterns, providing insight into the cognitive processes that structure our bodily experiences and general knowledge. Lakoff and Johnson (1980, 1999) argue that many conventional metaphors are based on schematic concepts that are relevant to our sensorimotor experiences (Lakoff & Johnson, 1980, 1999). These image schemas often constitute related concepts. For example, the concepts CONTAINER, SUBSTANCE and OBJECT are related because human beings are predisposed to experience their bodies as a container, with an inside and outside, that is made up of bodily substances, such as bones and blood. For example, the metaphor “*Mary fell in love*” conceptualises the person (in this case Mary) as a substance that enters the container (in this case love), reflecting the BODY AS A CONTAINER FOR EMOTIONS schema. Other concepts that are grounded in sensorimotor experiences are related to metaphorical schemas that follow spatial orientations (e.g., MORE IS UP, LESS IS DOWN) and motion (e.g., TIME IS MOTION).

Apart from the metaphorical concepts that are grounded in our sensorimotor experiences, ontological metaphors are related to perceived structural similarities between general knowledge and experiential concepts (Kövecses, 2010). For example, the expression “*The relationship is stuck*” follows the conceptual metaphor LOVE IS A JOURNEY based on our basic understanding of journeys (in this case being stuck on a train), enabling us to reason about the experiential concepts of love (in this case, inharmonious relationships).

7.1.4.1 Criticism of CMT

CMT has received a range of criticism. One issue that has been noted consistently is its reliance on the problem that the identification of metaphors is largely unsystematic and depends on the researchers' intuition (Kövecses, 2008; Pragglejaz, 2007). Some metaphorical expressions remain unnoticed, meaning that the target domains that underpin these metaphorical expressions also remain unidentified (Kövecses, 2008). Researchers also differ in their theoretical orientations and criteria for metaphor identification, influencing their decision-making to classify conventional expressions as instances of metaphorical or non-metaphorical expressions (Pragglejaz Group, 2007). The lack of agreed-upon criteria also prevents the establishment of a scientific framework to quantitatively assess and compare the occurrence of metaphorical schemas in spoken and written discourses (Kövecses, 2008; Pragglejaz Group, 2007). Most importantly, the lack of a systematic approach to metaphor analysis tends to produce cyclic arguments, rendering CMT unfalsifiable and, thereby, unscientific (Haser, 2005; Kertész & Rákosi, 2009; Pragglejaz, 2007).

Another point of criticism is that conceptual metaphors differ in their levels of schematicity. Indeed, Kövecses (2008, p. 174) posits that the conceptual metaphor schema *THEORIES ARE BUILDINGS* can be mapped that onto "*The theory has a solid foundation*" but that the level of schematicity of this schema cannot be generalised to "*The theory has a corridor*". In this sense, Kövecses (2008, p. 175) argues that it is necessary to establish an appropriate level of schematicity in order to identify those elements of the source domain that map realistically onto the target domain.

Furthermore, Lakoff and Johnson's (1980) CMT has been widely criticised because it presents the relationship of embodiment and image schemas as universal experiences without acknowledging the cultural differences that influence the mind-body connection. Therefore, CMT has been perceived as reductionistic due to its lack of accountability for the cross-cultural variations of conceptualised bodily experiences (Rakova, 2003). In fact, cognitive linguists have provided great insight into the cultural differences that mediate the relationship between the body and cognitive processes and into the ways in which these cultural variations are expressed in the use

of metaphors (e.g., Maalej & Yu, 2011).

Moreover, several scholars have pointed out that cognitive science has incorporated fundamental psychoanalytic concepts without acknowledging its original source (Bucci, 2000; Holland, 1998; Fónagy, 2001). For example, the psychoanalyst Holland (1998) argues forward that cognitive linguistics and metaphor theory's central idea of a cognitive science of conceptual metaphor seems to show strong similarities to the writings of the psychoanalyst Ella Freeman Sparpe (1937, 1940). For example, Lakoff's (1996) analysis of US political parties by differentiating between the conservative as representing the strict father image and the liberal representing a nurturing mother image resemble psychoanalytic conceptualizations. Similar, Lakoff's (1997) analysis of dreams through the use of metaphoric mappings and image schemas to explore the dreamer's anxieties makes use of psychoanalytic symbolism, such as *WORLDLY POWER IS SEXUAL POWER*. Another study (also associated the use of container metaphors to the dynamics of borderline patients (Melnick, 1997). Also, CMT assumes that metaphors would be grounded in bodily experiences echoes the Freudian psychoanalytic notion, which positions the body as a central concept to describe and explain the functional and dysfunctional development of the self in human beings (Freud, 1905; 1923). Out of this context, Holland proposes that CMT would align with the psychoanalytic idea that perceive unconscious and conscious thinking to be interwoven processes and thus diffuse the idea of an "objective reality" and "literal truth". Despite the fact that CMT does not differentiate between two levels of consciousness (i.e., the conscious and unconscious), Fónagy (2001, p. 357) points out that Johnson (1987) compared the system of metaphorical thought to a net of channels, which to some extent implies the possible existence of different levels of consciousness that canalize the mapping processes of metaphorical image schemas.

7.2. Study 3: Assessing the Semantic Fields and Use of Figurative Language in Autobiographical Memories of High and Low Barrier Personalities

7.2.1 Aim of this study

This study aims to explore the use of semantic fields related to container-schematic imagery in the narratives of everyday memories and of dream memories in High and Low Barrier personalities. By drawing on Lakoff & Johnson's (1980) container schema, it can be differentiated between concrete container-schematic perceptions of objects that are characterized by an external surface that differentiates the object from its surroundings, whereas container-schematic perceptions of non-material entities, such as time and emotions, are metaphorical. Taking into consideration Fisher and Cleveland's exterior-interior model of body boundary awareness and Lakoff & Johnson's (1999) in-out orientation of container-schematic conceptualizations, it can be stated that if an increased use of the semantic fields that represent concrete and metaphorical container-schematic imagery were to be found in the narratives of High Barrier personalities compared to Low Barrier personalities. This result would support the proposition that the referential system which coordinates sense impressions and organises our mental representations differs between the barrier personality types. Such an increased frequency of semantic fields representing concrete and metaphorical container-schematic conceptualizations of objects and entities would indicate an individual basis that underpins the tendency in humans to conceptualize and quantify the properties of their surroundings through the use of container-schematic perceptions. Given that High Barrier personalities used more semantic content associated with primordial mental activity and Low Barrier personalities used an increased amount of semantic content related to conceptual thought (see 6.2), this study further aimed to explore the extent to which the use of semantic fields might be reflective of the level of primordial mental activity and conceptual thought in the narratives of High Barrier and Low Barrier personalities.

As heightened levels of primordial mental activity have been associated with an increase of metaphorical language (Martindale, 1990; Freud, 1900), this study also

aims to explore how High and Low Barrier personalities use metaphorical expressions differently in narratives of everyday memories and of dream memories. In particular, Study 2 (see 6.2.) identified that Low Barrier personalities showed higher instances of expressing their thoughts and emotions directly, whereas High Barrier personalities communicated their emotions and thoughts less often. Out of this context, it is possible to infer that High Barrier personalities might show higher frequencies of communicating their thoughts and emotions through the use of metaphorical expressions compared to the Low Barrier personalities.

7.2.1.1 Hypotheses

Given that the barrier imagery related to the semantic content describes the shielding and protective features of objects, the first hypothesis (H1) predicts that the narratives in the autobiographical memories of High Barrier personalities will use more semantic fields related to concrete container-like objects, such as *'Vehicles and transport on land'*, *'Architecture and buildings'* and references related to *'Clothes and personal belongings'*. The second hypothesis (H2) further predicts that High Barrier personalities will use more semantic fields that indicate a metaphorical container-schematic conceptualization of entities that are not characterized by a visual external boundary or surface. As shown in Study 2 (see 6.2), the autobiographical memories of High Barrier personalities use more semantic content related to primordial mental activity than the autobiographical memories of Low Barrier personalities. In this context, the third hypothesis (H3) predicts that the narratives of High Barrier personalities will use higher frequencies of semantic fields related to primordial mental activity, such as perceptual process (e.g., *'Sensory sight'*), spatial references, relativity (e.g., *'Shape'*, *'Time'*) and bodily processes (e.g., *'Anatomy and physiology'*). In contrast, the fourth hypothesis (H4) predicts that Low Barrier personalities will use higher frequencies of the semantic fields related to conceptual thought, such as cognitive processes (e.g., *'Thought and belief'*) and affective processes (e.g., *'General Emotions'*, *'Happy'* and *'Sad'*). Study 6 also showed a negative association between barrier imagery and the expression of affective processes, to the extent that Low Barrier personalities use a greater proportion of emotion words. The fifth hypothesis (H5) suggests that High Barrier personalities

show an increased tendency to express their emotions indirectly, in form of metaphorical expressions.

7.2.2 Method

7.2.2.1 Data

As discussed in Chapter 4 (see 4.2, 4.3 and 4.4), the BTM (Wilson, 2006) was applied to the narratives of everyday memories (N = 488) and to the narratives of dream memories (N = 450) using the PROTAN content analysis software (Hogenraad et al., 2003).

7.2.2.2 Semantic field annotation

As outlined in Chapter 4 (see 4.3), the USAS tagger (Rayson et al., 2004) was applied to the narratives of everyday memories and of dream memories to match the words and multi-word expressions with pre-defined semantic field tags. A log-likelihood statistic at a 0.001 significance level with a LL cut-off value of 6.63 was applied to indicate the over- or under-use of 65 USAS tags. Due to the relatively large number of over- and under-used key semantic fields in the comparison of the autobiographical memories between the High and Low Barrier personalities, the analysis was limited to the twenty most frequently occurring semantic fields.

7.2.2.3 Corpus-based metaphor analysis

The USAS tagger was applied to analyse the figurative language used, including metaphor and metonymy. The application of the USAS tool to the identification of significantly over- and under-used semantic fields after comparing the two texts (i.e., the research and reference corpus) has been proposed as an automatic course for the analysis of figurative language (Koller, Hardie, Rayson, & Semino, 2008; Semino, Hardie, Koller, & Rayson, 2005). By referring to a conceptual metaphorical framework (Lakoff & Johnson, 1980; Lakoff, 1987), the ‘source’ and ‘target’ domains of the conceptual metaphors have been suggested to correspond approximately with the pre-defined semantic fields of the USAS tagger. As outlined by Semino and

colleagues (2005), this identification of ‘semantic’ fields would then enable the further exploration of potential metaphorical language usage (Semino et al., 2005). The USAS tagger also produces lists that show the frequencies of the semantic tags based on word and multi-word expressions in each semantic field for both data sets (i.e., the research and reference text). A closer exploration of these words and multi-word expressions enables the identification of any potential ‘source’ domains in greater detail while providing further information about the words and multi-word expressions that inform the high- and low-keyness of semantic fields in one dataset, compared to another (Semino et al., 2005). Subsequently, concordance analysis enables the classification of words and multi-word expressions classified within a set of semantic fields conceptualised for the dataset, thereby providing further insight into the metaphorical use of extracted potential ‘source’ domains. As stated by Koller and colleagues (2008, p. 142), this metaphorical analysis has been largely criticised for lacking a coherent empirical framework (e.g., Steen, 1999; Cameron, 2003; Deignan, 2005). The development of an automated annotation procedure for metaphorical analysis represents a promising empirical procedure for the identification of ‘source’ and ‘target’ domains compared to manual metaphor annotation.

7.2.2.4 Identification of metaphors and figurative expression

The identification of figurative language use was based on the Metaphor Identification Procedure (MIP) as proposed by the Pragglejazz Group (2007). The MIP represents a systematic procedure of identifying metaphors. Based on the MIP, a lexical unit is classified as a metaphorical expression when its contextual meaning is incongruent with the basic meaning associated with the same lexical unit. The basic meaning of a lexical unit is sourced from a dictionary, such as the OED, which can be then compared with the contextual meaning of the lexical unit as it occurs in the phrase. To assess the reliability of the MIP, six independent coders used the MIP to identify metaphors in two data sets (i.e., conversations and newspaper text) and had an overall modest reliability to identify metaphors using the MIP.

The MIP outlines the following procedural steps to identify metaphors and figurative expressions (p. 3)

1. Read the entire text–discourse to establish a general understanding of the meaning.

2. Determine the lexical units in the text–discourse

3. (a) For each lexical unit in the text, establish its meaning in context, that is, how it applies to an entity, relation, or attribute in the situation evoked by the text (contextual meaning). Take into account what comes before and after the lexical unit.

(b) For each lexical unit, determine if it has a more basic contemporary meaning in other contexts than the one in the given context. For our purposes, basic meanings tend to be

—More concrete; what they evoke is easier to imagine, see, hear, feel, smell, and taste.

—Related to bodily action.

—More precise (as opposed to vague)

—Historically older.

Basic meanings are not necessarily the most frequent meanings of the lexical unit.

(c) If the lexical unit has a more basic current–contemporary meaning in other contexts than the given context, decide whether the contextual meaning contrasts with the basic meaning but can be understood in comparison with it.

4. If yes, mark the lexical unit as metaphorical.

The OED (<http://www.oed.com>) was used to identify the schema of a metaphorical expression. The OED is a standard Dictionary of the English Language that provides the meaning and pronunciation of over 600,000 words. The OED provides also the

historical meaning of words and is regularly updated and revised according to contemporary developments in the English language.

7.2.2.5 Classification of Barrier personalities

As outlined in Chapter 6 (see 6.2.2.2), the median range for the barrier imagery frequency in each memory type was used to divide the narratives of everyday and dream memories into two equivalent parts. Barrier scores less than the median values were categorised as ‘Low Barrier personalities’, whereas Barrier scores greater than the median values were categorised as ‘High Barrier personalities’.

7.2.3 Results

The identified over- and under-used semantic discourse fields in the narratives of everyday memories and of dream memories in Low and High Barrier personalities can be seen in the Tables 21, 22, 23 and 24.

Consistent with the first hypothesis (H1), High Barrier personalities had a high keyness of semantic fields, which can be perceptually grounded in relation to the container schema that conceptualizes the enclosed or partially enclosed objects in which a material boundary separates the interior from the exterior (Johnson, 1987). The semantic fields that are relevant to the container schema in narratives of everyday memories and of dream memories include ‘*Vehicles and transport on land*’ (e.g., car, train, cars), ‘*Clothes and personal belongings*’, (e.g., bag, shoe, pocket), ‘*Architecture, house and buildings*’ (e.g., house, flat, building). Related narratives of everyday memories also include the semantic field, ‘*Residence*’ (e.g., hotel, house). In both narrative types, the semantic field ‘*Sailing, swimming, etc.*’ contains semantic items related to container schematic objects (e.g., boat, boats, ship), whereas the semantic field ‘*Parts of buildings*’ includes semantic items that can be classified as barrier imagery (e.g., room, roof) and also penetration imagery (e.g., window, door, doorway). High Barrier personalities’ narratives of the dream memories, relative to those of Low Barrier personalities, had a high keyness of the semantic fields ‘*Furniture and household fittings*’ (e.g., bed, sofa, table) and ‘*The Media: Books*’ (e.g., library, book, books). These terms both comprise container schematic semantic

items that can also be classified as barrier imagery, such as '*carpet*', '*chairs*' and '*gates*', as well as, in relation to the latter, '*library*' and '*book*'. In narratives of dream memories, High Barrier personalities had also a high keyness of the semantic field '*Geographical terms*' that comprises the semantic items that express natural occurrences, some of which are grounded in container schematic concepts with clearly defined boundaries, such as '*sea*', '*river*', and '*cave*'.

Given the increased perceptual focus on surfaces in High Barrier personalities' narratives of everyday memories, the high keyness of the semantic field '*Living creatures: animals, birds, etc.*' contained, if also infrequently, semantic items that denote to animals classified as barrier imagery due to the animals' "distinctive or unusual skin" (Fisher & Cleveland, 1958, p. 59), including stripes and structured surfaces (e.g., sheep). An increased focus on surfaces in High Barrier personalities was also evident in the high keyness of the semantic fields '*Colour and colour patterns*' and '*Substances and materials: Liquid*', which are often, but not exclusively, related to the description of the solid and textured surface materials (e.g., wood, glass, iron) of container objects (e.g., "*The cardboard box*").

Consistent with the second hypothesis (H2), the results also showed High Barrier personalities' perceptual focus on the metaphorical boundaries and vague containing qualities of entities. For example, High Barrier personalities' narratives of everyday memories had a high keyness of the semantic field '*Geographical names*', which comprises the semantic items that denote place names of cities (e.g., London, Norwich, Aberdeen), countries (e.g., Italy, Uganda, New Zealand) and adjectives with cultural references (e.g., British, Irish, Arabian). These place names and cultural attributes are often conceptualised within a container schema in relation to geographically negotiated and bounded territories. For example, the boundaries of a country are often designated through a coloured line drawn on a map.

In narratives of dream memories, High Barrier personalities had a higher keyness of the semantic fields '*Personal names*' and '*Kin*' compared to Low Barrier personalities. '*Personal names*' typically denote the identity of a person (or animal) that assumes unique qualities due to their personality and the unique visual appearance and recognisability of their bodily exterior (e.g., "*I met Albert Einstein*").

The semantic field '*kin*' (e.g., mum, family, father) contains those semantic items that communicate an associated degree of kinship of family members (e.g., "*My mum was stood*"). Kinship represents a group entity that is defined by its emotional attachments and shared genetics; thus, this entity is differentiated from other social groups and relationships. In this context, the high frequency of references to kinship echoes the High Barriers' tendency to emphasise group membership, as shown in Study 2 (see 6.2). Kinship has also been anthropologically associated with nurturing and protection against individuals who are not kin (Murphy, 2008). Such security related concerns might be also expressed in the high keyness of the semantic field '*Law and order*' (e.g., security, police, prisoner) in High Barrier's narratives of dream memories, which comprises those semantic items that characterise security-related concepts and the confinement and restriction of movement (e.g., "*they arrested Beth*"), which confirm the increased use of inhibition words, as identified in Study 2 (6.2).

High Barrier personalities' narratives of everyday memories also had an increased frequency of the semantic field '*Time: Beginning*' (e.g., started, start, began), which conceptualises time in the form of a definite temporal boundary of an action or entity. The conceptualization of time as a bounded entity might then correspond to symbolic perception of container boundaries in relation to non-material entities. In particular, as pointed out by Bolognesi & Bichisecchi (2014), Western cultures reflect a tendency to conceptualize time in relation to a TIME IS MONEY metaphorical schema which is motivated by economic achievement and trading objectives. Apart of the notion that a metaphorical objectification of time that carries feelings of urgency, desire and greediness, as well as concerns related to survival and the oscillation between life and death (Bolognesi & Bichisecchi (2014, p. 10), the metaphorical link between time and money as a schematic mapping is consistent with the achievement and materialistic motivations associated with the High Barrier personality (Fisher & Cleveland, 1958).

In addition, the results identified that the narratives of High Barrier personalities involving everyday memories had a high keyness of semantic fields reflecting primordial mental activity, thus confirming the third hypothesis (H3). Thus, the narratives of everyday and dream memories had an inflated semantic field associated with the somatosensory processes, including the semantic field '*Anatomy and physiology*' (e.g., back, sleep, head). Whereas narratives of everyday memories had a

high keyness of the semantic field '*Sensory: Sight*' (e.g., see, saw, seen), which denotes the visual discernment and perception of the eye, the semantic fields '*Light*' (e.g., light, lightening, lights) and '*Seen*' (e.g., noticed, notice, looked out) in narratives of dream memories referred to the processes of observation, for example "*I suddenly noticed a girl running across the tracks*"). There was also a high keyness of semantic fields associated with spatial and motion references, including '*Location and direction*' (e.g., there, this, where), '*Moving, coming and going*' (e.g., went, go left) and '*Putting, pulling, pushing, transporting*' (e.g., put, moved, picked up). The inflation of spatial and motion references was also evident in High Barrier personalities' narrative of dream memories, (i.e., '*Location and direction*'); however, the results suggest that the spatial and motion references in dream narratives are primarily conceptualised through the ascertainment of size, amount and degree, as indicated by the semantic fields '*Measurement: Size*' (e.g., size, fit, sized), '*Measurement: Length & height*' (e.g., in, heights, level) and '*Speed: Fast*' (e.g., faster, quicker).

Moreover, and mainly consistent with the fourth hypothesis (H4), Low Barrier personalities' narratives of everyday and dream memories had a higher keyness of semantic fields related to conceptual thoughts, compared to the narratives of High Barrier personalities. In both everyday and dream memories, the semantic field '*Pronouns*' had the highest keyness, compromising predominantly self-references rather than other- or group-references. Consistent with the results of Study 2 (see 6.2), such an inflated use of self-references is associated with the Low Barrier's increased self-focus compared to the group-orientation of High Barrier personalities (Fisher & Cleveland, 1958). Conversely and seemingly contradictory, Low Barrier personalities' narratives of everyday memories also had a high keyness of the semantic field related to general social interactions, including '*Personal relationship: general*' (e.g., friends, friend, met), '*Participating*' (e.g., met up, meeting, attended) and '*Giving*' (e.g., gave, give, given). These socially orientated references would be more typically associated with the socially orientated High Barrier personality than the typically perceived solitary Low Barrier personality. A closer examination of the social contexts described in the narrative of Low Barrier personalities, however, indicates an inflation of the social activities involving close relationships and small group settings, such as '*friend*' (62) and '*friends*' (55). Out of this context, it might be

possible to infer that Low Barrier personalities might not necessarily avoid social interactions in favour of solitary activities, as posited by Fisher & Cleveland (1958); instead, these data may reflect a preference of Low Barrier personalities for engaging in social interactions involving close relationships and friendships, compared to High Barrier personalities, who make such references to their family members. This preference of Low Barrier personalities for mentioning friends in their narratives of everyday memories might be indicative of the supportive role friendships play in their life as a possible substitute for a less supportive family environment, compared to High Barrier personalities, who are typically characterised by a supportive family (Fisher & Cleveland, 1958).

Within this line of thought, the narratives of dream memories of Low Barrier personalities' also had a high keyness for the semantic field '*Relationship: Intimacy and sex*' (e.g., boyfriend, girlfriend, sexually), emphasising intimate personal relationships and experiences. Although the notion of relationship is frequently depicted by affective positive events (e.g., "*I was with my boyfriend and our best friend*"), in High Barrier personalities, on the other hand, intimacy is frequently depicted in relation to emotionally negative event descriptions (e.g., "*but my boyfriend was shouting at me and accusing me*"). In this sense, Low Barrier personalities are typically perceived as solitary, but based on the results of this study, Low Barrier personalities seem to perceive intimate relationships more positively compared to High Barrier personalities. The association of such a positive affective tone with intimate relationships in Low Barrier personalities might be related to the emotional support close relationships bring to individuals, which may have been lacking in their early socialisation experiences. In contrast, High Barrier personalities might experience close relationships reminiscent of the conditional love imposed by parents, as characterised by the demand of compliance to their social values and behavioural expectations (Rogers, 1951, 1961) (see 7.2).

Given the assumption of the inflation of cognitive processes with conceptual thoughts (Robbins, 2011), the results showed an inflation of semantic fields associated with cognitive processes, such as '*Knowledgeable*' (e.g., know, knew, remember), and '*Learning*' (e.g., found out, find out, learnt) in Low Barrier personalities' narratives of everyday memories. In particular, the semantic field '*Negative*' (e.g., not, no, nothing)

indicated the presence of discriminating thoughts related to a greater accuracy and factual truthfulness relative to the narrative contents (Newman et al., 2003). Although their cognitive processes of everyday memories emphasised knowledge, cognitive insights and discriminative thought, Low Barrier personalities' narratives of dream memories further reflected a high keyness of those semantic fields that compromise semantic items specific to the recall of dream events, such as *'Inattentive'* (e.g., in dream, ignored, disregarding), *'Mental actions and processes'* (e.g., dreamt, dream, dreaming), and *'Mental object: Conceptual object'* (e.g., dream, dreams, nightmare). These semantic items indicate that the recalled event was a dream and its consequences would represent "no physical real-life effect on the real 'I', other than an emotional impact, since dreams indicate creative imaginary acts" (Cariola, 2008, p. 20).

Low Barrier personalities also use more semantic fields related to the evaluation of event states in both narrative types. Thus, the narratives of everyday memories had an inflated keyness of the semantic fields *'Evaluation: True'* (e.g., fact, in fact, be the case) *'Existing'* (e.g., was, is, be) and *'Exceed; waste'* (e.g., too, too much, over), whereas the narratives of dream memories had an increased use of *'Evaluation: Good'* (e.g., best, absolute, perfect) and *'Evaluation: Inaccurate'* (e.g., wrong, missing, missed), compared to the narratives of everyday and dream memories of High Barrier personalities. Evaluations typically indicate the remembering subject's personal involvement and attitude towards the narrative event by emphasising the importance of certain narrative aspects (e.g., "*he was too clingy anyway*") and via commentary on the accuracy of the recalled details (e.g., "*And I know for a fact that it was not due*"). Such an increased focus on the evaluation and truthfulness of memory events is consistent with Study 2 (see 6.2), which related Low Barrier personalities' semantic usage to Pennebaker and King's (1999) factor level of *'making distinctions'*. Thus, the production of autobiographical memories that might be perceived as more factually reliable than the narratives of High Barrier personalities that might reflect a creative and socially engaging narrative style. In relation to the notion of truthfulness, Low Barrier personalities' narratives of everyday memories also showed an increased keyness of semantic fields associated with the socially grounded sharing of knowledge in the form of reported speech and printed media. Examples of this precept include *'Speech: Communication'* (e.g., said, told, say), *'Existing'* (e.g., was, is, be),

'*Speech acts*' (e.g., asked, tell, questions), '*The Media: Newspapers etc.*' (e.g., paper, papers, articles). An increased keyness of the semantic field '*Wanted*' (e.g., wanted, want, wants) was also observed to communicate and assert intentional and goal-directing behaviour (e.g., "*but all I wanted was to be with Chris*").

The narratives of both everyday and dream memories of Low Barrier personalities also had an increased keyness of the semantic field '*Thought, belief*' (e.g., think, felt, feel) that included the expression of their thought processes (e.g., "*I do not think Craig told anyone*") and feeling states (e.g., "*I felt bad that I had so enjoyed the evening*"). Although the narratives of everyday memories did not show a high keyness of semantic fields related to emotions, narratives of dream memories showed an inflated keyness of the semantic fields associated with the expression of various emotional states, such as '*Sad*' (e.g., upset, crying, sad), '*Happy*' (e.g., happy, funny, laughed) and '*Like*' (e.g., like, loved, fancied).

