Towards an Understanding of Time and Space in Japanese Language



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A thesis submitted for the degree of
Doctor of Philosophy

Trinity Term 2019

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Abstract: Towards an Understanding of Time and Space in Japanese Language

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This thesis investigates the perception and expression of time and space concepts in the contemporary Japanese mental lexicon. Through the frameworks of cognitive linguistics and cognitive semantics it examines material obtained through a set of experiments with Japanese native speaking participants – a free word association experiment and spontaneous speech experiments on temporal and on spatial description strategies.

Network analysis of the materials obtained through the free word association experiment revealed that time and space concepts are most closely related to the concepts of emotional evaluation, family/human relations and work.

Qualitative and quantitative analyses of the corpora based on the material of the spontaneous speech experiments allowed me to detect the patterns of temporal and spatial description and to formulate typologies of temporal and spatial description strategies in Japanese.

The findings of this work demonstrate that some of the strategies of spatial and temporal description seen in Japanese native speakers have not been described in research conducted on more extensively investigated languages.

This study will contribute to the global discussion on language of time and space and will play an important role in forming deeper understanding of conceptual structure of Japanese mental lexicon.

Acknowledgements

I would like to thank my supervisor Professor Bjarke Frellesvig for his guidance, support and advice throughout this project. His patience and generosity in terms of space and time have been very much appreciated. I would also like to express my great appreciation to Dr. Stephen W. Horn for his help and encouragement.

I am grateful for the financial support received throughout this project from the British Association for Japanese Studies, Hertford College, the Great Britain Sasakawa Foundation, the Japan Foundation Endowment Committee, and the Sasakawa Fund.

Advice given by Professor Yo Matsumoto, Professor Jieun Kiaer, Professor Jennifer Guest, and Dr. Sandra Kotzor has been a great help in shaping the core of this work.

I would also like to express my deep gratitude to Professor Takehiko Maruyama and Professor Toshinobu Ogiso and all the colleagues at the National Institute for Japanese Language and Linguistics for their valuable help in organizing my fieldwork.

I would like to acknowledge valuable help, support and advice of Professor Keisuke Kasuya, Professor Tokuaki Bannai, Professor Jun Okamoto and Professor Terry Joyce.

Special thanks must go to my colleagues and peers at the University of Oxford and Oxford Brookes University - Dr. Kerri L. Russell, Catherine Harris, Frank Davey, George Wollaston, Kateryna Tarasova, and Dr. Satoshi Imamura, who contributed their time and knowledge to discussing my work and to assisting with this project.

My grateful thanks are also extended to all the colleagues and friends who helped me with recruiting participants for my experiments, and to everyone who participated in my experiments.

I would like to thank my friends, who have been a constant source of inspiration and encouragement for me, and also to express my deep gratitude to Katja Telegina for her feedback on everything I have written or presented throughout this project.

Finally, I would like to thank my parents, whose support and encouragement made this work possible.

List of Abbreviations

ABL - Ablative

ACC - Accusative

ADD - Additive

ALL – Allative

ANOVA - Analysis of variance

APF – Absolute perspectivation frame

AR – Association response

Adj - Adjective

Adv/ADV – adverb/adverbial

BLC – Basic locative construction

C – Clip

CMT – Conceptual metaphor theory

CONN - Connective

Cat – Category

Ch - Characterizations

Com - Commentary

Conf – Configuration

Conj – Non-temporal conjunction

DAT – Dative

Deic - Deictic motion

EPI - Epistemic modality

EVID - Evidential

EVT – Event

EX – Exposition

El – Elaboration

Eng – English

F – F-ratio (test statistics used in ANOVA)

F – Figure

FIN - Aspectual completion

FS – Frame Strategy

FoR – Frame of reference

Freq – Frequency

GEN - Genitive

GR – Group

HPF – Holistic Perspectivation Frame

IKU - *te iku* form

INT - Interrogative particle

IPFT - Imperfective/continuous

InD – in-degree

Instr - Instrumental

KURU - *te kuru* form

LBE – Linear Limited Strategy

Lm – Landmark

LnB – Linear no Beginning Strategy

LnBE - Linear non Limited Strategy

LnE – Linear no End Strategy

Loc - Localizations

N – Number

NA- Not applicable for zero values/not available

NEG - Negative/negation

NL – Nonlinear Strategy

NOM - Nominative

NPAST - non-past

PASS - Passive

POS – Part of speech

PPF – Phasal Perspectivation Frame

PRS – Perspective Strategy

PS – Path Strategy

PTN - Potential

Pct – Percent

Pic - Picture

R – Relator

REF - Reflexive

REP - Representative

RP – Relations Predicate

RSMD - resultative-middle construction with a ditransitive verb

SD – Spatial Description

SOO – Outstanding Object Strategy

SS – Scanning Strategy

SW – Stimuli Word

Sh – Shot

Spec – Specifications

Sq – Sequence

Start - inchoative predicate

T – Topos

TD – Temporal Description

TOP – topic

TSit - time of the situation

TT – topic time

TmP - Temporal nouns and conjunction

UTT – utterance

W – Mauchy's sphericity test statistic

WInD – weighted in-degree

Z – zero

coll –collocation

df – degrees of freedom

expr – Expression

i-adj – i-adjective

n - noun

na-adj – na-adjective

no-adj – no- adjective

np - noun phrase

p – probability

par – particle

proper n - proper noun

s - standard deviation of a sample data

sd - Standard deviation

v - verb

y.o. – years old

z – a data point expressed in standard deviation units

η^2 - Eta-squared

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Chapter I: Introduction

Time and space are the core concepts of human thinking and reasoning. These two fundamental concepts have puzzled the minds of researchers since the ancient times. A solid body of research in psychology, behavioral studies, neuroscience and cognitive linguistics has demonstrated links between human cognition and language in temporal and spatial domains (e.g., Aurnague et al. 2007b; Boroditsky, Fuhrman, and McCormick 2011; Bowerman and Choi 2001; Cavallo et al. 2017; Majid et al. 2004; Tversky 2003; Weisberg, Marchette, and Chatterjee 2018; Ünal and Papafragou 2016). Moreover, findings of the studies in the field have been utilized to support the development of such fields of research as pedagogy, artificial intelligence and natural language processing (e.g., Bateman et al. 2010; Kristiansen, Ibáñez, and Achard 206).

In linguistics, the tradition of investigation of time and space as represented in European languages is long and fruitful, but in-depth research of time and space in other languages is a matter of an ongoing discussion. To date, the systematic investigation of static space and time description in Japanese has not received much attention from researchers. While systematic studies on motion in Japanese (Matsumoto 1997; Matsumoto, Akita, and Takahashi 2017), investigations of the features of particular spatio-temporal expressions (Shinohara and Matsunaka 2010; Shinohara and Pardeshi 2011), and works on time and space in Japanese culture (Katoo 2007; Mita 1996, 1998) have been published; the empiric investigation of language of space and time leading to typology of the two concepts has not been conducted yet.

The main goal of this work is to bridge this gap of knowledge. In this thesis, I will formulate a typology of spatial and temporal description in contemporary Japanese, and I will also

examine the connections of linguistic representations of time and space concepts with other concepts. The material for this research was obtained through a set of experiments conducted with Japanese native speaking participants – a free word association experiment and two spontaneous speech experiments. The two types of the experiments were utilized in this project as 1) a free word association experiment gives an access to culture-specific aspects of mental lexicon (De Deyne, Verheyen, and Storms 2016) and as 2) the spontaneous speech experiment is one of the most effective tools for investigation of typologies of spatial and temporal description in the field (e.g. Kobozeva 2000; Levinson 2003; Tversky and Hard 2009; Vanek 2012). The choice of these particular types of the experiments is determined by the aims of this study to approach detection, analysis and formulation of temporal and spatial concepts of contemporary Japanese as a complex analysis incorporating discourse and mental lexicon materials.

This work consists of five chapters. In this chapter I will present an introduction to this study. The major aims of the first chapter are to set the framework for the study, to overview the context preceding the current discourse on time and space in cognitive linguistics, and to demonstrate why time and space concepts in particular are such an important material to investigate. The next section of this chapter sets a framework of discussion for this work, giving an overview of approaches to time and space concepts in linguistics.

Chapters from 2 to 4 are dedicated to the analysis of the material obtained through the experimental work. Each of the three chapters begins with a brief overview of the goals, approaches to analysis and particularities of methodology of the study; then the design of the experiment along with the descriptive statistics are demonstrated. The third sections of these chapters are dedicated to description of the details of preparation of the analytic tools – a

network in Chapter 2 and corpora in Chapters 3 and 4. In Chapters 3 and 4 the fourth sections are giving an overview of the descriptive statistics of the corpora. Results of the analysis for each corresponding study are reported in section 4 in Chapter 2, and in section 5 in Chapters 3 and 4. Similarly conclusions are formulated in section 5 in Chapter 2, and in section 6 in Chapters 3 and 4.

Chapter 2 is based on the free word association experiment and is focused on access to mental lexicon. In Chapter 2, I will present and discuss the findings based on network analysis of temporal and spatial word association data. The theoretical framework for such analysis is based on the conceptual metaphor theory and cognitive semantics (Talmy 1983; Talmy 2000; Lakoff and Johnson 2003); the methodology of qualitative and quantitative analysis is a network theory approach to analysis of language conceptual structure (Steyvers and Tenenbaum 2005; De Deyne and Storms 2008; De Deyne, Navarro, and Storms 2013; Mehler et al. 2016).

Chapters 3 and 4 are based on spontaneous speech experiments on spatial and temporal description strategies. In the two chapters, I will analyze descriptions of visual stimuli representing various types of space and time in order to detect utilization of frames of reference (Bender and Beller 2014; Levinson 2003; Tenbrink 2011) and description strategies (Tversky and Hard 2009; Kobozeva 2000) and to formulate the typologies of spatial and temporal description in Japanese.

The last chapter, Chapter 5 summarizes the three separate studies described and analysed in Chapters 2-4, and provides conclusions and suggestions for the future work.

1. Topics and Methods of Spatial and Temporal Language Analysis

Concepts of space and motion have been historically the central topics of cognitive linguistics. A solid body of research examining the two concepts has been developed within the various frameworks, e.g., Auer et al. (2013), Engberg-Pedersen (1999), Landau and Jackendoff (1993), Levinson (2003), Levinson and Wilkins (2006), Talmy (1983), Talmy (2000), Taylor and Tversky (1996), Tversky (1996), Sinha et al. (1994). Time has presented a set of challenging questions for researchers: from how to define it (Evans 2003; Galton 2011) and define a typology of time (Bennardo, Beller, and Bender 2010; Carroll, von Stutterheim, and Klein 2003; Lakoff and Johnson 2003; Tenbrink 2011), to the nature of asymmetry in spatio-temporal metaphor (Boroditsky 2000; Gentner, Imai, and Boroditsky 2002) and associations (Mochizuki 2018). In this subsection of the chapter, I will briefly outline the topics and methods of spatial and temporal language analyses in cognitive linguistics.

The reasons for such focus on the domains of space and motion lie both in the availability and centrality of space for human experience and perception, and in features of its linguistic representations. Space has been considered the most productive source for research on both linguistic universals, as for instance in works of Talmy (1983, 2000) and linguistic diversity, as in works of Levinson (2003, Levinson and Wilkins 2006). Another topic that is attracting a lot of attention is the interconnection of spatial domain with other domains of the mental lexicon such as time (Clark 1973; Kreitzer 1997; Bender et al. 2012; Mochizuki 2018; Tenbrink 2007; Tenbrink 2011; Tversky 2004; Yakovleva 1994).

The topics of linguistic universals and language-specific patterns investigated on the materials of spatial description have also been in the center of discussion on “linguistic relativity” (Whorf et al. 2012; Yakovleva 1994) or “linguistic mediation” (Vygotskiĭ and Cole

1978; Levinson 2003). A detailed account of an ongoing discussion on "linguistic mediation" and interaction of language and perception in general is outside the scope of this work; though, it is important to mention that the material used for this discussion is primarily language of motion and space (Levinson et al. 2002; Haun et al. 2011; Li and Gleitman 2002; Li and Abarbanell 2018; Papafragou, Massey, and Gleitman 2002).

The scope of research of space in cognitive linguistics varies depending on the approach to the material and to the methods of its analysis. The seminal works on spatial language are largely based on the linguistic intuition of the researcher, e.g. Talmy (1983), Talmy (2000), Lakoff (1987), Lakoff and Johnson (2003). However, the approach based solely on linguistic intuition has been extensively discussed and the approach based on the analysis of materials obtained through a range of empiric techniques was strongly advocated as appropriate for the cognitive linguistic studies (Cuyckens, Sandra, and Sally 1997; Sandra and Rice 1995; Sandra 1998). As a result of this discussion, a shift towards empirical studies on spatial language has occurred, and a number of fundamental works based on materials obtained through experiments with visual stimuli description and description of visual stimuli from memory have been published (Levinson 2003; Levinson and Wilkins 2006; Tversky 2003; Tversky and Hard 2009).

Zlatev (2010) outlines five common methods of empirical investigation of spatial language: a. First-language acquisition and developmental studies (e.g. Choi and Bowerman 1991; Bowerman and Choi 2001; Huttenlocher, Lourenco, and Vasilyeva 2009; Smith and Samuelson 2009), b. Second-language acquisition studies (e.g., Carroll and von Stutterheim 2003; Holmes, Moty, and Regier 2017) , c. Off-line psycholinguistic experiments (e.g., Sandra and Rice 1995), d. Online psycholinguistic experiments (e.g., Sandra and Rice 1995), e. Naming

and description experiments (e.g., Levelt 1996; Kobozeva 2000; Taylor and Tversky 1996) , f. Linguistic relativity experiments employ similar methodology to the types above to demonstrate universals and cultural-specific features in spatial language, and to determine the relations between spatial conceptualization in language and in thought (e.g., Levinson 2003; Levinson and Wilkins 2006). In this work, however, the focus is only on two of these empirical methods on the e. naming and description experiments in Chapters 3 and 4 and c. off-line experiment in Chapter 2.

The type of the material also differs. Some of the works are based on the material of a particular class of words or part of speech, e.g., closed-class forms (Talmy 1983), spatial prepositions (Goddard 2002; Landau and Jackendoff 1993), spatial localization nouns (Aurnague et al. 2007; Shinohara and Matsunaka 2010; Shinohara and Pardeshi 2011), spatial adverbs (Yakovleva 1994) and verbs (Malt et al. 2008; Matsumoto, Akita, and Takahashi 2017). Spatial expressions are the other type of material frequently chosen for analysis. In the broadest sense, "spatial expressions" are defined as expressions designating spatial relations (Zlatev 2010). The majority of such works (Kreitzer 1997; Talmy 2000; Levinson 2003; Levinson and Wilkins 2006) investigate spatial relations through analysis of the relations between two semantic primitives - Figure (or "Trajector") and Landmark (or "Ground"), where the Figure is a designation of the spatially described object, and the Landmark is an object in relation to which the Figure's location is described. In some cases Relations Predicate (RT), which is a predicate characterizing the type of spatial relations between the Figure and the Landmark, is also included in the analysis of spatial relations (Kobozeva 2000). The described topics and methods are utilized in different combinations and proportions within several of the major theoretical frameworks such as conceptual metaphor theory (CMT) (Lakoff and Johnson

2003; Gibbs, Costa Lima, and Francozo 2004), natural semantic metalanguage (NLM) (Wierzbicka 1997; Goddard 2002), language world view (Zalizniak, Levontina, and Shmelew 2005; Yakovleva 1994), and frames of reference (FoRs) (Levinson 2003; Majid 2004; Haun et al. 2011).

Another major focus in spatial language investigation is spatial perspective taking and embodiment (Cavallo et al. 2017; Taylor and Tversky 1996; Tversky 1996; Tversky and Hard 2009). Conceptual Metaphor Theory, introduced by Lakoff and Johnson (2003; originally published in 1980), has been widely supported and developed by many cognitive linguistics researchers (e.g., Croft and Cruse 2004; Gibbs 2011; Kovecses 2000); the metaphors connected with concepts of space were repeatedly investigated on a wide range of material, including various languages and gesture in different cultures, e.g., Núñez and Sweetser (2006). Within the framework of CMT metaphor itself is defined as:

> […] metaphor is thought of very broadly as conceptualizing one domain of experience in terms of another. The domain of experience that is used to comprehend another domain is typically more physical, more directly experienced, and better known than the domain we wish to comprehend, which is typically more abstract, less directly experienced, and less known.
>
> (Kövecses 2017, 2)

Space is considered to be one of the "more physical and more directly experienced" domains, and therefore is presented as the main source for metaphor for other domains. Lakoff and Johnson (2003, p.16) claim that "most of our fundamental concepts are organized in terms of one or more spatialization metaphors". According to CMT spatialization metaphors such as orientational metaphors, e.g., up-down, in-out, front-back, on-off, deep-shallow, central-peripheral, or container metaphor are rooted in our direct experience of our physical bodies and the world around us. In other words, in CMT space is the main source domain of the linguistic conceptualization of the world, while time is the most representative target domain

for spatialization. Though at the very beginning of their classic work on metaphor Lakoff and Johnson (2003) define the first attribute of time through the "time is money" metaphor, concluding that this metaphor exemplifies perception of time as a limited commodity thus a valuable resource. The core of the discussion is focused on spatialization of time through the other three major metaphors Lakoff and Johnson (2003) suggest - "Time is a moving object" ("moving-time metaphor"), "Time is stationary and we move through it" ("moving-ego metaphor"), and "Time is a container".

Though the concept of space is considered the source domain providing the language with metaphors or even particular expressions, the concept of space within the current linguistic discourse is rarely presented as a notion that needs further defining. The majority of works on spatial language go beyond the definitions to the typology of spatial expression, which is discussed in the next subsection of this chapter.

The concept of time, on the other hand, is the subject of frequent discussion in terms of defining the temporal "senses" or "qualities" defining the concept and differentiating it from the concept of space. Evans (2003) defines time concepts through a phenomenological set of "senses", at the same time addressing an existing disproportion in discussion of time, and emphasizing that though the concept of space is one of the major sources affecting our perception of time; time is "also constituted by other kinds of (perhaps subjective) experiences" (Evans 2003, p. 15). In his discussion of conceptual metaphor theory (e.g., Lakoff and Johnson 2003; Kövecses 2000) as applied to concept of time, Evans (2003) emphasized that metaphor is only one of the ways to represent experience, and that metaphor adds to the human ability of temporal modeling, understanding and expression, but does not solely structure our conceptualization of time. Moreover, Evans (2003) argues that our experience of time is direct

and can be traced experimentally and further agrees with Chafe (1994) that "temporal processing, which may serve to structure conscious experience, shows up in language" (Evans 2003, p. 17). Elaborating on temporal experience Evans (2003) supports the notion of "time as "felt" (Flaherty 1999) in context of perception of duration through "full" and "empty" intervals of time, and further concludes that our subjective experience of time relates primarily on duration, rather than on the awareness of change. As the main constitutes of concept of time, Evans (2003) names duration sense, moment sense, instance sense, event sense, matrix sense, agentive sense, measurement-system sense, and commodity sense. Hedhte also derives a number of "secondary temporal concepts", derived from socio-cultural experiences rather than the temporal experience itself. Among such secondary concepts are matrix, agentive and temporal measurement senses. Matrix sense is the sense of time perceived as itself, as an "independent entity" which can serve as a "background" for other entities, e.g., in "we live in time". Agentive sense is time that is not a background as in matrix sense, but is an "agent" in the process of some change, e.g., time transformed her. Temporal measurement sense, according to Evans (2003), represents a "correlation between periodic behavior in the external world and our experience of duration" (p.170).

Galton (2011) names extension, linearity, directionality, and transience as the main attributes of time. The notion of extension in Galton's interpretation is largely based on Aristotle's definition of time: "the number of change with respect to before and after" (*Physics*, IV.1 1). Thus, time as an extension can be separated into measurable parts, e.g., the most basic – before and after, and time itself carries the separating function for the events. As Galton defines it:

> The extendedness of time seems to consist in the fact that its nature is such that what is in time (note the container metaphor!) can be separated, so that even things that are otherwise identical, such as the same action by the same subject in the same place, can be numerically distinct solely by virtue of occupying distinct times.

> Duration might then be regarded as a measure of the extent of their separation, but it does not seem to be possible to define this without reference to what comes between the two times – a concept that relates to linearity rather than bare extension.
> (Galton 2011, p. 697)

Galton interprets linearity in temporal sense through "betweenness": "given any three distinct moments, one must be between the other two" (Galton 2011, p. 697). Directedness adds a notion of asymmetry to the linearity of time, which can be characterized by three pairs of distinct features – lower and higher entropy, perception of events and memories of events, causes and effects. Galton presents transience as a self-explanatory attribute of time; "a given time is only present when it is that time" (Galton 2011, p. 697).

Definition of time as a concept in systematic manner evokes various difficulties and a wide field for discussion in various field from philosophy and anthropology to physics. In language, it tends to be defined either via a set of defining qualities as in works of Evans (2003) and Galton (2011), or from the point of view of temporal description typology as I will present in the subsection on frames of reference.

1.1 Spatial and Temporal Description

This section of the chapter outlines a theoretical framework of the research on spatial and temporal language and description typology.

1.1.1 Figure and Landmark

A solid body of work has been created on spatial language, spatial perception and expression from works generalizing the fundamental connections between spatial cognition and spatial language (e.g., Lakoff 1987; Talmy 1983, 2002; Levinson 2003; Jackendoff 2010) to works theoretically and empirically investigating diversity of particular types of spatial expression among various languages (e.g., Berthele et al. 2015; Heegård and Liljegren 2018; Levinson and Wilkins 2006; Sinha et al. 1994).

Such extensive interest in the topic shown by the researchers from various areas of linguistics can be explained by a number of factors. As Levinson (2006) suggests, the ground for such interest lays in the nature of human spatial cognition - while playing a "central role in human thinking and reasoning", it is at the same time "variable, unspectacular" and many aspects of it "depend on cultural factors".

Therefore, language of spatial description or "the language of space" is a particularly important and productive source for linguistic analysis, as it has a potential to reveal the universal features of spatial thinking as well as culturally determined variability. Moreover, in spatial cognition and expression "language may not so much reflect underlying cognition, as actively drive it" (Stephen C. Levinson and Wilkins 2006).

The primary focus of many theoretical works on spatial perception and expression has been on detection and description of relations between "Figure" and "Ground" (Landmark). Talmy (2000) defines the Figure and The Ground as follows:

> Figure is a moving or conceptually movable entity whose site, path, or orientation is conceived as a variable the particular value of which is the relevant issue. The ground [landmark] is reference entity, one that has a stationary setting relative to a reference frame, with respect to which the Figure's site, path, or orientation is characterized. In other words, the figure in spatial description is an object which location one wants to describe; while the landmark is an object one chooses to be a landmark, in relation to which the figure's location is described.

Talmy also suggests a set of characteristics, combinations of which are considered to be defining for choice of a Figure and a Landmark in spatial (or temporal) description:

> Figure:
> • has unknown spatial (or temporal) properties to be determined
> • more movable
> • smaller
> • geometrically simpler
> • more recently on the scene/in awareness
> • of greater concern/relevance

• less immediately perceivable
• more salient, once perceived
• more dependent

Landmark:

• acts as a reference entity, having known properties that can characterize the primary object [figure]'s unknowns
• more permanently located
• larger
• geometrically more complex in its treatment
• earlier on the scene/in memory
• of lesser concern/relevance
• more immediately perceivable
• more backgrounded, once primary object [figure] is perceived
• more independent

(Talmy 2000, p. 182)

The notions of Figure and Landmark as setting the basis of temporal description (TD) are broadly defined as a Figure being a described event (EVT) and a Landmark as a reference event serving to locate the Figure in time. Talmy (2000) formulates the temporally specific definitions of F and Lm as:

> The Figure is an event whose location in time is conceived as a variable the particular value of which is the relevant issue. The Ground (Lm) is a reference event, one that has a stationary setting relative to a reference frame with respect to which the Figure's temporal location is characterized.
>
> (Talmy 2000, p. 320)

Talmy also describes a set of "principles" of relations between temporal F and Lm:

> 1. Sequence principle is formulated as "the unmarked (or only possible) linguistic expression for any particular relations between two events in temporal sequence that treats the earlier event as a reference point, or Ground (Lm), and the later event as requiring referencing - that is the Figure", e.g., she arrived, and [after that] he left.
> 2. Cause-result principle is defined as "the unmarked (or only possible) linguistic expression for a causal relation between two events that treats the causing event as Ground (Lm) and the resulting event as Figure", e.g., she arrived, and [because of that] he left.
> 3. Inclusion principle governs the relations of temporal inclusion, when "a larger, temporally containing event acts as Ground (Lm) with respect to a contained event as Figure", e.g., she visited ten countries during her trip.
> 4. Contingency principle - "an event that is necessary for or determinative of a second event acts as Ground (Lm) with respect to the second event that is contingent

or dependent on it, which acts as Figure", e.g., he dreamt [all the time] during his sleep.

5. Substitution principle - "an expected but nonoccuring event acts as Ground (Lm) with respect to an unexpected but occurring substitute event, which acts as Figure", e.g., he's playing instead of working.

(Talmy 2000, p. 327–29)

1.1.2 Spatial and Temporal Frames of Reference

While the notion of Figure and Landmark as the core minimal units of spatial description is agreed upon by the most researchers in the field of spatial language, the typology of the relations between them is discussed extensively. The commonly used general term for the types of these relations is "frames of reference" or FoR. The term "frame of reference" itself was adapted from Gestalt theories of perception, defined as "a unit of organization of units that collectively serve to identify a coordinate system with respect to which certain properties of objects, including the phenomenal self, are gauged (Rock 1992; p. 404)" (cited from Levinson 2003).

Almost each major strand of research defines and develops its own typology and terminology set for different FoRs, e.g. Jackendoff (2010) proposes eight FoRs, Talmy (2000) suggests a subdivision consisting of four FoRs, but despite the differences in subdivisions of FoRs' typology, when applied to spatial language research, the general division into three major FoRs - viewer-centered or relative, object-centered or intrinsic, and environment-centered or absolute (Levinson 2003), is universally recognized.

Relative or viewer-centered FoR is a tertiary coordinate system involving the viewer's coordinates, e.g. the playground is to the left of the pond (from where the viewer is located).

Intrinsic or object-centered FoR is a system of coordinates based on "inherent features" of the object, utilized as a Landmark, e.g. the playground is in front of the school. Such "inherent

features" or facets of the Landmark objects are assigned systematically or on a case-by-case basis or combining these two principals (Levinson 2003).

Absolute or environment-centered FoR is a FoR based on the "cardinal directions" or usage of the fixed Landmark independent from the scene, e.g. the lake is north of the village. As the findings of Kita (2006) suggest, the two major FoRs utilized for spatial description in Japanese are relative and intrinsic. Absolute FoR can also be utilized in a limited set of contexts, for navigation or for description of large-scale spatial relations learnt from a map, and is particularly frequent in real-estate description. Absolute FoR is relevant for the material presented in this work only in application to the vertical axis. However, some of the studies on Japanese material involving speakers of non-standard Japanese suggest that absolute FoR is actively used in navigation narrative and the proportion between active use of relative, and intrinsic FoRs can vary in different varieties of the language (Inoue 2002; Kataoka 2005; Takekuro 2007; Matsumoto et al. 2010). Spatial description in language is not limited to systematic description, utilizing explicit sets of coordinates. Some descriptions do not provide any angular information, e.g., it's next to the shop or it's around the station. Relationships of this type describing proximity, coincidence, containment, contiguity and contact of the objects are termed as "topological" (Levinson 2003; Levinson and Wilkins 2006). Another type of spatial description not associated with provision of angular information is deixis, as in "I'm here".

Historically, the grounds of the approach to encoding, analysis and conceptualization of temporal language were built in close connection with approaches to the analysis of spatial language, spatial description and expressions of motion (e.g., Clark 1973; Gell 1992; R. Jackendoff 1983; R. Jackendoff 2010; Lakoff and Johnson 2003; Talmy 1983; Talmy 2000),

and this approach is still developing theoretically and empirically using various language material (e.g., Bender and Beller 2014; Bennardo, Beller, and Bender 2010; Boroditsky 2000; Casasanto and Boroditsky 2008; Tenbrink 2011; Moore 2017). Such notions as frames of reference, Figure, Landmark and Relator have been introduced and developed within the theoretical frameworks of both spatial and temporal language research. Though there are differences in employed terminology, e.g., types of temporal description can be referred to as "temporal relational schemas" as in McTaggart (McTaggart 1908) or "perspectives" or "perspectivation frames" as in Carroll and von Stutterheim (2003), von Stutterheim and Lambert (2005), or temporal frames of reference (t-FoR) as in Bender and Beller (2014) and Bennardo, Beller, and Bender (2010). Also, as in spatial language investigation "Locatum" is frequently used for Figure and "Relatum" or "Ground" for Landmark (Lm) (e.g. in Tenbrink 2011; Talmy 2002). In this work, types of temporal description are referred to as "perspectivation frames", and the elements of the description are termed as Landmark, Figure, Relator and Relations Predicate, as for spatial description.

The general principles of encoding and analysis of temporal language are similar to that of spatial language. However, this does not imply that expressions of temporal concepts are understood as directly projected from the expressions of the spatial concepts. Though spatial description and motion language are considered productive sources of vocabulary, gesture (Núñez and Sweetser 2006), metaphoric and conceptual mapping for temporal language and temporal description have a set of distinctive features that cannot be conceptualized through tools and methods used in spatial description (Evans 2003; Galton 2011; Langacker 2012).

Therefore, for qualitative analysis of TDs in this work, the approach to temporal description based on the features of temporal discourse such as hierarchical structure of the described

temporal events, differences between "external" time and "internal" time of discourse will be based on the approaches introduced and developed in Carroll and von Stutterheim (2003), Klein (1994; 2009), Noyau et al. (2005), Vanek (2012).

Previous research on temporal description suggests that there are three distinctive frames of reference applicable to temporal description, namely holistic, phasal perspectivation (e.g., von Stutterheim and Lambert 2005; Vanek 2012) and absolute perspectivation frames (Bennardo, Beller, and Bender 2010; Bender et al. 2012; Bender and Beller 2014). The major issue for distinguishing between the linguistic representations of the types of temporal description within temporal discourse lays in the complexity of combinations of tense, lexical, and grammatical aspect.

In Klein's (1994, 2009) works on time in language, he suggests approaching this issue via complex analysis of lexical, morphosyntactic devices and patterns of topic time management. Such an approach allows the focus of the analysis to be on the temporal description by excluding temporal information external to the discourse (Vanek 2012). Klein distinguishes three "times" associated with TD – 1) time of utterance (TU), i.e. time when the utterance is expressed, 2) topic time (TT), time about which something is asked or said; 3) time of the situation (TSit), time at which the situation takes place. The only time of these three containing the results of TD production by the speaker is TT; therefore, the analysis of the types of temporal description is focused on TT and its changes in relation to the two "times" external to the text. In particular, there are two types of TT management that are frequently utilized in TDs and that are easily detectable in temporal discourse - 1) topic time maintenance, where TT does not change while TSit changes, e.g. *hiru ni natte, dandan to kuraku natte, yoru ni naru* ("it becomes day time, gradually gets darker, it becomes night"); 2) topic time shift, when TT

shifts so that it is in post-time in the relation to the TSit of the previous event, e.g. *de, hiru ni natte, sono ato dandan to kuraku natte, yoru ni natteiku* ("then it becomes day time, after that gradually gets darker, and becomes night") (von Stutterheim and Lambert 2005, Vanek 2012).

The analysis of time topic management patterns is an approach effective for detecting two of the temporal frames of reference – perspectivation and holistic frame of reference. However, the absolute frame of reference is detected through the analysis of the complexity of hierarchy of the temporal description - condensation and granularity of the text. Condensation is the degree of both temporal and non-temporal hierarchical organization of the text; granularity is the degree of temporal partitioning of the situations described in TD (Noyau et al. 2005). The two measures are discussed in more detail in chapter 4.

In temporal descriptions following the holistic perspectivation frame (HPF), events are explicitly interrelated to each other. This frame of reference can be conceptually compared with the intrinsic frame of reference of spatial descriptions. HPF descriptions are characterized by viewing the situation from event-based (intrinsic) perspective with explicit reference to points of completion and linkage of successiveness of the situations. The other feature is topic time shift from one event to the following event, using the preceding event as a temporal anchor, e.g. she arrived, and then unpacked, and then later made a call.

The phasal perspectivation frame (PPF) is characterized by the speaker taking a view point on the temporal situation described from the observer-anchored perspective. The main features of such perspective are absence of reference to the point of completion and absence of shift of topic time from event to event, e.g., she arrived, unpacked and made a call.

The absolute perspectivation frame (APF) can be interpreted as the conceptual equivalent of absolute frame of reference in spatial description, where the Landmarks are "cardinal

directions" or objects independent from the scene described. As temporal perspectivation frame, APF employs a set of temporal events "independent" from the described events as Landmarks, e.g. "with the flow of time", "when seasons change", "when years pass".

1.1.3 Relator and Relations Predicate

Relationships between Figure and Landmark in Japanese spatial description are largely expressed through the spatial nominals and postpositions (particles); both of these types of expression of relations between the objects in spatial description are referred to as Relators (R) in this work.

Kita (2006) emphasizes that spatial nominals play a particularly important role in spatial descriptions in Japanese, and he also suggests several types of Relator that are typical for angular (relative, intrinsic and absolute) and non-angular (topological) spatial descriptions.

Topological relations are typically expressed with spatial nominals of surroundedness and containment or verbs with semantic features of connectivity. Among spatial nominals with semantic features of surroundedness and containment Kita (2006) names *naka* (中, "inside"), *soto* (外, "outside"), *aida* (間, "between") and *mawari* (周り, "around"). Proximity is expressed through spatial nominals such as *soba* (そば, "near"), *tonari* (隣, "next (to)") or *yoko* (横, "aside; next to"). While these nominals are utilized independently, the type of spatial description expressed will remain topological, though in the combination with other Relators they can produce mixed-type description as in: *sono appuraito no piano no mukatte hidari donari ni wa sofa ga arimasu* (そのアップライトのピアノの向かって左隣にはソファがあります, "there is a sofa next to that upright piano on the left [as one faces it]").

Connectivity, contact or attachment in Japanese tend to be expressed not through the Relators, but through verbs (Matsumoto 1996, 1997). Considering the importance of the role

of verbs in particular and predicates in general for spatial and temporal description in Japanese, predicates serving to express spatial or temporal relationships between Landmark and Figure are termed as Relations Predicates (RP) in this work and analyzed separately in Chapters III and IV. For spatial RPs there is a large cluster of verbs with semantic features of the connectivity type in Japanese, and some of them can be found within the data obtained from the participants of the experiment presented in chapter 3, e.g. *tsuku* (付く, "to be attached; to be connected with"), *haru* (貼る, "to stick; to paste"), *tsunagaru* (繋がる, "to be tied together; to be connected to"), *rinsetsusuru* (隣接する, "to be adjoined").

Examples of typically intrinsic spatial nominals in Japanese are *kado* (角, "convex corner"), *sumi* (隅, "concave corner"), *heri* (へり, "a strip of surface near the edge"), *fuchi* (ふち, "a strip of surface near the edge"). Such nominals designate internal properties of the Landmark, therefore they predominantly serve as Relators in spatial descriptions within the intrinsic FoR.

There is also a set of spatial nominals, which can be involved in both intrinsic and relative FoRs, depending on the context. *Mae* (前, "in front, front"), *ushiro* (後ろ, "back, behind"), *migi* (右, "right") and *hidari* (左, "left") are among such spatial nominals.

Kita (2006, p. 488) derives four senses of such spatial nominals by which the usages in intrinsic or relative FoRs can be disambiguated:

> 1. Lm external intrinsic – the region projected from the frontal side of a body or a vehicle, e.g. *Yamada san no mae ni* "at Mr Yamada's front"
> 2. Lm external intrinsic – the region projected from the side of an object that one canonically faces when one uses the object, e.g. *tsukue no mae ni* "in front of the desk"
> 3. Lm internal intrinsic – the part of the Lm that is close to its *mae* side in sense 1, e.g. *gekijoo de ichiban mae ni suwaru* "One sits at the front-most row in a theatre"
> 4. Relative – the region projected from Lm to the direction of the frontal side of the speaker's body, e.g. *hako wa sono ki no mae ni aru* "the box is in front of the tree".

All of the features of topologic spatial description or descriptions following any of the FoRs also apply to the vertical axis.

Notions of Relator and Relations Predicate in temporal description (TD) are also conceptually similar to those of spatial description. Though in spatial description the core of spatial relations is expressed through relationships between Figure (F) and Landmark (Lm), in temporal description the focus shifts to Relators and Relations Predicates. Combination of Relator and Relations Predicate in TD serve to express the nature of relations between F and Lm. In Japanese temporal relators (TmP) can be expressed by the means of temporal nouns, particles and conjunctions; RPs are expressed through predicates and their tense form and grammatical aspect. However, the major difference between spatial description and temporal description is that the Relator is not a necessary element to express temporal relations, as seen from Talmy's definitions, sequence or cause-result relations in TDs can be unmarked. Here the major role in expression of temporal relations belongs to RPs. Sequence or cause-result relations between F and Lm are typical for phasal perspectivation frame or relative frame of reference (FoR), and in TDs in Japanese can be expressed through connective forms of the predicates, *te iku* and *te kuru* forms or parataxis. The Relators typically expressing intrinsic FoR or holistic perspectivation frame are R with the meaning:

1) before/after, e.g. *ato* (後, "after"), *sono ato* (その後, "after that"), *mae* (前, "before"), *sono mae* (その前, "before that)

2) beginning and end, e.g., *saisho* (最初, "at the beginning"), *saigo* (最後, "at the end"), particles *kara* (から, "from"), *made* (まで, "until").

The Relators with semantic features of inclusion or simultaneous processes, e.g. *totomoni* (とともに, "as; while"), *nitsurete* (につれて, "when A, B; as") can be utilized in both absolute and intrinsic FoRs in TDs, depending on the hierarchical relations of F and Lm.

1.1.4 Typology of Extended Spatial and Temporal Descriptions

The works on FoRs discuss the core minimal elements of spatial description – F, Lm and R – and how they interact in forming locative constructions. The other strand of research develops a typology of more extended spatial descriptions, investigating the "perspectives" or "strategies" of spatial description (e.g., Taylor and Tversky 1996; Kobozeva 2000).

In their work *Perspective in Spatial Descriptions* (1996), Taylor and Tversky derive three major "perspectives" of spatial description - gaze, route and survey. Gaze is defined as "scanning a scene from a fixed viewpoint outside an environment"; route reflects "exploring an environment"; survey "scanning a scene (or a map) from a fixed viewpoint above an environment". The three perspectives correspond with the types of spatial descriptions proposed by S. C. Levinson (2003); on the basis of experiments conducted with English native speakers, gaze is considered to be predominantly relative, while route - a mixture of relative and intrinsic – and survey use absolute FoR (Taylor and Tversky 1996). Although the materials utilized in most of the works on the topic by Tversky and her colleagues (Taylor and Tversky 1992; Taylor and Tversky 1996; Tversky and Hard 2009; Cavallo et al. 2017) were maps and route descriptions and the participants of the experiments were native speakers of European languages, the findings concerning the fundamental trends of spatial description presented in their research are applicable to spatial description in general. One such finding is the notion that the "perspective" of description is not always consistent through the description (Taylor and Tversky 1996; Cavallo et al. 2017), i.e. the speaker can switch between different

"perspectives" naturally without any expressed notification of a perspective change. The other fundamental notion proposed by Taylor and Tversky (1996) is the dependence of a "perspective" choice on both how an environment was experienced by the speaker and the characteristics of the environment itself. Moreover, they discuss and demonstrate (Cavallo et al. 2017; Tversky and Hard 2009), that switches between the origins of description from the speaker's own physical location to some other object's or person's, as if the speaker's own body is in that place, can also be caused by the characteristics of the environment described. In this work a spatial visual stimuli set consists of the photographic representations of different types of environment - rooms, landscapes with roads, tabletops, and findings of Taylor and Tversky (1996) suggest that the typical "perspective" of description for such environments would be gaze and a relative FoR.

Kobozeva (2000), on the basis of an experiment with Russian native speaking participants, develops an alternative but overlapping typology of the "perspectives", or as she terms it "strategies" of spatial description. In addition to Scanning Strategy (SS), equivalent to gaze perspective and Path Strategy, equivalent to route perspective, Kobozeva (2000) also derives a Strategy of Outstanding Object (SOO) and a Frame Strategy (FS). The SOO places the focus of the narrative on particular "outstanding objects" within the environment and describes the rest of the objects in relation to the "outstanding" ones. The FS relies on the structural parts "the frame" of the given environment to describe the relative locations of the objects within it.

Differences in the choice of stimuli can play an important role in contributing to differences in typology, considering the recent findings of Weisberg, Marchette, and Chatterjee (2018) demonstrating that there are differences in neural processing of images depicting spatial relations and of verbal or schematic representations of space. The other important difference

between the approaches of Taylor and Tversky (1996) and Kobozeva (2000) is the absence of "where is?" or "how to get to?" in Kobozeva (2000) in the task given to the participants of the experiment. Such differences might be crucial for obtaining a wider range of strategies for the description of space, not restricted by navigational or locating tasks. Considering the main goals of this work to ascertain both strategies of extended spatial descriptions and types of description, the approach to experimental design and to encoding of experimental materials, therefore, will rely greatly on the methodology proposed by Kobozeva (2000), and in qualitative and quantitative analysis methods on works of Tversky's and Levinson's groups.

For typology of extended temporal description, the situation is more complex - as Klein (2009) points out, research of temporal language has long been biased towards analyzing 1) texts representing a singular situation 2) in a limited number of languages. In this thesis, I will work towards development of a preliminary typology of extended temporal description on the basis of data obtained from Japanese native speakers.

One way to approach conceptualization of time in language is through theoretical works based on culture. Though concepts formulated on the basis of culture cannot be directly projected to language, they might have an interconnection (e.g., Levinson and Wilkins 2006; Katoo 2007). And as Sinha and Gärdenfors (2014) claim, the notion of time or even "time as such" is not universal, but is affected by "a cultural and historical construction based on cognitive technologies for measuring time intervals".

Katoo (2007) proposes that there are three distinct temporal concepts - linear non-limited, circular, and linear limited – typical to Japanese culture.

Linear non-limited time - is an endless sequence of *ima* ("now"). For such concepts each *ima* ("now") can be temporally short or long; it is *ima* ("now") while it is perceived as "what

is real" (Nagano 1998). *Ima* is not even strictly "present"; it can include close "past", "present" and close "future". In other words, this sequence of "nows" brings the focus to the "present", blurring the past and the future out.

Such conceptualization of time bears some similarity to interpretations of time in temporal language research referencing McTaggart's (McTaggart 1908) A-series. MacTaggart's A-series temporal concept can be interpreted as time from an ever-changing "now" viewpoint: "I shall speak of the series of positions [events] running from the far past through the near past to the present, and then from the present to the near future and the far future, as the A series" (McTaggart 1908, 458).

Linear limited "life-time" is the second concept Katoo (2007) presents as relevant for Japanese culture. It is limited, irreversible, and has clear end and beginning, where the events are not just a sequence, but have cause and effect relations. A similar conceptualization can be also found in MacTaggart's work as B-series: "The series of positions which runs from earlier to later I shall call the B series" (McTaggart 1908, 458).

Though in the context of language the theory of MacTaggart has not been connected with notions of the reality/unreality of time, the two original definitions of A-series and B-series were developed and reinterpreted in numerous works on temporal language and time perception (e.g., Gell 1992; Moore 2017; Shinohara and Pardeshi 2011; Tenbrink 2011; Sinha and Gärdenfors 2014). For instance, the A-series philosophical concept was reapplied to the language material as D (deictically based) - Time and B-series as S (sequentially based)-time (e.g. as in Sinha and Gärdenfors 2014), or in the framework of Conceptual Metaphor theory (Lakoff and Johnson 2003) as Moving-Ego and Moving-Time as conceptualization of A-series employing motion verbs and positional metaphor as metaphoric conceptualization of B-series.

The third concept proposed by Katoo is a circular temporal concept connected with agricultural cycle, change of seasons, from which the ritual framework was projected to a cultural one, especially affecting art and literature. In works on anthropology and philosophy of time (e.g., Gell 1992; Leach 1950), the discussion on the relevance or even existence of such a temporal concept has been ongoing for a long time. However, in studies on temporal language, linguistic representations of nonlinear temporal concepts – for example, cyclical and radial – are being discussed in relation to non-Western language and cultures (e.g., Bender and Beller 2014). Moreover, as Bender and Beller (2014) claim, "the linear and the cyclical concept can be reconciled and integrated into a spiral or helic concept according to which types of events do recur, but at different points in time and in a non-reversible order". In this work, such a strategy of temporal description would be termed as Non-Linear (NL) as the linguistic representation of culturally circular time, e.g. the flow of seasons, tends to be accompanied with sequentially positioned sub-events.

Mita (1998), using a set of representative examples from the two classical anthologies of Japanese poetry, *Man'yooshuu* and *Kokinshuu*, elaborates on the literary roots of cyclical time –flow concepts and its co-existence with linear lifetime concept. Mita (1998) claims that when poetry from the *Man'yooshuu* was written the concept of time was framed by and closely associated with events of nature and the "world was defined as everlasting (*toko)* and time was thought to be reversible (*wochi*), both of which were deep-rooted in people's perception of time". By the time of the *Kokinshuu*, as Mita states, cyclical time flow in poetry becomes a "socially defined perception of season". In other words, Mita claims that the predominant concept of time for the *Man'yooshuu* is cyclical time-flow concept, while in the *Kokinshuu* the

main concept of time shifts to irreversible linear lifetime with reference to cyclical time as a part of literary tradition.

The picture of Japanese time and space concepts drawn from the works based on Japanese literature, culture and folklore is a complex multilayered view of the foundations on which the contemporary concepts of time and space are formed. In the second chapter of this work, I will investigate native speakers' associations with various vocabulary representing concepts of betweenness, inside and outside and seasons; in the fourth chapter I will examine whether typology of time formulated on the basis of Japanese culture is reflected in temporal descriptions of Japanese native speakers. The strategies of temporal description will be defined on the basis of the analysis of the experimental data in chapter 4.

2. Summary

In the context of global scholarship, Japanese time and space concepts remain predominantly limited to introspective examinations through literary narrative or art material. Without a systematic empirical study on an adequate linguistic material, the conceptual structure of contemporary Japanese is largely terra incognita, which leads to representation of Japanese time and space concepts as a number of separate cultural, social and linguistic phenomena.

This work will be conducted to bridge this gap by employing a complex method of analysis of linguistic representations of Japanese time and space concepts, which incorporates a theoretical framework of cognitive linguistics, materials based on experimental work with native speakers, and will consult the previous studies on time and space in Japanese culture and society. As the outcome of this study, I will present a set of qualifying associations for concepts of time and space in Japanese as well as a preliminary typology of spatial and temporal description. I expect this research to contribute to the global discussion on language of time and space and to play an important role in shaping deeper understanding of interaction between cognition and expression, culture and language in contemporary Japan.

Chapter II: Mental Lexicon through Free Word Association Experiment

This chapter presents the findings of a study which aimed to describe and analyze structural and semantic features of temporal and spatial domains of the Japanese mental lexicon based on the results of a free word association experiment involving Japanese native speaking residents of the Kanto area. Network analysis approach was applied to the experimental data, as the findings of previous studies (De Deyne, Verheyen, and Storms 2016, 51) suggested that network analysis of associations tends to reveal more semantic information of the mental lexicon than the studies based on common language production.

The data obtained via the experiment was analyzed qualitatively and quantitatively through network analysis.

The major findings of the analysis revealed that the time and space domains of the Japanese mental lexicon are connected with domains of emotion, family and work. Moreover, analysis of the data set suggests that the nature of the associations produced by the participants is interconnected with their age group, confirming the previous findings connecting natural language and personality development (Lanning et al. 2018).

The first section of this chapter gives a brief overview of the premises of the study presented and gives a definition of the main methodological tool of the study – a network.

The second section elaborates on network construction and encoding, while the third section describes the design and procedure of the experiment presented in this chapter.

The fourth section presents findings and results of the network centrality and community analysis. The conclusions are given in section five.

1. Mental Lexicon and Network Theory

While investigation of Japanese mental lexicon has been primarily focused on its morphological and orthographical features (Kess and Miyamoto 1999, p. 8–12; Matsuda and Joyce 2005, p. 1), some studies on time and space concepts in Japanese culture and society based on intuition and introspection have been published (Mita 1996; Katoo 2007). However, there have not yet been any attempts to approach modeling and analysis of interconnections between spatial and temporal associative vocabulary and their connection with other domains of the Japanese mental lexicon on the basis of the experimental data. As Gravino et al. (2012) suggest, an appropriate "natural" approach to such modeling and analysis lies within network theory approach.

A network is an intuitively understandable and efficient way of presenting bipartite data, such as a set of stimuli connected to a set of associations. Network representations of linguistics data, e.g., syntactic trees, schemes of concept relatedness of human memory (Collins and Quillian 1969, 421; Collins and Loftus 1975) have been used quite extensively for illustrative purposes for an extended period of time. Critique of such illustrative approaches, where the structure of the network was based on the researcher's intuition and introspection, was a significant step in the development of cognitive linguistics and cognitive semantics methodology. It is widely considered (e.g., Zlatev 2010) that the methodology of cognitive linguistics, as we know it today, has been largely shaped by the discussion initiated in works of Sandra and his colleagues: Sandra and Rice (1995), Cuyckens, Rice and Sandra (1997), Sandra (1998). The main target of criticism in the works of Sandra and colleagues was the absence of empirical grounds to the structure of various network representation:

> The flow of argument seems to lead inevitably to the conclusion that the prepositional network approach analyses must be remedied at the methodological level, the only criterion available at the present being linguists' unshakeable confidence in their introspections.
>
> (Sandra 1998, p.94)

However, at the same time, as the result of this discussion the notion of 'semantic network' for cognitive linguists has been discredited for over a decade.

With the development of means and sources for retrieval and computation of empirical linguistic data, the opportunity to apply network theory methods to linguistic data emerged. In recent studies on phonology (e.g., Vitevitch 2008; Vitevitch and Castro 2015), semantics (e.g., De Deyne, Verheyen, and Storms 2016; Gravino et al. 2012; Steyvers and Tenenbaum 2005; Zortea et al. 2014) and different aspects of language acquisition (e.g., Meara 2009; Trautwein and Schroeder 2018), the network analysis approach to various language systems has been utilized in the same way as network[1] theory analysis is applied to the data in biology, physics and social sciences.

Network theory, the theoretical basis of network analysis, counts its history from 1735, when Leonhard Euler solved the famous Königsberg Bridges problem using a network (Biggs, Lloyd, and Wilson 1986, 1–20). The details of the solution to the problem are outside of the scope of this work. However, the logic of Euler's solution is significant for understanding the core principals of network analysis, and the crucial step made by Euler was the simplification and visualization of the data relevant for the solution of the problem.

Since the 18th century, a variety of mathematical, statistical, and computational tools for visualization, interpretation, and analysis of networks have been developed. However, network analysis was predominantly utilized in the natural sciences and engineering until an experiment

[1] also known as 'graph theory'

conducted by Stanely Milgram in 1960s in the USA attracted public attention to the outcome of network analysis in the social sciences by demonstrating that on average two random people can be divided by only six steps (Travers and Milgram 1967, p. 61-67). As the result of a heated discussion around Milgram's experiment, methods of network analysis started to be used more extensively by researchers in the social sciences, and then in the humanities.

Recent studies reveal that an application of network analysis to various linguistic materials demonstrates consistent results in detecting similarities in organizational properties of different linguistic networks (De Deyne, Verheyen, and Storms 2016), which are not found in many other extensively used semantic models such as Latent Semantic Analysis (Steyvers and Tenenbaum 2005, p. 43). At the same time, some of the previous findings suggest that networks based on word association data reveal extra-linguistic information relevant to the investigation of the mental lexicon, such as information on "imagery, knowledge, beliefs, attitudes, and affect" (De Deyne, Verheyen, and Storms 2016, p. 51).

Moreover, experimental findings by Crutch and Warrington (2005, p. 623) indicate that abstract concepts tend to have an associative character of connection, highlighting a qualitative difference with a categorical character of connections between lexical items representing concrete conceptual knowledge. While visual or video stimuli can be employed successfully with more concrete domains of the mental lexicon (Malt et al. 1999, p. 234–35; Malt et al. 2008, p. 234), they are not always applicable for the investigation of time and space domains, represented by both highly abstract and rather concrete vocabulary.

Thus, the free word association experiment facilitates both representation of abstract and concrete stimuli and demonstrates both categorical and associative characters of connection.

The main purpose of this chapter is to apply quantitative methods of network analysis to the results of a free word association experiment, and, on the basis of this analysis, to qualitatively describe the structure of the given network. This study aims to reveal significant features of the network, from determining keywords for this set of word association data and their relations, to discovering possible associative connections of time and space domains with different concepts of the Japanese mental lexicon. The secondary goal of this study is to discuss the possibility that the age of adult participants is a factor affecting the way they performed in this study. As the previous studies (Zortea and Salles 2012; Zortea et al. 2014) with other languages suggest the significant age differences in native speakers of the same language might be the reason in different patterns in their associations. To achieve this goal, I will briefly describe differences in the descriptive statistics of two age groups of participants: 1) in their 20s, and 2) from their 40s to their 70s.

1.1 Network Properties

As Beckage and Colunga (2016) state, the strength of the application of network theory analysis to language material is the fact that it allows a study of a system of objects and at the same time relations between these objects:

> This framework allows for the interactions of objects to be as important as the objects themselves, allowing the system, as well as the constituents of the system, to be studied. Language can be studied both as an object and as a process. Network analysis techniques allow us to consider both structure and process in turn. The network representation is both simple enough to be analyzed at the system level, and detailed enough to be examined at a more local level (constituents or constituent subgroups). The application of network analysis to language allows for the study of not only how language is structured, but the influence of this structure on human performance, and [...], the cognitive processes that exploit and give rise to this structure.
>
> (pp. 3-4)

To operate within the terminology of network theory, the objects, whose relations compose the observed system, are called the “nodes” or “vertices” of the network; the relations between

the nodes are termed as “links”, “edges” or “connections”. The definition of network itself within the same framework of network theory differs slightly in different disciplines:

> From a formal point of view, a network (or a graph) is a set of vertices connected via edges.
>
> Dorogovtsev and Mendes (2013)
>
> A network (or a graph) is a set of nodes connected by links.
>
> Dorogovtsev (2010)
>
> Graphs are assigned by giving a set of the vertices and a set of connections between them.
>
> Caldarelli (2007)

In other words, a network is a set of paired joints connected by a set of lines. In this work the joints will be referred to as nodes; the lines will be referred to as edges.

In the context of this particular material, “nodes” are words, both stimuli (SW) and association responses (AR), and, accordingly “edges” are connections between the words, produced by the participants of the free word association experiment. The frequency of a particular AR (association response) to a particular SW will be called the “weight” of the edge connecting the stimuli and response.

Investigation of the macro structure of a network has the potential to give an insight into the structure of mental lexicons. Trautwein and Schroeder (2018) in their study on development of orthographic features of the mental lexicon claim that “the mental lexicon can be conceptualized as a large network with nodes and connections”. At the same time, works using network theory for analyses of linguistic networks (e.g., Beckage and Colunga 2016, De Deyne, Verheyen, and Storms 2016; Trautwein and Schroeder 2018) reveal that the same structural properties as found in other non-artificial networks, e.g. biological or social

networks, are typically found in language. Such structural properties, namely high clustering[2] accompanied by a relatively short average path length[3], is called small-world structure (Watts and Strogatz 1998). Though a detailed investigation of network's structural properties is outside the scope of this work, it is noteworthy that some studies on the topic claim (e.g., Beckage and Colunga 2016, p. 9) that small-world structure of language networks "may suggest ways of investigating the cognitive processes that underlie the emergence of this structure".

Analysis of the meso structure of the language networks is based on the analysis of network clusters or communities. In network analysis the term "community" [4] is defined as a relatively isolated group of nodes. The nodes in such a group have a stronger connection with each other than with the rest of the network (Lancichinetti et al. 2010, p. 1).

Previous works investigating the meso structure of large-scale language networks (e.g., De Deyne, Verheyen, and Storms 2016) demonstrate that language networks are organized thematically rather than taxonomically, and that their communities are not mutually exclusive. As De Deyne, Verheyen, and Storms (2016, p.71) hypothesize, such community structure of language networks reflects "an inherent property of language, where most words are taxonomically related to only a small number of other words, but might occur in a variety of thematic settings".

The findings of research on the micro structure of the language network challenge the determining role of word frequency for language acquisition, memory, word access and

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[2] (Local Clustering Coefficient) = (number of pairs of neighbors of the node that are connected)/ (number of pairs of neighbors of the node), where neighbors are two nodes connected by a single edge

[3] The average of distances between all pairs of nodes in the network, which are connected with at least one path

[4] This is also known as a "module."

language processing in general (e.g., Griffiths et al. 2007, Steyvers and Tenenbaum 2005, Vitevich 2008), demonstrating that relational language measures revealed through network analysis can be more effective in accounting for a number language phenomena than word frequency. These studies utilized one of the clustering coefficients or centrality measures in their analysis; centralities serve to determine the most important elements of a network (Newman 2010). In this work, centralities are utilized to identify the shared qualities of temporal and spatial domains of the mental lexicon to detect the connections of temporal and spatial domains with the other domains of the mental lexicon, and to investigate the nature of the semantic relations between words within the data set. Due to the structure of the network, where only nodes representing 50 SWs have out-going edges, the only applicable centrality measures are: (1) in-degree centrality (InD), and (2) weighted in-degree centrality (WInD), as they are not affected by the strength of out-going connections. InD measures a number of incoming connections of the node. For this data, InD indicates the number of connections of an association response (AR) with the whole stimuli set. In other words, this measure allows us to find words that could be considered key words for spatial and temporal domains of the mental lexicon.

WInD is the sum of the weights of incoming connections to the node. For this data set, the WInD measure demonstrates the number of participants who replied with a particular AR to a particular SW. In other words, WInD, when applied to word association material, serves as a measure of demonstrating the strength of the connections between words.

2. Design of the experiment

The first stage of the free word association experiment was conducted in Tokyo in 2015 with 85 Japanese native-speaking participants. The total number of single non-foreign word responses collected during the experiment was 4097 tokens.

2.1 Stimuli Set

The stimuli set utilized for the free word association experiment is displayed in table 2.1. The participants of the experiment were asked to write down their associations to the 50 stimuli (SWs) semantically connected to time and space concepts.

Table 2.1 Stimuli Set

ID	Lemma	Romanization	POS	Translation
1	空間	kuukan	n	space
2	スペース	supeesu	n	space, room
3	余地	yochi	n	room, space
4	距離	kyori	n	distance
5	広がり	hirogari	n	spread
6	長さ	nagasa	n	length
7	場所	basho	n	place, spot, position
8	場	ba	n	place, occasion
9	隙間	sukima	n	crevice, opening, gap
10	隙	suki	n	space, room, gap
11	外（そと）	soto	n	outside
12	うち	uchi	n	inside
13	都内	tonai	n	in the city, within metropolitan Tokyo
14	郊外	koogai	n	suburb
15	家	ie	n	house, home
16	アパート	apaato	n	apartment

ID	Lemma	Romanization	POS	Translation
17	マンション	manshon	n	apartment, condominium flat
18	我が家	wagaya	n	one’s house, one’s family, one’s home
19	マイホーム	mai hoomu	n	one’s home
20	部屋	heya	n	room
21	居間	ima	n	living room
22	リビング	ribingu	n	living room
23	前	mae	n	forward, front, before
24	後ろ	ushiro	n	behind, back
25	奥	oku	n	inner part, back, bottom
26	間（あいだ）	aida	n	distance, period
27	間　（ま）	ma	n	time, interval, space
28	時間	jikan	n.	time
29	時	toki	n.	time
30	年代	nendai	n	era, generation
31	年齢	nenrei	n	age, years
32	過去	kako	n	past
33	未来	mirai	n	future
34	昔	mukashi	n	ancient times, in the past, once
35	長年	naganen	adv	long time, many years
36	時代	jidai	n	time, era
37	時期	jiki	n	time, period, season
38	季節	kisetsu	n	season
39	夏	natsu	n	summer
40	秋	aki	n	autumn, fall
41	日(ひ)	hi	n	day, sun
42	日付	hizuke	n	date day
43	夜	yoru	n	night, evening
44	朝	asa	n	morning
45	昼間	hiruma	n	daytime
46	休日	kyuujitsu	n	holiday, day off
47	休み	yasumi	n	holiday, rest
48	ひま	hima	na-adj,n	free, not busy

ID	Lemma	Romanization	POS	Translation
49	瞬間	shunkan	adv n	moment, instant second
50	タイミング	taimingu	n	timing

The particular temporal and spatial lexical items for the experiment were selected on the basis of four main sources: (1) A Frequency Dictionary of Japanese (Tono 2013), (2) Japanese Word Association Database ver. 1 (Joyce 2005), (2) Associative Concept Dictionary (Okamoto and Ishizaki 2001), and (3) Japanese WordNet ver. 1.1 (Isahara et al. 2008).

