

“Inside or Outside”: The Container Schema of High and Low Barrier Personalities. And Remarks on Covid-19

Laura A. Cariola¹
University of Edinburgh

Abstract

By relating the exterior-interior model of body boundary awareness to Lakoff & Johnson’s (1999) in-out orientation of container-schematic conceptualisations, this study aims to explore the use of container-schematic imagery in the autobiographical memories of High and Low Barrier Personalities. The results of this study are based on a corpus of everyday autobiographical memories (N=488) and dream memories (N=450). The results demonstrated that, in both memory types, High Barrier personalities used more semantic fields representing concrete and metaphorical container-schematic imagery (Johnson, 1987), suggesting that the container schema is similar to the Barrier personality construct. The results are also discussed in reference to the Covid-19 pandemic.

Introduction

“Just wear the damned mask” (Bloomberg, 2020)

“McDonald’s slammed for separating Golden Arches to promote social distancing”
(New York Post, 2020)

The negotiation, erection and fall of national and cultural borders is prevalent in political discourses. Barriers separate people, whereas opening barriers unifies people and regions. There are many examples of regions that have aimed to redefine geographical or cultural identities by the reinforcement or creation of barriers. Recent examples include U.S. president Donald Trump’s suggestion of expanding the Mexico–United States barrier, the Catalan declaration of independence from Spain, the withdrawal of the United Kingdom (UK) from the European Union (EU), and the Scottish referendum. Other examples include the closing of national borders and the implementation of social distancing to prevent the spread of the Coronavirus, to mention a few.

Typically, boundaries have been explored in political discourses in reference to right-wing political influences and ideologies, such as hate crime and racist-related discourses (e.g., Baker, Gabrielatos, & McEnery, 2013; Wodak, 2009; Wodak &

¹ Correspondence concerning this article should be addressed to Dr. Laura A. Cariola, Department of Clinical Psychology, School of Health in Social Science, The University of Edinburgh/, Medical School (Doorway 6), Teviot Place, EH8 9AG. Email: Laura.Cariola@ed.ac.uk

Richardson, 2012) and discourses of political boundaries and border politics (Chilton, 1996). In particular, the link between cultural and bodily boundaries is a common metaphorical blend in Nazi and War propaganda using the BODY AS A CONTAINER or BODY AS A STATE metaphorical schema. In these metaphorical blends, the containment functions as a protective device to keep the 'good' self safe on the inside by warding off the danger of the "other" that resides beyond the containing boundaries (Chilton, 2005). Whereas linguistics focuses on the metaphorical concepts of the BODY AS A CONTAINER, psychological research has focussed on exploring how individuals vary in the way they experience the containing function of their body image, or schema. Fisher and Cleveland's (1956, 1958) body boundary scoring provides a content analysis measure to explore lexical items associated with boundaries and their penetrability. Fisher and Cleveland's (1956, 1958) body image boundary concept originated from their observation that individuals varied in their appraisals of their own body images. A series of exploratory studies provided empirical evidence that a distinction could be made between individuals who perceive their body boundaries as being clearly bounded and differentiated from the environment, and individuals whose bodies lack such firm body boundaries. Based on these preliminary results, Fisher and Cleveland developed a reliable and valid body boundary scoring measure, which determines the perceived definiteness and permeability of one's body.

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; for example, barrier responses include '*a striped zebra*', '*a woman wearing a high-necked dress*' and '*a tower with stone walls*'. Penetration imagery, in contrast, relates to the fragility, permeability, openness, and destruction of definite boundaries. For example, penetration responses include '*a man climbing through a window*', '*an amputated arm*' and '*a bleeding leg*'. Based on this scoring, high frequencies of boundary imagery indicate a High Barrier personality, whereas low frequencies of barrier imagery relate to a Low Barrier personality. Barrier and penetration imagery represent personality states that are context dependent (Cariola, 2014a).

Psychological research has extensively explored the body boundary concept (Fisher & Cleveland 1958; see also Fisher, 1970, 1986). In particular, it has been identified that High Barrier personalities are more independent, goal-oriented, persistence-and achievement-oriented, emotionally expressive, and spontaneous, less suggestible and less likely to be disturbed in stressful and frustrating situations. High Barrier personalities are also more likely to support group goals and to strive to achieve group cohesion, as well as indicating a greater interest in socialising and communicating with others. It has also been shown that High Barrier personalities reflect increased skin sensitivity and reduced heart rate associated with greater openness and receptivity to externally derived stimuli, compared to individuals with Low Barrier personalities, who indicate the reverse pattern. In contrast, Low Barrier personalities express heightened concern for the safety and security of places, as a means of reinforcing their weak boundaries. Low Barrier personalities further reflect a greater need to engage in solitary activities that reduce social contact (see Fisher, 1970).