Based on the assumption that dream states typically have a higher level of primordial mental activity compared to everyday consciousness (Freud, 1900), Low Barrier personalities' narratives of dream memories also feature a high keyness of semantic fields associated with relativity, which is typically representative of primordial mental activity (Robbins, 2011), such as spatiality, temporality and physiological references. Thus, the high keyness of the semantic fields '*Time: Present: simultaneous*' (e.g., now, at this point, yet) and '*Distance: Near*' (e.g., closer), both of which emphasise the relationship between the recalled dream events relative to the rememberer's real life (e.g., "*the guy I am currently seeing was cheating on me*") and also express a sense of the immediate vividness of a dream event (e.g., "*I was now on the other side*"). On the other hand, the spatial semantic field '*Distance: Near*' (e.g., closer) is related to the expression of an observed motion situated in the dream memory (e.g., "*the wolf was getting closer and closer*"). Other semantic fields associated with the primordial mental activity in Low Barrier personalities' narratives of dream memories include bodily references, such as those expressed through the semantic field '*Anatomy and physiology*' (e.g., woke up, body, face). Still, the high keyness of the semantic field '*Work and employment: Generally*' (e.g., work, working, staff) reflected an achievement- and goal orientated focus, similar to that typically associated with High Barrier personalities (Fisher & Cleveland, 1958).

Furthermore, cognitive linguistics has consistently demonstrated that internal and external bodily parts are often used metaphorically as a means to conceptualise human cognition, spanning emotions, personality traits, cultural values and mental faculties (Gibbs, 2006; Ziemke, Zlatev, & Frank, 2007). The results identified that High Barrier personalities used slightly more frequently but also differently embodied expressions of human emotions than Low Barrier personalities, thus partly confirming the fifth hypothesis (H5). For example, the human heart is typically perceived as representing the centre of human emotions and feelings, compared to the head, which is then the centre of thoughts and the mind in the British-English speaking culture (Sharifian, Dirven, Yu, & Niedermeier, 2008). In this context, the results identified that the semantic item ‘*heart*’ in the semantic field ‘*Anatomy and physiology*’⁷ was used as a source domain to express the emotions in High Barrier personalities’ narratives of everyday (6) and dream memories (2) figuratively. For example, the emotion of sadness was expressed via conventional idioms (i.e., “*It was heart breaking*”) and a vertical metaphor DOWN IS BAD schema (e.g., “*My heart sinks*”). However, the emotion of fear was communicated in the form of a local displacement of the heart (e.g., “*I could feel my heart in my mouth*”). The ‘*heart*’ was also conceptualised as PART FOR WHOLE metonymy by attributing to the human heart the anthropomorphic quality HEART IS A HUMAN BEING, such as “*my heart cries*”. In contrast, among Low Barrier personalities, the ‘*heart*’ was used figuratively in only one instance as a means to express the affectionate personality of another individual (i.e., “*caring heart*”). According to Fisher (1970, p. 481), an increased awareness of the heart has been shown to relate to sociability and friendly interactions with others, echoing the social and outgoing nature of the High Barrier personality.

Semantic items related to anal references, such as ‘*shit*’, ‘*piss*’, ‘*arse*’ and ‘*bum*’, occurred frequently in metonymic expressions of High Barrier personalities’

⁷ In the semantic field ‘*Anatomy and physiology*’, the semantic item ‘*back*’ is the most frequently used word; however, its denotative meaning was related predominantly to the concept of “coming back, returning” (e.g., “*when I am living back in halls next year*”) or “situated behind or in the rear, or away from the front” (e.g., “*and my back window is also leaking*”) rather than relating to “the hinder surface of the body, that which is opposite to the front or face, and which is turned upon those who are left behind” (OED, 2014). This example demonstrates the lack of context-dependent sensitivity of computerised semantic tagging to disambiguate homonymous and homographs.

narratives of everyday (7) and dream memories (1) to devalue the usefulness of objects and thus to express feelings of discontentment (e.g., *“my brakes are so shit”*). Anal references were also used idiomatically to denote feelings of annoyance (i.e., *“he was right up my bum”*) and disrespectful behaviour (i.e., *“he others took the piss out of him”*). In contrast, metonymic schemas and idioms of anal references were used by Low Barrier personalities in only three instances, all of which were devaluing the objects and personalities of individuals (i.e., *“my morning was absolutely shit”* and *“coughing up black shit from my lungs”*, *“how far up your own arse can you be”*).

Whereas High Barrier personalities employed more anal source domains, Low Barrier personalities showed an increased use of source domains related to the idiomatic expressions of ‘face’ to convey emotions in narratives of everyday memories (6). For example, Low Barrier personalities referred to the ‘face’ to express the emotion of courage, or lack of fear, by combining the metonymic FACE IS SEEING schema with the metaphorical schema SEEING IS CONFRONTING, such as *“to face all the aspects of my personality”* and *“she could not face it alone”*, and the idiomatic expression *“to keep a brave face”*. In contrast, High Barrier personalities’ narratives of dream memories used the idiomatic expression of ‘face’ to express the acknowledgment of adverse life events (i.e., *“to remain positive in the face of setbacks”*), whereas in three instances ‘face’ was used merely metonymically in relation to a literal act of ‘direction looking’ (e.g., *“no point did he turn to face me”*).

Such a differential focus between Low and High Barrier personalities’ figurative use of bodily parts alludes to Fisher (1970), who conducted extensive research on the personality differences that underpin preferential focuses on the front or back of the human body. Given that head and back awareness has been shown correlate negatively, a differential focus on the human body between both Barrier personality types would not be surprising. Fisher (1970) noted that anal processes “take place down there but not up there” (p. 441) whereas the cognitive processes associated with the head participate in the control of anal impulses. Specifically, an increased anal focus has been associated with a heightened sensitivity to dirt and greater measures of self-control and orderliness, thus reflecting the High Barrier personalities’ internalised sense of values and behavioural expectations.

In this sense, the High Barrier personality resonates with the anal character organisation of the Freudian (1905) sexual development model. Based on this model, the anal stage occurs during the 2nd-3rd years of an infant's life. This stage is characterised by the infant's learning to control his bowels. Precisely as the infant learns to control it passing and withholding of faeces, he discovers he can assert some control over his environment. The pleasure associated with withholding and expelling faeces is referred to as retentiveness and has expulsive anal characteristics. In the former characterisation, the withholding of faeces is perceived as a form of disobedience, whereas their expulsion is seen as a form of compliance to parental control that is primarily experienced in relation to toilet training. In this way, compliance with parental demands become an assertion of self-control. Anal personality characteristics are typically associated with concerns about orderliness, rigidity, conservation and anxiety over loss of control. To some extent, these characteristics mirror the personalities of High Barriers, including their withholding of emotions and high awareness of social values and behavioural expectations. Substantial findings from empirical studies are also consistent with the existence of this Freudian anal personality cluster (see Fisher & Greenberg, 1996).

High Barrier personalities had also a high keyness of the semantic field '*Judgment of appearance: Beautiful*' in the narratives of everyday memories, which also contained semantic items describing a favourable perception of objects, individuals and events (e.g., amazing, nice, lovely), such as "*the views from the roof were amazing*" or "*it was lovely to pretend*". These semantic tags are associated with positive affective tone and thus produce positive emotions in the communicative recipient (Bradley & Lang, 1999; Stevenson, Mikels, & James, 2007; Warriner, Kuperman, & Brysbaert, 2013). Consistent with the results of Study 2 (see 6.2), which suggest that High Barrier personalities construct narratives that are socially acceptable, the use of words with a positive valence may evoke positive emotions within the recipient, consistent with High Barrier personalities' motivation to evoke positive social responses. By contrast, Low Barrier personalities are less concerned about the outcomes of social evaluations because of their solitary and self-contained disposition.

Emotions are also indirectly expressed by High Barrier personalities in relation to the semantic field '*Architecture, houses and buildings*'. High Barrier personalities'

narratives of everyday memories use the word stems ‘*build*’ and ‘*built*’ to express emotions and physical states (e.g., “*the excitement was building*”, “*the stress built*”, “*build my strength up*”) and to describe the development of human relationships through the use of EMOTIONS, PHYSICAL HEALTH and RELATIONSHIPS ARE STRUCTURES schema (e.g., “*we had really built up some kind of rapport*”). In narratives of dream memories, these word stems were not used figuratively; however, the architectural imagery related to the semantic field ‘*Parts of buildings*’ was depicted as damaged and destroyed in High Barrier personalities’ narratives of dream memories (e.g., “*bits of the roof were missing*”). In High Barriers’ narratives of everyday memories, however, they did not mention the condition of the parts of buildings (e.g., “*The views from the roof were amazing*”).

High Barrier personalities also had a high keyness of the semantic field ‘*Damaging and destroying*’ (e.g., crashing, crash, broken) in relation with architectural features (e.g., “*a few of us living in this ruin of a castle*”) and anatomical bodily parts (e.g., “*I had broken my foot again*”) in their recall of dream memories. Although these expressions were used predominantly literally, the complete or partial destruction of objects and bodily parts might also evoke feelings of loss or physical pain in the hearer, thus communicating negative emotions (Bowlby, 1980). Given High Barrier personalities’ increased group focus, the use of imagery that expresses negative emotions through the use of destructive imagery might further enable them to elicit empathic and supportive responses from the environment. As suggested by Semino (2010), the process of embodied simulation and the hearing of the pain of others typically involves the simulation of a similar painful experience or emotional state in the hearer (Barsalou, 2008), and in this way, High Barrier personalities would elicit an empathic response.

In particular, the ability to simulate the experiences, events, feelings, and emotions of others represents the foundation of social identification and the notion of a social “we-ness” (Gallese, 2009). Out of this context, the sharing of destructive imagery in the narratives of dream memories, as an indirect expression of negative emotion, might be related to the High Barrier’s increased ability to simulate other internal states while grounding their communicative content on embodied simulation designed to elicit socially empathic responses and social identification. This strategy is consistent with

the High Barrier' socially orientated natural personalities. Conversely, High Barrier personalities might also use references related to the destruction or damage of objects in order to infuse their dream narrative with drama. In this way, they call on the listener's ability for embodied simulation as a means of increasing the attentive and affective involvement of the listener (e.g., "*the sound of the wild waves crashing in my ears*").

Table 21 Frequencies (O) and log-likelihood values (LL) of over-used semantic fields in narratives of everyday memories of High Barrier personalities compared to Low Barrier personalities

Semantic Field	High Barrier		Low Barrier		LL
	O1	%	O2	%	
Vehicles and transport on land	234	0.68	39	0.12	141.93
Clothes and personal belongings	129	0.37	8	0.02	121.09
Moving, coming and going	801	2.32	480	1.48	61.46
Architecture, house and buildings	89	0.26	16	0.05	51.21
Parts of buildings	114	0.33	33	0.10	42.02
Anatomy and physiology	356	1.03	195	0.60	37.68
Living creatures: animals, birds, etc.	120	0.35	40	0.12	36.74
Residence	130	0.38	51	0.16	30.64
Plants	57	0.16	13	0.04	27.01
Putting, pulling, pushing, transporting	231	0.67	124	0.38	26.06
Colour and colour patterns	71	0.21	23	0.07	22.63
Judgement of appearance: Beautiful	129	0.37	59	0.18	22.27
Geographical names	154	0.45	76	0.24	22.07
Substances and materials: Liquid	33	0.10	6	0.02	18.83
Sensory: Sight	220	0.64	129	0.40	18.36
Sailing, swimming, etc.	37	0.11	9	0.03	16.49
Grammatical bin	9,893	28.63	8,728	26.99	16.21
Location and direction	520	1.51	377	1.17	14.41
Time: Beginning	107	0.31	55	0.17	13.73
Substances and materials: Solid	43	0.12	14	0.08	13.61

Table 22 Frequencies (O) and log-likelihood values (LL) of over-used semantic fields in narratives of dream memories of High Barrier personalities compared to Low Barrier personalities

Semantic Fields	High Barrier		Low Barrier		LL
	O1	%	O2	%	
Parts of buildings	384	1.18	103	0.40	115.19
Architecture, houses and buildings	243	0.75	42	0.16	114.89
Vehicles and transport on land	194	0.60	72	0.28	33.88
Clothes and personal belongings	150	0.46	53	0.20	28.93
Location and direction	698	2.15	400	1.54	28.46
Personal names	165	0.51	65	0.25	25.26
Moving, coming and going	802	2.47	497	1.92	19.83
Grammatical bin	9,962	30.66	7,487	28.90	14.98
Kin	225	0.69	118	0.46	14.10
Geographical terms	127	0.39	57	0.22	13.81
Light	37	0.11	9	0.03	12.54
Law and order	34	0.10	8	0.03	11.97
Measurement: Size	15	0.05	1	0.00	11.73
The Media: Books	31	0.10	7	0.03	11.42
Seen	33	0.10	8	0.03	11.23
Measurement: Length & height	17	0.05	2	0.01	10.40
Damaging and destroying	65	0.20	26	0.10	9.60
Furniture and household fittings	102	0.31	48	0.19	9.57
Speed: Fast	8	0.02	0	0.00	9.38
Sailing, swimming, etc.	56	0.17	22	0.08	8.63

Table 23 Frequencies (O) and log-likelihood values (LL) of under-used semantic fields in narratives of everyday memories of High Barrier personalities (HB) compared to Low Barrier personalities (LB)

Semantic Field	High Barrier		Low Barrier		LL
	O1	%	O2	%	
Pronouns	5,852	16.94	6,135	18.97	38.55
Negative	478	1.38	623	1.93	29.96
Thought, belief	265	0.77	377	1.17	27.76
Speech: Communication	286	0.83	389	1.20	23.34
Knowledgeable	162	0.47	226	0.70	15.27
Existing	1,223	3.54	1,334	4.13	14.97
Evaluation: True	9	0.03	30	0.09	13.36
Speech acts	196	0.57	258	0.80	13.10
Wanted	128	0.37	181	0.56	12.98
Personal relationship: general	153	0.44	204	0.63	11.08
The Media: Newspapers etc	3	0.01	16	0.05	10.65
Learning	10	0.03	28	0.09	10.11
Participating	21	0.06	40	0.12	7.34
Giving	57	0.16	83	0.26	6.73
Exceed; waste	32	0.09	53	0.16	6.73

Table 24 Frequencies (O) and log-likelihood values (LL) of under-used semantic fields in narratives of dream memories of High Barrier personalities compared to Low Barrier personalities

Semantic Field	High Barrier		Low Barrier		LL
	O1	%	O2	%	
Pronouns	5,370	16.53	4,902	18.92	46.78
Relationship: Intimacy and sex	56	0.17	106	0.41	29.08
Mental object: Conceptual object	180	0.55	234	0.90	24.59
Thought, belief	178	0.55	219	0.85	18.61
Anatomy and physiology	342	1.05	362	1.40	14.11
Sad	32	0.10	57	0.22	13.92
Degree: Boosters	239	0.74	265	1.02	13.68
Negative	432	1.33	440	1.70	13.04
Happy	42	0.13	67	0.26	12.84
Time: Present: simultaneous	51	0.16	74	0.29	11.07
Inattentive	33	0.10	54	0.21	10.99
Like	39	0.12	59	0.23	9.89
Evaluation: Good	6	0.02	18	0.07	9.30
Work and employment: Generally	38	0.12	55	0.21	8.17
Evaluation: Inaccurate	16	0.05	30	0.12	8.09
Distance: Near	2	0.01	10	0.04	7.79
Mental actions and processes	76	0.23	92	0.36	7.30

7.2.4 Discussion

The results of this study largely confirmed the research hypotheses. High Barrier personalities' narratives of everyday and dream memories contained more semantic fields related to concrete and metaphorical container schematic entities than the narratives of Low Barrier personalities. These narratives were also classified as barrier imagery, according to Fisher and Cleveland's manual scoring system (H1), such as *'Vehicles and transport on land'*, *'Clothes and personal belongings'*, and *'Architecture, house and buildings'*. High Barrier personalities used a metaphorical container schema to conceptualise geographical locations as geographically bounded territories and temporal references as definite temporal boundaries (H2). In this sense, the results provided further evidence that the visual cognition of High Barrier personalities emphasised the surface and containing features of their natural environment and memory traces of dream memories to the extent that the concrete and metaphorical container schema represent a theoretical equivalence to the Barrier personality construct.

Given the association between body boundary awareness and primordial mental activity, High Barrier personalities also used more semantic fields reflecting primordial mental activity in both autobiographical memories types compared to Low Barrier personalities (H3), including references to somatosensory processes (*'Anatomy and physiology'*, *'Sensory: Sight'*, *'Light'*) and spatial and motion references (e.g., *'Location and direction'*, *'Moving, coming and going'* and *'Putting, pulling, pushing, transporting'*). In contrast, Low Barrier personalities used more semantic fields associated with conceptual thought (H4), including references related to cognitive processes (e.g., *'Knowledgeable'*, *'Learning'*, *'Negative'*), emotional states (e.g., *'Sad'*, *'Happy'*, *'Like'*) and references indicating an increased emphasis on the evaluation of accuracy and truthfulness of the recalled narrative details (e.g., *'Evaluation: True'*, *'Exceed; waste'*, *'Evaluation: Inaccurate'*). In this sense, the results further confirm the notion that Low Barrier personalities show an increased tendency to recall narratives they perceive to be factually reliable than the narratives of High Barrier personalities, which may reflect a creative and socially engaging narrative style.

Most interestingly, Low Barrier personalities had an inflated keyness of references related to '*Personal relationship: general*'. Such a heightened focus on social relationships contradicts the notion that Low Barrier personalities prefer solitary activities compared to socially orientated High Barrier personalities. Conversely, their increased focus on friendships might indicate that Low Barrier personalities draw on the support derived from close friendship ties in their lives as a possible substitute for a less supportive family environment. High Barrier personalities, on the other hand, would typically use more semantic items from the semantic field '*kin*', coinciding with the protection and nurturing provided by their supportive family. Intimate relationships are also frequently depicted as positive affective events for Low Barrier types, whereas High Barrier personalities frequently associate negative emotions with recalling intimate relationships, potentially indicating the High Barriers' negative experiences of their parental conditional love and evoking feelings of anxiety and rejection from their early socialisation experiences (Rogers, 1951, 1961).

Although Low Barrier personalities tended to express their emotions directly, High Barrier personalities employed more embodied figurative expressions to communicate their emotional states. Body parts, including the heart and anal regions, were used in relation to feelings of sadness and discontent; this act might be associated with the increased nature of High Barrier personalities' socially orientated characters. Further, an anal personality organisation indicates an increased sensitivity to dirt and greater measures of self-control and orderliness, thus reflecting the High Barrier personalities' internalised sense of values and behavioural expectations (Fisher, 1970; Fisher & Greenberg, 1996). In contrast, Low Barrier personalities used more references related to the face as a means to express feelings of courage. The use of PART FOR WHOLE metonymy and idioms by attributing emotionally-expressive qualities to a human body part might also, to some extent, contribute to the regulation of these part-whole schemas in relation to the principles of displacement and condensation. Condensation describes the combination of an image with two or more other images, forming a single unified image; displacement involves the replacement of the initial image with a different form (Freud, 1915). In narratives of dream memories, High Barrier personalities use imagery to evoke negative emotion states, such as the destruction of buildings and the injury of body parts; in so doing, they enable their listeners to simulate similar experiences in their own lives, as marked by

notions of loss and physical pain that could elicit empathic and supportive responses (Semino, 2010).

Apart from the capacity of cognitive functioning to simulate internal states, the use of embodied metaphorical expressions and the use of indirect expressions of negative emotion states might represent a negative politeness strategy as a means to avoid disapproving and judgmental responses by the listener, as these responses might represent positive face-threatening acts to the one recalling them (Brown & Levinson, 1987). Threats to the positive face are assumed to lower an individual's self and social esteem, which, given that High Barrier personalities are typically characterised as socially orientated, would represent an unfavourable outcome with the potential to jeopardise their acceptance within a social in-group. The indirect expression of emotions also represents an indirect speech act in the form of a pre-sequence on the part of the listener, who, in a conversational context, responds to the embedded emotive content by providing a supportive and empathic response consistent with sustained social involvement and conversational interest (Levinson, 1983). In this sense, High Barrier personalities relate to their social environments and attempt to gain the approval of their social surroundings in a manner that directly mirrors their own early experiences in their family environment; that is, they as children adapted to their parents' social expectations and conditional values of what constitutes acceptable and love-worthy behaviour (Fisher & Cleveland, 1958; Rogers, 1951, 1961).

In particular, given that High Barrier personalities employed embodied schemas and emotive expressions through the use of imagery, including destructive and injurious images, to express negative emotions, it can be assumed that High Barrier personalities might be to some extent consciously unaware of their emotions. Thus, one of the basic premises posited by Fisher and Cleveland (1958) applies, as the bodily stiffness of High Barrier personalities can be considered a defence against expressing anger and other negative emotions. In this sense, negative emotions are perceived as suppressed sensations that remain inside the body, assuming metaphorical forms that are externalised obscurely, such that a listener must interpret these forms before properly recognising and projecting them back to the speaker. Throughout, the "politeness game" is ongoing; that is, negative politeness strategies

are then possibly used to avoid disapproving responses until the speaker's defences have been gradually weakened to the point of permitting non-defensive forms of communication. Only at this juncture is an individual able to integrate their negative emotions as a coherent part of the self (Schafer, 1976).

Chapter 8

Body Boundary Imagery in Person-centred Therapy

8.1 Introduction

Chapters 6 and 7 showed that individuals varying in their body boundary finiteness differ in their language behaviour. High Barrier personalities used more semantic content associated with primordial mental activity, whereas Low Barrier personalities used more semantic content related to conceptual thought. Low Barrier personalities also had higher keyness of semantic fields related to emotions and thoughts and of semantic fields related to knowledge and factual themes, whereas High Barrier personalities had higher keyness of semantic fields related to container schematic imagery, concepts that are grounded in terms of clearly defined boundaries and surface structures. Given that Fisher & Cleveland (1958) perceive the formation of body boundaries as embodying familial social values, the differential linguistic expression between High and Low Barrier personalities might be associated with language variation that occurs within speech communities. This notion echoes social psychological theories that put forward that children's socialisation and adaptation within their family structure would facilitate the development of social values and need strivings as an integral part of a behavioural and cognitive system (Fisher & Cleveland, 1958). Such a system of actions is then further expressed in linguistic choices that govern the unique and distinctive linguistic combinations observable in the discursive construction of written and spoken texts (Halliday, McIntosh, & Stevens, 1964; McMenamin, 2002). In this context, the distinctive language use of Barrier personalities might represent a psychological sub-idiolect that is practiced in its micro speech community by reflecting the characteristics associated with High and Low Barrier personalities.

Assuming that Fisher and Cleveland's body boundary development would be influenced primarily by early socialisation experiences and the internalisation of

social and behavioural values, it can be reasoned that psychotherapeutic clarifications of these social and behavioural values would result in changes in body boundary finiteness. In particular, Roger's (1951, 1961) person-centred psychotherapy puts forward that the internalisation of social values that are incompatible with an individual's phenomenological self represent one of the greatest influences in the development of psychopathology. Patients attending person-centred psychotherapy sessions are able to explore their needs and values that are consistent with their experiences within the parameters of a non-judgmental and empathic therapeutic relationship. In light of this context, this chapter explores to what extent body boundary finiteness changes in patients attending person-centred psychotherapy.

8.1.1 Person-centred psychotherapy

The Rogerian approach to therapy generally refers to the theories and clinical practice of Carl Rogers (1902-1987), the founder of so-called person-centred psychotherapy. Person-centred psychotherapy became one of the most influential therapeutic forms after Rogers' publication of 'Client-Centred Therapy' (1951) (Thorne, 2003). The person-centred approach is primarily a phenomenological approach, and it was developed as a countermovement, referred to as the 'third-force' psychology. Thus, it provides an alternative perspective to, first, the nomothetic and theory-driven "diagnostic and prescriptive point of view" (Thorne, 2003, p. 132), and second, the Freudian assumption of perceiving human beings as "irrational, unsocialised, and destructive of self and others" (Pervin et al., 2005, p. 165). In contrast, person-centred psychotherapy is based on the basic assumption that all humans are trustworthy and unique and have an inherent motivation to develop, extend, create and mature, the so-called self-actualising tendency, as a means to fulfil their inner potentials (Rogers, 1961; Thorne, 2003).

8.1.2 Conceptualisation of the self

Rogers perceived the self to be constructed in relation to two components: first 'the current self' as composed of "consistent and organised patterns derived from perceptions of external objects and experiences...and these underlying patterns of the self are available to the self's consciousness" (Pervin, Cervone, & John, 2005, p.

167), and second, ‘the ideal self’ which represents a self-concept that a person would like to resemble or at least potentially become in the future. Thus, a person’s awareness of the discrepancies between ‘the current self’ and ‘the ideal self’ act as a motivational force to reduce the underlying tension through constant clarification of the self, referred to as self-actualisation.

In addition, the process of self-actualisation facilitates the coherent and congruent integration of experiences and perceptions within the current self-concept. In contrast, the notion of incongruence relates to inconsistencies between the self-concept and experiences and perception, which may result in greater tensions between the phenomenological self and the current self-concept, referred to as self-experience discrepancy. Consequently, a person may engage in specific defence mechanisms of denial and distortion of experiences that may be perceived as threatening and thus, incongruent with the underlying current wholeness of the self and a frustration of the need for positive self-regard.

8.1.3 Acquisition of psychological disturbance

According to the person-centred approach, a supportive and loving family environment in which children experience their parents’ unconditional positive regard represents the basis of the development of a positive congruent self and self-worth.

The child will also adapt to his or her parents’ conditional values of what constitutes acceptable and love-worthy behaviour (referred to as introjected values), no matter how bizarre and irrational, to obtain the basic need of parental approval. These introjected parental values may, however, fail to reflect the person’s actual experiences, action tendencies and values, and eventually, the child will start to distort and deny any experiences of the true self and which would fail to win parental approval. Consequently, the discrepancies between the conditional parental values and the individual’s experiences will result in a split between the experiencing phenomenological self and the true self. A person who is preoccupied with fulfilling a great variety of introjected values that are incongruent with the true self tends to engage in rigid attitudes and maintain behaviours and values that further reinforce such a negative self-concept. Such a person might even “become completely cut off

from their own inner resources and their own values and become governed by a secondary and treacherous valuing process based on the internalisation of other people's judgments and evaluations" (Thorne, 2003, p. 138).

Although Rogers refrained from a schematic typology of psychiatric diagnosis (Rogers, 1951), the person-centred theory holds that the discrepancy between the phenomenological self and the true self represents the basis for the development of psychopathological disorders. This view has also been confirmed in empirical psychological studies showing that individuals who experience high scores of discrepancies between the actual self and the ideal self experience higher levels of depression and lower levels of life satisfaction (Higgins, Bond, Klein, & Strauman, 1986; Ogilvie, 1987).

8.1.4 Rogers' three conditions

Given the importance of parental values in the development of an individual's self-concept, person-centred psychotherapy employs a non-directive approach emphasising the therapists' use of reflection as a means to summarise what the clients express about their feelings and thoughts to the extent that patients' phenomenological experiences are fully acknowledged by the therapist. Most importantly, Rogers (1961) stressed the notion of the therapeutic climate as a prerequisite for a deep understanding of the therapists towards their clients and for the desired therapeutic changes to occur. Thus, patients will be encouraged to gradually assume more courage to trust their intuitions, values, needs and desires that are congruent with the phenomenological self. In particular, the person-centred positive and supportive therapeutic environment depends largely upon three conditions, namely, 1) the therapist's congruence or genuineness, 2) unconditional positive regard, and 3) empathic understanding, as a means to facilitate the patient's self-development and self-exploration. Unconditional positive regard allows the therapist to communicate a genuine caring attitude towards the patient and to create a therapeutic climate in which patients are able to explore their emotions and thoughts and to gradually get in touch with their phenomenological self.