The Associative Concept Dictionary contains data from two separate surveys, one conducted with 10 and another with 50 Japanese native-speaking undergraduate and graduate student participants. For both surveys forming the Associative Concept Dictionary, participants were asked to reply to a stimulus with an association of a certain category: "superior concept," "inferior concept," "part or material concept," "attributive concept," "synonymous concept," "action concept," and "environmental concept." Regarding the volume of the data set, the Associative Concept Dictionary Based on 10 respondents' data has 1656 stimuli, approximately 130000 responses in total, and approximately 33000 different responses. The Associative Concept Dictionary Based on 50 Respondent Data has 1055 stimuli, approximately 250000 responses in total, and approximately 56000 different responses.

The Japanese Word Association Database ver. 1 is based on a free word association experiment conducted in the form of a paper questionnaire for Japanese native-speaking university students with an average age of 19. It consists of 104800 associative responses to 2099 stimuli. The stimulus lists for both of the dictionaries were compiled from various reference sources on Japanese basic vocabulary.

Several features of the methodology and design did not allow to use the material obtained during the previous word association studies for this project. In both Japanese Word Association Database ver. 1 (Joyce 2005) and Associative Concept Dictionary (Okamoto and Ishizaki 2001) the participants of the underlying experiments were of approximately the same age group – in their 20s. In this work one of the purposes of the free word association study is to observe potential differences in temporal and spatial domains of mental lexicon in different age groups; therefore, a larger age range of participants is needed. The next limitation was the methodology of Associative Concept Dictionary (Okamoto and Ishizaki 2001), where the experiment conducted was not a free word association experiment, but the participants were given a set of tasks, which altered their associations. Finally, The Japanese Word Association Database ver. 1 was considered only as a source of reference due to limited accessibility to the obtained data.

The other source used to form the stimuli set was Japanese WordNet. Japanese WordNet 1.1 is based on the set of the semantic relations (hypernyms, meronyms, etc.) proposed and utilized in Princeton WordNet 3.0. The synsets for the Japanese version were enriched with Japanese translations of definitions, examples, and lemmas. In total, version 1.1 consists of 57238 concepts (synsets), 93834 words, 158058 senses (synset-word pairs), 135692 definitions, and 48276 examples.

The practical criteria for the selection of the SWs were based on a variety of frequencies according to Frequency Dictionary of Japanese from *toki* (時, “time”), with 2514 occurrences per million words, to *ima* (居間, “living room”), with 9 occurrences per million words and a variety of semantic relations within the stimuli set (synonyms, hyponyms, antonyms). In

addition, this particular list of SWs was created with the intention to collect association data based on both abstract and concrete linguistic representations of temporal and spatial concepts.

Synonyms (partial synonyms) in the stimuli set, shown in tables 2.2 to 2.13, were chosen in accordance with Japanese WordNet.

Table 2.2 Synonyms 'Space'

ID	Lemma	Romanization	POS	Translation
1	空間	kuukan	n	space
2	スペース	supeesu	n	space, room
3	余地	yochi	n	room, space
5	広がり	hirogari	n	spread

Table 2.3 Synonyms 'Distance'

ID	Lemma	Romanization	POS	Translation
4	距離	kyori	n	distance
6	長さ	nagasa	n	length

Table 2.4 Synonyms 'Place'

ID	Lemma	Romanization	POS	Translation
7	場所	basho	n	place, spot, position
8	場	ba	n	place, occasion

Table 2.5 Synonyms 'Gap'

ID	Lemma	Romanization	POS	Translation
9	隙間	sukima	n	crevice, opening, gap
10	隙	suki	n	space, room, gap

Table 2.6 Synonyms 'One's home'

ID	Lemma	Romanization	POS	Translation
18	我が家	wagaya	n	one's house, one's family, one's home
19	マイホーム	mai hoomu	n	one's home

Table 2.7 Synonyms 'Living room'

ID	Lemma	Romanization	POS	Translation
21	居間	ima	n	living room
22	リビング	ribingu	n	living room

Table 2.8 Synonyms 'Interval'

ID	Lemma	Romanization	POS	Translation
26	間（あいだ）	aida	n	distance, period
27	間（ま）	ma	n	time, interval, space

Table 2.9 Synonyms 'Time'

ID	Lemma	Romanization	POS	Translation
28	時間	jikan	n	time
29	時	toki	n	time
50	タイミング	taimingu	n	timing

Table 2.10 Synonyms 'Age'

ID	Lemma	Romanization	POS	Translation
30	年代	nendai	n	era, generation
31	年齢	nenrei	n	age, years

Table 2.11 Synonyms 'Era'

ID	Lemma	Romanization	POS	Translation
30	年代	nendai	n	era, generation
36	時代	jidai	n	time, era

Table 2.12 Synonyms 'Day'

ID	Lemma	Romanization	POS	Translation
41	日	hi	n	day, sun
42	日付	hizuke	n	date day

Table 2.13 Synonyms 'Time off'

ID	Lemma	Romanization	POS	Translation
46	休日	kyuujitsu	n	holiday, day off
47	休み	yasumi	n	holiday, rest
48	ひま	hima	na-adj,n	free, not busy

Hyponyms and hypernyms (tables 2.14 to 2.19) were selected in accordance with the Japanese Word Association Database and the Associative Concept Dictionary.

Table 2.14 Hyponyms 'House'

ID	Lemma	Romanization	POS	Translation
15	家	ie	n	house, home
16	アパート	apaato	n	apartment
17	マンション	manshon	n	apartment, condominium flat
20	部屋	heya	n	room

Table 2.15 Hyponyms 'Season'

ID	Lemma	Romanization	POS	Translation
38	季節	kisetsu	n	season
39	夏	natsu	n	summer
40	秋	aki	n	autumn, fall

Table 2.16 Hyponyms 'Time (jikan)'

ID	Lemma	Romanization	POS	Translation
28	時間	jikan	n	time
35	長年	naganen	adv	long time, many years
36	時代	jidai	n	time, era
37	時期	jiki	n	time, period, season
38	季節	kisetsu	n	season
41	日	hi	n	day, sun
49	瞬間	shunkan	adv n	moment, instant second

Table 2.17 Hyponyms 'Day'

ID	Lemma	Romanization	POS	Translation
41	日	hi	n	day, sun
43	夜	yoru	n	night, evening
44	朝	asa	n	morning
45	昼間	hiruma	n	daytime

Table 2.18 Hyponyms 'Space'

ID	Lemma	Romanization	POS	Translation
1	空間	kuukan	n	space
15	家	ie	n	house, home
25	奥	oku	n	inner part, back, bottom

Table 2.19 Hyponyms 'Time (toki)'

ID	Lemma	Romanization	POS	Translation
29	時	toki	n	time
34	昔	mukashi	n	ancient times, in the past, once

Paris of antonyms (tables 2.20 to 2.23) were selected in accordance with the Japanese Word Association Database and the Associative Concept Dictionary.

Table 2.20 Antonyms 'Inside/Outside'

ID	Lemma	Romanization	POS	Translation
11	外（そと）	soto	n	outside
12	うち	uchi	n	inside

Table 2.21 Antonyms 'City/suburb'

ID	Lemma	Romanization	POS	Translation
13	都内	tonai	n	in the city
14	郊外	koogai	n	suburb

Table 2.22 Antonyms 'Front/Back'

ID	Lemma	Romanization	POS	Translation
23	前	mae	n	forward, front, before
24	後ろ	ushiro	n	behind, back

Table 2.23 Antonyms 'Past/Future'

ID	Lemma	Romanization	POS	Translation
32	過去	kako	n	past
33	未来	mirai	n	future

Ten fillers (appendix, table1.1) were selected randomly from the Frequency Dictionary of Japanese, following two criteria: (1) approximately the same frequency range as the stimuli, and (2) absence of relation to time and space concepts. The fillers were added to the survey to serve as distraction from the temporal and spatial stimuli; the responses to the fillers were not included in the analysis.

2.2 Design of the experiment questionnaires

For the first stage of the experiment a set of five questionnaires containing temporal and spatial stimuli words were created to collect word association data for the analysis presented in this chapter.

SWs and fillers were divided into five lists of twelve words (ten stimuli words and two fillers) in each. To minimize the influence of the order of the stimuli in the questionnaire on the associations, there were five versions of each list with different orders of stimuli.

Each questionnaire was printed on either two A4 pages or on both sides of one page of A4. The first page contained the title of the survey, the number of the questionnaire (from 1 to 5), and questions in Japanese asking the participant to indicate their sex, age, place of origin and education. Instructions for filling in the questionnaire were also printed on the first page. The second page contained the list of stimuli with underlined blank spaces for associative answers.

In the appendix (figure 1.1), one of the versions of the questionnaire can be found to give an overall impression of what participants held in their hands.

The experiment was conducted one questionnaire at a time with a minimum interval of 3 hours and maximum interval of 1 week. The participants were given 10 minutes to fill in each questionnaire.

2.3 Participants

A total number of eighty-five Japanese native speaking participants divided into two groups according to their age participated in this stage of the survey. The purpose of adding the age criteria at this stage of the experiment was to observe 1) whether there is an effect of age on the associations and, if there is, whether any 2) particular tendencies can be determined through qualitative analysis of the data.

The overall age range, as shown in figure 2.1, is from 18 y.o. to 76 y.o. with an average age of 40 (sd=21).

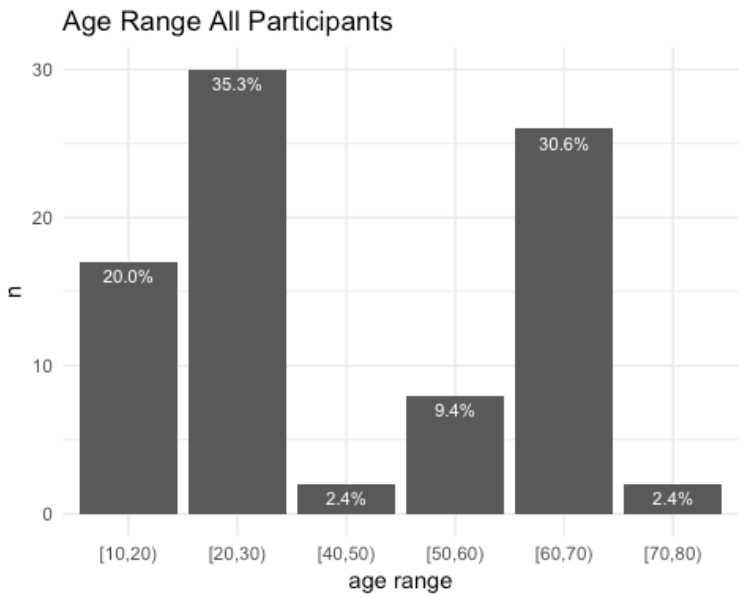


Figure 2.1 Age

The first group consisted of 47 participants with a minimum age of 18 and a maximum age of 29. The average age within this group was 21 (sd=3).

The second group consisted of 38 participants with a minimum age of 46 and a maximum age of 76. The average age within this group was 62 (sd=6).

The gender composition within the groups, and in total, had approximately the same proportions. In total, there were 58 (61%) female participants and 33 (39%) male participants.

As shown in 2.2, in the first group there were 29 (62%) female participants and 18 (38%) male participants. In the second group, there were 23 (61%) female participants and 15 (39%) male participants (appendix, table 1.2).

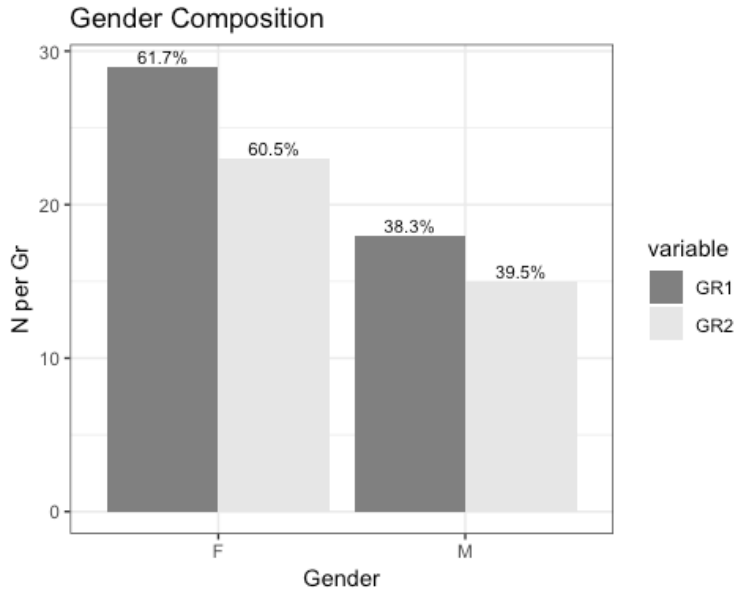


Figure 2.2 Gender Composition

The participants were also asked to specify their highest level of education completed and their place of origin, i.e. the place where they spent the most time during their childhood.

Overall, the majority of the participants (67%) either originate from or are long-term residents of the Kanto area. Considering this fact, it is important to mention here that this part of the work is, therefore, based on a sample of Kanto area Japanese speakers. The general trend in the numbers for places of origin is similar for both groups. However, the proportion of participants from the Kanto area within the first group (72%) is noticeably higher than within the second group (58%).

The places of origin stated by participants are shown in detail in the appendix table 1.3

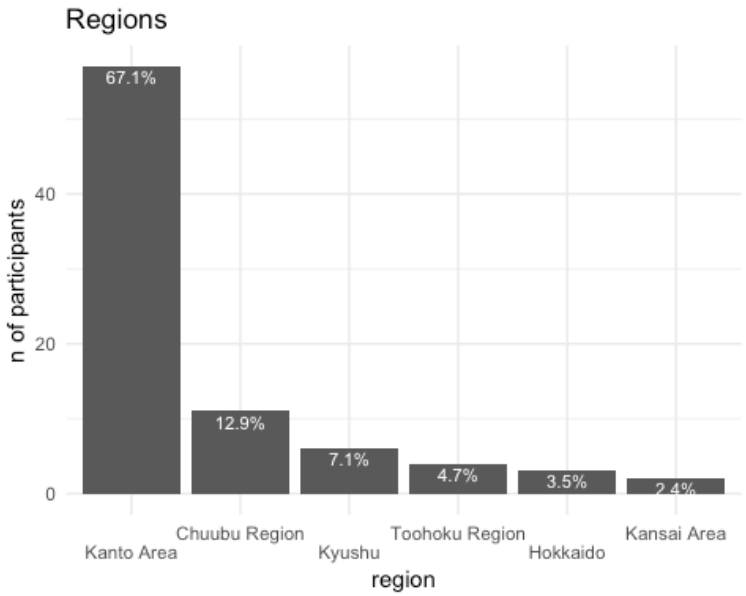


Figure 2.3 Regions

As for highest level of education completed (figure 2.4), the majority of the participants either graduated from high school (38%) or hold university undergraduate degrees in humanities (26%).

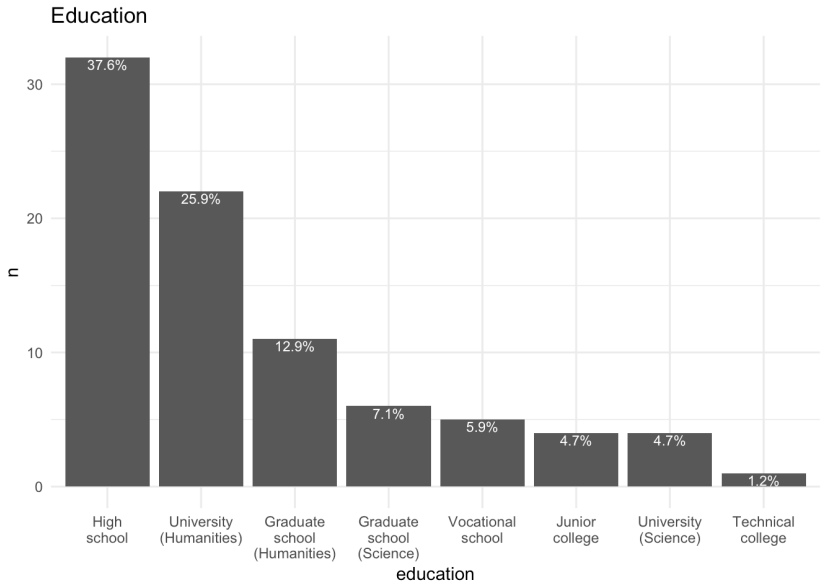


Figure 2.4 Education

The differences in education between the two groups shown in fig. 2.5 and in tables 1.4-1.6 in the appendix are due to the age difference of participants. In the first group more than half

of participants (62%) have high school education only, in the second group more than half of participants hold either undergraduate (44%) or graduate (18%) degrees in humanities.

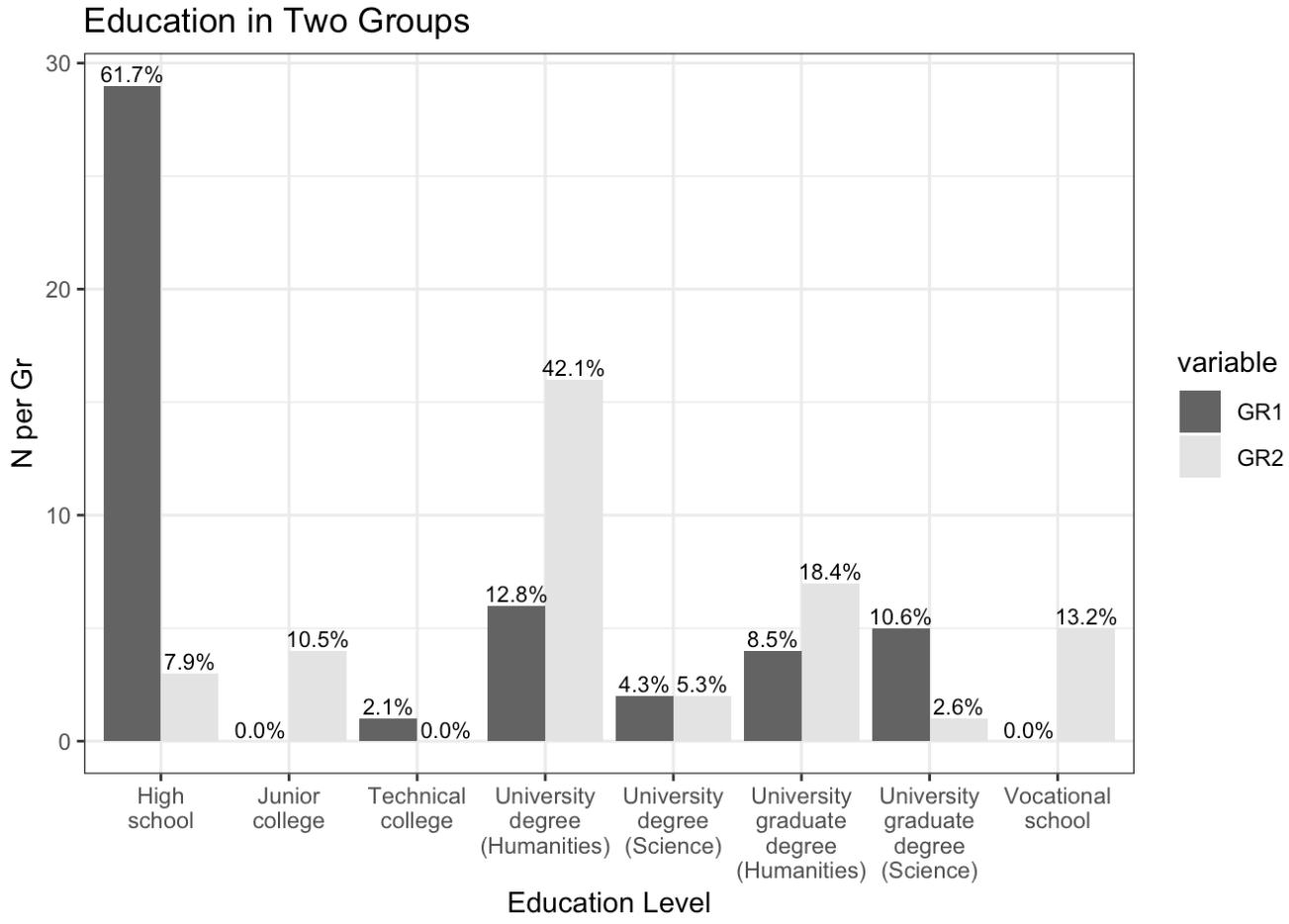


Figure 2.5 Education by group

3. Network Construction and Encoding

This network was built on the material of the first responses to the first stage of the free word association experiment; in total it consists of 1423 individual words. All data used for the analysis is based on the first association responses.

Participants' personal information was anonymized, and every participant was associated with an ID.

A table was created containing 1) stimuli; 2) responses corresponding to them; 3) participants' IDs; 4) age; 5) gender; 6) education level; and 7) age groups.

When creating this table, blank, illegible, foreign words, and long phrase responses were removed, and some of the responses were normalized (appendix table 1.7). Finally, each individual word response was given an ID number.

Then the frequencies of the responses for the whole network, and each age or gender group were calculated with the R package 'plyr' (Wickham, H., 2011). The table with frequencies was divided into two tables for each network, namely, a table with nodes and their labels and a table with edges and frequencies.

Network statistics were calculated with the R package IGRAPH (Csardi and Nepusz 2006); network visualizations created to simplify the analysis were created with Gephi (Bastian, Heymann, and Jacomy 2009).

In preparing the data for the analysis, all association responses (ARs) were encoded at three levels by their features and the nature of their connection with the stimuli (SW). The first two levels were added following the methodology utilized in The Japanese Word Association Database ver. 1 (Joyce 2005).

The first level marked the character of the associative connection, e.g., semantic association, orthographic association, transcription response.

The second level encoded the features of the association preventing its inclusion in the analysis, such as foreign-word or phrase response. For the ARs encoded at the first level as semantic associations, the third level of encoding was added for the purposes of the analysis presented in this paper. The third level encoded the character of the semantic connection of ARs, e.g., synonym, antonym.

For the first stage of the analysis, network statistics were calculated for the whole network, and for both of the age groups' networks.

To observe possible differences in the structure of parts of the network based on the responses of participants of the two different age groups, the size of the network based on the responses of Group 1 (participants in their 20s) was reduced by taking a sample of responses of a randomly chosen 37 participants to match the number of participants of Group 2 (from their 40s to their 70s).

For each network, the number of nodes, number of edges, density, average path length, network diameter, average in-degree, average weighted in-degree, and average clustering coefficient were calculated. These parameters of the network demonstrate its size, connectivity, and density.

The number of nodes in the network represents the total number of words in the network, including SW and AR; thus, the number of edges represents the total number of connections between words.

Density demonstrates how close the network is to being completed; it describes the portion of the potential connections in a network that are actual connections. In real-world networks,

e.g., biological networks, acquaintances networks, linguistics networks, this measure is usually quite low, as a sample is often relatively small, compared to the whole population.

Average path is the average of distances between all pairs of nodes in the network, connected with at least one path. The two centrality measures are the (1) Average in-degree (InD), the average number of incoming connections of the node, and (2) average weighted in-degree (WInD), referring to the average sum of weights of incoming connections of the node. Overall, these two measures demonstrate the overall connectivity of the network and average strength of connections. The average clustering coefficient is an average of the individual nodes' clustering coefficients. The clustering coefficient of a node is the number of pairs of neighbors of the node that are connected, divided by the total number of pairs of neighbors of the node, which demonstrates the probability that the two nearest neighbors of a node are themselves nearest neighbors. The description of the characteristics of the networks based on the network statistics is summarized in the section 4.1

For the second stage of analysis, ARs with the highest InD centrality and WInD centrality were detected.

The InD centrality measure demonstrates which ARs were the most associated words with all of the SWs. Fifty ARs with the highest InD were divided into ten groups according to their semantic features: 1) Abstract Time and Space, 2) Temporal and Spatial Measure, 3) Home/Living Space, 4) Light/Dark, 5) Importance, 6) Family/Human Relations, 7) Temperature, 8) Leisure/Work, 9) Past/Present, and 10) Positive Emotional Evaluation. The connections of the ARs with the highest InD centrality score within each of the ten groups were analyzed individually and in connection with the other members of the same group. Three words were identified with a top 50 InD centrality score that could not be attached to any of

the groups named above: *shizuka* (静か, "quiet, silent"), *nai* (ない, "not, nonexistent, not being (there)"), *jibun* (自分, "myself, I"), and were analyzed separately. Identification of differences and similarities between sets of the SWs connected to the ARs with highest InD scores served as the basis for revealing some of the semantic features of the SWs, e.g., a set of qualities typically associated with temporal and spatial vocabulary of the stimuli set. Further specifications for encoding the semantic features of attributes, such as emotional evaluation or measurement, were added to the whole data set based on the qualitative analysis of the set of ARs with the highest InD scores.

As a result of these analyses, conclusions were made about associative connections between words within the network and connections of time and space concepts with other concepts, as presented in the subsection 4.2.1.

The main purpose of the qualitative analysis of the ARs with the highest WInD was to determine what kinds of relations are strongest within the network, and what kind of information about micro and meso levels of the network it might give. In word association studies (e.g., Karaulov et al. 1998; Sergieva 2009), it is considered that association between two words is significant when it is verified by at least two participants; for this analysis, fifty words with the highest WInD, from *kuukan* (空間, "space") with WInD = 59 to *yoyuu* (余裕 ,"leeway", "room", "time") with WInD = 13, were utilized.

According to Aitchison (2012, 102), the following types of connections are the most common in word association material: 1) Coordination, i.e., words sharing the same level of detail, such as "salt and pepper" and opposites like "left and right"; 2) Collocations (syntactic connections); 3) Superordination; and 4) Synonymy. After qualitative analysis of the ARs with the strongest connections, I added a 5th type, Attribute, to Aitchison's classification. It can be

suggested that this type of connection should be a part of Collocations, but due to its relatively large size in this data set, it was analyzed separately. Also, a category "Other" was added for the cases in which the character of the connection is either ambiguous or not clear at all. I grouped the ARs with the highest WInD scores according to the type of their connection to the SW. Primarily, the ARs were attached to the group by their strongest connections. The sets of connections of the ARs attached to each type were analyzed qualitatively to reveal culturally specific differences and similarities in strongly connected words. Findings from this analysis are presented in subsection 4.2.2.

To investigate the meso level of the network, representing time and space domains, the community detection algorithm, Order Statistics Local Optimization Method (OSLOM), was utilized. This algorithm, proposed by Lancichinetti et al. (2011), was chosen as it is consistent with the features of the data and is capable of accounting for edge directions, weights of edges, and overlapping communities, and has proved effective in previous studies with corpus-based and word association-based data sets (De Deyne, Verheyen, and Storms 2016). Therefore, OSLOM makes it possible to build a model of time and space domains of the mental lexicon based on word association data, as well as to understand its structure with possible overlaps.

The main principles of the algorithm's workflow are as follows:

> 1) To look for significant communities.
> 2) To analyze the resulting set of communities, detecting their internal structure.
> 3) Finally, to detect the hierarchical structure of the communities
> (Lancichinetti, Andrea, Radicchi, Ramasco, and Fortunato 2011)

The significance of each community in the network was determined by calculating the probability (p) of finding of such a community in random null models. The models used in OSLOM are networks generated by randomly joining nodes under the constraint that each node has a fixed number of neighbors, taken from the pre-assigned degree distribution

(Lancichinetti, Andrea, Radicchi, Ramasco, and Fortunato 2011). With the cut off value p = 0.05, three significant communities at the higher hierarchical level and eleven communities on the lower hierarchical level were detected. Each of the communities of the lower hierarchical level was analyzed qualitatively. This was done by encoding the shared semantic features of the words members of the communities, and a set of topics prevailing in each community was then identified. Based on the identified topics, several types of concepts of time and space domains of mental lexicon, presented in section 4.3 of this chapter, were formulated.

In the next step of the network community structure analysis, overlaps between communities were reviewed. Overlaps are cases when a node or a number of nodes can be attached to more than one community, based on the number and the strength of the connections with word members. OSLOM detected 15 overlaps of different sizes, from overlaps between Natural Processes time and Seasonal time (33 words), to small overlaps containing only one word, e.g., overlaps between Outside/Inside and Abstract Time communities. The three biggest overlaps, 1) M1 Natural Processes Time and M8 Seasonal Time (33 words), 2) M3 Schedule and M10 Abstract Time (12 words), and 3) M2 Depth/unknown and M10 Abstract Time (10 words), were analyzed qualitatively to detect the topics shared by the communities. As the result of this analysis, some additional observations about the conceptualization of time and space were made and presented in the subsection 4.3.3 of this chapter.

4. Results and Findings

This section of the chapter presents results of qualitative and quantitative analysis of the network built on the material obtained through the experiment.

4.1 Descriptive Network Statistics

The descriptive network statistics demonstrated the size, connectivity, and density of the network based on the results of the free word association experiment. Table 2.24 displays information about the number of nodes and edges, density, average path length, network diameter, average in-degree, weighted in-degree, and clustering coefficient for the whole network.

Table 2.24 Descriptive Network Statistics

Measure	Score	Measure	Score
Number of nodes	1423	Network diameter	10.000
Number of edges	2234	Average in-degree	1.569
Density	0.001	Average weighted in-degree	2.818
Average path	4.326	Average clustering coefficient	0.076

For this network, the average path is 4.3, which means that there are roughly four “steps” between any two words in the network. Network diameter and the maximum path length between any two nodes existing in the network is 10.

As seen in table 2.24, the average clustering coefficient of this network is 0.076. In comparison with the average clustering coefficient of 0.003 of a matching random graph, this score can be considered high. A small average path, together with a high average clustering coefficient, indicates that the network has the properties of a small-world network, which replicates the results previously observed in larger scale networks, both corpus-based and word

association-based (e.g., Steyvers and Tenenbaum 2005; De Deyne and Storms 2008; De Deyne, Verheyen, and Storms 2016).

Table 2.25 presents the descriptive statistics comparing the two age groups.

Table 2.25 Descriptive Statistics for the two age groups

Measure	**Group 1**[5]	**Group 2**
Number of nodes	797	849
Number of edges	1143	1234
Density	0.002	0.002
Average path	3.649	4.502
Network diameter	10	10
Average in-degree	1.434	1.453
Average weighted in-degree	2.199	2.15
Average clustering coefficient	0.063	0.055

While both networks show a similar density and network diameter, the average path and average in-degree centrality measures of the Group 2 network were higher than the same measures of the Group 1 network. At the same time, the average clustering coefficient and average weighted in-degree of the Group 1 network are higher than the same measures of the Group 2 network.

In the context of the word association networks, the findings demonstrated that participants from Group 1 tended to produce a variety of responses with stronger connections to separate SWs, while participants from Group 2 tend to give more universal responses, which leads to a slightly higher average in-degree centrality score. In the Group 1 sample network, 12% of responses (92 tokens) had InD=1 and WInD>1, which demonstrates that these ARs were

[5] random sample of 37

connected with only one word from the stimuli set by several participants of the experiment. Meanwhile, in the Group 2 network, there were only 9% (73 tokens) of such cases.

4.2 Centralities: Qualitative Analysis of the Key Words of the Networks

There is a set of measures in network statistics called "centralities", which serve to determine the most important elements of a given network. In the previous section two of them, in-degree centrality and weighted in-degree centrality, were already mentioned. Due to the structure of the network, where we have only 50 nodes of the stimuli set with out-going edges, the only applicable centrality measures are these two: in-degree centrality and weighted in-degree centrality.

4.2.1 In-degree centrality (InD)

For this data, InD demonstrates the number of connections of a particular association response (AR) with the whole stimuli set. In other words, this measure allows the finding of words that could be considered key words for this particular data set.

Generally, when using InD all the nodes within the data set could be divided into three types: 1) nodes with zero InD centrality, words from the stimuli set, which did not appear as ARs; 2) leaf-nodes, with InD 1 which, considering the nature of the data set, are individual or personal associations; and 3) words with InD higher than 1, the words which appeared as associations in this survey, and are considered relevant material for the analysis. In Table 2.26, the proportion of association responses of these three types is demonstrated.

Table 2.26 InD Score Proportion

InD Score	N of Nodes	Proportion
0	6	0.4%
1	1041	73.2%
>1	376	26.4%

This type of proportion, where degree roughly follows power-law distribution and with a small proportion of important elements within the represented system is typical for real-world networks (Newman 2010).

Due to the limitations of the scope of this work, only the fifty following words (table 2.27) with the highest InD centrality are discussed here.

Table 2.27 ARs with highest InD

N	AR[6]	Romanization	Translation	InD
1	時間	jikan	time	17
2	狭い	semai	narrow, small	13
3	空間	kuukan	space	12
4	家	ie	house, home	12
5	部屋	heya	room	11
6	広い	hiroi	spacious, wide	11
7	好き	suki	like, fondness	10
8	寛ぎ	kutsurogi	ease, relaxation	9
9	大切	taisetsu	important, necessary	9
10	時	toki	time	8
11	仕事	shigoto	work	8
12	今	ima	now	8
13	明るい	akarui	bright, colorful, light	8
14	間（あいだ）	aida	gap, break	8
15	家族	kazoku	family	7
16	自由	jiyuu	freedom	7
17	長い	nagai	long	7
18	短い	mijikai	short	7

[6] Here and below AR stands for “association response|”

N	AR[6]	Romanization	Translation	InD
19	暗い	kurai	dark	7
20	落ち着く	ochitsuku	to calm down	7
21	くつろぐ	kutsurogu	to relax	7
22	古い	furui	old	7
23	楽しい	tanoshii	enjoyable, fun	7
24	歴史	rekishi	history	7
25	スペース	supeesu	space	6
26	場所	basho	place	6
27	隙間	sukima	gap, opening	6
28	静か	shizuka	quiet, silent	6
29	ゆとり	yutori	leeway, room, reserve	6
30	人	hito	human being, mankind, people	6
31	遊び	asobi	play, leisure	6
32	安心	anshin	relief, peace of mind	6
33	あたたかい	atatakai	warm	6
34	テレビ	terebi	TV	6
35	暑い	atsui	hot	6
36	子供	kodomo	children	6
37	大事	daiji	important	6
38	ない	nai	not, nonexistent, not being (there)	6
39	過去	kako	past	6
40	広がり	hirogari	spread	5
41	昔	mukashi	past, old times	5
42	中	naka	inside, in	5
43	自分	jibun	myself, I	5
44	余裕	yoyuu	leeway, room, time	5
45	人間関係	ningenkankei	human relations	5
46	太陽	taiyoo	sun	5
47	庭	niwa	garden, yard	5
48	自宅	jitaku	one’s home, one’s house	5
49	のんびり	nombiri	carefree	5
50	生活	seikatsu	living, life	5

There are several groups of words to which words with high InD centrality can be attached in accordance with their semantic features: abstract temporal and spatial words, words with semantic of temporal and spatial measure (e.g. “long”, “short”), past and present, home/living space, leisure/work, family, weather, importance (e.g., “important”) and positive emotional evaluation (e.g., “good”, “enjoyable”). Each of these groups is discussed below to investigate what the character of connections of words included in a group with the whole network and other groups might reveal about time and space in perception of Japanese native speakers. In particular, I will propose a set of hypotheses on potentially significant features of time and space concepts and their connections with other concepts on the basis of the overview of a part of the micro structure of the network.

4.2.1.1 Abstract Time and Space

The most abstract words with semantics of time and space are shown in the appendix table 1.8. Here, I would like to overview features of the connections of two ARs with the highest InD centralities within the group – *jikan* (時間, “time”) and *kuukan* (空間, “space”) (appendix tables 1.9-10).

Jikan (“time”) and *kuukan* (“space”) as ARs are highly popular for the given stimuli set, what might be considered a confirmation that these two lexical items serve as the most general terms for time and space in modern Japanese.

Moreover, there is a number of overlaps between the sets of SW, which triggered *jikan* (“time”) and *kuukan* (“space”) as ARs.

There are 10 clearly temporal SWs to which *jikan* (“time”) is given as an AR: *toki* (時, “time”), *hima*（ひま, “free time”）, *taimingu* (タイミング, “timing”), *jiki* (時期, “time”,

“period”), *shunkan* (瞬間, “moment”), *hizuke* (日付, “date”), *naganen* (長年, “long time”), *nendai* (年代, “era”), *hi* (日, “day”), *mirai* (未来, “future”).

Two words with semantic of measure, *nagasa* (長さ, “length”) and *kyori* (距離, “distance”) also have *jikan* as an AR, but the character of their associative connections with *jikan* (“time”) seem to be different, as *nagasa* can be perceived as some “length of jikan (“time”), while the connection between *kyori* and *jikan* is “distance”[covered] in some amount of “time”.

There are a number of polysemous words such as *aida* (間（あいだ）, “distance”, “period”), *ma* (間（ま）, “time”, “interval”, “space”), *sukima* (隙間, “opening”, “gap”) etc., which can be associated with both time and space. However, the fact that only one clearly spatial word, *kuukan* (“space”), is associated with *jikan* (“time”), is a designation of a pair concept.

As for the SWs *kuukan* (“space”) is associated with, there are 7 spatial SWs: *supeesu* (スペース, “space”), *hirogari* (広がり, “spread”), *ba* (場, “place”), *ribingu* (リビング, ”living room”), *suki* (隙, “space”, “room”), *ushiro* (後ろ, “behind”), *basho* (場所, “place”).

There is also almost the same set of SWs with ambiguous spatial/temporal semantic features, such as *aida* (“distance”, “period”), *ma* (“time”, “interval”, “space”), *sukima* (“opening”, “gap”) associated with both *kuukan* (“space”) and *jikan* (“time”).

Considering the overlap of connections between *jikan* (“time”) and *kuukan* (“space”), and the hypothesis that these two lexical items are designations of time and space concepts in modern Japanese, It is possible to generalize that as well as their lexical representations, time and space concepts are perceived as a pair of overlapping concepts, and are subordinate concepts of space-time concept (*jikuukan*, 時空間).

4.2.1.2 Temporal and Spatial Measure

The next group is a group of words related to temporal and spatial measure, which contains *semai* (狭い, "narrow") a word with the second highest InD score (appendix table 1.11).

In this group, the division between temporal and spatial vocabulary is relatively clear, all SWs triggering *semai* and *hiroi* (広い, "spacious", "wide") are spatial, while all SWs triggering *nagai* (長い, "long") and *mijikai* (短い, "short") tend to be temporal. *Aida* (間（あいだ）, "gap", "break") and *kyori* (距離, "distance") are the exceptions, both associated with *hiroi*, *nagai* and *mijikai*.

On the one hand, the fact that attributes of words related to both temporal and spatial measure are associated with these two words confirms that they are perceived as polysemous, having both temporal and spatial semantic features. Moreover, it demonstrates that syntagmatic connections, the major character of relations between SW and AR in this case, obtained from word association data, might be utilized to reveal semantic features of the SW. Generalizing even further, the set of vocabulary with the meaning of interval or distance are the most obvious intersection between temporal and spatial concepts.

4.2.1.3 Home/living space

The elements of this group are highly clustered (appendix table 1.12), most of the SW triggering these ARs are closely related to the topics of housing and living space. However, this group of ARs is also closely connected with two other groups of ARs with high InD.

Some of the ARs from this group, *ie* (家, "house", "home"), *jitaku* (自宅, "one"s home"), *naka* (中, "inside") and *heya* (部屋, "room") are associated with abstract spatial words such as *kuukan* (空間, "space"), *supeesu* (スペース, "space"), *basho* (場所, "place"), *soto* (外, "outside"), demonstrating connection with the first group described in this section.

The most atypical word in this group, *terebi* (テレビ, TV) is strongly connected with such SWs as *ribingu* (リビング, “living room”), *ie* (家, “home”), *ima* (居間, “living room”), *heya* (部屋, “room”). *Terebi* is associated with this set of SW as an important part of interior of the living space, but at the same time it is also connected with a group of words in the semantic category of leisure and free time through *kyuujitsu* (休日, “day off”) and *hima* (ひま, “free time”).

4.2.1.4 Light/Dark

ARs in this group are connected both with temporal and spatial SWs and both through their literal and metaphoric senses (appendix table 1.13). Light and dark times of the day or the year, such as *asa* (朝, “morning”), *hiruma* (昼間, “daytime”), *yoru* (夜, “night”) or *natsu* (夏, “summer”) are the most frequent SW associated with words from this group. Also, there are a number of spatial SWs, which can be perceived as *akarui* (明るい, “light”) or *kurai* (暗い, “dark”), namely, *ribingu* (リビング, “living room”), *soto* (外, “outside”), *sukima* (隙間, “gap”), *oku* (奥, “inner part”), *ushiro* (後ろ, “behind”).

Moreover, *akarui* (“light”) and *kurai* (“dark”) in their metaphorical senses are associated with such temporal SWs as *kako* (過去, “past”), *mirai* (未来, “future”), and *mukashi* (昔, “ancient times”).

This group is small with only two words in it, though its elements are well connected with a number of words within the whole association network. Therefore, concepts of lightness and darkness are significant for understanding time and space for Japanese native speakers.

4.2.1.5 Importance

This group consists of two words with meaning of importance: *daiji* (大事, “important”) and *taisetsu* (大切, “important”, “necessary”; appendix tables 1.15-16).

It is remarkable that all SWs associated with importance are temporal or have temporal senses as *aida* (間（あいだ）, “distance”, “period”) and *ma* (間（ま）, “time”, “interval”, “space”), but there is one exception: *oku* (奥, “inner part”). It can be assumed on the basis of the association material that importance is an attribute of time in perception of native speakers. On the contrary, space does not have an attribute of importance explicit.

As for *oku*, it is likely to be associated with importance in its metaphorical meaning of one’s heart, one’s true feelings.

4.2.1.6 Family/Human relations

In total within the whole data set, there are 44 AR that can be attached to this group. This group is particularly interesting as it reveals what other fundamental concepts might be connected to concepts of time and space in the perception of Japanese native speakers.

Through observing the connections of the ARs of this group (appendix table 1.17), it can be concluded that human relations and family relations are associated with words in the semantic category of home, distance, generation, urban/rural areas, past/future, free time and also abstract time/space.

4.2.1.7 Temperature

Formally both AR *atsui* (暑い, “hot”) and *atatakai* (あたたかい, “warm”) can be interpreted as temperature attributes to the SWs they are associated with (appendix table 1.18). In such cases, it can be concluded that SWs meaning home, daytime, different seasons and some of the abstract spatial SWs have temperature attribute marked by the participants of this

survey. However, there is a possibility that *atatakai* is in some cases used in its metaphoric meaning of "warm as cozy", in which case it becomes ambiguous whether SWs semantically connected to "home" have a temperature attribute, or an attribute marking a warm and cozy atmosphere. Disambiguation of such cases is one of the goals for future research.

4.2.1.8 Leisure/ work

This group is one of the most numerous among the groups of words with highest InD (appendix table 1.19). This suggests that part of the stimuli set is strongly associated with relaxation and leisure. This phenomenon is easily predictable if we take in consideration presence of temporal SWs, *kyuujitsu* (休日, "day off"), *hima* (ひま, "free time"), or *yasumi* (やすみ, "holiday"), in the original stimuli set. Also, this group of ARs is connected with home/life space group, confirming that the real world equivalents of these SWs are associated with rest and relaxation.

An outlier in this group *shigoto* (仕事, "work") is also associated with *kyuujitsu* ("day off") and *yasumi* ("holiday"), but as an opposite (quasi-antonym). High InD of *shigoto* ("work"), and its connection to numerous temporal and spatial SW demonstrates its significance for time and space perception in Japanese native speakers. Hypothetically, *shigoto* ("work") might be one of the fundamental concepts connected with time and space in modern Japanese. Although confirmation of this hypothesis is outside of the scope of this work, it should be investigated further with a larger data set.

4.2.1.9 Past/Present

There are 4 words with semantics of "past" and 1 word with meaning of "present" in this group (appendix table 1.20). Both differences and intersections in their connections with other

words in the network make this group particularly interesting from the point of view of understanding features of perception of past and present in Japanese native speakers.

All words in this group are associated with each other to some extent:

1. *Ima* (今, “now”) is an AR to *mukashi* (昔, “past”, “old times”); presumably, as an antonym
2. *Furui* (古い, “old”) is an AR to *mukashi* (“past”, “old times”); the character of this connection can be interpreted as synonymy
3. *Rekishi* (歴史, “history”) is an association to both *mukashi* (“past”, “old times”) and *kako* (過去, “past”); this connection might be interpreted as a superordination-subordination type of relations, whether meronymy or hypernymy
4. *Kako* (“past”) is associated with *mukashi* (“past”, “old times”) as a synonym

It is clear that relations within this group are complex, but still all the words are interconnected with each other.

As for the connections outside the group, all of the words in this group are ARs to *jidai* (時代, “time”, “era”). Three out of five words *mukashi* (“past”, “old times”), *rekishi* (“history”) and *furui* (“old”) are associated with *nendai* (年代, “era”, “generation”). *Ima* (“now”) and *kako* (“past”) are ARs to *jikan* (時間, “time”), while *rekishi* (“history”) and *mukashi* (“past”, “old times”) are both ARs to *naganen* (長年, “long time”, “many years”).

Words from this group are mostly associated with temporal SWs with several exceptions:

1. *ima* (“now”) is an AR to *basho* (場所, “place”);

2. words in the semantic category of house, *ie* (家, “home”, “house”), *apaato* (アパート, “apartment building”), *wagaya* (我が家, “one’s home”, “one’s house”), are associated with *furui* (“old”);

3. *ushiro* (後ろ, “behind”, “back”) is associated with “past” (*kako*).

From a brief description of connections inside the group and with the rest of the network, it is clear that this group has association connections with Abstract Time and Space vocabulary and Home/Living space. However, considering strong connections with words such as period, era and generation, it is possible to assume that words from this group are also perceived as words with semantic classification of temporal division. This type of division can be called a contrastive division, e.g., if it is not now, then it is past. Taking into account InD scores, it can be hypothesized that contrast between “now” and “past” is more prominent in contemporary Japanese native speakers, than contrast between “present”, “past” and “future”.

4.2.1.10 Positive Emotional Evaluation

This group (appendix table 1.21) also represents one of the fundamental concepts in language, culture and psychology, namely, emotions. In total, there are 50 AR with semantics of both positive and negative emotional evaluation in the whole data set. In particular, there are two words with meaning of positive emotional evaluation *suki* (好き, “like”) and *tanoshii* (楽しい, “enjoyable”), among the words with the highest InD centrality score. They are associated with both temporal and spatial SW.

In most of these cases, the connection with the SW demonstrates that a real world equivalent of the SW has the potential to cause emotions in general as in *ie* (家, “home”, “house”), *wagaya* (我が家, “one’s house”, “one’s family”, “one’s home”), *kako* (過去, “past”), or it is commonly

considered pleasant as *yasumi* (休み, “holiday”, “rest”) or *kyuujitsu* (休日, “holiday”, “day off”).

In other cases, SW and emotional evaluation AR are connected syntagmatically, as *naganen* (長年, “long time”, “many years”) and *suki* (好き, “like”).

4.2.1.11 Other words with high InD

There are 3 words in the top 50 by InD centrality which cannot be attached to any of the groups named above: *shizuka* (静か, “quiet”, “silent”), *nai* (ない, “not”, “nonexistent”, “not being (there)”), *jibun* (自分, “myself”, “I”) (appendix table 1.22).

Shizuka (“quiet”, “silent”) is connected with four spatial SWs and 2 temporal ones. The presence of various temporal and spatial SW in association with *shizuka* and its relatively high InD demonstrates that attribute of level of noise is also significant for this particular set.

The case of *nai* (“not”, “nonexistent”, “not being (there)”) is an example of syntagmatic connection with high frequency. At the same time it shows that absence of some of the SW, such as *jikan* (時間, “time”), *hima* (ひま, “free time”), *supeesu* (スペース, “space”) etc., can be more significant than presence.

Jibun (“myself”, “I”) or *jibun-no* (“my”, “mine”) is an ambiguous case, where the character of connection between SW and AR might be interpreted as both semantic and syntagmatic. However, disambiguation of the character of connections is outside the scope of this study, and is planned as part of a future study on semantic relations.

Hypothetically, if the character of the connection is semantic, it can be concluded that a certain number of spatial SWs, for example *kuukan* (空間, “space”), *supeesu* (“space”, “room”), *basho* (場所, “place”, “spot”), etc., have an attribute of belonging.

4.2.2 Weighted In-Degree (WInD) Centrality

In word association studies (Karaulov et al. 1998, Sergieva 2009), it is considered that association between two words is significant when it is verified by at least two participants. For this data set the weighted in-degree centrality measure demonstrates a number of participants, who replied with a particular association response (AR) to a particular stimulus (SW). In other words, WInD, when applied to word association material, serves as a measure demonstrating the strength of the connections between words.

In the following table, the 50 words with the highest WInD are shown. This set of words is discussed in this section below.

Table 2.28 ARs with highest WInD

N	AR	Romanization	Translation	WInD
1	空間	kuukan	space	59
2	時間	jikan	time	55
3	家	ie	house, home	54
4	太陽	taiyoo	sun	46
5	家族	kazoku	family	41
6	狭い	semai	narrow, small	36
7	広い	hiroi	spacious, wide	34
8	明るい	akarui	bright, colorful, light	34
9	過去	kako	past	33
10	隙間	sukima	gap, opening	32
11	暑い	atsui	hot	29
12	長い	nagai	long	26
13	春	haru	spring, springtime	26
14	カレンダー	karendaa	calendar	25
15	暗い	kurai	dark	24

N	AR	Romanization	Translation	WInD
16	落ち着く	ochitsuku	to calm down	24
17	外	soto	outside	23
18	後	ato	back, behind, rear	23
19	間（あいだ）	aida	gap, break	22
20	テレビ	terebi	TV	22
21	うち	uchi	inside, within	21
22	時	toki	time	21
23	寛ぎ	kutsurogi	ease, relaxation	21
24	歴史	rekishi	history	21
25	未来	mirai	future	20
26	場所	basho	place, location, spot, position	19
27	前	mae	before, in front	18
28	一瞬	ishhun	moment, instant	18
29	後ろ	ushiro	back, behind	17
30	田舎	inaka	rural area, countryside	17
31	部屋	heya	room	16
32	遠い	tooi	far, distant	16
33	今	ima	now	16
34	時計	tokei	watch, clock, timepiece	16
35	春夏秋冬	shunkashyuutoo	spring, summer, autumn (fall) and winter; the four seasons	16
36	宇宙	uchuu	universe, cosmos, space	15
37	自由	jiyuu	freedom	15
38	短い	mijikai	short	15
39	仕事	shigoto	work	15
40	大切	taisetsu	important, necessary	15

N	AR	Romanization	Translation	WInD
41	距離	kyori	distance, range	14
42	風	kaze	wind, breeze, draught, draft	14
43	好き	suki	liking, foundness	14
44	高い	takai	high, tall, expensive	14
45	安心	anshin	relief, peace of mind	14
46	夢	yume	dream	14
47	子供	kodomo	children	14
48	紅葉	kouyoo	autumn colours, fall colors, leaves changing color	14
49	リビング	ribingu	living room	13
50	余裕	yoyuu	leeway, room, time	13

According to Aitchison (2012) the following types of connections are the most common in association material:

1) Coordination, i.e., words sharing the same level of detail, e.g., “salt and pepper”, and opposites like “left and right” are included here;

2) Collocations (syntactic connections);

3) Superordination;

4) Synonymy

I have added the 5th category – “Attribute” to Aitchison’s classification. It can be suggested that this category should be a part of Collocations, but due to its relatively big size in this set, it is presented separately. Also, a category Other is added for the cases, where the character of the connection is either ambiguous or not clear at all.

In most of the cases, as will be shown below, the nature of the connections produced in free word association experiments is Coordination, Superordination or Synonymy. In other words semantic relations between ARs and SWs are prevailing in this part of the data set. In this section, I will group the ARs with the highest WInD scores according to the nature of the connection to SW. Primarily, the ARs will be attached to the group by their strongest connections, but if other relatively strong connections of different character exist, they would also be discussed here.

The main purpose of this overview of the words with the highest WInD is to determine what kinds of relations are common within this network, and what kind of information about micro and meso levels of the network it might give.

4.2.2.1 Coordination

Out of the top 50 by WInD there are 7 ARs that can clearly be attached to this group (appendix table 1.23), and it is remarkable that all of them are opposites. Overall, there are two pairs of opposites *soto* (外, "outside") / *uchi* (うち, "inside"), *kako* (過去, "past") / *mirai* (未来, "future") and a group of 3 words *mae* (前, "forward", "front", "before")/ *ushiro* (後ろ, "behind", "back")/ *ato* (後, "behind", "after").

The case of the strong opposition expressed by *soto* ("outside") and *uchi* ("inside") is frequently discussed (e.g., Katoo 1969; Tsubotomo, Hayase and Wada 2009), and is a well-known, culturally specific phenomenon. It is outside of the scope of this work to discuss this phenomenon in detail. However, it is worth emphasizing that the presence of this opposition among the words with the highest WInD in this network demonstrates that strong *soto*/*uchi* differentiation is still relevant in contemporary Japanese context.

The opposition between *mirai* (“future”) and *kako* (“past”) has the potential to reveal a crucial feature for understanding temporal flow perception in Japanese native speakers. It is remarkable that neither *mirai* nor *kako* are strongly linked to any of the words with the meaning of present. Considering also the observation about Past/Present in the previous section, it might be right to assume that there are two sets of vocabulary with semantics of past/present/future, with *kako* and *mirai* as members of one set, and *ima* and *mukashi* as members of the other one. The most interesting feature here is not only the relatively strong connections within these two pairs, but also the absence of the third element – “present” for *kako* and *mirai*, and “future” for *ima* and *mukashi*. If in the case of the *kako*/ *mirai* pair, we can find *genzai* (“present”) as an AR to both of them, a word suitable to play the role of “future” for *ima* and *mukashi* does not appear in this data set.

It needs further detailed investigation to be certain, but it is possible to interpret the fact that word with semantics of “future” is not connected to *ima* and *mukashi* confirms some of the conceptual features of *ima* (今, “now”) described by Katoo (2007). As Katoo claims, understanding of *ima* (“now”) can be extended from the close past to the close future.

The set of *mae* (“forward”, “front”, “before”)/ *ushiro* (“behind”, “back”) / *ato* (“behind”, “after”) consists of polysemous *mae* and two opposites to its two different senses. *Ushiro* (“behind”) is primarily an opposite to spatial *mae*, while *ato* (“after”) is an opposite to temporal *mae*. It is possible that the differentiation between *ushiro* (“behind”) and *ato* (“after”) is more significant than the differentiation between “in front” and “before”. In other words, the existence of this set in this form, when a single polysemous *mae* has two separate opposites, might be a reflection of a culturally specific phenomenon, which requires a more detailed investigation in the future.

4.2.2.2 Collocation

This category has only one AR from the group of words with the highest WInD (appendix table 1.24). It is *kaze* (風, "wind") as an AR to *sukima* (隙間, "crevice", "opening", "gap"). Ten participants of the survey associated *kaze* with *sukima*, as there is a fixed collocation *sukimakaze* (隙間風, "draught", "cold air entering through the crack of a door or window"). A strong associative link between these two words sugessts that the collocation might be used more frequently than *sukima* ("crevice", "opening", "gap") alone.

4.2.2.3 Hyponymy and Partonomy

There are 5 clear examples of hyponymy and partonomy among the AR with the highest WInD (appendix table 1.25). Four of them are temporal: *haru* (春, "spring")/ *kisetsu* (季節, "season"), *karendaa* (カレンダー, "calendar")/ *hizuke* (日付, "date"), *rekishi* (歴史, "history") / *jidai* (時代, "era", "period"), *ima* (今, "now")/ *jidai* ("era", "period") and one is spatial *heya* (部屋, "room")/ *kuukan* (空間, "space"). Type of subordination is not clear in some of the cases; for instance, *heya* can be understood as a type of *kuukan* ("space"), as well as a part of *kuukan* ("space").

4.2.2.4 Synonymy

Some of the 13 ARs present in this group (appendix table 1.26) are abstract and/or polysemous, e.g., *kuukan* (空間, "space"), *jikan* (時間, "time") etc., where a strong connection with synonyms can be explained by the existence of a cluster of abstract words with large overlaps and slight differences in meanings, such as *aida* (間（あいだ）"distance", "period", "interval")/ *sukima*（隙間, "crevice", "opening", "gap"）/ *suki*（隙, "space", "room", "gap"） or *kuukan*（空間, "space"）/ *supeesu*（スペース, "space"）/ *hirogari*（広がり,

“spread”, “space”）/ *uchuu*（宇宙, “space”, “universe”）/ *yochi*（余地, “room”, “space”）/ *yoyuu*（余裕, “leeway”, “room”, “time”）.

The remaining words in this group are more concrete, but usually have a synonym from a different register of speech or a synonym pointing to a different type of real world equivalent of the same thing, e.g., *kisetsu* (季節, “season”)/ *shunkashyuutoo* (春夏秋冬, “four seasons”) or *ribingu* (リビング, “living room”)/ *ima* (居間, “living room”).

In some cases there are synonyms only to a certain sense of a polysemous word, e.g., *uchuu* (宇宙, “space”, “universe”) to *supeesu* (スペース, “space”).

4.2.2.5 Attribute

In total there are 15 ARs with high WInD that can be attached to this group (appendix table1.27). This set of ARs represents the most important attributes of particular temporal and spatial SWs in perception of Japanese native speakers.

Thematically ARs in this group can be divided into several subgroups below:

1. Darkness/Lightness: *akarui* (明るい, “light”), *taiyoo* (太陽, “sun”), *kurai* (暗い, “dark”), which tends to be associated with SWs with semantics of time of the day, season and past/future

2. Measure/size: *nagai* (長い, “long”), *tooi* (遠い, “far”, “distant”), *takai* (高い, “high”, “tall”), *semai* (狭い, “narrow”), *hiroi* (広い, “spacious wide”), *mijikai* (短い, “short”), which is associated with SWs with the meaning of distance, time, place and past/future

3. Evaluation: *taisetsu* (大切, “important”, “necessary”), *anshin* (安心, “relief”, “peace of mind”), *suki* (好き, “like”), *jiyuu* (自由, “freedom”), associated with words with semantics of free time, place and home

4. Temperature: *atsui* (暑い, “hot”), associated with SWs related to seasons

5. Colour: *kooyoo* (紅葉, “autumn colors”), associated with words related to seasons

In other words, when Japanese native speakers are thinking about a particular spatial or temporal item, they tend to connect the item itself with its size, lightness, temperature, colour, or emotional evaluation of the item in question.

4.2.2.6 Others

There are 9 examples of connection that cannot be attached to the categories above for different reasons (appendix table 1.28).

Ie（家, “home”, “house”）/ *uchi* (うち, “inside”) are strongly linked to each other, with 27 participants associating *uchi* with *ie*. It is more likely that here *uchi* is perceived as a synonym to *ie*, but at the same time there is still the possibility that it is interpreted as the “inside” part of *ie* (家, “house”).

There is another case quite similar to *ie*/ *uchi*. It is *kazoku* (家族, “family”)/ *wagaya* (我が家, “one’s home”, “one’s house”), where *kazoku* might be interpreted as a synonym to one of the senses of *wagaya*, and at the same time it might be interpreted as connection of a type “*wagaya* (home) is where my *kazoku* (family) belongs”.

There are also two cases of attributes – *ochitsuku* (落ち着く, “to calm down”) and *kutsurogi* (寛ぎ, “ease”, “relaxation”), which can be interpreted as an action linked to a particular SW – *ochitsuku* (“to calm down”) for *ie* (“home”) and *kutsurogi* (“relaxation”) for *ima* (居間, “living room”).

4.3 Communities

The term “community” is used as a network analysis term, where community is defined as a relatively isolated group of nodes. The nodes in such a group have a stronger connection with each other than with the rest of the network (Lancichinetti, Radicchi, and Ramasco 2010). In this subsection the structure of the network on two heirarchical levels is overviewed.

4.3.1 Communities Analysis

As a result of the network structure analysis with the community detection algorithm OSLOM, three communities at a higher hierarchical level and eleven communities at a lower hierarchical level were found. On the higher hierarchical level, association data was divided into two large communities of approximately the same size, and one smaller one. The two larger communities were labeled “Time” (633 nodes) and ”Space” (720 nodes). The third, smaller community, labeled “In front/behind” (44 nodes), contains ARs of two SWs: *mae* (前, “in front”, “before”) and *ushiro* (後ろ, “back”, “behind”). Though all three communities at the higher hierarchical level are mutually connected, the connection between Time and Space communities is stronger (282 links) than the connections between either of them and the “In front/behind” community (56 links with Time, 47 with Space).

However, the fact that a small community appears at the highest hierarchical level demonstrates that it is significant as an independent element of the network. The “In front/behind” community was present on a lower hierarchical level, as discussed below, and its features make it a unique element of this network. On the lower hierarchical level, the data is divided into the 11 communities shown in Table 2.29.

Table 2.29 Communities Detected with OSLOM

ID	Label	Size (n of w)	P
M0	In front/behind	44	9.5671e-101
M1	Natural Processes time	88	0.0120197
M2	Depth/unknown	48	2.0198e-101
M3	Schedule	42	0.00117105
M4	City/Countryside	64	0.0169435
M5	Abstract Space	319	4.773e-101
M6	Leisure/ Free time	92	0.0146817
M7	Outside/Inside	184	0.00469006
M8	Seasonal time	190	0.00472016
M9	Room (life space)	20	0.00498773
M10	Abstract Time	312	8.9182e-101

I assigned labels to each community based on the semantics of lexical items forming the module. Size refers to the number of the nodes (words) attached to the module by the algorithm. The algorithm also found and removed 107 "noisy" or "homeless" nodes; these were nodes that could not be attached to any of the communities and were likely individual associations. On the other hand, some of the nodes, which I discuss in the next section, were attached to multiple communities. P measure in Table 2.29 is the probability to get the same module in a random network model. On average, for this network, the probability measures for the communities demonstrate that the communities found here are not random, and the results are statistically significant.