Empirical research has also identified a relationship between body boundary awareness and primordial thought, by measuring body boundary imagery and
Language and Psychoanalysis, 2020, 9 (2), 28-53. 29
<http://dx.doi.org/10.7565/landp.v9i2.5265>

regressive language in personal memories (Cariola, 2014a,b; see also Martindale, 1975). The findings provided some supporting evidence for the Freudian theory that assumes that the body, unconscious thought and language represent interrelated concepts. Primordial thought relates to the Freudian (1900) theory which differentiates between two types of mental functioning: primary process (primordial thought); and secondary process (conceptual thought). According to Freudian psychodynamic theory (1900), the primary process is concrete, irrational, free-associative, autistic, unrelated to logic and spatio-temporal constraints, and free from social and moral conventions. Primary process thought is the principal awareness that young children have, and it has also been associated with the cognitive functioning of altered states of consciousness, including dream, meditative, mystical and drug-induced hallucinatory states (see also Martindale, 1979). The primary process is assumed to function in relation to the Freudian principles of displacement and condensation. In contrast, secondary process relates to abstract principles of grammar and logic, time and space, social conventions and general knowledge of typical everyday situations in older children and adults.

Similarly, Robbins (2011, pp. 53-54) stated that primordial mental activity represents a distinctive form of mental activity that interacts with thought processes. In this view, primordial mental activity is assumed to be psychosomatic and motivated by bodily sensations and sensory perceptions, as well as by 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 in relation to a self that is perceived as undifferentiated relative to others and the environment. In contrast, conceptual thought is reflective and is motivated to identify emotions and to adapt to reality. Experiences are self-referential, and 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. Importantly, psychological research has provided consistent evidence of the existence of the Freudian primary and secondary process in human cognitive functioning (Brakel & Shevrin, 2005; Brakel, Shevrin, & Villa, 2002). Neurological research has also established a biological basis for the primary and secondary process (Carhart-Harris & Friston, 2010).

The Exterior-Interior Model of Body Boundary Awareness

Fisher and Cleveland's body boundary concept of personality has identified the psycho-physiological and autonomic features associated with the degree of body boundary finiteness. 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 that showed individuals who presented with chronic illnesses of their exterior body 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) had a higher Galvanic Skin Response and showed less of an increase in heart rate in response to stressful exposures than individuals with interior bodily symptoms (i.e., duodenal ulcers; Fisher & Cleveland, 1960). Children with rheumatoid arthritis also had higher barrier scores than children with asthma (Cleveland, Reitman, & Brewer, 1965), and a study comparing 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 tend 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 bodily sensations related to exterior sites of the body (e.g., skin, muscle) were positively correlated with barrier scores, more so than interior body sensations (e.g., heart, stomach). In another experiment, barrier scores were positively correlated with recall of word clusters related to exterior bodily sensations (e.g., “*skin cold*”) compared with interior bodily sensations (e.g., “*heartbeat*”). A study by Cassell (1966) confirmed these results, demonstrating that individuals using more barrier imagery recognised 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).

The Body and the Container in Embodied Cognition

Formal models of human cognition and consciousness consider the human brain to be 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; recurrent, temporary and reflexive behaviours, including verbal behaviours, which represent the responses corresponding to the referential system (Wang et al., 2013). This view is consistent and complementary with Johnson’s (1987) cognitive linguistics theory. The latter suggests that image schemas are continuous and analogous structures that organise our mental representations, cognitive processes and generalised knowledge, enabling us to understand 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. 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 embodies 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 preposition ‘in’ (e.g., “*The cat is in the house*”) (see Figure 1). 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 being physically contained and bounded by an enveloping skin boundary. This in-out orientation of our bodily experience is apparent in our cognitive perception of the environment as a three-dimensional container. In fact, Lakoff and Johnson (1980) argue that the container schema is the most pervasive cognitive schema because of the human instinct for marking off territories by defining clear boundaries, such as 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 ran out of energy*”), as well as emotional states (e.g., “*Peter fell in love*”) that are conceptualised as definite and bounded spaces.

As noted by Johnson (1987), the in-out orientation of the containment schema adheres to five structural entailments: i) containments involve 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.

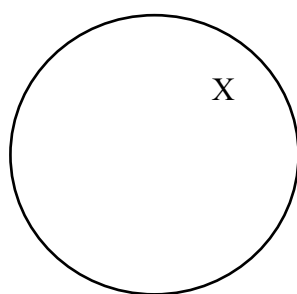


Figure 1. Container schema.

Cognitive Metaphor Theory (CMT)

Conceptual Metaphor Theory (CMT) states that embodied image schemas represent the basis of conceptual metaphorical expressions (Lakoff & Johnson, 1980). The Oxford English Dictionary (2012) 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”. The idea of something signifying something else captures the essence of the “A is B” schema of 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), the target domain, (in this case LIGHT), giving rise to the conceptual mnemonic of the mapping as HAPPINESS IS LIGHT (Kövecses, 2010, p. 97). Whereas the “A is B schema” of conceptual metaphor connects unrelated domains, metonymy, however, relies on a different mental mapping (Gibbs & Colston, 2012).