Specifically, the attitude of respect and unconditional positive regard offers patients the opportunity to experience unconditional acceptance within an environment that is characterised by an absence of social and ethical introjects and reinforcements. Associated with unconditional positive regard is the idea of empathic understanding, which refers to the therapist's "awareness and understanding of the [client's phenomenological world]... to the extent that the emotion will be shared with the [therapist]" (Reber & Reber, 2001, p. 239). In this sense, the therapist will be able to express her or his non-judgmental empathy in a congruent verbal and non-verbal manner, through which the patient will feel understood and will eventually acknowledge the therapist as a trustworthy companion in their therapeutic process. This enables patients to get in contact with their phenomenological self and to develop a stable and healthy self-concept, meanwhile recognising their personal worth that is independent of external approval.

8.1.5 Reich's bodily armour

Rogers' (1951, 1961) person-centred approach to psychotherapy can be construed as a foundation for psychotherapies that use body awareness or movement, including body psychotherapy, gestalt psychotherapy, dance therapy and bioenergetics. Body psychotherapy perceives the body, mind, internal and perceptual processes to be intertwined aspects of the self-experience and grounded intersubjective meaning that are explored and enacted within the psychotherapeutic relationships through direct physical contact and expressive behaviour (Röhrich, Gallagher, Reuter, & Hutto, 2014). The mind-body focus of such psychotherapeutic approaches facilitates "a movement inward" (Davis, 2012, p. 69) as a means of being aware of and experiencing internal processes in the present rather than in the past; this inward focus is thought to facilitate an authentic experience of emotions and feelings as part of a self-actualisation process (Behr & Becker 2012). In particular, Rogers (1961) emphasizes that psychological changes would result in experiential shifts in form, physical loosening of the organism to the extent that the body would manifest patients' moments of self-actualization (see Fernald, 2003). In this sense, Rogerian therapy influenced body psychotherapy in becoming person-centered by emphasizing a focusing on the experiential and embodied inner self situated within here-and-now. Although verbal psychotherapists might assume a stronger theoretical level by

focussing predominantly on patients' verbal content, as pointed out by Leijssen (2006), humans are essentially interacting bodies "and we are confronted with the body as a metaphor for the whole self; therapy with 'no-body' is impossible" (p. 127).

Consideration of the mind-body relationship in psychotherapy was firstly introduced and popularised by Wilhelm Reich (1897-1957) (see for example Carleton, 2002). Consistent with Fisher and Cleveland's (1958) assumption that the body boundary would embody the sum of all social and behavioural internalisations, as well as representing a container that inhibits the externalization of unacceptable emotions, Reich's (1945) "*Character Analysis*" argued that the contracted musculature and hardened surface of the body armour embodies the sum of repressed instinctive processes, such as emotions and feelings. These instinctive processes are perceived to be unacceptable in relation to societal moral expectations and values. According to Reich (1970), the body surface is comprised of three layers: the first layer relates to the expression of prevalent social values and conventions, such as conscientiousness and politeness; the second layer relates to an individual's unconscious and repressed drives, which are embodied in contracted musculature; and the third layer relates to the biological experiences and processes of the true self (see also Conger, 2005). Given the discrepancy between these layers, Reich (1945) argued that the hard body shell represents the discrepancies between an individual's instinctual, internal processes and demands, and the values and demands of the outer world. The body armour provides a chronic barrier that wards off anxieties that are generated by the conflict between the repressed instinctual processes and the moral demands of the outer world. The resulting lack of awareness, or 'contactlessness', of these repressed instinctual demands is thought to be one of the most important contributing factors in the development of psychological disorders. Through the psychotherapeutic process, the patient is able to trust the expression of repressed instinctual material, reduce the defensive structure and dissolve the rigid body armour.

8.2 Study 4: A tentative exploration of Body Boundary Imagery in Person-Centred Psychotherapy

8.2.1 Aim of this study

Although the notion of a supportive and stable family environment generally represents a positive and fortunate circumstance, person-centred psychotherapy proposes that parental approval and love is, to varying degrees, based on conditional values of what constitutes acceptable and love-worthy behaviour. In particular, Rogers proposes (1951, 1961) that neurotic individuals have internalised their parental and social values as their own to the extent that any experiences, such as emotions and insights, that are experienced by the phenomenological self, but are inconsistent with internalised values, would be repressed from conscious awareness. As a result, an individual would negotiate and regulate their experiences and values, as well as their sense of self-worth, based on the internalisations and approval in relation to the values and judgments that are prevalent in their external social environment (Thorne, 2003). Such an external orientation has been typically associated with the breakdown of genuine interpersonal communication due to the effect of the internal discrepancy whereby deeper insights, being cut-off from conscious awareness, assume a communicative barrier between the self and the external world, resulting in feelings of loneliness, depression and anxiety. Rogers did not evaluate individuals who lack sufficient social value internalisations and thus have dysfunctional body boundary formations, and might face difficulties in adapting functionally and regulating their behavioural expressions to be consistent with society's values and norms (see for example Tardif & Van Gijseghem 2001).

Given the relationship between body boundary development, language behaviour and parental and social value internalisations, this study aims to assess how High and Low Barrier patients change their body boundary finiteness and semantic content through the processes of attending person-centred psychotherapy sessions. Changes in the patients' body boundary finiteness and semantic content would provide some

· Cariola, L. A. (2015). Semantic expression of the Body Boundary Personality in person-centred psychotherapy. *International Body Psychotherapy Journal*, 14.

evidence for Fisher and Cleveland's (1958) assumption that the internalisation of social values would be embodied in the formation of body boundaries. Thus, psychotherapy would enable patients to clarify their social values and attitudes to be consistent with the experiences of their phenomenological self within a therapeutic relationship characterised by the therapist's genuineness, unconditional positive regard and empathy. Such internalisation would be associated, depending on the patient's body boundary personality type, with the weakening or strengthening of the body boundaries.

8.2.1.1 Hypothesis

Given that Study 2 (see 6.2) demonstrated that High Barrier personalities use more semantic content associated with primordial mental activity in the written narration of everyday and dream memories, the first hypothesis (H1) predicts that barrier imagery would correlate positively with semantic content associated with primordial thought, such as group references (i.e., first-person plural pronouns and inclusion words), perceptual processes (i.e., seeing, hearing and feeling), spatial references (i.e., relativity, space and motion), bodily processes (i.e., body, health, sexuality and ingestion) and references related to personal concerns (i.e., work, achievement, leisure, home, money, religion and death). However, barrier imagery would be negatively correlated with semantic content related to conceptual thought, such as self-reference (i.e., first-person singular pronouns) and verb forms (i.e., common verbs, auxiliary verbs, present tense, past tense and future tense) as well as affective processes (i.e., positive emotions and negative emotions) and cognitive mechanisms (i.e., insight, causation, discrepancy, tentativeness, certainty, inhibition and exclusion words) in the combined spoken psychotherapy transcripts. Correlations of semantic content consistent with the research hypotheses would then demonstrate external validity to the extent that an association between semantic items related to barrier imagery and primordial mental activity can be generalised to naturally occurring language behaviour and to experimentally derived autobiographical memories only (see 6.2).

Additionally, psychological theory proposes that early socialisation experiences and internalisation of social and behavioural values, or the lack thereof, influence the

development of the body boundary formation (Fisher & Cleveland, 1958; Rogers, 1967). Because the person-centred psychotherapy aims to support patients in trusting and bringing to conscious awareness their organismic experiences and values, rather than internalised values, the second hypothesis (H2) predicts that Low Barrier patients would show an increase and High Barrier patients a decrease in barrier imagery at the end of therapy compared to the first psychotherapy sessions. The third hypothesis (H3) predicts that Low Barrier patients would show an increase and High Barrier patients a decrease in semantic content associated with primordial mental activity at the end of therapy compared to the first psychotherapy sessions. Given that the results of psychotherapy typically aim to clarify patients' neurotic symptoms, such as feelings of loneliness, depression and anxiety and thus to reduce their psychological tensions and discomfort (Rogers, 1961, p. 65), a fourth hypothesis (H4) predicts that Low and High Barrier patients would show lower frequencies of negative emotion words (such as anxiety, anger and sadness) at the end of therapy compared to the first psychotherapy sessions.

Taking into consideration that this study is based on the theoretical assumption that body boundaries would change throughout the psychotherapeutic process, a fifth hypothesis (H5) puts forward that progressive psychotherapy sessions would be positively correlated with barrier imagery in Low Barrier patients but progressive psychotherapy sessions would correlate negatively with barrier imagery in High Barrier patients. The sixth hypothesis (H6) predicts that progressive psychotherapy sessions would be negatively correlated with semantic content associated with primordial mental activity in High Barrier patients but positively correlated in Low Barrier patients. A final seventh hypothesis (H7) further predicts that progressive psychotherapy sessions would be negatively correlated with negative emotion words in Low and High Barrier patients. In this sense, this study is based to some extent on the assumption that the expression of the true self as well as the formation of the body boundary lies in the middle range rather than the extreme end of the High-Low Barrier personality continuum.

8.2.2 Method

8.2.2.1 Data

The data of this study were sourced from the online ‘*Counseling and Psychotherapy Transcripts, Client Narratives, and Reference Works*’ database, which contains more than 2,000 transcripts of psychotherapy sessions that document the treatment of a variety of psychiatric disorders, such as post-traumatic stress disorder, schizophrenia, bipolar disorder, childhood trauma, sexual abuse, and eating disorders, to mention a few. The psychotherapy transcripts are based on different therapeutic modalities, including person-centred therapy, psychodynamic therapy, group psychotherapy, and neuro-linguistic programming, among others. The transcript database of the Rogerian person-centred approach to psychotherapy, however, is the most comprehensive because it offers a range of transcripts of individual therapies based on twenty consecutive sessions, with the twentieth session representing the final session. In contrast, the transcripts of the other psychotherapeutic modalities were often based only a few consecutive sessions. According to the accompanying ‘Counseling and Psychotherapy Transcripts’ handbook (2012), the psychotherapy transcripts are provided by practicing therapists who adhere to the American Psychological Association’s Ethics Guidelines, and the selection of the psychotherapy transcripts was conducted by an editorial board of distinguished practitioners and academics.

The psychotherapy transcripts used in this study were based on 12 patients (7 men and 5 women) who attended 20 consecutive once-weekly Rogerian person-centred psychotherapy sessions. The demographic information of the patients, including age range, sexual orientation and marital status, can be seen in Table 25.

Table 25 Demographics of patients’ age range, sexual orientation and marital status

Gender	Age Range			Sexual Orientation		Status		
	11-20	21-30	31-40	Heterosexual	Bi-sexual	Single	Engaged	Married
Male	1	5	1	6	1	6	-	1
Female	-	4	1	5	-	3	1	1

Although the person-centred approach to psychotherapy categorically refrains from making psychiatric diagnoses, the therapists noted that at the beginning of their first psychotherapy session the patients presented a wide range of comorbid symptoms. Of the 12 patients, 50% (6) suffered presented depression; 41.67% (5) anxiety; 33.33% (4) anger; 33.33% (4) low self-esteem; 16.67% (2) apathy; 16.67% (2) feelings of isolation; 16.67% (2) general pain; 16.67% (2) moodiness; 16.67% (2) sexual dysfunctions; 16.67% (2) loss of appetite; 8.33% (1) acting out; 8.33% (1) compulsive disorder; 8.33% (1) confusion; 8.33% (1) danger to others; 8.33% (1) dysphagia; 8.33% (1) dysphoria; 8.33% (1) exhaustion; 8.33% (1) hyperphagia; 8.33% (1) hypersomnia; 8.33% (1) indecisiveness; 8.33% (1) irritability; 8.33% (1) social inhibition; and 8.33% (1) suicidal ideation.

Of the 12 therapists, 11 (4 men and 7 women) had less than 10 years post-qualification experience in Rogerian person-centred psychotherapy. The online ‘Counseling and Psychotherapy Transcripts’ database (2012), however, did not provide any information on one therapist’s gender and post-qualification experience. The 12 sets of transcripts had a total token count of 1,699,534 words, with a mean of 3,836.42 per patient psychotherapy transcript (SD = 3,057.79). The therapists’ verbal behaviour had a total token count of 358,137 words, with a mean of 1,577.70 words per psychotherapy transcript (SD = 678.36). The patients’ verbal behaviour had a total token count of 1,341,397 words, with a mean of 6,210.17 words per psychotherapy transcript (SD = 2,773.22).

8.2.2.2 Objective measures and content analysis

As outlined in Chapter 4 (see 4.2), the BTD’s barrier imagery category and the LIWC (Pennebaker et al., 2007) were applied to psychotherapy transcripts of patients’ verbal behaviour (N = 12) using the PROTAN content analysis software (Hogenraad et al., 2003).

8.2.2.3 Statistical analysis

Initial descriptive statistics regarding the frequencies of barrier imagery revealed that the psychotherapy transcripts had a frequency rate mean 1.72 of and a frequency rate

median of 1.69 (SD = .66). By drawing on the methodology applied by Fisher and Cleveland (1958), the frequency rate median value of 1.69 for the barrier imagery frequency of the first psychotherapy session was used to divide the psychotherapy transcripts into two patient groups that used high and low frequencies of barrier imagery at the beginning of their therapy. Therefore, psychotherapy beginnings with barrier scores less than the frequency rate median value (< 1.69) were categorised as 'Low Barrier patients', whereas Barrier scores greater than the frequency rate median value (> 1.69) were categorised as 'High Barrier patients'.

After the psychotherapy transcripts were divided into two equal parts, the descriptive statistics showed that the Low Barrier patients ($N = 6$) had a frequency rate mean of 1.13 (SD = .24) and that the High Barrier patients ($N = 6$) had a frequency rate mean of 2.30 (SD = .29) for the barrier frequencies in the psychotherapy transcripts. As a result of this median division, of the total 12 patients, 6 were classified as High Barrier and 6 as Low Barrier patients. The High Barrier patients were 3 men aged 11 to 30 years and 3 women aged 21 to 40 years. The Low Barrier patients were 4 men aged 21 to 30 years and 2 women aged 21 and 40 years.

A Spearman rank correlation coefficient (Spearman, 1904) was used to explore the strengths of association between barrier imagery and the semantic content of the LIWC. It was also used to explore the strengths of associations between the progression of the sessions and the semantic variables as well as the strengths of associations among the semantic variables in the psychotherapy transcripts of Low and High Barrier patients. Subsequently, a non-parametric repeated measures Wilcoxon signed rank test compared the frequencies of barrier imagery between the first and twentieth (final) psychotherapy sessions.

8.2.3 Results

8.2.3.1 Descriptive statistics

The descriptive statistics of the semantic content of semantic content of the combined psychotherapy sessions can be seen in Table 26.

Table 26 Descriptive statistics of the BTD and LIWC semantic content of the patients' verbal behaviour in the combined psychotherapy sessions

	Sessions (N = 216)			
<i>Linguistic variable</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>IQR</i>
Word count	6210.17	5467.00	2773.22	1841.00
Different words	598.49	584.00	126.67	165.00
Barrier imagery	1.69	1.69	.55	.80
Penetration imagery	1.33	1.34	.42	.59
Function words	26.14	26.17	.29	.33
Pronouns	15.20	15.15	.60	.91
Personal pronouns	11.86	11.73	.84	1.40
1st singular pronouns	9.22	9.24	.80	1.08
3rd singular pronouns	4.47	4.58	1.43	2.21
2nd pronouns	4.34	4.37	1.40	2.00
1st plural pronouns	2.02	1.93	.70	.90
3rd plural pronouns	2.81	2.71	.73	.89
Impersonal pronouns	9.47	9.50	.53	.73
Articles	6.31	6.23	.63	.98
Verbs	14.11	14.28	.56	.80
Auxiliary verbs	11.06	11.08	.47	.63
Past tense verbs	0.92	.92	.19	.26
Present tense verbs	11.26	11.28	.64	.99
Future tense verbs	2.38	2.37	.53	.71
Adverb	7.86	7.85	.43	.56
Prepositions	10.30	10.30	.78	1.35
Conjunctions	8.98	8.93	.54	.76
Negations	5.58	5.50	.57	.76
Quantifiers	5.11	5.15	.42	.57
Numbers	2.93	2.96	.55	.75
Swear	0.95	.88	.60	.73
Psychological processes				
Social	9.71	9.79	1.42	2.11
Family	1.51	1.42	.80	1.20
Friends	1.23	1.14	.68	.82
Humans	2.84	2.75	.78	.86
Affect	7.40	7.30	.68	.81
Positive emotions	6.27	6.20	.77	1.02
Negative emotions	3.81	3.79	.55	.69
Anxiety	1.73	1.64	.54	.64
Anger	2.05	2.01	.53	.67
Sadness	1.37	1.37	.42	.54
Cognitive processes	14.46	14.43	.56	.87
Insight	6.63	6.54	.92	1.50
Causation	4.01	4.03	.46	.62
Discrepancy	3.64	3.58	.49	.70

Psychological processes				
Tentativeness	6.26	6.16	.71	.96
Certainty	4.76	4.64	.66	.89
Inhibition	1.76	1.73	.43	.58
Inclusion	7.34	7.46	.81	1.23
Exclusion	6.06	6.05	.51	.69
Perceptual	4.77	4.72	.60	.79
Seeing	2.28	2.33	.50	.68
Hearing	3.03	2.93	.78	1.02
Feeling	2.62	2.51	.69	.83
Biological process	2.62	2.61	.59	.76
Body	1.51	1.45	.47	.61
Health	1.40	1.37	.47	.58
Sexual	1.04	1.03	.61	.77
Ingestion	1.09	1.05	.53	.71
Personal concerns				
Work	3.05	2.99	.77	1.01
Achievement	3.00	2.95	.55	.69
Leisure	2.09	2.07	.58	.79
Home	1.58	1.55	.62	.77
Money	1.49	1.38	.66	.89
Religion	.98	.93	.57	.76
Death	.56	.54	.47	.83
Relativity	10.53	10.61	1.00	1.21
Motion	4.25	4.29	.59	.71
Space	6.72	6.73	.72	1.01
Time	7.51	7.55	.75	1.02

8.2.3.2 Strengths of association between barrier imagery and semantic content

Consistent with the first hypothesis (H1), the results demonstrated that barrier imagery correlated positively with semantic content associated with primordial mental activity (see Tables 27 and 28).

Table 27 Positive Spearman rank correlation coefficients of positive correlations between barrier imagery and semantic content of the patients' verbal behaviour in the combined psychotherapy transcripts

Linguistic variable	Barrier imagery
1 st plural pronouns	.275**
3 rd singular pronouns	.194**
Articles	.396**
Prepositions	.235**
Family	.251**
Anger	.221**
Inhibition	.138*
Inclusion	.191**
Swear words	.182**
Biological processes	.324**
Body	.348**
Health	.202**
Ingestion	.337**
Work	.270**
Leisure	.383**
Home	.519**
Money	.444**
Death	.224**
Relativity	.446**
Motion	.367**
Space	.395**
Time	.223**

Notes: * $p < .05$ level, ** $p < .01$ level

Table 28 Negative Spearman rank correlation coefficients between barrier imagery and semantic content of the patients' verbal behaviour in the combined psychotherapy transcripts

Linguistic variable	Barrier imagery
Pronouns	-.278**
1 st singular pronouns	-.226**
Impersonal pronouns	-.356**
Verbs	-.326**
Auxiliary verbs	-.328**
Present tense	-.180**
Negations	-.353**
Affective processes	-.363**
Positive emotions	-.376**
Anxiety	-.179**
Cognitive processes	-.422**
Insight	-.408**
Causation	-.160*
Discrepancy	-.158*
Tentativeness	-.257**
Exclusion	-.241**
Perceptual processes	-.268**
Feeling	-.316**

Notes: * $p < .05$ level, ** $p < .01$ level

Group references, such as first-person plural pronouns (e.g., we, us, and our), and inclusion words (e.g., and, with, and include) showed a weak positive association with barrier imagery. The use of collective group references resonates with a lack of self-other differentiation and over-inclusive thinking. In this sense, self-expectations and internal experiences are over-generalised in relation to others, such as the patients' therapist and partners, which can be observed in the following phrases: [Patient 3] "*Are we supposed to sit here and just tell anything that comes to my mind?*" or "*Well we were both more or less elated because we both want to get this problem resolved, so we are quite hopeful*".

In contrast, barrier imagery was weakly negatively correlated with personal pronouns (e.g., I, them, and her) and therefore indicated an emphasis on conversational topics that relate to the self rather than others. Particularly, the weak negative correlation between barrier imagery and first-person singular pronouns (e.g., I, me, and mine)

implies a reduced self-focus. By drawing on person-centred psychotherapy (Rogers, 1967), a reduced self-focus would be indicative of a blocked interpersonal communication, or so-called defence mechanism of denial, in which patients are unaware of their feelings. In this sense, conversations maintain a superficial tone, referred to as phatic conversations (Malinowski, 1972), and contain a restricted level of self-disclosure by focusing on objects and, in relation to the psychotherapeutic context, problems that are non-immediate and external to the self (Rogers, 1961). An increased self-focus emphasises internal mental processes that relate to affective and cognitive states and changes, whereas an increased usage of group-references and non-immediate others relate to interpersonal material processes (Halliday, 1985). Consistent with this view, there was a weak positive association between barrier imagery and third-person singular pronouns (e.g., she, her, and him), indicating an increased non-immediate, or extended, other-focus related to the patients' exploration of their personal relationships. A high prevalence of third-person singular pronouns might also represent a staging strategy to regulate their discomfort of being the focus in the conversational situation (McCarthy, 1991) as well as to justify their feelings and concerns. This strategy indicates reduced personal responsibility and dissociation from statement ownership (Hancock, Curry, Goorha, & Woodworth, 2008) within the psychotherapeutic context, which can be observed in the following example: [Patient 6]

COUNSELOR: *"And that leads you to be very - well you said skeptical - I guess also leery about what's going to happen here"*.

PATIENT: *"Well yeah well part of my bad experience. Well part of my experiences comes with working as a counselor with myself. Which I am doing now. And I am working in state and in hospitals and so forth. And realizing that these guys that I am working with are you know my superiors. Do not know me. Or know every little. And like just the resident psychiatrist I went to last year I knew damn well I knew more about physiology or just about people than he did. He did not - he would give me back the next week what I had tried to tell him the week before completely reversed. Completely ignoring what I had meant. And just I guess being basically insensitive. Which just makes me feel like I am not getting ahead of things just unwinding. Not exactly or continuing my therapy"*.

As mentioned previously, person-centred psychotherapy assumes that psychological disturbances are acquired through the process of familial and social introjects that are incongruent with the values and experiences of the phenomenological self. This process precedes the embodiment of these values within the body boundary (Fisher & Cleveland, 1958). Therefore, a weak positive association between barrier imagery and family-related references (e.g., daughter, husband, and aunt) highlights the inflated focus on family related themes, as demonstrated in the following patient's statement: [Patient 11] *"Because I was already invited by Jodie's mother over to dinner. See, it was almost like - and I sat down and thought about, tried to think about that, too. And, I was thinking...because I felt this before, that my mother might have rejected me, like my mother did not really care. You know I think I told you that last week"*.

Barrier imagery correlated moderately positively with home references (e.g., apartment, house, family), which mirrors a focus on the immediate and intimate social environment and indicates an emphasis of container-schematic precepts — e.g., [Patient 110] *"And, I guess what happened was, some kids had rung this old lady's doorbell, so she had come up from the basement to answer the door, and her husband had seen the kids running away from the door, and so he knew who they were and so he told her, and she came over and told my neighbour. And, the neighbour got all mad, and she was sitting there yelling at two of her own kids and one of the people across the street's kids, and she screamed at him about, oh, maybe she sent him home"*.

A weak to moderate positive correlation between barrier imagery and references to personal concerns, including work (e.g., job, majors, and Xerox) and money (e.g., audit, cash, and owe) relates to a materialistic and achievement orientated focus, e.g., [Patient 124] *"I - although I enjoy sort of basking in the accomplishments - well, based on when I go back home. Like, I have spoken quite a few times to my - well, the old high school keeps inviting me back. I was the first graduate in class", and in relation to monetary references, "So, I remember I went out and I bought her something from K.M. Hightower's...like I spent like a whole part-time pay check, which is like 15 bucks. It's, well...but I mean it was still a substantial amount for just like a small housewarming gift for somebody who is not even a relative or really that close". This materialistic and goal-orientated focus could possibly relate to being*

socially positively evaluated by others based on superficial values rather than on personal inter-personal qualities. Conversely, a weak positive correlation between barrier imagery and leisure words (e.g., cook, chat, and movie), which to some extent, is consistent with the creative expression and unstructured behaviour associated with primordial mental activity — e.g., [Patient 2] *“So, I read his psychology book. However, he does not because I do not do it that much. I am not interested in that much, you know. I like to read, but I like to read novels historical novels, and he does not”*.

As expected, barrier imagery was weakly to moderately negatively associated with affective processes (e.g., happy, cried, and abandon), including positive emotion (e.g., love, nice, and sweet) and anxiety words (e.g., worried, fearful, and nervous) that are related to the reduced conscious awareness of both positive and anxiety-related emotional experiences and the communication to the therapist. Although a heightened primordial mental activity typically relates to reduced affective processes, barrier imagery showed a significant weak positive correlation with anger words (e.g., hate, kill, and annoyed) and swear words (e.g., damn, piss, and fuck), which indicate an emphasis of anger-related experiences associated with a body boundary finiteness within the psychotherapeutic context. These anger emotions can be directed towards the self in the form of references related to self-harming, e.g., [Patient 6] *“And, you know, it was like really stupid, but it was like about the third night within the last week that I woke up and wanted to cut myself, which is just really. Like I before that had gone through a fantastically long time”*, or the feeling of anger in relation to others, e.g., [Patient 27] *“Well, I think to be worried about that is, it makes sense to me because I just I feel like if you are angry and you are angry while somebody is saying something to you, you ought to be able to tell them you are angry or express it or say something or do something”*.

According to Rayner (1995, pp. 101-102), aggression involves the actual or simulated activation of muscular movements associated with primordial mental activity to bring about a negation and separation as well as a reaction of perceived threats and a self-preservation function. Considering that High Barrier individuals introjected their parental social and behavioural values, such as the socially unacceptable expression of rage and anger (Fisher & Cleveland, 1958), the expression of anger within the

therapeutic context would facilitate an essential cathexis to explore interpersonally distressing experiences that result in a gradual resistance to maladaptive parental and social introjects (Freud, 1905; Fenichel, 1945). A resistance may be then perceived as an adaptive manifestation of the patient embodying an agent of change (Coghlan, 1993; Nevis, 1987) in which the patient would resist the learned masochistic submission to parental demands as a means to avoid interpersonal rejection, as well as the harsh criticism of the internalised sadistic parental super-ego (Freud, 1923).