4.3.2 Qualitative Analysis of the Communities

The words present in each of the communities were further encoded based on their semantic features. Groups of words with similar semantic features in each community are described in this section.

4.3.2.1 M0 In front vs behind

The first module called In front/behind, as it is formed around the words *mae* (前, "in front", "before") and *ushiro* (後ろ, "back", "behind"). It consists of 44 words (appendix table 1.29). As an independent community without noisy nodes on a higher hierarchical level, this community can not be attached to either space or time, but at the same time it is connected to both of them.

Vocabulary in this community is human-centered. In comparison with other communities derived from the same material, this module has the strongest association connection between SWs and body, the strongest traces of embodiment (Lakoff, G., 1987) in associative material. This might be the reason why this community is independent from communities of time and space at higher hierarchical level. On a larger scale, it is possible to assume that this community is situated in a conceptual overlap between time, space, movement and body. It is shown below that lexical items forming other communities are not associated with physical orientation or psychological state of a human being in time and space, which makes this community unique in this set of data.

4.3.2.2 M1 Natural Processes Time

The community entitled Natural Processes Time is formed around such SWs as *aki* (秋, "autumn"), *yoru* (夜, "night") and *asa* (朝, "morning") (appendix table 1.30). This community can also be interpreted as time perceived by human senses, as it contains groups of words associated with taste, vision, and hearing.

The following groups of words are found in this community:

1. Food/harvest
2. Dark/light time of the day

3. Sky
4. Plants
5. Time of the day
6. Color
7. Sounds
8. Loneliness
9. Temperature

Aki ("autumn") is the central SW that this community is formed around. Though *yoru* ("night") and *asa* ("morning") are also present, they are secondary in this community, as the most of the ARs here are associations to *aki* ("autumn"). This fact might be interpreted in a way that *ak*i ("autumn") is a season, associated with sensitivity to seasonal changes in nature.

4.3.2.3 M2 Depth/unknown

The third community, Depth/unknown, is formed around SW *oku* (奥, "interior") (appendix, table 1.31). It has two main groups and two smaller groups of words with similar semantic features:

1. Depth/deep place
2. Unknown/hidden
3. Past/memories
4. Future

All four groups here are formed around two main senses of *oku*: depth in its direct meaning, and its metaphorical meaning, i.e., depth of one's heart or one's true feelings. The first two groups, depth/deep place and unknown/hidden are directly connected to *oku*, while past/memories and future are connected by analogy: Deep – Past and Unknown –Future.

4.3.2.4 M3 Calendar

This community is concentrated around SWs with the semantics of day, date, and time of the day (appendix table 1.32). Therefore, the following groups of words are found within this community:

1. Plans/special day
2. Dark/light time
3. Writing/reading

This community is relatively small (42 nodes), but it is noticeable that it emphasizes the coexistence of natural time, such as day and night, and human centered time, such as schedules or arrangements.

There is also an interesting metamorphosis, when time as a schedule or as a date is associated with written space, e.g., *techoo* (手帳, "notebook") or *tegami* (手紙, "letter"), it becomes attached to something material. It can be assumed that time, when perceived as controlled or organized by people, tends to be strongly associated with space. In this particular case, it is a written space.

4.3.2.5 M4 City/Countryside

This community shows a strong opposition of ARs linked to urban areas and ARs linked to the countryside (appendix table 1.33). Presumably, because of such marked opposition, this community has the clearest set of subdivisions in the whole network. The following groups of words with similar semantic features were found in this community:

1. Metropolis
2. City center
3. Crowd(ed)

4. Multi-floor buildings
5. Countryside
6. Nature
7. Housing
8. Quiet vs bustling
9. Transport/movement

Some of the differences between suburban and urban areas based on association responses become clear from the semantic features of the words grouped above. Suburban areas are viewed in more horizontal dimensions than urban, e.g., housing vs skyscrapers. Suburban areas are more associated with natural objects, while city associations are more human centered. Different noise levels are also distinctive features of city/suburb opposition.

4.3.2.6 M5 Abstract Space

This community is the largest (319 nodes) in this data set, and it contains most of the noisy nodes. Nevertheless, it mostly contains words with the semantics of space with quite a broad span of meanings (appendix table 1.34). As this community is concentrated around the most abstract spatial vocabulary of the stimuli set, it can be interpreted as an associative reflection of space in its abstract sense, space that does not have a real-world equivalent. There are several groups containing words which share some semantic features in this community:

1. Nothing/empty
2. Air
3. Necessity
4. Shape/figure
5. Measures:

- Units
- Attributes
- Tools of measure
- Calculation

6. Particular space representations:
   - Field
   - Building
7. Position/location/whereabouts
8. Storage
9. Computer
10. Thoughts
11. Human relations
12. Speech/conversation
13. Space as metaphor for society - expressions regulating behavior and communication
14. Sports
15. Way/road
16. Interval/gap
17. Meeting
18. Arts/design
19. Connection

This community, as a representation of space in the broadest sense, has several different dimensions of interpretation, as seen from the list of the groups above. Firstly, it is metaphorically associated with “container”, either with an empty container or with a container

containing air. In addition, it is also associated with real containers, i.e, with different types of storage spaces. Secondly, space is understood through the ways of measuring it or modeling it. Then through ARs with the semantics of road and location, space is interpreted through the way of experiencing it.

The fourth dimension here is space, as the spaciousness attribute of particular objects, e.g., fields or buildings, or as needed for particular activities, e.g., sports or artistic expression. However, space as an attribute of art might also be interpreted as a reference to the expression "art space". This issue needs more detailed investigation with a larger set of association data.

The last dimension in which space is represented in this community is space as something in between two or more things, for instance, interval or connection. Metaphoric representations of space from keyboard space to space in speech or behavior are based on this "betweenness" interpretation of space.

4.3.2.7 M6 Leisure/Free time

This community is formed around three SW with semantics of leisure – *yasumi* (休み, "rest"), *kyuujitsu* (休日, "holiday", "day off") and *hima* (ひま, "free time") (appendix table 1.35).

The following groups can be derived from this community:

1. Easy/relaxed
2. Doing nothing/killing time
3. Particular days/periods of time
4. Activities
5. Negative evaluation
6. Positive evaluation

7. Sleep
8. Freedom
9. Entertainment
10. Going out/travel

In general, it is more informative from sociological or psychological points of view than from a linguistic one.

However, the presence of groups for both positive and negative emotional evaluation in this group demonstrates that free time as time free of activity can be interpreted as something unacceptable as well as something enjoyable. This kind of interpretation together with presence of *shigoto* (仕事, "work") among the ARs with the highest InD and WInD scores implicitly confirms the strong connection of work with time as a concept for contemporary Japanese native speakers.

4.3.2.8 M7 Outside/Inside

There is a formal opposition of *uchi* (うち, "inside") and *soto* (外, "outside") in this community, although the ARs connected with outside are present within this community, the proportion of ARs connected with inside is higher. This fact is a direct consequence of the higher number of SWs related to houses or buildings within the network.

The following groups can be found in this community:

1. Housing
2. Family
3. Building
4. Calm/safe
5. Danger/anxiety

6. Outside
7. Luxury
8. Money
9. Dream/wish
10. Interior/inside
11. Weather

Several layers of understanding of the opposition of outside/inside can be seen in this community. Housing, as a part of and/or as a real world equivalent of inside, is opposed to outside. The elements of this opposition are peaceful and familiar for inside, e.g., "family" or "peace of mind", and dangerous and uncontrollable for outside, e.g., "danger" or "cold". The other representation of inside is its formal representation as a building.

However, the most noteworthy set of groups here is a set of groups containing words with semantics of prosperity/wealth and desire, which demonstrates that housing, being one of the representations of "inside", also has semantic features of social status value.

Therefore, based on the ARs attached to this community, inside is a safe building, presumably a house, where one's family lives, and it is also a desirable property demonstrating the owner's status. On the other hand, outside is a dangerous outside world, main features of which are determined by external forces, e.g., weather.

4.3.2.9 M8 Seasonal Time

This community is formed around SWs *jiki* (時期, "time", "season"), *kisetsu* (季節, "season"), *natsu* (夏, "summer"), *aki* (秋, "autumn", "fall"), *shunkan* (瞬間, "moment"), and *taimingu* (タイミング, "timing") (appendix table 1.36).

This community is called Seasonal Time, though considering its contents, it also can be called “the season for something” or “good time for something”.

The following sub-groups by semantic features of their contents can be found in this community:

1. Season
2. Food
3. Plants
4. Change/transition
5. Round/circle
6. Arrival
7. Temperature
8. Water
9. Insects
10. Sensory features; body
11. Good/bad time for smth
12. Moment
13. Term/period of time
14. Chance
15. Life event
16. Picture/photo
17. Surprise

Time in this community is interpreted in its connection with seasonal or human life events. Moreover, in both of these cases it is understood as some external force with its own laws, e.g.,

when “good time” comes important life events happen, or when seasons change particular plants bloom. The presence of a sub-group of ARs with the shared semantics of surprise only emphasizes that human beings are not in control of time, as it is perceived in this context. The only thing representing something which is not a force of nature or fate, but a human activity, are words with the semantics of photograph, which can be interpreted here as an attempt to preserve a particular moment in time.

4.3.2.10 M9 Room

This community is relatively small (63 nodes). It is formed around SWs *heya* (部屋, “room”), *ima* (居間, “living room”) and *ribingu* (リビング, “living room”) (appendix table 1.37).

The following sub-groups can be derived from this community:

1. Room
2. Furniture
3. Interior
4. Own space/privacy
5. Family/friends (reunion)
6. Tea/coffee
7. Cleaning

Unlike the majority of the communities discussed here, this community is characterized by the relative concreteness of its contents. The SWs it is formed around have clear real-life equivalents, and as a consequence most of the ARs triggered by them are concrete as well. Therefore, the attributes of the room in interpretation of the participants of this study are interior, furniture, or some activities one can conduct in association with it.

The only socio-cultural feature represented here is an interpretation of the room as a private space.

4.3.2.11 M10 Abstract Time

This community is the second largest in this network at this hierarchical level (appendix table 1.38). It contains 312 nodes, and is formed around the most abstract temporal SWs, such as *jikan* (時間, "time"), *toki* (時, "time"), *nendai* (年代, "era", "generation"), *nenrei* (年齢, "age"), etc.

This community's members were encoded by their semantic features and divided into the following subgroups:

1. Lifetime
2. Era, particular (long) period
3. Age
4. Flow
5. Generation
6. Non-reversible
7. Relationships
8. Daytime
9. Work
10. Fairy tale
11. Memories
12. Nostalgia
13. Important
14. Long time/eternity

15. Past/present/future
16. Regulation
17. Number
18. Control
19. Schedule
20. History/calendar

This community covers different dimensions of the interpretation of time, I can roughly generalize that they are: 1) Non-reversible time as a flow; 2) Lifetime from different stages of personal life, to generations and historical periods; 3) Narrative time; 4) Time in connection with social constructs; 5) Measurable time.

It is also remarkable that time is perceived as valuable or as a treasure, while space, as was shown earlier, is perceived as necessary.

The existence of this community, with such a number of nodes and different sub-groups within it, might be, on the one hand, caused by data limitations. On the other hand, it might also be a reflection of a complex and diverse concept of time, as perceived by Japanese native speakers. Both of these hypotheses need to be tested with a larger set of data.

4.3.3 Overlaps between communities

To further develop the investigation of the features of a mesoscopic level of the network, overlaps between communities were analyzed qualitatively. Of the 15 overlaps possible, I discuss the 3 overlaps that contained the largest number of words attached: 1) M1 Natural Processes Time and M8 Seasonal Time (33 words), 2) M3 Schedule and M10 Abstract Time (12 words), and 3) M2 Depth/unknown and M10 Abstract Time (10 words).

Through the qualitative analysis of these three overlaps, involving the detection of shared semantic features of overlapping vocabulary, several observations not detected during the community analysis became clear. Two additional features of Abstract Time were detected: (1) the attachment of ARs' with meaning of small measures of time, e.g., days, date, light period of time, or milestones in the formation of plans or life events; (2) the part of abstract time vocabulary that is connected with a person's lifetime, e.g., personal past or future, a subject for reflection that might be associated with nostalgia or hope.

Also, the duality of the perception of seasonal time was revealed. One of the interpretations can be conveniently called "internal"; the other can be called "external." The internal interpretation is based on a person's sensations connected with the season, for example, tastes, noises and colors. The external interpretation takes the same set of associations as a reflection of the change of seasons and cyclical flow of time.

5. Conclusions

In this chapter, the network based on the results of the free word association experiment on temporal and spatial vocabulary was analyzed utilizing different techniques. To investigate the network structure at its various levels from micro to macro, analyses of words with the highest in-degree centrality scores, and of network communities were conducted. Words with the highest centrality scores were overviewed in order to detect shared properties of the network, the nature of relationships between important elements, and to reveal potential connections with concepts different from time and space. In other words, WInD scores were utilized to overview the micro structure of the network, InD scores were used to hypothesize about features at the meso and macro levels.

Quantitative and qualitative comparative analysis of the association networks for Groups 1 and 2 demonstrated that there was a difference in the pattern of responses to the association experiment. Responses of participants in their 20s tended to be more individual, while those in their 40s+ appeared to be more homogeneous with their responses. I hypothesize that responses of younger participants tend to be individual associations, while responses of participants in their 40s+ tend to be based on shared socially and/or culturally specific associations. At the same time, the qualitative analysis of the associations revealed that participants in their 40s+ tend to connect temporal and spatial vocabulary with such domains of the mental lexicon as "work" or "family," while for participants in their 20s, such a trend is less prominent. These findings suggest that the "work" or "family" domains of the mental lexicon are less activated for the participants in their 20s in connection to time and space domains. Considering the observations above and the recent findings in detecting personality development thorough language (Lanning et al. 2018), with a group of participants relevant to the task, the

investigation of the development of mental lexicon through modeling a network growth might lead to significant findings.

A set of a shared core attributes associated with concepts of time and space were identified based on the qualitative analysis of the semantic features for the fifty words with the highest InD centrality. Certain types of spatial and temporal objects were differentiated by the following qualities:

(1) Light/Dark

(2) Warm/[Cold]

(3) Work/not work

(4) Good/bad

(5) Quiet/[noisy]

(6) Mine/[not mine]

All of the attributes above were associated with both temporal and spatial SWs by the participants. However, two attributes of measure, (1) Long/short and (2) Narrow/wide, were associated with either time or space only: (1) Time can be long or short; (2) Space can be narrow or wide.

When the analysis of the semantic features of the ARs was further extended to the whole data set, it appeared that the closest domains to the time and space domains were Family/Human relations (57 tokens, 4%), Emotional Evaluation (49 tokens, 3%), and Work (33 tokens, 2%).

Analysis of semantic relations within the data sample of ARs with the highest WInD demonstrated that the major types of connections between strongly connected words within

the network were a collocation of a type attribute (30%), coordination (14%), synonymy (26%), or superordination (10%).

Some of the observations made in this chapter serve as a foundation for hypotheses about the perception of time and space in Japanese native speakers. The smallest community at the higher hierarchical level of the association network–In front/behind—is focused around *mae* (前, "forward," "front," "before")/ *ushiro* (後ろ, "behind," "back"), and the core of association responses attached to this community are embodiment associations. This community is well connected to the two bigger communities at this level of the network hierarchy–Time and Space—but it is not attached to either of them; it exists independently, putting a figure, or a body, of a person in the center. The set of association responses forming the In front/behind community in this network demonstrates an interpretation of time and space from within the person or even as an extension of their body or their mind. The presence of two opposites, *ushiro* (後ろ, "behind," "back")/ *ato* (後, "back," "after"), to two different senses of *mae* (前, "forward," "front," "before") might also be a confirmation of this type of perception of time and space. In addition to these findings, the topic of fear in association with *ushiro* was revealed, based on the analysis of the shared semantic features of the words members of this community. While such culturally specific keywords as *ma* (間（ま）, "time," "interval," "space") or *soto* (外, "outside")/uchi (うち, "inside") are extensively discussed within a set of different frameworks from linguistics to cultural studies (e.g., Katoo 1969; Katoo 2007, Tsubotomo, Hayase and Wada 2009), *mae* (前, "front," "before") and *ushiro* (後ろ, "behind," "back") do not seem to be a major focus of interest to researchers in this context. Some research discussing *mae* and *ushiro* in relation to spatial embodiment and frames of reference has been done (Shinohara, Matsunaka 2010; Shinohara and Pardeshi 2011). However, the topic of fear

in association with *ushiro* is yet to be discussed and further investigated as a potential connection between spatial and fear domains of the Japanese mental lexicon.

From the qualitative analysis, I was able to observe several types of conceptualizations of time and space domains of the mental lexicon for the Japanese native-speaking participants of this study. Generally, on the basis of shared semantic features of words, members of the communities, time and space as perceived by the participants can be understood as the following:

Time:

1. Time as perceived by human senses
2. Unknown time
3. Organized time, e.g., calendar time
4. Time as resource, e.g., free time – bad useless resource, or busy time - good resource
5. Uncontrollable time
6. Flow-time
7. Life time
8. Narrative time
9. Time as social construct

Space:

1. Human-centered space
2. Nature-centered space
3. Container
4. Space as experience
5. Betweenness space

6. Outside space
7. Inside space
8. Own space

However, the relationships between the two concepts are not clear at the moment and need further investigation. A potential way to explore the specifics of the relationships is to expand the dataset by utilizing multiple ARs to the same SW for analysis. Traditionally in word association studies (e.g., Umemoto 1969; Joyce 2005; Okamoto and Ishizaki 2001), only the first responses were chosen for analysis, to avoid possible difficulties with chain associations, which might have affected the qualitative interpretation of the associative connections between individual words. However, more recently, with the development of tools for quantitative analysis applicable to association data, more researchers (e.g., De Deyne, Navarro, and Storms 2013) tend to use multiple responses. This approach should be taken into consideration for future studies, as it might be more effective in research solely focused on the meso and macro structures of the network, when the connections between individual lexical items are less relevant.

Considering the overlaps in qualities characterizing time and space, and the association responses to the most abstract words with semantics of time and space, it is possible to hypothesize that the time and space domains are perceived as a pair of overlapping domains and can be understood as subordinate concepts of the space-time concept (*jikuukan*, 時空間). The nature of interrelations between temporal and spatial concepts and space-time concept has been discussed not only in the context of Japanese (e.g., Katoo 2007), but also in a wider context of various languages, cultures, and perception in general (e.g., Casasanto and Boroditsky 2008; Filipović and Jaszczolt 2012b; Filipović and Jaszczolt 2012a).

Chapter III: Spatial Description Strategies through Spontaneous Speech Experiment

The main purposes of this chapter are the description, analysis and contribution to the typology of the patterns of spatial description in Japanese native speakers on the basis of the materials obtained through the spontaneous speech experiment.

The analysis presented in this chapter aims to answer three major research questions: 1. whether the type of space represented in the picture affects the strategy of description; 2. whether the categorization of the picture is affected by the type of space or by the strategy of description; 3. what types of spatial descriptions are prevailing for each strategy of spatial description.

In connection with the first research question a number of hypotheses were formulated and tested: 1. Room feature of the visual stimuli would trigger strategies containing frame elements, as there is a natural frame of walls-floor-ceiling depicted in the picture (no support found); 2. Roads depicted in the stimuli would trigger path strategy, describing movement of the speaker through the picture (confirmed); 3. Tabletop stimuli would trigger descriptions containing a) scanning the picture, i.e., Scanning strategy, (confirmed) and object-centered non-systematic descriptions, Outstanding Objects Strategy (no support found).

The second research question was approached with two formulated hypotheses: 1. categorization is affected by the major feature of the picture (partially confirmed); 2. categorization is affected by the strategy of description (found no support in the given data set). The outcome of the analysis suggests that categorization might be a process independent from the spatial description.

The outcome of the analysis of the types of spatial descriptions within each of the strategies demonstrates that there are differences from what was suggested in previous works on the topic written on the basis of European languages material e.g., Taylor and Tversky (1992), Taylor and Tversky (1996). The most significant differences are 1. prevalence of intrinsic frame of reference in scanning strategies in Japanese, as opposed to relative frame of reference in English; 2. presence of variation of scanning strategy – a perspective scanning strategy based on scanning based not on "left"/"right" scanning axis, as typically found in English (Taylor and Tversky 1996) or in Russian (Kobozeva 2000), but on the "front/back" axis.

This chapter is written on the basis of the results of a spontaneous speech experiment on spatial description strategies. The details of the design and conditions of the experiment are given in section 2 Spontaneous Speech Experiment on Spatial Description Strategies of this chapter.

The main purpose of the experiment was to obtain material from Japanese native speaking participants in order to ascertain the patterns (strategies) of spatial description (SD). Descriptions of three pairs of visual stimuli containing different predominant features (room, road and table) were audio recorded, transcribed, and organized in a corpus of texts and annotated for qualitative and quantitative analysis. The terminology, proposed typology and distinctive features for each strategy with examples are summarized in section 1 Spatial Description. Conventions of encoding the corpus of texts obtained through the experiment and the samples of encoded texts following different strategies of description are presented in 3 Corpus and Encoding.

A general descriptive statistical overview of the obtained corpus – numbers and proportions of each type of the strategy per picture, of each category type, the most frequent expressions

of such elements of spatial description (Figure, Landmark, Relator and Relations Predicate) – are shown in the section 4 of this chapter, Descriptive Statistics.

The results of quantitative and qualitative analyses - results of variance statistic tests for strategies, and categories and proportions of types of spatial expression per strategy, are shown in section 5 Results.

The findings and preliminary conclusions are combined in section 6. Conclusions.

1. Spatial Description

In the first chapter of this work I gave a theoretical framework of the research on spatial language and spatial description typology. This section of the chapter briefly revisits some of the relevant definitions with examples illustrating them.

1.1 Figure and Landmark

Figure and Landmark (Ground) are two of the main elements of spatial description. Figure (F) is an object whose location, orientation or trajectory of movement is described. Landmark (Lm) is an object in relation to which the Figure's position or path is described.

Talmy (2000) formulated a set of characteristics of F and Lm; he suggests that in principle the choice of Lm is determined by a set of parameters that makes it easier to use it as a reference. Talmy (2000) suggests that the choice of Lm typically is predetermined by a combination of these parameters:

- acts as a reference entity, having known properties that can characterize the primary object [figure]'s unknowns
- more permanently located
- larger
- geometrically more complex in its treatment
- earlier on the scene/in memory
- of lesser concern/relevance
- more immediately perceivable
- more backgrounded, once primary object[figure] is perceived
- more independent

While Figure:

- has unknown spatial (or temporal) properties to be determined
- more movable
- smaller
- geometrically simpler
- more recently on the scene/in awareness
- of greater concern/relevance
- less immediately perceivable
- more salient, once perceived
- more dependent

(Talmy 2000, p. 182)

In some cases it is easy to illustrate the work of these principles, for example, spatial properties of a room are commonly known and more immediately perceivable than spatial properties of contents of this room. Therefore, it is naturally easy to use "room" as the first Landmark of the room description, e.g., "there is a table in the middle of the room". Another example, a parameter of early appearance for Lm choice, tends to be predominant within descriptions of some particular fragment of space, when the Figure described in the previous sentence or clause serves as a Landmark in the next, e.g., "there is a table in the middle of the room, there are chairs to the right and to the left of the table".

1.2 Frames of Reference

In spatial description there are three major FoRs - relative, intrinsic, and absolute (Levinson 2003).

Relative or viewer-centered FoR is a tertiary coordinate system involving the viewer's coordinates, e.g. the playground is to the left of the pond (from where the viewer is located). Intrinsic or object-centered FoR is a system of coordinate based on 'inherent features' of the object, utilized as a Landmark, e.g. the playground is in front of the school. Such 'inherent features' or facets of the Landmark objects are assigned systematically or on a case-by-case basis or combining these two principals (Levinson 2003).

Absolute or environment-centered FoR is a FoR based on the 'cardinal directions' or usage of the fixed Landmark independent from the scene, e.g. the lake is north of the village.

As the findings of Kita (2006) suggest, the two major FoRs utilized for spatial description in Japanese are relative and intrinsic.

1.3 Relator and Relations Predicates

In this chapter the major three types of spatial description I will discuss are relative, intrinsic and topological. To some extent each of these three types can be identified on the lexical level. Relationships between Figure and Landmark in Japanese are largely expressed through the spatial nominals and postpositions (particles); both of these types of expression of relations between objects in spatial description are referred to as Relators (R) in this work. As Kita (2006) emphasizes, spatial nominals play a particularly important role in spatial description in Japanese, and he also suggests several types of the Relators typical for angular (Intrinsic, Relative and Absolute FoRs)and non-angular spatial descriptions.

Topological relations are typically expressed with spatial nominals of surroundedness and containment, or Relations Predicates (RPs) with semantic features of connectivity. Due to the importance of the role of predicates in spatial description in Japanese, in this work predicates expressing spatial relations are termed as Relations Predicates (RP) and analysed along with

Figure, Landmark and Relators. Among spatial nominals with semantic features of surroundedness and containment, Kita (2006) names *naka* (中, "inside"), *soto* (外, "outside"), *aida* (間, "between") and *mawari* (周り, "around"). Proximity is expressed through spatial nominals such as *soba* (そば, "near"), *tonari* (隣, "next (to)") or *yoko* (横, "aside; next to"). While these nominals are utilized independently, the type of spatial description expressed will remain topological, though in combination with other Relators they can produce mixed-type description as in P1R47: *sono appuraito no piano no mukatte hidari donari ni wa sofa ga arimasu* (そのアップライトのピアノの向かって左隣にはソファがあります, "there is a sofa next to that upright piano on the left [as one faces it]").

Connectivity, contact or attachment in Japanese tend to be expressed not through the nominal/particle Relators, but through verbs (Matsumoto 1996, 1997). There is a large cluster of RPs with semantic features of type of connectivity in Japanese, and some of them can be found within the data obtained from the participants of the experiment, e.g. *tsuku* (付く, "to be attached; to be connected with"), *haru* (貼る, "to stick; to paste"), *tsunagaru* (繋がる, "to be tied together; to be connected to"), *rinsetsusuru* (隣接する, "to be adjoined").

Examples of typically intrinsic spatial nominals in Japanese are *kado* (角, "convex corner"), *sumi* (隅, "concave corner"), *heri* (へり, "a strip of surface near the edge"), *fuchi* (ふち, "a strip of surface near the edge") . Such nominals designate internal properties of the Landmark, therefore, they predominantly serve as Relators in spatial descriptions within the intrinsic FoR.

There is also a set of spatial nominals, which can be involved in both intrinsic and relative FoRs, depending on the context. *Mae* (前, "in front, front"), *ushiro* (後ろ"back, behind"), *migi* (右, "right") and *hidari (左,* "left"*)* are among such spatial nominals.

All of the features of topologic spatial description or descriptions following any of the FoRs also apply to the vertical axis.

1.4 Locative Constructions in Japanese

Spatial descriptions typically answer the question, 'where is x', and according to Kita (2006) the construction most typically used to answer this question in Japanese follows the pattern:

Basic Locative Construction (BLC)
Figure_NP - *wa* Landmark_NP - *ni* Locative_Verb[7]
TOP DAT
'Figure is at Place'

However, in Japanese this construction is applicable to the description of a limited number of the most simple relations between F and Lm. Kita (2006) suggest there are only two situations where the BLC is utilized naturally to answer 'where is x?" question:

A) Figure is not attached to Landmark, and could move freely in at least two dimensions
pen wa kami no shita ni aru
pen-TOP paper-GEN under-DAT be-NPAST
'The pen is underneath the paper'
B) Figure is inherently fixed with respect to ground
shikago wa irinoi ni aru
Chicago-TOP Illinois-DAT be-NPAST
'Chicago is in Illinois'

While the BLC expressing situation A can be found within the data obtained through the experiment presented in this work, e.g. P6R26：

急須はテーブルの上にあります

kyuusu wa teeburu no ue ni arimasu

[7] Abbreviations TOP -Topic, DAT - Dative, GEN-Genitive, REP-Representative, PTN-Potential, INT-interrogative particle, NPAST-Nonpast, EVID-Evidential, EPI - epistemic modality

teapot-TOP table-GEN on-DAT be-NPAST

'The teapot is on the table'

Situation B does not appear in the context of the utilized stimuli set.

A number of spatial relations that the BLC is not utilized to express were highlighted by Kita (2006):

> Situation C: Figure is tightly fixed to landmark (e.g. the handle is on the door)
> Situation D: Figure is impaled by landmark. Figure impales landmark
> (e.g. The apple is on a skewer)
> Situation E: Figure is 'damage' or negative space (e.g. The hole is in that wall)
> Situation F: Figure is adornment or clothing (e.g. the ring is on his middle finger)

The contextual similarity of situations C to F comes from the suggestion of a previous event that caused the particular spatial relationship. According to Kita, in such cases the question of 'where' is typically answered with one of two types of resultative constructions, the resultative-middle construction with a ditransitive verb and *te aru,* or the imperfective of an intransitive verb with *te iru*. Out of types C to D, situation C is the most common within the data analyzed in this chapter, and both of the two types of resultative construction can be utilized for description of the situation C in Japanese. However, Kita emphasizes the general preference for expressions of spontaneous change over expressions of agentive change; thus, the imperfective form of an intransitive verb is typically preferred in all of the situations mentioned to answer "Where is" question.

1.5 Typology of Extended Spatial Descriptions

On the basis of the analysis the materials obtained through an experiment with Russian native speakers, Kobozeva (2000) defined four spatial description strategies – Frame Strategy (FS), Strategy of Outstanding Objects (SOO), Path Strategy (PS) and Scanning Strategy (SS).

On the basis of the materials analyzed in this work, a variation of Scanning Strategy – a Perspective Strategy (PRS) was added.

1.5.1 Frame Strategy (FS)

According to Kobozeva (2000) in the descriptions following FS - space is divided into a set of fragments, resembling the slots of a frame of the space of this type, e.g. floor, walls and ceiling for description of a room. Descriptions following FS are typically characterized by:

1) explicit (non-zero) categorization of the space described, e.g. this is a room
2) explicit topoi, e.g., there is a sofa in this room
3) avoiding deixis, narrator's ego appears in the text only when it is necessary
4) appearance of the words naming elements of the frame in the very beginning of the text, e.g., walls, floor.
5) high appearance of secondary objects, e.g. sky in landscape description
6) linear order of description correlates with the hierarchy of the elements of the frame

1.5.2 Strategy of Outstanding Objects (SOO)

In SOO space is divided into fragments, corresponding with the surroundings of some "outstanding" objects, which attract the narrator's attention. In descriptions following SOO:

1) categorization might be zero
2) high frequency of zero topoi, e.g., There is a sofa.
3) deixis/ non-deixis topoi both possible when introducing "outstanding" object, e.g., "there is a coffee pot right in front of me" or "there is a coffee pot at the table"
4) free order of description

1.5.3 Path Strategy (PS)

In PS, space description is determined by the trajectory of an imaginary movement through the picture. The main features of PS are:

1) usage of motion constructions
2) usage of verbs with semantics of motion as Relations Predicate
3) comparatively high frequency of words with semantics of distance
4) usage of ordinal numerals, or other words with semantics of order

1.5.4 Scanning Strategy (SS)

Space is described as the narrator scans the picture, usually form left to right and from top to bottom. The main features of SS are:

1) scanning of the space from left to right and from top to bottom
2) high frequency of words with semantics of order or sequence, e.g., first, then, and then.

1.5.5 Perspective Strategy (PRS)

It is not entirely clear at this stage of the research whether this strategy is an independent strategy, which was not determined by Kobozeva, or a variation of Scanning Strategy. However, in a number of cases the participants were describing the stimuli through scanning it from front to back or from back to front.

Therefore, PRS is characterized by:

1) scanning of space from front to back, or back to front.
2) high frequency of words with semantics of order or sequence.

1.6 Structure of Extended Spatial Description

According to Kobozeva each spatial description (SD) consists of the following structural and functional elements.

Structural elements of SD are

- Exposition,
- Elaboration,
- Sequence and Shot.

Functional elements are

- Categorization, which includes Category
- Configuration, formed by combination of Topos, Figure and Relations Predicate
- Topos, consisting of Landmark and Relator

Elements often present in SDs, which do not directly affect spatial descriptions, are

- Specification,
- Characterization,
- Localization,
- Commentary

1.7 Exposition and Categorization

SD starts with a zero or a non-zero Exposition (EX)[8]. The main role of the EX is to state the type of the space.

[8] Abbreviations given in brackets were utilized as corpus tags in process of annotation, and are used in the text of this chapter

The only compulsory element of EX is Categorization. Categorization typically consists of one sentence announcing the type of or the central object of the space. The noun or the NP representing the type of the space or the central object is a category (Cat) of the description in question, e.g., *heya ga arimasu* (部屋があります, "there is a room"), where *heya* (部屋; "room") is the Cat.

1.8 Elaboration

The main body of SD, in Kobozeva's terminology - Elaboration (El), consists of one or more Sequences (Sq). Each Sq correlates with a particular part of visually perceived space.

1.8.1 Shot and Configuration

Sq consists of a number of Shots (Sh). Sh is such a fragment of description that contains at least one Configuration (Conf). Conf serves for the description of the location of an object in relation to other objects, and consists of Topos (T), Figure (F) and Relations Predicate (RP). Sh might also contain a number of elements not expressing spatial relations.

1.8.2 Topos, Figure, Relations Predicate, Landmark and Relator

Figure (F) is a textual representation of an object, which location is described in Conf. Topos (T) is a designation of locative construction, consisting of a Landmark (Lm) and a Relator (R). Lm is an object utilized to describe a relative location of the F, while R together with Relations Predicate (RP) express the character of spatial relations between the Lm and the F.

1.8.3 Sequence

Sequence (Sq) is a sequence of Shs, meeting the following criteria:

- Lm in the very first Sh of the Sq is used in Elaboration (El) for the first time, or there is at least one other Lm used in El for the first time between the current and the previous uses of this Lm

- Lm of Shi (where $i > 1$) is utilized as a Figure in Sh $i \backslash n$ where $n \epsilon [1, i-1]$

Here "use" of a Lm in the first Sh of a Sq is interpreted as its appearance in the text, when the Landmark is non-zero. When the Landmark is zero in the first Sh, "use" is interpreted as an implicit appearance traceable from the previous linguistic or extra-linguistic (e.g., type of the space described) context.

1.8.4 Specification, Characterization, Localization and Commentary

There are a number of elements not representing any type of spatial description but frequently present within both Expositions and Elaborations of SDs. Such elements are Specifications (Spec), Characterizations (Ch), Localizations (Loc) and Commentary (Com).

Specifications contain additional information, usually giving more detailed descriptions of the type of the Figure whose location is being described, or the type of the category introduced, e.g. with category *heya* (部屋です, "room"), possible Spec can be *yooma no taipu no heya desu* (洋間のタイプの部屋です, "European type room").

Characterizations (Ch) contain information on features, e.g., size, colour, of the Figure, Lm or Cat objects described within the text. For example, when describing a room, Ch might contain information on the features of the room's parts, *furooringu no yuka de, tenjoo wa kanari takai heya ni natteimasu* (フローリングの床で、 天井はかなり高い部屋になっています, "the room has wooden flooring, and a quite high ceiling").

Localization is a variation of Ch, giving additional information on Figure's location, e.g., characterizing the Figure's orientation in space - *sofa ga arimasu. kochira muki ni oite arimasu* (ソファがあります。こちら向きに置いてあります; "there is a sofa. *It is facing this way*"), or location - *heya no oku kabe ni ataru bubun no sanbun no ni wo shimeru tokoro ni* fusuma ga arimasu (部屋の奥、壁に当たる部分の３分の２を占めるところに襖があり

ます; “There is a fusuma in the back of the room, *occupying the place of around two thirds of the wall*”)

Commentary can contain non-spatial information given by the participant, for instance, commentary on the weather, time of the day, or personal impressions about the described stimuli, e.g. *igokochi ga yosasoo desu ne* (居心地が良さそうですね, “it seems cozy, doesn’t it”).

2. Spontaneous Speech Experiment on Spatial Description Strategies

This section gives an overview of demographic information collected from the participants of the experiment, and describes the design of the experiment, including the organization of the stimuli set and a description of the experimental process.

2.1 Stimuli set

Spontaneous speech experiments with static or dynamic visual stimuli set have been recognized by the researchers within the field of spatial and motion language investigation as an effective tool for obtaining the data for the analysis (e.g., Taylor and Tversky, 1996; Kobozeva, 2000; Kita, 2006). In this project a spontaneous speech experiment with six static visual stimuli with broadly formulated tasks for spatial description was utilized.

The stimuli set for the spontaneous speech experiment on spatial description strategies consisted of 6 pictures (2 interiors, 2 landscapes and 2 still life photographs). Each picture was chosen so that it has clear zones of interest, and it has one of three features - 1. confined space, e.g. room with walls, floor etc., 2. road, 3. close up at a set of objects. These three features were selected as they were considered to tend to trigger certain spatial description strategies discussed in this chapter.

The pictures were chosen so that each of the three features has two different representations – P1 with more strictly confined space and P2 with less clear frame; P3 with the road as a dominating element of the picture and P4 where road is a part of the landscape; P5 as a still life with more objects densely grouped with more various types of spatial relationships and P6 with less objects and some space between them. Such contrasts of representation aim to verify

whether the symbolism of a particular feature – room, road and table or contents of each particular picture might affect the patterns of description produced by the participants.

The particular set of pictures was selected through qualitative analysis of descriptions obtained through a pilot study with a group of five Japanese native speaking participants. The main goal of the pilot was to exclude any pictures that were considered odd, unnatural or staged.

The pictures utilized in the final version of the experiment design are shown below.[9]

[9] sources of the pictures:

P1 https://farm4.staticflickr.com/3220/3137731200_e3d575cf80_b_d.jpg; https://www.flickr.com/photos/tranztec/

P2 Marcelo Saavedra/Shutterstock.com

P3 Tanjala Gica/Shutterstock.com

P4 https://farm8.staticflickr.com/7454/9058208046_f133a7fe3a_h_d.jpg, https://www.flickr.com/photos/bluesky0121/9058208046

P5 Santi S/ shutterstock.com

P6 Santi S/ shutterstock.com

Figure 3.1 Picture 1

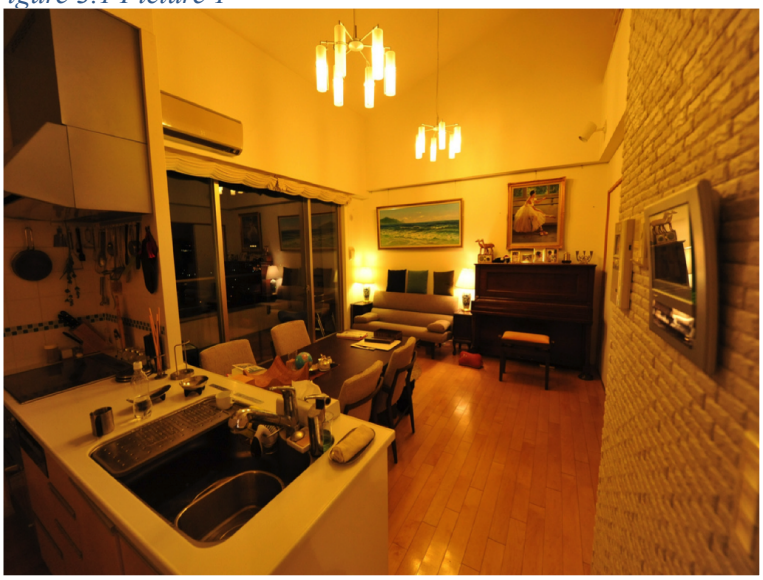


Figure 3.2 Picture 2



Figure 3.3 Picture 3



Figure 3.4 Picture 4



Figure 3.5 Picture 5



Figure 3.6 Picture 6



2.2 Design of the experiment

The spontaneous speech experiment on spatial description strategies as a part of my doctoral project was approved by the Central University Research Ethics Committee (CUREC Ref No R43735/RE002) and by the National Institute for Japanese Language and Linguistics' (NINJAL) Ethics Committee.

The experiment was organized and conducted in January-February 2016 at National Institute for Japanese Language and Linguistics. Before the conduction of the experiment the participants were given participant information forms and consent forms to sign (appendix fig. 2.1-2.2).

Prior to the beginning of the experiment participants were also given a personal data form (appendix fig. 2.3) with a unique ID number for each participant. After the collection of the data all responses were anonymized using the ID numbers associated with each participant through the personal data forms. The form contained questions in Japanese asking participants to fill in their name, age, gender, birth year, places where they lived between 5 and 20 y.o. and their completed education level.

Participants were also given a 10-minute oral explanation of the details of the process of the experiment, including instructions on the usage of the equipment and style of description. The participants were advised to describe the stimuli as if they were talking to a Japanese native speaker they knew.

During the conduction of the experiment each participant was asked to sit in front of the screen of a tower mount type EyeLink 1000 (SR Research), then they were asked to place their chin on the chinrest of the eye tracking equipment. When they were seated comfortably and

are ready to start, they were asked to push a button to start the experiment. The space with eye-tracking and audio recording equipment was separated from the rest of the room with a curtain, so that the participant would not be distracted. The person conducting the experiment was observing the process from the screen outside the curtain.

The sequence of the experiment was designed with Experiment Builder 1.10.1630 software. The participants were shown a sequence of instruction screens and visual stimuli (P1-P6) on the 1920x1080 (Full-HD, 1080p) screen of EyeLink 1000 (SR Research), tower mount, 1000Hz equipment. Responses of each participant were audio recorded, and eye-movement data was taken simultaneously. Eye-movement data is stored securely in anonymized form on a hard drive not connected to the Internet for further investigation. Eye-movement data is not analyzed here, as it is out of scope of the current work.

All instructions for the experiment appeared on the screen in Japanese in font 24 MS Meiro. The first screen used once in the very beginning of the experiment for initial calibration of the eye-tracking equipment:

- 画面１ 画面に現れる黒い点を見てください。(Please look at the black dot that will appear at the screen)
- この説明を読み終わったら、スペースキーやエンターを押してください。(After reading this instruction, please press enter or space)

A second instruction screen appeared before each trial:

- この説明を読み終わったら、スペースキーやエンターを押してください。(After reading this instruction, please press enter or space) スペースキーやエンターを押したら、画面の黒い点を見てください。(After pressing space or enter, please look at the black dot on the screen)

- 画面に写真が現れた時、 (when a picture appears at the screen:)

1. 調査シートの右上に書かれている協力者ID番号を 声に出して読んでください。(1. Please say out loud the participant ID number from your personal data form)

2. 画面に出た写真を見てください。その写真に写っているものと、 その位置について、 その写真を見たことがない人にも分かるように説明してください。(2. Please look at the picture appeared at the screen. Please describe the picture so that a person who has not seen it may understand what objects are in the picture and the location of the objects)

3. 説明を終わったら、もう一度スペースキーやエンターを押してください。 (3. After explaining the picture, please press enter or space again).

After the conduction of the experiment each participant was given a 1000 yen (approx. 6 GBP Feb 2016 rate) compensation of expenses, and given a consent withdrawal form with information how to withdraw their consent at any time. Each participant was sent a debriefing email explaining the purpose of the experiment in more details.

2.3 Participants

A total number of 51 Japanese native speaking participants took part in this survey; data obtained from 48 was utilized for the analysis. The minimum age of the participants was 22 and the maximum age was 71, with an average age of 48.5. More detailed information on the age range of the participants is demonstrated in Figure 3.7.

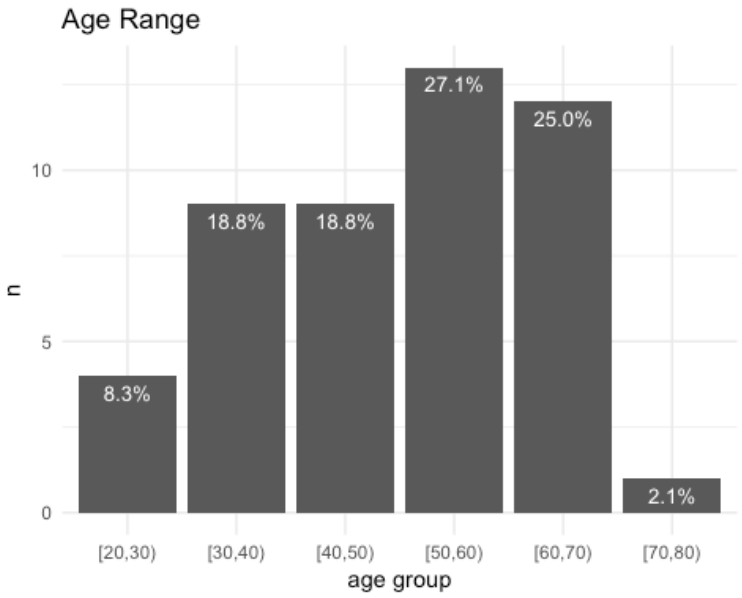


Figure 3.7 Age

As for the gender composition, 10 (21%) male and 38 (79%) female participants took part in this study.

The participants were also asked to specify their highest level of education completed and their place of origin, i.e. the place where they spent the most time from age of 5 until age of 20. All of the participants were residents of the Kanto area at the time the experiment was conducted.

Overall, the majority of the participants (33, 65%) either originate from or are long-term residents of the Kanto area. Considering this fact, it is important to mention here that this part of the work is, therefore, primarily based on a sample of Kanto area Japanese speakers. More detailed information on the places of origin of the participants is shown in Figure 3.8. The

places of origin stated by participants are shown in detail in the appendix table 2.1

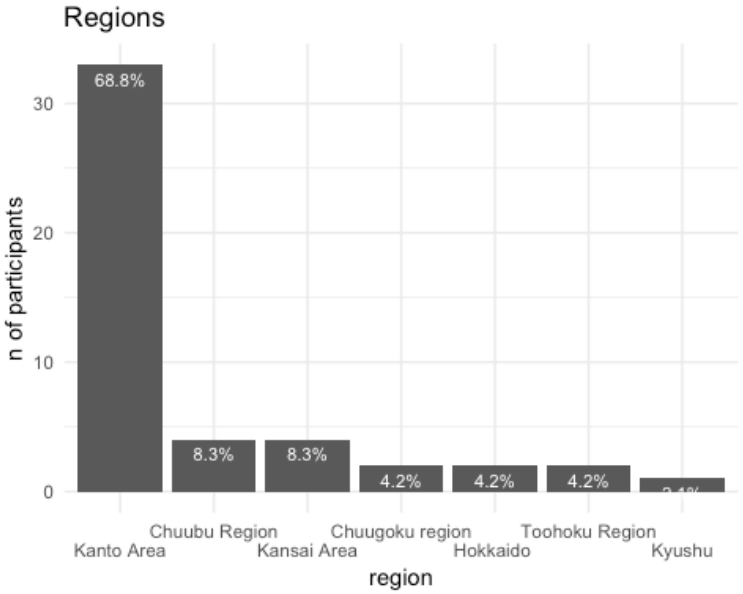


Figure 3.8 Regions

Among the participants originating from the Kanto area the majority spent most of the time between the age of 5 and the age of 20 in Tokyo (21 participant out of 33; 64%) as shown in figure 3.9

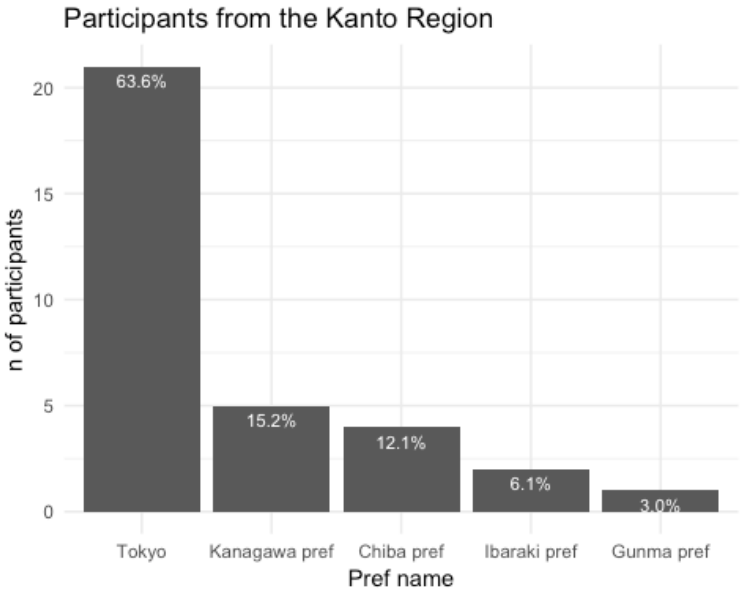


Figure 3.9 Kanto

As for the highest level of education completed, the majority of the participants hold either university undergraduate degrees in humanities (24, 50%) or graduate degrees in humanities (15, 31%) (Figure 3.10).

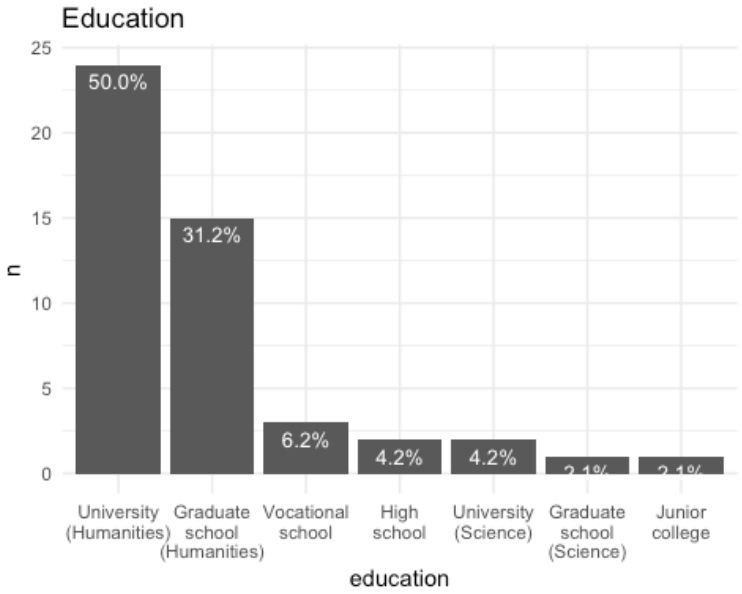


Figure 3.10 Education

3. Corpus and Encoding

In this section of the chapter the overall size of the corpus, methods and tools for encoding, including examples of encoding of spatial descriptions and non-spatial description elements are given.

3.1 Corpus and Encoding Overview

After transcribing the recordings of the descriptions produced by the participants a corpus of 306 texts with a total length of 111037 characters and an average text length of 363 characters (sd = 254) was obtained for further analysis.

The text was annotated in XML following a TEI[10] Linguistic Corpus schema customized for the needs of the project. Annotation of the expressions of spatial relations and detection of spatial description strategies primarily follow the basic principles outlined by Kobozeva (2000). The grounds of her approach lay in the works of Talmy (1983, 2002). While the typology of the strategies Kobozeva proposes intersects with the notion of perspective developed by Taylor and Tversky (1996).

All of the texts were first annotated with the first level of structural elements of SD Exposition (EX) and Elaboration (El) to reveal the structure of the spatial description. Thirteen of the texts (4%) had zero EX, and consisted of Elaboration only.

As the next stage of encoding and analysis the texts were encoded to reveal the functional elements of SD – category (Cat) for EX, and Configuration (Conf), each containing Topos (Landmark (Lm) and Relator(R)), Figure (F) and Relations Predicate (Cop), for El. The non-

[10] The Text Encoding Initiative, creating and maintaining the TEI Guidelines for a standard for text encoding for the humanities and social sciences. https://tei-c.org

spatial description elements of the texts – specifications (Spec), characterizations (Ch), localizations (Loc) and commentary (Com) were also encoded with the corresponding tags. At this stage of analysis the texts of participants N9, N15, N39 were excluded from the analysis as lacking or not containing the functional elements of SD. The resulting data set consisted of 288 spatial descriptions.

As the next step of analysis El of each SD were encoded with Shot (Sh) and Sequence (Sq) tags. Each Sh contained one Conf and contextually related non-SD elements – specifications, characterizations and comments. Each Sq consisted of at least one Sh corresponding with SD of one zone of interest of the stimuli. The average number of Sq per text was 3.6 (sd = 1.8) with minimum 1 and maximum 12; and the average number of Sh per Sq was 2.3 (sd= 1.6) with minimum 1 and maximum 9.

After the encoding of all structural elements within the corpus was completed, the texts were analyzed against the criteria formulated by Kobozeva (2000) to detect the strategies that the SD followed. Each SD was encoded with one of the tags designating a non-mixed – Frame (FS), Outstanding Object (SOO), Path (PS), Scanning (SS) or mixed strategy of spatial description. During this stage a set of SD with a front – back axis scanning was detected and tagged as a Perspective strategy (PRS). Mixed strategies were encoded as such if the SD contained more than one Conf following a strategy different from the rest of the SD.

Further annotation for Cat typology and types of spatial description and statistical analysis of the data were conducted with R in R Studio software.

3.2 Spatial Description Strategies Annotation Examples

In this section examples of annotated SDs following different strategies and examples of non-spatial description elements present within the SDs are given.

3.2.1 Frame Strategy (FS)

In SDs following FS space is divided into a set of fragments, resembling the slots of a frame of the space of this type, e.g. floor, walls and ceiling for description of a room.

Fragment of P1R26:

Heya ga arimasu
There is a room
Heya no kabe no migigawa ni wa migigawa no kabe ni wa e ga arimasu
On the right side of the room's wall, on the right wall there is a picture
Heya no oku no kabe ni mo e ga kazatte arimasu
There is also a picture decorating the room's back wall
Tenjoo ni wa raito ga burasagatte imasu
A lamp is hanging from the ceiling

Encoding of the fragment of P1R26:

```
<seg type="#EX"><w ana="#Cat">部屋</w>があります。</seg>
 <seg type="#El"><…>
<seg type="#Sq" n="2">
<s>
<seg type="#Sh" n="1">
<seg ana="#Conf">
<seg ana="#T"><seg ana="#Lm">部屋の壁</seg>の<seg ana="#R">右側に</seg></seg>は、
<seg ana="#Spec">右側の壁には</seg>、えー、
<w ana="#F">絵</w>が <w ana="#Cop">あります</w></seg></seg>。</s></seg>
<seg type="#Sq" n="3">
<s>
<seg type="#Sh" n="1">
<seg ana="#Conf"><seg ana="#T"><seg ana="#Lm">部屋の奥の壁</seg><w
ana="#R">に</w></seg>も <w ana="#F">絵</w>が <w
ana="#Cop">飾ってあります</w></seg></seg>。</s></seg>
<seg type="#Sq" n="4">
<s>
<seg type="#Sh" n="1">
<seg ana="#Conf"><seg ana="#T"><w ana="#Lm">天井</w><w ana="#R">に</w></seg>は <w
ana="#F">ライト</w>が <w ana="#Cop">ぶらさがっています</w></seg></seg>。</s></seg>
<...></seg></seg></said>
</div>
```

The above fragment of description of the first picture by participant 26 demonstrates several features of frame description strategy. Explicit categorization is formulated as *heya ga arimasu* ("there is a room"). The description follows wall – ceiling - wall frame, it starts from the right

wall - *heya no kabe no migigawa ni wa, migigawa no kabe ni wa, eee, e ga arimasu* (“on the right side of the wall, on the right wall there is a painting/picture”); then proceeds to the wall in the back of the room – *heya no oku no kabe ni mo e ga kazatte arimasu* (“the wall in the back of the room is also decorated with a painting/picture”); and then to the ceiling - *tenjoo ni wa raito ga burasagatte imasu* (”lights are hanging from the ceiling”).

3.2.2 Strategy of Outstanding Objects (SOO)

In SOO space is divided into fragments, corresponding with the surroundings of some “outstanding” objects, attracting the narrator’s attention.

In this SD of P5 by participant number 20, categorization is zero; Topos is zero in two of three Configurations; out of all the objects in P5 only three *hon* (本, “book(s)”), *megane* (眼鏡, “glasses”) and *koohii* (コーヒー,”coffee”) are mentioned.

Fragment of P5R20:

koohi to hon to megane ga oite arimasu
there are coffee, books and spectacles
hon wa nisatsu de
two books
sono ue ni megane ga oite arimasu
and on top of them there are spectacles

Encoding of the fragment of P5R20:

```
 <seg type="#EX"><seg ana="#Cat"></seg></seg>
<seg type="#El">
<seg type="#Sq" n="1">
<seg type="#Sh" n="1">
<s>
<seg ana="#Conf">
<seg ana="#T"><seg ana="#Lm"/><seg ana="#R"/></seg>
<w ana="#F">コーヒー</w>と<w ana="#F">本</w>と<w ana="#F">眼鏡</w>が
<seg ana="#Cop">置いてあります</seg>
</seg>。</s></seg>
<s>
<seg type="#Sh" n="2">
<seg ana="#Conf">
```

```
<seg ana="#T"><seg ana="#Lm"/><seg ana="#R"/></seg>
<w ana="#F">本</w>
は二冊で
<w ana="#Cop"/></seg>、</seg>
<seg type="#Sh" n="3">
<seg ana="#Conf"><seg ana="#T"><w ana="#Lm" lemma="本">その</w><seg ana="#R">上に
</seg></seg></seg>
<w ana="#F">眼鏡</w>が
<seg ana="#Cop">置いてあります</seg>
</seg>。</seg></s></seg></seg></said></div>
```

3.2.3 Path Strategy (PS)

Path Strategy (PS) is extremely rare in this data set, and primarily appears in mixed path-scanning strategy SDs.

In PS space description is determined by the trajectory of an imaginary movement through the picture.

Below there is one of the rare examples of usage of PS, participant 12 is describing the cross-roads from the P3. In the first Sq the Lms are deictic *watashitachi* (私たち, “we”) and *koko* (ここ, “here”); verbs pointing on PS being utilized in this fragment are *tatteiru* (立っている, “standing”), *tomatteiru* (止まっている, “stopping”), *ugoiteiru* (動いている, “moving”), *tooreru* (通れる, “can pass”); there is also a Ch describing the width of the sidewalk specifying that it is about 5 meters wide *go meetaa gurai* (５メーターぐらい).

Fragment of P3R12:

> *Machinaka no koosaten no tokoro desu.*
> The place is a crossroads in the city.
> *Watashitachi wa ima koko ni tatteiru no wa*
> *hodookyoo, hodoo, hodoo wo wataru tokoro ni tatte imasu.*
> Now here, where we are standing, is a pedestrian bridge, a sidewalk, we are standing at a place to cross the street.
> *Kuruma wa eeto koko kara mieru no wa san dai miemasu kedomo,*
> *chotto tomatteiru ka ugoiteiru ka chotto koko kara wa wakarimasen ne*
> Cars, from here I can see three cars, but from here it’s not clear whether the cars are standing or moving.

Hodoo no hirosa mo kekkoo go meetaa gurai atte yoyuu ga aru
Sidewalks's width is also plenty, about five meters, it has plenty of space.
Hodooyuusen to kaite arimasu kedo, jitensha mo tooreru hokoo, hodoo ni natte imasu
It is written "pedestrian priority", but a bicycle can also pass there.

Encoding of the fragment of P3R12:

```
 <seg type="#EX">
<s>
<…>
<seg ana="#Cat">町中の、えー、交差点のところ</seg>です。</s>
<...>
</seg>
<seg type="#El">
<seg type="#Sq" n="1">
<seg type="#Sh" n="1">
<s>
<seg ana="#Conf" n="1PS">
<seg ana="#T"><w ana="#Lm">私たち</w>は今<w ana="#Lm">ここ</w><w ana="#R">に
</w></seg>
<w ana="#Cop">立っている</w>のは、
ええと、<w ana="#F">歩道橋</w>、</seg>
<seg ana="#Loc">歩道、歩道を渡るところに立っています</seg>。</s><…>
<seg type="#Sh" n="3">
<s>はい。<seg ana="#Conf">
<w ana="#F">車</w>は、ええと、
<seg ana="#T"><w ana="#Lm">ここ</w><w ana="#R">から</w></seg>見えるのは 3 台
<w ana="#Cop">見えます</w></seg>けども、
<seg ana="#Ch">
ええと、ちょっと止まっているか動いているかちょっとここからではわかりませんね。
</seg></s><…>
<seg ana="#Ch">
<s>はい。歩道の広さも結構５メーターぐらいあって、えー、余裕がある。</s>
<s>えー、歩行者優先と書いてありますけど、自転車も通れる歩行歩道になっています。はい。
</s></seg></seg></seg></seg></said></div>
```

3.2.4 Scanning Strategy (SS)

In SS space is described as the narrator is scanning the picture, usually from left to right and from top to bottom.

It might be not clear from the description itself, but when comparing this description and P1 we can see that the SD below, given by participant 36, follows the left to right path for each

Sq. Also, conjunctions with meaning of sequence, such as *mata* (また, “again; also”), *sara ni* (さらに, “furthermore; again”), and *sore kara* (それから, “and then; after that”), appear 10 times throughout the length of this fragment of SD.

