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Citation for published version:

Cariola, LA 2014, 'Exploring telicity and transitivity in primordial thought language and body boundary imagery', *Journal of Psycholinguistic Research*, vol. 43, no. 6, pp. 683-697. <https://doi.org/10.1007/s10936-013-9272-4>

Digital Object Identifier (DOI):

[10.1007/s10936-013-9272-4](https://doi.org/10.1007/s10936-013-9272-4)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Peer reviewed version

Published In:

Journal of Psycholinguistic Research

Publisher Rights Statement:

The final publication is available at Springer via: <https://doi.org/10.1007/s10936-013-9272-4>

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Cariola, L. A. (2014). Exploring telicity and transitivity in primordial thought language and body boundary imagery. *Journal of Psycholinguistic Research*, 43, 683-697.

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Abstract

Linguistic research of the ‘unconscious knowledge’ related to the right-brain hemisphere represents a shift from the prevalent scientific investigation of the linguistic processes of grammatical structures associated to the dominant ‘verbal’ left-brain hemisphere. This study explores the relationship between primordial thought language, body boundary awareness and syntactic features – i.e. telicity and transitivity – in autobiographical narratives of everyday and dream memories. The results showed that event descriptions with atelic predicates and intransitive structures were more frequent in dream recall than narratives everyday memories. Primordial thought language and body boundary awareness, however, decreased with atelic predicates and transitive structures which might indicate the tendency of events to describe result states, such as achievements and accomplishments, as a means to bring about an unconscious wish fulfilment, as well as the emphasis of event arguments to be realized without the inclusion of an external object.

Keywords: Telicity, transitivity, primordial thought language, body boundary imagery, autobiographical memory

Introduction

This study explores the relationship between primordial thought language and syntactic features – i.e. telicity and transitivity – in the language of written everyday memories. The concept of primordial thought language relates to the Freudian (1900) psychoanalytic theory that differentiates between two modes cognitive functioning – primordial thought and conceptual thought. Based on this theoretically conceptualization, West (1991, p. 228) describes that the primordial thought is concrete, irrational, free-associative, autistics, unrelated to logic and spatio-temporal constrains, as well as free from social and moral conventions. It is the principal form of awareness in young children and cognition related to altered states of consciousness, including dreams, drug-induced states and hallucinations. In contrast, conceptual thought is abstract and related to grammatical rules, as well as the constraints of time and space, social and moral conventions.

The notion of primordial and conceptual thought language has been extensively explored in content analysis through the Regressive Imagery Dictionary (RID) (Martindale, 1975a, 1990) that measures the frequencies of primordial and conceptual thought language. Research has identified that primordial thought language was higher in right brain hemisphere activation in adults (Martindale, Covello & West 1986). Primordial thought language was also higher in highly creative individuals than non-creative individuals (Hines & Martindale, 1973), stories of young children than stories of adults (West, Martindale & Sutton-Smith, 1985), writings of authors under the influence of psychotropic drugs compared to the stories of control groups (Martindale & Fisher, 1977; West, Martindale, Hines & Roth, 1983), fetish stories as opposed to normative romantic stories (Wilson, 2002), poetry of pathological writers versus non-pathological poets (Martindale, 1975b), folktales of primitive cultures than to those of more complex cultures (Martindale, 1976), and speech of individuals diagnosed with paranoid-schizophrenia than non-paranoid schizophrenics and non-psychotic individuals with other psychiatric disorders (West & Martindale, 1988).

In particular, the linguistic research exploring linguistic processes of language performance related to the non-dominant “emotional” right hemisphere represents a shift from the prevalent scientific investigation of the linguistic competence of

grammatical structures associated to the dominant “verbal” left hemisphere (Wilson, 2009). Thus, it has been shown that the right hemisphere is primarily involved in processing emotional cues and prosody of language, whereas the left hemisphere enables to produce temporally controlled oral and manual articulations, as well as to understand symbolic and abstract processes (Banich, 2004). The right hemispheric limbic structures are also believed to have emerged phylogenetically earlier than the left hemisphere, due to their predominant involvement in emotion driven decision-making of human evolutionary development (cf. Trimble, 2007). Out of this view, the function of the right hemisphere has been often described as the ‘unconscious knowledge’ as it allows to understand the subtle nuances of language (Cattell, 2006).