Given that the inhibited expression of anger-related emotions has been typically associated with the stiffening of the body musculature in High Barrier personalities (Fisher and Cleveland, 1958), the positive correlation between barrier imagery and aggression words might represent a psychotherapeutic feature of the previously repressed anger and the loosening of the conditioned punishment-reward behaviour to avoid socially rejecting and disapproving social judgment (Pennebaker, 1989; Pennebaker & Beall, 1986; Traue & Pennebaker, 1993). Accordingly, there was also a significant positive correlation between barrier imagery and inhibition words (e.g., block, constrain, and stop), which might be related to the inhibited expression of High Barrier patients' thoughts and feelings. In contrast, the weak correlations between barrier imagery and verbs (e.g., walk, went, and see), including auxiliary verbs (e.g., am, will, and have) and present tense verbs (e.g., is, does, and hear) indicates a reduced reality-based behaviour and now-and-here concern associated with primordial mental activity (Robbins, 2011).

Barrier imagery also showed a weak positive association with death-related references (e.g., bury, coffin, and kill), such as self-directed aggressive behaviour in the form of suicidal ideation, e.g., [Patient 6] *“Well, when I tried to kill myself about two years ago or whenever it happened, and I saw a psychiatrist where I was when I got out of the hospital”*. Given the relationship between destruction and anger, as noted in the psychoanalytic literature (see Hurvich, 2003), the use of anger words and destructive death-related references might also be indicative of the presence of annihilation anxieties, such as through the use of death-thematic fantasies, e.g., [Patient 32] *“I cannot conceive of it, and yet, personally — if everyone I knew now died, I think my life would be completely different because I would not have any expectations to live up to their expectations”*. Particularly, and consistent with Fisher and Cleveland's

(1958) observation, Bowlby (1980) conceptualised death-related fantasies to represent patients' unconscious revenge and desire to hurt their parents. Such revenge would be motivated by parental rejection of the patients' authentic self.

Similar to affective processes, cognitive processes (e.g., cause, know, and ought), including insight words (e.g., think, know, and consider), causation words (e.g., because, effect, and hence), discrepancy words (e.g., should, would, and could), tentativeness words (e.g., maybe, perhaps, and guess) and exclusion words (e.g., but, without, and exclude), and negations (e.g., no, not, and never) were weakly to moderately negatively correlated with barrier imagery. Specifically, the reduced use of insight words, tentativeness and causation words indicate a lower presence of self-reflection and the sense-making processes of the content that is being explored within the therapeutic context. Similarly, low frequencies of discrepancy words and exclusion words indicate a reduced presence of complex cognitive processes to produce accurate accounts of experiences and insights. To some extent, the reduced usage of semantic content that is classified to measure cognitive processes may indicate a lowered neurotic defence mechanism of intellectualisation in which patients would avoid unconscious conflicts through the process of reasoning and logic (Freud, 1936).

Furthermore, barrier imagery was weakly to moderately positively correlated with biological processes (e.g., eat, blood, and pain), including references related to the body (e.g., cheek, hands, and spit), health (e.g., clinic, flu, and pill) and ingestion (e.g., dish, eat, and pizza), e.g., [Patient 3] *"She would be sleeping (Body) and wake (Body) up the next morning, I am dead tired (Health) because I laid there and worried all night about something I really did not need to be worried about. I used to chew (Ingestion) my finger nails (Body) clear back to the quick ..."*. The moderate to strong positive correlations with relativity (e.g., area, bend, and exit), including references related to motion (e.g., arrive, car, and go), space (e.g., down, in, and thin) and time (e.g., end, until, and season), as well as prepositions (e.g., to, with, and above), further reflect the psychosomatic characteristic and somatosensory impressions associated with primordial functioning (Robbins, 2011) — e.g., [Patient 124] *"How will I interact now (Time)? Why should I have done that? Why should not I have just come (Motion) in (Space) here and be honest? I hope I am being honest. However, just the*

thought that...". Barrier imagery was also moderately positively associated with articles (e.g., a, an, and the), which correspond to the tendency of objectification, which reflects the concreteness in primordial mental activity (Bucci, 1997; Mergenthaler & Bucci, 1993; Loewald, 1978) and a heightened focus on surface-defining objects — e.g., [Patient 11 *"Not that I care about the fellow. It is just the point of the thing"*].

Conversely, barrier imagery was weakly negatively correlated with perceptual processes (e.g., observing, heard, and feeling), including feeling words (e.g., feels and touch), indicating a reduced receptivity to environmental sensory stimuli and lowered sensitivity of the external skin body boundary in spoken therapeutic discourses compared to written autobiographical memories. This low activation of perceptual processes typically relates to conceptual thought (Robbins, 2011). Based on cognitive psychology, a deflation of sensory processes has also been identified as a marker of memory inaccuracies (e.g., Johnson & Raye, 1981; Hernandez-Fernaund & Alonso-Quecuty, 1997; Schooler, Gerhard, & Loftus, 1986). Within the therapeutic context, a reduction of perceptual processes might relate to discursive themes that are based on patients' fuzzy memory representations of their inter- and intra-psychic experiences that form part of their personal truths (Brainerd & Kingma, 1984; Reyna & Brainerd, 1998; Spence, 1982). A reduction of perceptual process is also consistent with the Rogerian (1961, p. 110) assumption that individuals would defensively exclude insights that are inconsistent with their internalised value systems. Lower frequencies of perceptual process in heightened barrier awareness would then indicate patients' dysfunctional ability to acknowledge their internal and external reality, as well as their lowered ability to understand their own or others' implicit or explicit mental states. This decreased ability indicates a limited capacity to engage in self-reflective and mentalisation processes (Fónagy & Target, 1996).

8.2.3.3 Comparing patients' semantic content between the first and twentieth (final) psychotherapy session

A Wilcoxon signed rank test showed that High Barrier patients used significantly less and Low Barrier patients significantly more barrier imagery at the end of psychotherapy compared to their first session (Tables 29 and 30). Thus, the second

(H2) hypothesis was confirmed.

The reduction of barrier imagery in High Barrier patients is indicative of a supportive therapeutic environment that enables patients with previously heightened body boundary finiteness to clarify the parental and social introjects that were incongruent with the phenomenological self. The empathic and non-judgmental therapist allows patients to explore and reflect upon their emotions and thoughts, including frustrations and traumatic experiences, resulting in the lowering of the encapsulating body boundary. In particular, the absence of punishing interpersonal judgment would result in the reduction of muscular sensitivity associated with a socially conditioned punishment-reward response (Fisher & Cleveland, 1958).

Given the assumption that body boundaries develop as a response to the internalisation of social values concurrent with the behaviourist punishment-reward system (Fisher & Cleveland, 1958), the nurturing and empathic environment of the person centred therapeutic environment would bring about functional forms of self- and other-relating and would help the patient formulate values and behavioural responses that are congruent with the needs of their phenomenological self. A reduced body boundary embodies a functional self-other differentiation that enables patients to acknowledge their feelings and to be reliant on their own judgments and values, concurrent with a greater capacity to trust others and to engage with their experiences. Such a functional body boundary would further allow patients to fulfil the potentials of their ideal self.

High Barrier patients also showed a decrease in discrepancy words (e.g., should, would, could), further reflecting a reduction in introjected parental behavioural and emotional absolutist self- and other-demands. This resonates with Ellis (1994) and Horney's (1945) concepts of absolute claims, the so-called 'shoulds', 'oughts' and 'musts', which represent a fundamental feature of psychological disturbances and a neurotic personality organisation. The therapeutic process would enable patients to reformulate their rigid demands into flexible and realistic preferences that are consistent with a compassionate understanding and tolerance towards one's own and others emotions and behavioural tendencies. The clarification of these neurotic demands within the psychotherapeutic context increases an internal locus of

evaluation, which would enable patients to evaluate their experiences based on their own values rather than sourcing external judgments. The notion of values and judgment as fixed and threatening entities then assumes less importance and reduces the fear of not meeting others' demands or being loved and approved by their parents and social relations at possibly all times (Rogers, 1951).

A reduction of demands would also coincide with an actualising tendency in which an individual's fulfilled potentials would lower the perceived discrepancies between the phenomenological and ideal self, thus resulting in an improved sense of life satisfaction (Higgins, Bond, Klein, & Strauman, 1986; Ogilvie, 1987). In particular, clarification of these introjects would result in the integration of previously split-off parts of the self. Such an integration might, then, also produce a greater tolerance towards one's own and other's action tendencies, such as the expression of emotions and insights, making them less likely to engage in the process of splitting, in which perceived differences would be exaggerated, resulting in the formation of dichotomous "good" vs. "bad" group categorisations associated with primordial mental activity (Rayner, 1995). There was also an increase in insight words (e.g., think, know, consider), which reflects heightened levels of self-reflection, as well as an increased ability to make causal inferences between emotions and events that are communicated in the psychotherapy sessions.

High Barrier patients also showed an increase in seeing words (e.g., view, saw, seen) but a reduction in spatial references (e.g., down, in, thin), indicating an increase in sensory processes associated with non-spatial elements, such as social relations, and in relation to metaphorical expressions based on the SEEING IS KNOWING schemas, e.g., [Patient 105] *"I can see it in all of them. How sometimes I just, like looking back over a situation I will think, no the other person said this, now really what did he say and what does that mean to him and what does that mean to me in relation to that"*.

In relation to Low Barrier patients, an increase in body boundary finiteness in the twentieth psychotherapy session compared to the first, indicates that the therapeutic process enabled patients to internalise values derived from the therapeutic alliance that would represent stable foundations of a functional self- and other-relating. Given

that Low Barrier personalities have experienced an early family environment characterised by a lack of supportive structures and in which parents were experienced as threatening and overtly abusive, the therapeutic alliance might have facilitated Low Barrier patients in formulating more functional and thicker body boundaries that allow a clearer self and other differentiation. The empathic and unconditional regard of the therapeutic alliance might have enabled the patients to develop an improved sense of self-worth in which the self is seen as loveable and worthy of respect. It may also have facilitated a greater trust to engage in social interactions that are not a threat to the self but are instead perceived as reasonable, caring social relations. Low Barrier patients also showed an increase of references related to the sensory input of hearing (e.g., ear, listen, hearing), which reflects an increased sense of openness to experience (Hirsch & Peterson, 2009), in the last therapy session compared to the first. Conversely, a reduction of semantic content associated with primordial mental activity, such as articles and references related to work and achievement, indicate that Low Barrier patients were even less materialistic at the end of psychotherapy compared to the first session.

Apart from some semantic variables, the results did not reflect a compelling increase in Low Barrier patients or a reduction in High Barrier patients of semantic content associated with primordial mental activity, so the third hypothesis (H3) was only partly confirmed. No statistically significant reduction in negative emotion words, including anxiety, anger and sadness, was found in High or Low Barrier patients, so the fourth hypothesis (H4) was rejected.

Table 29 Descriptive statistics (mean, median, standard deviation and interquartile range) and Wilcoxon signed-rank test results of semantic content of semantic content in the first and final psychotherapy session of High Barrier patients

	First session (N = 6)				Twentieth session (N = 6)					
<i>Linguistic variable</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>IQR</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>IQR</i>		<i>Sig.</i>
Barrier	2.30	2.31	.29	.51	1.46	1.50	.34	.58	FI > TW	*
Discrepancy	3.77	3.66	.50	1.04	3.26	3.18	.38	.58	FI > TW	*
Insight	5.86	5.74	.61	1.12	6.56	6.55	1.00	1.95	FI < TW	*
Seeing words	2.01	2.06	.18	.31	2.51	2.43	.22	.35	FI < TW	*
Space	7.08	7.02	.77	1.38	6.79	6.79	.67	1.25	FI > TW	*

Notes: * $p < .05$ level, ** $p < .01$ level, FI = First session, TW = Twentieth session

Table 30 Descriptive statistics (mean, median, standard deviation and interquartile range) and Wilcoxon signed-rank test results of semantic content of semantic content in the first and final psychotherapy session of Low Barrier patients

	First session (N = 6)				Twentieth session (N = 6)					
<i>Linguistic variable</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>IQR</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>IQR</i>		<i>Sig.</i>
Barrier	1.13	1.07	.24	.47	1.53	1.44	.43	.75	FI < TW	*
Articles	6.43	6.42	.63	1.09	5.92	5.99	.55	.86	FI > TW	*
Hear	2.74	2.86	.69	1.18	3.31	3.20	.94	1.11	FI < TW	*
Achievement	3.24	2.93	.71	1.39	2.70	2.77	.52	.90	FI > TW	*
Work	3.32	3.20	.67	1.30	2.83	2.57	.73	.83	FI > TW	*

Notes: * $p < .05$ level, ** $p < .01$ level, FI = First session, TW = Twentieth session

8.2.3.4 Strengths of association between progressive psychotherapy sessions and semantic content

A Spearman rank correlation coefficient showed that in High Barrier patients, progressive psychotherapy sessions were weakly negatively correlated with barrier imagery, but progressive sessions were not positively correlated with barrier imagery in Low Barrier patients. Thus, the fifth hypothesis (H5) was only partly confirmed (see Tables 31 and 32).

In High Barrier patients, there was also a negative correlation between progressive sessions and first-person singular pronouns (e.g., I, me, mine) as well as anxiety words (e.g., worried, fearful, nervous) and death-related references (e.g., bury, coffin, kill). Such a reduced self-focus and deflation of death-related themes might be related to a deflation of depressive symptoms as well as a reduced attention to emotionally painful experiences (Weintraub, 1981, 1989; Rude, Gortner, & Pennebaker, 2004; Stirman & Pennebaker, 2001; Wolf, Sedway, Bulik, & Kordy, 2007). In particular, High Barrier patients reduced the usage of death-related references to express suicidal ideation, indicating the presence of an internal split in which the body would be conceptualised within a dichotomous “other” and “not me” framework. Meanwhile, an identification with the narcissistic and sadistic super-ego would be acted out in form of an attack against the body-self (Goldblatt & Maltsberg, 2010; Maltsberg, 2004). A suicide attempt would enable the patient to dissociate from the depressive feelings and would provide a means to preserve the core self and maintain self-cohesion, thus representing a maladaptive coping strategy to regulate self-other boundaries (Maltsberg, 2004; Stolorow, 1975; Boergers, Spirito, & Donaldson, 1998). Given High Barrier patients’ clearly defined social and behavioural expectations, suicide might then also assume a retaliation against the critical and conditionally loving parent by assuming bodily ownership and represent revenge against the parent for not having provided sufficient unconditional love (Bowlby, 1980; Kernberg, 1984; Maltsberg, 2004, p. 657).

Considering that High Barrier patients clarified, within the therapeutic process, parental and social introjects that are incongruent with the patients’ phenomenological experiences, the use of death-related expressions also resonates with Freud’s (1923) concept of the death instinct, to the extent that patients might experience a regression to an earlier primordial state of self-organisation. The loss of these parental values and the weakening of body boundaries that constitute the foundation of patients’ social forms of self- and other-relating would activate infantile fantasies of annihilation anxieties related to the fear of losing parental love and the threat of parental emotional abandonment. The patient might also experience regression to early annihilation anxieties that would be transferred to their current life situations, such as the fear of not being able to cope and feelings of emptiness or loss of identity that would impinge the ability of survival and self-preservation, to mention a few (Hurvich, 2003, pp.

585-586). Through the therapeutic alliance, however, patients would progressively discover the courage to trust their own feelings by recognising that they do not represent a threat to survival current with the developing ability of “becoming more able to trust others and to accept their unique feelings and values which exist in the other person” (Rogers, 1961, p. 325).

Death-related thoughts have also been associated with polarised group membership judgments as a means to ward off unconscious annihilation anxieties to the extent that ingroup members would be perceived as a secure base that would protect against external threats and thus increase survival (Baldwin & Wesle, 1996). In this light, the reduction of death-related words would be consistent with a deflation of primordial mental activity associated with the process of gross exaggeration of perceived differences associated with the primordial mental activity (Matte Blanco, 1975; Rayner, 1995). The therapeutic process would then help High Barrier patients reduce an ingroup identification and have a greater tolerance and acceptance of others’ forms of expressions and choices, such as behaviour, attitudes and opinions, rather than actual or perceived group memberships that do not represent a threat to survival but assume a valuable function in society.

In relation to Low Barrier patients, there was a reduction in human references (e.g., adult, baby, boy), which indicates a lowering of interest in social relations, typically associated with Low Barrier personalities. Conversely, there was an increase in references related to motion (e.g., arrive, car, go) and money (e.g., audit, cash, owe), which are associated with primordial mental activity and a materialistic and concrete focus in High Barrier personalities.

Given these results, namely, the lack of reduction of semantic content associated with primordial mental activity in High Barrier patients but an increase in motion words and references related to money in Low Barrier patients, the sixth hypothesis (H6) was partly supported. Conversely, the reduction in anxiety words and death-related themes in High Barrier patients would be consistent with the expected results of therapy, namely, the reduction of patients’ psychological tensions and discomforts (Rogers, 1961). Thus, the seventh hypothesis (H7) was also partly supported.

Table 31 Spearman rank correlation coefficients between progressive psychotherapy sessions and semantic content in High Barrier patients

Linguistic variable	Barrier imagery
Barrier	-.216*
1 st singular pronouns	-.299*
Anxiety	-.234*
Death	-.208*

Notes: * $p < .05$ level, ** $p < .01$ level

Table 32 Spearman rank correlation coefficients between progressive psychotherapy sessions and semantic content in Low Barrier patients

Linguistic variable	Barrier imagery
Money	.239**
Motion	.267**
Humans	-.194*

Notes: * $p < .05$ level, ** $p < .01$ level

8.2.4 Discussion and conclusion

The results of this study were partly consistent with some of the research hypotheses. Consistent with the first hypothesis (H1), barrier imagery positively correlated consistently with semantic content associated with primordial mental activity, such as group-references, biological processes, relativity and personal concerns, whereas barrier imagery correlated negatively with semantic content associated with primordial thought, such as self-references, verbs, and cognitive and affective processes. Taking into consideration that the correlations of barrier imagery in the psychotherapeutic context were consistent with the semantic tendency of written narratives of everyday memories, as demonstrated by High and Low Barrier personalities in Study 6 (see 6.2), the results indicate an external validity of the semantic behaviour associated with barrier imagery to the extent that that it can be generalised to both experimentally derived autobiographical memories and naturally occurring psychotherapy-based language behaviour (Elmes, Kantowitz & Roediger,

1991; Rosenthal & Rosnow, 1984). Conversely, barrier imagery correlated positively with anger words, which are typically associated with conceptual thought. Such an inflation of anger words in relation to body boundaries might provide some confirmation of the patients' frustrations regarding internalised parental values that constitute a thickening of the body boundary. The person-centred therapeutic approach would then represent a process in which these parental and social introjects and their inconsistency with the patients' phenomenological self would form part of the patients' conscious awareness.

In addition, the results demonstrated that barrier imagery was reduced in High Barrier patients and increased in Low Barrier patients when comparing the first and final psychotherapy sessions (H2). There was also a reduction in barrier imagery in High Barrier patients throughout the therapeutic process, but barrier imagery did not increase in Low Barrier patients (H5). Such a change of barrier imagery confirms that the empathic and unconditional acceptance of the therapeutic relationship in person-centred interventions enables patients to explore their emotions and insights while ridding themselves of inauthentic values that are not congruent with the phenomenological self or their personality predispositions, thus resulting in the changes of body boundary finiteness. High Barrier patients also showed a reduction of self-references, anxiety words and death-related semantic content (H7). Such a reduced self-focus and lower use of negative affective themes would further indicate the effectiveness of the therapeutic process in alleviating and clarifying patients' psychological suffering, such as their experiences and emotions associated with hopelessness, rejection and disappear. Negative emotion words, however, were not reduced in High or Low Barrier patients when comparing the first and final psychotherapeutic sessions (H4).

The results did not produce compelling evidence that would suggest a change of semantic content associated with primordial mental activity in Low and High Barrier patients (H3 and H6). High Barrier patients, however, showed a reduction in discrepancy and insight words at the final psychotherapy session. A reduction in discrepancy words indicates the lowering of absolute claims, the so-called 'shoulds', 'oughts' and 'musts' (Ellis, 1994; Horney, 1945) that represent the internalised social values that hinder patients' ability to respond more spontaneously and openly to their

environment and to be more tolerant towards the self and others (Higgins et al., 1986; Ogilvie, 1987; Tajfel, 1959; Tajfel & Wilkes, 1963). An increase in insight words also reflects heightened levels of self-reflection and understanding of one's own psychological processes, such as needs, emotions and behavioural tendencies. A comparison between the first and final psychotherapeutic sessions of Low Barrier patients shows a reduction in achievement and work related references, which indicates a reduced focus on labour and success. Conversely, an increase in references related to money is congruent with the concrete and materialistic focus of High Barrier personalities. A increase in motion processes is also typically associated with the primordial mental activity. The reduction of human references, however, indicates a lower focus on social relationships, which would be associated with a Low Barrier personality. Low Barrier patients' increased used of hearing words from the first to final therapeutic session, however, might indicate an increased sense of openness to experience (Hirsch & Peterson, 2009).

In summary, the results provided some confirmation of the research premise that person-centred psychotherapy would clarify patients' social value systems and behavioural expectations that are embodied in the increased body boundary finiteness. Particularly, this study linked Fisher and Cleveland's body boundary personality with Reich's (1945) concept of body armour (which has not been explored in previous literature). Out of this context, the results of this study indicated that individuals with a harder body shell tend to differ in their semantic expression from patients with a softer body shell. In this sense, the use of linguistic features may enable therapists to differentiate between patients with hard and soft body armours, and changes in linguistic features may indicate defensive mechanisms that are associated with the hard body shell being dissolved through the psychotherapeutic process.

Chapter 9

General Discussion and Conclusion

9.1 Main Findings

The aim of this thesis was three-fold. The first aim was to assess the validity and reliability of the BTD (Wilson, 2006), and the second aim was to explore the semantic tendencies associated with the Barrier personality in the recall of autobiographical memories. Beyond these primary research objectives, this thesis further examined the use of semantic content, semantic fields, embodied schemas and figurative expressions associated with primordial mental activity and container-schematic imagery. Using the same theoretical framework associated with the development of body boundary finiteness, the third aim was to explore the semantic tendencies associated with the Barrier personality in patients attending person-centred psychotherapy. Due to the triangulation of the various data sets and the computer-assisted methodologies employed in this thesis, the results of this study provide a cross-validation of the results (Mathison, 1988).

9.1.1. Validity and reliability

The first research question focussed on the methodological necessity to assess the BTD's (Wilson, 2006) validity and reliability in order to make meaningful interpretations of the data. Study 1 showed a good inter-coder reliability (see 5.2.3.1), indicating that the semantic content of the BTD, as classified into barrier and penetration imagery, was based on an acceptable level of a shared common-sense understanding of the body-boundary concept, further indicating semantic validity. The inter-method reliability (see 5.2.3.2) was also sufficiently high, suggesting that the manually coded barrier and penetration imagery were moderately highly correlated with the computer-assisted barrier and penetration scores. Study 1 (see 5.2.2.4) also identified a low consistency of scoring in the barrier, penetration and sum body boundary imagery scores among the experimental conditions (i.e., Rorschach

responses, picture response task, everyday memory, dream memory and dream interpretation). The results also challenged Fisher and Cleveland's (1956, 1958) notion that Low and High Barrier personality types would represent stable personality traits. In fact, Study 1's assessment of the correlational validity (see 5.2.3.3) between the BTB and primordial thought language, as measured using the RID, identified that the use of primordial thought language increased while that of conceptual thought language diminished across the experimental conditions (i.e., Rorschach responses, picture response task, dream memory, everyday memory and dream interpretation). Barrier and penetration imagery were also moderately positively correlated with primordial thoughts and negatively correlated with conceptual thought language across the majority of the experimental conditions, further supporting the notion that body boundary awareness increases with the level of primordial mental activity, as opposed to being a stable personality trait.

9.1.2 Semantic tendencies in the Barrier personality

The second research question aimed to explore the relationship between body boundary finiteness and semantic content in two types of autobiographical memories that in turn varied as to the associated degrees of regressive cognitive functioning at the level of encoding — i.e., everyday and dream memories. Drawing on Robbins' (2011) framework of primordial mental activity and conceptual thought, the results of Study 2 (see 6.2) identified that individuals classified as High Barrier personalities used significantly more semantic content associated with primordial mental activity, such as group references, somatosensory processes, and spatial references, whereas individuals classified as Low Barrier personalities used more semantic content associated with conceptual thought, such as self-reference, affective and cognitive processes. These semantic tendencies were relatively consistent in their narratives of everyday and dream memories. The results show that the level of regressive cognitive functioning does not interfere with the semantic expression of a Barrier personality type. In this sense, the Barrier personality represents a dynamic personality trait that interacts with a situational level of regressive cognitive functioning. The results also indicated that body boundary awareness may embody Freudian modes of cognitive functioning (Fisher & Cleveland, 1956, 1958).

The study further conceptualised the Barrier personality in relation to social identity theory (Tajfel, 1959; Tajfel & Wilkes, 1963). The increased frequency of inclusion words, such as first person plural pronouns, reflect a group-orientated focus in High Barrier personalities, whereas an increased frequency of first-person singular pronouns, emotional and cognitive processing words would indicate an increased self-focus in Low Barrier personalities. Body boundary functions were interpreted as a contact membrane differentiating the self from the external environment while categorising the self and others into distinct social groups (Anzieu, 1989) (see 2.2.3). Social group categorisation also entails the process of social group comparison, which typically results in the accentuation of perceived similarities and differences among social groups (Hoggs & Abrams, 1988). Due to the mechanisms of the in-group/out-group bias, the in-group is seen more favourably than the out-group, resulting in a polarised conceptualisation of a “good” self, or us, vs. a “bad” other, or them. Such a polarised conceptualisation underpins the process of downward social comparisons as a strategy intended to reinforce one’s self-concept that adheres to the stereotypical norms shared among one’s social group members and to maintain a heightened sense of self-worth and collective self-esteem (Wills, 1981; Crocker & Luhtanen, 1990). In this view, the body boundary may be perceived to play a role in the maintenance and regulation of an individual’s self-concept distributed across three levels of self-representation – the individual self, the relational self and the collective self (Brewer & Gradinier, 1996).

9.1.3 Containment schemas in the Barrier personality

By relating the body boundary concept to the cognitive linguistic assumption that humans would be predisposed to view their environment in a visual in-out orientation due to their conscious experience of perceiving themselves as being contained by a skin boundary (Lakoff & Johnson, 1980), the third research question involved the identification of the semantic fields related to concrete and metaphorical container-schematic imagery and the use of embodied figurative expressions of emotional states in the narratives of everyday and dream memories of individuals classified as High and Low Barrier personalities. The results demonstrated that, in both memory types, High Barrier personalities used more semantic fields representing concrete and metaphorical container-schematic imagery (Johnson, 1987) (e.g., *Vehicles and*

transport on land', *Time: Beginning*') and thus indicating that container metaphor might represent a theoretical equivalence to the Barrier personality construct. High Barrier personalities' autobiographical memories also used higher frequencies of semantic fields related to primordial mental activity, such as bodily, sensory, motion and spatial references. High Barrier personalities also used more semantic fields associated with space and time relations, and also demonstrated an increased surface awareness. These results indicate an increased tendency to structure concepts and knowledge as bounded and contained entities, which is consistent with Fisher and Cleveland's (1958) claim that High Barrier personalities direct their visual attention to the boundaries and enclosing features in their environment. In contrast, the narratives of Low Barrier personalities had higher frequencies of semantic fields related to conceptual thought, such as knowledge and emotional references, reflecting their tendency to communicate their thoughts and feeling states directly in both autobiographical memory types. In contrast, High Barrier personalities showed an increased tendency to express their emotions figuratively by mapping emotions onto bodily parts and processes, using 'head' or anal references, as well as by communicating events that imply experiences of losses. Such indirect expressions of emotions might enable the speakers to minimise the threat of negative social evaluations while constituting a "politeness strategy" used to gain social acceptance. Such personalities hope to avoid social rejection and disapproval and, further, to elicit empathic responses.