Fragment of P1R36:

Chiisana heya desu ne
it is a small room
Kono heya ni wa sofa mo arimasu
There is also a sofa in this room
mata kusshon ga mittsu sofa no ue ni arimasu
Also there are three cushions on the sofa
sara ni sofa no ue ni e ga kakete arimasu
furthermore there is a picture hang above the sofa
sorekara piano mo sara ni oite arimasu
and then there is also a piano
migi no hoo no kabe ni wa nan deshooka
What is it on the right-side wall?
kuuchooshisetsu no suicchi to ka sooitta mono nan deshoo ka
It is probably something like a switch of air-conditioning device.
sorekara kore wa ima wa yoru desu ne
And then now it is probably evening
sorekara shanderia ga tenjoo kara futatsu sagatte imasu
And then there are two chandeliers hanging from the ceiling.
sorekara migi no ie no hoo ni wa supottoraito ga arimasu
And then on the right up there are spotlights
sorekara sofa no hidarite no hoo ni wa sutando ga oite arimasu
and then on the left next to the sofa there is a floor light
sorekara hidari mado no ue no hoo ni wa eakon no kikai ga arimasu
And then on the left above the window there is an air-conditioning device.

Encoding of the fragment of P1R36:

```
 <seg type="#EX">
<s>小さな<w ana="#Cat">部屋</w>ですね。</s></seg>
<seg type="#El"><…>
</seg>
<seg type="#Sq" n="3">
<seg type="#Sh" n="1">
<s>
<seg ana="#Conf">
<seg ana="#T">この<w ana="#Lm">部屋</w><w ana="#R">に</w></seg>は
<w ana="#F">ソファ</w>も
<w ana="#Cop">あります</w>
```

</seg>。</s><…>
<seg type="#Sh" n="2">
<s>
また、
<seg ana="#Conf">
<w ana="#F">クッション</w>が三つ
<seg ana="#T"><w ana="#Lm">ソファ</w>の<seg ana="#R">上に</seg></seg>
<w ana="#Cop">あります</w>
</seg>。</s> </seg>
<seg type="#Sh" n="3">
<s>
さらに
<seg ana="#Conf">
<seg ana="#T"><w ana="#Lm">ソファ</w>の<seg ana="#R">上に</seg></seg>は
<w ana="#F">絵</w>が
<w ana="#Cop">掛けてあります</w>
</seg>。
</s>
<…></seg></seg>
<seg type="#Sq" n="4">
<seg type="#Sh" n="1">
<s>
<seg ana="#Conf">
<seg ana="#T"><seg ana="#Lm"/><seg ana="#R"/></seg>
それから
<w ana="#F">ピアノ</w>も
さらに
<w ana="#Cop">置いてあります</w>
</seg>。</s></seg>
<…> <seg type="#Sq" n="5">
<seg type="#Sh" n="1">
<s>
それから、
<seg ana="#Conf">
<seg ana="#T"><seg ana="#Lm">右のほうの壁</seg><w ana="#R">に</w></seg>は、なんでしょうか…
<seg ana="#F">空調施設のスイッチ</seg>とかそういったものなん
<w ana="#Cop">でしょう</w>
</seg>か。</s></seg>
<…> <s><seg ana="#Com">
それから
これは今は夜ですね。
</seg></s>
<…> </seg></seg>
<seg type="#Sq" n="6">
<seg type="#Sh" n="1">
<s>
それから

<seg ana="#Conf">
<w ana="#F">シャンデリア</w>が
<seg ana="#T"><w ana="#Lm">天井</w><w ana="#R">から</w></seg>二つ
<w ana="#Cop">下がっています</w>
</seg>。</s></seg></seg>
<seg type="#Sq" n="7">
<seg type="#Sh" n="1">
<s>
それから
<seg ana="#Conf">
<seg ana="#T"><w ana="#Lm"/><seg ana="#R">右の上のほうに</seg></seg>は
<w ana="#F">スポットライト</w>が
<w ana="#Cop">あります</w>
</seg>。</s></seg></seg>
<seg type="#Sq" n="8">
<seg type="#Sh" n="1">
<s>
それから、
<seg ana="#Conf">
<seg ana="#T"><w ana="#Lm">ソファ</w>の<seg ana="#R">左手のほうに</seg></seg>は
<w ana="#F">スタンド</w>が
<w ana="#Cop">置いてあります</w>ね
</seg>。
</s>
<…> </seg>
</seg>
<seg type="#Sq" n="9">
<seg type="#Sh" n="1">
<s>
それから
<seg ana="#Conf">
<seg ana="#T"><w ana="#R">左</w>、<w ana="#Lm">窓</w>の<seg ana="#R">上のほうに
</seg></seg>は
<w ana="#F">エアコン</w>の機械が
<w ana="#Cop">あります</w></seg>。</s></seg></seg></seg></said>

3.2.5 Perspective Strategy (PRS)

It is not entirely clear at this stage of the research whether this strategy is an independent strategy, which was not determined by Kobozeva, or a variation of Scanning Strategy. However, for this data set Perspective Strategy (PRS) is quite common.

The following fragment of SD of P6 by participant 41 demonstrates the usage of Relators (R) with meaning back/front in PRS. Out of 8 non-zero Rs, *oku* (奥, “back (of a house, drawer, etc.)”) is utilized in 3 cases, and *temae* (手前, “before; this side; front”) in 3 cases.

Fragment of P6R41:

> *Kondo mo teeburu no ue ni mono ga oite arimasu*
> Things placed at the table this time as well.
> *Oku ni nanten no eda ga oite arimashite*
> At the back there is a branch of nandina
> *Temae ni wagashi*
> In the front Japanese sweets
> *Osara*
> A plate
> *Sorekara owan*
> Then a teacup
> *Sorekara kyuusu*
> Then a teapot
> *Migigawa no oku ni natteimasu*
> At the back on the right side
> *Mazu ichiban temae ni aru no ga kuroi marui osara no ue ni notta wagashi*
> First of all, at the frontmost there are Japanese sweets on the black round plate
> *De temae ni tsumayooji ga arimasu*
> And in front of it there is a toothpick

Encoding of the fragment of P6R41:

```
 <seg type="#EX">
今度も<seg ana="#Cat">テーブルの上にもの</seg>が置いてありますが、
<...></seg>
<seg type="#El">
<seg type="#Sq" n="1">
<s>
<seg type="#Sh" n="1"><seg ana="#Conf" part="I">
<seg ana="#T"><w ana="#Lm"/><w ana="#R">奥に</w></seg>
</seg>
<…> <seg ana="#Conf" part="M">
<seg ana="#F">南天の枝</seg>、
</seg>
<…>
<seg ana="#Conf" part="F">が
<seg ana="#Cop">置いてありまして</seg>
</seg>、 </seg>
<seg type="#Sh" n="2"><seg ana="#Conf">
```

<seg ana="#T"><w ana="#Lm"/><seg ana="#R">手前に</seg></seg>
<w ana="#F">和菓子</w>
<w ana="#Cop"/>
</seg>、</seg>
<seg type="#Sh" n="3"> <…>
<seg ana="#Conf">
<seg ana="#T"><seg ana="#Lm"/><seg ana="#R"/></seg>
<w ana="#F">お皿</w>
<w ana="#Cop"/>
</seg>、</seg>
<seg type="#Sh" n="4">
それから
<seg ana="#Conf" part="I"><seg ana="#T"><w ana="#Lm"/><seg ana="#R">左奥に
</seg></seg></seg><…>
<seg ana="#Conf" part="F"><w ana="#F">お椀</w>
<w ana="#Cop"/></seg>、 </seg>
<seg type="#Sh" n="5">
それから
<seg ana="#Conf" part="I">
<w ana="#F">急須</w>、
<seg ana="#T"><w ana="#Lm"/><seg ana="#R">右側の奥に</seg></seg>
</seg>
<…>
<seg ana="#Conf" part="F">
<seg ana="#Cop">になっています</seg>
</seg>。</seg></s></seg>
<seg type="#Sq" n="2">
<s>
<seg type="#Sh" n="1">
まず、
<seg ana="#Conf">
<seg ana="#T"><w ana="#Lm"/><seg ana="#R">一番手前に</seg></seg>
<w ana="#Cop">ある</w>のが、
黒い丸い<seg ana="#T"><w ana="#Lm">お皿</w>の<seg ana="#R">上に</seg></seg><w
ana="#Cop">のった</w>
<w ana="#F">和菓子</w>、
</seg> </seg>
<…>
<seg type="#Sh" n="3">
<s>
で、
<seg ana="#Conf" part="I">
<seg ana="#T"><w ana="#Lm"/><seg ana="#R">手前に</seg></seg></seg></seg>
<…>
<seg ana="#Conf" part="M"><w ana="#F">爪楊枝</w></seg><…>
<seg ana="#Conf" part="F">が<w ana="#Cop">あります</w>
</seg>。</s></seg><…></seg>

3.3 Specification, Characterization, Localization and Commentary

These elements are frequently observed in SDs, however, they do not serve to express spatial relations between F and Lm. Thus they are outside of the scope of the analysis presented here. To exclude such elements from the analyzed material they were identified and tagged. Specifications (Spec), Characterizations (Ch), Localizations (Loc) or non-spatial Commentaries (Com) were found in both EXs and Els of the obtained descriptions.

3.3.1 Specification:

Spec was represented with various syntactic constructions, introducing a variety of specifying descriptions, e.g.:

Nominal sentences:

In P1R1:

> [部屋の中です。] 洋間のタイプの部屋です。
> *[heya no naka desu.] Yooma no taipu no heya desu*
> [Inside a room.] European type room

Disjunctive coordinations:

In P1P21:

> [壁の方には、<…>、これはモニターでしょうか。] パソコンのモニターか、テレビのようなものが写っています。
> *[kabe no hoo ni wa, kore wa monitaa deshoo ka.] Pasokon no monitaa ka, terebi no yoo na mono ga utsutte imasu*
> [At the wall… this might be a monitor.] Either a monitor, or something like a TV is shown

Specifying constructions:

In P1R18:

> ソファの左側が大きな窓です。外に出っ、ベランダの外に出れるような窓は、になっています。
> *[sofa no hidarigawa ga ookina mado desu.] soto ni de.., beranda no soto ni derareru yoona mado wa, ni natteimasu*

[On the left side from the sofa there is a big window.] going out… it is a type of window through which you can get out to the verandah

3.3.2 Characterization:

Characterizing constructions were describing colors or sizes of the objects described:

In P1R18:

その上に３つクッションが並んでいます。 右から順に茶色、水色、黒です。
[sono ue ni mittsu no kuushon ga narandeimasu.] Migi kara jun ni chairo, mizuiro, kuro desu.
[There are three cushions standing in a line on top of it.] From right [to left] - brown, blue, black.

In P1R35:

後は、フローリングの床で、 天井はかなり高い部屋になっています。
ato wa, furoringu no yuka de, tenjoo wa kanari takai heya ni natteimasu
Then, the room has wooden flooring, and a quite high ceiling

3.3.3 Localization:

Localization is a type of characterization of an object, giving additional characteristics of the object's location. Most of the Loc were characterizing the spatial orientation of the objects described:

In P2R13:

多分、和室の手前のほうは、 これ、日本家屋の一階だと思うんですけども、庭に面していると思われて
... tabun washitsu no temae no hoo wa, kore, nihonkaoku no ikkai da to omou n desu kedo mo, niwa ni menshiteiru to omowarete...
… though I think that it is, probably, the front side of Japanese style room, this is the ground floor of the Japanese style house, it is facing the garden

3.3.4 Commentary:

Commentary (Com) includes a wide range of non-spatial information given by the participant, for instance, commentary on the weather, time of the day, or personal impressions about the described stimuli.

In P3R46:

天気は曇りで
...tenki wa kumori de...
The weather is cloudy…

In P1R1:

時間は夜で、ライトが灯っています。
...jikan wa yoru de, raito ga tomotteimasu..
as it is night, the lights are on

or in P2R2:

とても静かな素敵な部屋です
...totemo shizukana sutekina heya desu...
it is a very quiet lovely room

4. Descriptive Statistics

This section consists of descriptive statistics demonstrating qualitative and quantitative features of the contents of the corpus obtained through the experiment. The first subsection overviews the number of the strategies in the corpus as a whole and per picture. In the second subsection category types found in SDs are presented and overviewed. The most frequent F, R, Lm and RP are given in the third subsection.

4.1 Strategies

The total number of texts obtained through the spontaneous speech experiment was 306.

However, to make the data symmetrical for the purposes of the quantitative analysis responses of participants N9, N15 and N39, who responded to some of the pictures with non-spatial descriptions, were not included. The resulting dataset contains 288 SDs, and the frequencies for each strategy within the whole data set are demonstrated in table 3.1.

Table 3.1 Strategies Number

Strategy	Freq
SS	87
PRS	72
SOOSS	33
SOO	30
FSSS	26
PSSS	11
FS	8
PSPRS	8
PRSSOO	7
FSPRS	5
PS	1
TOTAL	**288**

As shown in fig. 3.11 the majority of SD strategies within the corpus are SS (87, 30%), PRS (72, 25%) and SOO (30, 13%). Only 8 (3 %) of responses following FS were detected. PS as an independent strategy was found only once in the whole corpus of 288 SDs.

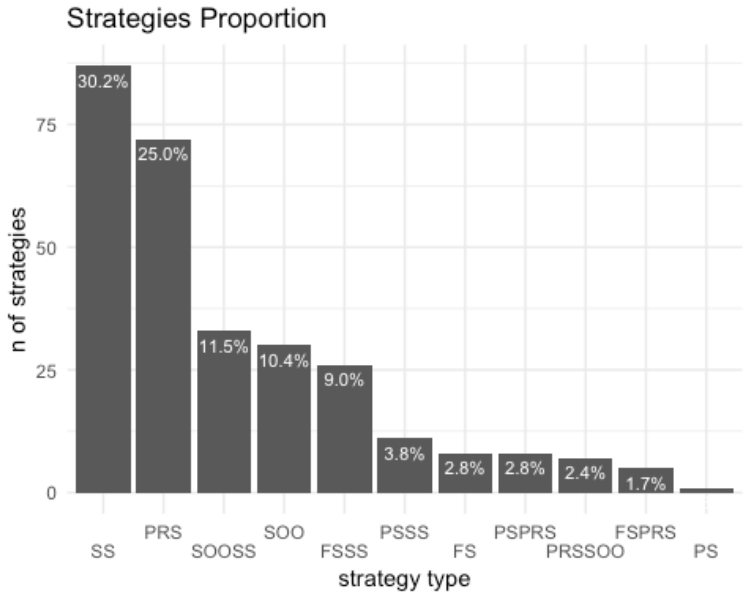


Figure 3.11 Strategies Proportion

Mixed strategies such as SOOSS (33, 11%), FSSS (26, 9%), PSSS (11, 4 %) and less frequent PRSPS, PRSSOO, and FSPRS were coded as mixed if they contained at least 2 Conf following a minor strategy of description.

Overall majority of descriptions follows a SS or a mixed partially scanning strategy, which is considered typical for description of two-dimensional representations of space (e.g., Taylor and Tversky (1996).

All 51 participants have given SDs as their responses to P4 and P6. One of the participants (participant N39) has given non-spatial descriptions of P1, P2, P3 and P5. Response of participant N9 to P3 and response of participant N15 to P5 contained only 1 Conf each. Accordingly, in the data set obtained during the experiment 50 SDs were collected for P1 and P2, 49 SDs for P3 and P5, and 51 for P4 and P6.

For the purposes of the analysis all the responses of participants N9, N15 and N39 were not included. The numbers for strategies per picture for the resulting data set are shown in table 3.2.

Table 3.2 Number of Strategies Per Picture

Strategies	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
FS	2	3	2	0	1	0
FSPRS	1	2	0	1	0	1
FSSS	8	2	3	6	5	2
PRS	13	6	3	18	13	19
PRSSOO	3	3	0	0	0	1
PS	0	0	1	0	0	0
PSPRS	1	0	4	3	0	0
PSSS	0	1	6	4	0	0
SOO	3	3	11	4	3	6
SOOSS	6	10	2	4	7	4
SS	11	18	16	8	19	15
Total	**48**	**48**	**48**	**48**	**48**	**48**

The following subsections demonstrate the proportions of strategies per picture.

4.1.1 Picture 1 Strategies

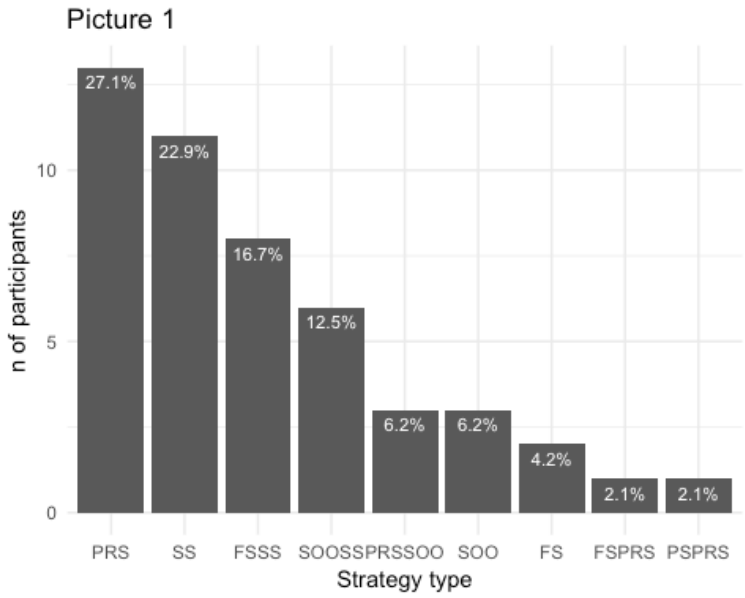


Figure 3.12 P1 Strategies Proportion

Figure 3.12 demonstrates that the majority of the participants chose one of the scanning strategies of PRS (13; 27%) or SS (11; 23%). SOO (3; 6%) and its combinations with scanning strategies SOOSS (6; 12%) and PRSSOO (3; 6%) form 24% of the responses to P1. SDs containing elements of frame strategy FSSS (8; 17%), FS (2; 4 %), and FSPRS (1; 2%) combined form about 23% of descriptions of this picture.

4.1.2 Picture 2 Strategies

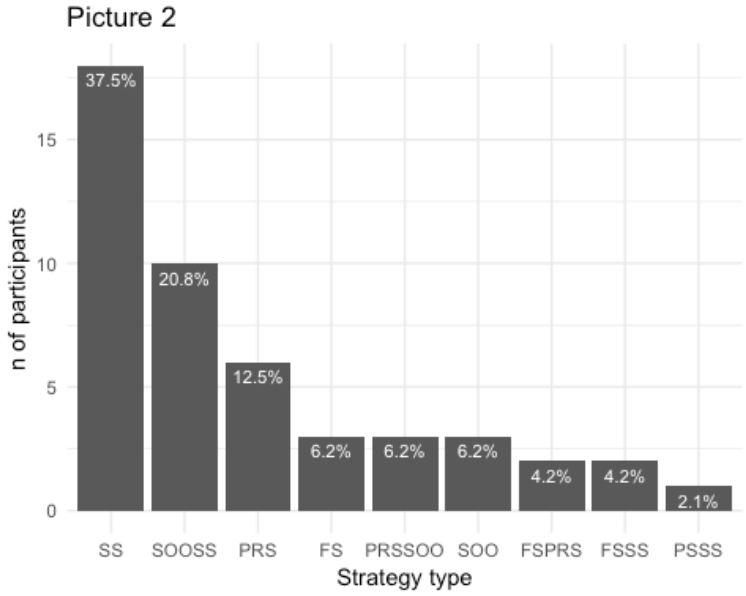


Figure 3.13 P2 Strategies Proportion

Figure 3.13 demonstrates that the most frequent strategies for P2 all have an element of scanning SS (18; 37.5%), SOOSS (10; 20.8%) and PRS (6; 12.5%). Also, approximately 15% of responses contain frame elements FS (3; 6.2%), FSPRS (2; 4.2%) and FSSS (2; 4.2%). Only one response contains elements of path strategy mixed with SS.

4.1.3 Picture 3 Strategies

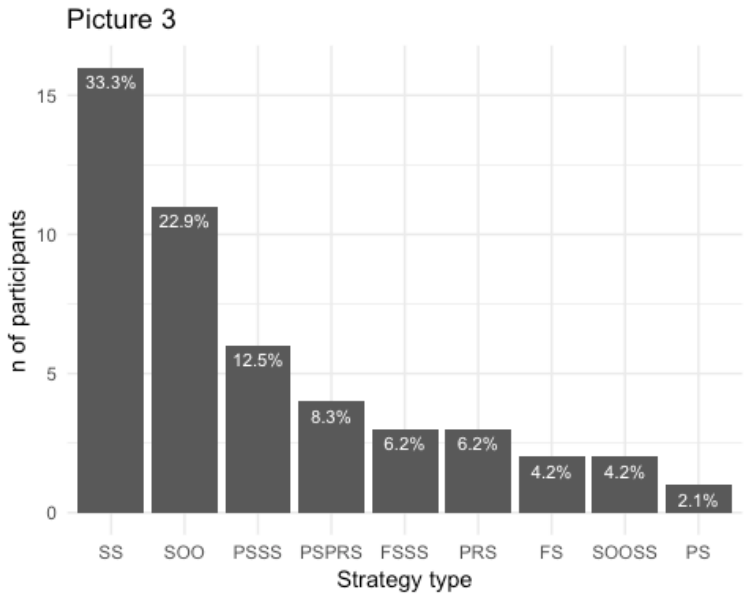


Figure 3.14 P3 Strategies Proportion

The most frequent strategy of description for P3 is SS, with 16 (33%) of participants following it in their responses to the stimuli. The second most frequent SD strategy is SOO (11, 23%). The total frequency of the descriptions containing path elements is around 21%, which is the highest in the given data set, and the data for this picture contains the only PS response within the corpus. FS as a strategy, and as an element in mixed descriptions, is present in approximately 10 % of the responses to P3.

4.1.4 Picture 4 Strategies

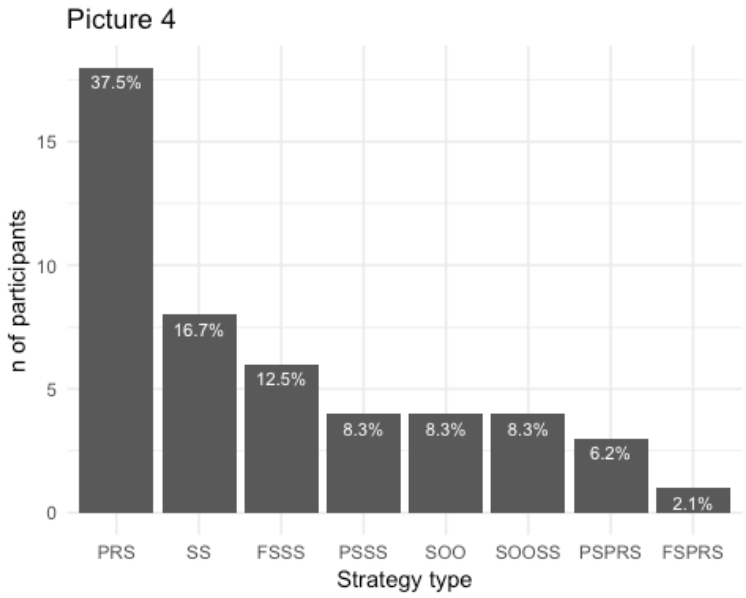


Figure 3.15 P4 Strategies Proportion

The prevailing strategy of description is scanning with PRS (18; 37.5%) and SS (8; 17%). SOO strategy for this picture was used only by 8% (4) of the participants. Most of the mixed strategies include one of the scanning strategies, and are almost equally divided between the strategies containing FS, FSSS (6; 12%) and FSPRS (1; 2%), and strategies containing PS elements, PSSS (4; 8%) and PSPRS (3; 6%).

4.1.5 Picture 5 Strategies

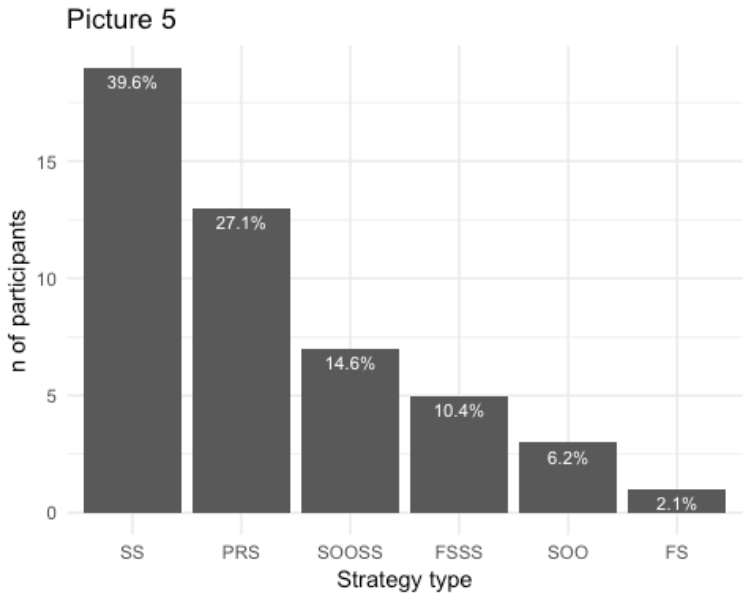


Figure 3.16 P5 Strategies Proportion

The prevailing strategies for description of this picture are scanning with SS (19; 40%) and PRS (13; 27%). SOO as an independent strategy makes up a 6% (3) of the responses, and 15% (7) as a mixed strategy with scanning. FS strategy is present within the response data as an independent strategy FS (1; 2.1%) and as a mixed FSSS (5; 10%).

4.1.6 Picture 6 Strategies

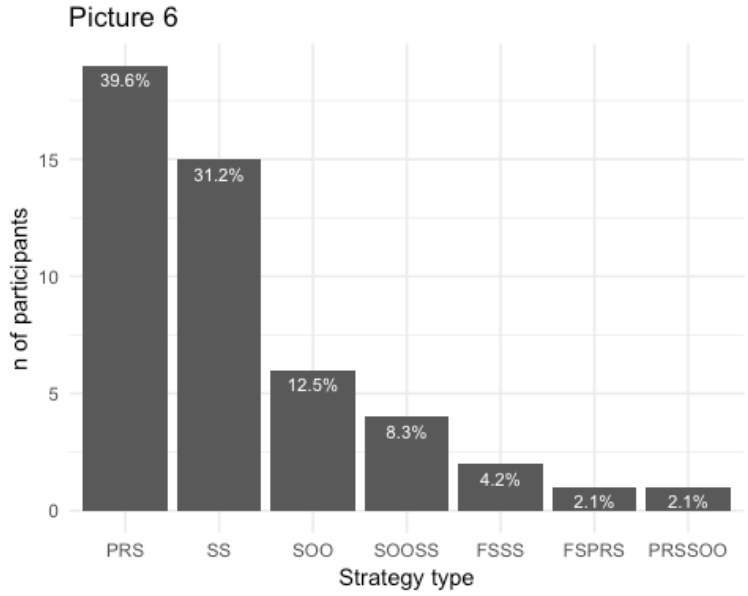


Figure 3.17 P6 Strategies Proportion

Prevailing strategies for this picture are PRS (19; 40%) and SS (15; 31%). SOO is represented as an independent strategy (6; 12%), and in combination with SS (4; 8%) and PRS (1; 2%). FS is found only in combinations with scanning strategies FSSS (2; 4%) and FSPRS (1; 2%).

From a brief overview of the strategies per picture we can observe that the last two pictures, P5 and P6, have less variation of strategies than the other pictures. P5 and P6 are described with 6-7 strategies including mixed ones with prevailing scanning and outstanding objects strategies. Pictures from P1 to P3 have a variation of 9 strategies per picture, and P4 has 8. Also, along with the considerable number of scanning strategy SDs, pictures P1 to P4 demonstrate relatively high frequency of FS and PS elements. The initial hypothesis of the influence of the pictures' main features were statistically tested, and the results of the tests are described in the next section.

4.2 Category (Cat)

Category (Cat) is a generalized association with the picture presented to the participant, and it's their first articulated reaction to the stimuli. Investigation of types of Cat aims to describe how the participants of the survey label a visual spatial stimulus in speech, and to discuss a number of factors affecting categorization.

In this part of chapter I will describe the types of Cat observed within the corpus and possible connections of Cat with features of the visual stimuli, description strategies and participants' individual patterns of spatial description.

As the first step of the analysis all Cats were coded by their semantic features. All 288 zero (13; 4,5%) and non-zero (275) Cats were extracted from the corpus; the frequencies for each lexical item with the function of category were calculated per picture. The categories associated with each picture were grouped by semantic features. Twelve category types were formulated, the types and their codes used for data annotation are presented in table 3.3.

Table 3.3 Codes for Category

Cat Codes	Full Code
ST_F	space type by function
SUPT	by type of superordinate
IN_OUT	inside/outside
ST	by space type
SUPT_ST	mixed by type of space and superordinate
MO	by main object(s)
SUPT_MO	mixed by main object(s) and superordinate
IN_OUT_MO	mixed by inside outside and main object(s)
ST_MO	mixed by main object(s) and type of space
TP	by type of picture
MO_T	mixed by main object(s) and time
Z	zero category

Six independent category types were detected (table 3.4). They were Type of Space (98 tokens, 34%), Main Object(s) (50 tokens, 17%), Type of space by function (24, 8%), Type of Superordinate (20 tokens, 7%), Inside/Outside (14 tokens, 5%) and Type of Picture (9 tokens, 3%).

A number of combinations of these five types were also present within the corpus: Type of Space & Main Object(s) (34 tokens, 12 %), Superordinate & Main Object(s) (10 tokens, 4%), and Type of space & Superordinate (8, 3%).

Two of the least frequent mixed types of category were Main Object(s) & Time (6, 2%), and Inside/Outside & Time (2, 0.7%) include temporal markers as well as spatial. For quantitative analysis these two types will be added to their major independent types, MO and IN_OUT.

Table 3.4 Overall Frequency of Each Category Type

Cat Codes	Freq	Pct	Code Full
ST	98	34.0%	by space type
MO	50	17.4%	by main object(s)
ST_MO	34	11.8%	mixed by main object(s) and type of space
ST_F	24	8.3%	space type by function
SUPT	20	6.9%	by type of superordinate
IN_OUT	14	4.9%	inside/outside
Z	13	4.5%	zero category
SUPT_MO	10	3.5%	mixed by main object(s) and superordinate
TP	9	3.1%	by type of picture
SUPT_ST	8	2.8%	mixed by type of space and superordinate
MO_T	6	2.1%	mixed by main object(s) and time
IN_OUT_MO	2	0.7%	mixed by inside outside and main object(s)

Examples of category expressions of different types could be found in table 3.5, which demonstrates the expressions of category with a frequency higher than one for each picture.

Table 3.5 Category with Frequency > 1

PicID	Cat Code	Category	Romanization	Translation	Freq per Picture	Pct
P1	ST_F	リビングルーム	ribinguruumu	living room	7	14.6%
P1	ST	部屋	heya	room	6	12.5%
P1	SUPT	マンションの一室	manshon no isshitsu	one of the rooms of apartment building	3	6.2%
P1	ST_F	リビング	ribingu	living (room)	3	6.2%
P1	IN_OUT	部屋の中	heya no naka	inside the room	3	6.2%
P2	ST	和室	washitsu	Japanese-style room	19	39.6%
P2	ST	日本間	nihonma	Japanese-style room	3	6.2%
P2	SUPT	日本家屋	nihonkaoku	Japanese house	2	4.2%
P2	ST	和室のような部屋	washitsu no yoo na heya	Japanese-style like room	2	4.2%
P2	ST	和室の部屋	washitsu no heya	Japanese-style room	2	4.2%
P3	MO	交差点	koosaten	crossing	10	20.8%
P3	MO	道路	dooro	road; highway	4	8.3%
P3	SUPT_MO	都会の道路	tokai no dooro	road in the city	3	6.2%
P4	ST	田舎の風景	inaka no fuukei	countryside landscape	10	20.8%
P4	Z	zero	zero	zero	4	8.3%
P4	ST	田舎	inaka	coundtryside	4	8.3%
P4	ST	田園風景	denenfuukei	rural landscape	3	6.2%
P4	ST	田舎の田園風景	inaka no denenfuukei	countryside rural landscape	2	4.2%

PicID	Cat Code	Category	Romanization	Translation	Freq per Picture	Pct
P4	ST	農村の風景	nooson no fuukei	farm village/rural landscape	2	4.2%
P5	ST	テーブルの上	teeburu no ue	on the table	5	10.4%
P5	Z	zero	zero	zero	3	6.2%
P5	MO	コーヒーのセット	koohii no setto	cofee set	3	6.2%
P5	MO	コーヒー	koohii	coffee	2	4.2%
P5	ST	テーブル	teeburu	table	2	4.2%
P6	Z	zero	zero	zero	6	12.5%
P6	ST	テーブルの上	teeburu no ue	on the table	5	10.4%
P6	ST	机の上	tsukue no ue	on the desk	3	6.2%
P6	MO	日本茶のセット	nihon cha no setto	Japanese tea set	3	6.2%
P6	ST_MO	テーブルの上にお茶のセット	teeburu no ue ni ocha setto	tea set on the table	2	4.2%

Almost 40% (19) of participants have chosen ST with *washitsu* (和室, “Japanese-style room”) for P2; participants frequently categorized P4 by ST, for example, *inaka no fuukei* (田舎の風景, “countryside landscape”; 10 tokens, 21%), *inaka* (田舎, “countryside”; 4 tokens, 8.3%) and *denenfuukei* (田園風景, “rural landscape”; 3 tokens, 6.2%). For pictures P5 and P6 ST category representations are P5 *teeburu no ue* (テーブルの上, “on the table”; 5, 10.4%), *teeburu* (テーブル, “table”; 2, 4.2%) and *tsukue no ue* (机の上, “on the desk”; 3, 6.2%).

MO type category is well represented among such frequent categories for P3 as *koosaten* (交差点, “crossing”; 10, 20.8%) and *dooro* (道路, “road; highway”; 4, 8.3%), for P5 as *koohii*

no setto (コーヒーのセット, “cofee set”; 3, 6.2%) and *koohii* (コーヒー, “coffee”; 2, 4.2%), for P6 as *nihon cha no setto* (日本茶のセット, “Japanese tea set”; 3, 6.2%).

ST_MO is the third category type by frequency for the whole corpus, but there is only one example of this type among the most frequent category expressions - *teeburu no ue ni ocha setto* (テーブルの上にお茶のセット, “tea set on the table”; 2, 4.2%) for P6.

Examples of the ST_F type category could be found in P1 with *ribinguruumu* (リビングルーム, “living room”; 7 tokens, 15%) and *ribingu* (リビング, “living (room)”; 3, 6%).

Examples of SUPRT categories can be found in such frequent categories for P1 as *manshon no isshitsu* (マンションの一室, “one of the rooms of apartment building”; 3, 6.2%) and for P2 as *nihonkaoku* (日本家屋, “Japanese house”; 2, 4.2%).

In table 3.5, the IN_OUT category is represented by *heya no naka* (部屋の中, “inside the room”; 3, 6.2%) for P1. There is also an example of SUPT_MO type category for P3 - *tokai no dooro* (都会の道路, “road in the city”; 3, 6.2%).

TP is represented in the corpus with collocations with frequency 1, describing either the type of the picture or the participant’s impression of the picture, for instance, for P6, *seibutsu no shashin* (静物の写真, “still life picture”) or *chotto nita shashin* (ちょっと似た写真, “a bit similar picture”).

Examples of the SUPT_ST category can be found among the categories given for P2, e.g., *nihon no ouchi no cha no ma* (日本のお家の茶の間, “Japanese-style living room in Japanese house”), or for P5 *ribingu no teeburu no ue* (リビングのテーブルの上, “on the living room’s table”).

MO_T categories are found as categories produced only for P5 and P6, describing the whole setting of the picture in temporal terms, e.g. *koohii, oyatsu no ojikan* (コーヒー、おやつのお時間, "coffee, snack time") or *ocha no taimu* (お茶のタイム, "tea time").

IN_OUT_MO category is represented only by two category expressions produced for P3 - *soto no oodoori* (外の大通り, "big street outside") and *soto no dooro no fuukei* (外の道路の風景, "view of a big street outside").

Distribution of Cat for each picture is demonstrated in figures 3.18 – 3.23 below.

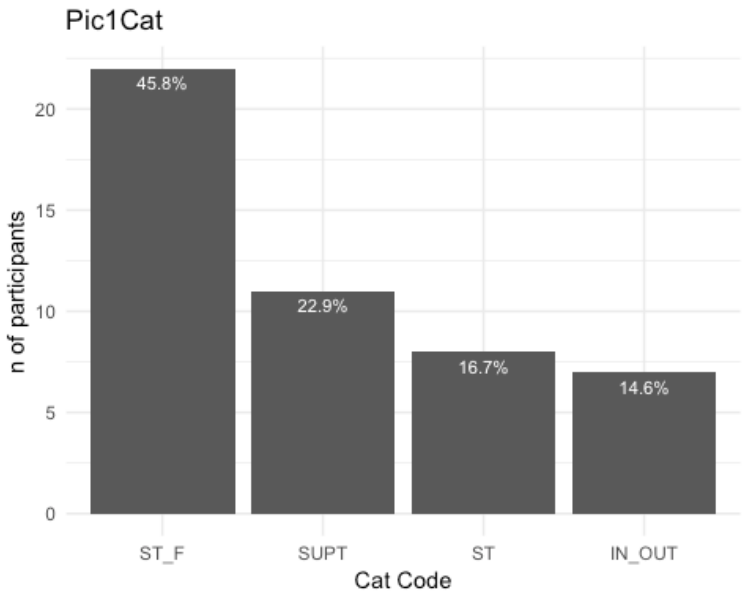


Figure 3.18 P1 Category

Figure 3.18 shows the types of category participants produced for P1. There are four types only, and ST_F is prevailing with 46% (22 participants). Overall, ST_F and ST take up about 63% of the responses to P1.

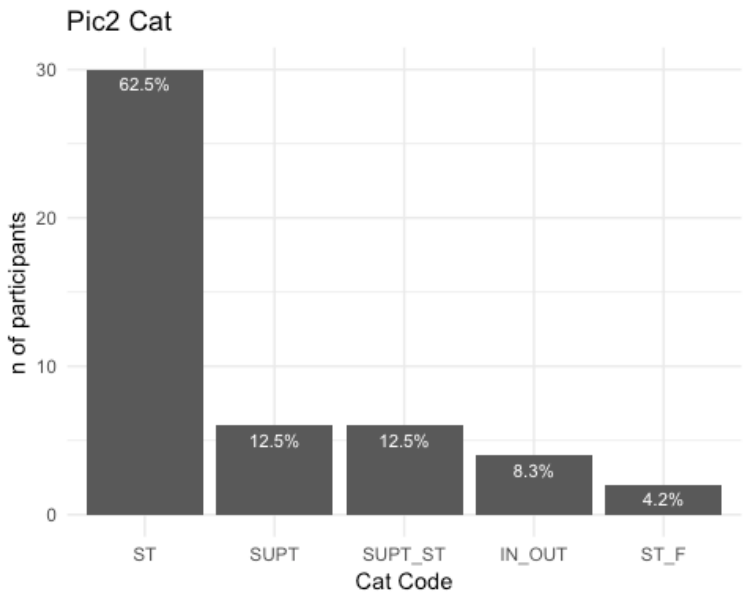


Figure 3.19 P2 Category

P2 has five different types of category. ST is the most frequent type with about 63% (30) participants utilizing this type to categorize the space depicted on this picture. In comparison with P1 it has one category type more with SUPT_ST at about 13% (6 participants).

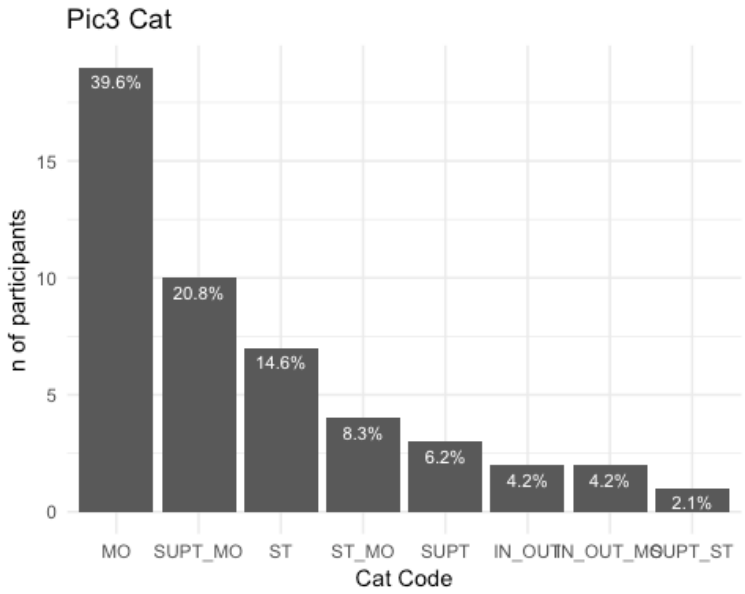


Figure 3.20 P3 Category

P3 has a much wider variety of Cat types than P1 and P2. As shown in the figure 3.20, there are eight category types with 40% (19) MO and 21% (10) of SUPT_MO. Overall, elements of the main object (MO) type are present in around 73% of responses to P3.

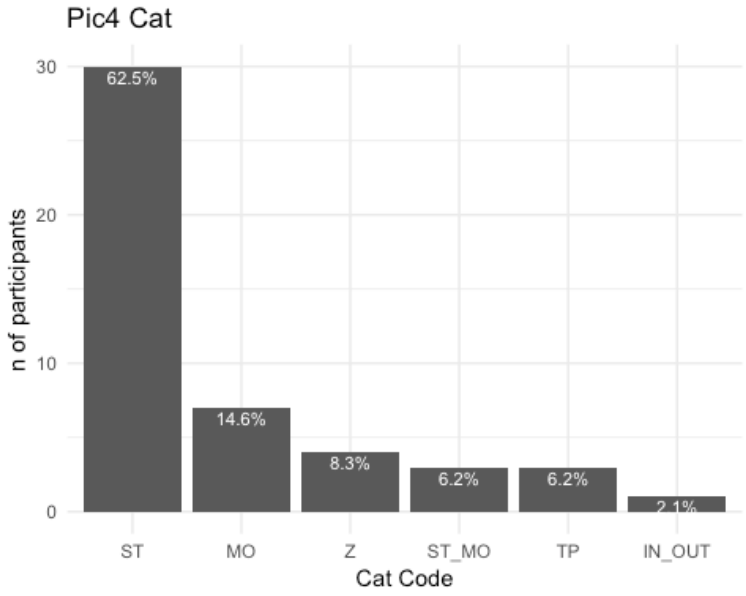


Figure 3.21 P4 Category

For P4 ST is prevailing at 60% (29). In comparison with P1-3 there is also high percentage of zero category responses (8%, 4) and TP responses (6%, 3).

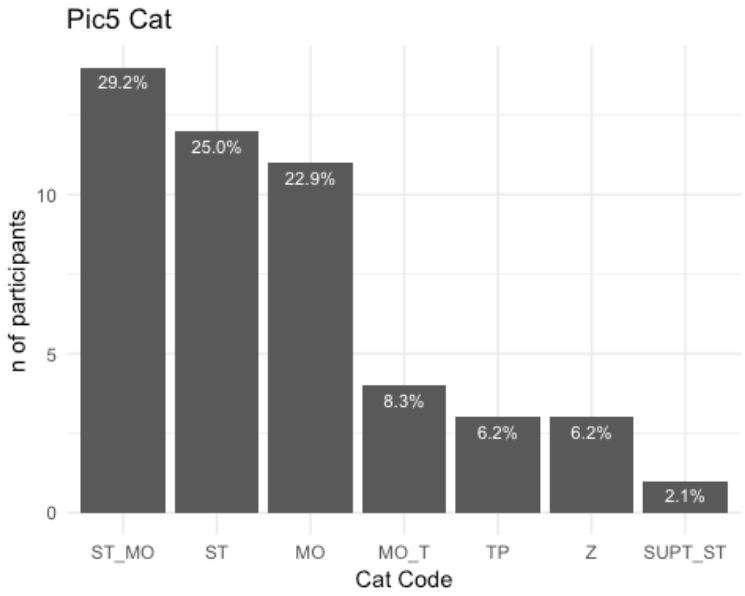


Figure 3.22 P5 Category

In total there are seven different types of Cat in the responses to P5. The three most frequent Cat types are ST_MO (30%; 14), ST (25%; 12) and MO (23%; 11).

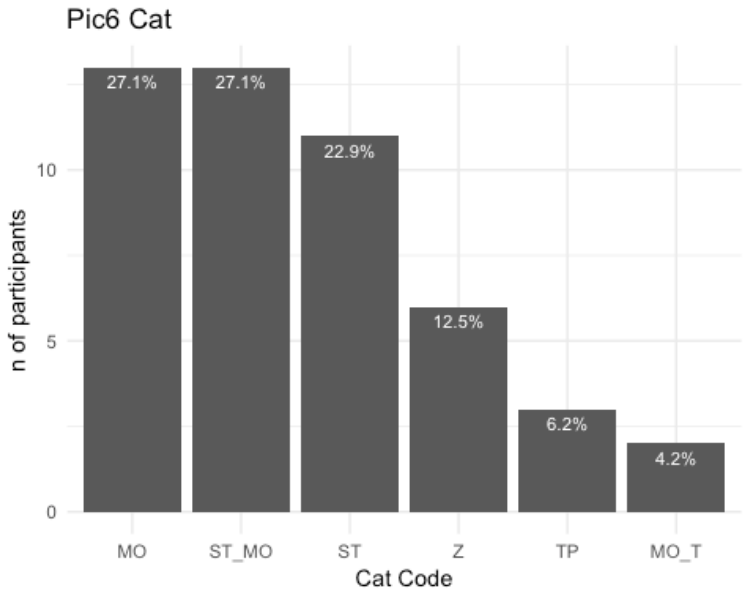


Figure 3.23 P6 Category

The distribution of category types for P6 is very similar to that of the P5. There are three most frequent category types MO (27%; 13), ST_MO (27%; 13) and ST (23%; 11).

The sets of types of Cats are similar for the pairs of pictures with room feature (P1 and P2) and table feature (P5 and P6). The differences between the sets of Cats for P3 and P4 (road feature) can be interpreted through the internal features of the two pictures, while P3 demonstrates both static objects and the objects that are depicted as moving through the picture, all the objects in the P4 are static.

4.3 Figure, Landmark, Relator and Relations Predicate

Figure, Relator, Landmark and Relations Predicate are the cores of spatial description. This section demonstrates the lexical items used by the most participants of the experiment as Figures, Relators, Landmarks and Relations Predicate for each picture. Such an overview aims to present the expressions of spatial relations on the lexical level.

4.3.1 Figure (F)

Figure is an expression utilized to point to an object whose location is being described.

A total number of 2857 tokens of Figure was found in the corpus.

An overall list of Fs with more than five participants utilizing this particular expression for the particular item in the picture is demonstrated in table 2.2 in the appendix. More detailed information on the most frequent expressions of F per picture is given in figures 3.24 – 3.35. Each figure demonstrates the expression of F used by more than five participants to point at a certain object at the picture.

4.3.1.1 Picture 1 Figure

There were 19 words that were produced by more than five participants as Fs in descriptions of P1 (figures 3.24, 3.25). The words with the highest frequency are *sofa* (ソファ, “sofa”) used by 44 participants (92%), *piano* (ピアノ, “piano”) by 42 (88%), *e* (絵, “picture”) by 41

participant (85%), *kitchin* (キッチン, “kitchen”) by 31 (65%), and *mado* (窓, “window”) by 29 (60%).

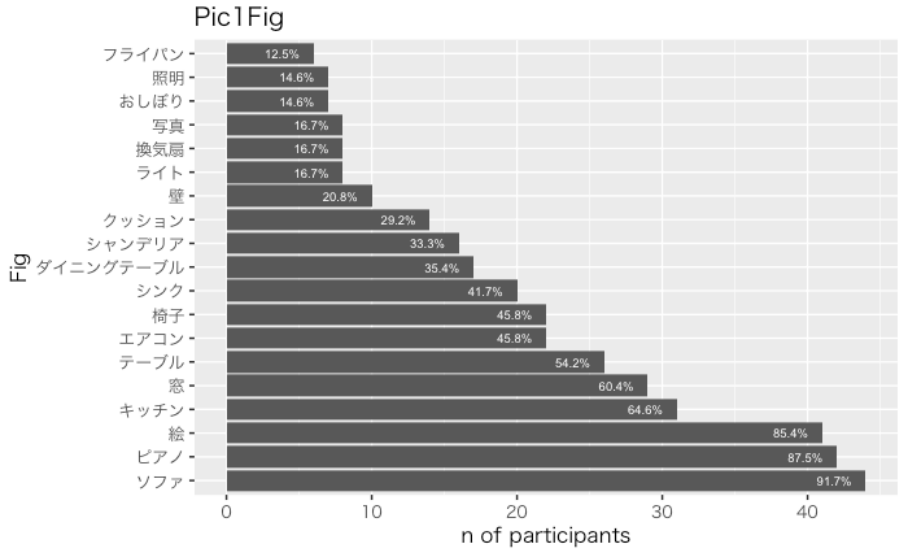


Figure 3. 24 P1 Figure

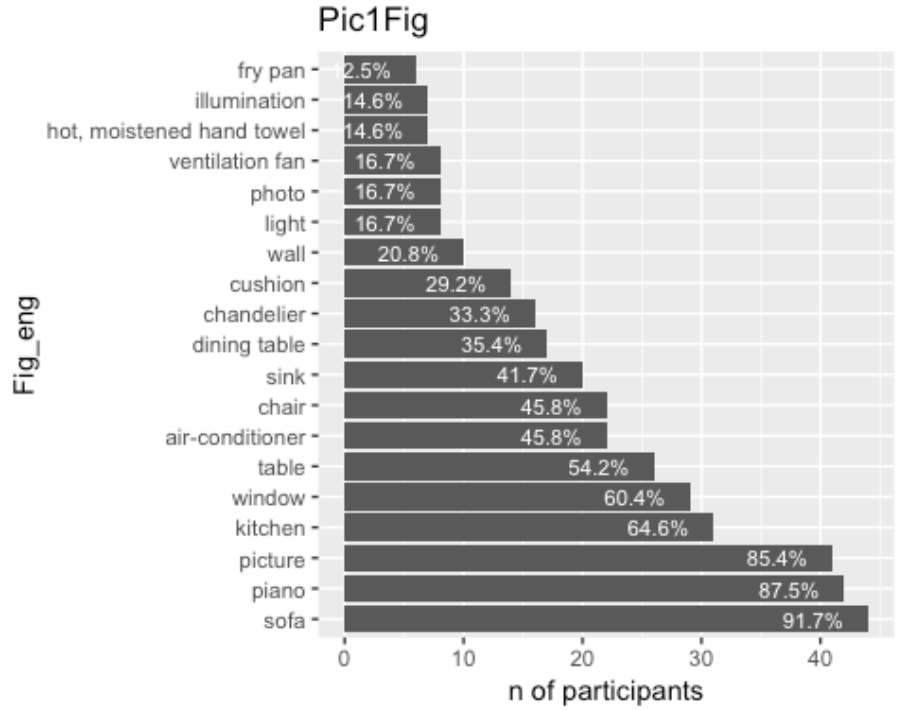


Figure 3.25 P1 Figure Eng

As seen in visualization 1, the objects in P1 most frequently described with the same lexical items are located from right to left and from back to the front of the picture.



Visualization 1 P1 Figure

4.3.1.2 Picture 2 Figure

There are 20 words utilized by more than 5 participants to name the F of P2. The most frequent lexical items used to express F in P2 are *zabuton* (座布団, "zabuton") used by 42 (88%) participants, *tansu* (箪笥, "dresser") by 34 (71%), *fusuma* (襖, "fusuma") by 29 (60%), *owan* (お椀, "bowl; teacup") by 21 (44%) and *ranma* (欄間, "transom") by 20 (42%).

The number of the lexical items is almost the same with P1; however, the number of participants identifying F with exactly the same lexical items is lower. The presence of the variation in naming the main objects in the picture is clear even among the most frequently used lexical items. While 71% of the participants utilize *tansu* for the dresser, 15% specify that it is a *wadansu* (和箪笥, "Japanese style dresser"); bowls at the table are named in different manners, ranging from *owan* (44%) to the more specific *ochawan* (お茶碗, "rice bowl; tea

cup; teacup"; 25%) and *yunomi* (湯のみ, "teacup"; 19%) to generalized *shokki* (食器, "tableware"; 15%).

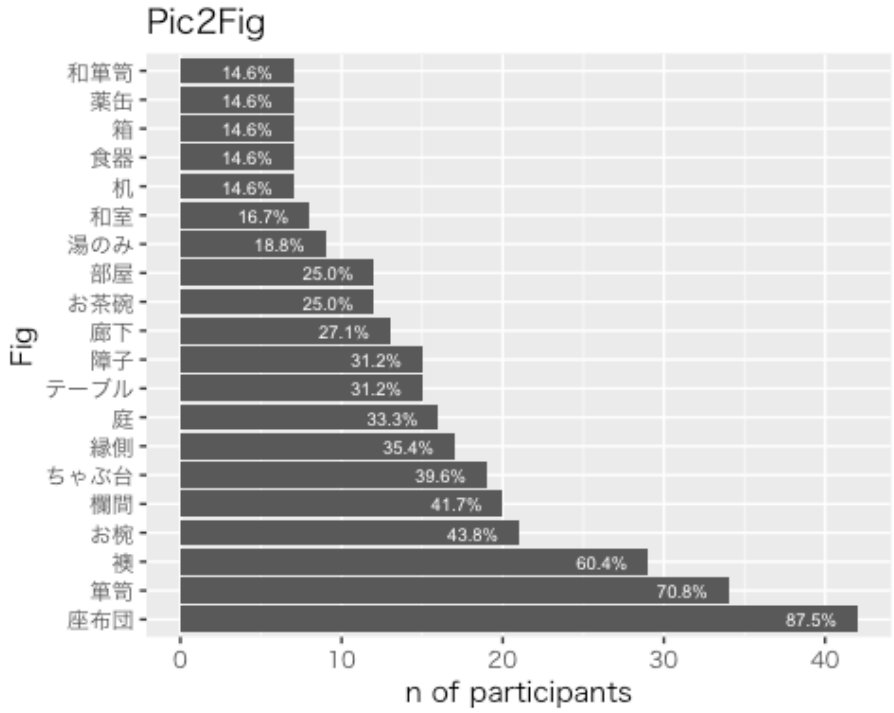


Figure 3.26 P2 Figure

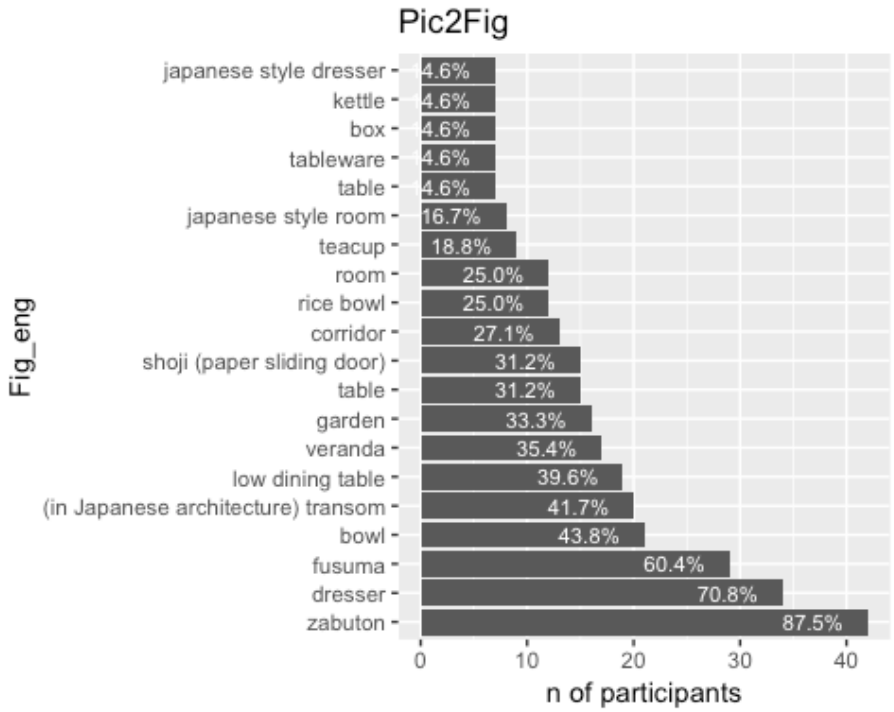
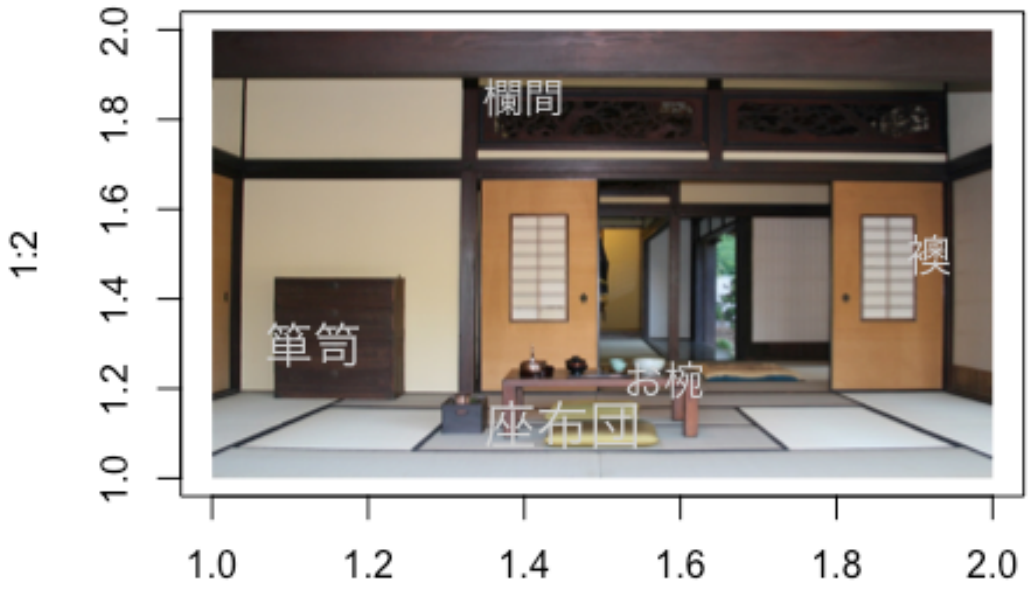


Figure 3.27 P2 Figure Eng

From visualization 2 it is clear that the location of the F objects most frequently designated with the same lexical items has its focal point around the table in the center of the room.



Visualization 2 P2 Figure

4.3.1.3 Picture 3 Figure

Expressions of F for P3 utilized by more than 5 participants are less diverse compared to P1 and P2. There are only nine words demonstrated in figure 3.28. The most frequent among them are *biru* (ビル, "building(s)"), which was used by 47 (98%) participants. *Kuruma* (車, "car(s)") was utilized by 36 (75%) participants for cars in general and *torakku* (トラック, "truck; lorry") was used by 13 (27%) for a truck in particular. There are also *oodanhodoo* (横断歩道, "pedestrian crossing") with 13 (27%) of participants using it, and *shingoo* (信号, "traffic light"; 12 participants, 25%). The appearance of one of the other most frequently used Fs for P3 - *hito* (人, "person; human being") is noteworthy as it is mentioned by 12 (25%) of participants to express absence of people in this picture.