CMT also suggests 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 are 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 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).

Criticism of CMT

CMT has received a range of criticism. One problem consistently noted is 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 in classifying 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 for quantitatively assessing and comparing 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 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. Lakoff and Johnson’s (1980) CMT has been also 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).

Pertaining to the psychodynamic theory underpinning the body boundary concept, scholars have also pointed out that cognitive science has incorporated fundamental psychoanalytic concepts without acknowledging their source (Bucci, 2000; Holland, 1998; Fónagy, 2001). Holland (1998) argues that cognitive linguistics and metaphor theory’s central idea of a cognitive science of conceptual metaphor shows strong similarities to the writings of Ella Freeman Sharpe (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 resembles psychoanalytic conceptualisations. Similarly, Lakoff’s (1993) 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. Also, CMT’s assumption that metaphors are grounded in bodily experiences echoes the Freudian psychoanalytic notion, which positions the body as a central concept for describing and explaining the functional and dysfunctional development of the self in human beings (Freud, 1905; 1923). From this context, Holland proposes that CMT aligns with the psychoanalytic idea that unconscious and conscious thinking are 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 implies the existence of different levels of consciousness that canalise the mapping processes of metaphorical image schemas.

Aims of this Study

By drawing on Lakoff & Johnson’s (1980) container schema, 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. 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 conceptualisations, 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 conceptualisations of objects and entities indicates an individual basis that underpins the tendency in humans to conceptualise and quantify the properties of their surroundings through the use of container-schematic perceptions. As heightened levels of primordial mental activity have been associated with an increase in use of metaphorical language (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, previous literature has identified that Low Barrier personalities showed more frequent instances of expressing their thoughts and emotions directly, whereas High Barrier personalities communicated their emotions and thoughts less often (Cariola, 2015). From this context, it is possible to infer that High Barrier personalities communicate their thoughts and emotions through the use of metaphorical expressions more frequently than Low Barrier personalities.

Hypotheses

Given that the barrier imagery related to 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 container-schematic conceptualisation of entities that are not characterised by a visual external boundary or surface.

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 and relativity (e.g., *'Shape'*) 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'*).

The fifth hypothesis (H5) suggests that High Barrier personalities will have an increased tendency to communicate emotions indirectly through the use of metaphorical expressions, compared to Low Barrier personalities.

Method

Participants and Data

The data were based on responses of 330 female and 158 male participants with a mean age of 25.59 years old (SD=10.65) with a range of 18-63 years. The data obtained for this study were based on a corpus of everyday memories (N=488) and dream memories (N=450). The narratives for everyday memories (N=488) had a text length of 71,831 words with a mean of 147.19 words per response (SD=97.27). The narratives of dream memories (N=450) had a text length of 62,005 words with a mean of 137.79 words per response (SD =125.16).

Procedure

An online survey was produced and distributed to undergraduate and graduate students. The study's online questionnaire included an initial briefing that outlined the purpose of the research project. Once the participants decided to take part in the experiment, they disclosed their demographic information, including gender, age, and native language. Then, the participants were asked to write a narrative about a recent everyday experience — *“Please think about a recent personal event. Write about this past event, in the box below, as you would describe it to a person or a good friend in a real-life situation”* — and a recent nocturnal dream — *“Please think about a recent nocturnal dream. Write about this dream, in the box below, as you would describe it to a person or a good friend in a real-life situation”*. At the end of the experiment, the participants were thanked and were provided with a debriefing that explained the purpose of the study. The study received full ethical approval from the Ethics Committee at Lancaster University in Lancashire, UK. All verbal responses were manually checked for correct spelling and were spell-checked using the Microsoft Word Spelling and Grammar tool. Due to the technical restrictions of the PROTAN content analysis software (Hogenraad, Daubies, Bestgen, & Mahau, 2003), brackets, hyphens, and dashes were deleted from the corpus texts. Apostrophes used in contractions (i.e., negations and personal pronouns with auxiliary verbs) were substituted with the original grammatical forms, whereas apostrophes that marked the possessive case were deleted.

Classification of Barrier Personalities

The Body Type Dictionary (BTD) (Wilson, 2006) was applied to the narratives of everyday memories (N=488) and to the narratives of dream memories (N=450). The BTD is a content analysis dictionary that, in conjunction with a content analysis software program, identifies and calculates the frequency of lexical 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. 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).

For the computerised content analysis, the BTD was applied to the narratives using the PROTAN content analysis software program, which measures occurrences of category-based lexical content in texts (Hogenraad et al., 2003). A lemmatisation process was then applied to reduce inflected words to their base forms. For example, *Language and Psychoanalysis*, 2020, 9 (2), 28-53. 36
<http://dx.doi.org/10.7565/landp.v9i2.5265>

“*agrees, agreed, agreeing*” were all reduced to “*agree*”. Subsequently, the lexical content of the segmented and reduced texts was matched against the BTM categories. The frequency rate used in this study for both linguistic and grammatical variables was based on the following formula:

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

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.’