Given that Martindale (1981) provided a neuroscientific basis relating primordial mental cognition to reduced cognitive inhibition, it can be deduced that social parameters, such as perceived social rejection, could override cognitive inhibition in High Barrier personalities to the extent that personal emotions would not be communicated directly, compared to those of a Low Barrier personality. Consistent with this view, Fisher and Cleveland (1958) asserted that an increased inhibition against expressing negative emotions represents a fundamental feature of individuals with definite body boundaries. The focus on enclosing peripheries and the rigid appearance of bodily stiffness, on a psychosomatic level, reflect a defensive function by containing and controlling those negative emotions that are perceived as unacceptable, overwhelming or threatening. The body functions then act as an enclosing container "whose walls would prevent the outbreak of these impulses" (p.

55). The use of figurative language mapped onto bodily parts and processes might also reflect a part-whole, self-other relationship in which the social environment becomes part of the bodily self through the simulated contact of the container surface, acting as an embodied extension of the high-excitatory skin membrane.

Based on the results of this study, it is possible to assert that the use of concrete container schematic objects represents a conceptual equivalent to the symbolic container metaphor; however, the generalisability of the results are limited to the extent that it has not been established whether the use of concrete container imagery would also relate to the spatial conceptualizations of the container metaphors (e.g., “*Mary fell in love*”).

At this point, it should also be noted that the analysis is limited to some extent by its narrow focus on the frequencies of over- and under-used semantic fields. Such an analysis is inherently limited because it does not explore the similar patterns in the semantic fields of a dataset. Thus, this approach prevents, to some extent, a more complete understanding of the data from being achieved (e.g., Taylor, 2013).

9.1.4 Body boundary changes in person-centred psychotherapy

The fourth research question aimed to assess how the semantic content associated with High and Low Barrier personalities, as identified in Study 2 (see 6.2), would be related to the verbal behaviour of patients in person-centred psychotherapy. The results of Study 4 (see 8.2 and 8.2.3.2) showed that patients’ use of barrier imagery correlated positively with the semantic content associated with primordial cognition, such as group references, somatosensory processes, and spatial references, but correlated negatively with the semantic content associated with conceptual thought, such as self-reference and affective and cognitive processes. Given that the positive and negative correlations are very similar to those identified in Study 2 (see 6.2), it is possible to assert that the results were externally valid to the extent that an association between barrier imagery and primordial mental activity can be generalised to naturally occurring language behaviours, compared to experimentally derived autobiographical memories alone. However, some slight differences between the association of barrier imagery and primordial mental activity were found to exist in

the autobiographical memories and psychotherapeutic transcripts. For example, barrier imagery correlated negatively with certain anger words (e.g., hate, kill, annoyed) that, as an affective reference, would be typically associated with conceptual thoughts. Thus, positive correlations were explained in relation to the patients' negative self-cognition in form of self-harm, e.g., "*wanted to cut myself*", as well as of feelings of anger associated with others and situations, e.g., "*Yeah, there was resentment and anger in that too*". Conversely, there was a weak negative correlation between barrier imagery and perceptual processes (e.g., observing, heard, feeling), including feeling words (e.g., feels, touch). Such a reduced effect size in the psychotherapeutic context compared to that found in the recall of autobiographical memories might be related to the heightened internal focus on personally sensitive topics and self-reflective processes, in contrast with the increased external, social-orientated focus noted during the recall of autobiographical memories.

Based on the internalisation of parental and social values as the most important influence on the formation of body boundaries (Fisher & Cleveland, 1957) and representing a primary cause of psychological disturbances (Rogers, 1961), another focus of the fourth research question was to explore the relationship between changes in body boundary finiteness and semantic content associated with primordial mental activity in the verbal behaviours of patients attending person-centred psychotherapy. The results showed that, in the psychotherapeutic process, High Barrier patients had a decline in barrier imagery, whereas Low Barrier patients, to some extent, had an increase in barrier imagery. This finding suggests the beneficial effects of an empathic and nonjudgmental therapeutic alliance, which enables patients to clarify and reflect upon the authenticity of the values embodied in their body boundaries.

Changes were evident in the semantic content of High and Low Barrier patients. For example, High Barrier patients show a reduction in the use of anxiety words (e.g., worried, fearful, nervous) and death-related references (e.g., bury, coffin, kill) (indicating a lowering of anxieties and death-related themes, such as suicidal ideation). There was also a decrease in the use of discrepancy words (e.g., should, would, could), reflecting a reduction of introjected parental behavioural and emotional absolutist self- and other-demands (Ellis, 1994; Horney, 1945). The noted increase in insight words (e.g., think, know, consider), however, indicated a greater awareness of

the speaker's internal emotional and cognitive processes. Low Barrier patients, in contrast, used more references related to the sensory input of hearing (e.g., ear, listen, hearing), reflecting an increased sense of openness to experience (Hirsch & Peterson, 2009). Taken together, however, the results did not show substantial changes in the semantic items associated with the primordial cognition of High Barrier patients or the conceptual cognition of Low Barrier patients.

9.2 Methodological Limitations

Despite firmly theoretically grounded decisions that determined the methodological and statistical approaches, this thesis presented some methodological limitations, such as the effect size and sample selection.

9.2.1 Effect size

The notion of effect size represents a statistical weakness that impinges on the validity of their interpretation of the data. In relation to Study 1 (see 5.2), the small effect sizes of the correlations indicate that the significant p-values might be related to the relatively large sample size irrespective of the correlation coefficients between some of the experimental conditions. Thus, the effect sizes used to explore the semantic differences between Barrier personalities were often only small to medium, irrespective of the high levels of statistical significance. In this sense, the small effect sizes identified in this study highlight the importance of effect size values as statistical measure to assess differences between the experimental and null hypotheses, rather than just reporting the obtained p-value (e.g., Michalczyk & Lewis, 1980; Gigerenzer, 2004). Low effect sizes, however, represent an inherent and general problem in content analysis research (Mergenthaler, personal communication) and are thus not unique to the studies in this thesis. In this sense, a low effect size may be related to the relatively short text samples. These short text samples may ultimately limit the probability of a body boundary lexis occurring when compared with other types of linguistic variables, whereas longer text samples would increase the probability of a more thematic diversity and vocabulary. In fact, the semantic content of the BTD (Wilson, 2006) represents only a small proportion of everyday usage-based vocabulary, which is primarily composed of the function words (such as pronouns,

prepositions, articles, etc.) that allow discourse to be cohesive and coherent, further providing universal insight into the quantitative views of the social and psychological dimensions (Argamon & Levitan, 2005; Chung & Pennebaker, 2007). In particular, the low correlation of the scoring consistency of body boundary imagery (see 5.2.2.4) might also be associated with variations in dedifferentiated cognition across experimental conditions.

The importance of text size has been also specifically pointed out by Mergenthaler (1985) putting forward that computer-based content analysis should be based on text of a sufficient text size. Whereas Gottschalk and Gleser (1969) based their research on verbal samples of at least 70 words, texts that consist of around 100 and 200 words are perceived as acceptable for computerized content analysis (Mergenthaler, 1985). Given the relatively small sample sizes often used in psychotherapy and psychiatric-based content analysis (see for example Gottschalk & Gleser, 1969), the use of sufficiently large texts is of vital importance to bring about meaningful statistical results. Although the text samples used in this thesis varied in their text lengths, the overall large corpus of projective test responses and autobiographical memories enabled a sufficient statistical power and robustness to gauge meaningful inferences between the semantic content categories and the experimental conditions.

9.2.2 Sample Selection

Another weakness of the studies in this thesis is related to the data sample selection. For example, the use of autobiographical memories is based on single responses, as opposed to multiple responses. In this sense, the results of the studies analysing autobiographical memories cannot account for the fact that these memories are partly governed by the topic of the selected narrative, recent emotional experiences, and other variables, such as the frequency with which the recalled memory is rehearsed, its perceived pleasantness, and the specificity and vividness of the memory (Conway & Bekerian, 1987; Habermas & Diel, 2013; Nelson, Moskowitz, & Steiner, 2008). Considering that body boundary awareness represents a dynamic personality construct, the methodological constraints of this study do not rule out the possibility that the relationship between semantic content and Barrier personalities might reflect “method factors” inevitably affecting language use. The results obtained in these

studies are therefore limited because they cannot be generalised to other modes of language production, such as the embeddedness of language and the spontaneous recall of autobiographical memories within social situations (Conway & Jobson, 2012; Berntsen & Rubin, 2012). Future research should therefore establish how the topic selection and cognitive processes associated with the retrieval of autobiographical memories is related to Barrier personality and language use. In order to control for the semantic variability associated with topic selection and emotional content, future studies should also employ diary studies or participants' recollections of several autobiographical memories to facilitate the generation of more robust statistical results.

Study 4 (see 8.2) encountered further methodological issues associated with the text sample selection. The text samples used in these studies were to some extent opportunistic; for example, the online '*Counseling and Psychotherapy Transcripts, Client Narratives, and Reference Works*' database (2012) happens to contain a comprehensive set of person-centred psychotherapy transcripts. Thus, future studies should explore the behaviour of body boundary imagery and other semantic content in a wider range of psychotherapy modalities, such as psychodynamic therapies, gestalt psychotherapy, and cognitive behaviour therapy, to mention a few. By investigating a wider range of modalities, the changes in body boundary awareness and semantic content might be more broadly generalisable. Given that this study is based on person-centred psychotherapy transcripts, the results of these studies cannot indicate the extent to which changes in verbal behaviours might be attributed to the patients' attendance at psychotherapy alone rather than to the Rogerian modality in specific.

The '*Counseling and Psychotherapy Transcripts, Client Narratives, and Reference Works*' database (2012) provided only very limited and partly incomplete information about the therapists, such as their gender and years of post-qualification experience. Essentially, the provided information does not rule out that the same therapist might have been present in the treatment of more than one patient; in such a case, the text samples would not be independent from one another. Although the study focussed exclusively on the patients' verbal behaviours, the therapists nevertheless may be a confounding variable that would interfere with the reliability of data analysis, impinging on the validity of the data interpretation. If conversational interactions

represent dynamic behaviours in which meaning is co-constructed and speakers can synchronise their speech patterns and content within the conversational context (see Richardson, Dale & Shockley, 2008), the verbal behaviours of patients cannot be perceived as independent from therapists' verbal behaviours. For example, therapists' Barrier personality types can influence their own semantic content, thereafter potentially influencing the patient's verbal behaviours. On the other hand, some therapists might be more inclined to repeat their patients' semantic content and thus less likely to contribute their own expressions and semantic behaviours. To explore this notion, future research should explore patients' and therapists' turn-by-turn language behaviours within psychotherapy transcripts.

As a final point, the '*Counseling and Psychotherapy Transcripts, Client Narratives, and Reference Works*' (2012) database provided an extensive set of person-centred psychotherapy transcripts; however, some therapy session transcripts were omitted and are thus not available for our analysis of these studies.

9.3 Future Research

The results of this study are satisfying to the extent that they further opened up a series of questions that should be explored in future research.

One of the most interesting results, which was briefly mentioned in Study 2, suggested that Low Barrier personalities use the semantic content associated with Pennebaker and King's (1999) factors '*Immediacy*' and '*Making distinctions*', such as high frequencies of first-person singular pronouns and low frequencies of inclusion words typically associated with truthful verbal behaviours (Burgoon, Blair, Qin, & Nunamaker, 2003; Dulaney, 1982; Newman et al., 2003). Based on this view, the narratives of Low Barrier personalities might be perceived as more factually reliable than the narratives of High Barrier personalities. This reduced self-focus in deceivers has been explained in relation to a strategy of non-immediacy (Wiener & Mehrabian, 1968) combined with a reduced self-awareness, reduced self-focus, and increased other-focus in order to dissociate from statement ownership (Feldman et al., 2002; Hancock et al., 2008; Knapp, Hart, & Dennis, 1974). Higher frequencies of inclusion words have been also associated with higher levels of attributed trustworthiness

(Toma & Hancock, 2012), potentially increasing the persuasiveness of these statements compared to those of Low Barrier personalities. High Barrier personalities also used more motion words associated with both primordial mental activity and deceptive behaviours, in addition to demonstrating low frequencies of those exclusion words associated with a low degree of discrimination and an attempt to produce a simple story that avoids contradictions (Newman et al., 2003).

In this light, future research should explore differences in the features of deceptive language (see Vrij, 2000) and the underlying cognitive strategies that are used by High and Low Barrier personalities in their construction of deceptive recollective narratives. Primordial mental activity has typically been associated with higher levels of creativity (Martindale, 1975, 1990) (see 2.3.3). High Barrier personalities have been predicted to produce, voluntarily and involuntarily, more creative and less truthful recollective experiences than Low Barrier personalities. This construction of creative autobiographical recollections might be partly motivated by High Barrier personalities' increased social focus and their aim to produce narratives that are socially engaging. Such an analysis of deceptive language behaviours in relation to the Barrier personality would account for the underlying cognitive and motivational differences underpinning the encoding and retrieval processes involved in autobiographical memory formation. Given that the current indicators of memory accuracy are perceived as not necessarily sufficiently reliable, the central issue of jurisprudence also remains key to differentiating truth from deception and the involuntary misrepresentation of past experiences (BPS, 2008). Therefore, further analysis of deceptive language behaviours in relation to the body boundary personality construct would be of great interest to provide more reliable language-based memory criteria in order to validate the historical truthfulness of memories, particularly in litigation. Language-based memory validation would be critical in situations with the same eyewitness and accuser, such as cases of sexual abuse, and also in the setting of false confessions and neurological disorders that impinge on memory retrieval (e.g., amnesia and brain injuries). Future research should also explore the extent to which the witness statements of High Barrier personalities could be perceived as more persuasive compared to the statements given by Low Barrier personalities, as well as the level at which perceived persuasiveness might relate to the decision-making processes of court trial juries.

In addition, the results of this thesis demonstrate that body boundary finiteness represents an embodiment of the familial and social values that can be clarified and modified within brief person-centred psychotherapy. The theoretical underpinnings and results might lend some support to the idea that a body boundary construct does not represent an alternative model to psychodynamic attachment theories (e.g., Bowlby, 1969; Winnicott, 1971) (see 2.2.3), as put forward by Roman (2014). Relational attachment patterns are conceptualised as pervasive and dynamical blueprints acquired in early infant development in relation to the maternal ability to provide emotional support and security. In contrast, the development of Fisher and Cleveland's (1958) body boundaries are predominately influenced by exposure to sociocultural values and behavioural expectations. Although attachment patterns and sociocultural variables have been shown to interact (Van Ijzendoorn & Kroonenberg, 1988), it can be argued that attachment theory does not represent a conceptual alternative to the body boundary personality development. However, partly in agreement with Roman (2014), it might be possible to suggest that the early developments of attachment patterns in combination with the formation of relational body boundaries (Bick, 1968, Ogden, 1989) could represent dynamic aspects interacting with the development of the body boundary finiteness related to the internalisation process of social values and behavioural expectations, as outlined by Fisher and Cleveland (1958). In this sense, attachment patterns, relational body boundaries and sociocultural body boundaries might form a dynamic model of self- and other-relational patterns and organisational schemas interrelated on neurological, physical and environmental levels. Therefore, future studies should explore the relationship between the body boundary concept, attachment style and relational body boundaries while considering other models to describe and explain the development of relational schemas. For example, the Polyvagal theory (Porges, 2011) represents a neuropsychological theory that assumes early socialisation and environmental conditions are the strongest influences on the development of the central nervous system. This system, in particular the right hemisphere, regulates external and internal bodily processes and moderates the emotions, social communications, social relationships, inhibition and adaptive processes.

Another future research idea should explore the developmental basis of body boundaries, language use and relational schemas in family-based conversation. As

shown in Study 3 (see 7.2), High Barrier personalities use high frequencies of container-schematic semantic fields to relate with the increased in-out-group cognition underpinning their social relational schemas. Such a relationship between container-schematic imagery and in-out-group cognition has also been demonstrated in the construction of dichotomous political discourses. For example, the racist presentation of Muslims in the British press tends to use keywords emphasising container-schematic concepts, such as ‘community, ‘world’ and ‘country’ (Baker et al., 2013). Additionally, the political manifestos of the UK 2010 General Election that used a high level of barrier imagery tended to build blame discourses reflecting a polarisation between a “good” self and a culpable “bad” other social group. On the other hand, the remaining political parties employed solution-focused discourses that recognised the existence of conflicting interests among social groups (Cariola, 2013).

References

- Ackerman, S. J., Hilsenroth, M. J., Clemence, A. J., Weatherill, R., & Fowler, I. C. (2001). Convergent validity of Rorschach and TAT scales of object relations. *Journal of Personality Assessment*, 77, 295-306.
- Aiken, L. R. (2003). *Psychological testing and assessment*. Boston, MA: Allyn and Bacon.
- Allport, G. W., & Odbert, H. S. (1936). Trait names: A psycho-lexical study. *Monographs*, 47, 211.
- Allport, I. (1965). *Letters from Jenny*. New York, NY: Harcourt, Brace & World Inc.
- Altman, I., & Taylor, D. A. (1973). *Social penetration: The development of interpersonal relationships*. New York, NY: Holt, Rinehart and Winston.
- Anastasi, A., & Urbina, S. (1997). *Psychological testing*. Upper Saddle River, NJ: Prentice Hall.
- Anderson, S. J., & Conway, M. A. (1993). Investigating the structure of autobiographical memories. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 19, 1178-1196.
- Anzieu, D. (1989). *The skin ego*. New Haven, CT: Yale University Press.
- Andrews, J. (1968). *The relationship of body image to verbal learning and perceptual motor performance in young children* (Unpublished doctoral dissertation). Syracuse University.

- American Psychological Association (2000). *Diagnostic and statistical manual of mental disorders: DSM-IV-TR*. Washington, DC: American Psychiatric Association.
- Appleby, L. (1956). The relationship of a Rorschach Barrier typology to other behavioural measures (Unpublished doctoral dissertation). University of Houston.
- Applebee, A. (1978). *The child's concept of story*. Chicago, IL: University of Chicago Press.
- Archer, D., Wilson, A., & Rayson, P. (2002). Introduction to the USAS category system. *Benedict project report*. Retrieved from <http://ucrel.lancs.ac.uk/usas/usas%20guide.pdf>
- Argamon, S., & Levitan, S. (2005, June,). Measuring the usefulness of function words for authorship attribution. *Proceedings of the 2005 ACH/ ALLC conference*. Victoria, Canada.
- Arieti, S. (1964). The rise of creativity: From primary process to tertiary process. *Contemporary Psychoanalysis*, 1, 51-68.
- Arieti, S. (1966). *American handbook of psychiatry*, Vol. 3. New York, NY: Basic Books.
- Arieti, S. (1967). *The intrapsychic self*. New York, NY: Basic Books.
- Artstein, R., & Poesio, M. (2007). Inter-coder agreement for computational linguistics. *Computational Linguistics*, 34, 555-596.
- Aulagnier, P. (2011). *The violence of interpretation: from pictogram to statement*. London, UK: Brunner-Routledge. (Original work published 1975).
- Bachelis, L. A. (1965). *Body-field perceptual differentiation as a variable in creative thinking* (Unpublished doctoral dissertation). Yeshiva University.

Baker, P., Gabrielatos, C., & McEnery, A. (2013). *Discourse analysis and media attitudes: The representation of Islam in the British Press*. Cambridge, UK: Cambridge University

Baker, P., Gabrielatos, C., Khosravini, M., Krzyżanowski, M., McEnery, T., & Wodak, R. (2008). A useful methodological synergy? Combining critical discourse analysis and corpus linguistics to examine discourses of refugees and asylum seekers in the UK press. *Discourse & Society*, 19, 273-305.

Baldwin, M. W., & Wesley, R. (1996). Effects of existential anxiety and self-esteem on the perception of others. *Basic and Applied Social Psychology*, 18, 75-95.

Barclay, C. R. (1994). Composing protoselves through improvisation. In U. Neisser, & R. Fivush (Eds.), *The remembering self: Construction and accuracy in the self-narrative* (pp. 55-77). New York, NY: Cambridge University Press.

Barendregt, J. T. (1961). *Research in psychodiagnostics*. The Hague, Netherlands: Mouton & Company.

Barsalou, L. W. (1988). The content and organisation of autobiographical memories. In U. Neisser, & E. Winograd (Eds.), *Remembering reconsidered: Ecological and traditional approaches to the study of memory* (pp. 193-243). New York, NY: Cambridge University Press.

Barsalou, L. W. (2008). Cognitive and neural contributions to understanding the conceptual system. *Current Directions in Psychological Science*, 17, 91-95.

Bazan, A., Van Draege, K., De Kock, L., Brakel, L. A. W., Geerardyn, F., & Shevrin, H. (2013). Empirical evidence for Freud's theory of primary process mentation in acute psychosis. *Psychoanalytic Psychology*, 30, 57-74.

Behr, M., & Becker, M. (2012). Scales for experiencing emotions: Awareness, appraisal and regulation of one's own emotions. *Hellenic Journal of Psychology*, 9, 278-303.

Benjafield, J., & Muckenheim, R. (1989). An historicodevelopmental analysis of the Regressive Imagery Dictionary. *Empirical Studies of the Arts*, 7, 79-88.

Benjamin, J. (1992). Recognition and destruction: An outline of intersubjectivity. In N. J. Skolnick, & S. C. Warshaw (Eds.), *Relational perspectives in psychoanalysis* (pp. 43-69). Hillsdale, NJ: Analytic Press.

Berelson, B. (1952). *Content analysis in communication research*. Glencoe, Il: The Free Press.

Berntsen, D., & Rubin, D. C. (2012). *Understanding autobiographical memory: An ecological theory*. Cambridge, UK: Cambridge University Press.

Berlyne, D. E. (1965). *Structure and direction in thinking*. New York, NY: John Wiley & Sons.

Berlyne, D. E. (1971). *Aesthetics and psychobiology*. New York, NY: Appledon-centrui-Crofts.

Berlyne, D. E. (Ed.) (1974). *Studies in the new experimental aesthetics*. Washington, DC: Hemisphere.

Berth, H. (2001). Die Messung von Angstaffekten mittels computergestützter Inhaltsanalyse. *Psychotherapie, Psychosomatik, Medizinische Psychologie*, 51, 10-16.

Bick, E. (1968). Experience of the skin in early object relations. *International Journal of Psycho-Analysis*, 49, 484-486.

Bion, W. R. (1962). *Learning from experience*. London, UK: Karnac.

Bluck, S., & Alea, N. (2002). Exploring the functions of autobiographical memory: Why do I remember the autumn? In J. D. Webster, & B. K. Haight (Eds.), *Critical advances in reminiscence work* (pp. 61-75). New York, NY: Springer.

Bluck, S., & Glück, J. (2004) Making things better and learning a lesson: “Wisdom of experience” narratives across the lifespan. *Journal of Personality*, 72, 543-573.

Bluck, S., Alea, N., Habermas, T., & Rubin, D. C. 2005. A tale of three functions: The self-reported uses of autobiographical memory. *Social Cognition*, 23, 91-117.

Bluck, S., & Levine, L. J. (1998). Reminiscence as autobiographical memory: A catalyst for reminiscence theory development. *Ageing and Society*, 18, 185-208.

Boag, S. (2012). *Freudian repression, the unconscious, and the dynamics of inhibition*. London, UK: Karnac.

Boergers, J., Spirito, A., & Donaldson, D. (1998). Reasons for adolescent suicide attempts: Associations with psychological functioning. *Journal of the American Academy of Child and Adolescent Psychiatry*, 37, 1287-1293.

Bogen, J. E. (1969a). The other side of the brain I: Dysgraphia and dyscopia following cerebral connissurotomy. *Bulletin of the Los Angeles Neurological Societies*, 1, 73-105.

Bogen, J. E. (1969b). The other side of the brain II: An appositional mind. *Bulletin of the Los Angeles Neurological Societies*, 1, 135-162.

Bogen, J. E., & Bogen, G. (1969). The other side of the brain II: An appositional mind. *Bulletin of the Los Angeles Neurological Societies*, 34, 135-162.

Bolognesi, M., & Bichisecchi, R. (2014). Metaphors in Dreams: Where Cognitive Linguistics meets Psychoanalysis. *Language and Psychoanalysis*, 3, 4-22.

Bollas, C. (1987). *The shadow of the object: psychoanalysis of the unthought unknown*. London: Free Associations Books.

Bonfigli, L., Kodilja, R., & Zanuttini, L. (2002). Verbal versus olfactory cues: Affect in elicited memories. *Perceptual and Motor Skills*, 94, 9-20.

Bornstein, R. F. (2002). A process dissociation approach to objective-projective test score interrelationships. *Journal of Personality Assessment*, 78, 47-68.

Bornstein, R. F., & Masling, J. M. (Eds.). (2005). *Scoring the Rorschach: Seven validated systems*. Mahwah, NJ: Erlbaum.

Botzung, A., Denkova, E., Ciuciu, P., Scheiber, C., & Manning, L. (2008). The neural bases of the constructive nature of autobiographical memories studied with a self-paced fMRI design. *Memory*, 16, 351-363.

Bowlby, J. (1969). *Attachment and loss, Vol. 1*. New York, NY: Basic Books.

Bowlby, J. (1980). *Loss, sadness and depression, Vol. 3*. New York, NY: Basic Books.

Bradley, M. M., & Lang, P. J. (1999a). Affective norms for English words (ANEW): Stimuli, instruction manual and affective ratings. (Tech. Rep. No. C-1). Gainesville, FL: University of Florida.

Brainerd, C. J., & Kingma, J. (1984). Do children have to remember to reason? A fuzzy-trace theory of transitivity development. *Developmental Review*, 4, 311-377.

Brakel, L. A. W. (2004). The psychoanalytic assumption of the primary process: extrapsychanalytic evidence and findings. *Journal of the American psychoanalytic Association*, 52, 1131-1161.

Brakel, L. A. W. (2009). *Philosophy, psychoanalysis and the a-rational mind*. Oxford, UK: Oxford University Press.

Brakel, L. A. W., & Shevrin, H. (2003). Freud's dual process theory and the place of the a-rational. *Behavioral and Brain Sciences*, 26, 527-528.

Brakel, L. A. W., & Shevrin, H. (2005). Anxiety, attributinal thinking and the primary process. *International Journal of Psychoanalysis*, 86, 1679-1693.

Brakel, L. A. W., Kleinsorge, S., Snodgrass, M., & Shevrin, H. (2000). The primary process and the unconscious: Experimental evidence supporting two psychoanalytic presuppositions. *International Journal of Psychoanalysis*, 81, 553-569.