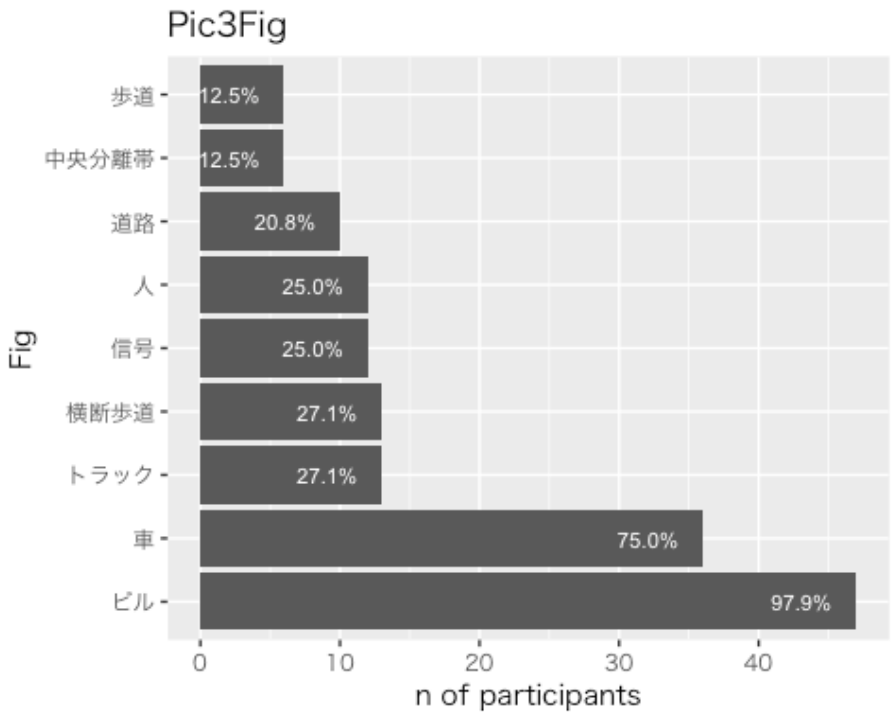


Figure 3.28 P3 Figure

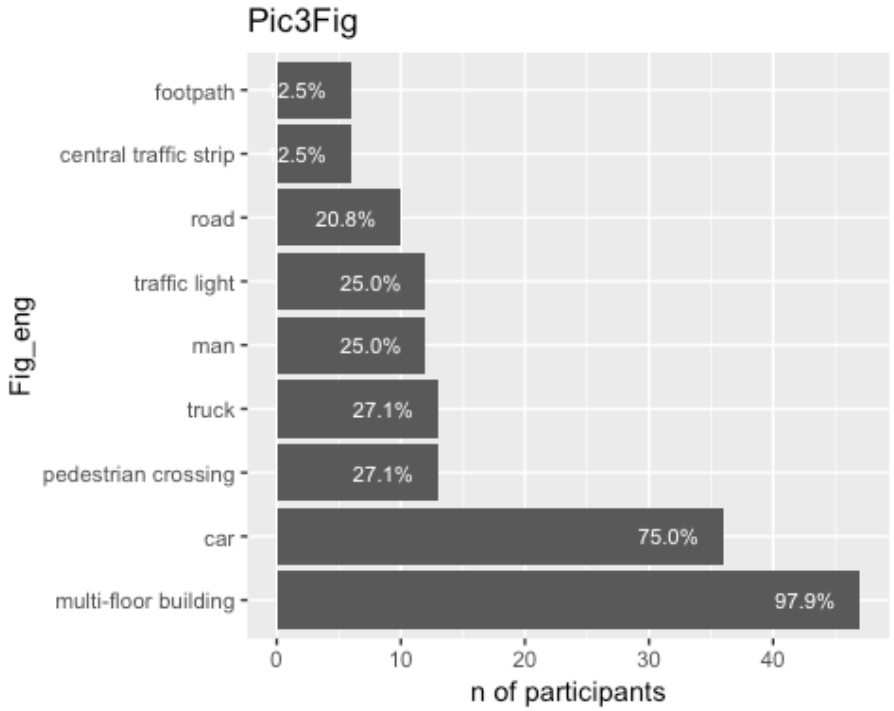
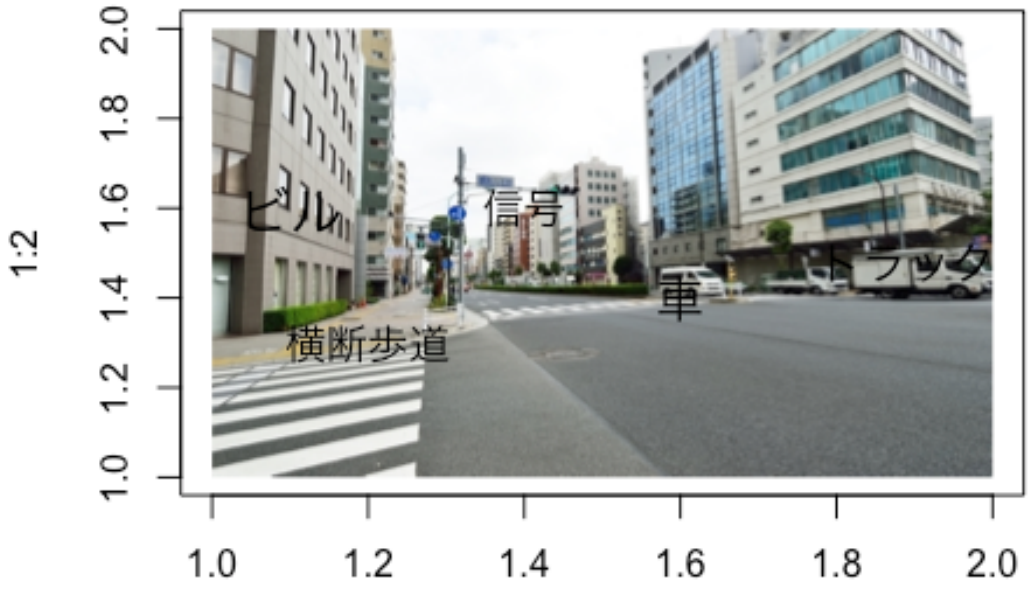


Figure 3.29 P3Figure Eng

The visualization of the most frequently used expressions of F for P3 demonstrates their location from left to right in an arch shaped form with an empty center.



Visualization 3 P3 Figure

4.3.1.4 Picture 4 Figure

There are 18 words that were utilized by participants to designate the Fs in description of P4. The most frequent of them are *torii* (鳥居, "torii") 44 (92%) participants, *yama* (山, "mountain") 32 (67%) participants, *tanbo* (田んぼ, "paddy field") 31 participants (65%), *kumo* (雲, "cloud") 26 (54%) participants, and *michi* (道, "road") 20 (42%) participants.

There is some variation in designation of the "road" and the "field" among the most frequently used expressions of F for this picture. Along with *tanbo* (田んぼ, "paddy field") utilized by 65% of participants, *suiden* (水田, "(water-filled) paddy field") was also used by 9

(19%) of participants, and instead of general *michi* (42%), the more specific *ipponmichi* (一本道, “direct unforked road”) was used by 8 (17%).

The presence of the word *jinja* (神社, “Shinto shrine”; 10, 21%) among the most frequent expressions of F demonstrates a case of contextual prediction as in P3 with *hito* (“person, people”), as the shrine itself is not seen in P4.

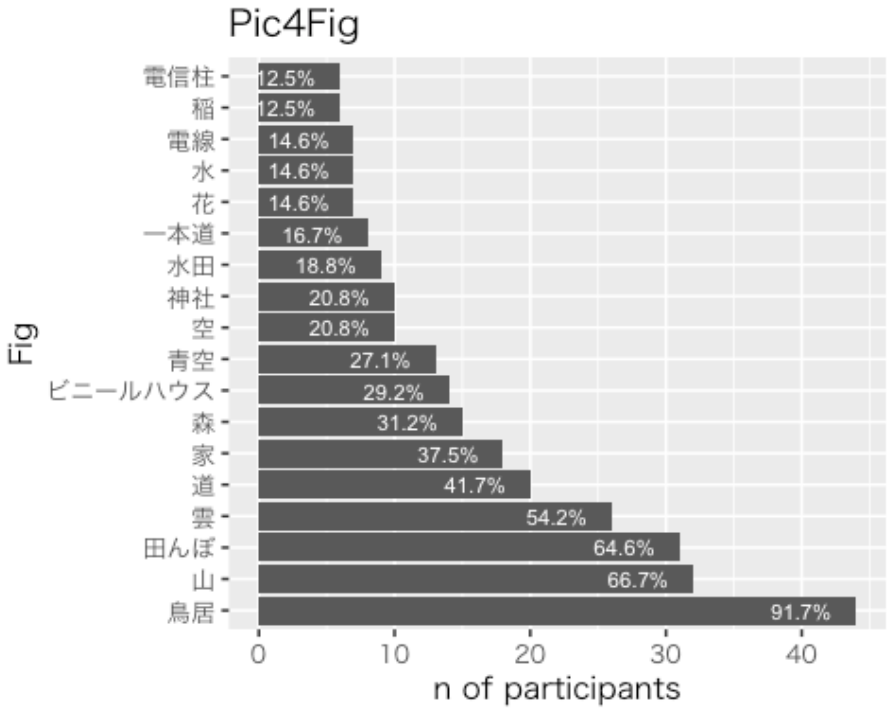


Figure 3.30 P4 Figure

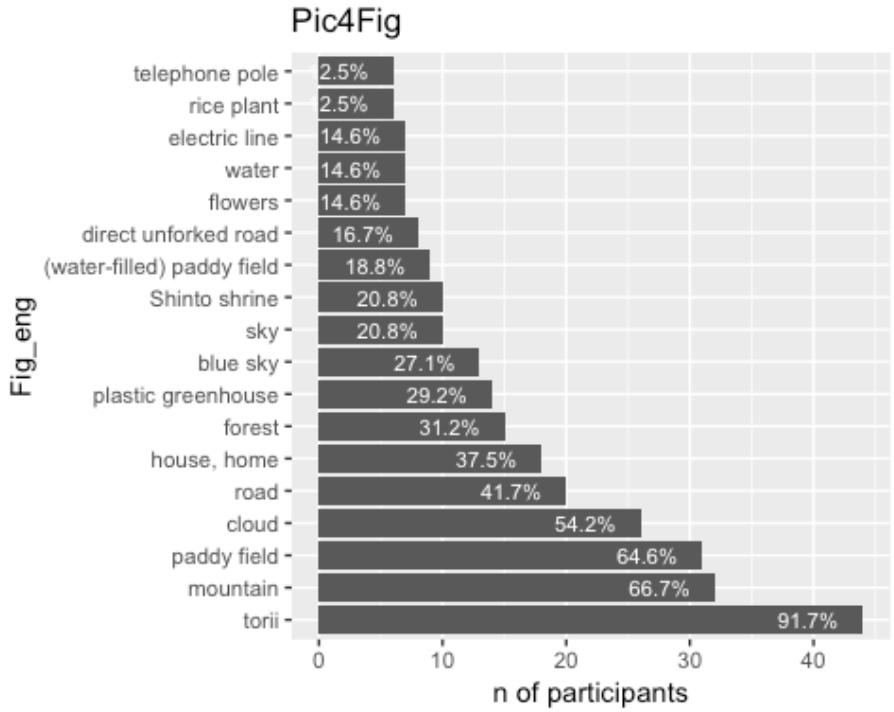


Figure 3.31 P4 Figure Eng

The visualization of the most frequently used expressions of F for P4 shows that the objects most frequently named with the same lexical items are located either in the front or in the back of this picture.



Visualization 4 P4 Figure

4.3.1.5 Picture 5 Figure

There are 13 words with more than 5 participants utilizing them as expressions of F for P5. In spatial descriptions of this picture all the items were referred to with the same lexical items by more than 5 participants as shown in figure 3.32.

The most frequent five lexical items are *megane* (眼鏡, "eyeglasses") used by 48 (100%) of participants, *hon* (本, "book") used by 46 (96%), *koohiimame* (コーヒー豆, "coffee beans") used by 34 (71%), *koohii* (コーヒー, "coffee") used by 30 (63%), and *bisuketto* (ビスケット, "cookie") by 20 (42 %).

There is also some variation in lexical items used for the same objects, such as 1) along with *bisuketto* (42% of participants) *kukkii* (クッキー, "cookie") was used by 13 (27 %) of participants and *kurakkaa* (クラッカー, "cracker") used by 6 (13%); 2) cup has the two most

frequent lexical items utilized to designate it: the more specific *koohiikappu* (コーヒーカップ, “coffee cup”; 11, 23%) and the general *kappu* (カップ, “cup”; 9, 19%).

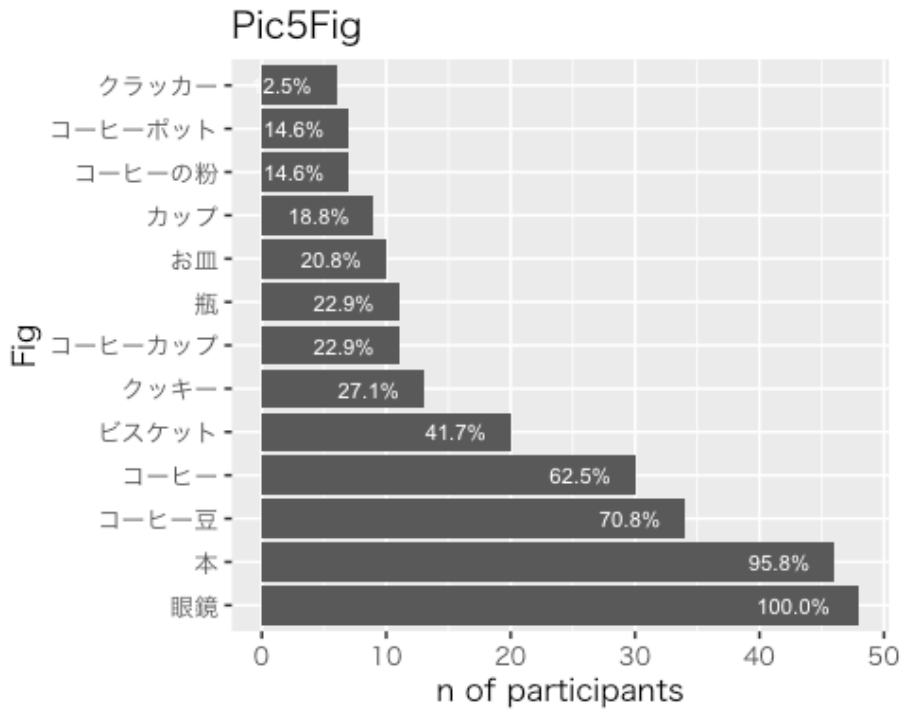


Figure 3.32 P5Figure

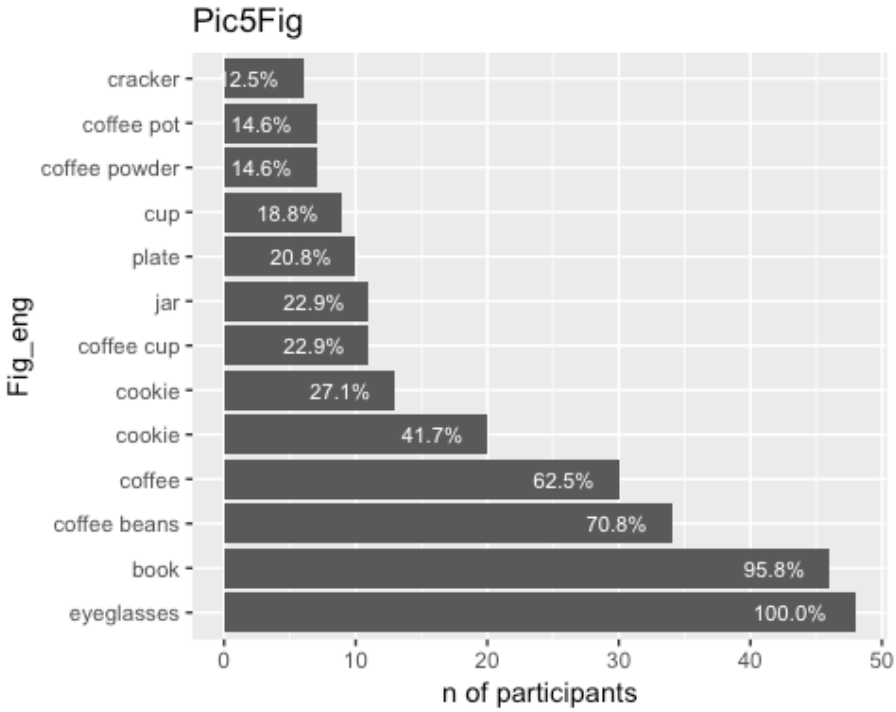


Figure 3.33 P5Figure Eng

From the visualization of the most frequently used expressions of F for P5 it is clear that the five objects which were most frequently named with the same lexical items are located predominantly in the front and the back-left part of the picture.



Visualization 5 P5 Figure

4.3.1.6 Picture 6 Figure

There are 14 words with more than five participants utilizing them to name the described object in P6. In spatial descriptions of this picture all the items were referred to with the same lexical items by more than 5 participants as shown in figure 3.34

The most frequent among them are *kyuusu* (急須, “teapot”) with 36 (75%) participants using it, *wagashi* (和菓子, “Japanese sweets”) with 34 (71%), *ocha* (お茶, “tea”) with 25 (52%), *eda* (枝, “branch”) with 25 (52%), *yooji* (楊枝, “skewer for eating moist wagashi”) with 15 (31%).

There is some variation among the frequent lexical items pointing to the Japanese sweets - *wagashi* was the most frequent with 71% of participants utilizing it, however, *okashi* (お菓子, “sweets”; 9, 19%) and *ochagashi* (お茶菓子, “cake served with tea”; 6, 13%) were also used by the participants of the experiment. There is also a lot of variation for naming the cup in this

picture, and some of the lexical items used to point to this F are among the most frequent ones, e.g. *yunomi* (湯のみ, “teacup”; 14, 29%), *chawan* (茶碗, “bowl”; 8, 17%), *ochawan* (お茶碗, “bowl”; 7, 15%).

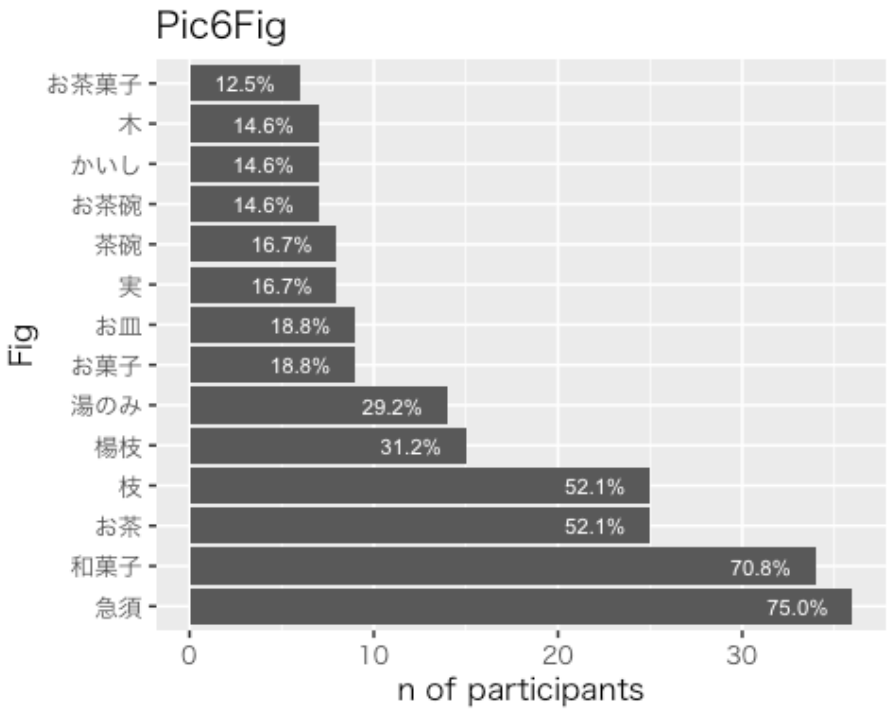


Figure 3.34 P6 Figure

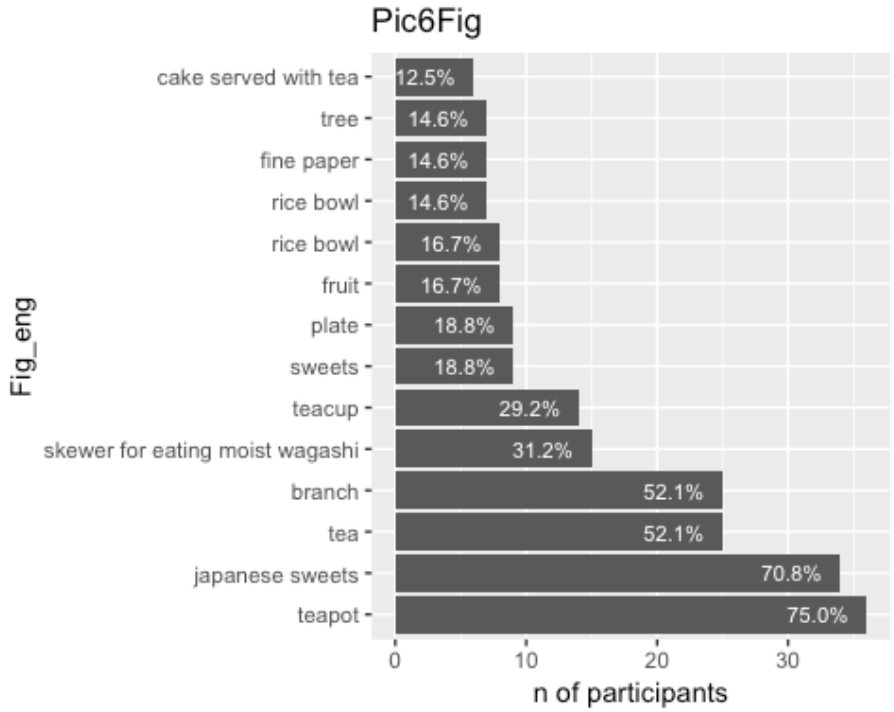
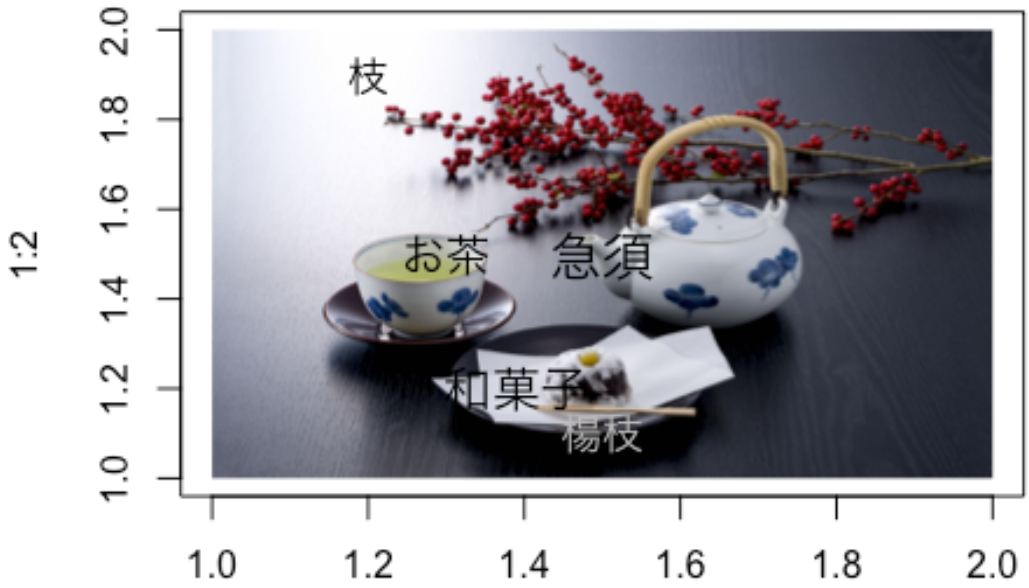


Figure 3.35 P6 Figure Eng

The visualization of the most frequently F expressions demonstrates that all the objects in P6 were referred to with the same lexical items by more than five participants.



Visualization 6 P6 Figure

Overall, P1 and P2 with the room feature, and P5 and P6 with the tabletop feature demonstrated similar trends in the designation of the Fs. Most of the participants utilized the same lexical items for the bigger objects, such as furniture, or for structural elements of the rooms for P1 and P2. For P5 and P6, the majority of the participants utilized the same lexical items for most of the objects in the pictures, with the exception of smaller objects in P5.

P3 and P4, both representing landscapes with the road feature, do not show such similarity as in the other two pairs. The number of Fs expressed with the same lexical item by a high number of participants is lower for P3, which can be related to the higher proportion of description with the PS element focusing on movement through the picture, rather than description of its static contents. However, for both of the pictures P3 and P4 there is a figure that an F, which is not shown in the picture but is mentioned within the description by a relatively high number of participants: *hito* ("person; people") for P3 and *jinja* ("shinto temple") for P4.

4.3.2 Landmark (Lm)

Lms are designations of objects utilized by the participants of the experiment to describe the relative locations of other objects - Figures. The spatial characteristics of the object chosen as Lms are already known by the speaker, or some of its characteristics such as geometric complexity, size or location make it more perceivable and accessible (Talmy 2000).

In total 2845 tokens of Lms were extracted from the corpus. Lexical items used by more than five participants as Lms in SDs for each picture are shown in table 2.3 in the appendix.

In this section, frequencies, the number of participants utilizing each particular Lm expression per picture, are demonstrated in figures from 3.36 to 3.47.

The most frequent designations of the Landmark for the whole corpus are zero Lm and Lm expressed with *sono* (その, "that") or variations of deictic pronouns, e.g. *soko* (そこ, "there"). Both of these two types of Lm expression can in context point to some particular Landmark; however, zero Lms can also refer to the space of the picture in general, i.e. geometrically more complex object, which is easier to perceive and categorize. For the analysis of types of spatial relations presented further in this work the objects pointed to with *sono* and zero Lm expressions were disambiguated by encoding, where it was possible to derive the Lm object from the context.

The second most frequent type of lexical item serving as Lms in SDs is a lexical item already utilized as a F, i.e. already familiar to the speaker. Therefore, the most frequent non-ambiguous expressions of Lms are primarily consistent with the most frequent expressions of F. In this section, the most frequent lexical items used by the participants are briefly outlined, highlighting the expressions of Lms pointing to the internal elements of the stimuli and to the observer.

4.3.2.1 Picture 1 Landmark

As shown in figures 3.36 and 3.37 some of the most frequent F such as *piano*, *sofa* or *mado* were utilized as Lms as well. However, there are two major differences in comparison with the F data for P1 - 1) lexical items with semantics of structural parts of the type of the space described - *kabe* (壁; 36, 75%) and *tenjoo* (天井; 24, 50%); 2) lexical items referring to the space or picture in general - *heya* (部屋; 19, 40%), *shashin* (写真; 8, 17%) were utilized as Lms by a relatively large number of the participants.

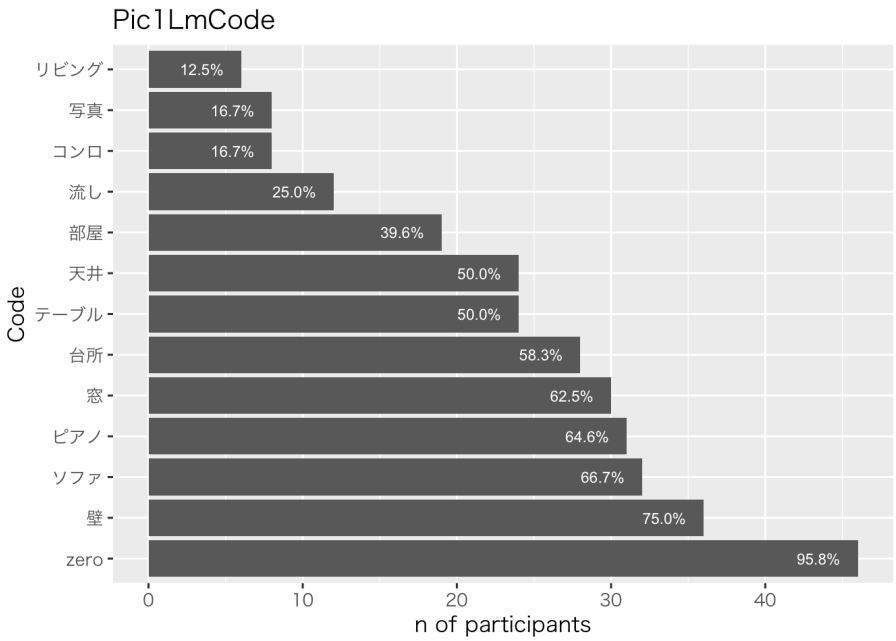


Figure 3.36 P1 Landmark

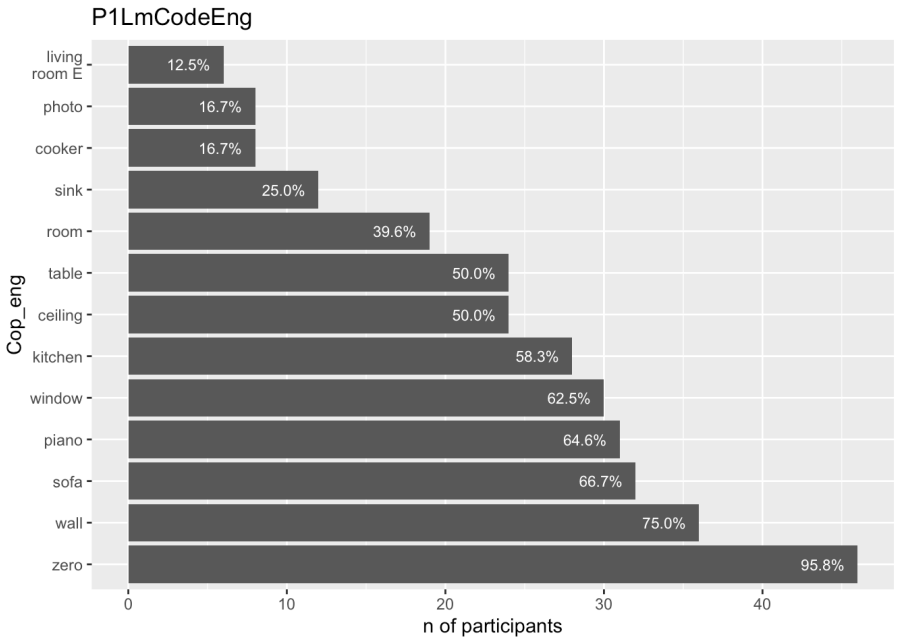


Figure 3.37 P1 Landmark Eng

4.3.2.2 Picture 2 Landmark

For P2, along with ambiguous Lms such as zero, *sono* and *soko*, and lexical items, the most frequently utilized as Fs for this picture, a structural element of this type of space, *kabe* (壁; "wall"; 16, 33%) was utilized as one of the most frequent Landmarks.

Also, the trend as in P1 Lms of usage of designations of the space itself or its parts – *heya* (部屋, "room"; 24, 50%), *washitsu* (和室, "Japanese style room"; 24, 50%), *rooka* (廊下, "corridor"; 12, 25%), *engawa* (縁側, "open corridor"; 11, 23%), *tonarinoheya* (隣の部屋, "next room"; 13, 27%) and *temaenoheya* (手前の部屋, "front room"; 11, 23%) shows in the most frequently utilized Lm for P2.

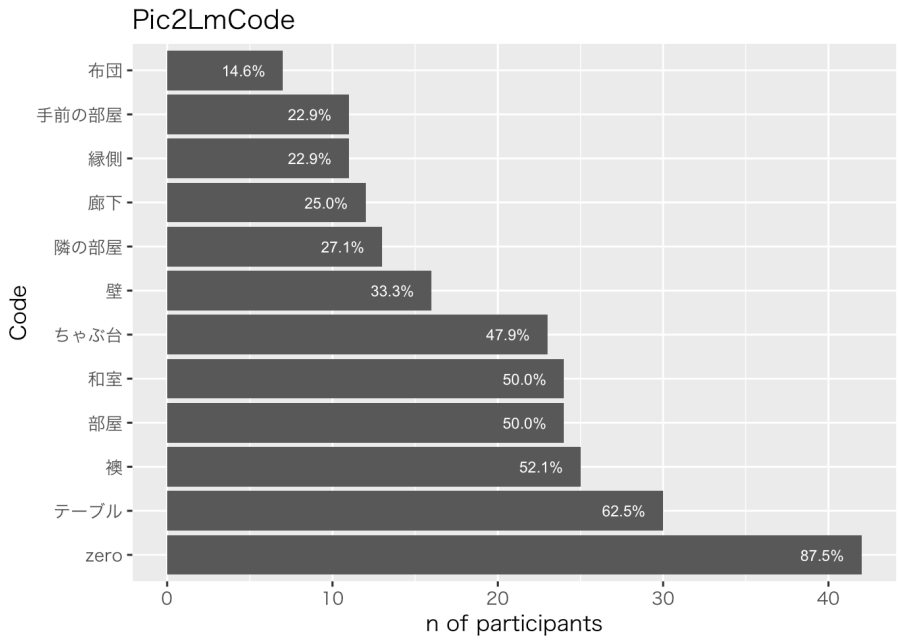


Figure 3.38 P2 Landmark

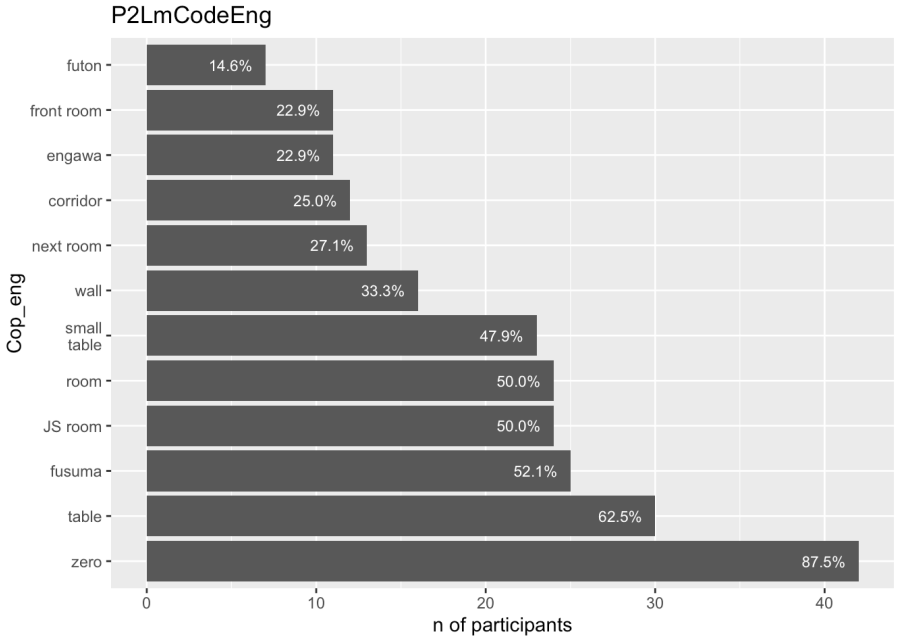


Figure 3.39 P2 Landmark Eng

4.3.2.3 Picture 3 Landmark

In connection to the space type depicted in P3 and, presumably, the usage of PS elements, one of the types of expression of Lms produced by more than five participants were deictic pronouns *koko* (ここ, "here") and *kochira (*こちら, "here"). These deictic pronouns, implying the projection of the speaker to the described space, were encoded as *koko* (ここ, "here") and were utilized by 16 (33%) of the participants. As an Lm designating the frame of the picture, *gamen* (画面, "screen") was used by 7 (15%) participants.

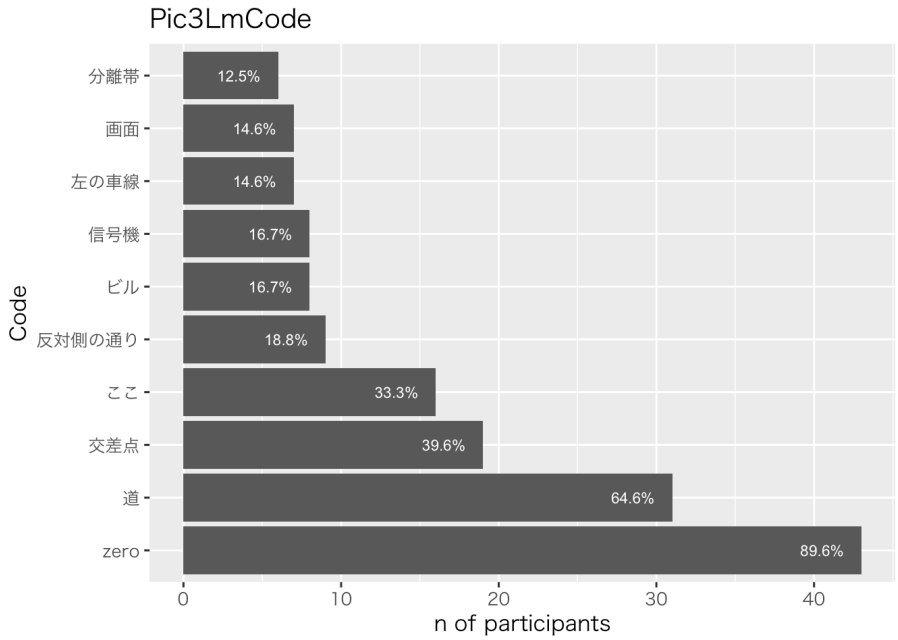


Figure 3.40 P3 Landmark

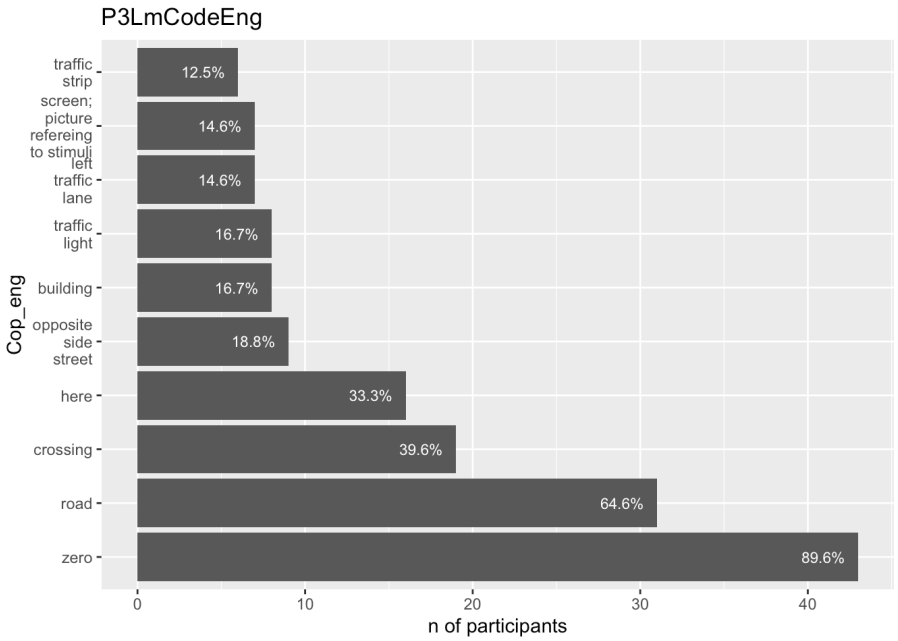


Figure 3.41 P3 Landmark Eng

4.3.2.4 Picture 4 Landmark

Among the most frequent expressions of Lm for P4, two Lms representing the frame of the objects described – *gamen* (画面, "screen"; 9, 19%) and *shashin* (写真, "picture"; 9, 19%) were utilized.

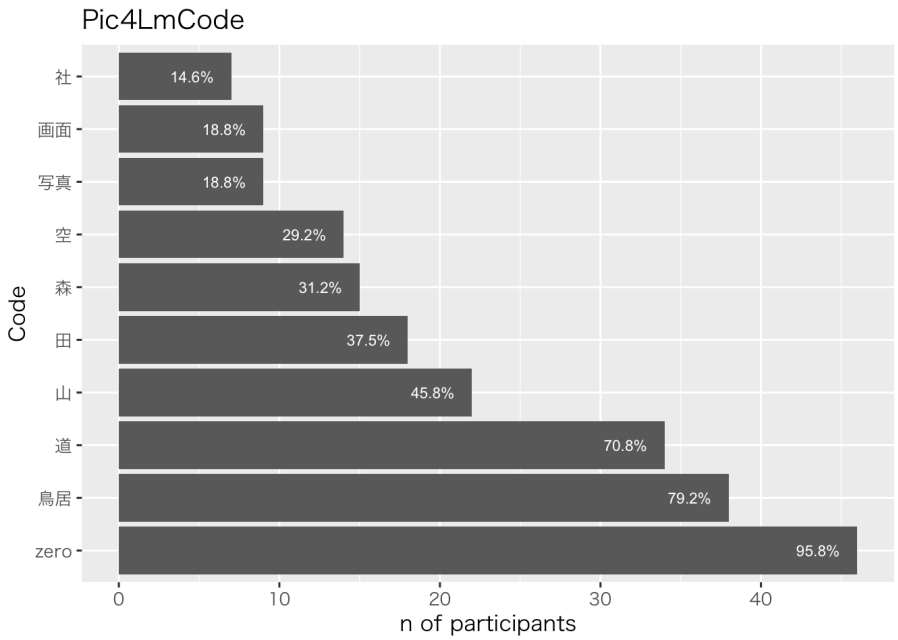


Figure 3.42 P4 Landmark

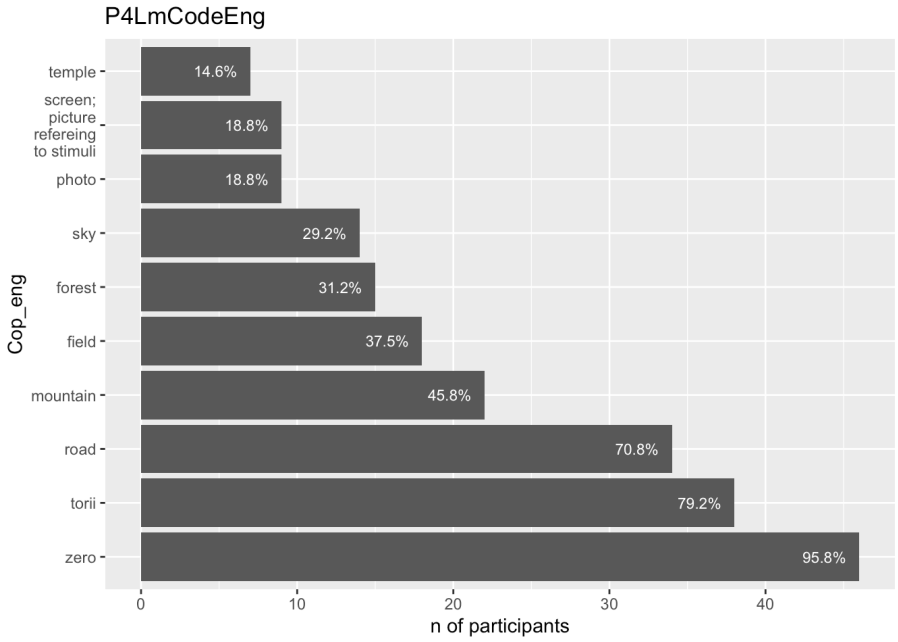


Figure 3.43 P4 Landmark Eng

4.3.2.5 Picture 5 Landmark

Similar to P4, two expressions of Lm referring to the frame of the stimuli *gamen* (画面, "screen"; 6, 13%) and *shashin* (写真, "picture"; 6, 13%) were among the most frequently utilized by participants of the experiment.

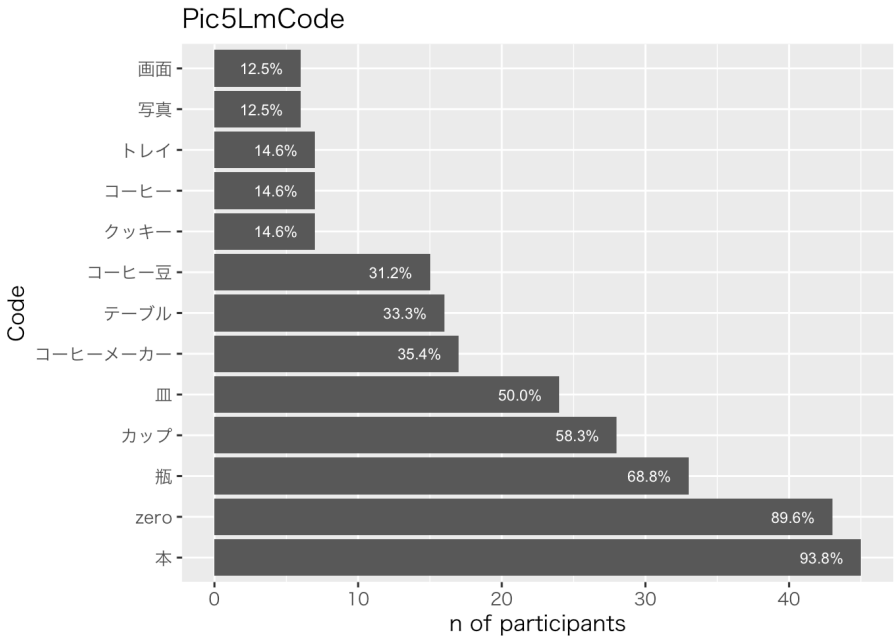


Figure 3.44 P5 Landmark

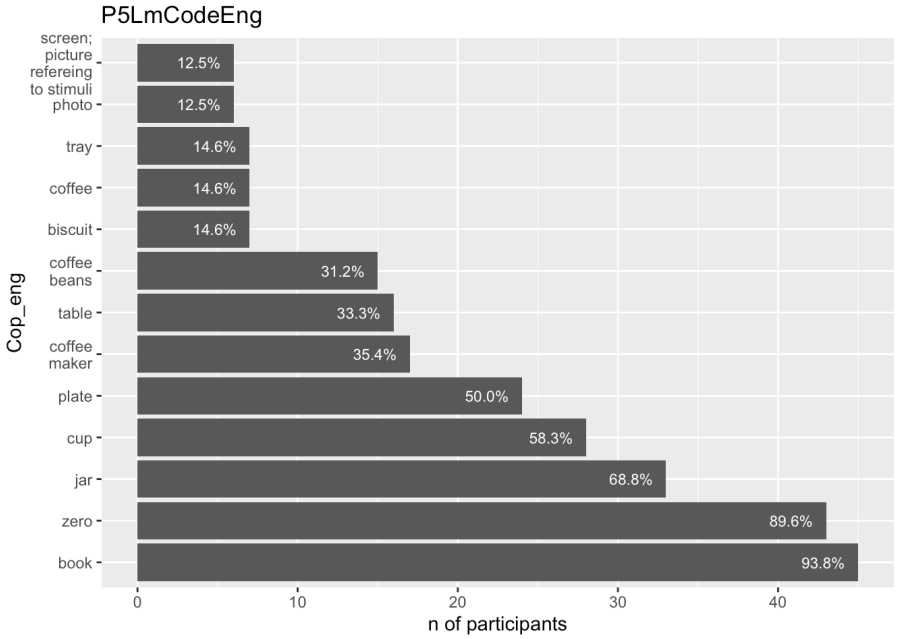


Figure 3.45 P5 Landmark Eng

4.3.2.6 Picture 6 Landmark

For P6 only one Lm among the most frequently used by the participants of the experiment was used to designate the frame of the stimuli - shashin (写真, "photo, picture"; 6, 13%).

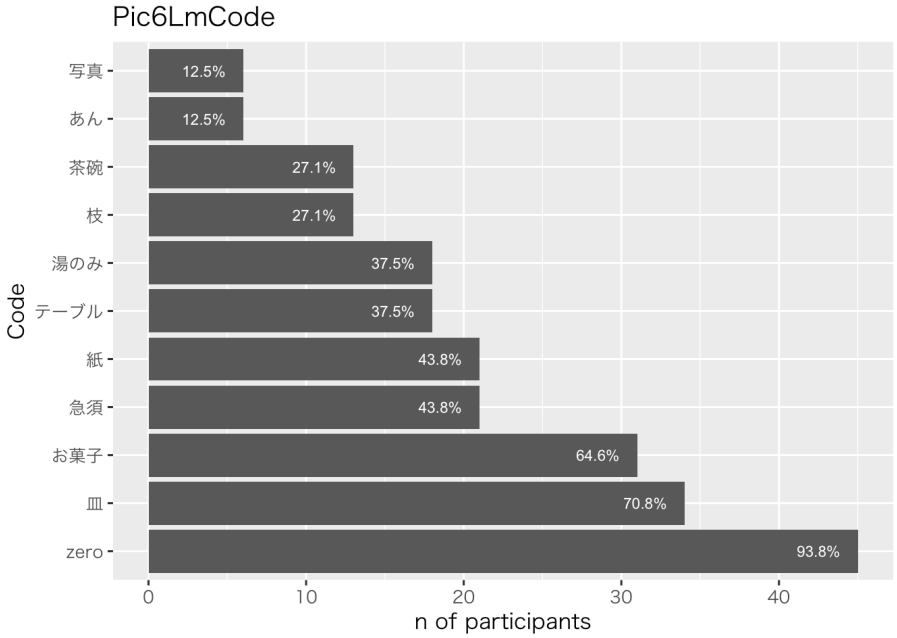


Figure 3.46 P6 Landmark

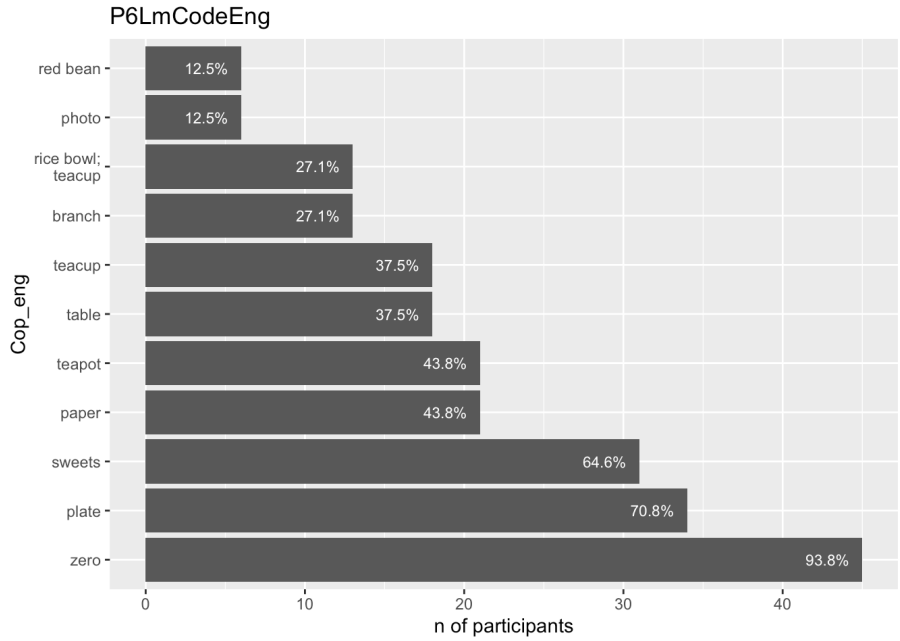


Figure 3.47 P6 Landmark Eng

4.3.3 Relator (R)

Relator is one of the two most important functional elements of spatial description as it expresses the character of the spatial relations between the F and the Lm. In this section the most frequent expressions of Relator for each picture are demonstrated in table 2.4 in the appendix and figures from 3.48 to 3.59.

In most of cases in Japanese, Rs are expressed through postpositions, particles or spatial nominals or their combinations.

4.3.3.1 Picture 1 Relators

There are four semantically distinct groups among the most frequent expressions of R for P1.

The first group consists of expression of vertical orientation *ueni* (上に, “above, on, at”; 36, 75%) *ue* (上, “above”; 7, 15%) *shitani* (下に, “below, under”; 9, 19%).

The second group includes expressions with semantics of perspective: *temaeni* (手前に,“in the front”; 20, 42%) and *okuni* (奥に,“at the back”; 19, 40%), *ichibantemaeni* (一番手前に ,“at the frontmost”; 6, 13%), and Lm *maeni* (前に, “in front (of)”; 7, 15%)

The third group includes words and expressions with meaning of the horizontal “right/left” axis: *hidarigawa* (左側, “left side”; 13, 27%) and *hidarigawani* (左側に, “on the left side”; 12, 25%), *migigawani* (右側に, “on the right side”; 10, 21%) and *migigawa* (右側, “right side”; 8, 17%)

Migiokuni (右奥に, “in the back right”; 10, 21%) can be included in either the second or the third group.

And the forth group includes two expressions with the meaning “next to”: *yokoni* (横に, “next to (horizontally)”; 7, 15%) *tonarini* (隣に,“next to”; 6, 13%).

There is also relatively high percentage of zero (31, 65%) Relators, which normally means that the whole Topos was zero and the SD was based on the verbal spatial meaning only.

Two particles (or “postpositions” as in Kita 2006) *ni* (に, “at (place, time)”; 38, 79%) and *kara* (から,“from”; 17, 35%) were also among the most frequent Relators for P1.

The majority of *ni* Relators were utilized when talking about something being attached to a vertical surface, e.g. in P1R1 *kabe ni wa e ga futatsu kakattemasu* (壁には絵が二つかかってます, “there are two pictures on the wall”), or in clauses describing the contents of the room in general, as in P1R28 *ima ni wa shokujiyoo no teeburu to dofa to piano ga arimasu* (居間に

は食事用のテーブルとソファとピアノがあります, “In the living room there is a dining table, and a sofa, and a piano”).

Most of the examples with *kara* being a Relator are either describing a vertical axis as in P1R18 *tenjoo kara wa futatsu no raito ga sagatteimasu* (天井からは二つのライトが下がっています, “There are two lamps hanging from the ceiling”) or outside/inside relations, e.g. P1R7 *mado kara ikutsuka ie no akari ga mieru* (窓からいくつか家のあかりが見える, “lights of the several houses are seen from the window”).

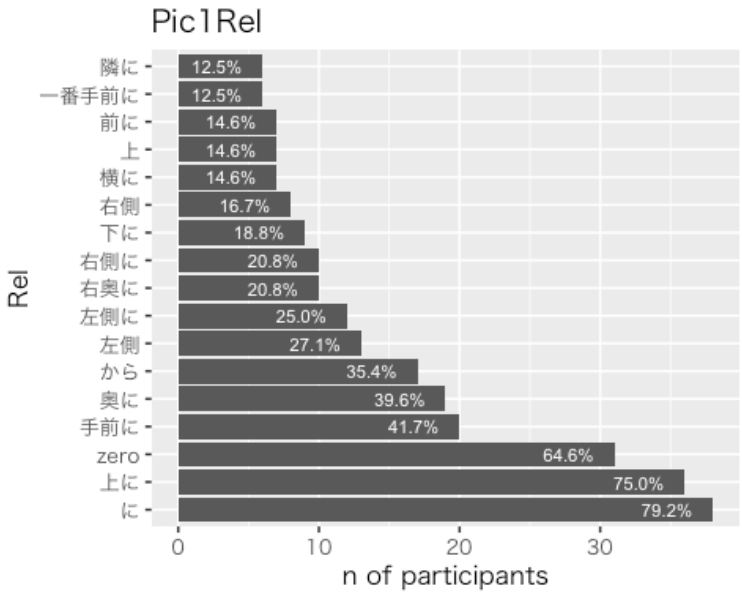


Figure 3.48 P1 Relator

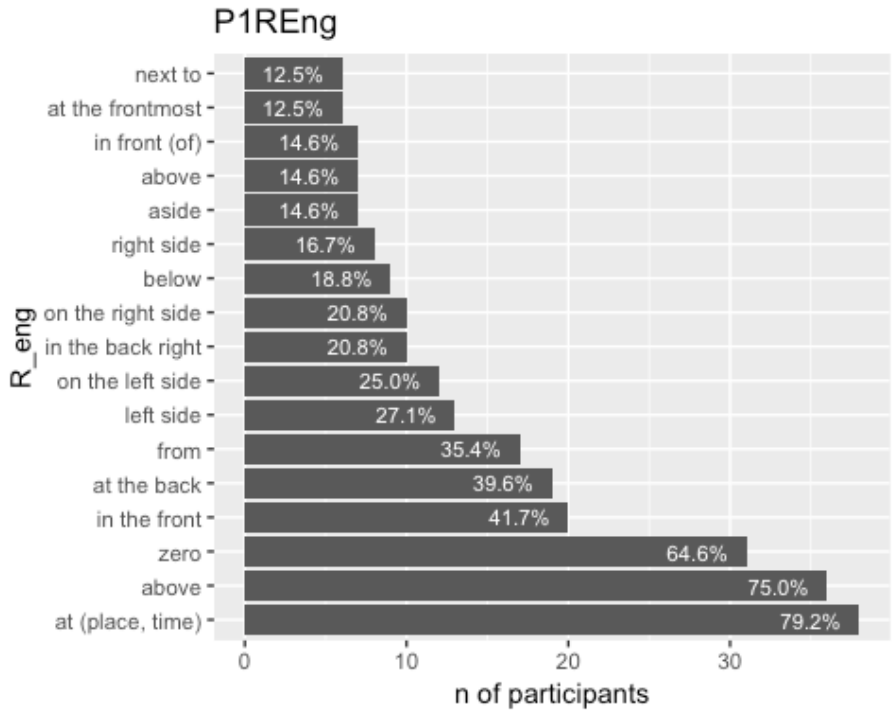


Figure 3.49 P1 Relator Eng

4.3.3.2 Picture 2 Relators

Among the most frequent expressions of R for P2, only *ueni* (上に, "above, on"; 40, 83%) and some cases of *ni* (に, "at (place, time)"; 29, 60%) describe spatial relations on the vertical axis.

However, as in SDs of P1, *ni* was the most frequently utilized to describe attachment to a vertical surface, as P2R40 *sono kabe ni*<...> *hikidashi ga kabe ni tsukete oitearimasu* (その壁に<…>引き出しが壁につけて置いてあります, "On that wall<…>a dresser is placed against that wall") or to describe the contents of the space, a room in this case, e.g. P2R45 *washitsu ni teeburu ga oiteatte*... (和室にテーブルが置いてあって, "there is a table in the Japanese style room").

In SDs for P2 *kara* (から,“from”; 9, 19%) is utilized only to express “outside/inside” or “entrance/exit” relations between Figure and Landmark as in P2R13 *soto kara no taiyoo no hikari ga sashikondeite…* (外からの太陽の光が差し込んでいて[…], “from the outside sunlight is shining through[…]”).

Rs expressed as a construction in the form Lm + *tokoroni* (ところに, “at place [of, around]”) were used by 6 (13%) participants.

As in SDs for P1, zero Relators were relatively frequent in SDs of P2 (36, 75%).

The rest of the most frequent expressions of Rs for P2 can be divided into three groups - one representing two sets of expressions describing the perspective relations - *okuni* (奥に,“at the back”; 24, 50%) *oku* (奥, “back, inner part”; 8, 17%), *temaeni* (手前に,“in the front”; 8, 17%), *mukoogawani* (向こう側に, “on the other side, across, behind”; 8, 17%), *shoomenni* (正面に , “in the front”; 7, 15%); and the other one describing horizontal “right/left” relations, consisting of *hidarigawani* (左側に, “on the left side”; 14, 29%), *migigawani* (右側に, “on the right side”; 11, 22%) *migigawa* (右側, “right side”; 6, 13%); and the third one describing a set of expressions referring to the center or the middle of the space described *chuuooni* (中央に, “in the center”; 12, 25%) *mannakani* (真ん中に,“in the middle”; 19, 40%), *mannaka* (真ん中, “middle”; 6, 13%).

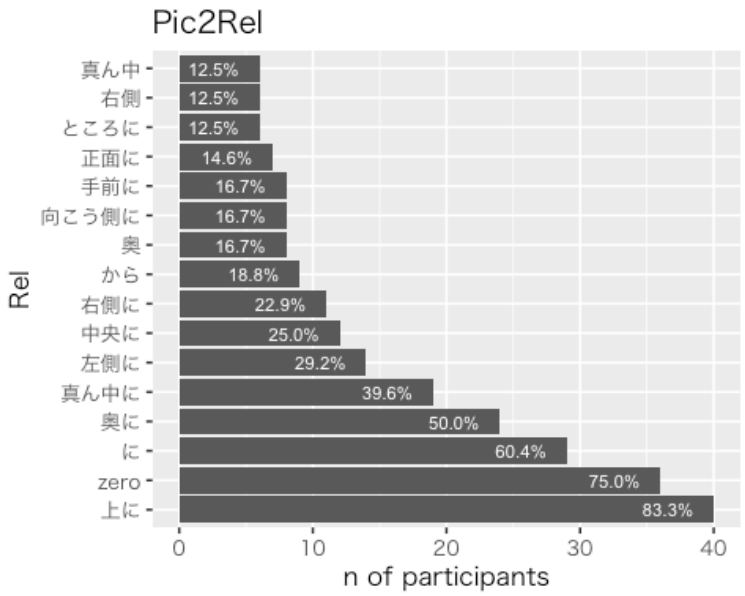


Figure 3.50 P2 Relator

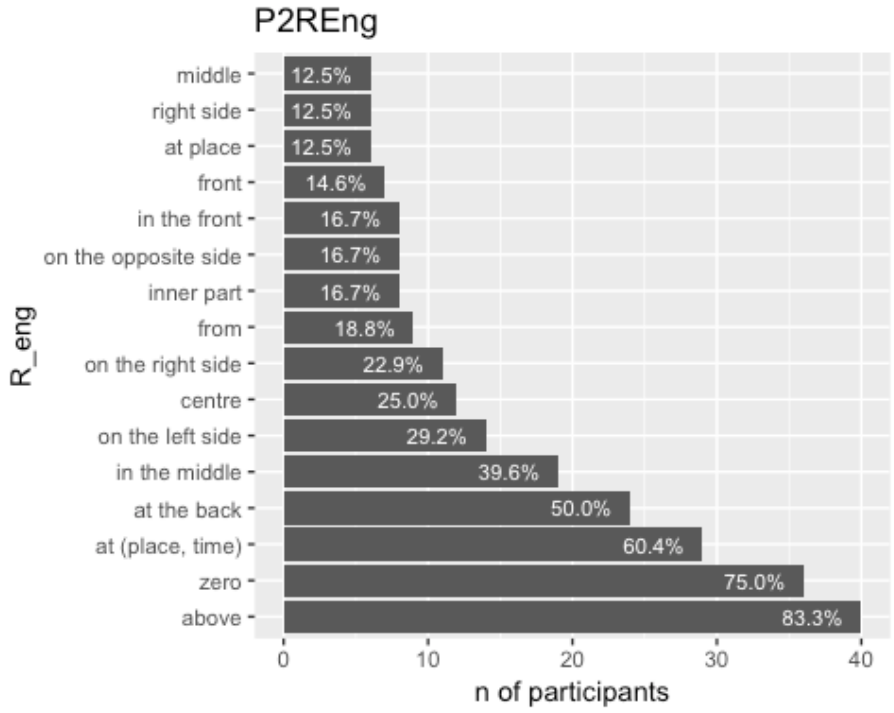


Figure 3.51 P2 Relator Eng

4.3.3.3 Picture 3 Relators

SDs for P3 demonstrate a distinct set of the most frequent expressions of Rs, which reflects a visible presence (21%) of Path element containing strategies in SDs for this picture.