Despite the implicit discrepancy between the right and left hemispheric associated linguistic activities, Martindale (1975b) made a theoretical proposition reasoning that primordial thought functioning might coincide with particular grammatical markers. Based on the assumption that primordial thought language is unrelated to logic and spatio-temporal constraints, Martindale reasoned that the rules of Chomsky’s (1957, 1965) transformational grammar and Fillmore’s case grammar (1968) would be specific to the conceptual thought process only. In contrast, the grammar of the primordial thought is governed conceptually by vague and over-inclusive meaning structures that correspond with an insufficient self-differentiation in which “objects and actions are merged into a so-called thing-of-action” (Werner 1948 as quoted in Martindale 1975b, p. 341). Such a primordial state is then both vague and collective, as well as self-contained autistic (cf. Foulkes 1965).

Matte Blanco (1959, 1975) extend the Freudian concept of primordial and conceptual cognition and Werner’s notion of object-action merger by proposing that the ordinary logic of conscious and pre-conscious cognition relate to propositions that emphasise the differential qualities of meaning structures – i.e. concept of symmetry – whereas unconscious cognition perceives different meaning structures as if they were identical – i.e. concept of symmetry (Rayner 2003, pp. 24-25). Logical symmetric schemas that imply a notion of sameness, such as “rotation and displacement...[are based] a transformation from one state to another brings about, when repeated, a return to the first state (Rayner, 2003, p. 24). Based on the Freudian (1900) principle of displacement, condensation, and symbolization in primordial thought syntax, the

absence of logic and the process of symmetrization produces symmetrical equations in which the subject remains undifferentiated from the object – e.g. ‘I want to kill X’ vs. ‘X wants to kills me’, whereas the absence of temporal constrains in primordial thought syntax results in temporal equivalence – e.g. “I want to kill X” vs. “I killed X”, as a means to bring about an unconscious wish fulfilment (Martindale 1975b, p. 348). Similar to the undefined temporality in primordial thought that emphasizes the interchangeable proposition of the self-contained actions, Matte-Blanco emphasizes that emotions continue to be experienced “outside time...it is experienced as something that does not happen but it is, simply is” (Matte-Blanco 1975, as quoted in Rayner 2003, p. 68).

Associated to the concept of subject’s self-containment of internal reality in primordial states is the notion of body image measuring the degree of definiteness the individual assigns to his body boundaries” (Fisher & Cleveland 1958, p. 57). Thus, Fisher and Cleveland (1956, 1958) devised a body boundary scoring system to measure ‘barrier imagery’ – i.e. the protective and enclosing qualities of the body surface) – as well as ‘penetration imagery’ – i.e. the fragility, permeability and openness of definite body boundaries. In particular, research on pathological and non-pathological altered states of conscious identified that changes of body boundary awareness. For example, individuals diagnosed with schizophrenia might experience blurring of their body boundaries, including sensation of depersonalization and delusion disappearance of body parts (cf. Guimón, 1997). Individuals experiencing extra-sensory perceptions, hypnosis and religious-mystical states also measured lower on body boundary definiteness as compared to conscious awareness (cf. Schmeidler & LeShan, 1970; Saraceni, Ruggeri & Filocamo, 1980; Wilson, 2009). Theoretical models similar to Fisher and Cleveland’s barrier personality have been proposed, including skin ego (Anzieu, 1985), amoebic self-theory (Burriss & Rempel, 2004), and crustacean and amoeboid self-protection in autism (Tustin, 1981).