Descriptive statistics 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). The BTM has been shown to have high inter-rater and inter-method reliability in relation to Fisher and Cleveland’s (1956, 1958) manual scoring system, and correlation validity with primordial thought language (Cariola, 2014, a,b).

After the data were divided into two equal parts, the Low Barrier personalities (N=244) had a frequency rate mean of .34 (SD=.75) and 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. 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).

Semantic Field Annotation

The USAS tagger (UCREL² Semantic Annotation Tool) (Rayson et al., 2004) of the web-based semantic annotation software WMatrix (Rayson, 2008) 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. The USAS’s tag set 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). The USAS semantic tagger is assumed to have a categorisation accuracy of 91 to 92 per cent (Rayson et al., 2004). In relation to this study, 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

² UCREL is the acronym for the University Centre for Computer Corpus Research on Language.

the High and Low Barrier personalities, the analysis was limited to the twenty most frequently occurring semantic fields.

Corpus-Based Metaphor Analysis

To answer the fifth hypothesis, 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). 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 to the pre-defined semantic fields of the USAS tagger. This identification of ‘semantic’ fields then enables 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 whether the words and multi-word expressions that inform semantic fields in one dataset are high or low keyness compared to another. Subsequently, concordance analysis enables the classification of words and multi-word expressions classified within a set of semantic fields conceptualised for the dataset, providing 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.

Identification of Metaphors and Figurative Expression

The identification of figurative language use was based on the Metaphor Identification Procedure (MIP) as proposed by the Pragglejaz Group (2007). The MIP represents a systematic procedure for 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 using the MIP to identify metaphors in two data sets (i.e., conversations and newspaper text) demonstrated an overall modest reliability in identifying metaphors using the MIP. The MIP outlines the following procedural steps for identifying 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 Oxford English Dictionary (OED, 2014) (<http://www.oed.com>) was used to identify the basic meaning of words. The OED is a standard dictionary of the English language that provides the meaning and pronunciation of over 600,000 words. The OED also provides the historical meanings of words, and is regularly updated and revised according to contemporary developments in the English language.

Further Statistical Analysis

A Z-test of proportions for independent populations was used to assess significant differences in use of figurative expressions between High and Low Barrier personalities in the narratives of everyday and dream memories.

Results

The 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 Tables 1, 2, 3 and 4.

H1. Consistent with the first hypothesis (H1), High Barrier personalities had a high keyness of semantic fields that were perceptually grounded to the container schema with enclosed or partially enclosed objects and a material boundary that separated the interior from the exterior (Johnson, 1987). The semantic fields that were relevant to the container schema in narratives of everyday memories and of dream memories included: *'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 included the semantic field: *'Residence'* (e.g., *hotel, house*), *'Sailing, swimming, etc.'* (e.g., *boat, boats, ship*), and *'Parts of buildings'* (e.g., *room, roof*).

High Barrier personalities' narratives of the dream memories, compared 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 comprise container schematic lexical items that can also be

classified as barrier imagery, such as *'carpet'*, as well as, in relation to the latter, *'library'* and *'book'*. High Barrier personalities' narratives of dream memories also had a high keyness of the semantic field *'Geographical terms'*, which comprises lexical items 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, lexical items that denoted animals, which are classified as barrier imagery due to the animals' "distinctive or unusual skin" (Fisher & Cleveland, 1958, p. 59). These include 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"*).

H2. Consistent with the second hypothesis (H2), the results also showed High Barrier personalities' perceptual focus on the metaphorical boundaries and 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 lexical items that denote the 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. 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 (e.g., *"The funeral started with a Catholic mass"*). The conceptualisation of time as a bounded entity corresponds to symbolic perception of container boundaries of non-material entities, compared to material entities that are defined by a physical boundary.

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 denotes the identity of a person (or animal), and implies 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 lexical 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 (Cariola, 2015). Kinship has also been anthropologically associated with nurturing and protection against individuals who are not kin (Murphy, 2008). In contrast, Low Barrier personalities' narratives of everyday memories 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*, *Language and Psychoanalysis*, 2020, 9 (2), 28-53.

40
<http://dx.doi.org/10.7565/landp.v9i2.5265>

give, given), rather than family relationships. Notably, Low Barrier personalities made significantly more references to ‘friend/s’ (117) compared to High Barrier personalities (95), $Z = 2.01$, $p < .05$. 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 lives 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.

Security related concerns are also expressed in the high keyness of the semantic field ‘Law and order’ (e.g., *security, police, prisoner*) in High Barrier personalities’ narratives of dream memories, which comprise those lexical items that characterise security-related concepts and the confinement and restriction of movement (e.g., “*they arrested Beth*”), along with the increased use of inhibition words, as identified in Study 2 (6.2).