Three particles *ni* (に, "at (place, time)"; 27, 56%), *kara* (から, "from"; 8, 17%), *wa* (は, "topic marker particle"; 8, 17%) are relatively frequently used as Rs for P3, and in comparison with other visual stimuli P3 had the highest number of participants utilizing *wa* as Relator.

The majority of the examples of usage of *wa* contain a motion verb as Relations Predicate, e.g.: P3R10 *dooro wa torakku ga ooku hashitteiru* (道路はトラックが多く走っている, "There are a lot of trucks [running] on the road"); and in three of the examples *wa* is utilized with deictic pronouns, as in P3R23: *koko wa choodo koosaten ni natteimasu* (ここはちょうど交差点になっています, "This is a crossroads [right here]"). *Kara* is used differently in comparison with P1 and 2.

Kara in SDs of P3 is used when the Landmark is considered to be a point or an area of departure towards the deictic center, e.g. P3R8 *wan ga sandai mukoo kara kochira ni mukatte hashittekiteimasu* (ワンが 3 台向こうからこちらに向かって走ってきています, "three minivans are moving from the other side towards here"), or when the deictic centre is a projection of a view-point of the observer as in P3R12: *kuruma wa koko kara [...] san dai miemasu*(車はここから 3 台[…]見えます, "[I can] see three cars from here").

Two other expressions of R, *ryoogawani* (両側に, "on the both sides"; 13, 27%) and *nimukatte* (に向かって,"heading towards smth"; 6, 13%), reflect that the road and the motion are the central features in SDs for this picture.

Mannakani (真ん中に, “in the middle”; 7, 15%) and *temaeni* (手前に, “in the front”; 6, 13%) were also frequently utilized as expressions of R.

The high proportion of zero (27, 56%) R correlates with the usage of path element containing strategies and particularly with the usage of motion verbs for expression of spatial relations in such cases.

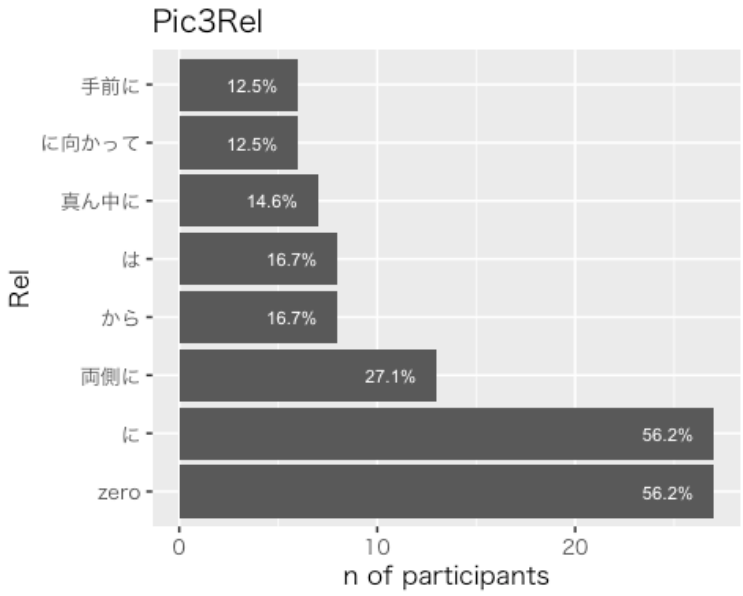


Figure 3.52 P3 Relator

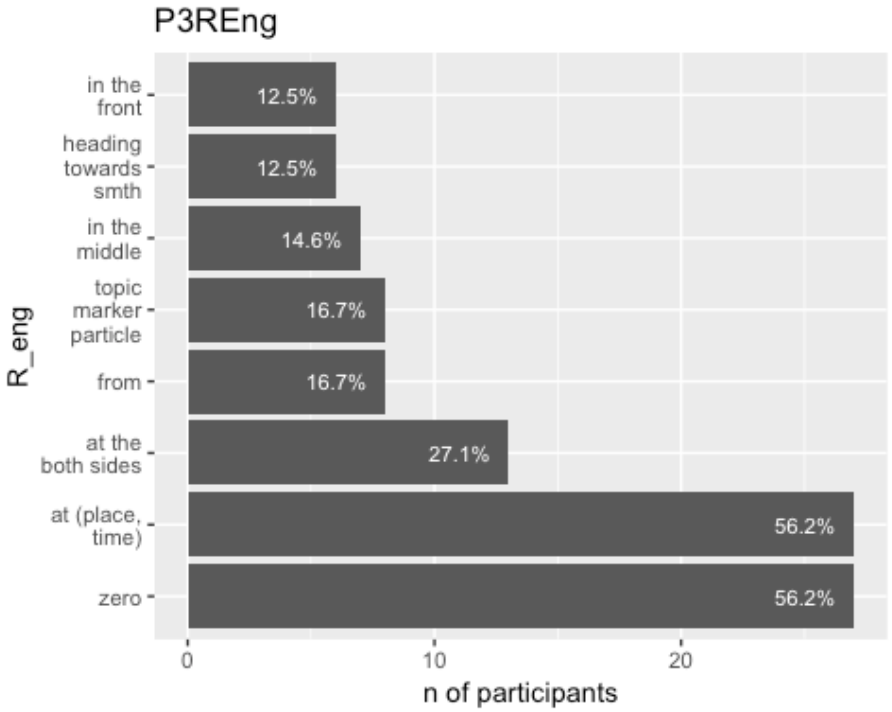


Figure 3.53 P3 Relator Eng

4.3.3.4 Picture 4 Relators

The high proportion of zero (30, 63%) Relators is similar that of P3. However, the overall variety of Relators for this picture is more alike to that of the P1 and P2.

There is a group of expressions of R reflecting perspective properties of the picture - *okuni* (奥に, “at the back”; 25, 52%), *temaeni* (手前に, “in the front”; 17, 35%), *okunohooni* (奥のほうに, “at the back area”; 8, 17%), *mukooni* (向こうに, “on the other side, across, behind“; 7, 15%). While expressions with meaning of left and right are less frequent in comparison with perspective expressions - *migigawani* (右側に,”on the right side“; 6, 13%) and *hidarinohooni* (左のほうに,” on the left; in the left area“; 6, 13%), *mannakani* (真ん中に,”in the middle“;

13, 27%) was also frequently utilized to describe the location of the central Fs, e.g. *torii*, at the picture.

Ueni (上に,"above, on"; 11, 23%) was predominantly used in descriptions of two types of relations. The first type was relations where the Figure was depicted above the Landmark in the picture, e.g., P4R40: *sono [yama no] ueni wa aozora to kumo ga hirogatteimasu* (その[山の]上には青空と雲が広がっています,"Above that [the mountains] blue sky with clouds is spreading"). The second type can be interpreted as the situation where the Figure is on the top of the Landmark as in P4R33: *yama no ueni wa denchuu no yoo na hosoi boo ga sanbon tatteimasu* (山の上には電柱のような細い棒が３本立っています"there are three thin poles, looking like power poles, [standing] on the top of the mountain")

As in P3, *ni* (に,"at (place, time)"; 15, 31%), *kara* (から, "from"; 12,25%), and *wa* (は, "topic marker particle"; 6, 13%) are among the most frequent expressions of R. *Wa* is utilized as R, as in the SDs of P3, with deictic pronouns projecting the view-point of the observer, as in P4R12 *koko wa kyuuryoo de[...]* (ここは丘陵で, "as there[here] is a hill[…]"), or when the Figure is a part of the Landmark, e.g. P4R51 *migigawa no tanbo wa ine ga uetearimasu* (右側の田んぼは稲が植えてあります, "the left side field has rice planted/growing on it"). *Kara* in SDs of this picture is utilized to designate a relationship between a Landmark and an extended Figure as in P4R19 *torii kara michi ga tsudzuite imasu* (鳥居から道が続いています, "the road continues from torii").

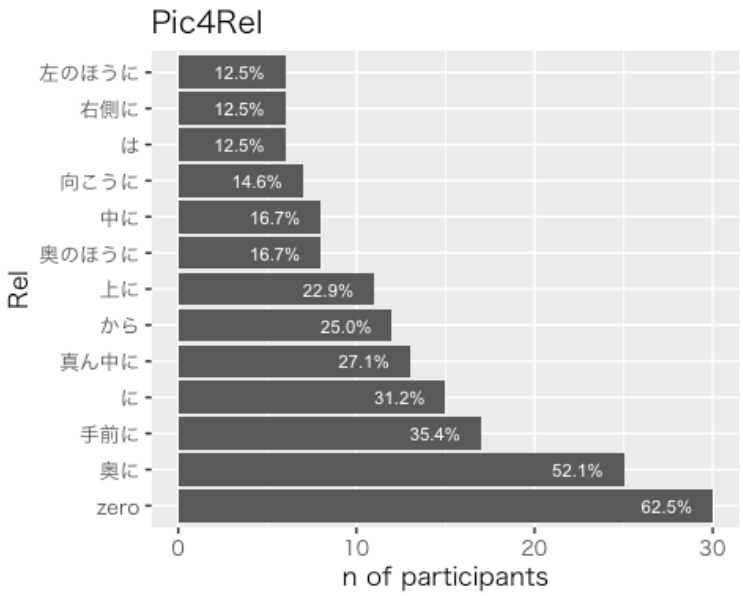


Figure 3.54 P4 Relator

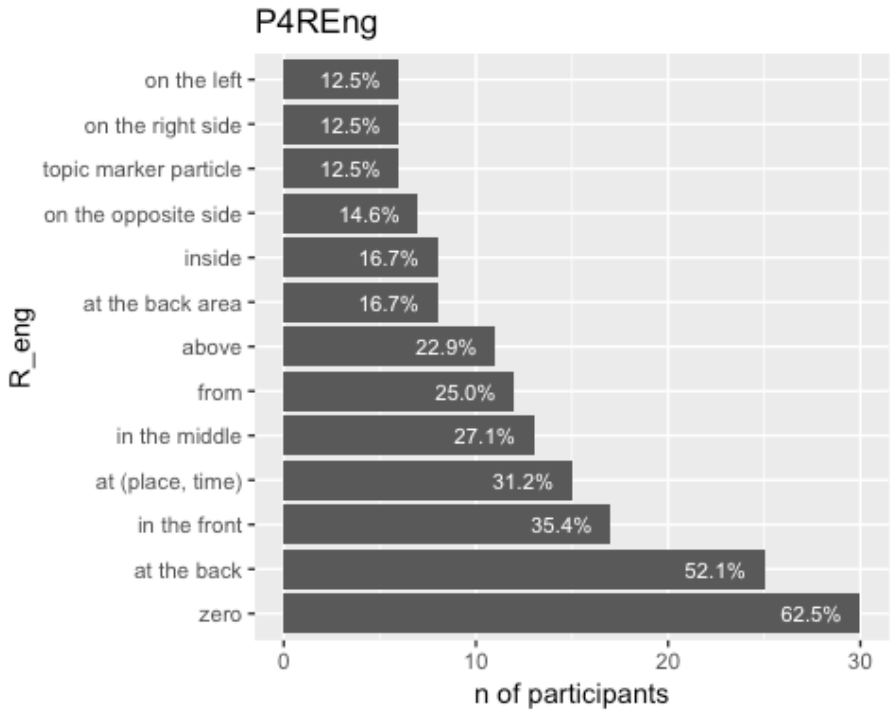


Figure 3.55 P4 Relator Eng

4.3.3.5 Picture 5 Relators

P5 and P6, depicting the setting of various items on the table, demonstrate a slightly different frequency distribution between Relators. The pictures are less complex in terms of spatial relations in comparison with P1-P4; therefore, in general there is less variety in spatial relations between F and Lm, and consequentially less variety in Relators.

For P5 there are five semantically distinct groups among the most frequently utilized expressions of R. Similar to the other pictures one of the most frequent expressions of R are *ueni* (上に, "above, on"; 45, 94%) and *ni* (に,"at (place, time)"; 33, 69%), describing predominantly the location of the Figures on the table, or on some other Landmark. The other two groups - expressions with semantic features of "perspective" such as *okuni* (奥に, "at the back"; 22, 46%) and *temaeni* (手前に, "in the front"; 22, 46%), and expressions of "left/right" axis such as *hidarigawani* (左側に, "on the left side"; 10, 21%) *migigawani* (右側に,"on the right side"; 13, 27%) are similar to the set of expressions of R for P1-P4. Zero (22, 46%) Relators are also relatively frequent for this picture. However, there are also two types of expressions of R that did not appear among the most frequent Rs for the previous pictures, *nakani* (中に, "inside"; 17, 35%) for situations of "container" type Lms, and a comparatively wide varety of expressions of proximity – *tonarini* (隣に,"next to"; 7, 15%) *yokoni* (横に, next to (horizontally)"; 6, 13%) *ushironi* (後ろに,"behind"; 6, 13%).

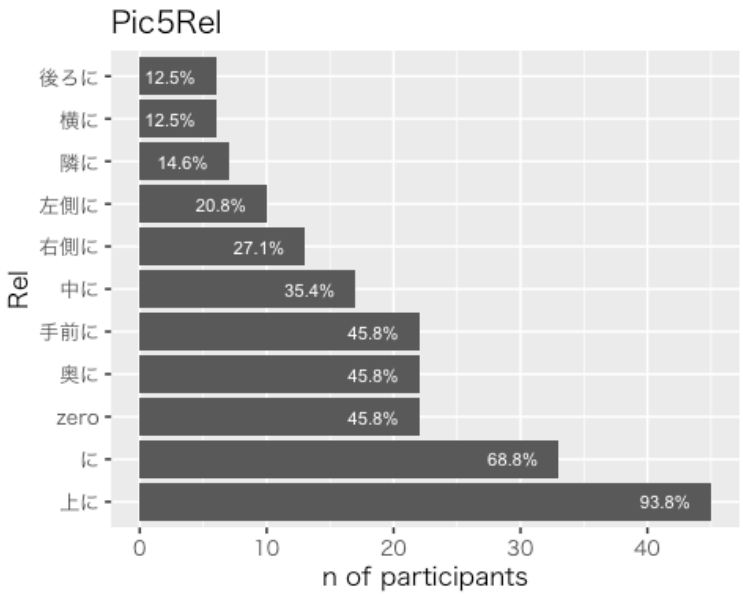


Figure 3.56 P5 Relator

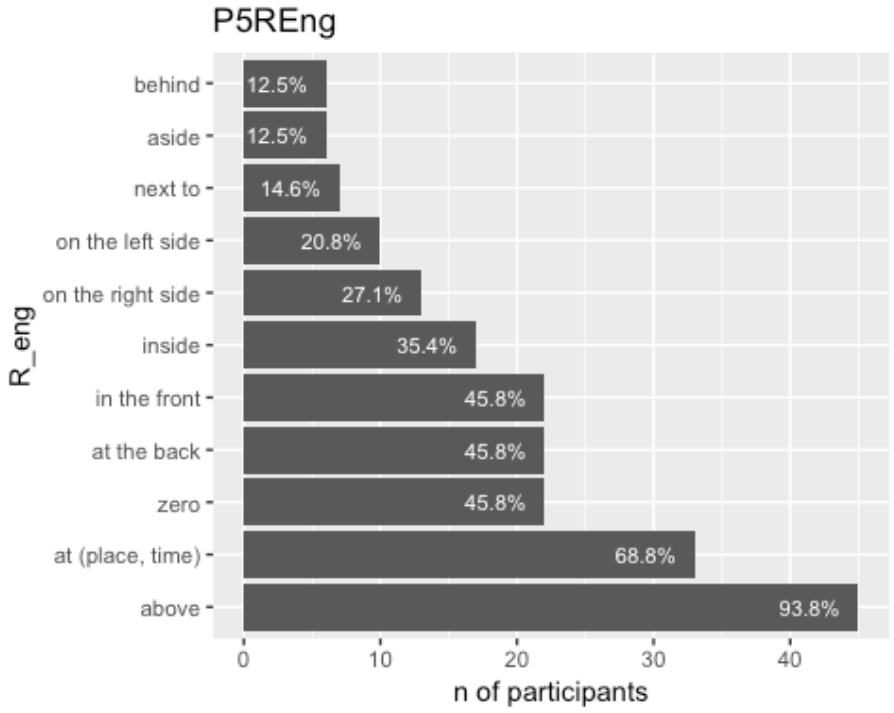


Figure 3.57 P5 Relator Eng

4.3.3.6 Picture 6 Relators

The most frequent expressions of R for P6 are similar to the expressions utilized for P5, with the exception of the "proximity" expressions group. The absence of Relators with semantic features of proximity among the most frequent expressions of R for this picture can be explained by difference in density of objects in the picture. However, all other groups of expressions of R are present in both pictures and serve the similar roles.

Ueni (上に, "above, on"; 36, 75%) and *ni* (に," at (place, time)"; 23, 48%) designate the locations of F on the table, or in some cases on other Lms. *Nakani* (中に, "inside"; 13, 27%) is utilized for the expression of relations of containment between Lm and F.

The group of Rs with semantic features of perspective is overall the biggest for P6 with *temaeni* (手前に,"in the front"; 30, 63%), *okuni* (奥に, " at the back"; 26, 54%), *ichibantemaeni* (一番手前に,"at the frontmost"; 8, 17%) and *temae* (手前,"front, before"; 6, 13%). In comparison with "perspective" relation expressions, expressions describing the relations between F and Lm through "left/right" axis were less frequently utilized by the participants - *hidarigawani* (左側に,"on the left side"; 11, 23%) *migigawani* (右側に,"on the right side"; 8, 17%). Zero Relators for P6 were utilized by 22 (46%) of participants of the experiment.

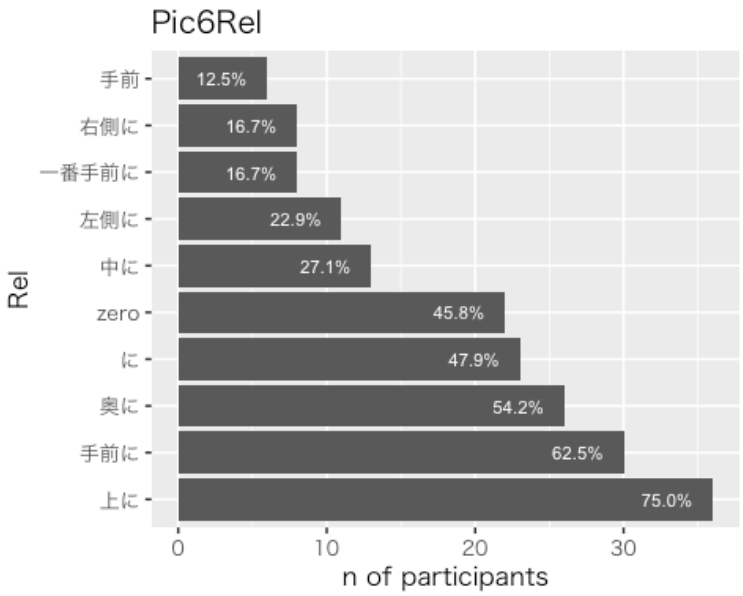


Figure 3.58 P6 Relator

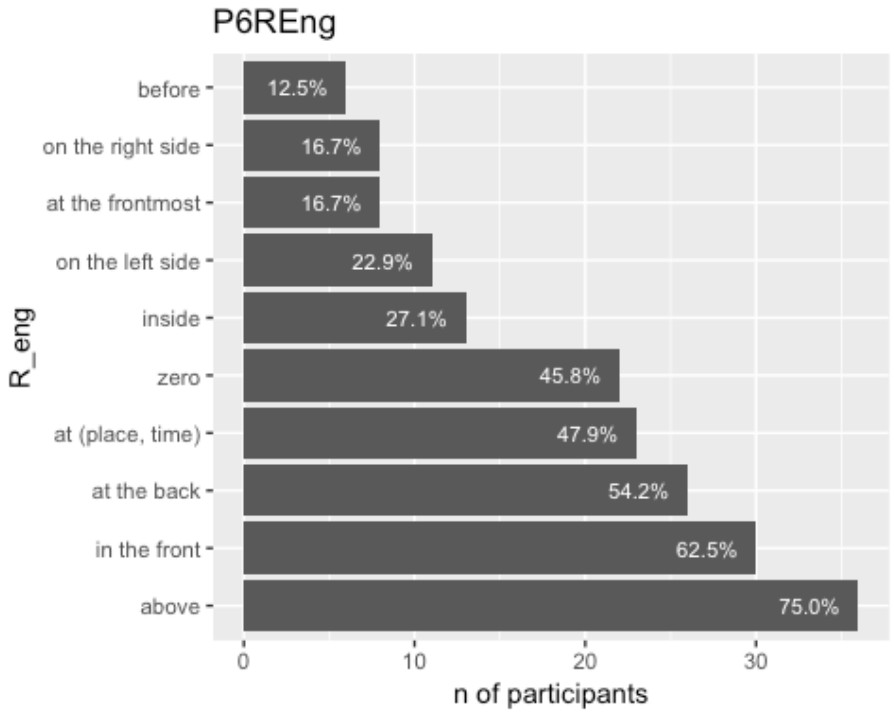


Figure 3.59 P6 Relator Eng

4.3.4 Relations Predicate (RP)

RP in this work is utilized as a term referring to all predicates used in the description of spatial relations between F and Lm. The total number of tokens of RP extracted from the corpus is 2687 words. Table 2.5, demonstrating RPs used by more than five participants in spatial descriptions of each picture, can be found in the appendix.

4.3.4.1 Picture 1 Relations Predicates

The most frequently utilized expressions of RP for P1 are various forms of the verb *aru* - *arimasu* (あります, "to be"; 41, 85%), *atte* (あって, "to be-CONN"; 26, 54%), *ari* (あり, "to be-CONN"; 11, 23%), and *aru* (ある, "to be"; 8, 17%), which, as well as *desu* (です, "be-COP"; 8, 17%) are normally utilized in BLC in Japanese (Kita 2006).

The room feature of the picture is a possible context affecting relatively the high frequency of usage of *oitearimasu* (置いてあります, "to put-CONN-RSMD"; 22, 46%) and *kazattearimasu* (飾ってあります, "to decorate-CONN-RSMD"; 11, 23%) with middle-resultative *te aru*, implying the fact of existence of the agent, but not overtly expressing it.

The majority of other frequently utilized verbs are used in imperfective forms with *te iru* - *kakatteimasu* (かかっています, "to hang-CONN-IPFT"; 20, 42%), *sagatteimasu* (下がっています, "to hang-CONN-IPFT"; 8, 17%), *burasagatteimasu* (ぶら下がっています, "to hang from"; 6, 13%), *narandeimasu* (並んでいます, "to line up-CONN-IPFT"; 7, 15%), *ni natteite* (になっていて, "to become-CONN-IPFT-CONN"; 10, 21%), *ni natteimasu* (になっています, "to become-CONN-IPFT"; 7, 15%)

The cases of usage of *miemasu* (見えます, “to be seen”; 11, 23%) rather than *aru* or a verb with spatial semantic features for P1 can be characterized by - presence of a F on the picture, but absence from the space described, e.g., P1R18 *beranda no soto wa fuukei ga miemasu* (ベランダの外は風景が見えます, “landscape is seen outside the veranda”), or uncertanty in naming of the Figure or its partial visibility, e.g. *oku ni gasu dai, aiecchi no yoona mono ga miemasu* (奥にガス台、IH のようなものが見えます, “at the back [of the kitchen] a gas stove, something like an induction cooker is seen”).

There was also a high percentage of participants using the zero (22, 46%) Relations Predicate for this picture.

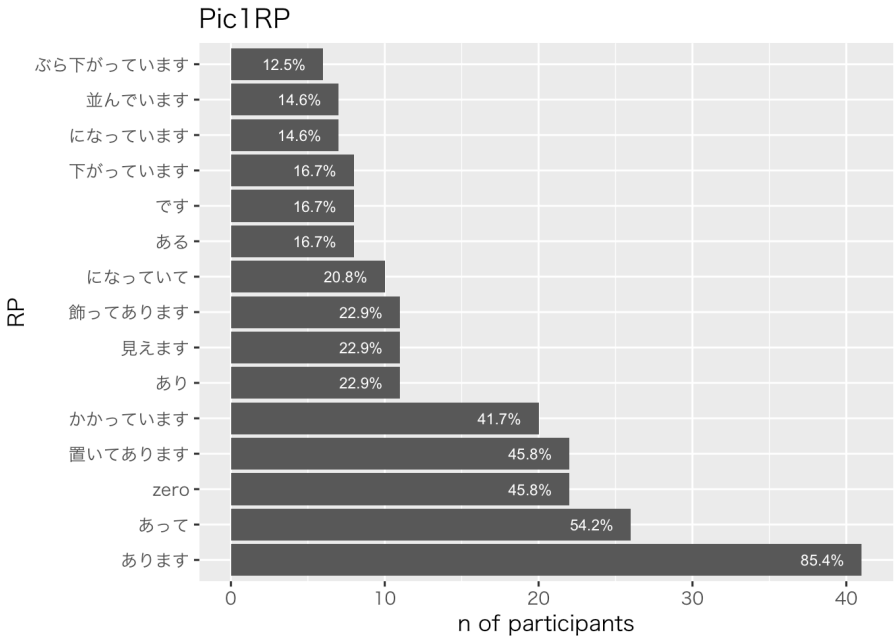


Figure 3.60 P1 Relations Predicates

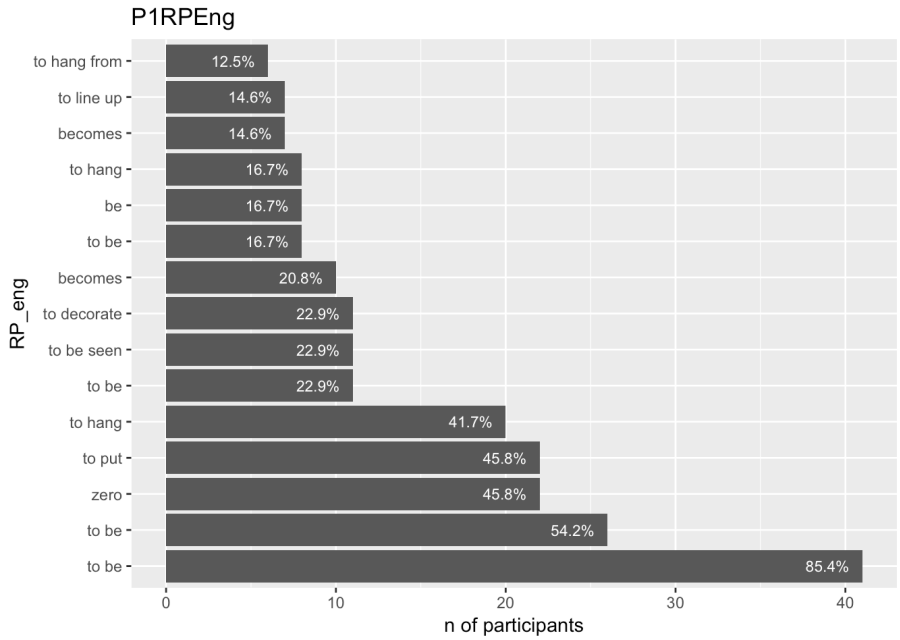


Figure 3.61 P1 Relations Predicates Eng

4.3.4.2 Picture 2 Relations Predicates

In general the patterns of usage of Relations Predicates for P2 is similar to that of P1. There is high proportion of participants utilizing *aru* and *desu* in SDs of this picture - *arimasu* (あります, "to be"; 34, 71%), *atte* (あって, "to be-CONN"; 25, 52%) *aru* (ある, "to be"; 16, 33%) *ari* (あり, "to be"; 13, 27%), *desu* (です, "be-COP"; 6, 13%). Zero Relations Predicate usage among the participants is also close to 50%. *Oku* ("to put") is utilized predominantly with resultative middle *te aru* - *oitearimasu* (置いてあります, "to put-CONN-RSMD"; 33, 69%), *oiteatte* (置いてあって, "to put-CONN-RSMD-CONN"; 8, 17%), *oiteari* (置いてあり, "to put-CONN-RSMD-CONN"; 8, 17%). Seven participants also used *oku* in the passive imperfective form *okareteimasu* (置かれています, "to put-PASS-IPFT"; 7, 15%), and six used *noru* in imperfective *te iru* form when descripting an F placed on the top of the Lm: *notteimasu* (のっています, "to be placed on-CONN-IPFT"; 6, 13%).

The back of the picture with the garden partially showing from the open doors was described with usage of a verb of sight, *miemasu* (見えます, "to be seen"; 20, 42%), *mieru* (見える, "to be seen"; 6, 13%). Another frequently utilized construction for description of this part of the picture was RP *desu* with evidential *yoo* - *yoo desu* (ようです, "(I) wonder; looks like", EVID-COP; 8, 17%).

Ni natteimasu (になっています, "to become-CONN-IPFT") was used by nine participants (19%) in SDs of this picture.

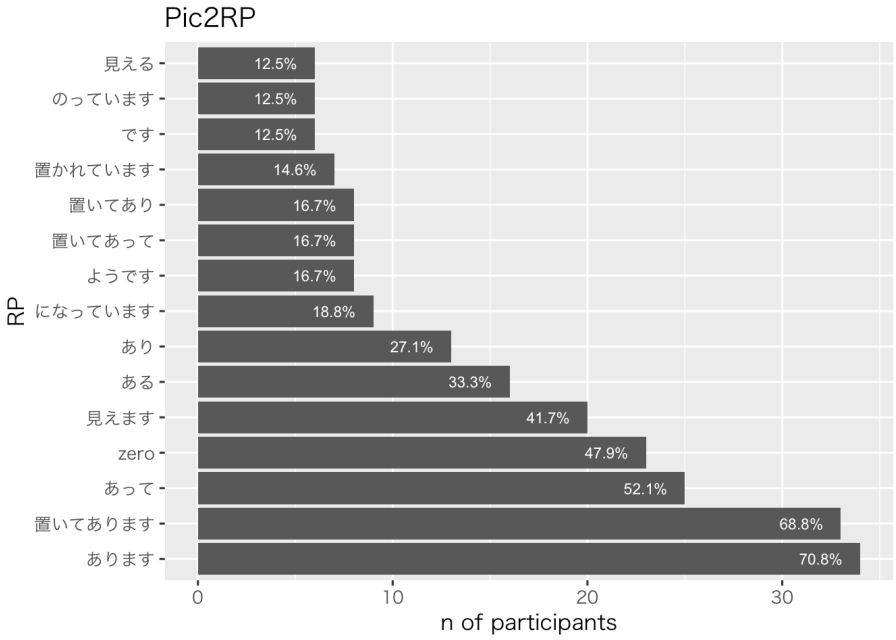


Figure 3.62 P2 Relations Predicates

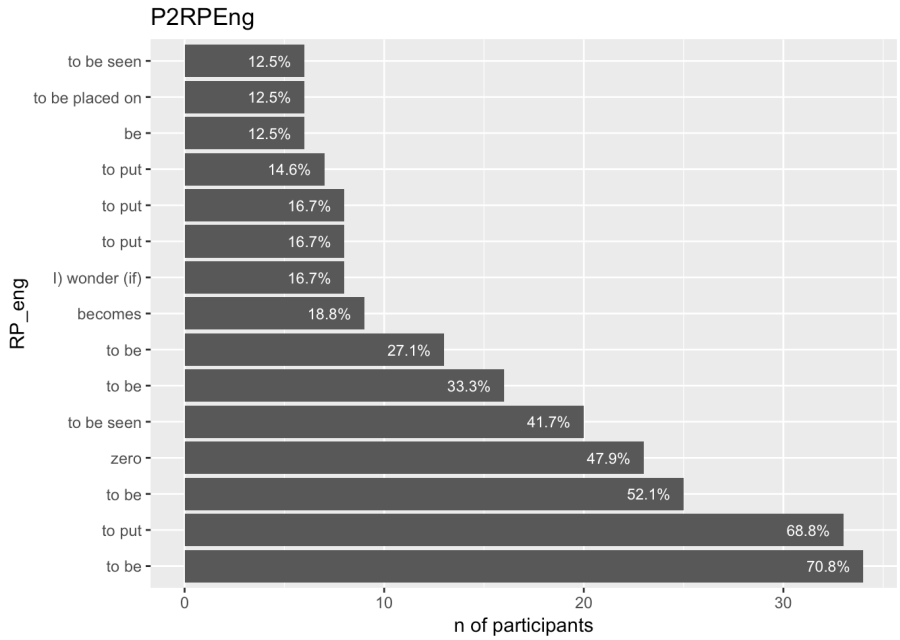


Figure 3.63 P2 Relations Predicates Eng

4.3.4.3 Picture 3 Relations Predicates

While *aru* and *mieru* were also utilized quite actively by the participants of the experiment for P3 *arimasu* (あります, "to be"; 20, 42%), *atte* (あって, "to be-CONN"; 12, 25%), *miemasu* (見えます, "to be seen"; 11, 23%), figure 3.64 demonstrates that there were noticeable differences in choice of Relations Predicates usage for P3 in comparison with pictures representing room space (P1-P2) or tabletop space (P5-P6).

Zero Relations Predicate was present in SDs of only 6 (13%) participants.

Expressions of RP in *te aru* resultative middle form are not among the expressions utilized by more than five participants. Both the frequently utilized stative verbs and verbs of movement - *narandeimasu* (並んでいます, "to line up-CONN-IPFT"; 13, 27%), *tachinarandeimasu* (立ち並んでいます, "to stand in a row-CONN-IPFT"; 11, 23%), *tatteimasu* (立っています, "to stand-CONN-IPFT"; 9, 19%), *hashitteimasu* (走っています,

"to run-CONN-IPFT"; 11, 23%), *hashitteiru* (走っている, "to run-CONN-IPFT"; 7, 15%) were used with *te iru* imperfective form.

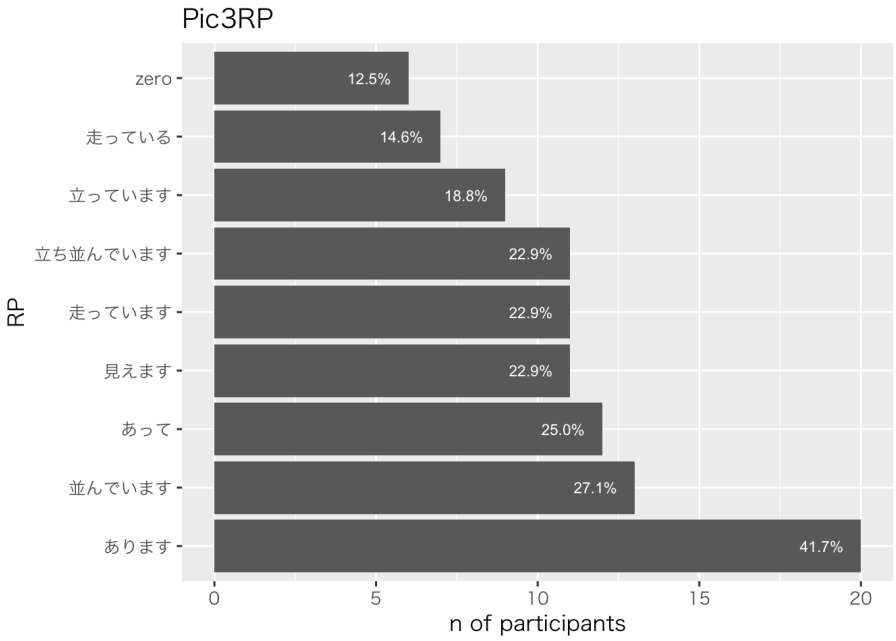


Figure 3.64 P3 Relations Predicates

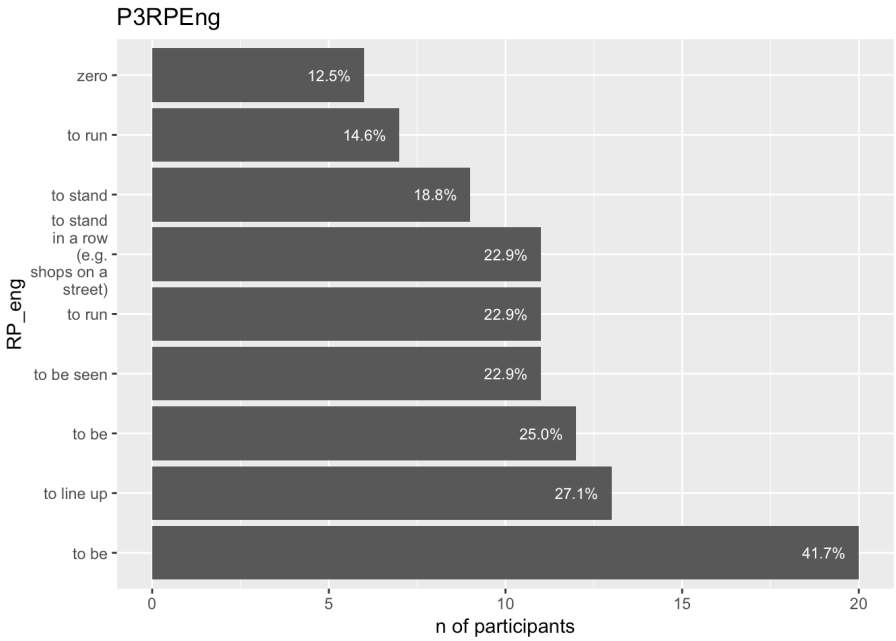


Figure 3.65 P3 Relations Predicates Eng

4.3.4.4 Picture 4 Relations Predicates

The verb *aru* and copula *desu* were frequently utilized by the participants as an expression of RP for P4 *arimasu* (あります, “to be”; 25, 52%) *aru* (ある, “to be”; 16, 33%) *atte* (あって, “to be-CONN”; 9, 19%) *ari* (あり, “to be-CONN”; 8, 17%) *desu* (です, “be-COP”; 15, 31%), *de* (で, “be-COP-CONN”; 6, 13%). *Mieru* also was frequently used by participatns in description of P4 - *miemasu* (見えます, “to be seen”; 24, 50%), *mieru* (見える, “to be seen”; 6, 13%), *mieteimasu* (見えています, “to be seen-CONN-IPFT”; 6, 13%)

The same trend of absence of middle resultative *te aru* forms and active use of verbs in *te iru* forms as observed in P3 is reflected in the most frequently used expressions of RP for P4, e.g., *tatteimasu* (立っています, “to stand-CONN-IPFT”; 12, 25%), *tatteiru* (立っている, “to stand-CONN-IPFT”; 6, 13%), *ni natteimasu* (になっています, “to become-CONN-IPFT”; 9, 19%).

The main differences between P3 and P4 appear in semantic features of the verbs. While in P3 both stative verbs and verbs of movement were present among the most frequently used expressions of RP, in P4 verbs of movement were less frequent, e.g. *iku* (行く, “to go”) and *hashiru* in the imperfective *te iru* form (走っています, “to run-CONN-IPFT”) were utilized only by three participants of the experiment.

Another distinctive feature of SDs of P4 revealed through the most frequently utilized expressions of RP is an active use of verbs with semantic features of spread and connectivity - *hirogatteimasu* (広がっています, “to spread (out)-CONN-IPFT”; 19, 40%), *hirogatteite* (広

がっていて, “to spread (out)-CONN-IPFT-CONN”; 11, 23%), *tsuzuiteimasu* (続いています, “to continue-CONN-IPFT”; 6, 13%).

In comparison with P3, zero Relations Predicate was more actively used by the participants in descriptions of this picture - zero (17, 35%).

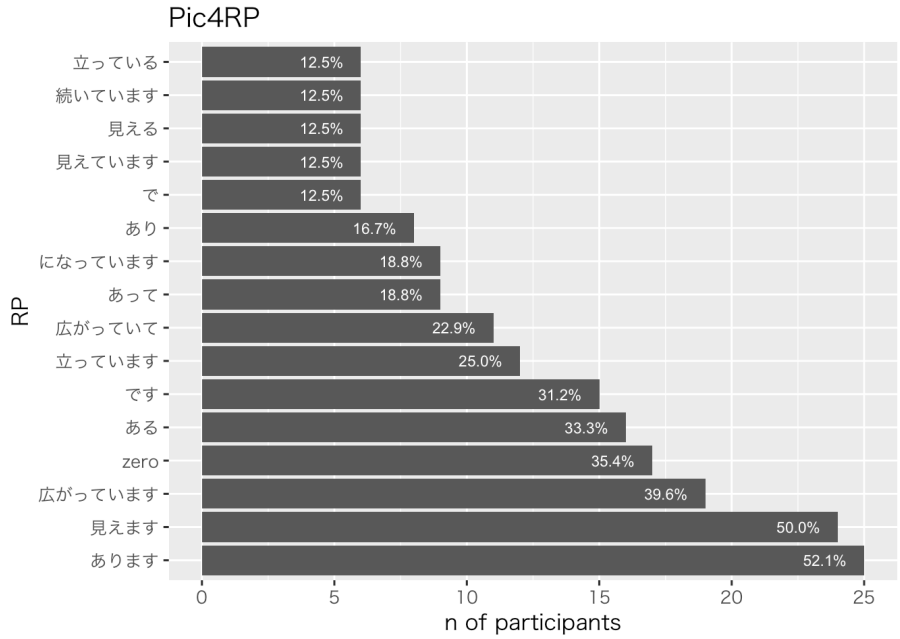


Figure 3.66 P4 Relations Predicates

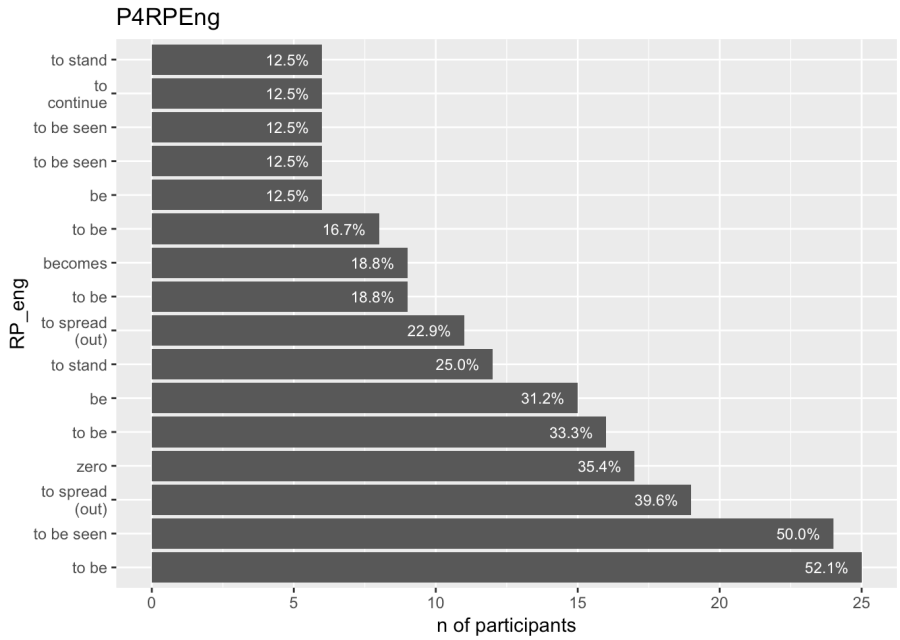


Figure 3.67 P4 Relations Predicates Eng

4.3.4.5 Picture 5 Relations Predicates

P5 and P6 represented two tabletop settings, and received very similar sets of RP expressions produced by participants.

The set of the most frequently utilized expressions for P5 consists of verbs with semantic features of placement, containment and presence.

Oku in resultative middle *te aru* form was the most frequently used RP for P5 - *oitearimasu* (置いてあります, "to put-CONN-RSMD"; 35, 73%), *oiteatte* (置いてあって, "to put-CONN-RSMD-CONN"; 12, 25%), *oitearu* (置いてある, "to put-CONN-RSMD"; 6, 13%). Other variations of RP with similar semantic features were represented by *okareteimasu* (置かれています, "to put-PASS-CONN-IPFT"; 11, 23%) and *notteimasu* (のっています, "to be placed on-CONN-IPFT"; 8, 17%).

Aru and its forms, *arimasu* (あります, “to be”; 20, 42%), *ate* (あって,“to be-CONN”; 12, 25%), *ari* (あり, “to be-CONN”, 6, 13%), were actively utilized, but the proportion of participants using them for P5 was lower than the proportion of participants using *aru* in SDs of P1 or P2.

Haitteimasu (入っています, “to enter-CONN-IPFT”; 15, 31%), *haitta* (入った, “to enter-PAST”; 9, 19%), *haitteite* (入っていて, “to enter-CONN-IPFT”; 7, 15%) were relatively frequently used to characterize the locations of the Figures contained by the Landmarks. *Hairu* is usually translated as “to enter” and can serve as a motion verb in Japanese; however, in cases as represented here, where it is used for SDs, *hairu* does not necessarily encode continious location change of a F, it only encodes the result of the change of state the participants observed.

The participants of the experiment also frequently utilized zero Relations Predicate (26, 54%) in P5 descriptions.

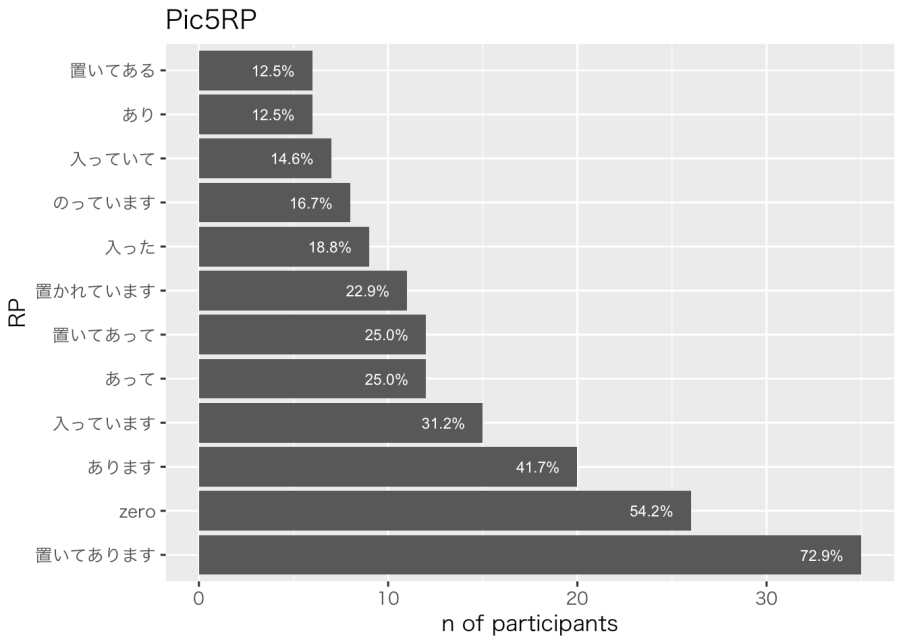


Figure 3.68 P5 Relations Predicates

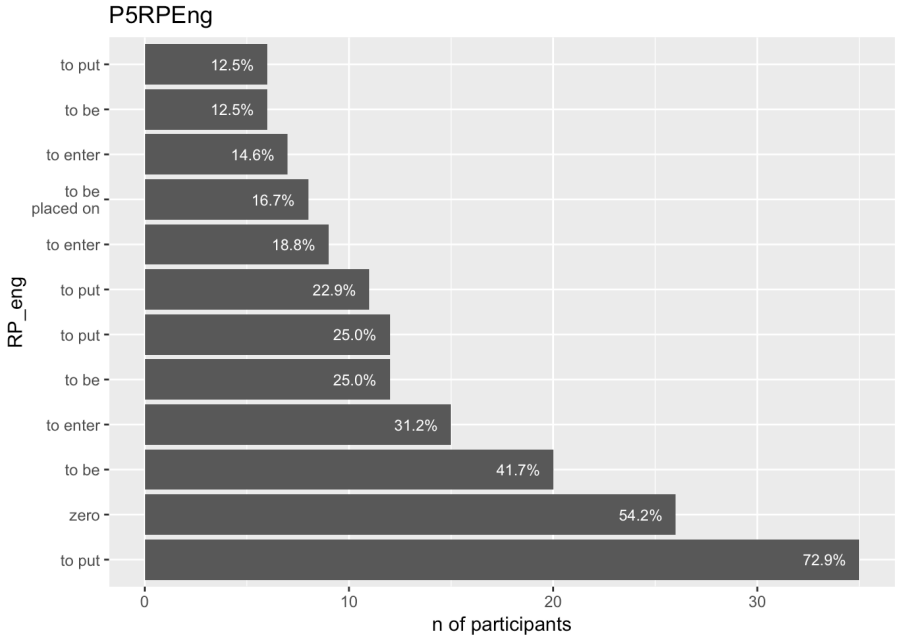


Figure 3.69 P5 Relations Predicates Eng

4.3.4.6 Picture 6 Relations Predicates

For P6 the groups of the most frequently used expressions of RP are similar to those of the P5. The most frequently utilized verb is *oku* in *te aru* form – *oitearimasu* (置いてあります,

"to put-CONN-RSMD"; 30, 63%), *oiteatte* (置いてあって, "to put-CONN-RSMD-CONN"; 10, 21%). Nine participants (19%) also used *oku*, putting it in passive imperfective resultative, *okareteimasu* (置かれています, "to put-PASS-CONN-IPFT"). Another verb with semantic features of placement, in this case the vertical placement of one object on the top of the other, *noru* was also quite frequently utilized – *notteimasu* (のっています, "to be placed on-CONN-IPFT"; 14, 29%), *notteite* (のっていて, "to be placed on-CONN-IPFT-CONN"; 9, 19%), *notta* (のった, "to be placed on-PAST"; 6, 13%).

About half of the participants (23, 48%) used zero Relations Predicate in their descriptions of P6.

The number of participants utilizing existence verb *aru* or copula *desu* for this picture was among the lowest in comparison with responses with other stimuli – *arimasu* (あります, "to be"; 16, 33%), *atte* (あって, "to be-CONN"; 8, 17%), *desu* (です, "be-COP"; 12, 25%).

Haitteimasu (入っています, "to enter-CONN-IPFT") was utilized by ten (21%) participants in descriptions of this picture.

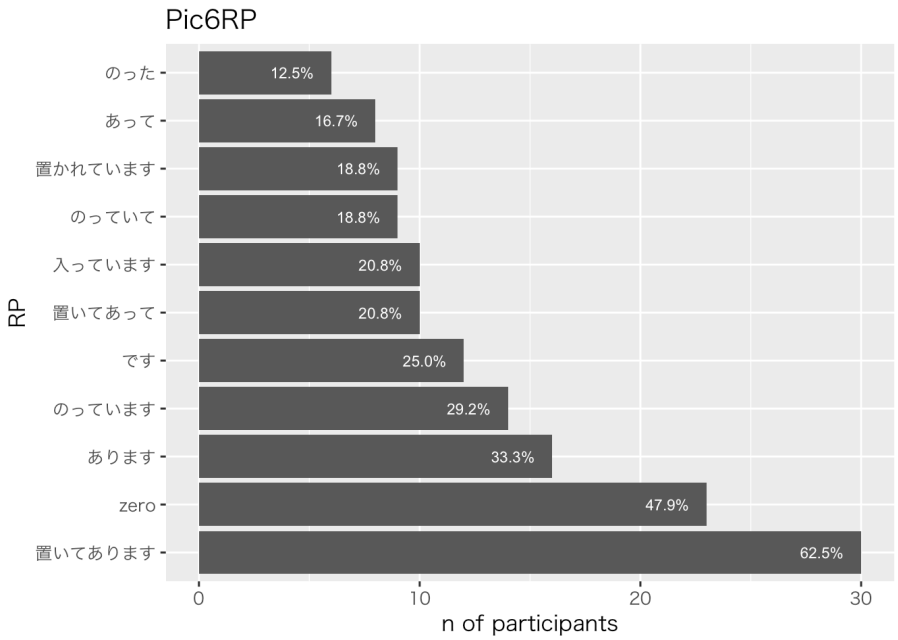


Figure 3.70 P6 Relations Predicates

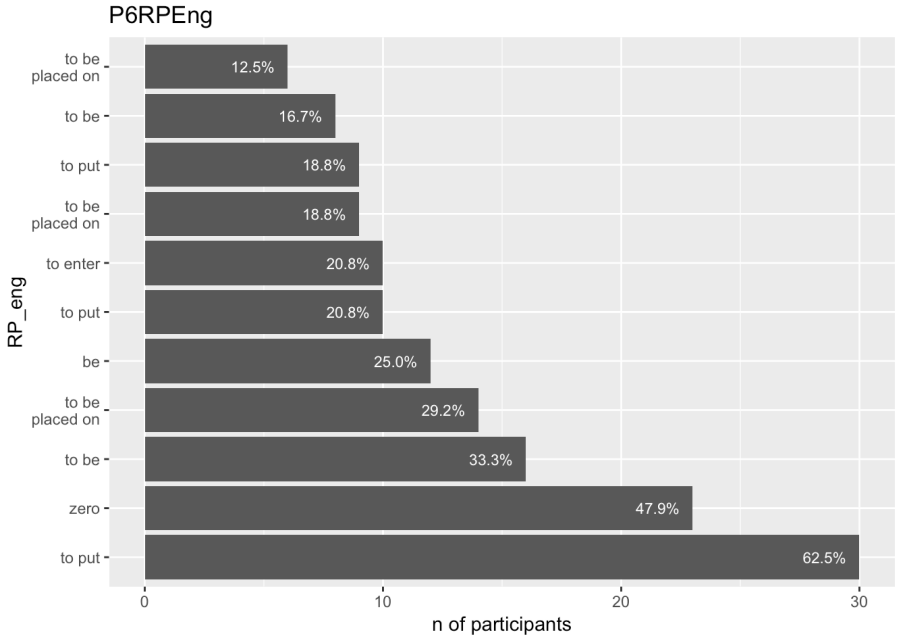


Figure 3.71 P6 Relations Predicates Eng

5. Results

This section of the chapter demonstrates the results of the quantitative analysis of the strategies and categories, and qualitative analysis of the types of spatial description per strategy.

In the first two parts of this section the conditions and the results of the variance tests are applied to the strategies and category types. The hypotheses concerning the strategies were tested with one-way repeated measures ANOVA (Lawrence 2013), and the generalized linear mixed-effects model for binomial variables (Bates et al. 2015). The hypotheses concerning the types of category were tested with generalized linear mixed-effects model for binomial variables (Bates et al. 2015).

The last part of the section gives a characteristic of each strategy through the proportions of types of descriptions utilized in the descriptions following each corresponding strategy.

5.1 Strategies

The hypothesis behind this study was that the following major features of the pictures would trigger different description strategies.

1. presence of a set frame in room pictures (room),
2. presence of the road in landscape pictures (road),
3. a set of different objects placed on the non-framed table (table)

The assumption was that 1. the room feature would trigger strategies containing frame elements, as there is a natural frame of walls-floor-ceiling depicted in the picture. Feature 2. the road was intended to trigger path element containing strategies. Finally, 3. the table feature

was assumed to trigger descriptions containing element of outstanding objects strategy and most of the scanning strategy descriptions.

For the analysis of variance, the responses of the participants were divided into groups depending on the feature present at the picture: room (P1 and P2), road (P3 and P4) and table (P5 and P6).

The responses were turned into binary variables and coded as follows:

Frame for all strategies containing Frame elements; *Scan* for SS and PRS; *Object* for all strategies containing elements of Outstanding Objects Strategy; *Path* for all strategies containing Path strategy elements.

For each hypothesis stated above, analysis of variance was conducted with one-way repeated measures ANOVA (Lawrence 2013), and generalized linear mixed-effects model for binomial variables (Bates et al. 2015). ANOVA was utilized as the most well-known test for variance in the discipline; the linear model was used to ascertain the results, as it is capable of accounting for binary data in repeated measures with more precision. The contrasts for each test were as follows:

1. Frame:
    1. Responses to pictures with Room and Road as the major feature vs responses to pictures with Table
    2. Responses to Room pictures vs Road pictures
2. Scan:
    1. Responses to Room and Table pictures vs Responses to Road pictures
    2. Responses to Table pictures vs Room pictures
3. Object:
    1. Responses to Room and Table pictures vs Road pictures

2. Responses to Table vs Room pictures

4. Path:

1. Responses to pictures with Room and Road vs Responses to Table Pictures

2. Responses to Road pictures vs Room pictures

5.1.1 Frame

Mauchly's test indicated that the assumption of sphericity had been violated with W= 0.8, p<.05, Greenhouse-Geisser corrected (s=.85) test results are reported. The effect of the major feature of a picture on the appearance of responses containing Frame strategy is insignificant, with F (1.7, 80) = 2.3, p > .05. Such an outcome demonstrates that for this data set the variance of the frame strategy containing responses was not significantly different between pictures with different features.

5.1.2 Path

Mauchly's test indicated that the assumption of sphericity had been violated W= 0.3, p<.05, Greenhouse-Geisser corrected (s=.57) test results are reported. The results demonstrate that presence of path elements in responses was significantly affected by the major feature of the picture, F (1.14, 53) = 14, p < .05, η^2 =.160.

The outcome of generalized linear mixed-effects model analysis demonstrates that while the first contrast was insignificant z = 0.007, p= 0.995, the second contrast between Road pictures and Room pictures was significant with at z= 3.29 and p= 0.001.

5.1.3 Scan

The outcome of the ANOVA test shows that the appearance of scanning elements in the descriptions was significantly affected by the major feature of the picture F (1.3, 11) = 6, p <.05, η^2 = .06.

The outcome of generalized linear mixed-effects model analysis demonstrates that the first contrast, comparing responses to pictures with Room and Table features and pictures with Road feature, is significant at z = 2.1 and p=.03, and the second contrast between Table and Room pictures is significant at z = 2.7, p=.006.

5.1.4 Object

The effect of the major feature of the picture on the production of Object strategy containing responses was insignificant with $F = (0.2, 7.8) = 1$, $p < .05$.

Considering the outcome of the variance tests, the following conclusions on the influence of the major feature of the picture on the strategies of its description within this data set can be made:

- Table feature tends to trigger Scanning strategies more than Road or Room feature.
- Road feature tends to trigger Path element containing strategies more than Room feature. Table feature does not trigger path element containing strategies.
- Strategies containing Frame and Outstanding Object element did not show any significant variance influenced by the major feature of the picture. At this stage it is only possible to hypothesize that Frame and Outstanding Object strategies are triggered by the individual speech or perception features of the participants, rather than the features of the visual stimuli. However, a larger data set is needed to confirm or reject this hypothesis.

5.2 Category

The variance of each Cat type within the corpus was statistically tested in order to detect whether strategy type or picture features significantly affect the type of category chosen by the participants. The results are discussed in the next section.

Two general hypotheses were set for category types. The first one that category type in general depends on the feature of the contents of the picture: room, road or table. The second is that the strategy type affects the category type. These two hypotheses were tested with the linear mixed model fit by maximum likelihood (Adaptive Gauss-Hermite Quadrature). The outcome of the tests for each category type is listed below.

5.2.1 Space Type

For ST (space type category) the contrasts were chosen as follows.

Feature:

- Room and Road vs Table
- Room vs Road

Strategy:

- Frame and Scan vs Object and Path
- Frame and Scan vs Path
- Frame vs Scan

Generalized linear mixed model fit by maximum likelihood (Adaptive Gauss-Hermite Quadrature) demonstrated that the only statistically significant variance effect for the ST category was detected for the contrast between room and road features vs table feature with z= 2.434, p = 0.01. It suggests that the table feature, as represented in this data set, tended to trigger the ST category less than room and road features. Post-hoc Tukey's test revealed that the main significant effect is within room and table contrast z = 2.368, p=.05.

5.2.2 Main Object (s)

MO (main object(s)) category, including MO_T (main objects and time), was tested with the following contrasts:

Feature:

- Table and Room vs Road
- Table vs Room

Strategy:

- Object and Scan vs Path and Frame
- Object and Scan vs Frame
- Object vs Scan

The outcome of the generalized linear mixed model fit by maximum likelihood (Adaptive Gauss-Hermite Quadrature) shows that there was no significant variation in usage of MO type category affected by feature of the picture or the strategy of the description.

5.2.3 Mixed Space Type and Main Object (s)

ST_MO - Mixed Space Type and Main Object(s) category was tested with the following contrasts:

Feature:

- Road and Table vs Room

Road vs Table

Strategy:

- Object and Scan vs Path and Frame
- Object and Scan vs Frame
- Object vs Scan

The generalized linear mixed model fit by maximum likelihood (Adaptive Gauss-Hermite Quadrature) demonstrated statistically significant effect of stimuli feature only in case of Table vs Road contrast $z = 2.959$, $p=.003$.

5.2.4 Functional Type of Space

ST_F (Type of space functional) was tested with the following contrasts:

Feature:

- Room and Road vs Table
- Room vs Road

Strategy:

- Frame and Scan vs Object and Path
- Frame and Scan vs Path
- Scan vs Frame

The outcome of the generalized linear mixed model fit by maximum likelihood (Adaptive Gauss-Hermite Quadrature) shows that there was no significant variation in usage of the ST_F type category affected by feature of the picture or the strategy of the description. It might be caused by the effect of asymmetry, when all the responses of ST_F type are given to the pictures with room feature.