Surprisingly, linguistic research has not yet explored through the means of empirical inquiry the relationship between primordial thought language and syntactic features in narratives of everyday and dream memories. Taking into consideration that dream memories are encoded in heightened state of primordial thought, the first hypothesis (H1) is that primordial thought language would be lower and conceptual thought

language would be higher in everyday narratives as compared narratives of dream memories. Taking into consideration that primordial thought processes are characterized by an absence of time resulting in infinite temporal event descriptions, the second hypothesis (H2) predicts that everyday memories would use more telic but fewer atelic predicates as compared to dream memories. Based on the assumption that primordial thought represent symmetrical relations in which schematic meaning constructs are collapsed and the subject engages in regressed thing-into-actions in which the external object is not recognized as an external entity to the agentic subject, the third hypothesis (H3) proposed that everyday memories have more transitive but fewer intransitive structures than dreams memories.

In addition, the fourth hypothesis (H4) predicts that primordial thought language would correlate positively with atelic predicates but negatively with telic predicates. Due to the finiteness of emotions, the fifth hypothesis (H5) predicts that emotion lexis would be positively correlated with atelic predicates in both text types. The sixth hypothesis (H6) states that primordial thought language would correlate positively with intransitive and negatively with transitive structures. Due to the theoretical and empirical relationship between regressive imagery and body boundaries, a seventh hypothesis (H7) predicted that primordial thought language would be positively correlated with penetration imagery. An eighth and ninth hypothesis predict that penetration imagery would be positively correlated with atelic predicates (H8) and intransitive structures (H9) in both narratives of everyday and dream memories.

Method

Data

Due to the use of manual coding only a limited sample size could be analyzed in this study. In total, the data was based on responses of 46 female and 16 male participants with a mean age of 26.67 (SD = 10.86) with a range of 18-63 years. All participants provided written memory of an everyday memory and dream memory. Everyday memories had a total text length of 9,701 words of with a mean text length of 161.68 words per narrative (range = 29-606, SD = 117.60) and narratives of dream memories

had a total text length of words 8510.00 with a mean text length of 141.83 words per narrative (range = 40-621, SD = 101.04).

Procedure

An 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. 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 a narrative about a recent everyday experience and a recent nocturnal dream. 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.

Computerized content analysis

RID. The Regressive Imagery Dictionary (Martindale 1975a, 1991) is a coding scheme that measures the frequency of semantic items of primordial and conceptual thought language. The RID contains about 3200 words and roots that are stored in 29 primordial thought categories, 7 conceptual thought categories, and 7 emotion categories (see Appendix Table 1). In particular, primordial thought is measured on the sum of the categories Drive, Regressive Cognition, Perceptual Disinhibition, Sensation, and Icarian Empirical research using the RID has also produced consistent evidence that proves the categories of the RID a valid and reliable tool to measure primary and secondary process thought (Martindale, 1975; see also Wilson, 2011).

BTD. The Body Type Dictionary (Wilson, 2006) is a computerized dictionary that calculates the frequency of semantic items categorised as barrier imagery and penetration imagery based on Fisher & Cleveland’s (1956, 1958) scoring system measuring High and Low barrier personalities. Based on this model, a high frequency of boundary imagery corresponds to a high barrier personality, and a low frequency of barrier imagery indicates a low barrier personality. Barrier and penetration imagery are also assumed to represent independent personality dimensions, rather than

opposite ends of a polar personality model. In total, the BTD contains 551 words for barrier imagery and 231 words for penetration imagery, as well as 70 exception words designed to prevent the erroneous matching of ambiguous word stems that are assigned to 12 semantic categories (Wilson, 2008). The semantic categories of barrier and penetration imagery can be seen in the Appendix Table 2.¹