Brakel, L. A. W., Shevrin, H., & Villa, K. K. (2002). The priority of primary process categorization: Experimental evidence supporting a psychoanalytic developmental hypothesis. *Journal of the American Psychoanalytic Association*, 50, 483-505.

British Psychological Society (2008). *Guidelines on memory and the law: Recommendations from the scientific study of human memory*. Leicester, UK: The British Psychological Society.

Brown, P., & Levinson, S. (1987). *Politeness: Some universals in language usage*. Cambridge, UK: Cambridge University Press.

Bucci, W. (1984). Linking words and things: Basic processes and individual variation. *Cognition*, 17, 137-153.

Bucci, W. (1995). The power of the narrative: A multiple code account. In J. W. Pennebaker (Ed.), *Emotion, disclosure and health* (pp. 93-122). Washington, DC: American Psychological Association Books.

Bucci, W. (1997). *Psychoanalysis and cognitive science: A multiple code theory*. New York, NY: Guilford Press.

Bucci, W. (2000). The need for a “psychoanalytic psychology” in a cognitive science field. *Psychoanalytic Psychology*, 17, 203-224.

Bucci, W., & Freedman, N. (1978). Language and hand: The dimension of referential competence. *Journal of Personality*, 46, 594-622.

- Buchheim, A., & Mergenthaler, E. (2000). The relationship among attachment representation, emotion-abstraction patterns and narrative style: A computer-based text analysis of the Adult Attachment Interview. *Psychotherapy Research*, 10, 390-407.
- Buck, L. A., & Barden, M. (1971). Body image scores and varieties of consciousness. *Journal of Personality Assessment*, 35, 309-314.
- Buckley, P. (1981). Mystical experience and schizophrenia. *Schizophrenia Bulletin*, 7, 516-521.
- Burgoon, J. K., Blair, J. P., Qin, T., & Nunamaker, J. F. (2003). Detecting deception through linguistic analysis. *Intelligence and Security Informatics*, 2665, 91-101.
- Burris, C. T., Remple, J. K. (2004). "It's the end of the world as we know it": Threat and the spatial-symbolic self. *Journal of Personality and Social Psychology*, 86, 19-42.
- Burris, C. T., & Remple, J. K. (2010). If I only had a membrane: A review of amoebic self theory. *Social and Personality Psychology Compass*, 4, 756-766.
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56, 81-105.
- Cameron, L. (2003). *Metaphor in educational discourse*. London, UK: Continuum.
- Cardone, S. S. (1967). *The effect of chlorpromazine on the body image of chronic schizophrenics* (Unpublished doctoral dissertation). Illinois Institute of Technology.
- Carhart-Harris, R. L., & Friston, K. J. (2010). The default-mode ego-functions and free-energy: a neurobiological account of Freudian ideas. *Brain*, 133, 1265-1283.
- Cariola, L. A. (2008). A structural and functional analysis of dream narratives. *Dreaming*, 18, 16-26.

Cariola, L. A. (2012a). A case study of primary process language and body boundary imagery in discourses of religious-mystical and psychotic experiences. *ETC - Empirical Text and Culture Research*, 5, 36-61.

Cariola, L. A. (2012b, July). *A narrative pattern analysis of primary process language and body boundary imagery in discourse of religious-mystical and psychotic altered states of consciousness*. Poster presentation. The 16th Annual Meeting of the Association for the Scientific Study of Consciousness. Brighton, UK.

Cariola, L. A. (2013, July). *Exploring the embodied basis of political discourses and figurative language*. 5th Corpus-Based Approaches to Figurative Language. Pre-conference workshop at the 7th International Corpus Linguistics Conference (CL2013). Lancaster, UK.

Carleton, J. A. (2002). Body, self and soul: The evolution of a wholistic psychotherapy. *JISHIM*, 2, 30-39.

Cassell, W. A. (1964). A projective index of body perception. *Journal of Projective techniques*, 30, 31-36.

Cassell, W. A. (1966). A tachistoscopic index of body perception. *Journal of Projective Techniques*, 30, 31-36.

Chilton, P. (1996). *Security metaphors: Cold war discourse from containment to Common European Home*. New York, NY: Peter Lang.

Chung, C. & Pennebaker, J. W. (2007). The psychology of function words. In K. Fiedler (Ed.), *Social communication* (pp. 343-359). New York, NY: Psychology Press.

Clausen, J. A., & Fisher, S. (1973). Effects of amphetamine and barbiturate on body experience. *Psychosomatic Medicine*, 35, 390-405.

- Cleveland, S., Reitman, E. E., & Brewer, E. J. Jr. (1965). Psychological factors in juvenile rheumatoid arthritis. *Arthritis and Rheumatism*, 8, 1152-1158.
- Coghlan, D. (1993). A person-centred approach to dealing with resistance to change. *Leadership and Organization Development Journal*, 14, 10-14.
- Compton, N. (1964). Body image boundaries in relation to clothing fabric and design preferences of a group of hospitalized psychotic women. *Journal of Home Economics*, 56, 40-45.
- Conger, J. P. (2005). *Jung and Reich: The body as shadow*. Berkeley, CA: North Atlantic Books.
- Conway, M. A. (1990). *Autobiographical memory: An introduction*. Buckingham, UK: Open University Press.
- Conway, M. A. (1992). A structural model of autobiographical memory. In M. A. Conway, D. C. Rubin, H. Spinnler, & W. A. Wagenaar (Eds.), *Theoretical perspectives on autobiographical memory* (pp. 167-194). Dordrecht, Netherlands: Kluwer.
- Conway, M. A. (Ed.). (1997). *Past and present: Recovered memories and false memories*. New York, NY: Oxford University Press.
- Conway, M. A. (2005). Memory and the self. *Journal of Memory and Language*, 53, 594-628.
- Conway, M. A. (2009). Episodic memories. *Neuropsychologica*, 47, 2305-2313.
- Conway, M. A., & Bekerian, D. A. (1987). Organisation in autobiographical memory. *Memory and Cognition*, 15, 119-132.

- Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review*, 107, 261-288.
- Conway, M. A., & Jobson, L. (2012). On the nature of autobiographical memories. In D. Berntsen & D. C. Rubin (Eds.), *Understanding autobiographical memory: Theories and approaches* (pp. 54-69). Cambridge, UK: Cambridge University Press.
- Conway, M. A., & Rubin, D. C. (1993). The structure of autobiographical memory. In A. E. Collins, S. E. Gathercole, M. A. Conway, & P. E. M. Morris (Eds.), *Theories of memory* (pp. 103-137). Hove, UK: Lawrence Erlbaum.
- Conway, M. A., & Turk, D. J. (1999). A positron emission tomography (PET) study of autobiographical memory retrieval. *Memory* 7, 679-702.
- Costa, P. T. Jr., & McRae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources, Inc.
- Crocker, J., & Luhtanen, R. (1990). Collective self-esteem and ingroup bias. *Journal of Personality and Social Psychology*, 58, 60-7.
- Crowne, D. P., & Marlowe, D. (1964). *The approval motive*. New York, NY: John Wiley & Sons.
- Cupchik, G. C., & László, J. (2008). *Emerging Visions: Approaches to the aesthetic Processes: Psychology, semiology, and philosophy*. Cambridge, UK: Cambridge University Press.
- Davis, A. D. (1960). Some physiological correlates of Rorschach body-image productions. *Journal of Abnormal and Social Psychology*, 60, 432-436.
- Davis, W. (2012). In support of body psychotherapy. *International Body Psychotherapy Journal*, 11, 59-73.

Deffner, G. (1986). Microcomputers as aids in Gottschalk-Gleser rating. *Psychiatry Research*, 18, 151-159.

Deignan, A. (2005). *Metaphor and corpus linguistics*. Amsterdam, The Netherlands: John Benjamins.

Deutsch, F., & Murphy, W. F. (1955). *The clinical interview*. New York, NY: International Universities Press.

Diefenbach, D. L. (2001) Historical foundations of computer-assisted content Analysis. In M. D. West (Ed.), *Theory, method and practice in computer content analysis* (pp. 13-41). Westport, CT: Ablex Publishing.

Domhoff, G. W. (2003). *The scientific study of dreams: Neural networks cognitive development, and content analysis*. Washington, DC: American Psychological Association.

Dorsey, D. S. (1965). *A study of the relationship between independence of group pressure and selected measures of body image* (Unpublished doctoral dissertation). University of California, Los Angeles.

Dulaney, E. F. Jr. (1982). Changes in language behavior as a function of veracity. *Human Communication Research*, 9, 75-82.

Ehmann, B., Garami, V., Naszodi, M., Kis, B., & László, J. (2007). Subjective time experience: Identifying psychological correlates by narrative psychological content analysis. *Empirical Text and Culture Research*, 3, 14-25.

Eigenbrode, C. R., & Shipman, W. G. (1960). The body image barrier concept. *Journal of Abnormal and Social Psychology*, 60, 450-452.

Ellis, A. (1994). *Reason and emotion in psychotherapy*. Secaucus, NJ: Citadel Press Inc.

- Elmes, D. G., Kantowitz, B. H., & Roediger, H. L. (2006). *Research methods in psychology*. Belmont, CA: Wadsworth Thomson Learning.
- Entwistle, N. (1972). Personality and academic attainment. *British Journal of Educational Psychology*, 42, 137-151.
- Epstein, S. (1994). Integration of the cognitive and the psychodynamic unconscious. *American Psychologist*, 49, 709-724.
- Exner, J. E. (1969). *The Rorschach systems*. New York, NY: Grune & Stratton.
- Exner, J. E. (2003). *The Rorschach: A comprehensive system, Vol. 1: Basic Foundations*. New York, NY: John Wiley & Sons.
- Fairclough, N. (1992). *Discourse and social change*. Cambridge, UK: Polity Press.
- Feldman, R. S., Forrest, J. A., & Happ, B. R. (2002). Self-presentation and verbal deception: Do self-presenters lie more? *Basic and Applied Social Psychology*, 24, 163-170.
- Fellbaum, C. (1998). WordNet: An electronic lexical database. Cambridge, MA: MIT Press.
- Fenichel, O. (1945). *The psychoanalytic theory of neuroses*. New York, NY: Norton.
- Fernald, P. S. (2003). Carl Rogers: Body-oriented psychotherapist. *The USA Body Psychotherapy Journal*, 2, 24-32.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.
- Fisher, S. (1959a). Extensions of theory concerning body image and body reactivity, *Psychosomatic Medicine*, 21, 142-149.

Fisher, S. (1959b). Prediction of body interior versus body exterior reactivity. *Journal of Personality Psychology*, 27, 56-62.

Fisher, S. (1963). A further appraisal of the body boundary concept. *Journal of Consulting Psychology*, 27, 62-74.

Fisher, S. (1970). *Body experience in fantasy and behaviour*. New York, NY: Appleton-Century-Crofts.

Fisher, S. (1971). Boundary effects of persistent inputs and messages. *Journal of Abnormal Psychology*, 7, 290-295.

Fisher, S. (1976). Body perception upon awakening. *Perceptual and Motor Skills*, 43, 275-278.

Fisher, S. (1986). *Development and structure of the body image*. Hillsdale, NJ: Lawrence Erlbaum.

Fisher, S., & Cleveland, S. (1956). Body-image boundaries and style of life. *Journal of Abnormal and Social Psychology*, 52, 373-379.

Fisher S., & Cleveland, S. (1958). *Body image and personality*. New York, NY: Dover Publications.

Fisher, S., & Cleveland, S. (1960). A comparison of psychological characteristics and physiological reactivity in ulcer and rheumatoid arthritis groups II. Difference in physiological reactivity. *Psychosomatic Medicine*, 22, 290-293.

Fisher, S., & Fisher, R. (1964). Body image boundaries and patterns of body perception. *Journal of Abnormal and Social Psychology*, 68, 255-262.

Fisher, S., & Greenberg, R. P. (1996). *Freud scientifically reappraised: Testing the theories and therapy*. New York, NY: John Wiley & Sons.

- Fisher, C., & Paul, I. (1959). The effect of subliminal visual stimulation on images and dreams: A validation study. *Journal of the American Psychoanalytic Associations*, 7, 35-83.
- Fisher, S., & Renik, O. (1966). Induction of body image boundary changes. *Journal of Projective Techniques of Nervous and Mental Disease*, 137, 252-257.
- Flader, D., & Wodak-Leodolter, R. (Eds.) (1979). *Therapeutische Kommunikation*. Königstein, Germany: Scriptor.
- Fleiss, J. L. (1981). *Statistical methods for rates and proportions*. New York, NY: John Wiley & Sons.
- Fónagy, I. (2001). *Languages within language: An evaluative approach*. Amsterdam, The Netherlands: John Benjamins.
- Fónagy, P., & Target, M. (1996). Playing with reality: I. Theory of mind and the normal development of psychic reality. *International Journal of Psychoanalysis*, 77, 217-233.
- Freud, A. (1992). *The ego and the mechanisms of defence*. London, UK: Karnac Books. (Original work published 1936).
- Freud, S. (2001). *Pre-psycho-analytic publications and unpublished drafts, S. E. 1*. London, UK: Hogarth Press. (Original work published 1895)
- Freud, S. (2001). *The interpretation of dreams, S. E. 4*. London, UK: Hogarth Press. (Original work published 1900)
- Freud, S. (2001). *Psychopathology of everyday life, S. E. 6*. London, UK: Hogarth Press. (Original work published 1901)
- Freud S. (2001). *Three essays on the theory of sexuality and other works, S. E. 7*. London, UK: Hogarth Press. (Original work published in 1905)

Freud, S. (2001). *Case history of Schreber, Papers on technique and other works, S. E. 12*. London, UK: Hogarth Press. (Original work published 1911)

Freud, S. (2001). *Totem and taboo, S. E. 13*. London, UK: Hogarth Press. (Original work published 1913)

Freud, S. (2001). *On the history of the psycho-analytic movement, papers on metapsychology and other works, S. E., 14*. London, UK: Hogarth Press. (Original work published 1915)

Freud, S. (2001). *The ego and id and other works, S. E. 19*. London, UK: Hogarth Press. (Original work published 1923)

Freud, S. (2001). *An autobiographical study, inhibitions, symptoms and anxiety, lay analysis and other works, S. E. 20*. London, UK: Hogarth Press (Originally work published 1926).

Freud, S. (2001). *The future of an illusion, civilization and its discontents and other works, S. E. 21*. London, UK: Hogarth Press. (Original work published 1927)

Friedman, M. (1937). The use of ranks to avoid the assumption of normality implicit in the analysis of variance. *Journal of the American Statistical Association*, 32, 675-701.

Fromm, E. (1979). *Hypnosis: Developments in research and new perspectives*. New York, NY: Aldine.

Frost, R. (1914). *North of Boston*. Retrieved from <http://www.gutenberg.org/files/3026/3026-h/3026-h.htm>

Gabrielatos, C., & Baker, P. (2008). Fleeing, sneaking, flooding: a corpus analysis of discursive constructions of refugees and asylum seekers in the UK press 1996-2005. *Journal of English Linguistics*, 36, 5-38.

Galatzer-Levy, R. (1997), Psychoanalysis, memory, and trauma. In P. Appelbaum, L. Uyehara, & M. Elin, (Eds.), *Trauma and memory: Clinical and legal controversies* (pp. 138-157). New York, NY: Oxford University Press.

Galin, D. (1974). Implications for psychiatry of left and right cerebral specialization. *Archives of General Psychiatry*, 31, 572-583.

Gallagher, S. (2005). *How the body shapes the mind*. New York, NY: Oxford University Press.

Garmer, M., Lemon, J., Fellows, I., & Singh, S. (2012). *Various coefficients of interrater reliability and agreement*. Retrieved from <http://www.cran.r-project.org/web/packages/irr/irr.pdf>.

Gelo, O. (2008). Metaphor and emotional-cognitive regulation in psychotherapy: A single case analysis. Ulm, Germany: Ulmer Textbank Publishing.

Gelo, O., & Mergenthaler, E. (2003). Psychotherapeutic process and metaphorical language. Society for psychotherapy research. Book of abstracts of the 34th Annual Meeting. Ulm, Germany: Ulmer Textbank Publishing.

Gennaro, A., Al-Radaideh, A., Gelo, O., Manzo, S., Nitti, M., & Salvatore, S. (2010). Modelling psychotherapy process as a sense-making dynamic: The two stage semiotic model (TSSM) and The discursive flow analyzer (DFA). In S. Salvatore, J. Valsiner, A. Gennaro, & J. B. Traves Simon (Eds.), *YIS: Yearbook of idiographics science, Vol. 2* (pp. 131-169). Roma, Italy: Firera Publishing.

Gibbs, R. W. (2006). Metaphor interpretation as embodied simulation. *Mind & Language*, 21, 434-458.

Gigerenzer, G. (2004). Mindless statistics. *The Journal of Socio-Economics*, 33, 587-606.

Gleser, G. C., Gottschalk, L. A., & Springer, K. J. (1961). An anxiety scale applicable to verbal samples. *Archives of General Psychiatry*, 5, 593-605.

Goffman, E. (1971). *Relations in public*. New York, NY: Harper.

Goldblatt, M. J., & Maltzberger, J. T. (2010) Self attack as a means of self-preservation. *International Journal of Applied Psychoanalytic Studies*, 7, 58-72.

Goldstein, K. (1939). *The organism*. Boston, MA: Beacon.

Gottschalk, L. A. (1974). A hope scale applicable to verbal samples. *Archives of General Psychiatry*, 7, 489-496.

Gottschalk, L. A. (1988). Narcissism: Its normal evolution and development and the treatment of its disorders. *American Journal of Psychotherapy*, 42, 4-27.

Gottschalk, L. A. (1995). *Content analysis of verbal behavior: New findings and clinical applications*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Gottschalk, L. A., & Bechtel, R. J. (2000). *PCAD 2000: Psychiatric Content Analysis and Diagnosis*. Corona del Mar, CA: GB Software LLC.

Gottschalk, L. A., Eckardt, M. J., & Feldman, D. J. (1979). Further validation studies of a cognitive-intellectual impairment scale applicable to verbal samples. In L. A. Gottschalk (Ed.), *The content analysis of verbal behavior: Further studies* (pp. 9-40). New York, NY: Spectrum Publications.

Gottschalk, L. A., & Gleser, G. C. (1969). *The measurement of psychological states through the content analysis of verbal behavior*. Berkeley, CA: University of California Press.

Gottschalk, L. A., & Hoigaard-Martin, J. (1986). A depression scale applicable to verbal samples. *Psychiatry Research*, 17, 153-167.

Gottschalk, L. A., Springer, K. J., & Gleser, G. C. (1961). Experiments with a method of assessing the variations in intensity of certain psychological states occurring during two psychotherapeutic interviews. In L. A. Gottschalk (Ed.), *Comparative psycholinguistic analysis of two psychotherapeutic interviews* (pp. 115-138). New York, NY: International University Press.

Gregory, R. J. (2004). *Psychological testing: History, principles, and applications*. Boston, MA: Allyn and Bacon.

Greenberg, E., Aronow, E., & Rauchway, A. (1977). Inkblot content and interpersonal distance. *Journal of Clinical Psychology*, 33, 882-887.

Habermas, T., & Bluck, S. (2000). Getting a life: The emergence of a life story in adolescence. *Psychological Bulletin*, 126, 748-769.

Habermas, T., & Diel, V. (2013). The episodicity of verbal reports of personally significant autobiographical memories: Vividness correlates with narrative text quality more than with detailedness or memory specificity. *Frontiers in Behavioral Neuroscience*. Retrieved from <http://www.frontiersin.org/Journal/10.3389/fnbeh.2013.00110/abstract>

Haden, C. A., Haine, R. A., & Fivush, R. (1997). Developing narrative structure in parent-child reminiscing across the preschool years. *Developmental Psychology*, 33, 295-307.

Hall, E. T. (1966). *The hidden dimension*. New York, NY: Doubleday.

Halliday, M. A. K. (1985). *An introduction to functional grammar*. London, UK: Edward Arnold.

Halliday, M. A. K., McIntosh, A., & Stevens, P. (1964). *The linguistic sciences and language teaching*. London, UK: Longmans.

Hancock, J. T. Curry, L. E. Goorha, S., & Woodworth, M. (2008). On lying and being lied to: A linguistic analysis of deception in computer-mediated communication. *Discourse Processes*, 45, 1-23.

Haser, H. (2005) *Metaphor, metonymy, and experientialist philosophy: Challenging cognitive semantics*. Berlin, Germany: Mouton de Gruyter.

Hayslip, B., Cooper, C., Dougherty, L., Cook, D. (1997). Body image in adulthood: A projective approach. *Journal of Personality Assessment*, 68, 628-649.

Hartmann, E., Harrison, R., & Zborowski, M. (2001). Boundaries in the mind: Past research and future directions. *North American Journal of Psychology*, 3, 347-368.

Haward, L. R. (1987). A body barrier scale for psych-medial research. *Medical Science Research*, 15, 539-540.

Hernandez-Fernaund, E., & Alonso-Quecuty, M. (1997). The cognitive interview and lie detection: A new magnifying glass for Sherlock Holmes? *Applied Cognitive Psychology*, 11, 55-68.

Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, 94, 319-340.

Higgins, E. T., Bond, R., Klein, R., & Strauman, T. J. (1986). Self-discrepancies and emotional vulnerability: How magnitude, accessibility and type of discrepancy influence affect. *Journal of Personality and Social Psychology*, 51, 1-15.

Hines, D., & Martindale, C. (1973). Functional brain asymmetry, primary process thinking, and natural language. *Electroencephalography and Clinical Neurophysiology*, 34, 773.

Hirsch, J. B., & Peterson, J. B. (2009). Personality and language use in self-narratives. *Journal of Research in Personality*, 43, 524-527.

Hobson, J. A. (1988). *The dreaming brain*. New York, NY: Basic Books.

Hobson, J. A., & McCarley, R. W. (1977). The brain as a dream state generator: An activation-synthesis hypothesis of the dream process. *American Journal of Psychiatry*, 134, 1335-1348.

Hobson, J. A., & Schredl, M. (2011). The continuity and discontinuity between waking and dreaming: A dialogue between Michael Schredl and Allan Hobson concerning the adequacy and completeness of these notions. *International Journal of Dream Research*, 4, 3-7. Retrieved from <http://www.archiv.ub.uni-heidelberg.de/ojs/index.php/IJoDR/article/view/9087>

Hogenraad, R. (2007). Perversion and creativity in the language of war. In L. Dorfman, C. Martindale, & V. Petrov (Eds.), *Aesthetics and innovation* (pp. 161-180). Cambridge, UK: Cambridge Scholars Publication.

Hogenraad, R. (2006). Trends in the creative content of scientific journals: Good, but not as good! In C. Martindale, P. Locher, & V. Petrov (Eds.), *Evolutionary and neurocognitive approaches to aesthetics, creativity, and the arts* (pp. 117-128). Amityville, NY: Baywood Publishing Company.

Hogenraad, R., Bestgen, Y., & Durieux, J.-F. (1992) Psychology as literature. *Genetic, Social, and General Psychology Monograph*, 118, 457-478.

Hogenraad, R., Daubies, C., Bestgen, Y., & Mahau, P. (2003). *Une théorie et une méthode générale d'analyse textuelle assistée par ordinateur. Le système PROTAN (PROTOCOL Analyzer)*. 32-bits version of November 10, 2003 by Pierre Mahau. Louvain-la-Neuve, Belgium: Psychology Department, Catholic University of Louvain.

Hogenraad, R., & Oriane, E. (1983). "A penny for your thoughts": Imagery value and periodicity of interior monologue. *Journal of Mental Imagery*, 7, 51-61.

Hogenraad, R., & Orianne, E. (1985-1986). Imagery, regressive thinking, and verbal performance in internal monologue. *Imagination, Cognition, and Personality*, 5, 127-145.

Hogenraad, R., Tousignant, N., Castano, E., Bestgen, & Dumoulin, M. (1997, May-June). *The words that buoy the European impulse*. Paper presented at the 5th American Branch of the Biennial European Community Studies Association. Seattle, WA.

Hoggs, M. A., & Abrams, D. (1988). *Social identifications: A social psychology of intergroup relations and group processes*. London, UK: Routledge.

Holland, N. (1998). Cognitive linguistics. *International Journal of Psycho-Analysis*, 80, 357-363.

Holsti, O. R. (1969). *Content analysis for the social sciences and humanities*. Reading, MA: Addison-Wesley.

Holt, R. R. (1956). Gauging primary and secondary process in Rorschach responses. *Journal of Projective Techniques*, 20, 14-15.

Holt, R. R. (1960). Cognitive controls and primary process. *Journal of Psychological Researches*, 4, 1-8.

Holt, R. R. (1966). Measuring libidinal and aggressive motives and their controls by means of the Rorschach test. In D. Levine (Ed.), *Nebraska symposium on motivation* (pp. 1-47). Lincoln, NE: University of Nebraska Press.

Holt, R. R. (1976). Freud's theory of the primary process – present status. *Psychoanalysis and Contemporary Science*, 5, 61-99.

Holt, R. R. (2002). Quantitative research on the primary process: Method and findings. *Journal of the American Psychoanalytic Association*, 50, 457-492.

Holt, R. R. (2005a). *Primary process thinking: Theory, measurement, and research*. Madison, CT: International Universities Press.

Holt, R. R. (2005b). The Pripro scoring system. In R. Bornstein, & J. Masling (Eds.), *Scoring the Rorschach: Seven validated systems* (pp. 191- 235). Mahwah, NJ: Lawrence Erlbaum.

Holtzman, W. H. (1965). Intelligence, cognitive style, and personality: A developmental approach. In O. G. Brim, R. S. Crutchfield, & W. H. Holtzman (Eds.), *Intelligence: Perspectives* (pp. 1-32). New York, NY: Harcourt.

Holtzman, W. H., Thorpe, J. S., & Swartz, J. D., & Herron, E. W. (1961). *Inkblot perception and personality*. Austin, TX: University of Texas Press.

Horner, T. M. (1983). On the formation of personal space and self-boundary structures in early human development: The case of infant stranger reactivity. *Developmental Review*, 3, 148-177.

Horney, K. (1950). *Neurosis and human growth: The struggle towards self-realization*. New York, NY: Norton.

Horton, C. L. (2011a). Rehearsal of Dreams and Waking Events Similarly Improves the Quality but Not the Quantity of Autobiographical Recall. *Dreaming*, 21, 181-196.

Horton, C. L. (2011b). Recall and recognition of dreams and waking events: A diary paradigm. *International Journal of Dream Research*, 4, 8-16.

Howe, M. L., Courage, M. L., & Edison, S. C. (2003). When autobiographical memory begins. In S. Algarabel, A. Pitarque, T. Bajo, S. E. Gathercole, & M. A. Conway (Eds.), *Theories of memory, Vol. 3*. New York, NY: Psychology Press.

Hundt, M., Sand, A., & Skandera, P. (1999). *Manual of information to accompany the Freiburg- Brown Corpus of American English*. Freiburg, Germany: University of Freiburg.