5.2.5 Superordinate

For the category of SUPT type (by superordinate), the following contrasts were set for the testing.

Feature:

- Road and Room vs Table
- Room vs Road

Strategy:

- Scan and Frame vs Path and Object
- Frame and Scan vs Path

- Scan vs Frame

The generalized linear mixed model fit by maximum likelihood (Adaptive Gauss-Hermite Quadrature) demonstrated that feature of the picture affects variance of this type of category, the major significant effect is found between room and road features z= 2.927, p= .003, demonstrating that the pictures with room feature tend to trigger category SUPT more than pictures with road feature.

5.2.6 Inside/ Outside

The following contrasts were set for tests of the Inside/ Outside (IN_OUT) category type:

Feature:

- Room and Road vs Table
- Room vs Road

Strategy:

- Scan and Path vs Object and Frame
- Scan and Path vs Frame
- Scan vs Path

The generalized linear mixed model fit by maximum likelihood (Adaptive Gauss-Hermite Quadrature) showed that there is only one significant effect of the feature on IN_OUT variance within the contrast between room and road features with z = 1.987, p =.05.

5.2.7 Zero

Feature:

- Table and Road vs Room
- Table vs Road

Strategy:

- Object and Scan vs Path and Frame
- Object and Scan vs Path
- Object vs Scan

The outcome of the generalized linear mixed model fit by maximum likelihood (Adaptive Gauss-Hermite Quadrature) showed that there was no significant variance in the appearance of zero category affected by feature of the picture or the strategy of the description.

5.2.8 Mixed Superordinate and Main Object(s)

The following contrasts were set for the Mixed Superordinate and Main Object(s) (SUPT-MO) category type:

Feature:

- Road and Table vs Room
- Table vs Road

Strategy:

- Object and Path vs Frame and Scan
- Object and Path vs Scan
- Path vs Object

The outcome of the generalized linear mixed model fit by maximum likelihood (Adaptive Gauss-Hermite Quadrature) showed that there were no statistically significant effects of feature of the picture or the strategy of the description on variance of SUPT_MO category type.

5.2.9 Type of Picture

The contrasts for testing Type of the picture category (TP) were set as follows:

Feature:

- Table and Road vs Room

- Road vs Table

Strategy:

- Object and Scan vs Path and Frame
- Scan and Object vs Path
- Scan vs Object

The outcome of the generalized linear mixed model fit by maximum likelihood (Adaptive Gauss-Hermite Quadrature) showed that there were no statistically significant effects of the feature of the picture or the strategy of the description on variance of the TP category type.

5.2.10 Mixed Superordinate and Space Type

For mixed Superordinate and Space type category (SUPT_ST) the following contrasts were set:

Feature:

- Road and Room vs Table
- Road vs Room

Strategy type:

- Path and Scan vs Object and Frame
- Scan and Path vs Frame
- Scan vs Object

The outcome of the generalized linear mixed model fit by maximum likelihood (Adaptive Gauss-Hermite Quadrature) showed that there were no statistically significant effects of the feature of the picture or the strategy of the description on variance of SUPT_ST category type.

Overall, linear regression tests did not demonstrate any statistically significant results for category types with frequency within the corpus lower than 5%. Strategy type did not show

any statistically significant effect on variance of category type. This hypothesis has to be rejected.

On the other hand, in cases where category type had a frequency of more than 5%, some statistically significant effects of the picture feature on the types of category (Cat) were detected:

- ST tends to appear less in pictures with the Table feature, especially in comparison with Room feature pictures.
- Table tends to trigger a mixed strategy ST_MO more than the Road feature pictures.
- SUPT and IN_OUT category types are triggered by the Room feature more than by the Road feature.

MO does not demonstrate any significant influence from the feature of the picture. The results shown here, however, need to be tested with a larger data set.

5.3 Strategies of Spatial Description and Types of Spatial Relations

A total number of 2458 configurations were extracted from the corpus for qualitative analysis. The analysis was conducted in order to encode the type of relationships in each configuration of all the spatial descriptions within the material obtained during the experiment. The main purpose of such analysis was to ascertain the predominant FoRs of the spatial description strategies.

Figures and Landmarks were encoded to disambiguate the usages of lexical items referring to particular objects in the pictures. The general procedure for encoding for Lms was similar to encoding for Figure, in particular each Lm was encoded in both Japanese and English to reflect which object in visual stimuli it refers to. However, Lm can often be a zero or a deictic pronoun, e.g. *koko*, *soko*, *sochira* or adnominal adjective, e.g., *sono*, *kono*. For Lms of such

type, lemma encoding was added for disambiguation. In most cases contextually such encoding was used in cases where Lm points to an F from the previous configuration, or the whole visual stimuli picture. Zero Lm's were encoded as non-zero in cases when they implicitly refer to a Figure from the previous configuration, while the zero Lm's referring to the whole picture, screen or room in the picture were encoded as "zero".

Relations Predicates were encoded with the dictionary form of the predicates used and codes for the forms of the predicates used by the participants. Relators were not encoded to allow more precise analysis of the expression of spatial relations within the configuration.

Each configuration containing encoded Lm, F, RP and Relator was assessed and encoded with one or multiple codes designating types of spatial relations.

In total throughout the corpus configurations with Topological type of relation (40%), Intrinsic (31%) and Relational (18 %) FoRs were prevailing. Non-static spatial descriptions of motion were detected in 4% of configurations. Deictic type of relations was also expressed in around 4% of configurations found within the corpus.

Table 3.6 Type of Relations

Type of Relationships	Code	Freq	Pct
Topological	Top	1174	40.3%
Intrinsic	Intr	896	30.8%
Relational	Rel	526	18.1%
Motion	MOT	123	4.2%
Deictic	D	110	3.8%
Absolute	Abs	75	2.6%
Intrinsic/Relational	Intr (Rel)	7	0.2%

Proportions of types of spatial relations for descriptions following each of the non-mixed strategies – FS (8), SOO (30), SS (87) and PRS (72) – are presented in figures 3.72-3.75.

5.3.1 Type of Spatial Relations in FS

As shown in the fig. 3.72 the majority of 41% of spatial relations within the descriptions following FS were expressed with intrinsic FoR, while the topological type of description was the lowest (29%) among all non-mixed strategies.

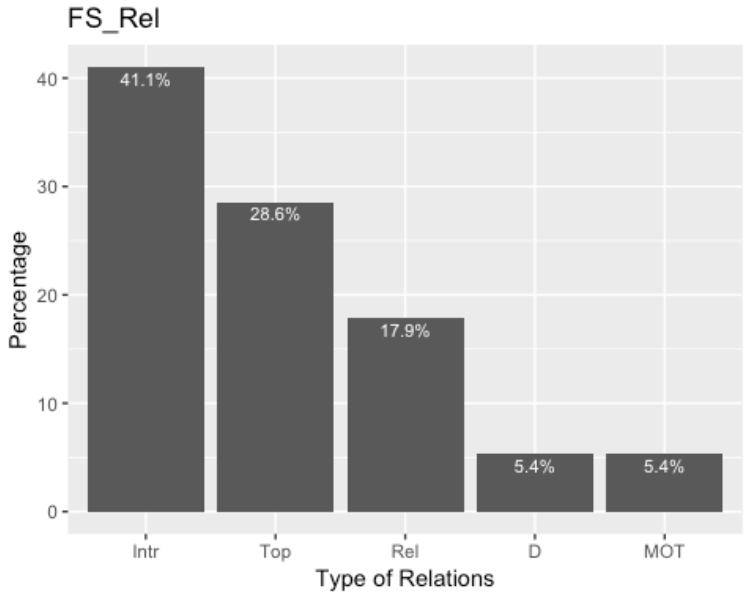


Figure 3.72 FS_Relations

5.3.2 Type of Spatial Relations in SOO

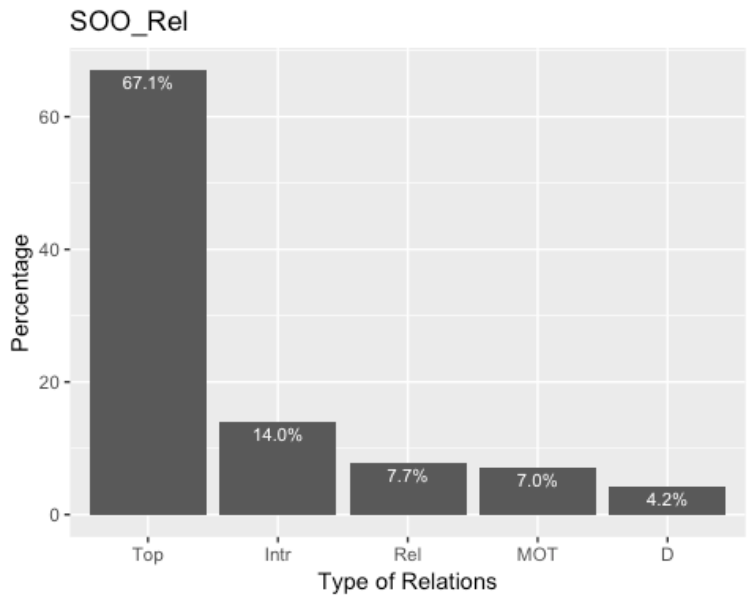


Figure 3.73 SOO_Relations

SOO can be characterized by the prevailing (67%) topological type of spatial description. In other words, SOO can be defined as a primarily topological spatial description, not reporting any angular information about the space described.

5.3.3 Type of Spatial Relations in SS and PRS

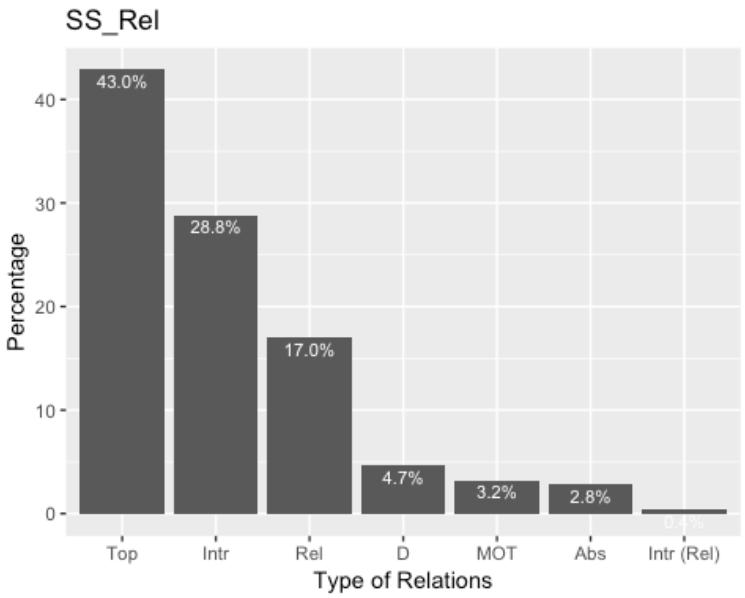


Figure 3.74 SS_Relations

The SDs identified as SS contained 43% of configurations expressing topological type of spatial description.

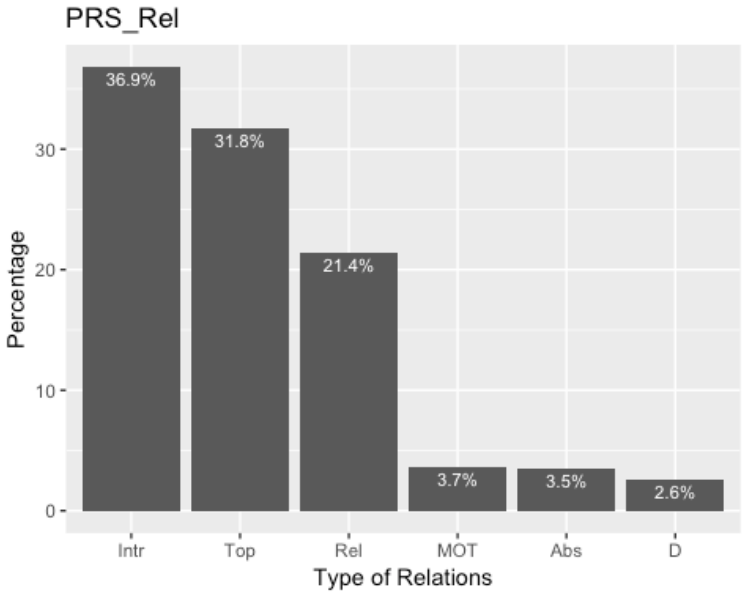


Figure 3.75 PRS_Relations

While SDs following PRS had the highest percentage of Relational FoR (26%) in comparison with other non-mixed strategies represented within the corpus, there was no clearly

prevailing type of spatial description in PRS SDs. Intrinsic FoR was detected in 36% of configurations and Topological in 32%.

5.3.4 Type of Spatial Relations in PS and PS mixed

The non-mixed PS strategy was utilized only once within the data, which makes analysis of types of spatial description impossible for PS. However, the proportions of non-static (14%) and deictic (11%) spatial descriptions within the mixed PS – scanning strategies (20 SDs) – is higher than in non-mixed scanning strategies.

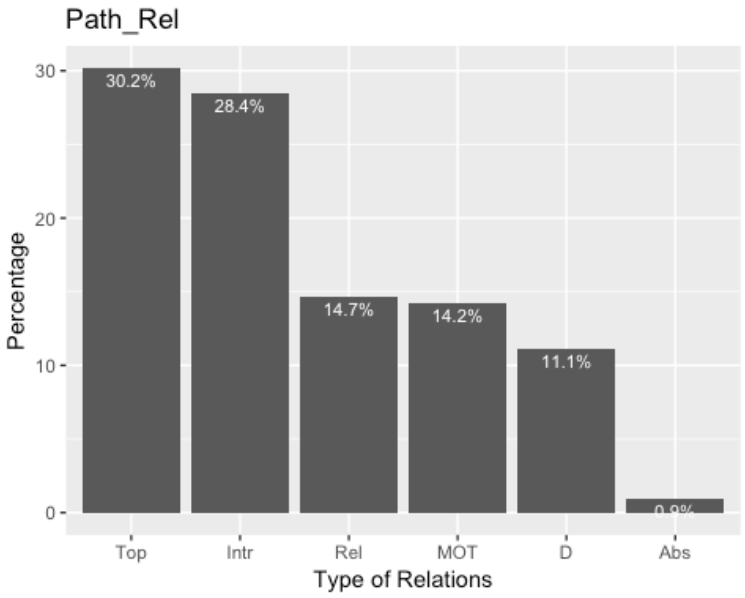


Figure 3.76 Path_Relations

6. Conclusions

The outcome of the statistical analysis of variance of the responses produced by the participants of the experiment suggested both confirmation of some of the hypotheses formulated when designing the experiment, and the absence of support for some of them within the current dataset.

The statistical analysis of the variance of strategies of description revealed that the usage of strategies containing Path element and Scanning strategies has an interconnection with the feature represented in the visual stimuli. However, strategies containing Frame element and those containing SOO did not show such a connection within the current dataset. I can hypothesize that the FS and SOO are affected by a factor not included in the analysis presented in this work, e.g. the individual speech or perception features of the participants. However, a larger data set is needed to confirm or reject this hypothesis.

Conceptually, strategies containing Path element and scanning strategies, SS and PRS, appear to be similar in the way that both of these types project the pattern of experiencing the space (Tversky 2003). In the case of Path Strategies, the participants describe the stimuli as if they were physically present within the space represented by the picture, while in the case of scanning strategies participants take an outsider's point of view and distance themselves from the space depicted in the picture.

Strategies containing Frame element and those containing Outstanding Object element can also be seen as conceptually similar. The FS and SOO descriptions take the visual stimuli or the type of the space represented by the visual stimuli as a "container", but while in FS the speaker describes locations of the objects in relation of structural part of the given "container", the speakers using SOO list the "contents" of the "container".

The preliminary conclusions on conceptual differences of the strategy types and the factors affecting the usage of a particular strategy need to be tested further within the environment closer to the real-life conditions, e.g., within the actual space or within the virtual spatial representations.

Category type or categorization of the spatial visual stimuli in general remains an answered question. In the light of the results present in in this work, it can be concluded that the category type is independent from the type of the strategy chosen by the participant, and the category type can be affected by the features of the space depicted in the stimuli, but to a limited degree. These preliminary conclusions need further investigation, possibly with a different approach to data collection where categorizations and spatial descriptions would be collected independently.

The analysis of the types of spatial description within the whole data set and within descriptions following non-mixed strategies of four types – FS, SOO, PRS and SS – was consistent with Kita's (2006) conclusions that intrinsic and relative FoRs are dominant in Japanese. Moreover, within the dataset utilized in this work intrinsic FoR was prevailing.

Each of the strategies was also characterized by the types of spatial relations most frequently utilized. In FS, participants most frequently utilized intrinsic FoR focused on the intrinsic properties of the represented space; in SOO, overall the descriptions were topological; PRS and SS were both characterized by the usage of different proportions of topological type of description and intrinsic FoR. In SS topological type of description was prevailing, though intrinsic FoR also had a comparatively high frequency of 28%. In PRS intrinsic FoR was prevailing, and relative FoR had the highest percentage of usage compared to other non-mixed strategies.

As the major direction for future research, the continuation of the investigation of the spatial description strategies in Japanese based on experiments conducted in an environment closer to real-life spaces is suggested.

Chapter IV: Temporal Description Strategies through Spontaneous Speech Experiment

The goal of this chapter is to describe and analyze the patterns of temporal description in Japanese in order to create a typology of this phenomenon. The data for this work is a corpus of 150 texts obtained from 50 Japanese native speaking participants through a spontaneous speech experiment conducted in 2017.

The main hypotheses of this work are based on the study of time in Japanese culture (Mita 1996; 1998; Katoo 2007), where three distinct temporal concepts co-existing in different aspects of Japanese culture were formulated: 1) linear time with no beginning and no end (traditional time in works of Katoo)- focused around an extended notion of *ima* (今; "now"); 2) linear time with beginning and end - lifetime; 3) circular time with no beginning and no end (day-to-day routine time in works of Katoo) – based on changes in nature associated with the flow of time, e.g., seasonal time.

According to Katoo, the traditional time concept has its roots in the *Kojiki*, where all the events seem to be happening in an endless linear sequence. Katoo interprets it as if this time concept is "nows (moments in the present) occurring in succession". In other words, time in its linear flow is perceived as a succession of such short or long line segments, which could not be measured as such. They are more of a framework that includes some segment of time from close past and close future. As seen in the previous section of this chapter, such a temporality model is not exclusive to Japanese culture. The notion of extended present was discussed by Bertrand Russell, Barry Dainton, Edmund Husserl and C. D. Broad. Such a notion of time overlaps with the discussion of *ima* (now) in Japanese as being both momentary and temporally extended and including past, present and future at the same time (Nagano 1998).

The notion of day-to-day time is described as a natural flow of time, or the cyclical change of seasons. Katoo considers perception of this type of time as being formed by Japanese agricultural conditions and Japanese cultural, especially literary tradition.

The last type is a linear lifetime, a sequence of unique events interconnected by fate or casual relationship, which extends through one's lifespan.

Mita (1998), as the result of qualitative analysis of marterials from the two classical anthologies of Japanese poetry, *Man'yooshuu* and *Kokinshuu*, concludes that the roots of cyclical time concept can be traced back to *Man'yooshuu* and by the time of *Kokinshuu* cyclical time coexisted with linear time concept.

The picture of Japanese time drawn from the works based on Japanese literature, culture and folklore is a complex multilayered view of the foundations on which the contemporary concepts of time are formed. In the study presented in this chapter I will detect whether these foundations are directly reflected in temporal discourse in contemporary Japanese.

Qualitative analysis of the corpus allowed formulating a preliminary typology of temporal description strategies as Linear Limited Strategy (LBE), Linear time with no beginning (LnB), Linear time with no end (LnE), Linear non-limited time (LnBE), and Non-Linear time (NL) strategies. The qualitative analysis of the texts allowed for the consideration of LnB, a variation of LBE, where the beginning is implicit and is determined by the beginning of narration. LnE was considered a separate time description strategy.

In connection with the premise based on the works of Katoo and Mita the initial hypotheses were that

1) representation of seasonal time would trigger the appearance of linguistic representation of non-linear (NL) time concept;

2) representations of day to night time and short periods of time would trigger the appearance of linguistic representation of linear time with no beginning and no end (LnBE); 3) representation of ageing would trigger the appearance of linguistic representations of linear limited time (LBE).

As an extension of the hypotheses above it was assumed that the Ageing Feature would be the least likely to trigger NL strategy and that Seasonal Feature would be the least likely to correspond with a limited linear strategy.

Analysis of the corpus (150 temporal descriptions) based on the responses of the participants of the spontaneous speech experiment demonstrated that 1) the hypothesis on distinct features of seasonal time description associated with NL strategies of description was confirmed for this data set, and 2) the second hypothesis was rejected, however, it was detected that Day to Night time stimuli tends to trigger LnE; 3) the third hypothesis was partially confirmed in post hoc tests with both limited linear variations (LBE and LnB).

This chapter presents the results of a spontaneous speech experiment on temporal description strategies. The details of the design and procedure of the experiment are given in section 2 of this chapter, Spontaneous Speech Experiment on Temporal Description Strategies. The main purpose of the experiment was to obtain the material from Japanese native speaking participants in order to ascertain the patterns (strategies) of temporal description (TD). Descriptions of the three video stimuli, representing different temporal processes (ageing, say to night time, seasonal change) were audio recorded, transcribed, organized in a corpus of texts and annotated for qualitative and quantitative analysis. The conventions of encoding and examples of encoded texts are demonstrated in section 3 Corpus and Encoding.

A general descriptive statistical overview of the obtained corpus – numbers and proportions of each type of the strategy per picture and of each category type, and the most frequent expressions of such elements of temporal description as Figure, Relator and Relations Predicate – are shown in section 4 Descriptive Statistics.

The approach to the analysis, the proposed typology, and the distinctive features for each strategy are summarized in section 1 Temporal Description.

While the proposed typology summary is given at the beginning of the chapter in section 1, the outcome of the analysis leading to it is demonstrated in section 5 Results along with results of variance statistics tests for strategies.

Findings and preliminary conclusions are summarized in section 6 Conclusions.

1. Temporal Concepts and Temporal Description

Details of the theoretical framework of temporal description are given in Chapter I of this work; this section of the chapter gives a brief of overview of the approaches to analysis of temporal language and structure of temporal description.

1.1 Figure and Landmark

The notions of Figure (F) and Landmark (Lm) as setting the basis of temporal description (TD) are broadly defined as a Figure being a described event (EVT) and a Landmark as a reference event serving to locate the Figure in time. Talmy (2000) formulates the temporally specific definitions of F and Lm as:

> The Figure is an event whose location in time is conceived as a variable the particular value of which is the relevant issue. The Ground (Lm) is a reference event, one that has a stationary setting relative to a reference frame with respect to which the Figure's temporal location is characterized.
>
> (Talmy 2002, p. 320)

Talmy also formulated a set of relations between temporal F and Lm, which are characterized in detail in Chapter I of this work. These principles are:

1. Sequence principle, e.g., she arrived, and [after that] he left.
2. Cause-result principle, e.g., she arrived, and [because of that] he left.
3. Inclusion principle, e.g., she visited ten countries during her trip.
4. Contingency principle, e.g., he dreamt [all] during his sleep.
5. Substitution principle, e.g., he's playing instead of working.

(Talmy 2000, 327–29)

From the set of principles Talmy introduces, Sequence, Cause-result, Inclusion and Contingency principles are relevant for the material analyzed further in this chapter. Stimuli material representing or suggesting substitution principle was not included in the data set analyzed in this work.

1.2 Types of temporal description

Previous research on temporal description suggests that there are three distinctive frames of reference applicable to temporal description, namely holistic, phasal perspectivation (e.g., Stutterheim and Lambert 2005; Vanek 2012) and absolute perspectivation frames (Bennardo, Beller, and Bender 2010; Bender et al. 2012; Bender and Beller 2014).

Holistic and phasal perspectivation frames are characterized by different types of TT management (Klein 1994, 2009). Holistic frame is characterized by TT shift: topic time shifts so that it is in post-time in relation to the TSit of the previous event, e.g. de, *hiru ni natte, sono ato dandan to kuraku natte, yoru ni natteiku* ("then it becomes daytime, after that gradually gets darker, and becomes night") (von Stutterheim and Lambert 2005, Vanek 2012). TT maintenance is a distinguishing feature of the phasal perspectivation frame, in this case TT does not change while TSit changes, e.g. *hiru ni natte, dandan to kuraku natte, yoru ni naru* ('it becomes daytime, gradually gets darker, it becomes night". Absolute perspectivation frame is characterized by high temporal granularity and in some cases relatively high condensation of the text. Condensation is the degree of both temporal and non-temporal hierarchical organization of the text; granularity is the degree of temporal partitioning of the situations described in TD (Noyau et al. 2005).

Noyau et al. (2005, p. 4) define temporal granularity as: "a qualitative dimension which characterizes the ways in which, in texts, a complex dynamic situation will be conceptualized, with either a high degree of granularity, i.e. presenting a detailed series of microevents, or a low degree, as one macro-event or a few events, in which the different components merge". Two main parameters that temporal granularity can allow accounting for are 1) a quantitative degree of granularity for the whole text or its segments; 2) shifts in granularity, allowing for

the detection of representations of complex hierarchical structures as in absolute perspectivation frame. Condensation index accounts for the complexity of relations within utterances of the description, e.g. higher condensation index represented by multi-propositional utterances with hypotactic linkage and lower condensation index represented by mono-propositional utterances with parataxis (Vanek 2012).

The next three subsections demonstrate examples of holistic, phasal and absolute perspectivation frames, illustrating their definitions.

1.2.1 Holistic perspectivation frame (HPF)

The HPF descriptions are characterized by viewing the situation from an event-based (intrinsic) perspective with explicit reference to points of completion and linkage of successiveness of the situations. The other feature is a topic time shift from one event to the following event, using the preceding event as a temporal anchor, e.g.

始め、冬からスタートして、
hajime fuyu kara sutaato shite
first it starts from winter
で、次に春になって、
de, tsugi ni haru ni natte
and then, next it becomes spring
で、そこから夏、
de, sokokara natsu
and then, from there summer
で、その後、最後秋で終わるのかな
de, sono ato saigo aki de owarunokana
and then, after that at the end it seems to end with autumn

1.2.2 Phasal perspectivation frame (PPF)

Phasal perspectivation frame (PPF) is characterized by the speaker taking a view point on the temporal situation described from the observer-anchored perspective. The main features of such perspective are the absence of reference to the point of completion and absence of shift of topic time from event to event, e.g.,

最初は真っ白な雪の中に立って、
saisho wa masshirona yuki no naka ni tatte
first it[tree] stands in pure white snow
春が来て、
haru ga kite
spring comes
夏、
natsu
summer
そして、秋で
soshite aki de
and autumn
葉っぱが全部落ちていく
happa ga zembu ochite iku
all leaves fall

1.2.3 Absolute perspectivation frame (APF)

APF can be interpreted as the conceptual equivalent of the absolute frame of reference in spatial description, as temporal perspectivation frame, it employs a set of "cardinal" temporal events as Lms such as the flow of time, passage of years or seasonal change.

For example, seasonal change as a Landmark can be represented as follows:

夏になると
natsu ni naru to
when summer comes
時が進んでいき
toki ga susundeiki
time passes
夏になると
natsu ni naru to
when summer comes
木に緑色の葉が生い茂り
ki ni midoriiro no ha ga oishigeri
green leaves grow thickly on trees

Ageing in APF can be represented as in the following example:

今度はそれがさらに年齢を進めると
kondo wa sore ga sara ni nenrei wo susumeru to

This time this is when ageing further advances,
髪が白くなってきて
kami ga shiroku nattekite
hair is turning grey

1.3 Relator or Temporal nouns and conjunction (TmP) and Temporal Relations Predicates (RTs)

Notions of Relator and Relations Predicate in TDs are also conceptually similar to those of spatial description. However, in temporal description in Japanese the combination of Relator and Relations Predicate play a major role in expressing the nature of relations between F and Lm.

In Japanese, temporal relators (TmP) can be expressed by the means of temporal nouns, particles and conjunctions; Temporal Relations Predicates (RTs) are expressed through predicates and their tense form and grammatical aspect.

However, the major difference between spatial description and temporal description is that the Relator is not a necessary element to express temporal relations, as seen from Talmy's definitions of sequence or cause-result, relations in TDs can be unmarked. Therefore, for the Phasal perspectivation frame, where the sequence relations are prevailing, relations between F and Lm are predominantly expressed through connective forms of the predicates, *te iku* and *te kuru* forms or parataxis.

The Relators typical for the Holistic perspectivation frame are Relators with meaning:

1) before/after, e.g. *ato* (後, "after"), *sono ato* (その後, "after that"), *mae* (前, "before"), *sono mae* (その前, "before that)

2) beginning and end, e.g., *saisho* (最初, "at the beginning"), *saigo* (最後, "at the end"), particles *kara (*から, "from"), *made (*まで, "until").

The Relators with semantic features of inclusion or simultaneous processes, e.g. *totomoni* (とともに, "as; while'), *nitsurete* (につれて, "when A, B; as") can be utilized in both absolute and intrinsic FoRs in TDs, depending on the hierarchical relations between F and Lm.

1.4 Structure of Temporal Description

This subsection of the chapter introduces the structure of the temporal description. As discussed above, TDs are encoded in a similar manner and with similar conventions to spatial descriptions (e.g., Tenbrink 2011). Though the structural parallelism in TDs and SDs is clear, the functional elements in TDs such as, for example, Figures and Landmarks are represented in a different way.

Temporal Description (TD) consists of the following structural and functional elements:

Structural elements are

• Exposition,

• Elaboration,

• Sequence and Utterance

Functional elements are

• Categorization, which includes Category

• Propositions

• Temporal Proposition - Event, which serves as a Figure and a Landmark, and minimally contains Relations Predicate and can also contain a Relator and a Landmark (or a repetition of the Landmark summarizing or specifying the previous event)

Propositions often present in TDs, which do not directly affect temporal descriptions, are:

• Specification,

• Characterization,

• Localization,

• Commentary and Metacommunicative Commentary

1.5 Exposition and Categorization

Similar to spatial descriptions, TDs start with a zero or a non-zero Exposition (EX). The main role of EX is to state the type of stimuli or the type of object/process represented by it. Therefore, the only compulsory element of EX is Category (Cat), which is represented by a noun or an NP, e.g. *kisetsu* (季節, "seasons"), *onna no ko ga seichooshiteiku sugata* (女の子が成長していく姿, "appearance of a girl growing up"). EX can also contain any propositions not containing TD, i.e. Specification (Spec), Characterization (Ch), Localization (Loc) or Commentary (Com).

1.6 Elaboration and Sequence

Elaboration (El) contains temporal description. It consists of at least one Sequence (Sq), which is also termed as Episode (Noyau et al. 2005) or Segment (Vanek 2012).

Each Sq is a part of the description that corresponds to a distinguishable part of the stimuli (Noyau et al. 2005; Vanek 2012). Sq must contain at least one Utterance (UTT) containing at least one Event (EVT), and can also contain any of the non-temporal description elements.

1.6.1 Utterance and Proposition

Utterance is an autonomous communicative unit that has an illocutionary force (Noyau et al. 2005). It must contain at least one temporal proposition (EVT) or non-temporal proposition, e.g. one event, or one commentary.

Division of the text into utterances for spoken language is based on syntactic, semantic and intonational cues (Vanek 2012). Proposition minimally consists of a predicate (RP) and

contains reference to situation, modality, optionally to other cognitive categories, e.g., time, space.

1.6.2 Event

Event is such proposition that contains reference to time, temporal change or process or its results, including ongoing events and completed events.

In temporal description, events (EVT) are considered to be both Figure (F) and Landmark (Lm) and at the same time it minimally contains a Relations Predicate (RP) and can contain a Relator (R).

The main principles of distinguishing and characterizing temporal events in discourse were described in Klein (2009) and supported in such research works on temporal language as Vanek (2012), Gerwien and Stutterheim (2018).

> 1. Qualitative change: does the content expressed involve a change of state or not (non-stative vs. stative VPs)?
> 2. Boundedness: does the content expressed have a beginning and an end, or, in other words, an initial and a final boundary ("unbounded" vs. "bounded")?
> 3. Duration: in the case of "bounded", is it of short or long duration ("punctual" vs. "non-punctual")?
> 4. Inner quantification: does the content expressed involve repeated sub-events ("iterative", "frequentative", "semelfactive")?
> 5. Phase: does the content focus a sub-phase, for example the beginning, the middle, the end ("inchoative", "durative", "terminative"/"resultative", etc.)?
>
> (Klein 2009, p. 60)

1.6.3 Non-temporal Propositions - Specification, Characterization, Localization, Commentary and Metacommunicative Commentary

In TD elements not representing any type of temporal description, which in temporal description are referred to as "non-events" or "background of the discourse' (e.g., Vanek 2012), are frequently present in both EX and El. Such elements, similar to spatial description, are Specifications (Spec), Characterizations (Ch), Localizations (Loc) and Commentary (Com).

Specification contain additional specifying information about the events or objects involved in events, e.g., with the described object *onnna no ko (*女の子, "girl"), the specification can be *shoogakusei gurai no onna no ko nan desu* (小学生ぐらいの女の子なんです, "she is probably around primary school student [age]").

Characterization contains information on distinctive features of objects or events described, e.g. colour, size, and temperature. For example, when the colour of the sky or general colour of the view in the stimuli represents a temporal change of a landscape, e.g. *sora ga pinku iro de* (空がピンク色で, "sky is pink ") or *kiiroi kanji no yakei de* (黄色い感じの夜景で, " a night view, which seems yellow").

Localization is a type of characterization providing additional information on spatial orientation or details of the location of objects involved in TDs. In temporal descriptions all spatial characteristics that are not directly included in the temporal events are treated as Localizations.

All the impressions or assumptions about the stimuli described or about the description process can be identified as Commentary, e.g. *sora mo totemo kirei deshita* (空もとてもきれいでした, "the sky was also very beautiful) or *kaze mo kanjiru* (風も感じる, "[I] feel the wind too')

The distinctive feature of TDs is that due to the film re-telling being the main tool and source of the data, there is also a variation in the Commentary – a Metacommunicative Commentary (Film) – containing commentary on the video features, e.g., *kamera wa dandan to zuumu shiteikimasu* (カメラはだんだんとズームしていきます, "camera gradually zooms in").

1.7 Typology of Extended Temporal Description

A theoretical background on the typology of extended temporal description is given in Chapter I of this work, and the details of the definition formulated as the result of the conducted analysis are demonstrated in Results section of this chapter. In this subsection I will show the types of strategies and their core features as they were hypothesized at the beginning of this work.

1.7.1 Strategies Definitions and Features

1.7.1.1 Linear limited time (LnB, LBE)

In Linear limited time strategy a sequence of events is described with the main emphasis on the ending point/completion of the temporal change/motion. Beginning could be explicit as in LBE or implicit as in LnB.

The features of Linear limited time strategy are:

1) The speaker describes the temporal change as completed
2) Lexically or aspectually marked start and end points

1.7.1.2 Non-limited Linear Time (LnBE)

LnBE is such strategy where the description focuses on the contents of the events. LnBE resembles Katoo's (2007) non-limited linear time.

Features of LnBE:

1) No marked start and end points of events

1.7.1.3 Endless linear time (LnE)

LnE descriptions are focused on the starting point of the temporal process/change and leave the end "open", as if the change is ongoing or the speaker perceives it as an ongoing.

Features of LnE:

1) Lexically or aspectually marked beginning of the temporal process/change, e.g., "at first it's a young girl, she grows, her face changes, her face changes more, her hair turns grey, she gets more wrinkles on her face, she is turning old".

1.7.1.4 Non-linear Time (NL)

In TDs following NL strategy the speaker tends to utilize more abstract, e.g. time, lifetime, or more temporally extended, e.g., seasons, Lms for the sets of more concrete or shorter events.

Features of NL:

1) Events at a higher hierarchical level are typically marked lexically or aspectually
2) Each event at a higher hierarchical level contains a number of sub-events, e.g., "as spring comes, flowers bloom, and birds start to sing, and all changes to green colours".

2. Spontaneous Speech Experiment on Temporal Description Strategies

This section describes the design of the experiment, including organization of the stimuli set and a description of the experimental process, and gives an overview of information on the ages, places of origin and education of the participants of the experiment.

Experiments of this type involving video stimuli description have been actively utilized in previous works investigating temporal description patterns in various languages (e.g., Noyau et al. 2005; Vanek 2012) and proved to be an effective tool of obtaining temporal discourse material.

2.1Stimuli set

The stimuli set for the spontaneous speech experiment on temporal description strategies consisted of 4 short video clips (1 representing life time (ageing), 1 representing daytime (flow-

time), 1 representing a short period of time (organized time measurable by clock), 1 representing seasonal time). Each of the four clips was chosen to clearly represent a cognitive symbolic artifact[11] – lifetime notion, day and night time flow, short time and seasonal time. The results of the study demonstrated in Chapter 2 confirmed that at the level of word association there is a disctinction between Life time, Flow-time, Seasonal Time and Organized time concepts. Such organization of the stimuli set aims to allow observation of 1) whether visulal representations of these cognitive symbolic artifacts will affect participant's choice of temporal description strategies, and of 2) particularities of the description patterns the participatns will utilize. As a result of the preliminary analysis of the responses, clip number 3 representing short period of time was excluded from the analysis, due to the asymmetry of the responses of the participants. A number of participants were distracted by the presence of the people in the video, and tended to describe the people rather than the events happening in the clip. This limitation is to be addressed in the future.

The particular set of clips was selected through qualitative analysis of descriptions obtained through a pilot study with two adult Japanese native speaking participants. The samples of clip scenes utilized in the final version of the experiment design are shown below[12].

---

[11] Examples of symbolic cognitive artefacts are notational systems (including writing and number), dials, calendars and compasses. (Sinha et al. 2011, p. 142)

12 Clip sources:

Clip 1 https://www.shutterstock.com/video/clip-8593741-getting-older-child-morphing-into-grandmother

Clip 2 https://www.shutterstock.com/video/clip-8781409-barcelona-cityscape-seen-behind-window-day-night

Clip 3 https://www.shutterstock.com/video/clip-4648949-london---february-2011-time-lapse-pedestrian

Clip 4 https://www.shutterstock.com/video/clip-13591325-timelapse-showing-big-tree-during-4-weather



C1Sample1



C1Sample2



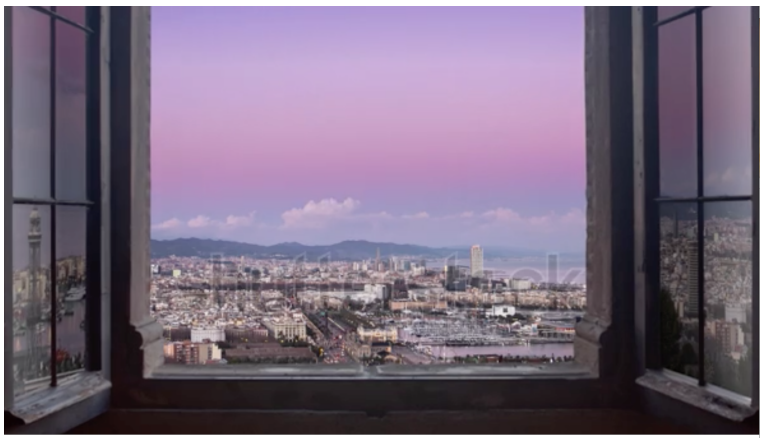
C1Sample3



C1Sample4



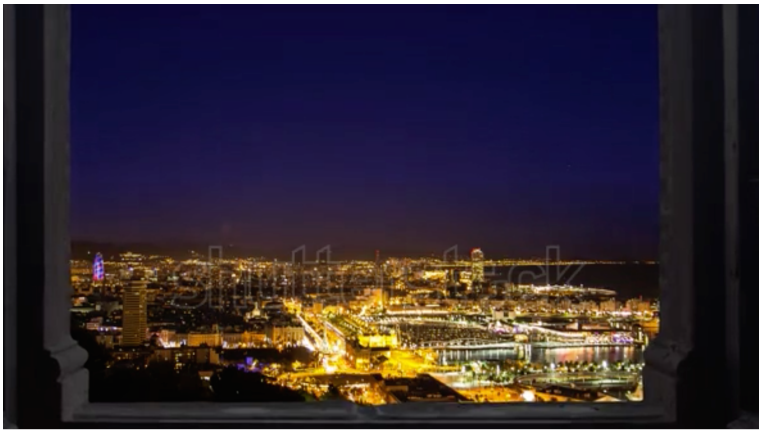
C2Sample1



C2Sample2



C2Sample3



C2Sample4



C3Sample1



C3Sample2



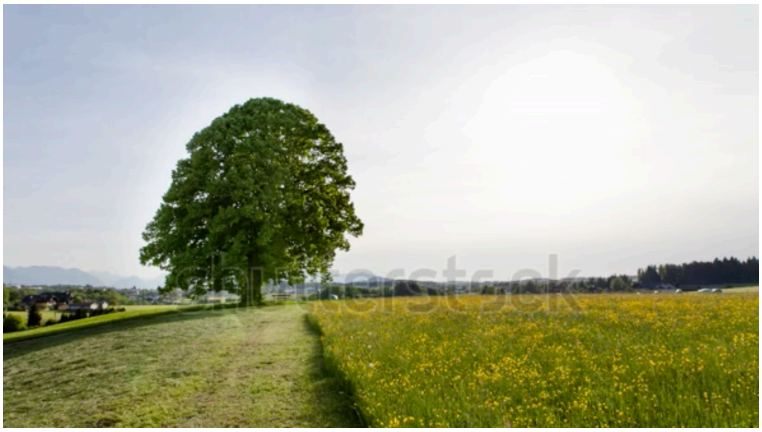
C3Sample3



C3Sample4



C4Sample1



C4Sample2



C4Sample3



C4Sample4

2.2 Design of the experiment

The spontaneous speech experiment on temporal description strategies as a part of this doctoral project was approved by the Central University Research Ethics Committee (CUREC Ref No R43735/RE003) and by the National Institute for Japanese Language and Linguistics' (NINJAL) Ethics Committee. The experiment was organized and conducted in January-April 2017 at the National Institute for Japanese Language and Linguistics, Tokyo, Japan.

Before the conduction of the experiment participants were given participant information forms and consent forms to sign (appendix figures 3.1-3.2). Prior to the start of the experiment participants were also given a personal data form (appendix figure 3.3) with a unique ID number for each participant. After the collection of the data all responses were anonymised using the ID numbers associated with each participant through the personal data forms. The form contained questions on name, age, gender, birth year, places where the participant lived between 5 and 20 y.o. and completed education.

Participants were also given a 10-minute oral explanation of the details of the process of the experiment, including instructions on usage of the equipment and style of description. The participants were advised to describe the stimuli as if they were talking to a Japanese native speaker they knew. In order to test the equipment and to familiarize the participants with the procedure of the experiment one sample clip was given to the participants as a test trial. The descriptions of the test trial were not included in the analysis. During the conduction of the experiment participants were asked to sit in front of the computer screen. They were asked if they needed adjustment of the positions of the screen, the keyboard, or the microphone on the table. They were also briefly instructed about the usage of the keyboard and the microphone.

When they were seated comfortably and are ready to start, they were asked to push a button to start the experiment. The person conducting the experiment was present in the recording laboratory sitting at the separate desk, but in close proximity to the participant.

The sequence of the experiment was designed with Experiment Builder 1.10.1630 software. The participants were shown a sequence of instruction screens and visual stimuli (C1-C4) on a 1920x1080 (Full-HD, 1080p) screen. The responses of each participant were audio recorded with a Roland Octa-Capture (24 bit 192 kHz) microphone.

All instructions for the experiment appeared on the screen in Japanese in font 24 MS Meiro.

The first instructions screen repeated the oral explanations of the procedure of the experiment given to participants before the conduction of the experiment. This screen appeared only once at the beginning of the experiment.

- The second instructions screen appeared before each trial:

次の画面に提示される動画を見てください。

(Please watch the video that will appear at the next screen)

動画が自動的に３回繰り返し、止まります。

(The video will automatically play 3 times, and will stop)

動画が止まったら、リターンキーを押してください。

(When the video stops, please press enter)

この説明を読み終わったら、リターンキーを押してください。

(After reading these instructions, please press enter)

- The third recording instructions screen appeared after each trial:

これから録音させていただきます。

(The recording is on now)

調査シートの右上に書かれている協力者 ID 番号を読みあげてください。

(Please read out loud the participant ID written on the top right of your personal data form)

前の画面に出た動画に写っていたもの、その動画を見たことがない人にもわかるように説明してください。

(Please describe the contents of the video from the previous screen. Please describe it so that a person who has not seen it may understand the contents of the video)

動画の説明が終わったら、リターンキーを押してください。

(After explaining the video, please press enter)

After the conduction of the experiment each participant was given 1000 yen (approx. 7 GBP average 2017 rate), compensation of expenses, and given a consent withdrawal form with information how to withdraw their consent at any time. Each participant was sent a debriefing email explaining the purpose of the experiment in more details.

2.3 Participants

A total number of 60 Japanese native speaking participants took part in this survey; data obtained from 50 participants was utilized for the analysis (detailed information on the participants in appendix table 3.1). Data obtained from participants N3, N4, and N6 was excluded from the analysis due to technical problems with the recordings. The texts of description produced by participants N18, N24, N28, N42, N45, N50, N52 was excluded from the analysis, as the descriptions produced by the participants for some of the stimuli contained only one temporal event, which did not allow an appropriate volume of material for analysis. The minimum age of the 50 participants was 20 and the maximum age was 70, with an average age of 48.8 (sd =13). More detailed information on the age range of the participants is demonstrated in figure 4.1.

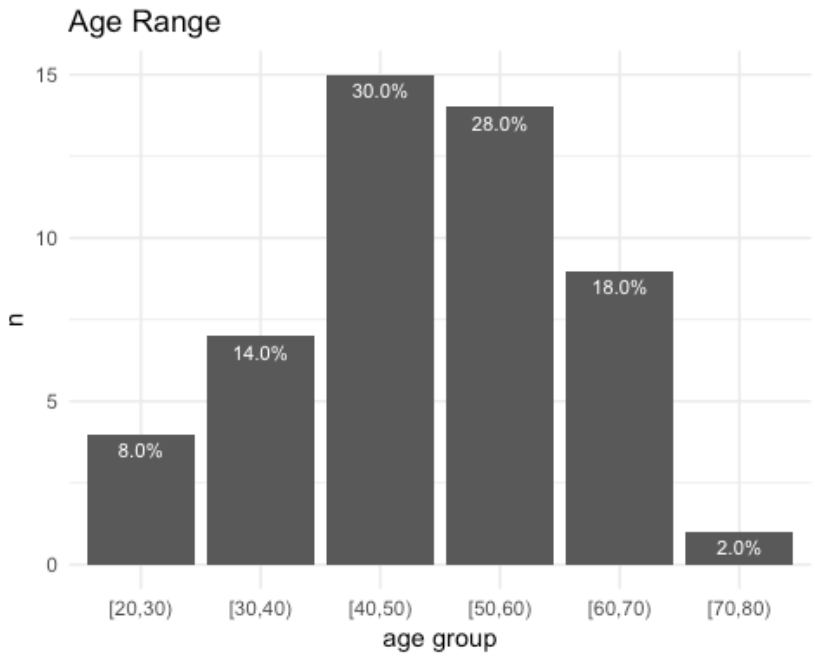


Figure 4.1 Age

As for the gender composition, 10 (20 %) male and 40 (80%) female participants took part in this study.

The participants were also asked to specify their highest level of education completed and their place of origin, i.e.,. the place where they spent the most time from age of 5 until age 20. All of the participants were residents of the Kanto area at the time the experiment was conducted.

Overall, the majority of the participants (34, 68%) either originate from or are long-term residents of the Kanto area. Considering this fact, it is important to mention here that this part of the work is, therefore, primarily based on a sample of Kanto area Japanese speakers. More detailed information on the places of origin of the participants is shown in figure 4.2.

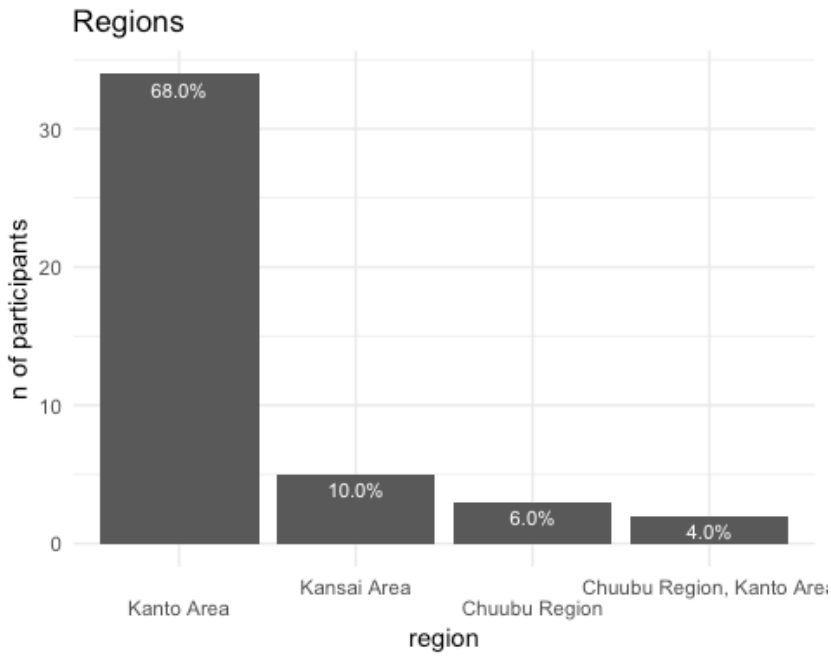


Figure 4.2 Regions

Among the participants originating from the Kanto area the majority spent most of the time between the age of 5 and the age of 20 in Tokyo (24 participant out of 34; 70%) as shown in fig. 4.3.

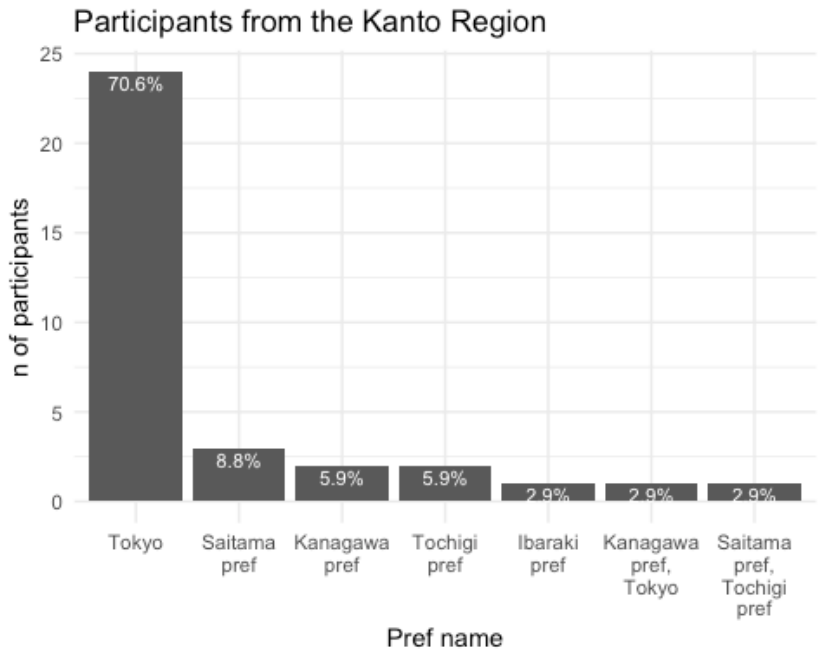


Figure 4.3 Kanto

As for the highest level of education completed, the majority of the participants hold university undergraduate degrees in humanities (25, 50%). High school and junior college are the highest completed level of education for six (12%) participants each (figure 4.4).

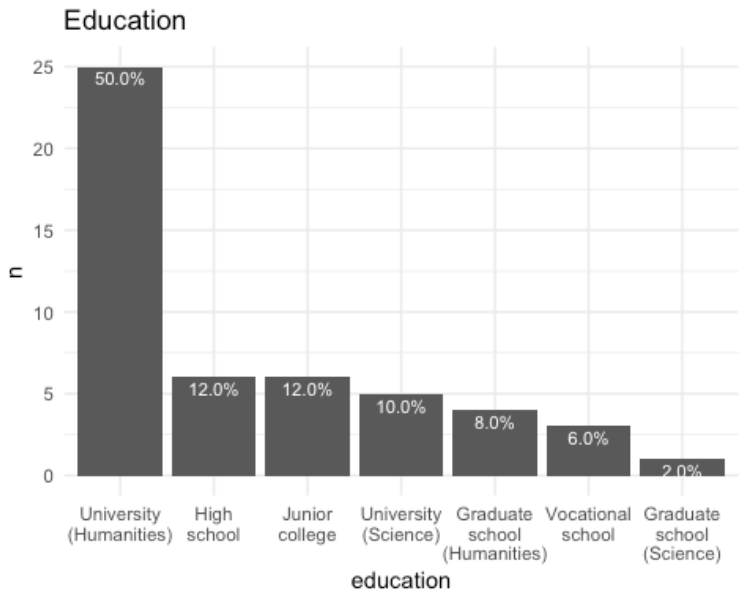


Figure 4.4 Education

3. Corpus and Encoding

In this section of the chapter I report the overall size of the corpus, methods and tools for encoding, including examples of the encoding of temporal descriptions and non-temporal description elements.

3.1 Corpus and Encoding Overview

The recordings of temporal descriptions produced by the participants were transcribed manually and organized in a corpus of 240 texts with a total length of 35725 characters and an average text length of 149 characters (sd=89).

The text was annotated in XML following a TEI Linguistic Corpus schema customized for the needs of the project. The annotation of the structure of temporal descriptions and of the types of temporal description followed the methodology for temporal discourse analysis proposed, described and developed in Noyau et al. (2005), Stutterheim and Lambert (2005), Vanek (2012), Bender and Beller (2014).

As the first step of encoding, functional elements of temporal descriptions were found and annotated. Categories were encoded with the tag Cat. Relations Predicates were encoded with the tag Cop and attributes containing information on part of speech, form, tense and dictionary form of the word. Along with predicates, Figures (F), Relators (R), Landmarks (Lm), temporal conjunctions (TmP) and non-temporal conjunctions (Conj) were tagged. Relators were also further annotated with part of speech and case attributes. Types of complex or ambiguous temporal conjunctions, including “shift”, “when-shift”, “now”, “during”, and “other” were also marked up. Non-temporal description elements of the texts – specifications (Spec), characterizations (Ch), localizations (Loc) and commentary (Com) – were encoded with the corresponding tags.

As the second step of the markup each of the texts was divided into Exposition (EX) and Elaboration (El) to reveal the structure of the description. Eighteen of the texts (12%) had zero EX, and consisted of Elaboration only.

The third step of the annotation consisted of structural analysis of the texts on three levels: 1) events occurring within the story-time were annotated as events (EVT), and events happening out of the story-time line were annotated as film (Film); 2) sequences (Sq) of events corresponding with episodes of the stimuli or episodes of the discourse were tagged; 3) whether through pauses or fillers in speech or through grammatical structure of the text, the borders of utterances (UTT) were found and marked up. All of the structural elements were numbered at the corresponding level, e.g. Sq 1 containing UTT 1, containing EVT 1, EVT 2 and Film 1. At this stage of annotation, descriptions containing only one EVT were excluded from the analysis. The descriptions of Clip 3 were also excluded due to the high number of descriptions containing only one EVT. The resulting corpus consists of 150 texts describing three stimuli.

The average number of Sq per text was 1.9 (sd = 1.06) with minimum 1 and maximum 7; and the average number of UTT per Sq was 1.7 (sd=1.1) with minimum 1 and maximum 9. 62 (41%) TDs contained a minimum of 1 and a maximum of 2 Film with an average of 1.08 (sd=.2).

After the encoding of all structural and functional elements the texts were analyzed qualitatively against the criteria set in Stutterheim and Lambert (2005) to detect the types of temporal description. Each Sq was given an attribute type for type of description and marked with Hol for HPF or Phase for the PPF tag. In addition to PPF and HPF, Absolute Perspectivation Frame (APF) (absolute t-FoR in Bender and Beller 2014) was also added in the process of analysis of the material and marked up within the corpus. The Elaborations (El)

of the texts with one prevailing type of Sq were annotated with the same type of description. Texts with equal amounts of Sq of different types, or texts where there were two or more Sq of type different from the prevailing one, were marked as mixed (Mix).

As the final stage of the qualitative analysis of the corpus, the types of description, semantics of temporal conjunctions, predicates tense and aspect were analyzed to detect and to conduct a strategy of description annotation. Each text was encoded with one of the tags designating the strategy Linear Limited (LBE), Linear not Limited (LnBE), Linear No End (LnE), Linear No Beginning (LnB) and Non-linear (NL).

Further annotation for Cat typology and statistical analysis of the data were implemented using R in R Studio software.

3.2 Temporal Description Strategies Annotation Examples

In this section, examples of encoding of temporal descriptions following different strategies and types of temporal descriptions are given.

3.2.1 Linear Strategies (LBE, LnB, LnE, LnBE)

Linear strategies in this data set are represented with four variations - Linear Strategy with Beginning and End (LBE), Linear Strategy with no Beginning (LnB), Linear Strategy with no End (LnE) and linear strategy without beginning and end (LnBE). The major similarity of the three is the TDs utilizing these strategies are typically following sequence principle Talmy (2002), where each following event treats the previous event as a Lm. The major differences between these variations are 1) absence or presence of explicit beginning and end of TD and 2) temporal inclusion (Talmy 2002) actively utilized in LnBE.

3.2.1.1 LBE

This strategy is defined by the explicit start and end of the description, as if the whole TD was one event divided into a linear sequence of stages leading to the end of TD.

In the fragment presented below, the beginning of El is marked with *saisho* ("beginning; first"), the end of El is marked with *saigo* ("last; final"). The events are connected with temporal and non-temporal conjunctions *keredomo* ("though"), *sono ato* ("and then").

Fragment of C1P13:

> *Saisho ni chiisana otoko no ko ga detekita n desu keredomo,*
> Though, at the beginning, a little boy appeared,
> *sono ato sukoshi zutsu toshi wo totteitte*
> then gradually [he] gets older,
> *otona ni natteitte*
> becomes an adult
> *<..> saigo ni ojiisan ni natte*
> at the end he becomes old,
> *owarimasu*
> [the clip] ends

Encoding of the fragment of C1R13:

```
<div xml:id="V1R13" type="LBE"><said who="#Par13">
      <seg type="EX"><seg ana="#Cat"></seg></seg>
      <seg type="El" subtype="Hol">
       <seg type="Sq" n="1" subtype="Hol">
         <seg ana="#UTT" n="1"><seg ana="#EVT" n="1">
             <seg ana="#TmP" type="Start">最初に</seg><seg ana="#Lm"></seg>
             小さな<seg ana="#F">男の子</seg><seg ana="#R"><w pos="par"
msd="NOM">が</w></seg>
           <seg ana="#Cop"><w  pos="v" tns="PAST" msd="Deic" lemma="出る">出てきた
</w></seg>んです
           <seg ana="#Conj">けれども</seg></seg>、
           <seg ana="#EVT" n="2"><seg ana="#TmP" type="Shift">その後</seg>、<seg
ana="#Lm"></seg>
        <seg ana="#Mn">少しづつ</seg><seg ana="#F">年</seg><seg ana="#R"><w
pos="par" msd="ACC">を</w></seg>
        <seg ana="#Cop"><w pos="v" tns="CONN" msd="Deic" lemma="取る">取っていって
</w></seg></seg>、
           <seg ana="#EVT" n="3"><seg ana="#Lm"></seg><seg ana="#F">大人</seg><seg
ana="#R">
```

```
            <w pos="par" msd="DAT">に</w></seg><seg ana="#Cop"><w pos="v"
tns="CONN" msd="Deic" lemma="なる">なっていって</w></seg></seg>、</seg></seg>
        <seg type="Sq" n="2" subtype="Hol">...</seg>
        <seg type="Sq" n="3" subtype="Hol">
          <seg ana="#UTT" n="1">
            <seg ana="#EVT" n="1"> <seg ana="#Lm"></seg><seg ana="#TmP" type="End">最
後に</seg>は<seg ana="#F">おじいさん</seg><seg ana="#R"><w pos="par" msd="DAT">に
</w></seg>
              <seg ana="#Cop"><w pos="v" tns="CONN" msd="NA" lemma="なる">なって
</w></seg></seg>
        <seg ana="#Film" n="1"><seg ana="#Cop"><w tns="PAST" pos="v" msd="NA" lemma="
終わる">終わりました</w></seg>
        </seg></seg>。</seg></seg></said></div>
```

3.2.1.2 LnB

LnB is a variation of limited linear TD strategy, characterized by the absence of explicit start indicators, while the end point of the story line is marked. However, the start point of the discourse time line can only be understood contextually.

In the case of the fragment given as an example below, the end of the elaboration is explicitly marked with *saigo* (“last; final”). However, only when *otoko no ko* (“boy”) is utilized as a Lm in the third EVT it becomes clear that *otoko no ko* is also a reference to an approximate age group of the person described in the beginning of the TD and an implicit starting point of the ageing process.