Manual coding of grammatical markers

The telic and atelic predicates, as well as transitive and intransitive structures of all narratives of everyday and dream memories were manually coded. Although durative situations imply some temporal qualities, telic predicates relate to situations that have a terminal point and temporal boundary, such as accomplishment and achievements (cf. Croft, 2012; Dowty, 1979; Vendler, 1967) that describe the definite completion of an action “beyond which the process cannot continue” (Comrie, 1976, p. 45). In contrast atelic predicates do not have an implicit end point, such as activities and states, but “can be protracted indefinitely or broken off at any point” (Comrie, 1976, p. 44). As outlined by Wagner (2006), telic and atelic predicates are typically differentiated through the use of particular syntactic tests (cf. Dowty, 1979; Vendler, 1967). For example, telic and atelic predicates combine differently to temporal adverbs, for which the former relates with temporal adverbs with a clear bounded point ‘*in X time*’ – e.g. in an hour – whereas atelic predicates relate to adverbs that imply an infinite duration ‘*for x time*’ – e.g. for an hour (Wagner, 2006). Syntactic structures of event descriptions can be also differentiated between transitive and intransitive, for which the former relates to verbs that require at least one noun and one direct object, whereas in contrast, intransitive verbs do not require objects in order to clarify the meaning of a sentence (cf. O’Dwyer, 2006, pp. 62-64).

¹ Wilson (2006) excluded the lexical items ‘boot(s)’, ‘Wellington(s)’, ‘welly/wellies’, and ‘mud’ in order to control for increased lexical focus on boots in the rubber boot fetish narratives. In fact, the first version of Fisher and Cleveland’s body boundary scoring system (1956) contained ‘clothing items with unusual covering and decorative function’, and only ‘buildings with unusual structures’, whereas the second edition (1958) included all types of ‘clothing items’, ‘vehicles’, and ‘buildings’.

Content analysis

For the computerised content analysis, the RID and BTM were applied to the texts using the PROTAN content analysis software program, which measures occurrences of category-based lexical content in texts (Hogenraad, Daubies & Bestgen, 1995; Hogenraad, Daubies, Bestgen & Mahau, 2003). A lemmatisation process was then applied to reduce inflected words to their base forms. For example, “*agrees, agreed, agreeing*” were all reduced to “*agree*”. Subsequently, the lexical content of the segmented and reduced texts were matched against the predefined categories of the BTM and RID. The PROTAN computes two counts for the lexical occurrences. The density count shows how many distinct lexical items (i.e., types) match each dictionary category, whereas the frequency count represents how many lexical items in total (i.e., tokens) match the dictionary categories (Wilson, 2008). The frequency rate was used in this study for both linguistic and syntactic variables based on the following formula:

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

Statistical analysis

Statistical calculations were performed with the statistical language and software package “R” (R Development Core Team, 2011) and the R:commander {Rcmdr} package (Fox, 2005). A paired sample t-test used to compare the mean frequencies of the linguistic and grammatical variables. Subsequently, a non-parametric two-tailed Spearman rank order correlation coefficient correlation (Spearman, 1904) was used to assess the strength of association between the linguistic and syntactic variables.

Results

Descriptive statistics

The descriptive statistics of mean text lengths and frequencies of semantic items and grammatical markers in everyday and dream memories are shown in Table 1.

Table 1

Descriptive statistics

	Everyday memories		Dream memories		Mean differences
	Mean	SD	Mean	SD	
Primordial thought	8.23	2.51	10.21	2.40	-1.98**
Conceptual thought	9.89	1.38	8.01	1.92	1.88**
Emotion lexis	4.61	2.02	4.76	2.65	-.16
Barrier imagery	2.09	2.13	3.65	2.48	-1.56**
Penetration imagery	1.02	1.55	1.57	1.89	-.54
Telic	8.03	1.53	7.44	1.82	.59**
Atelic	9.68	1.47	10.36	1.44	-.68*
Transitive	9.76	1.42	9.78	1.37	-.01
Intransitive	8.57	1.42	9.08	1.40	-.51*