H3. The results identified that the narratives of High Barrier personalities involving everyday memories had a high keyness of semantic fields reflecting primordial mental activity, such as sensory perception, spatial and motion references, thus confirming the third hypothesis (H3). For example, memories of everyday memories had a high keyness of semantic fields relevant to sensory perceptions, such as ‘Sensory: Sight’ (e.g., *see, saw, seen*), ‘Light’ (e.g., *light, lightning, lights*) and ‘Seen’ (e.g., *noticed, notice, looked out*), which 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’ narratives 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*).

H4. 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.

Given the assumption of the inflation of cognitive processes with conceptual thought (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. 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 comprise lexical 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 lexical 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 used more semantic fields related to the evaluation of event states in both narrative types. For example, 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*). 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 semantic usage, relating to Pennebaker and King's (1999) factor level of *'making distinctions'*. It suggests that the production of autobiographical memories by Low Barrier personalities might be perceived as more factually reliable than the narratives of High Barrier personalities, which reflect a more creative and socially engaging narrative style (Cariola, 2015).

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*), which 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*).

Taking into consideration 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 featured a high keyness of semantic fields associated with relativity, such as spatiality and physiological references, which is typically representative of primordial mental activity (Robbins, 2011). For example, 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"*). There was also a 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 and the person'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"*). In this sense, Low Barrier personalities used temporal references literally, whereas, as shown above in relation to the semantic field, *'Time: beginning'*, High

Language and Psychoanalysis, 2020, 9 (2), 28-53. 42
<http://dx.doi.org/10.7565/landp.v9i2.5265>

Barrier personalities used temporal references as a container-schematic bounded entity.

H5. The results identified that High Barrier personalities used slightly more but also different embodied expressions of human emotions than Low Barrier personalities, thus partly confirming the fifth hypothesis (H5). 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). For example, the human heart is typically perceived as representing the centre of human emotions and feelings, compared to the head, which is seen as 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*'³ was used eight times as a source domain to figuratively express the emotions in High Barrier personalities' narratives of everyday and dream memories. 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. 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, whereas High Barrier personalities did not use 'face' in figurative expressions. 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*".

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

³ In the semantic field '*Anatomy and physiology*', the semantic item '*back*' was 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 memories used the word stem 'build' to express emotions and physical states (e.g., "the excitement was building") 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 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 further enabled them to elicit empathic and supportive responses from the environment. 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 emotions, 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. These simulations rely on "implicit and prelinguistic mechanisms of the embodied simulation-driven mirroring mechanisms" (Gallese, 2009, p. 519). This strategy is consistent with the High Barriers' socially orientated personalities. Conversely, High Barrier personalities 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 to embody 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"). High Barrier personalities had a higher keyness of the semantic field 'Judgment of appearance: Beautiful' (e.g., *nice, lovely, amazing*) in the narratives of everyday memories, which also contained lexical items describing 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 a positive affective tone that produces positive emotions in the communicative recipient (Bradley & Lang, 1999; Stevenson, Mikels, & James, 2007; Warriner, Kuperman, & Brysbaert, 2013).

Table 1. 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 2. 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 3. Frequencies (O) and log-likelihood values (LL) of under-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	%	
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 4. 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

Discussion

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), this study explored 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), thus indicating that container metaphors might be similar 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. Finally, High Barrier personalities 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. For example, 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, 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. 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 memory types compared to Low Barrier personalities, 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, 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*'). The results further confirm that Low Barrier personalities show an increased tendency to recall narratives they perceive to be factually reliable compared to the narratives of High Barrier personalities, which reflect a creative and socially engaging narrative style to evoke social responses. An indirect expression of positive and negative emotions enables the speakers to minimise the threat of negative social evaluations while constituting a politeness strategy used to gain social acceptance.

Although the results indicated that Low Barrier personalities tended to express their emotions more directly, some examples were identified where High Barrier personalities employed embodied figurative expressions to communicate their emotional states. For example, the heart was used in relation to feelings of sadness and discontent; this act is associated with the increased socially-orientated nature of High Barrier personalities. In contrast, Low Barrier personalities used more references related to the face as a means to express feelings of courage. In narratives of dream memories, High Barrier personalities appeared to use imagery to evoke negative emotion states, such as the destruction of buildings and the injury of body parts; in so doing, they enabled 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.

Apart from the capacity of cognitive functioning to simulate internal states, indirect expressions of negative emotion states may represent a politeness strategy as a means of avoiding disapproving and judgmental responses by the listener (Brown & Levinson, 1987). Given that High Barrier personalities are typically characterised as socially orientated, threats would represent an unfavourable outcome, with the potential to negotiate or 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 attempt to gain the approval of their social surroundings in a manner that 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).

Based on the results of this study, it is possible to assert that the use of linguistic expressions that represent container schematic objects are conceptually equivalent to the symbolic container metaphor. However, the generalisability of the results is limited to the extent that it has not been established whether the use of concrete container imagery would also relate to the spatial conceptualisations of container metaphor (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. This is because it does not explore the similar patterns in the semantic fields of a dataset, which would provide a more complete understanding of the data.