- Hurvich, M. (2003). The places of annihilation anxieties in psychoanalytic theory. *Journal of the American Psychoanalytic Association*, 51, 579-616.
- Inhelder, B., & Piaget, J. (1958). *The growth of logical thinking from childhood to adolescence*. London, UK: Routledge.
- Jackson, S. (2011). *Research methods and statistics: A critical thinking approach*. Belmont, CA: Wadsworth.
- Johnson, M. (1987). *The body in the mind: The bodily basis of meaning, imagination, and reason*. Chicago, IL: University of Chicago Press.
- Johnson, M. K. (1992). MEM: Mechanisms of recollection. *Journal of Cognitive Neuroscience*, 4, 268-280.
- Johnson, M. K. (2006). Memory and reality. *American Psychologist*, 61, 760-771
- Johnson, M. K., Foley, M. A., Suengas, A. G., & Rye, C. L. (1988). Phenomenal characteristics of memories for perceived and imagined autobiographical events. *Journal of Experimental Psychology: General*, 117, 371-376.
- Johnson, M. K., Hashtroudi, S., & Lindsay, D. S. (1993). Source monitoring. *Psychological Bulletin*, 114, 3-28.
- Johnson, M. K., Kahan, T. L., & Raye, C. L. (1984). Dreams and reality monitoring. *Journal of Experimental Psychology: General*, 113, 329-344.
- Johnson, M. K., & Raye, C. L. (1981). Reality monitoring. *Psychological Review*, 88, 67-85.
- Johnston, A. (2009). Affects are signifiers: the infinite judgment of a Lacanian affective neuroscience. *Nessie: Revue numerique de philosophie contemporaine – Digital Review of Contemporary Philosophy*, 1. Retrieved from http://nessiephilo.com/Files/adrian_johnston__affects_are_signifiers.pdf.

- Jung, C. G. (1963). *Mysterium coniunctionis: An inquiry into the separation and synthesis of psychic opposites in alchemy*. New York, NY: Bollingen.
- Kacewicz, E., Pennebaker, J. W., Davis, M., Jeon, M., & Graesser, A. C. (2014). Pronoun Use Reflects Standings in Social Hierarchies. *Journal of Language and Social Psychology*, 33, 125-143.
- Kächele, H., Schachter, J., & Thomä, H. (2009). *From psychoanalytic narrative to empirical single case research. Implications for psychoanalytic practice*. New York, NY: Routledge.
- Kahan, T. L. (1994). Measuring dream self-reflectiveness: A comparison of two approaches. *Dreaming*, 4, 177-193.
- Kahan, T. L., LaBerge, S., Levitan, L., & Zimbardo, P. (1997). Similarities and differences between dreaming and waking cognition: An exploratory study. *Consciousness and Cognition*, 6, 132-147.
- Kahan, T. L., & LaBerge, S. P. (2011). Dreaming and waking: Similarities and difference revisited. *Conscious and Cognition*, 20, 494-514.
- Kalin, R., McClelland, D. C., & Kahn, M. (1965). The effects of male social drinking. *Journal of Personality and Social Psychology*, 1, 441-452.
- Karmel, R. L. (1975). *Changes in body awareness, boundary, focus, and distortion from late pregnancy to the postnatal period* (Unpublished doctoral dissertation). University of Ottawa.
- Kelly, E. F., & Stone, P. J. (1975). *Computer recognition of English word senses*. Amsterdam, Netherlands: North-Holland.
- Kernberg, O. F. (1984). *Severe personality disorders: Psychotherapeutic strategies*. New Haven, CT: Yale University Press.

Kertész, A., & Rákosi, C. (2009). Cyclic vs. circular argumentation in the Conceptual Metaphor Theory. *Cognitive Linguistics*, 20, 703-732.

Khosravinik, M., Krzyzanowski, M., & Wodak, R. (2012). Dynamics of representation in discourse: Immigrants in the British Press. In. M. Messer, R. Schroeder, & R. Wodak (Eds.), *Migrations: Interdisciplinary perspectives* (pp. 283-297). Berlin, Germany: Springer.

Klein, M. (1997). Notes on some schizoid mechanism. In *Envy and gratitude and other works 1946-1963* (pp. 1-24). London, UK: Random House Press. (Original work published 1946)

Klein, M. (1998). A Contribution to the Psychogenesis of Manic-Depressive States. In *Love, guilt, and reparation and other works 1924-1945* (pp. 262-289). London: Random House Press. (Original work published 1935)

Kleinman, M. J., & Russ, S. W. (1988). Primary process thinking and anxiety in children. *Journal of Personality Assessment*, 52, 254-262.

Klinger, E. (1971). *Structure and functions of fantasy*. New York, NY: Wiley-Interscience.

Knapp, M. L., Hart, R. P., & Dennis, H. S. (1974). An exploration of deception as a communication construct. *Human Communication Research*, 1, 15-29.

Kolbe, R. H., & Burnett, M. S. (1991). Content-analysis research: An examination of applications with directives for improving research reliability and objectivity. *Journal of Consumer Research*, 18, 243-250.

Koller, V., Hardie, A., Rayson, P., & Semino, E. (2008) Using a semantic annotation tool for the analysis of metaphor in discourse. *Metaphorik.de*, 15, 141-160. Retrieved from <http://www.metaphorik.de/15/koller.pdf>.

Koschene, R. L. (1965). *Body image and boundary constancy in kidney transplant patients: A test of the Fisher-Cleveland hypothesis* (Unpublished master thesis). University of Colorado, Colorado.

Kövecses, Z. (2010). *Metaphor*. Oxford, UK: Oxford University Press.

Kövecses, Z. (2008). Conceptual metaphor theory: Some criticisms and alternative proposals. *Annual Review of Cognitive Linguistics*, 6, 168-184.

Krippendorff, K. (2004). *Content analysis: An introduction to its methodology*. Thousand Oaks, CA: Sage. (First published 1980).

Kris, E. (1952). *Psychoanalytic explorations in art*. New York, NY: International University Press.

Kristeva, J. (1984). *Revolution in poetic language*. New York, NY: Columbia University Press.

Labov, W., & Fanshel, D. (1977). *Therapeutic discourse: Psychotherapy as conversation*. New York, NY: Academic Press.

Lacy, J. I. (1959). Psychophysiological approaches to the evaluation of psychotherapeutic process and outcome. In E. A. Rubenstein, & M. B. Parloff (Eds.), *Research in psychotherapy* (pp. 160-208). Washington, DC: National Publishing Company.

Lacy, S., & Riffle, D. (1996). Sampling error and selecting intercoder reliability samples for nominal content categories: Sins of omission and commission in mass communication quantitative research. *Journalism & Mass Communication Quarterly*, 73, 969-973.

Laffal, J. (1965). *Pathological and normal language*. New York, NY: Atherton Press.

- Laffal, J. (1995). A concept analysis of Jonathan Swift's "A Tale of a Tub" and "Gulliver's Travels". *Computers and the Humanities*, 29, 339-361.
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago, IL: University of Chicago Press.
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to western thought*. New York, NY: Basic Books.
- Landau, M. (1960). *Body image in paraplegia as a variable in adjustment to physical handicap* (Unpublished doctoral dissertation). Columbia University.
- Langer, S. (1942). *Philosophy in a new key: A study in the symbolism of reason, rite, and art*. Cambridge, MA: Harvard University Press.
- László, J. (2008). *The science of stories: An introduction to narrative psychology*. London, UK: Routledge.
- Lavit, R. J. (1970a). Effects of levels of anxiety on Holtzman inkblot responses (Unpublished doctoral dissertation). Oklahoma State University.
- Lehnert, W. G. (1981). Plot units and narrative summarization. *Cognitive Science*, 5, 293-331.
- Leifer, M., & Shapiro, J. P. (1991). Rorschach assessment of psychological functioning in sexually abused girls. *Journal of Personality Assessment*, 56, 14-28.
- Lepper, G., & Mergenthaler, E. (2007). Therapeutic collaboration: How does it work? *Psychotherapy Research*, 17, 576-587.
- Lerner, H. D. (1998). *Psychoanalytic perspectives on the Rorschach*. Hillsdale, NJ: Analytic Press.

- Levelt, W. J. M. (1999). Producing spoken language: A blueprint of the speaker. In Colin M. Brown, & P. Hagoort (Eds.), *The neurocognition of language* (pp. 83-122). Oxford, UK: Oxford University Press.
- Levinson, S. (1983). *Pragmatics*. Cambridge, UK: Cambridge University Press.
- Levy, L. H., & Orr, T. B. (1959). The social psychology of Rorschach validity research. *Journal of Abnormal Social Psychology*, 58, 79-83.
- Lévy-Bruhl, L. (1966). *How natives think*. New York, NY: Washington Square Press. (Original work published 1910)
- Lewin, B. D. (1946). Sleep, the mouth, and the dream screen. *Psychoanalytic Quarterly*, 15, 419-434.
- Linton, M. (1986). Ways of searching and the contents of memory. In D. C. Rubin (Ed.), *Autobiographical memory* (pp. 50-70). Cambridge, UK: Cambridge University Press.
- Loewald, H. W. (1978). *Psychoanalysis and the history of the individual*. New Haven, CI: Yale University Press.
- Lombard, M., Snyder-Duch, J., & Bracken, C. (2002). Content analysis in mass communication: Assessment and reporting of inter-coder reliability. *Human Communication Research*, 28, 587-604.
- Lombard, M., Snyder-Duch, J., & Bracken, C. (2010). Practical resources for assessing and reporting intercoder reliability in content analysis research projects. Retrieved from <http://matthewlombard.com/reliability/>
- Lovejoy, J., Watson, B. R., Lacy, S., & Riffe, D. (2014). Assessing the reporting of reliability in published content analyses: 1985-2010. *Communication Methods and Measures*. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/19312458.2014.937528#preview>

Lukoff, D. (1985). Diagnosis of mystical experiences with psychotic features. *Journal of Transpersonal Psychology*, 17, 155-181.

Lukoff, D., Lu, F., & Turner, R. (1992). Towards a more culturally sensitive DSM-IV: Psychoreligious and psychospiritual problems. *Journal of Nervous and Mental Disease*, 180, 673-682.

Maalej, Z., & Yu, N. (Eds.) (2011). *Embodiment via body parts: Studies from various languages and cultures*. Amsterdam, The Netherlands: John Benjamins.

Malinowski, B. (1972). Phatic communion. In J. Laver, & S. Hutcheson (Eds.), *Communication in face-to-face communication* (pp.146-152). Harmondsworth, UK: Penguin Books.

Maltsberger, J. T. (2004). The descent into suicide. *The International Journal of Psycho-Analysis*, 85, 653-667.

Mandler, J., & Johnson, N. (1977). Remembrance of things parsed: Story structure and recall. *Cognitive Psychology*, 9, 111-151.

Mann, H. B., & Whitney, D. R. (1947). On a test of whether one of two random variables is stochastically larger than the other. *The Annals of Mathematical Statistics*, 18, 50-60.

Marsden, G. (1965). Content-analysis studies of therapeutic interviews: 1954 to 1964. *Psychological Bulletin*, 63, 298-321.

Martindale, C. (1973). An experimental simulation of literary change. *Journal of Personality and Social Psychology*, 25, 319-326.

Martindale, C. (1974). The semantic significance of spatial movement in narrative verse: Patterns of regressive imagery in the Divine Comedy. In L. Mitchel (Ed.), *Computers in the humanities* (pp. 57-64). Edinburgh, UK: Edinburgh University Press.

Martindale, C. (1975). *Romantic progression: The psychology of literary history*. Washington, DC: Hemisphere.

Martindale, C. (1976). Primitive mentality and the relationship between art and society. *Scientific Aesthetics*, 1, 5-18.

Martindale, C. (1978). A quantitative analysis of diachronic patterns in some narratives of Poe. *Semiotica*, 22, 287-308.

Martindale, C. (1979). The night journey: Trends in the content of narratives describing transformation of consciousness. *Journal of Altered States of Consciousness*, 4, 321-343.

Martindale, C. (1981). *Cognition and consciousness*. Homewood, IL: Dorsey.

Martindale, C. (1987). Narrative pattern analysis: A quantitative method for inferring the symbolic meaning narratives. In L. Halász (Ed.), *Literary discourse: Aspects of cognitive and social psychological approaches* (pp. 167-181). Berlin, Germany: Walter de Gruyter.

Martindale, C. (1990). *The clockwork muse: The predictability of artistic change*. New York, NY: Basic Books.

Martindale, C. (1995). Creativity and connectionism. In S. M. Smith, T. B. Ward, & R. A. Finke (Eds.), *The creative cognition approach* (pp. 249-268). Cambridge MA: MIT Press.

Martindale, C. (1999). Biological bases of creativity. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 137-152). New York: Cambridge University Press.

Martindale, C., Covello, E., & West, A. (1986). Primary process cognition and hemisphere asymmetry. *Journal of Genetic Psychology*, 147, 79-87.

- Martindale, C., & Fisher, R. (1977). The effects of psilocybin on primary process content in language. *Confinia Psychiatrica*, 20, 195-202.
- Martindale, C., & West, A. (2002). Quantitative hermeneutics: Inferring the meanings of narratives from trends in content. In W. van Peer, & M. Louwerse (Eds.), *Thematics: Interdisciplinary studies* (pp. 377–396). Amsterdam, The Netherlands: John Benjamins.
- Maslow, A. (1962). *Toward a psychology of being*. New York, NY: Van Nostrand.
- Mathison, S. (1988). Why triangulate? *Educational Researcher*, 17, 13-17.
- Matte Blanco, I. (1975). *The unconscious as infinite sets*. London, UK: Karnac.
- Matte Blanco, I. (1988). *Thinking, feeling, and being*. London, UK: Routledge.
- Mattson, M., Wilkman, M., Dahlgren, L., Mattson, B., & Armelius, K. (1998). Body awareness therapy with sexually abused women. Part 2: Evaluation of body awareness in a group setting. *Journal of Body Work and Movement Therapies*, 2, 38-45.
- Maylor, E. A., Carter, S. M., & Hallett, E. L. (2002). Preserved olfactory cuing of autobiographical memories in old age. *Journals of Gerontology: Series B: Psychological Sciences and Social Sciences*, 57B, P41-P46.
- McAdams, D. P. (1982). Experiences of intimacy and power: Relationships between social motives and autobiographical memory. *Journal of Personality and Social Psychology*, 42, 292-302.
- McAdams, D. P. (1993). *The stories we live by: Personal myths and the making of the self*. New York, NY: William Morrow & Co.
- McAdams, D. P. (2001). *The psychology of life stories*. *Review of General Psychology*, 5, 100-122.

McCabe, A., Capron, T. & Peterson, C. (1991). The voice of experience: The recall of early childhood and adolescent memories by young adults. In A. McCabe, & C. Peterson (Eds.), *Developing narrative structure* (pp. 137-173). Hillsdale, NJ: Erlbaum.

McCarthy, M. (1991). *Discourse analysis for language teachers*. Cambridge, UK: Cambridge University Press.

McClelland, D. C. (1953). *Achievement motive*. New York, NY: Appleton-Century-Crofts.

McClelland, D. C., Atkinson, J. W., Clark, R. A., & Lowell, E. L. (1953). *The achievement motive*. New York, NY: Appleton-Century-Crofts.

McGlothlin, W., Cohen, S., & McGlothlin, M. S. (1967). Long lasting effects of LSD on normals. *Archives of General Psychiatry*, 17, 521-532.

McKellar, P. (1957). *Imagination and thinking*. New York, NY: Basic Books.

McKeough, A., & Genereux, R. (2003). Transformation in narrative thought during adolescence: The structure and content of story composition. *Journal of Educational Psychology*, 95, 537-552.

McLean, K. C., & Fournier, M. A. (2008). The content and processes of autobiographical reasoning in narrative identity. *Journal of Research in Personality*, 42, 527-545.

McMenamin, G. (2002). *Forensic linguistics: Advances in forensic stylistics*. London, UK: CRC Press.

Mead, G. H. (1934). *Mind, self, and society*. Chicago, IL: University of Chicago Press.

Megaree, E. I. (1965). The fate of one's face. *Psychiatric Quarterly*, 30, 31-43.

- Mehl, M. R., & Pennebaker, J. W. (2003). The sounds of social life: A psychometric analysis of students' daily social environments and natural conversations. *Journal of Personality and Social Psychology*, 84, 857-870.
- Mehrabian, A., & Wiener, M. (1967). Decoding of inconsistent communications. *Journal of Personality and Social Psychology*, 6, 109-114.
- Meltzer, D. (1975). *Explorations in autism*. London, UK: Karnac.
- Mendelsohn, G. A. 1976. Associative and attentional processes in creative performance. *Journal of Personality*, 44, 341-369.
- Merckelbach, H., Horselenberg, R., & Muris, P. (2001). The creative experiences questionnaire (CEQ): A brief self-report measures of fantasy proneness. *Personality and Individual Differences*, 31, 987-995.
- Mergenthaler, E. (1985). *Textbank systems: Computer science applied in the field of psychoanalysis*. Heidelberg, Germany: Springer.
- Mergenthaler, E. (1996). Emotion-abstraction patterns in verbatim protocols: A new way of describing psychotherapy process. *Journal of Consulting and Clinical Psychology*, 64, 1306-1315.
- Mergenthaler, E. (2008). Resonating minds. A school-independent theoretical conception and its empirical application to psychotherapeutic processes. *Psychotherapy Research*, 18, 109-126.
- Mergenthaler, E., & Bucci, W. (1993, June). *Computer assisted procedures for analyzing verbal data in psychotherapy research*. Paper presented at the 24th Annual International Meeting of the Society for Psychotherapy Research. Pittsburgh, PA.
- Mergenthaler, E., & Bucci, W. (1999). Linking verbal and nonverbal representations: Computer analysis of Referential Activity. *British Journal of Medical Psychology*, 72, 339-354.

- Mergenthaler, E., & Kächele, H. (1985). Changes of latent meaning structures in psychoanalysis. *Sprache und Datenverarbeitung*, 9, 21-28.
- Mergenthaler, E., & Kächele, H. (1991) University of Ulm: The Ulm Textbank Research Program. In L. Beutler, & M. Crago (Eds.), *International psychotherapy research programs* (pp. 219-225). New York, NY: Pergamon.
- Mergenthaler, E., & Kächele, H. (1996). Applying multiple computerized text analytic measures to single psychotherapy cases. *Journal of Psychotherapy Practice Research*, 5, 307-317.
- Merleau-Ponty, M. (1945). *Phénoménologie de la perception*. Paris, France: Librairie Gallimard.
- Michalczyk, A. E., & Lewis, L. A. (1980). Significance alone is not enough. *Journal of Medical Education*, 55, 835-838.
- Mieder, W. (2003). "Good fences make good neighbours": History and significance of an ambiguous proverb. *Folklore*, 114. Retrieved from <http://www.questia.com/library/1G1-106981965/good-fences-make-good-neighbours-history-and-significance>
- Mitchell, S. A. (1993). *Hope and dread in psycho-analysis*. New York, NY: Basic Books.
- Morgan, C. D., & Murray, H. A. (1935). A method of investigating fantasies: The Thematic Apperception Test. *Archives of Neurology and Psychiatry*, 34, 289-306.
- Muris, P., & Merckelbach, H. (1997). Suppression and dissociation. *Personality and Individual Differences*, 23, 523-525.
- Nelson, K. (1993). The psychological and social origins of autobiographical memory. *Psychological Science*, 4, 7-14.

Neisser, U. (1967). *Cognitive psychology*. New York, NY: Appleton-Century-Crofts.

Neisser, U. (1988). Five kinds of self-knowledge. *Philosophical Psychology*, 1, 35-59.

Nelson, K., & Fivush, R. (2004). The emergence of autobiographical memory: A social cultural developmental theory. *Psychological Review*, 111, 486-511.

Nelson, K. L., Moskowitz, D. J., & Steiner, H. (2008). Narration and vividness as measures of event-specificity in autobiographical memory. *Discourse Processes*, 45, 195-209.

Neuendorf, K. A. (2002). *The content analysis guidebook*. London, UK: Sage Publications.

Nevis, E. C. (1987). *Organizational consulting: A Gestalt approach*. Cleveland, OH: Gestalt Institute of Cleveland Press.

Newbold, R. F. (1984). Suetonius' boundaries. *Latomus*, 42, 118-132.

Newman, M. L., Groom, C. J., Handelman, L. D., & Pennebaker, J. W. (2008). Gender differences in language use: An analysis of 14,000 text samples. *Discourse Processes*, 45, 211-236.

Newman, M. L., Pennebaker, J. W., Berry, D. S., & Richards, J. M. (2003). Lying words: Predicting deception from linguistic styles. *Personality and Social Psychology Bulletin*, 29, 665-675.

Niederhoffer, K. G., & Pennebaker, J. W. (2002). Linguistic style matching in social interaction. *Journal of Language and Social Psychology*, 21, 337-360.

Nielsen, T. A., & Stenstrom, P. (2005). What are the memory sources of dreaming? *Nature*, 437, 1286-1289.

- Nitti, M., Ciavolino, E., Salvatore, S., & Gennaro, A. (2010). Analyzing psychotherapy process as intersubjective sensemaking. An approach based on discourse analysis and neural networks. *Psychotherapy Research*, 29, 546-563.
- Noy, P. (1969). A revision of the psychoanalytic theory of primary process. The *International Journal of Psycho-Analysis*, 50, 155-178.
- Oberlander, J., & Gill, A. J. (2006). Language with character: A corpus-based study of individual differences in e-mail communication. *Discourse Processes*, 42, 239-270.
- Ogden, T. H. (1989). *The primitive edge of experience*. Northvale, NJ: Jason Aronson.
- Ogilvie, D. M. (1987). The undesired self: A neglected variable in personality research. *Journal of Personality and Social Psychology*, 52, 379-385.
- Olney, J. (1981). *Metaphors of self: the meaning of autobiography*. Princeton, NJ: Princeton University Press.
- O'Neill, R. M. (2005). Body image, body boundary and the Barrier and Penetration Rorschach scoring system. In R. F. Bornstein, & J. M. Masling (Eds.), *Scoring the Rorschach: Seven validated systems* (pp. 159-189). London, UK: Lawrence Erlbaum.
- Orne, M. T. (1962). On the social psychology of the psychological experiment: With particular reference to demand characteristics and their implications. *American Psychologist*, 17, 776-783.
- Oxman, T. E., Rosenberg, S. D., Schnurr, P. P., & Tucker, G. J. (1988). Somatization, paranoia, and language. *Journal of Communication Disorders*, 21, 33-50.
- Parsons, T., & Bales, R. F. (1955). *Family socialization and interaction process*. Glencoe, IL: Free Press.

- Passonneau, R. (2006). Measuring agreement on set-valued items (MASI) for semantic and pragmatic annotation. *Proceedings of the International Conference on Language Resources and Evaluation (LREC)*. Genoa, Italy.
- Pasupathi, M. (2003). Emotion regulation during social remembering: Differences between emotions elicited during an event and emotions elicited when talking about it. *Memory*, 11, 151-163.
- Payne, D. G., & Blackwell, J. M. (1998). Truth in memory: Caveat emperor. In S. J. Lynn, & K. M. McConkey (Eds.), *Truth in memory* (pp. 32-61). New York, NY: Guilford Press.
- Pennebaker, J. W. (1989). Confession, inhibition, and disease. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (pp. 211-244). New York, NY: Academic Press.
- Pennebaker, J. W. (1997). Writing about emotional experiences as a therapeutic process. *Psychological Science*, 8, 162-166.
- Pennebaker, J. W., & Beall, S. K. (1986). Confronting a traumatic event: Toward an understanding of inhibition and disease. *Journal of Abnormal Psychology*, 95, 274-281.
- Pennebaker, J. W., Booth R. J., & Francis, M. E. (2007). *Linguistic Inquiry and Word Count: LIWC 2007*. Austin, TX: LIWC.
- Pennebaker, J. W., & Chung, C. K. (2011). Expressive writing and its links to mental and physical health. In H. S. Friedman (Ed.), *Oxford handbook of health psychology* (pp. 417-437). New York, NY: Oxford University Press.
- Pennebaker, J. W., Francis, M. E., & Booth, R. J. (2001). *Linguistic Inquiry and Word Count: LIWC 2001*. Mahwah, NJ: Lawrence Erlbaum.

Pennebaker, J. W., & Francis, M. E. (1999). *Linguistic Inquiry and Word Count: LIWC*. Mahwah NJ: Erlbaum Publishers.

Pennebaker, J. W., Kiecolt-Glaser, J. K., & Glaser, R. (1988) Disclosure of traumas and immune function: health implications for psychotherapy. *Journal of Consulting and Clinical Psychology*, 56, 239-245.

Pennebaker, J. W., & King, L. A. (1999). Linguistic styles: Language use as an individual difference. *Journal of Personality and Social Psychology*, 77, 1296-1312.

Pennebaker, J. W., Mayne, T. J. & Francis, M. E. (1997). Linguistic predictors of adaptive bereavement. *Journal of Personality and Social Psychology*, 72, 863-871.

Pennebaker, J. W., Mehl, M. R., & Niederhoffer, K. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual Review of Psychology*, 54, 547-577.

Pennebaker, J. W., & Lay, T. C. (2002). Language use and personality during crisis: Analyses of Mayor Rudolph Giuliani's Press Conferences. *Journal of Research in Personality*, 26, 271-282.

Pennebaker, J. W., & Stone, L. D. (2003). Words of wisdom: Language use over the lifespan. *Journal of Personality and Social Psychology*, 85, 291-301.

Pervin, L. A., Cervone, D., & John, O. P. (2005). *Personality: Theory and research*. Hoboken, NJ: John Wiley & Sons.

Peters, E., Day, S., McKenna, J., & Orbach, G. (1999). Delusions ideation in religious and psychotic populations. *British Journal of Clinical Psychology*, 38, 83-96.

Petrie, K. J., Booth, R. J., & Pennebaker, L. A. (1995). Repression, disclosure, and immune function: recent findings and methodological issues. In J. W. Pennebaker (Ed.), *Emotion, disclosure, and health* (pp. 223-237). Washington, DC: American psychological Association.