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

A paired sample t-test showed that primordial thought language was lower in everyday memories, $t(59) = -4.305$, $p < .000$, but higher in conceptual thought language, $t(59) = 6.740$, $p < .000$, than dream memories, and thus the first hypothesis (H1) was confirmed. Telicity was slightly higher in everyday memories, $t(59) = 2.005$, $p < .05$, but atelic predicates, $t(59) = -2.669$, $p < .10$, were lower in everyday memories as compared to dream memories and thus the second hypothesis (H2) was maintained. In relation to the third hypothesis (H3), intransitive verb structures, $t(59) = -2.021$, $p < .05$, were lower in everyday memories as compared to dream memories, but there was no significant difference in relation to the frequency of transitive structures, and thus the hypothesis is partly maintained. Barrier imagery was also lower in everyday memories, $t(59) = -3.747$, $p < .000$, than dream memories, but no significant differences was shown for penetration imagery.

Inconsistent with the fourth hypothesis (H4), primordial thought language was negatively correlated with atelic predicates, $\rho = -.356$, $p < .01$, in narratives of everyday memories. A similar trend could be identified in narratives of dream memories where primordial thought language was negatively correlated with atelic predicates, $\rho = -.297$, $p < .05$, and thus indicating that primordial thought language increases with finite temporal event descriptions. Consistent with the prediction of the fifth hypothesis (H5), in everyday memories, emotion lexis was positively correlated with atelic predicates, $\rho = .403$, $p < .001$, and also negatively with telic predicates, $\rho =$

-.353, $p < .01$, but in dream memories no such a significant correlation was identified between emotion lexis and atelic predicates, $\rho = .246$, $p = .058$.

Primordial thought language was negatively correlated with transitive structures, $\rho = -.361$, $p < .01$. Such a tentative confirmation was further substantiated with conceptual thought language being moderately positively associated with transitive structures, $\rho = .257$, $p < .05$. In dream narratives, primordial thought language was not significantly correlated with transitive structures, $\rho = -.200$, $p = .125$, nor intransitive structures, $\rho = .204$, $p = .117$, however, conceptual thought language was positively correlated with transitive structures, $\rho = .295$, $p < .05$, and negatively with intransitive structures, $\rho = -.338$, $p < .01$, and thus the sixth hypothesis (H6) was tentatively confirmed to the extent that the results showed an association within the predicted directions.

Primordial thought language was also positively correlated with barrier imagery, $\rho = .326$, $p < .000$, but not penetration imagery, $\rho = .133$, $p = .310$, in everyday memories. In dream memories, however, primordial thought language was positively correlated with both barrier imagery, $\rho = .405$, $p < .001$, and penetration imagery, $\rho = .403$, $p < .001$, and thus the seventh hypothesis (H7) was partly maintained. In narratives of everyday memories, barrier imagery was negatively correlated with atelic predicates, $\rho = -.276$, $p < .05$. There was, however, no significant correlation between penetration imagery, telic and atelic predicates. In dream memories, neither barrier nor penetration imagery were significantly correlated with telic and atelic predicates, transitive or intransitive structures, and thus the eight (H8) and ninth hypothesis (H9) were rejected.

Discussions

The results of this study demonstrated that narratives of dream memories had higher frequencies primordial thought but fewer frequencies of conceptual thought language as compared to everyday memories.