This study may provide insight into human behaviours associated with the Covid-19 pandemic to the extent that the closing of borders, social distancing and lockdowns increased people's immediate visual and cognitive awareness of the barrier structures in their immediate environment. Here the body boundary functions as a contact membrane that 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). Here the exposure to barriers would lead to human behaviour associated with the High Barrier Personality. For example, it is not inconceivable that the imposed confinement during lockdown inflated awareness of one's immediate social

relationships. The conceptualisation of social groups as barrier entities was communicated by the UK Government using barrier imagery, including ‘social bubbles’, ‘childcare bubble’ and ‘support bubble’.

To increase and facilitate social cohesion within a ‘bubble’, individuals would adjust to the needs that are common and shared by the social group, leading to a reduced awareness and expression of individualistic needs. As such, subjective experiences would be expressed indirectly, rather than directly, with the aim of ensuring social support and reducing the notion of threat towards the existing shared group norms and values. Here the alignment to social norms and reduction of threat would minimise rejection and most importantly arousal of social anger within the social group. This thought is consistent with Bachelard’s (1994) outside-inside distinction: “*Beyond what is expressed in their formal opposition lie alienation and hostility between the two. And so, simple geometrical opposition becomes tinged with aggressivity. Formal opposition is incapable of remaining calm*” (p. 212). Here the social group assumes an absolutist character, with its anger brewing underneath its supportive surface but easily erupting to punish undesirable social responses in its environment, whilst remaining well concealed and inhibited when it successfully suppresses individual expressions. It begs the question: Where is it better and safer to live, inside or outside? Future research should explore behaviour of High and Low Barrier personalities in relation to the Covid-19 pandemic, such as attitudes towards mask wearing and the maintenance of social distance.

The use of the body boundary to define the existence of the “other” by categorically differentiating the self from the non-self has been also shown in political discourses. For example, an analysis of barrier imagery in political manifestos showed High Barrier political parties reflected a tendency to construct blame discourses through the use of polarisation between a “good” self and a culpable “bad” other social group, whereas Lower Barrier political parties employ solution-focused discourses that recognise conflicting interests between social groups (Cariola, 2013). Based on these findings, it would be interesting to explore changes of group perceptions relevant to the Covid-19 pandemic, or other events that enforce a strong focus on barriers and boundaries.

There are also other limitations to this study. For example, there is an overlap between the BTM and some USAS categories, indicating that it would to some extent be conceivable that High Barrier narratives would have higher frequencies of semantic fields associated with barrier imagery compared to narratives derived from Low Barrier personalities. Although there is a sense of using a data set for selection twice to assume a set of results, this study aimed to perform a fine-grain analysis of barrier imagery in relation to the container-schematic concept, by homing on the linguistic details that underlie the coarse-grain categorisation of the BTM frequency analysis. Given the technical limitations of existing lexical analysis software programmes to conduct a fine-grain analysis, the USAS tagger was a tool that allowed a frequency analysis by comparing semantic fields of two data sets as well as providing concordances to explore how lexical items are used in context at sentence level. As such, the results of this study partly confirm existing knowledge of the barrier imagery, and further extend the barrier imagery concept by relating it to the container-schema derived from CMT. Future research would be able to replicate this analysis using semantic software that allows comparison of the lexical sub-categories of the

BTD rather than using alternative software with a semantic field categorisation. Future research may also want to explore the relationship between the High and Low Barrier Personality and culture, including national, regional and perhaps even local characteristics pertaining to physical distance and touch.

In relation to the clinical context, the body boundary construct might represent an alternative model to psychodynamic attachment theories (e.g., Bowlby, 1969; Winnicott, 1971) as put forward by Roman (2014). The development of Fisher and Cleveland's (1958) body boundaries are influenced by exposure to the early familiar and social environment that contribute to the development of an individual's attachment pattern. For example, Low Barrier Personalities experienced more neglect and lack of social and psychological support structures in their early familial and social environment compared to High Barrier personalities, thus increasing the possibility of the development of an insecure attachment pattern. Such early experiences of neglect in the Low Barrier personality may be associated with problematic attachment. For example, disorganised attachment relates to the complete absence or the collapse of functional attachment strategies, which is then associated with the development of dissociative disorders, including psychosis (Main & Hesse, 1990; Liotti, 1992). The development of disorganised attachment relates to early interactions in which children are exposed to the caregivers' inconsistent and erratic behaviour, which might mean they are frightening on some occasions, and at other times are available and caring.