- Piaget, J. (1953). *The origins of intelligence in children*. London, UK: Routledge.
- Piaget, J. (1954). *The child's construction of reality*. New York, NY: Basic Books.
- Piaget, J., & Inhelder, B. (1956). *The child's conception of space*. London, UK: Routledge.
- Pfafflin, F., Bohmer, M., Cornehl, S., & Mergenthaler, E. (2005). What happens in therapy with sexual offenders? A model of process research. *Sexual Abuse: A Journal of Research and Treatment*, 17, 141-151.
- Piao, S. L., Rayson, P., Mudraya, O., Wilson, A., & Garside, R. (July, 2006). Measuring MWE compositionality using semantic annotation. *Proceedings of COLING/ACL workshop on multiword expressions: identifying and exploiting underlying properties*. Sydney, Australia.
- Pillemer, D. B. (1998). *Momentous events, vivid memories*. Cambridge, MA: Harvard University Press.
- Pillemer, D., & White, S. H. (1989). Childhood events recalled by children and adults. *Advances in Child development*, 21, 297-340.
- Pine, F. (1962). Creativity and primary process: sample variations. *Journal of Nervous and Mental Disease*, 134, 506-511.
- Pine, F., & Holt, R. R. (1960). Creativity and primary process: A study of adaptive regression. *Journal of Abnormal and Social Psychology*, 61, 370-379.
- Pines, M. (1998). *Circular reflections: Selected paper on group analysis and psychoanalysis*. London, UK: Kingsley Publishers.
- Pólya, T., & Szász, L. (2013). *Regressive Imagery Dictionary. Hungarian translation*. Retrieved from <http://www.kovcomp.co.uk/wordstat/RID.html>

- Popplestone, J. A. (1963). A syllabus of exoskeletal defenses. *Psychological Record*, 13, 15-25.
- Popplestone, J. A., & Hawkins, R. E. (1964). The tattoo as an exoskeletal defense. *Perceptual and Motor Skills*, 19, 500.
- Porges, S. T. (2011). *The polyvagal theory: Neurophysiological foundations of emotions, attachment, communication and self-regulation*. New York, NY: W. W. Norton & Company.
- Pragglejaz Group (2007). MIP: A method for identifying metaphorically used words in discourse. *Metaphor and Symbol*, 22, 1-39.
- Pratt, M. W., Arnold, M. L., Norris, J. E., & Filyer, R. (1999). Generativity and moral development as predictors of value socialization narratives for young persons across the adult life span: from lessons learned to stories shared. *Psychology and Aging*, 14, 414-426.
- R Development Core Team (2011). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from <http://www.R-project.org>.
- Rakova, M. (2003). *The extent of the literal: Metaphor, polysemy and theories of concepts*. Houndmills, UK: Macmillan.
- Rapaport, D. (1951). *Organization and pathology of thought*. New York, NY: Columbia University Press.
- Rauter, U. K. (1972). *Body image boundary and interpersonal distance in two-person encounters*. Unpublished Master thesis. University of Houston.
- Rayson, P. (2008). From key words to key semantic domains. *International Journal of Corpus Linguistics*, 13, 519-49.

Rayson, P., Archer, D., Piao, S. L., & McEnery, T. (May, 2004). The UCREL semantic analysis system. *Proceedings of the workshop on Beyond Named Entity Recognition Semantic Labelling for NLP Tasks in association with 4th International Conference on Language Resources and Evaluation (LREC 2004)*. Lisbon, Portugal.

Rayson, P., & Wilson, A. (1996). The ACAMRIT semantic tagging system: progress report. In L. J. Evett, & T. G. Rose (Eds.), *Language engineering for document analysis and recognition, LEDAR, AISB96 Workshop proceedings* (pp. 13-20). Brighton, UK.

Reber, A. S., & Reber, E. S. (2001). *Dictionary of psychology*. London, UK: Penguin Books.

Reich, W. (1945). *Character analysis*. New York, NY: Farrar, Straus & Giroux.

Reich, W. (1970). *The mass psychology of fascism*. New York, NY: Farrar, Straus & Giroux.

Remple, J., K., & Burris, C. T. (2006). Push-you-pull-you: The boundaries self in close relationships. *Personality and Social Psychology Bulletin*, 32, 256-269.

Reyna, V. F., & Brainerd, C. J. (1998). Fuzzy-trace theory and false memory: New frontiers. *Journal of Experimental Child Psychology*, 71, 194-209.

Reynes, R., Martindale, C., & Dahl, H. (1984). Lexical differences between working and resistance sessions in psychoanalysis. *Journal of Clinical Psychology*, 40, 733-737.

Richardson, D. C., Dale, R., & Shockley, K. (2008). Synchrony and swing in conversation: coordination, temporal dynamics, and communication. In I. Wachsmuth, M. Lenzen, & G. Knoblich (Eds.), *Embodied communication in humans and machines* (pp. 75-93). Oxford, UK: Open University Press.

Riffe, D., Lacy, S., & Fico, F. G. (2005). *Analyzing media messages: Using quantitative content analysis in research*. Mahwah, NJ: Lawrence Erlbaum.

Riessman, C. K. (1993). *Narrative analysis*. Newbury Park, CA: Sage.

Robinson, J. A. (1992). First experience memories: Contexts and functions in personal histories. In M. A. Conway, D. C. Rubin, H. Spinnler, & W. A. Wagenaar (Eds.), *Theoretical perspectives on autobiographical memory* (pp. 223-240). Dordrecht, Netherlands: Kluwer Academic Publishers.

Robbins M. (2011). *The primordial mind in health and illness: A cross-cultural perspective*. Hove, UK: Routledge.

Roger, D. B. (1982). Body-image, personal space and self-esteem: Preliminary evidence for “focussing” effects. *Journal of Personality Assessment*, 46, 468-476.

Rogers, C. R. (1951). *Client centred therapy: Its current practice, implications and theory*. Boston, MA: Houghton Mifflin.

Rogers, C. R. (1957). The necessary and sufficient conditions of therapeutic personality change. *Journal of Consulting Psychology*, 21, 95-103.

Rogers, C. R. (1961). *On becoming a person: A therapist's view of psychotherapy*. London, UK: Constable.

Roman, P. (2014). Clinical and psychopathological research on attachment: The contribution of the psychic envelopes mode. *Mental Health, Religion & Culture*, 17, 766-776.

Ronai, C. R. (1992). The reflexive self through narrative: A night in the life of an erotic dancer/researcher. In C. Ellis, & M. G. Flaherty (Eds.), *Investigating subjectivity: Research on lived experience* (pp.102-124). Newbury Park, CA: Sage.

Rorschach, H. (1921). *Psychodiagnostik*. Leipzig, Germany: Ernst Bircher Verlag.

- Rosenberg, S. D., Blatt, S. J., Oxman, T. E., McHugo, G., & Ford, R. Q. (1994). Assessment of object relatedness through a lexical content analysis of the TAT. *Journal of Personality Assessment*, 63, 345-362.
- Rosenberg, S. D., Schnurr, P. P., & Oxman, T. E. (1990). Content analysis: A comparison of manual and computerized systems. *Journal of Personality Assessment*, 54, 298-310.
- Rosenthal, R., & Rosnow, R. L. (1984). *Essentials of behavioural research: Methods and data analysis*. London, UK: McGraw-Hill.
- Rourke, L., Anderson, T., Garrison D. R., & Archer, W. (2000). Methodology issues in the content analysis of computer conference transcripts. *International Journal of Artificial Intelligence in Education*, 11, 8-22.
- Rubin, D. C. (2006). The basic-systems model of episodic memory. *Perspectives on Psychological Science*, 1, 277-311.
- Rude, S., Gortner, E., & Pennebaker, J. W. (2004). Language use of depressed and depression-vulnerable college students. *Cognition and Emotion*, 18, 1121-1133.
- Ruggeri, G., & Saraceni, C. (1981). L'articolazione del "confine del sé" nel sogno e nel test di Rorschach. *Archivio di Psicologia, Neurologia e Psichiatria*, 42, 175-192.
- Salvatore, S., & Freda, F. (2011). Affect, unconscious and sensemaking. A Psychodynamic and semiotic and dialogical model. *New Idea in Psychology*, 29, 119-135.
- Sanders, J. L. (1976). Relationship of personal space to body-image boundary definiteness. *Journal of Research in Personality*, 10, 478-481.
- Rycroft, C. (1968). *Imagination and reality*. London, UK: Maresfield Library.

Rycroft, C. (1995). *A critical dictionary of psychoanalysis*. London, UK: Penguin Books.

Salvatore, S., Gelo, O., Gennaro, A., Manzo, S., & Al-Radaideh, A. A. (2010). Looking at the psychotherapy process as an intersubjective dynamic of meaning-making: A case study with discourse flow analysis. *Journal of Constructivist Psychology*, 23, 195-230.

Salvatore, S., & Tschacher, W. (2012) Time dependency of psychotherapeutic exchanges: the contribution of the theory of dynamic systems in analyzing process. *Frontiers in Psychology: Psychology for Clinical Settings*, 3, 253.

Sanger, C. K. (1978). *A comparison of the psychological effects of breast saving procedures and modified radical mastectomy* (Unpublished doctoral dissertation). Fordham University.

Saraceni, C., Ruggeri, G., & Filocamo, D. (1980). Studio sperimentale con il test di Rorschach sulle modificazioni dell'immagine corporea in ipnosi. *Archivio di Psicologia, Neurologia e Psichiatria*, 41, 50-64.

Schafer, R. (1976). *A new language for psychoanalysis*. New Haven, CI: Yale University Press.

Schilder, P. (1935). *The image and appearance of the human body*. London, UK: Paul Kegan.

Scheflen, A. E. (1973). *Communicational structure: Analysis of a psychotherapy transaction*. Oxford, UK: Indiana University Press.

Schmeidler, G. R., & LeShan, L. (1970). An aspect of body image related to ESP scores. *Journal of the American Society for Psychical Research*, 64, 211-218.

Schmitt, N., & Dunham, B. (1999). Exploring native and non-native intuitions of Word frequency. *Second Language Research*, 15, 389-411.

Schooler, J. W., Gerhard, D., & Loftus, E. F. (1986). Qualities of the unreal. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 12, 171-181.

Schore, A. N. (2000). Attachment and the regulation of the right brain. *Attachment and Human Development*, 2, 23-47.

Schore, A. N. (2009). Relational trauma and the developing right brain: An interface of psychoanalytic self psychology and neuroscience. *Self and System: Annals of the New York Academy of Sciences*, 1159, 189-203.

Schore, A. N. (2011). The right brain implicit self lies at the core of psychoanalysis. *Psychoanalytic Dialogues*, 21, 75-100.

Schore, A. N. (2012). Using concepts from interpersonal neurobiology in revising psychodynamic theory. *Smith College Studies in Social Work*, 82, 90-111.

Schnurr, P. P., Rosenberg, S. D., Oxman, T. E., & Tucker, G. J. (1986). A methodological note on content analysis: Estimates of reliability. *Journal of Personality Assessment*, 50, 601-609.

Schnurr, P., Rosenberg, S., & Oxman, T. (1992). Comparison of TAT and free speech techniques for eliciting source materials in computerized content analysis. *Journal of Personality Assessment*, 58, 311-325.

Schredl, M. (2003). Continuity between waking and dreaming: A proposal for a mathematical model. *Sleep and Hypnosis*, 5, 38-52.

Sharifian, F., Dirven, R., Yu, N., & Neiemier, S. (Eds.) (2008). *Culture, body, and language: Conceptualizations of internal body organs across cultures and languages*. Berlin, Germany: Mouton DeGruyter.

Semino, E. (2008). *Metaphor in discourse*. Cambridge, UK: Cambridge University Press.

Semino, E. (2010). Descriptions of pain, metaphor and embodied simulations. *Metaphor and Symbol*, 25, 205-226.

Semino, E., Hardie, A., Koller, V., & Rayson, P. (2005). A computer-assisted approach to the analysis of metaphor variation across genres. In J. Barnden, M. Lee, J. Littlemore, R. Moon, G. Philip, & A. Wallington (Eds.), *Corpus-based approaches to figurative language* (pp. 145-153). Birmingham, UK: University of Birmingham School of Computer Science.

Sharpe, E. F. (1978). *Dream analysis*. New York, NY: Brunner/Mazel. (Original work published 1937).

Sharpe, E. F. (1950). *Collected papers on psycho-analysis*. London, UK: Hogarth. (Original work published 1940).

Sherick, I. G. (1964). *Body image, level of ego development and adequacy of ego functioning* (Unpublished doctoral dissertation). Washington University.

Shevrin, H. (2001). *Subliminal explorations of perceptions, dream and fantasies: Pioneering contributions of Charles Fisher*. Madison, CT: International Universities Press.

Shevrin, H., & Fisher, C. (1967). Changes in the effects of a waking subliminal stimulus as a function of dreaming and nondreaming sleep. *Journal of Abnormal Psychology*, 72, 362-368.

Shipman, W. G., Oken, D., Grinker, R. R., Goldstein, I. B., & Heath, H. A. (1964). A study in the psychophysiology of muscle tensions: II. Emotional factors. *Archives of general Psychiatry*, 11, 330-345.

Singer, J. A., & Salovey, P. (1993). *The remembered self: Emotion and memory in personality*. New York, NY: Free Press.

Slatcher, R. B., Vazire, S., & Pennebaker, J. W. (2008). Am “I” more important than “we”? Couples’ word use in instant messages. *Personal Relationships*, 15, 407-424.

Smith, G. G. (1977). *The effects of inkblot barrier scores of different levels of body awareness during body stimulation exercises* (Unpublished doctoral dissertation). University of Florida.

Solms, M. (1997). *The neuropsychology of dreams: A clinico-anatomical study*. Mahwah, NJ: Lawrence Erlbaum.

Sorokin, P. (1957). *Social and cultural dynamics*. New York, NY: Porter Sargent Publications

Spiegelman, A., & Spiegelman, G. (1991). The relationship between parental divorce and the child’s body boundary definiteness. *Journal of Personality Assessment*, 56, 96-105.

Spearman, C. (1904). The proof and measurement of association between two things. *American Journal of Psychology*, 15, 72-101.

Spence, D. P. (1968). The processing of meaning in psychotherapy: Some links with psycholinguistics and information theory. *Behavioral Science*, 13, 349-361.

Spence, D. P. (1969). Computer measurement of process and content in psychoanalysis. *Transactions of the New York Academy of Science*, 31, 828-841.

Spence, D. P. (1970). Human and computer attempts to decode symptom language. *Psychosomatic Medicine*, 32, 615-625.

Spence, D. P. (1973). Tracing a thought stream by computer. In B. Rubinstein (Ed.), *Psychoanalysis and contemporary science*, Vol. 2 (pp. 109-131). New York, NY: Macmillan Company.

Spence, D. P. (1980). Lawfulness in lexical choice: A natural experiment. *Journal of the American Psychoanalytic Association*, 28, 115-132.

Spence, D. P. (1982). *Narrative truth and historical truth: Meaning and interpretation in psychoanalysis*. New York, NY: Norton.

Spence, D. P., Scarborough, H. S., & Ginsberg, E. H. (1978). Lexical correlates of cervical cancer. *Social Science and Medicine*, 12, 141-145.

Statman, A. J. Jr. (1978). *A study of the differential effects of physical and cognitive exercises on a measure of body image* (Unpublished doctoral dissertation). Pennsylvania State University.

Steen, G. (1999). From linguistic to conceptual metaphor in five steps. In R. Gibbs, & G. Steen (Eds.), *Metaphor in cognitive linguistics* (pp. 57-77). Amsterdam, The Netherlands: John Benjamins.

Stevenson, R. A., Mikels, J. A., & James, T. W. (2007). Characterization of affective norms for English words by discrete emotional categories. *Behavior Research Methods*, 39, 1020-1024.

Stigler, M., & Pokorny, D. (2001). Emotions and primary process in guided imagery psychotherapy: Computerized text-analytic measures. *Psychotherapy Research*, 11, 415-431.

Stirman, S. W., & Pennebaker, J. W. (2001). Word use in the poetry of suicidal and non-suicidal poets. *Psychosomatic Medicine*, 63, 517-522.

Stolorow, R. D. (1975). Toward a functional definition of narcissism. *International Journal of Psycho-Analysis*, 56, 179-185.

Stone, P. J., Dunphy, D. C., Smith, M. S., & Ogilvie, D. M. (1966). *The general inquirer: A computer approach to content analysis*. Cambridge, MA: MIT Press.

Stone, L. D., & Pennebaker, J. W. (2002). Trauma in real time: Talking and avoiding online conversations about the death of Princess Diana. *Basic and Applied Social Psychology*, 24, 172-182.

Suengas, A. G., & Johnson, M. K. (1988). Qualitative effects of rehearsal on memories for perceived and imagined complex events. *Journal of Experimental Psychology: General*, 117, 377-389.

Tajfel, H. (1959). Quantitative judgment in social perception. *British Journal of Psychology*, 50, 16-29.

Tajfel, H., & Wilkes, A. L. (1963). Classification and quantitative judgment. *British Journal of Psychology*, 54, 101-114.

Tardif, M., & Van Gijseghem, H. (2001). Do pedophiles have a weaker identity structure compared with nonsexual offenders? *Child Abuse & Neglect*, 25, 1381-1394.

Tatyrek, E. R. (1977). *An investigation of the effects of characteristics hostility on body boundary maintenance during aggressive stimulation* (Unpublished doctoral dissertation). Oklahoma State University.

Tausczik, Y. R., & Pennebaker, J. W. (2010). The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of Language and Social Psychology*, 29, 24-54.

Taylor, C. (2013). Searching for similarity using corpus-assisted discourse studies. *Corpora*, 8, 81-113.

Taylor, M. A., Reed, R., & Berenbaum, S. (1994). Patterns of speech disorders in schizophrenia and mania. *Journal of Nervous and Mental Disease*, 182, 319-326.

Thorne, B. (2003). Person-centred therapy. In W. Dryden (Ed.), *Handbook of individual therapy* (pp. 131-157). London, UK: Sage Publications.

- Tinsley, H. E. A., & Weiss D. J. (1975). Interrater reliability and agreement of subjective judgements. *Journal of Counseling Psychology*, 22, 358-376.
- Toma, C. L., & Hancock, J. T. (2012). What lies beneath: The linguistic traces of deception in online dating profiles. *Journal of Communication*, 62, 78-97.
- Toshikazu, H., & Isao, Y. (2000). A study of body image boundary score using Rorschach test. *Journal of the Nissei Hospital*, 28, 22-26.
- Traue, H. C., & Pennebaker, J. W. (1993). Inhibition and arousal. In H. C. Traue & J. W. Pennebaker (Eds.), *Emotion inhibition and health* (pp. 10-31). Seattle, WC: Hogrefe & Huber.
- Tulving, E. (1972). Episodic and semantic memory. In E. Tulving, & W. Donaldson (Eds.), *Organization of memory* (pp. 381-403). New York, NY: Academic Press.
- Tulving, E. (1983). *Elements of episodic memory*. New York, NY: Oxford University Press.
- Tulving, E. (1985). Memory and consciousness. *Canadian Psychologist*, 26, 1-12.
- Tulving, E. (2002). Episodic memory: From mind to brain. *Annual Review of Psychology*, 53, 1-25.
- Turner, R. P. Lukoff, D. Barnhouse, R. T., & Lu F. G. (1995). Religious or spiritual problem. *The Journal of Nervous and Mental Disease*, 183, 435-444.
- Twente, E. W. (1964). Patterns of awakening. *The Clinical Counselor*, 1, 7-17.
- Underhill, E. (1911). *Mysticism: A study in nature and the development of spiritual consciousness*. London, UK: Methuen.
- Van den Hout, M., Merckelbach, H., & Pool, K. (1996). Dissociation, reality monitoring, trauma and thought suppression. *Behavioural and Cognitive Psychotherapy*, 24, 97-108.

- Vanheule, S., Roelstraete, B., Geeradyn, F., Murphy, C., Bazan A., & Brakel, L. A. W. (2011) Construct validation and internal consistency of the Geometric Categorization Task (GEOCAT) for measuring primary and secondary processes. *Psychoanalytic Psychology*, 2, 209-228.
- Van Ijzendoorn, M. H., & Kroonenberg, P. M. (1988). Cross-cultural patterns of attachment: A meta-analysis of the strange situation. *Child Development*, 59, 147-156.
- Viney, L. L. (1983). The Assessment of psychological states through content analysis of verbal communications. *Psychological Bulletin*, 94, 542-563.
- Vrij, A. (2000). *Detecting lies and deceit*. Chichester, UK: John Wiley & Sons.
- Wang, Y., Patel, S., & Patel, D. (2013). The cognitive process and formal modals of human attentions. *International Journal of Software Science and Computational Intelligence (IJSSCI)*, 5, 32-50.
- Warriner, A. B., Kuperman, V., & Brysbaert, M. (2013). Norms of valence, arousal, and dominance for 13,915 English lemmas. *Behavior Research Methods*, 45, 1191-1207.
- Weber, R. P. (1990). *Basic content analysis*. London, UK: Sage.
- Weinberg, I., Shmushkevich, M., Barash, I., Lubin, G., & Kaplan, Z. (2003). "I am nobody": A case study of suicidal dynamics in pedophilia. *Archives of Suicidal Research*, 7, 375-387.
- Weiner, I. B. (1994). The Rorschach inkblot method (RIM) is not a test: Implications for theory and practice. *Journal of Personality Assessment*, 62, 498-504.
- Weintraub, W. (1989). *Verbal behavior in everyday life*. New York, NY: Springer.
- Weintraub, W. (1981). *Verbal behavior: Adaptation and psychopathology*. New York, NY: Springer.

Werner, H. (1948). *Comparative psychology of mental development*. New York, NY: International Universities Press.

West, A. (1991). Primary process content in the King James Bible: the five stages of Christian mysticism. *Computers and the Humanities*, 25, 227-238.

West, A., Martindale, C., Hines, D., & Roth, W. (1983). Marijuana-induced primary process content in the TAT. *Journal of Personality Assessment*, 47, 466-467.

West, A., Martindale, C., & Sutton-Smith, B. (1985). Age trends in the content of children's spontaneous fantasy narratives. *Genetic, Social, and General Psychology Monographs*, 111, 391-405.

Wilber, K. (1979). *No boundaries: Eastern and western approaches to personal growth*. Boston, MA: Shambhala Publications Inc.

Wilcoxon, F. (1945) *Individual comparisons by ranking methods*. *Biometrics Bulletin*, 1, 80-83.

Williams, R. L. (1962). *The relationship of body image to some physiological reactivity patterns in psychosomatic patients* (Unpublished doctoral dissertation). Washington University.

Williams, H. L., Conway, M. A., & Cohen, G. (2008). Autobiographical memory. In G. Cohen & M. A. Conway (Eds.), *Memory in the real world* (pp. 21-90). London, UK: Psychology Press.

Wills, T. A. (1981). Downward comparison principles in social psychology. *Psychological Bulletin*, 90, 245-271.

Wilson, A. (2002). The application of computer-content analysis in sexology: a case study of primary process content in fictional fetishistic narratives. *Electronic Journal of Human Sexuality*, 5. Retrieved from <http://www.ejhs.org/volume5/wilson.html>

- Wilson, A. (2006). The development and application of a content analysis dictionary for body boundary research. *Literary and Linguistic Computing*, 21, 105-110.
- Wilson, A. (2009a). The construct validity of the Haward Body Barrier Scale. Unpublished manuscript, Department of Linguistics and English Language, Lancaster University, UK.
- Wilson, A. (2009b). Barrier and penetration imagery in altered states of consciousness discourse: Replicating the five-stage model of Christian mysticism in the Bible. In W. Oleksy and P. Stalmaszczyk (Eds.), *Cognitive approaches to language and linguistic data: Studies in Honor of Barbara Lewandowska-Tomaszczyk* (Polish Studies in English Language and Literature 27), 357-372. Frankfurt am Main, Germany: Peter Lang.
- Wilson, A. (2011). The regressive imagery dictionary: a test of its concurrent validity in English, German, Latin, and Portuguese. *Literary and Linguistic Computing*, 26, 125-135.
- Wilson, A., & Rayson, R. (1993). Automatic content analysis of spoken discourse: a report on work in progress. In C. Souter, & E. Atwell (Eds.), *Corpus based computational linguistics* (pp. 215-226). Amsterdam, Netherlands: Rodopi.
- Wilson, A. E., & Ross, M. (2003). The identity function of autobiographical memory: time is on our side. *Memory*, 11, 137-149.
- Winnicott, D. W. (1965) *The family and individual development*. London, UK: Tavistock Publications.
- Winnicott, D. W. (1971). *Playing and reality*. New York, NY: Routledge
- Whitfield, C. L. (1991). *Healing the child within: Discovery and recovery for adult children of dysfunctional families*. Deerfield Beach, FL: Health Communications Inc.

Wodak, R. (1981). *Das Wort in der Gruppe. Linguistische Studien zur therapeutischen Kommunikation*. Vienna: Akademie der Wissenschaften.

Wodak, R. (2009). Prejudice, racism and discourse. In A. Pelinka, K. Bischof, & K. Stögner (Eds.), *Handbook of prejudice* (pp. 409-443). Amherst, NY: Cambria Press.

Wodak, R. (2010). "Communicating Europe": Analyzing, interpreting, and understanding multilingualism and the discursive construction of transnational identities. In A. Duszak, J. House, & L. Kumiega (Eds.), *Globalization, discourse, media: In a critical perspective* (pp. 17-60). Warsaw, Poland: Warsaw University Press.

Wodak, R. (2011). 'Us' and 'them': inclusion and exclusion – discrimination via discourse. In G. Delanty, R. Wodak, & P. Jones (Eds.), *Identity, belonging and migration* (pp. 54-77). Liverpool, UK: University of Liverpool Press.

Wodak, R., & Krzyzanowski, M. (2011). Language in political institutions of multilingual states and the European Union. In B. Kortmann, & J. V. D. Auwera (Eds.), *The languages and linguistics of Europe: a comprehensive guide* (pp. 621-639). Berlin, Germany: Mouton de Gruyter.

Wodak, R., & Richardson, J. E. (2012). *Analysing fascist discourse: European fascism in talk and text*. London, UK: Routledge.

Woike, B. A. (1995). Most-memorable experiences: Evidence for link between implicit and explicit motives and social cognition processes in everyday life. *Journal of Personality and Social Psychology*, 68, 1081-1091.

Woike, B., Gershkovich, R., Piorkowski, R., & Polo, M. (1999). The role of motives in the content and structure of autobiographical memory. *Journal of Personality and Social Psychology*, 76, 600-612.

- Wolf, M., Sedway, J., Bulik, C. M., & Kordy, H. (2007). Linguistic analyses of natural written language: unobtrusive assessment of cognitive style in eating disorders. *International Journal of Eating Disorders*, 40, 711-717.
- Wright, K. (1991). *Vision and separation*. London, UK: Free Associations Books.
- Wundt, W. (1896). *Lectures in human and animal psychology*. New York, NY: Macmillan.
- Wylie, R. C. (1961). *The self-concept, Vol. 1*. Lincoln, NE: University of Nebraska.
- Ziemke, Z., & Frank, R. M (Eds.) (2007). *Body, language and mind, Vol. 1: Embodiment*. Berlin, Germany: Mouton de Gruyter.

Appendix

Appendix 1

Instructions for the open-ended experimental tests

In this study, you will be asked to participate in three separate tests, as follows:

Test 1 will ask you to interpret a series of photographs. I would like you to make up a dramatic story about each photograph. From the picture, explain what has led to the event that is shown, describe what is happening at the present moment, say what the characters are feeling and thinking, and then provide the outcome. Please tell a complete story with a beginning, middle, and end (min. 100 words). Proceed in the same method with photographs No. 2 - No. 4. This test should take approximately 30 minutes.

Test 2 will ask you to interpret a series of inkblot pictures and then to write a few lines describing your interpretations. Start with inkblot No.1. As you gaze at the inkblot, be aware of what the inkblot looks like. An inkblot can look like all kinds of things, and most people find that an inkblot may look like more than one thing. Once you have interpreted the inkblot, you will be asked to write a few lines about your interpretation and to provide more details, for example, “what is the thing doing?” Proceed in the same method with inkblots No. 2 - No. 10. This test should take approximately 20 minutes.

Test 3 will ask you write about a recent personal event and a recent nocturnal dream. Please write about your recent personal event and dream as if you were telling it to a good friend during a real life situation (min. 100 words). You will be also asked to write an interpretation of the dream. This test should take approximately 20 minutes.