One of the most interesting results were firstly, that barrier imagery, but not penetration imagery, was inflated in dream memories, and secondly, penetration imagery correlated positively with barrier imagery but not penetration imagery in narratives of dream memories. In dream memories, however, primordial thought language correlated positively with both barrier and penetration imagery which confirms existing research that identified a loss of boundary definiteness in altered states of consciousness, including experiencing extra-sensory perceptions, hypnosis and religious-mystical states (cf. Schmeidler & LeShan, 1970; Saraceni, Ruggeri & Filocamo 1980; Wilson, 2009). These results appear to indicate that barrier and penetration imagery have different psychological functions as compared to represent polar opposite personality traits upon a body boundary continuum. Taking into consideration that penetration imagery was associated to primordial thought language in dream but not everyday narratives, the results seem to confirm Wilson's (2009) proposition putting forward that penetration imagery would be related to context dependent regressive cognitive functioning, whereas an increase of barrier imagery might represent a compensatory function, referred to as exo-skeletal defence (Popplestone, 1963), of an enduring uncertain body boundary awareness associated with low barrier personality as "they serve, in a real sense, as barrier which differentiate the self from the other" (Wilson 2009, p. 13). Out of this view, an increase of regressed cognitive functioning and weakening of body boundary awareness in dream memories might coincide with an inflated barrier frequency as a psychological mechanism associated to the censorship of dream recall, referred to as secondary revision (Freud, 1900). Such a secondary revision is assumed to represent the transition in which primordial dream content is encoded and re-arranged in relation to the causal logical, spatiotemporal and moral constrains of the conceptual thought process. Conversely, the positive association between barrier imagery and primordial thought in narratives of everyday memories might further indicate that a form of secondary revision, such as a selective recall of memory details, might be also involved in the encoding and recall processes of autobiographical memories, if also to a lesser degree as compared to dream recall.

In relation to grammatical markers, it was further established that dream narratives used more atelic predicates and intransitive structures than everyday memories, and thus the research hypotheses were confirmed. In particular, dream narratives represent

autobiographical memories that were encoded in a heightened state of primordial thought cognition that are typically characterized by an absence of temporal constraints. Such a temporally unconstrained primordial state is then reflected in an increase of atelic predicates that use event descriptions lacking a temporal endpoint. Although dream narratives reflected a higher frequency of atelic predicates as compared to everyday memories, primordial thought language was negatively correlated with atelic predicates in narratives of everyday and dream memories. Contrary to the existing theory of primordial thought processes, such a correlation proposes that an increase of primordial thought language reflects a decrease of temporally infinite event descriptions. The decrease of infinite and temporally unbounded events might then confirm that primordial thought processes reflect a tendency to realize dynamic events that imply a finite result state, such as achievements and accomplishments, as compared to unbounded activities and static situations that typically do not change over time (cf. Croft, 2012, pp. 34-35). A tendency to refer to achievements and accomplishments might then confirm the assumption that temporal symmetrization in primordial thought might aim to bring about an unconscious wish fulfilment (Martindale, 1975b, pp. 348). Emotion lexis showed a positive correlation with atelic predicates in narratives of everyday memories and thus indicating that emotions might exist as temporally unbounded and free-floating sensation-feeling entities. Dream memories, however, did not show such a positive correlation, which might be related to the dynamic interaction of emotional awareness and secondary revision that aims to suppress inappropriate dream material, such as imagery and emotions.

In addition, the reduced use of temporally unbounded event descriptions might be perhaps associated with an increase of barrier imagery in primordial thought. Thus, barrier imagery might then not only function to define and reinforce psychological boundaries as a means to differentiate between 'me' and 'non-me', but it might also function to distinguish between temporal dimensions of the narrative past and the present situatedness of the 'me'. In particular, Rayner (1995) stated that symmetry would result not only in establishing equivalence between schematic relations but it also makes use of the process of gross asymmetrization in form of splitting in which existing differences between schemas are exaggerated and thus resulting in cruder dichotomies. In this sense, primordial thought or "the unconscious then appears [...]"

as accentuating both symmetrization and asymmetrization” (p. 28). In contrast, barrier imagery was not correlated with atelic or telic verbs in dream memories. This might indicate a reduced sense of temporal boundary differentiation through the means of increased body boundary awareness. In fact, a positive correlation between primordial thought language, barrier and penetration imagery might demonstrate how body boundary finiteness that differentiates between the narrative ‘me’ and narrator ‘me’ coincides with an increased body boundary permeability and self-dedifferentiation reminiscent of the phenomenological dream experience at the point of encoding. In particular, dream memories used more intransitive verb forms as compared to everyday memories demonstrating an increase of causal event descriptions in which the actions are realized without a differentiated external object. Such intransitive arguments are typically associated with one-participant events that involve an external force dynamic, such as self-reflective functioning and sub-events that imply an effect on the subject, as compared to a force-dynamic interaction that includes an external recipient (Croft, 2012, pp. 237-238).