The pathological manifestations of the Low Barrier personality might also share some similarities with reactive attachment disorder. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM 5, American Psychiatric Association, 2013), reactive attachment disorder is caused by parental and social neglect, such as the absence of adequate caregiving during childhood. It can be expressed as an inhibited or disinhibited type. The former type is characterised by a consistent pattern of autistic-like emotional withdrawn behaviour, with a reluctance to accept comfort and affect even from a familiar adult. The latter type is characterised by indiscriminate attempts to receive comfort from any available adult, including total strangers, which puts children at an increased risk of abuse (Love, Minnis, & O'Connor, 2015; Verwoort, Bosmans, Doumen, Minnis, & Verschueren, 2014).

In this sense, body boundary awareness and reactive attachment behaviour represent dynamic models that regulate the maintenance and transgression of interpersonal and psychosocial boundaries. For example, as shown in previous research, the occurrence of reduced body boundary awareness and identity structure has been associated with sexual and violent offenders as well as those on the receiving end of sexual abuse (Leifer et al. 1991; Tardif & Van Gijsegem 2001; Weinberg et al. 2003). From a theoretical perspective, future research should outline in detail to what extent extreme manifestations that characterise the High and Low Barrier personalities relate to the various developmental psychopathological concepts.

Acknowledgments

Special thanks Prof. Robert Hogenraad (UCLouvain) and Dr. Andrew Wilson (Lancaster University) for their timely, detailed, helpful and insightful comments on the manuscript.

References

- 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>
- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders (5th ed.)* American Psychiatric Publishing.
- Bachelard, G. (1994). *The poetics of space*. Presses Universitaires de France.
- Baker, P., Gabrielatos, C., & McEnery, A. (2013). *Discourse analysis and media attitudes: The representation of Islam in the British Press*. Cambridge University.
- Barendregt, J. T. (1961). *Research in psychodiagnostics*. Mouton & Company.
- Bloomberg (17th July 2020). The best ad slogans to get Americans to wear masks. Retrieved from <https://www.bloomberg.com/news/articles/2020-07-17/how-to-get-people-to-wear-a-mask-memes-images-and-ads-say-this>
- Bowlby, J. (1969). *Attachment and loss, Vol. 1*. Basic Books.
- Bowlby, J. (1980). *Loss, sadness and depression, Vol. 3*. 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). University of Florida.
- 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., 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.
- Bucci, W. (2000). The need for a “psychoanalytic psychology” in a cognitive science field. *Psychoanalytic Psychology*, 17, 203-224.
- Cameron, L. (2003). *Metaphor in educational discourse*. Continuum.
- 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. (2013). *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.
- Cariola, L. A. (2014a). Lexical tendencies of High and Low Barrier personalities in narratives of everyday and dream memories. *Imagination, Cognition and Personality*, 34, 133-161.
- 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.

- Cariola, L. A. (2015). Lexical tendencies of High and Low Barrier personalities in narratives of everyday and dream memories. *Imagination, Cognition and Personality, 34*, 133-161.
- 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*. Peter Lang.
- Chilton, P. (2005) Manipulation, memes, and metaphors: The case of Mein Kampf. In: L. de Saussure (ed.) *Manipulation and ideologies in the twentieth century*. John Benjamins, pp. 5-45.
- Deignan, A. (2005). *Metaphor and corpus linguistics*. John Benjamins.
- Eigenbrode, C. R., & Shipman, W. G. (1960). The body image barrier concept. *Journal of Abnormal and Social Psychology, 60*, 450-452.
- Fisher, S. (1970). *Body experience in fantasy and behaviour*. Appleton-Century-Crofts.
- Fisher, S. (1986). *Development and structure of the body image*. 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*. Dover Publications.
- Fisher, S., & Fisher, R. (1964). Body image boundaries and patterns of body perception. *Journal of Abnormal and Social Psychology, 68*, 255-262.
- Fisher, S., & Renik, O. (1966). Induction of body image boundary changes. *Journal of Projective Techniques of Nervous and Mental Disease, 137*, 252-257.
- Fónagy, I. (2001). *Languages within language: An evaluative approach*. John Benjamins.
- Freud, S. (2001). *The interpretation of dreams, S. E. 4*. Hogarth Press. (Original work published 1900)
- Freud, S. (2001). *The ego and id and other works, S. E. 19*. Hogarth Press. (Original work published 1923)
- Freud S. (2001). *Three essays on the theory of sexuality and other works, S. E. 7*. London: Hogarth Press. (Original work published in 1905)
- Gibbs, R. W. (2006). Metaphor interpretation as embodied simulation. *Mind & Language, 21*, 434-458.
- Gallese, V. (2009). Mirror neurons, embodied simulation, and the neural basis of social identification. *Psychoanalytic Dialogues, 519-536*.
- Gibbs, R. W., & Colston, H. K. (2012). *Interpreting figurative meaning*. Cambridge University Press.
- Haser, H. (2005) *Metaphor, metonymy, and experientialist philosophy: Challenging cognitive semantics*. Berlin: Mouton de Gruyter.
- 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. Psychology Department, Catholic University of Louvain.
- Holland, N. (1998). Cognitive linguistics. *International Journal of Psycho-Analysis, 80*, 357-363.
- Johnson, M. (1987). *The body in the mind: The bodily basis of meaning, imagination, and reason*. University of Chicago Press.
- Kertész, A., & Rákosi, C. (2009). Cyclic vs. circular argumentation in the Conceptual Metaphor Theory. *Cognitive Linguistics, 20*, 703-732.