According to the concept of primordial thought, the exclusion of an external object in primordial thought coincides with the absence of causal logic in which an insufficient self-differentiation and actions assume an autistic and self-contained quality by merging with the object into thing-of-action (Werner, 1948). In particular, a correlation analysis showed that increase of primordial thought language related with a decrease of transitive structures in everyday memories; conversely, primordial thought language did not produce any significant association in dream narratives but conceptual thought language correlated positively with transitive structures and negatively with intransitive structures, and thus tentatively confirming the notion that an increase of primordial thought language and a decrease of conceptual thought language relate to the fewer causal event arguments that are realized through the inclusion of an external object, and thus “deviate grammatically from the canonical transitive argument structure construction” (Croft, 2012, p. 354). The notion of self-contained events in primordial thought might be also realized when the subject merges (or symmetrizes) with other participants in which the group acts as a fused group entity (Croft, 2012, p. 243). Similarly to primordial thought language, emotion lexis indicated a negative correlation with transitive structures but positive correlation with intransitive structures in everyday memories, and thus indicating the self-

contained phenomenological experiences of emotions in the recall of everyday memories.

In summary, this study proposed an empirical investigation to explore the relationship between right-brain associated primordial thought and left-brain syntactic process in narratives of autobiographical everyday and dream memories. Although the results of were insightful, further research should explore in more detail the co-occurrence of temporal grammatical markers in primordial cognition using a bigger sample size.

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Appendix

Appendix Table 1

Semantic categories and examples of primary and secondary process language in the RID (Martindale, 1975, 1990)

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

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

Appendix Table 2

Semantic categories and examples of barrier and penetration imagery in the BTM (Wilson 2006), including all clothing items, vehicles and buildings

Barrier imagery	Examples of semantic items
Clothing items	<i>Dress, robe, costume</i>
Animal with distinctive or unusual skins, including shelled creatures	<i>Alligator, badger, peacock, snails, shrimp</i>
Enclosed openings in the earth	<i>Valley, ravine, canal</i>
Unusual animal containers	<i>Bloated, kangaroo, pregnant</i>
Overhanging or protective surfaces	<i>Umbrella, dome, shield</i>
Armoured objects or objects dependent on their own walls	<i>Armour, battleship, ship</i>
Things being covered, surrounded or concealed	<i>Covered, hidden, behind</i>
Buildings	<i>Bungalow, cathedral, tower (except building that relate to social institutions, e.g. church, hospital, school).</i>
Enclosed vehicles	<i>Car, ship, truck</i>
Things with unusual container like shapes or properties	<i>Bagpipes, chair, throne</i>
Unique structures	<i>Tent, fort, hut</i>
Miscellaneous barrier words	<i>Basket, bubble, cage</i>
Penetration imagery	
Reference to the mouth being opened or used for intake or expulsion	<i>Eating, tongue, yawning</i>
Reference to evading, or bypassing or penetrating through the exterior of an object	<i>Autopsy, fluoroscope, x-ray,</i>
References to the body wall being broken, fractured, injured and damaged, including degeneration of surfaces	<i>Bleeding, stabbed, wounded, withered</i>
Openings in the earth that have no set boundaries	<i>Abyss, fountain, geyser</i>
All openings	<i>Anus, doorway, entrance</i>
Things which are insubstantial and	<i>Ghost, mud, shadow</i>

without palpable boundaries	
Transparency	<i>Crystal, see-through, transparent</i>
Miscellaneous penetration words	<i>Broken, frayed, hole</i>