- 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>.
- Kövecses, Z. (2008). Conceptual metaphor theory: Some criticisms and alternative proposals. *Annual Review of Cognitive Linguistics*, 6, 168-184.
- Kövecses, Z. (2010). *Metaphor*. Oxford University Press.
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. University of Chicago Press.
- Lakoff, G. (1993). How metaphor structures dreams: The theory of conceptual metaphor applied to dream analysis. *Dreaming*, 3, 77-98.
- Lakoff, G. (1996). *Moral politics: What conservatives know that liberals don't*. University of Chicago Press.
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to western thought*. Basic Books.
- Leifer, M., & Shapiro, J. P. (1991). Rorschach assessment of psychological functioning in sexually abused girls. *Journal of Personality Assessment*, 56, 14-28.
- Liotti, G. (1992). Disorganized/disoriented attachment in the etiology of the dissociative disorders. *Dissociation: Progress in the Dissociative Disorders*, 5, 196-204.
- Love, L., Minnis, H., & O'Connor, S. (2015). Factors associated with indiscriminate friendliness in high-risk children. *Infant Mental Health Journal*, 36, 427-455.
- Oxford Authors (2014). *Oxford English dictionary* (OED). Oxford University Press.
- Maalej, Z., & Yu, N. (Eds.) (2011). *Embodiment via body parts: Studies from various languages and cultures*. John Benjamins.
- Main, M., & Hesse, E. (1990). *Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behavior the linking mechanism?* In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *The John D. and Catherine T. MacArthur Foundation series on mental health and development. Attachment in the preschool years: Theory, research, and intervention* (p. 161-182). University of Chicago Press.
- Martindale, C. (1975). *Romantic progression: The psychology of literary history*. Washington, DC: 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.
- New York Post (24th March 2020). McDonald's slammed for separating Golden Arches to promote social distancing. Retrieved from <https://nypost.com/2020/03/24/mcdonalds-slammed-for-separating-golden-arches-to-promote-social-distancing/>
- 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.
- Pragglejaz Group (2007). MIP: A method for identifying metaphorically used words in discourse. *Metaphor and Symbol*, 22, 1-39.
- Rakova, M. (2003). *The extent of the literal: Metaphor, polysemy and theories of concepts*. Macmillan.

- 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*. 4th International Conference on Language Resources and Evaluation (LREC 2004), Lisbon, Portugal.
- Rayson, P. (2008). From key words to key semantic domains. *International Journal of Corpus Linguistics*, 13, 519-49.
- Robbins M. (2011). *The primordial mind in health and illness: A cross-cultural perspective*. Hove: Routledge.
- Rogers, C. R. (1951). *Client centred therapy: Its current practice, implications and theory*. Houghton Mifflin.
- Rogers, C. R. (1961). *On becoming a person: A therapist's view of psychotherapy*. London: Constable.
- Roman, P. (2014). Clinical and psychopathological research on attachment: The contribution of the psychic envelopes mode. *Mental Health, Religion & Culture*, 17, 766-776.
- 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). University of Birmingham School of Computer Science.
- Sharpe, E. F. (1950). *Collected papers on psycho-analysis*. Hogarth. (Original work published 1940).
- Sharifian, F. Dirven, R., Yu, N., & Neiemier, S. (Eds.) (2008). *Culture, body, and language: Conceptualizations of internal body organs across cultures and languages*. Mouton DeGruyter.
- Sherick, I. G. (1964). *Body image, level of ego development and adequacy of ego functioning* (Unpublished doctoral dissertation). Washington 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). 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.
- 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 compare with nonsexual offenders? *Child Abuse & Neglect*, 25, 1381-1394.
- Vervoort, E., Bosmans, G., Doumen, S., Minnis, H., & Verschueren, K. (2014). Perceptions of self, significant others, and teacher–child relationships in indiscriminately friendly children. *Research in Developmental Disabilities*, 35, 2802-2811.
- 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.

- 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.
- Wilson, A. (2006). The development and application of a content analysis dictionary for body boundary research. *Literary and Linguistic Computing*, 21, 105-110.
- Winnicott, D. W. (1971). *Playing and reality*. Routledge
- Wodak, R. (2009). Prejudice, racism and discourse. In A. Pelinka, K. Bischof, & K. Stögner (Eds.), *Handbook of prejudice* (pp. 409-443). Cambria Press.
- Wodak, R., & Richardson, J. E. (2012). *Analysing fascist discourse: European fascism in talk and text*. Routledge.
- Ziemke, Z., & Frank, R. M (Eds.) (2007). *Body, language and mind, Vol. 1: Embodiment*. Mouton de Gruyter.