Fragment C1R14:

otoko no ko ga dandan seichoo shitette
A boy grows up gradually,
otoko no ko ga shoonen ni natte
The boy becomes a teenager
otona ni natte
Becomes an adult
dandan dandan toshi wo totte
gradually gradually ages
saigo wa roojin ni naru
at the end becomes an old person

Encoding of the fragment C1R14:

```
<div xml:id="V1R14" type="LnB"><said who="#Par14">
        <seg type="EX"><seg ana="#Cat"></seg></seg>
        <seg type="El" subtype="Phase">
          <seg type="Sq" n="1" subtype="Phase">
           <seg ana="#UTT" n="1"><seg ana="#Ch" n="1">...</seg>
             <seg ana="#EVT" n="1"><seg ana="#Lm"></seg>
              <seg ana="#F">男の子</seg><seg ana="#R"><w pos="par" msd="NOM">が
</w></seg><seg ana="#Mn">だんだん</seg>
            <seg ana="#Cop"><w pos="v" msd="Deic" tns="CONN" lemma="成長する">成長し
てって</w></seg></seg>
             <seg ana="#EVT" n="2">...</seg>、
        <seg ana="#EVT" n="3">
          <seg ana="#Lm">男の子</seg>が<seg ana="#F">少年</seg><seg ana="#R"><w
pos="par" msd="DAT">に</w></seg>
          <seg ana="#Cop"><w pos="v" tns="CONN" msd="NA" lemma="なる">なって
</w></seg>、</seg>
             <seg ana="#EVT" n="4"><seg ana="#Lm"></seg><seg ana="#F">大人</seg>
             <seg ana="#R"><w pos="par" msd="DAT">に</w></seg><seg ana="#Cop"><w
pos="v" tns="CONN" msd="NA" lemma="なる">なって</w></seg></seg>、
             <seg ana="#EVT" n="5"><seg ana="#Lm"></seg><seg ana="#Mn">だんだん、だ
んだん</seg><seg ana="#F">年</seg><seg ana="#R"><w pos="par" msd="ACC">を
</w></seg><seg ana="#Cop"><w tns="CONN" pos="v" msd="NA" lemma="取る">取って
</w></seg></seg>、
             <seg ana="#EVT" subtype="Hol" n="6"><seg ana="#TmP" type="End">最後は
</seg><seg ana="#Lm"></seg>
          <seg ana="#F">老人</seg><seg ana="#R"><w pos="par" msd="DAT">に</w></seg>
          <seg ana="#Cop"><w pos="v" tns="NPAST" msd="NA" lemma="なる">なる
</w></seg></seg>
            <seg ana="#Film" n="1">...</seg>。</seg></seg></said></div>
```

3.2.1.3 LnE

In this variation of linear limited TD strategy, the beginning is explicit, while the end is open. It can be expressed implicitly through aspect, but the ending point of the linear process described remains unmarked.

The expression of the beginning of the TD can be realized through a Lm as in the example given below, or through a temporal noun, or grammatically through tense.

Fragment of C1R11:

onnano ko ga seichoo shiteiku sama
an appearance of a girl growing up

daitai go sai gurai kara
from about 5 years old <…>
dandan toshi wo totteiku
She ages gradually

Encoding of fragment of C1R11:

```
<div xml:id="V1R11" type="LnE"><said who="#Par11">
      <seg type="EX"><seg ana="#Cat"></seg></seg>
      <seg type="El" subtype="Phase"><seg ana="#TmP" type="Start"></seg>
        <seg type="Sq" n="1" subtype="Phase">
          <seg ana="#UTT" n="1">
            <seg ana="#EVT" n="1"><seg ana="#Lm"></seg><seg ana="#F">女の子
</seg><seg ana="#R"><w pos="par" msd="NOM">が</w></seg><seg ana="#Cop"><w
pos="v" tns="NPAST" msd="Deic" lemma="成長する">成長していく</w></seg></seg>様、
      <seg ana="#EVT" part="I" n="2">だいたい<seg ana="#Lm">5 歳</seg> ぐらい<seg
ana="#TmP" type="Start">から</seg></seg>
        <seg ana="#Com" n="1">...</seg></seg>、<seg ana="#EVT" part="F" n="2"><seg
ana="#Lm"></seg><seg ana="#Mn">だんだん</seg><seg ana="#F">年</seg><seg
ana="#R"><w pos="par" msd="ACC">を</w></seg>
        <seg ana="#Cop"><w pos="v" tns="NPAST" msd="Deic" lemma="取る">取っていく
</w></seg></seg>
      <seg ana="#Film" n="1">...</w></seg>。</seg></seg></seg>
      <seg ana="#TmP" type="End"></seg></seg></said></div>
```

3.2.1.4 Linear Non-limited Strategy (LnBE)

LnBE is a linear non-limited strategy. This TD strategy is characterized by the absence of an explicit starting point and ending point of temporal description, and by typically following the inclusion principle described by Talmy (2002), where a linear sequence of events is described as contained by a larger event. The larger event, e.g. *nenrei* (“age, ageing”), serves as a Lm for each of the events that follow it in the description “as ageing, hair become gray”, “as ageing, skin changes”.

Fragment C1R5:

chapatsu datta
was brown
kaminoke ga
hair,
nenrei totomoni
as ageing,

shiraga ni natteiku
becomes gray hair.
subesube datta
was smooth
ohada ga rooka shiteitte
skin ages
shiwa ga koku natteiku
wrinkles become deeper
urundeita
were moist
hitomi ga chotto tsukareta yoona kawaita yoona hitomi ni natteiku
eyes seem to become a bit tired, dry.

Encoding of fragment of C1R5:

```
<div xml:id="V1R5" type="LnBE">
      <said who="#Par5">
        <seg type="EX"><..>
        </seg>
        <p></p>
        <seg type="El" subtype="Mix">
         <seg type="Sq" n="1" subtype="Phase">
           <seg ana="#UTT" n="1"><seg ana="#EVT" n="1">...</seg></seg><seg
ana="#UTT" n="2">
             <seg ana="#Com" n="1">...</seg></seg></seg>
          <seg type="Sq" n="2" subtype="Hol">
             <seg ana="#UTT" n="1">
               <seg ana="#EVT" n="1"><seg ana="#Lm"></seg>
             <seg ana="#F"></seg><seg ana="#R"><w pos="NA" msd="NA"></w></seg>
             <seg ana="#Cop"><w pos="np" tns="PAST" msd="NA" lemma="茶髪">茶髪だっ
た</w></seg></seg>
              <seg ana="#EVT" n="2">
               <seg ana="#Lm">髪の毛</seg><seg ana="#R"><w pos="par" msd="NOM">が
</w></seg>
              <seg ana="#Cop"><w pos="n" msd="NA" tns="NPAST" lemma="年齢">年齢
</w></seg>
              <seg ana="#TmP" type="During"><w pos="par" msd="TC">とともに
</w></seg>、
          <seg ana="#F">白髪</seg><seg ana="#R"><w pos="par" msd="DAT">に
</w></seg>
              <seg ana="#Cop"><w pos="v" tns="NPAST" msd="Deic" lemma="なる">なって
いく</w></seg></seg></seg>。
             <seg ana="#UTT" n="2">
             <seg ana="#EVT" n="1">
               <seg ana="#Lm"></seg><seg ana="#F"></seg><seg ana="#R"><w pos="NA"
msd="NA"></w></seg>
            <seg ana="#Cop"><w pos="np" tns="PAST" msd="NA" lemma="すべすべ">すべす
```

```
べだった</w></seg></seg>
            <seg ana="#EVT" n="2">
              <seg ana="#Lm"></seg>お<seg ana="#F">肌</seg><seg ana="#R"><w
pos="par" msd="NOM">が</w></seg>
              <seg ana="#Cop"><w pos="v" tns="CONN" msd="Deic" lemma="老化する">老化
していって</w></seg></seg>
              <seg ana="#EVT" n="3">
                <seg ana="#Lm"></seg><seg ana="#F">シワ</seg><seg ana="#R"><w
pos="par" msd="NOM">が</w></seg>
              <seg ana="#Cop" part="I"><w pos="Adv" msd="NA" tns="CONN" lemma="濃い">
濃く</w></seg>
              <seg ana="#Cop" part="F"><w pos="v" tns="NPAST" msd="Deic" lemma="なる">
なっていく</w></seg>。</seg></seg>
              <seg ana="#UTT" n="3">
                <seg ana="#EVT" n="1">
                  <seg ana="#Lm"></seg><seg ana="#F"></seg><seg ana="#R"><w pos="NA"
msd="NA"></w></seg>
                <seg ana="#Cop"><w pos="v" tns="PAST" msd="IPFT" lemma="潤む">潤んでい
た</w></seg></seg>
            <seg ana="#EVT" n="2">
              <seg ana="#Lm"></seg> 瞳がちょっと
              <seg ana="#Cop" part="I"><w pos="v" tns="PAST" msd="EVID" lemma="疲れる">
疲れたような</w></seg>、
              <seg ana="#Cop" part="M"><w pos="v" msd="EVID" tns="PAST" lemma="乾く">
乾いたような</w></seg>、
              <seg ana="#F">瞳</seg><seg ana="#R"><w pos="par" msd="DAT">に
</w></seg>
              <seg ana="#Cop" part="F"><w pos="v" tns="NPAST" msd="Deic" lemma="なる">
なっていく</w></seg></seg>。</seg></seg>
          </seg></said></div>
```

3.2.2 Non-Linear Strategy (NL)

The TDs utilizing Non-Linear (NL) strategy incorporate a temporal cause-result principle and inclusion principle. A set of temporal events at a higher hierarchical level, for instance *haru* (“spring”) and *aki* (“autumn”) in the fragment below, serve as a Lm to a set of sub-events, e.g. changes in the scenery in the fragment below, and at the same time include them.

Fragment of C4R20:

de sore ga dandan haru ni naru to
and then when it becomes spring
yuki ga toketekite
the snow is melting
sakimono ga minotte
blooming things ripen

midori ga koo moedashitekiteiru
greenery starts to sprout
no ga wakarimasu
[I] see [the above]
aki ni naru to
when it becomes autumn
kondo wa kumo ga nagareteiru yoosu
this time, the way the clouds flow
sora ga takaku natte
sky becomes an autumn clear sky <..>
dandan, dandan happa ga sukunaku natteimasu
there are gradually fewer and fewer leaves

Encoding of the fragment of C4R20:

```
<div xml:id="V4R20" type="NL">
      <said who="#Par20">
      <seg type="EX">...</seg>
      <seg type="El" subtype="Mix">
        <seg type="Sq" n="1" subtype="Phase">.. </seg>
     <seg type="Sq" n="2" subtype="Phase">... </seg>
     <seg type="Sq" n="3" subtype="Abs">
       <seg ana="#UTT" n="1">
         <seg ana="#EVT" n="1"><seg ana="#TmP" type="Shift">で</seg>、それが<seg
ana="#Lm"></seg>
         <seg ana="#Mn">だんだん</seg><seg ana="#F">春</seg><seg ana="#R"><w
pos="par" msd="DAT">に</w></seg>
         <seg ana="#Cop"><w pos="v" tns="NPAST" msd="NA" lemma="なる">なる
</w></seg>
         <seg ana="#TmP" type="When-shift"><w pos="par" msd="TC">と</w></seg></seg>
、
         <seg ana="#EVT" n="2"><seg ana="#Lm"></seg>
           <seg ana="#F">雪</seg><seg ana="#R"><w pos="par" msd="NOM">が
</w></seg>
         <seg ana="#Cop"><w pos="v" tns="CONN" msd="Deic" lemma="溶ける">溶けてきて
</w></seg></seg></seg>、
       <seg ana="#UTT" n="2">
         <seg ana="#Loc" n="1">...</seg>
       <seg ana="#Ch">...</seg>
         <seg ana="#EVT" n="1"><seg ana="#Lm"></seg>
          <seg ana="#F">咲き物</seg><seg ana="#R"><w pos="par" msd="NOM">が
</w></seg>
        <seg ana="#Cop"><w pos="v" tns="CONN" msd="NA" lemma="実る">実って
</w></seg></seg>、
         <seg ana="#EVT" n="2"><seg ana="#Lm"></seg>
           <seg ana="#F">緑</seg><seg ana="#R"><w pos="par" msd="NOM">が
</w></seg>こう<seg ana="#Cop"><w pos="v" tns="NPAST" msd="Start-Deic-IPFT" lemma="
萌える">萌え出してきている</w></seg></seg>のがわかります</seg>。</seg>
         <seg type="Sq" n="4" subtype="Hol">...</seg>
```

<seg type="Sq" n="5" subtype="Abs">seg ana="#UTT" n="1">
<seg ana="#EVT" n="1"><seg ana="#Lm"></seg><seg ana="#F">秋</seg><seg ana="#R"><w pos="par" msd="NOM">に</w></seg><seg ana="#Cop"><w pos="v" tns="NPAST" msd="NA" lemma="なる">なる</w></seg><seg ana="#TmP" type="When-shift"><w pos="par" msd="TC">と</w></seg></seg>、
<seg ana="#EVT" n="2"><seg ana="#Lm"></seg>
<seg ana="#TmP" type="Shift">今度は</seg>、<seg ana="#F">雲</seg><seg ana="#R"><w pos="par" msd="NOM">が</w></seg>
<seg ana="#Cop"><w pos="v" tns="NPAST" msd="IPFT" lemma="流れる">流れている</w></seg></seg>様子、
<seg ana="#EVT" n="3"><seg ana="#Lm"></seg>
<seg ana="#F">空</seg><seg ana="#R"><w pos="par" msd="NOM">が</w></seg>
<seg ana="#Cop" part="I"><w pos="Adv" msd="NA" tns="CONN" lemma="高い">高く</w></seg>
<seg ana="#Cop" part="F"><w pos="v" tns="CONN" msd="NA" lemma="なる">なって</w></seg></seg>、
<seg ana="#Spec" n="1">...</seg></seg></seg>、
<seg ana="#UTT" n="2">
<seg ana="#EVT" n="1"> <seg ana="#Lm"></seg>
<seg ana="#Mn">だんだん、だんだん</seg><seg ana="#F">葉っぱ</seg><seg ana="#R"><w pos="par" msd="NOM">が</w></seg>
<seg ana="#Cop" part="I"><w pos="Adv" tns="CONN" msd="NA" lemma="少ない">少なく</w></seg>
<seg ana="#Cop" part="F"><w pos="v" tns="NPAST" msd="IPFT" lemma="なる">なっています</w></seg></seg></seg>。</seg>
<seg type="Sq" n="6" subtype="Abs">...</seg>、</seg>
<seg type="Sq" n="7" subtype="Hol">..</seg></seg> </said>

3.3 Specification, Characterization, Localization and Commentary

In this subsection, I present a brief overview of non-temporal description elements of the text with examples in order to demonstrate the elements excluded from the analysis. Specification (Spec), characterization (Ch), localization (Loc) and commentary (Com) are as commonly present in both EL and EX of TDs as in the spatial descriptions discussed in the previous chapter. These elements of the text do not describe temporal events, and therefore the analysis of such elements is outside of the scope of this work. However, in the process of preparation and analysis of the corpus all Spec, Ch, Loc and Com were tagged in order to exclude them from the analysis.

3.3.1 Specification

Similarly to spatial description in temporal descriptions, Spec was represented by a set of syntactic constructions serving as a paraphrase or specification of a TD.

Specs were found in the form of nominal sentences, as, for example, in the Exposition of C4R51, where the first utterance including the category is *hiroi nohara ni ookina ki ga ippon tatteiru* (“there is a big tree standing in the vast field”), while the second is a Spec *sooiu keshiki desu* (“that kind of a landscape”).

Fragment of C4R51:

```
<seg type="EX">
 <seg ana="#UTT" n="1">広い野原に大きな<seg ana="#Cat">木</seg>が一本立っている</seg>。
 <seg ana="#UTT" n="2"><seg ana="#Spec" n="1">そういう景色です</seg></seg>。</seg><..>
```

Disjunctive Specs were comparatively rare, but still present within the corpus, as in Exposition of C4R25 *hiroba deshooka* (“it seems like a square”), *harappa to iimasu ka* (“or would one rather say an ‘open field’”).

Fragment of C4R25:

```
<seg type="EX"><seg ana="#UTT" n="1"><seg ana="#Cat">広場</seg>でしょうか</seg>。
 <seg ana="#UTT" n="2"><seg ana="#Spec" n="1">原っぱといいますか</seg></seg>...</seg>
```

Specifying constructions were the most frequent type of Spec for this data set, as in the following fragment of Elaboration of C2R12 with the Specs occurring in the middle of the event:

> *kootsuu no jookyoo toka*
> such things as traffic situation
> *kootsuu toiu no wa, tatoeba, kuruma no hashitteiru daisuu toka*
> “traffic” is, for example, such things as the number of cars moving
> *ma, sooiu mono*
> well, that kind of things
> *wa henka shiteiku*

change

Fragment of C2R12:

```
<seg ana="#EVT" part="I" n="2"><seg ana="#Lm"></seg><seg ana="#F">交通の状況
</seg></seg>とか、
<seg ana="#Spec" n="1">交通というのは、例えば、車の走っている台数とか、</seg>
        ま、<seg ana="#Spec" n="2">そういうもの</seg><seg ana="#EVT" part="F" n="2">
          <seg ana="#R"><w pos="par" msd="top">は</w></seg><seg ana="#Cop"><w
pos="v" tns="NPAST" msd="Deic" lemma="変化する">変化していく</w></seg></seg>
```

3.3.2 Characterization

Characterizing constructions describe physical characteristics of the objects involved in TDs, typically their colors or/and sizes, as in a fragment of the Elaboration of C4R47, where Ch follows the event *haru no hana ga ichimen saiteimasu* (spring flowers are blooming all over [the field]), and the participant adds description of the flowers - *chiisai kiiroi hana desu* ("small yellow flowers").

Fragment of C4R47:

```
<seg ana="#UTT" n="3">
          <seg ana="#EVT" n="1">
          <seg ana="#Lm">春</seg>の<seg ana="#F">花</seg><seg ana="#R"><w pos="par"
msd="NOM">が</w></seg>一面
           <seg ana="#Cop"><w pos="v" tns="NPAST" msd="IPFT" lemma="咲く">咲いていま
す</w></seg>。</seg>
        </seg>
        <seg ana="#UTT" n="4"><seg ana="#Ch" n="1">小さい黄色い花です。</seg></seg>
          </seg>
```

3.3.3 Localization

In spatial descriptions Localization was defined as a type of characterization of an object, giving additional characteristics of the object's location. In TDs, however, all spatial characteristics that were not directly included in the temporal events were treated as Loc. Most of the Loc were characterizing the spatial orientation or details of location of the objects involved in TD, e.g.:

In EX of C4R17:

de, sono ki ni mukatte michi ga nobiteite
and a road stretches towards that tree

```
<seg ana="#UTT" n="2"><seg ana="#Loc" n="1">で、その木に向かって道が伸びていて
</seg></seg>
```

3.3.4 Commentary

Commentary (Com) refers to non-temporal information given by the participant. For this data set Coms primarily contained personal impressions about the described stimuli or comments about the process of description.

As in a fragment of the Elaboration of C2R54:

sugoku utsukushii machi de
very beatiful town
yakei mo kirei de
and the night view is beautiful too

```
<seg ana="#Com" n="1">すごく美しい街で、</seg>
<seg ana="#Com" n="2">夜景も綺麗で、</seg>
```

Or as in the following fragment of Elaboration of C4R5:

atarimae no koto itteru n da wa
Oh! I'm saying the obvious

```
<seg ana="#UTT" n="2">
<seg ana="#Com" n="1">当たり前のこと言ってるんだわ。</seg></seg>
</seg>
```

4. Descriptive Statistics

In this section of the chapter the proportion of strategies within the corpus, types of temporal description per clip, proportion of category, Relators, Relations Predicates, Landmarks and Figures are given.

4.1 Strategies and Types of Description Proportions

The total number of temporal descriptions (TD) obtained through the spontaneous speech experiment on temporal description strategies was 150. As shown in table 4.1 and figure 4.5, the majority of TD strategies within the corpus are linear with prevailing LBE (54, 36%) and LnE (38, 25%).

Only 14 (9%) responses were found to be TDs following NL strategy.

Table 4.1 Strategies Number

Strategy	**Freq**
LBE	54
LnE	38
LnB	24
LnBE	20
NL	14
TOTAL	**150**

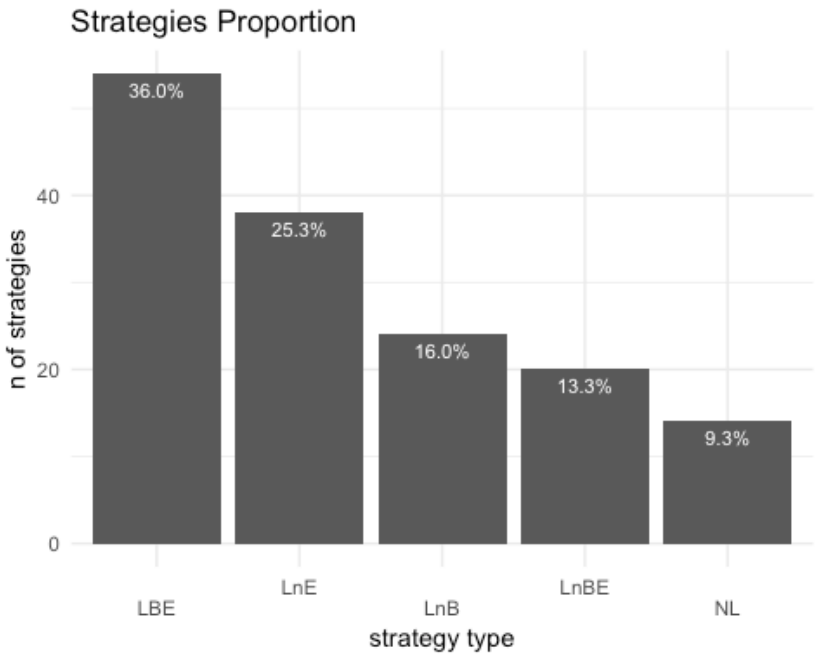


Figure 4.5 Strategies Proportion

As for the types of description, overall, as demonstrated in table 4.2 and fig 4.6 PPF is prevailing with 75 (50%) TDs following the phasal type of description. HPF was utilized in 45 (30%) descriptions, while APF appeared only in 8 (5%) cases in the whole corpus.

Table 4.2 Types Number

Type	Freq
Phase	75
Hol	45
Mix	22
Abs	8
TOTAL	**150**

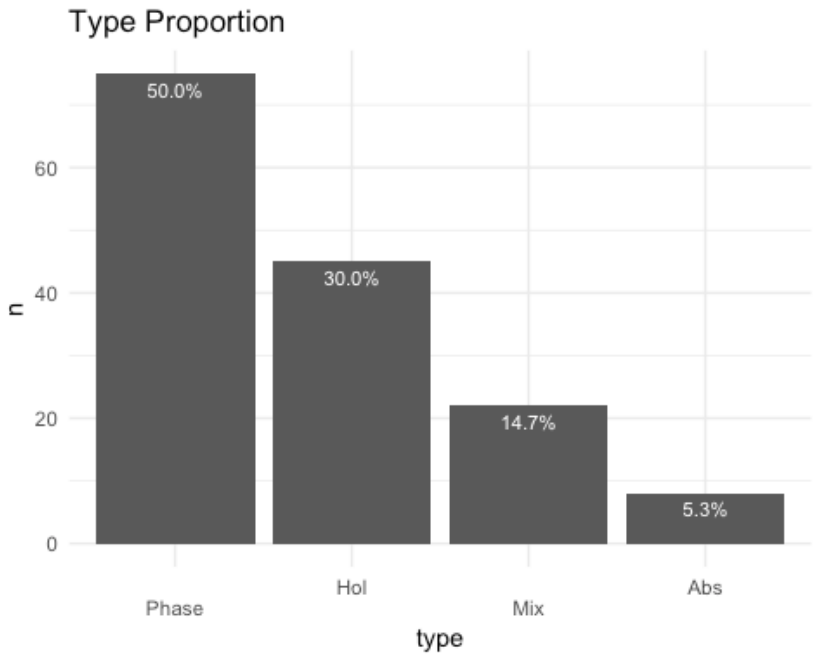


Figure 4.6 Type Proportion

The numbers of strategies per clip for the data set are shown in table 4.3.

Table 4.3 Number of Strategies Per Clip

Strategies	**C1**	**C2**	**C4**
LBE	17	24	13
LnB	19	2	3
LnBE	7	4	9
LnE	6	17	15
NL	1	3	10
TOTAL	**50**	**50**	**50**

The following figures demonstrate proportions of strategies per stimuli.

Figure 4.7 shows the proportion of strategies utilized for Clip 1 (Ageing). Limited linear strategies form the majority of the strategies utilized by participants in descriptions of this stimuli - LnB (19, 38%), LBE (17, 28%) and LnE (6, 12%). LnBE was utilized by 7 (14%), and NL only by one participant.

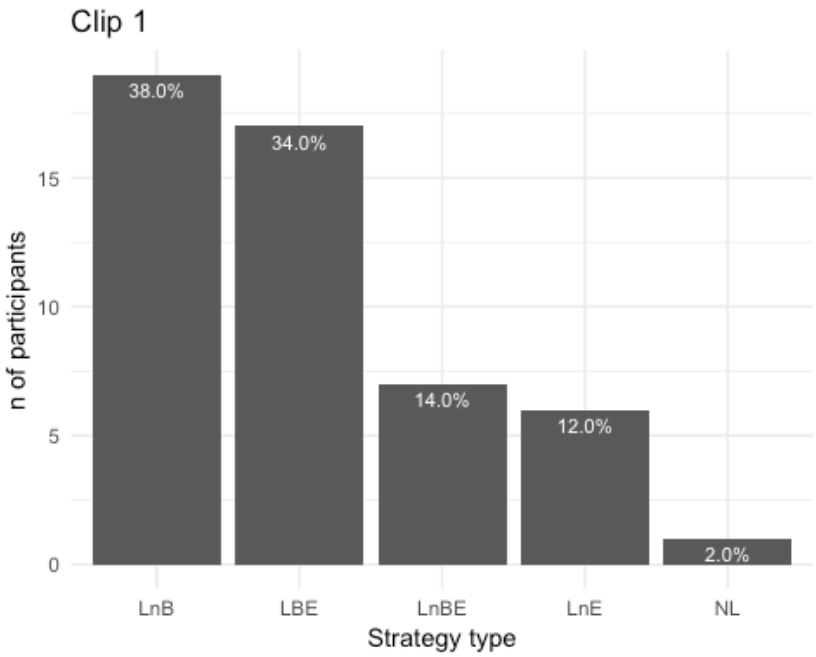


Figure 4.7 C1 Strategies Proportion

Similar to the first clip, the majority of the TDs for the Clip 2 (fig. 4.8) representing Daytime were linear and limited, however, the proportions of strictly limited linear time strategy (24, 48%) and time with no end (17, 34%) were higher. Linear time with no beginning was utilized for description of this stimulus only by 2 (4%) participants. NL was the strategy of 3 (6%) TDs.

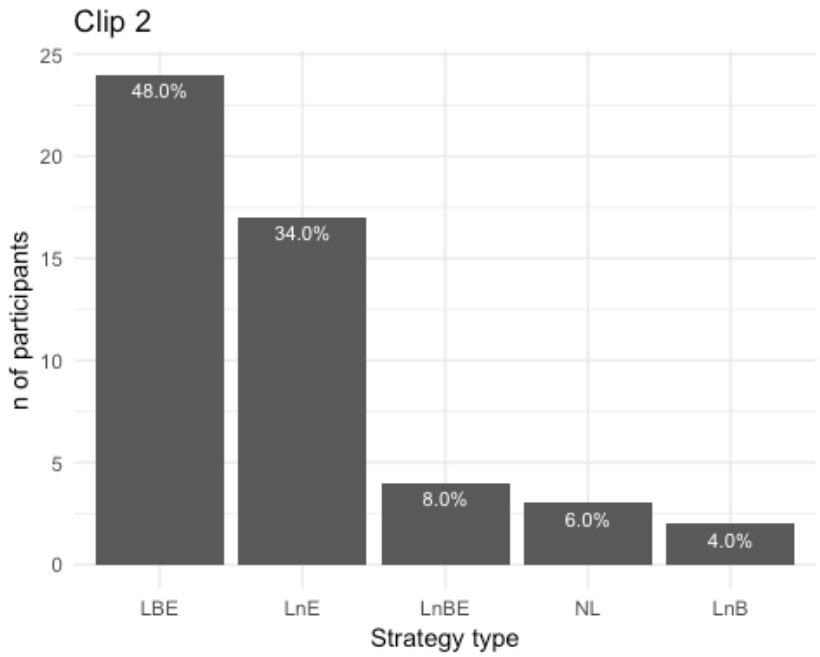


Figure 4.8 C2 Strategies Proportion

The proportions of strategies of TDs of clip 4 (fig. 4.9) demonstrate a different picture to C1 and C2. Although linear limited strategies LnE (15, 30%) and LBE (13, 26%) were also the most frequently utilized by the participants, there was a comparatively high number of cases where NL (10, 20%) was used. Moreover, this clip has the highest proportion of usage of non-limited linear time strategy (9, 18%).

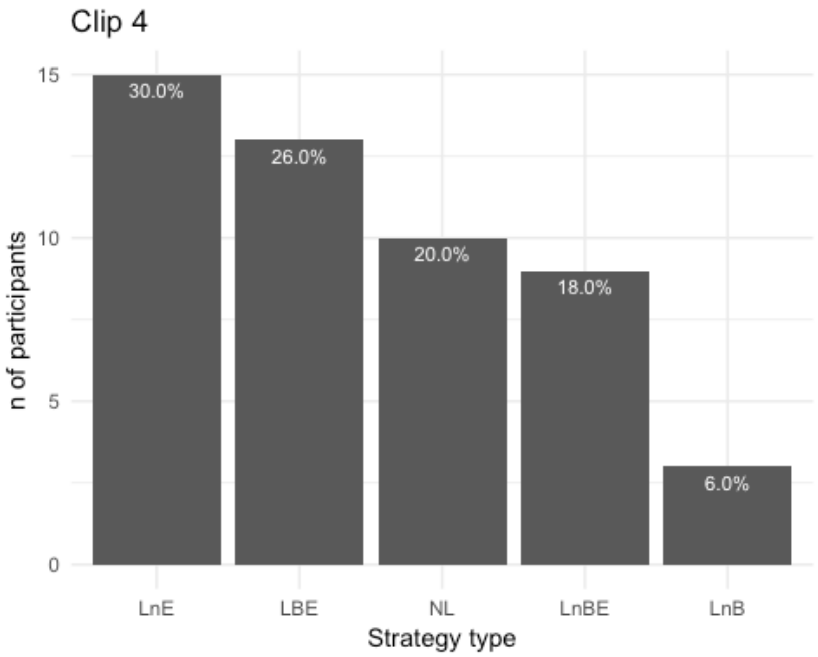


Figure 4.9 C4 Strategies Proportion

4.1.1 Type of Temporal Description per Clip

Table 4.4 shows the numbers of types of temporal description per clip. In this subsection the elaboration types of descriptions were calculated, which took into account all the types of Sq in El. In cases with equal numbers of Sq with different types of descriptions or when there were more than one Sq following a type of description different from the major type, the description was annotated as mixed ("Mix").

Table 4.4 Number of Types Per Clip

Types	**C1**	**C2**	**C4**
Abs	1	3	4
Hol	21	5	19
Mix	4	6	12
Phase	24	36	15
Total	**50**	**50**	**50**

4.1.1.1 Clip 1

In Clip 1 the numbers of Els following PPF (24, 48%) and HPF (21, 42%) are close to equal, with prevalence of PPF only by 3 TDs. In total PPF and HPF made up 90% of types of description for Els of this clip.

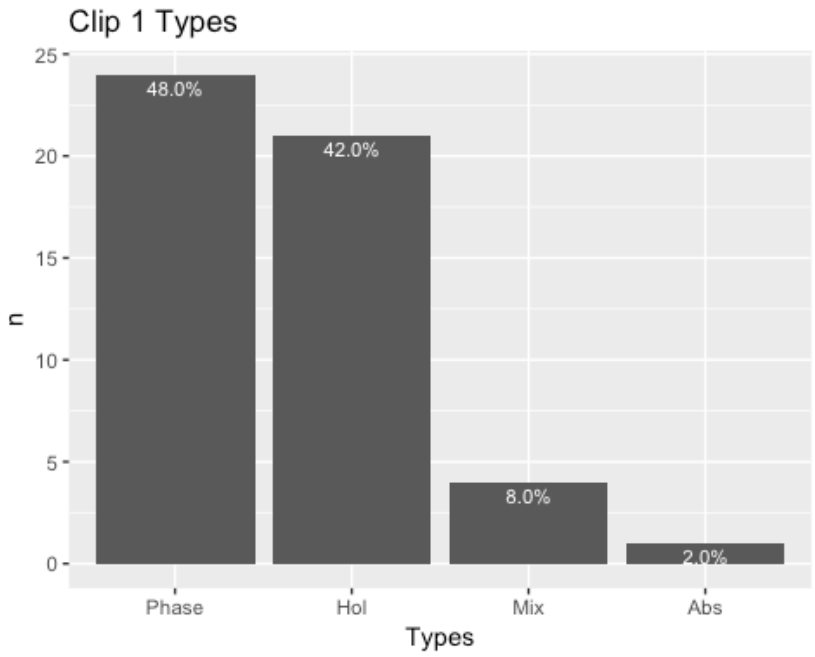


Figure 4.10 Clip1 Types

4.1.1.2 Clip 2

For Els of Clip 2 the phasal type of description was prevailing with 36 (72%) of participants using it in their TDs. HPF was the type of description in 5 (10%) cases. APF was the major type of description in 3 (6%) of TDs, which is two TDs more than in case of C1.

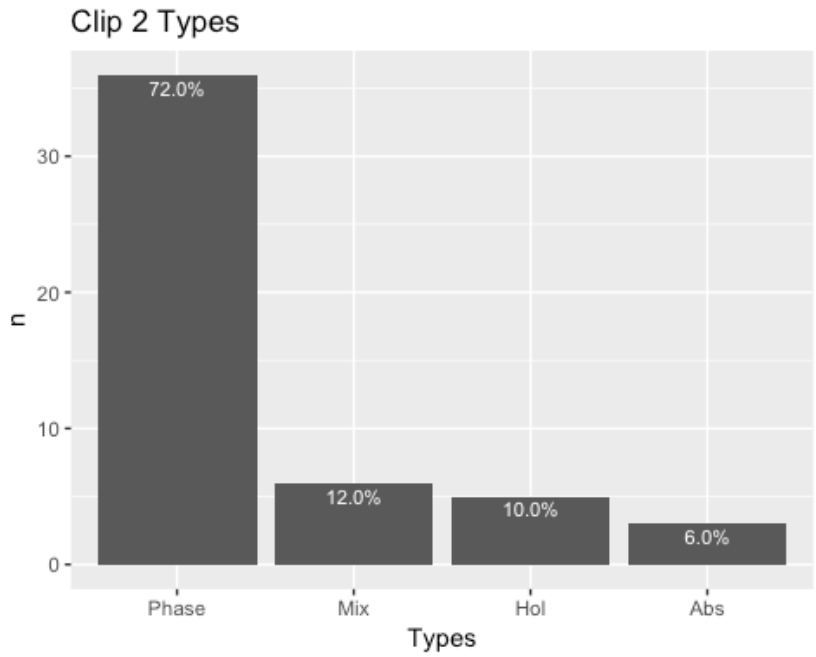


Figure 4.11 Clip 2 Types

4.1.1.3 Clip 4

While PPF was the major type of description for C1 and C2 TDs, in the case of C4 HPF was prevailing (19, 38%). The proportions of Mixed types (12, 24%) and APF (4, 8%) were also the highest in comparison with other clips.

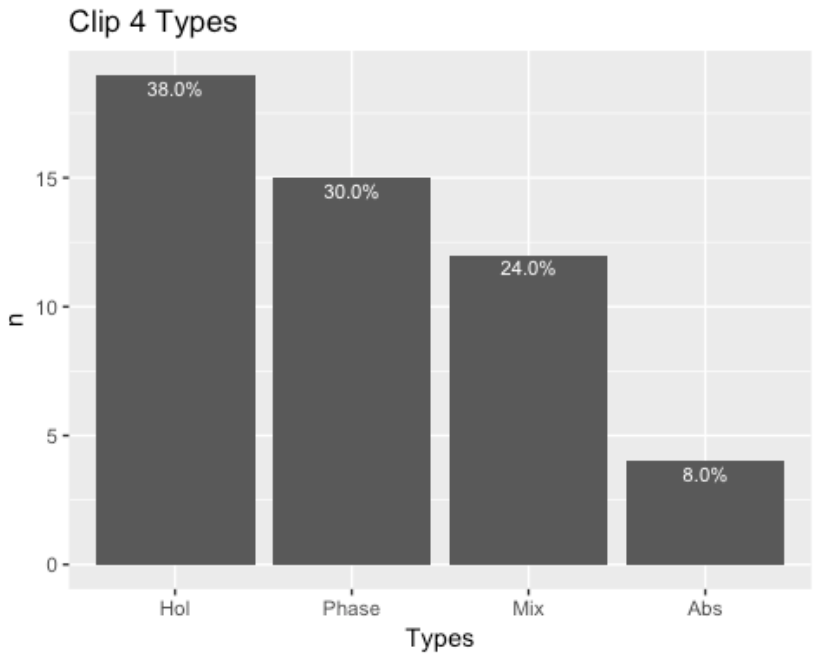


Figure 4.12 Clip4 Types

A brief overview of types of description per clip demonstrated that there were definitive differences between types of description of the stimuli. While C1 and C2 show some similarity in prevailing type of description, C4 stands out in this dataset.

4.2 Category (Cat)

In this section of the chapter I give an overview of the category (Cat) types of TDs present within the data set.

Each of the TDs within the corpus was annotated with a Cat segment for the element formulated by the participants as the category of the described visual stimuli. In total there were 14 types and mixed types detected (table 4.5).

Table 4.5 Codes for Category

Cat Codes	Full Code
IN_OUT	inside/outside
MO	by main object(s)
MO_T	mixed main object and time period

Cat Codes	Full Code
PR	by process of changes
ST	by space type
ST_MO	mixed by main object(s) and type of space
ST_T	mixed type of space and time
ST_TP	mixed type of space and type of picture
SUPT_ST	mixed by type of space and superordinate
T	by period of time
TP	by type of picture
TP_MO	mixed type of picture and main object
TP_T	mixed type of picture and time period
Z	zero category

The most frequent types of Cat for the data set were MO (43, 29%), ST (28, 20%) and PR (18, 12%).

Zero category was also relatively frequent with 19 (13%) TDs without explicit Cat.

Table 4.6 Overall Frequency of Each Category Type

Cat Codes	Freq	Pct	Code Full
MO	43	28.9%	by main object(s)
ST	29	19.5%	by space type
Z	19	12.8%	zero category
PR	18	12.1%	by process of changes
IN_OUT	10	6.7%	inside/outside
TP	9	6.0%	by type of picture
TP_T	7	4.7%	mixed type of picture and time period
T	6	4.0%	by period of time
MO_T	2	1.3%	mixed main object and time period
SUPT_ST	2	1.3%	mixed by type of space and superordinate
ST_MO	1	0.7%	mixed by main object(s) and type of space

Cat Codes	Freq	Pct	Code Full
ST_T	1	0.7%	mixed type of space and time
ST_TP	1	0.7%	mixed type of space and type of picture
TP_MO	1	0.7%	mixed type of picture and main object

Table 4.7 demonstrates the particular expressions utilized by more than one participant to categorize each of the clips.

Table 4.7 Category with Frequency > 1

ClipID	Cat Code	Category	Romanization	Translation	Freq per Clip	Pct
C1	Z	zero	zero	zero	16	32%
C1	MO	女の子	onnanoko	Girl	12	24%
C2	ST	町の風景	machi no fuukei	Town landscape	5	10%
C2	TP	風景	fuukei	Landscape	4	8%
C2	TP	景色	keshiki	Scenery	3	6%
C2	Z	zero	zero	zero	2	4%
C2	ST	どこかの町	dokokano machi	Town somwhere	2	4%
C2	IN_OUT	外の景色	soto no keshiki	Outside scenery	2	4%
C2	ST	町	machi	Town	2	4%
C2	ST	町の景色	machi no keshiki	Town scenery	2	4%
C2	ST	都市	toshi	City	2	4%
C4	MO	木	ki	Tree	17	34%
C4	T	四季	shiki	Four seasons	3	6%
C4	ST	草原	soogen	Grass-covered plain	3	6%
C4	PR	季節の移り変わり	kisetsu no utsuri kawari	Change of seasons	2	4%
C4	TP_T	冬の景色	fuyu no keshiki	Winter scenery	2	4%

4.2.1 Category Clip 1

As shown in fig 4.13, there were only three types of Cat detected for C1 - main object (MO), process (PR) and mixed main object with type of picture (MO_TP).

The most frequent type of Cat for the first clip was main object (21, 43%), and the most frequent expression of Cats of this type was *onna no ko* (女の子, "girl"). Zero Cat (16, 33%) was the second-most frequent for this clip. Categories of PR type were also utilized by 16 (11%) participants; however, the expressions used were different from participant to participant, e.g. *hitori no onna no ko ga obaachan ni naru* (一人の女の子がお婆ちゃんになる, "one girl becomes a granny") or *shoojo no seichoo* (少女の成長, "little girl's growing up"), the meaning in both cases was similar to"ageing of a girl/child".

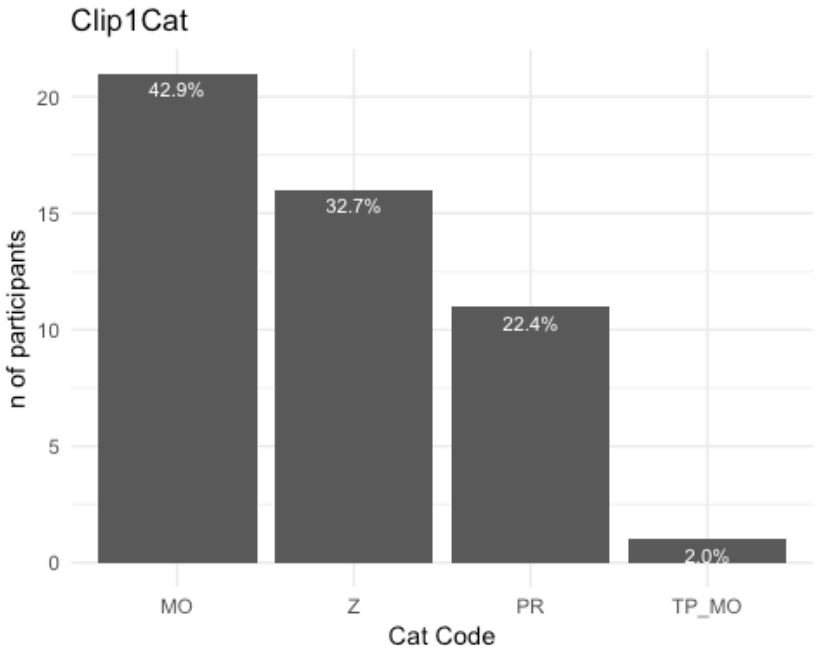


Figure 4.13 C1 Category

4.2.2 Category Clip 2

The variety of the types of Cat for C2 (fig. 4.14) is remarkably larger than for C1.

The most frequent type of Cat was space type (20, 40%) with the most frequent expression of the type being *machi no fuukei* (町の風景, “town landscape”; 5, 10%).

Ten participants (20%) used various expressions of the IN_OUT category, e.g., *soto no keshiki* (外の景色, “outside scenery”). Among the expressions of the third most frequent type of Cat, TP (8, 16%), were *fuukei* (風景, “landscape”; 4, 8%) or *keshiki* (景色, “scenery”; 3, 6%).

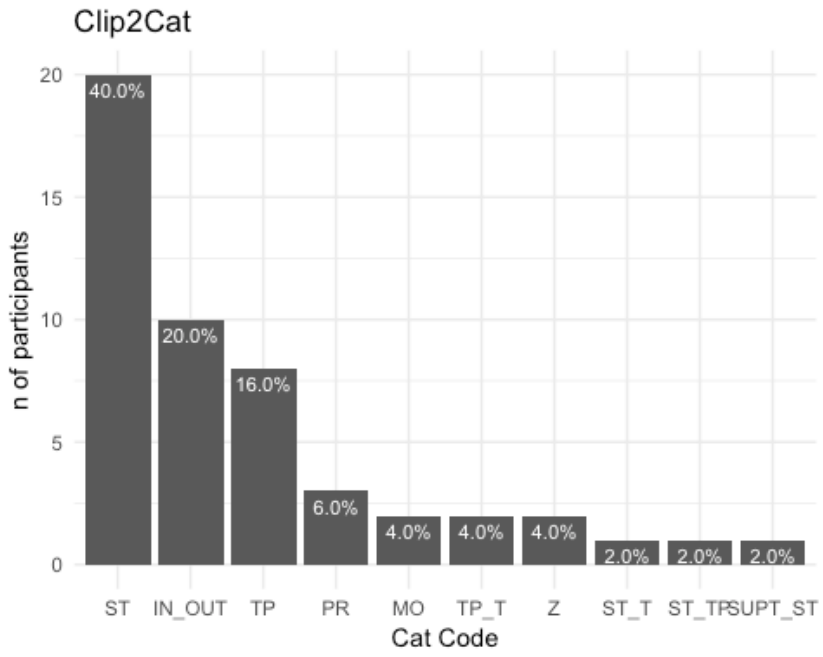


Figure 4.14 C2 Category

4.2.3 Category Clip 4

The most frequent type of the Cat was main object (20, 40%) with the most frequent expression of this type being *ki* (木, “tree”; 17, 34%).

Type of space (ST) was also a relatively frequent type of category (9, 18%). Among the expressions of ST for Clip 4 the most frequent one was *soogen* (草原, “grass-covered plain”; 3, 6%).

The third most frequent type of Cat for this clip T (6, 12%) refers to a time period when the described events take place, as in, for example, *shiki* (四季, "four seasons, seasons"; 3, 6%).

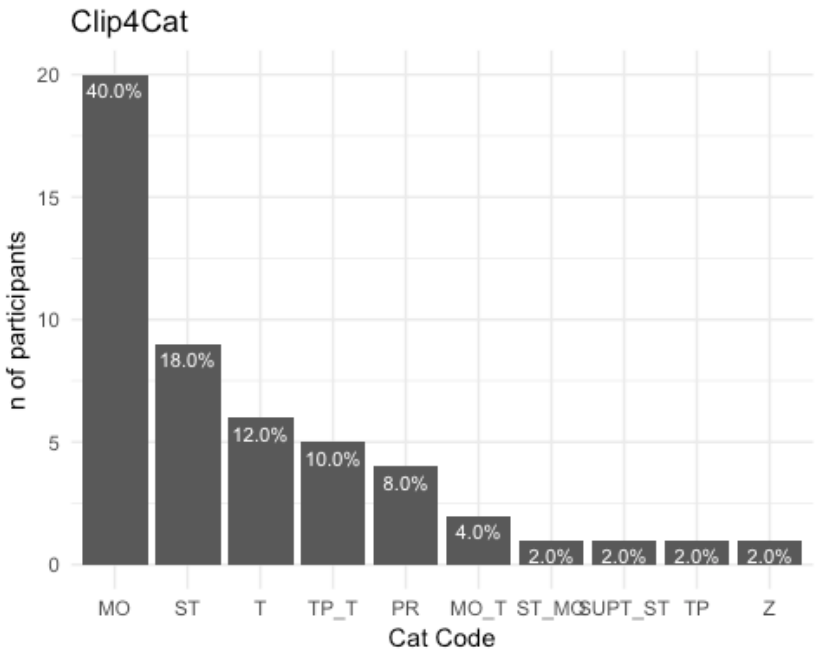


Figure 4.15 C4 Category

As seen from the Cat types and examples of the expressions of the most frequently utilized category types, Cat in TDs, as in spatial descriptions, categorizes the visual stimuli and its contents rather than the events or objects in Elaboration of the text.

4.3 Temporal postpositions, nouns and Conjunctions (TmPs), Landmark (Lm) and Figure (F), and Temporal Relations Predicates (RPs)

In this subsection, the examples of expression of TmPs, F and RP utilized by the greatest number of participants per clip are demonstrated and discussed. As mentioned in the first subsection of the chapter, for TDs the Landmark and the Figure are typically detected by their position within the text, i.e. the event(s) mentioned earlier in the text serve as Lms for the events that follow.

4.3.1 Temporal postpositions, nouns and conjunctions (TmP)

Temporal postpositions and conjunctions (TmP) in TDs serve as a Relator between the Landmark (Lm) event(s) and Figure (F) event(s). A total number of 482 tokens of temporal postpositions and conjunctions were used by the participants of the experiment.

In temporal descriptions the expression of temporal relations between Lm and F can be lexically unmarked, as the temporal discourse allows unmarked sequential description, which is particularly typical for PPF type of TD and LnBE strategy of temporal description. Zero TmPs were utilized in five of twenty (25%) TDs following LnBE.

In this subsection of the chapter, the lexical units utilized as TmP by the highest number of participants per stimulus are overviewed. Figures 4.16-20 and table 3.2 in the appendix show the TmPs used by more than 5 participants per picture.

4.3.1.1 TmP in Clip 1

The TmPs used by more than five participants can be divided into three pairs. The first pair consists of a pair of particles, *kara* (から, "from (e.g. time)"; 18, 36%) and *made* (まで, "until (a time)"; 17, 34%) typically utilized to designate the start and the end of a linear event. The second pair is a temporal noun, *saigo* (最後, "end"; 9, 18%) and *saigo* with topical particle *wa* (最後は, "at the end"; 8, 16%), which in total were utilized by 34% of participants. The third pair, *de* (で, "and then, at"; 8, 16%) and *soshite* (そして, "and then"; 6, 12%) represent topic time (TT) shifters.

Such a set of TmPs suggest that at lexical level the relations between events described in TDs for C1 tend to be expressed as limited with emphasis at the end of the TDs, and can also be expressed as explicitly marked sequences.

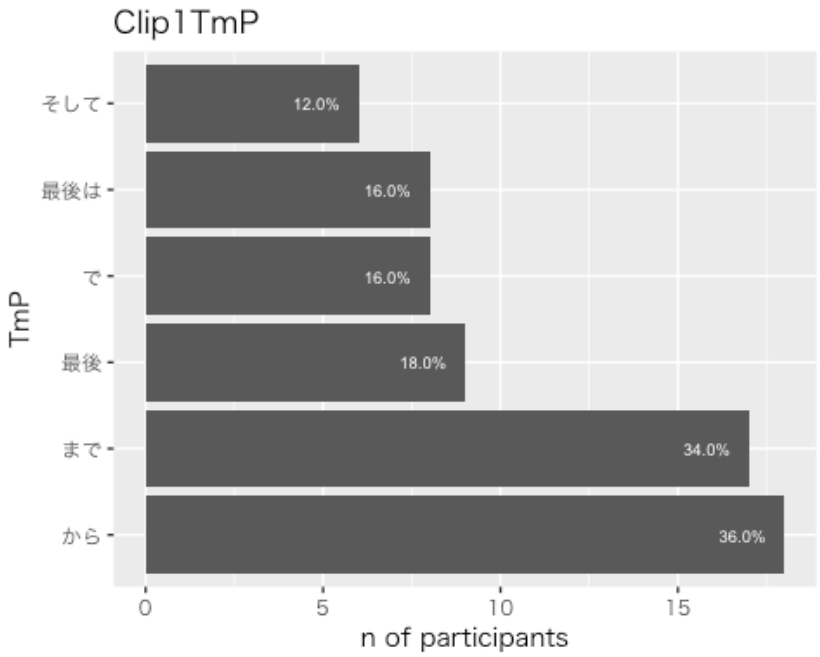


Figure 4.16 C1TmP

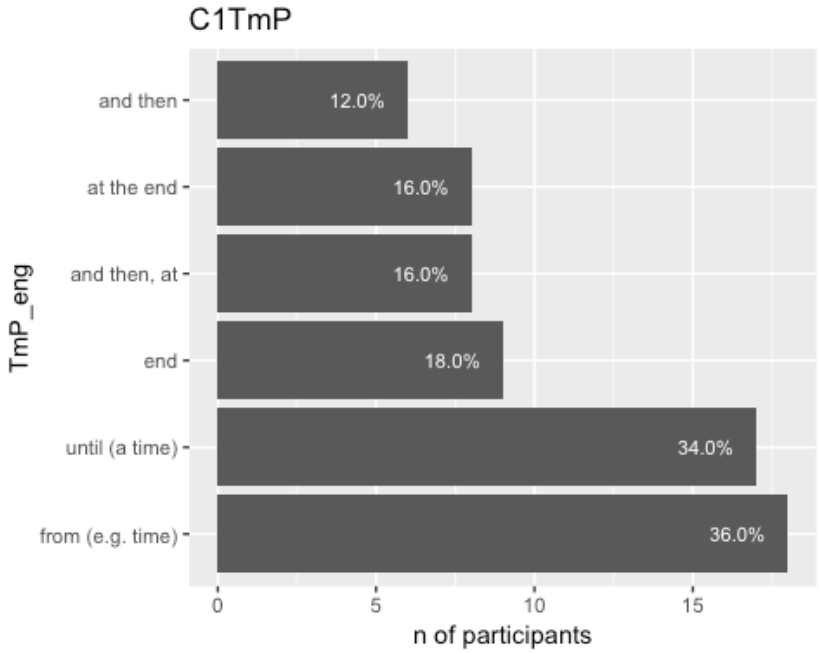


Figure 4.17 C1TmPEng

4.3.1.2 TmPs in Clip 2

The difference between the number of the participants who utilized *kara* (から, "from (a time)"; 44, 88%) and *made* (まで, "until (a time)"; 15, 30%) in their TDs of C2 demonstrates that for this stimuli the beginning of the event is more frequently marked than its end. While apart from *made* there were no TmPs with the semantic feature of end, there was another TmP with the semantic feature of start as *saisho wa* (最初は, "firstly"; 6, 12%). This can be considered a confirmation that TmPs, utilized by the highest number of participants of C2, demonstrate an emphasis on the beginning of the described sequence of temporal events.

TT shifters were also used by a relatively high number of participants. The most frequent of them for C2 were *de* (で, "and then, at"; 11, 22%), *soshite* (そして, "and then"; 7, 14) and *sorekara* (それから, "and then"; 7, 14%).

A separate type of TT shifter - *to* (と, "when/if") was utilized by 6 (12%) participants in TDs for C2. As *to* incorporates both temporal inclusion and temporal cause-result semantic features, it indicates not only sequential relations as other TT shifters, but a hierarchical differentiation between temporal events.

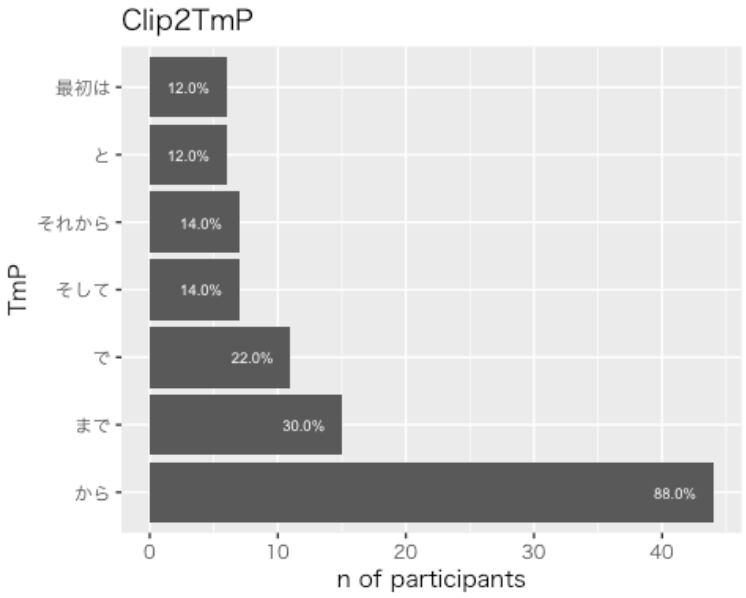


Figure 4.18 C2TmP

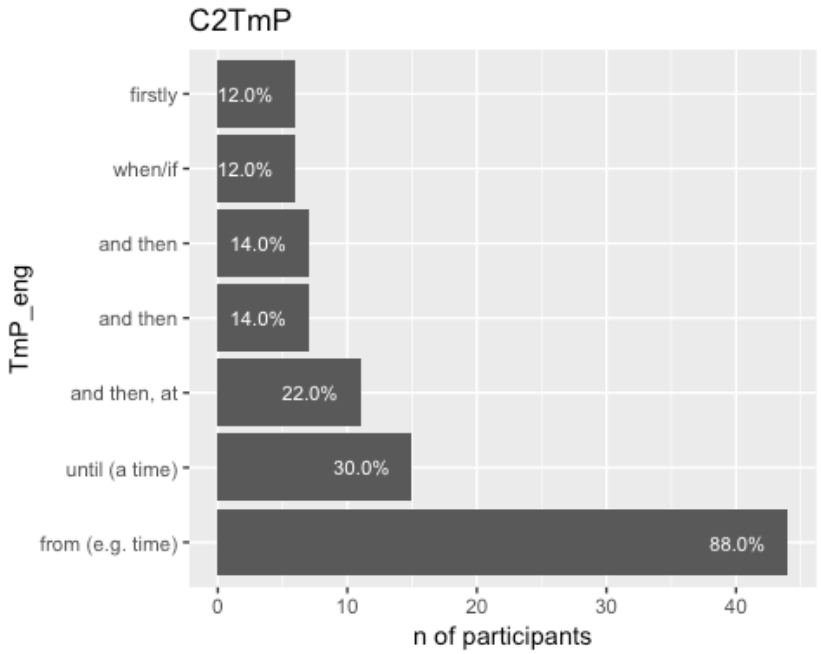


Figure 4.19 C2TmPEng

4.3.1.3 TmPs in Clip 4

The variety of TmPs utilized by the highest number of participants for C4 is wider than the variety of TmPs used in other two clips. TT shifters, in particular, *de* (で, "and then, at"; 31,

62%) *soshite* (そして, “and then”; 15, 30%) and *sorekara* (それから, “and then”; 12, 24%), *sono ato* (その後; “after that”; 8, 16%), *tsugi ni* (次に; “next”; 6, 12%), *kondo wa* (今度は, “this time”; 6, 12%), were actively used, demonstrating that the participants tended to lexicalize the subdivision into events in their TDs.

Interestingly, *mata* (また, “again”) was used by 12 (24%) of participants in TDs for this clip. Though *mata* can be interpreted as a TT shifter, meaning “and then; and also”, it can also be interpreted as a time marker for repetitive or reoccurring temporal events.

TmPs with semantic features of the start of an event were represented by *kara* (から, “from (e.g. time)”; 30, 60%), *saisho* (最初, “beginning”; 8, 16%) and *saishowa* (最初は, “firstly”; 7, 14%). Meanwhile, the only TmP designating ending used by more than five participants was *saigo* (最後, “end”; 6, 12%).

In comparison with C1 and C2, inclusive-cause-result TT shifter *to* (と, “when/if”; 19, 38%) was utilized by the highest number of participants in describing C4.

Such a set of actively utilized TmPs suggests that the TDs of C4 tend to be easily divided into lexically marked events with an emphasis on the start; and demonstrates that a set of events was simultaneously marked as causing and containing other events.

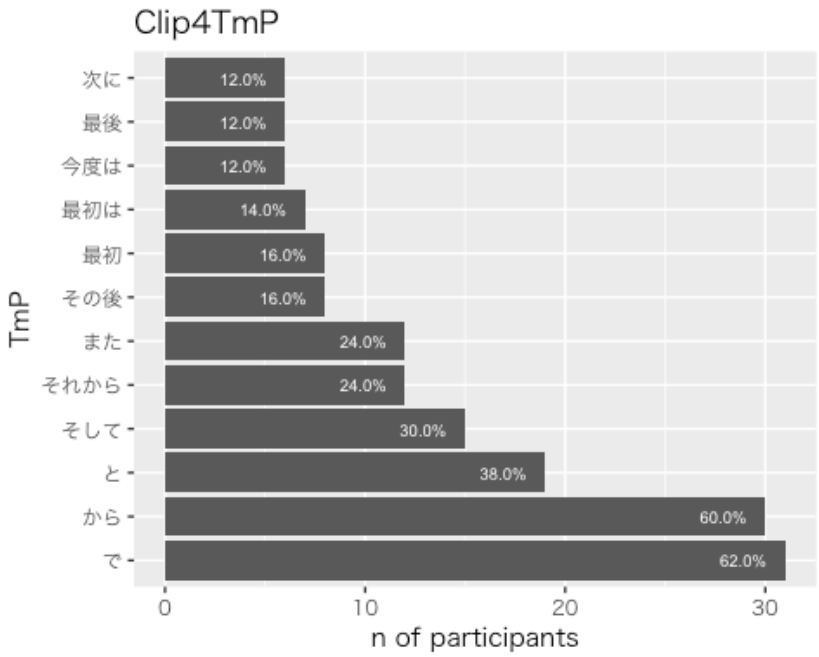


Figure 4.20 C4TmP

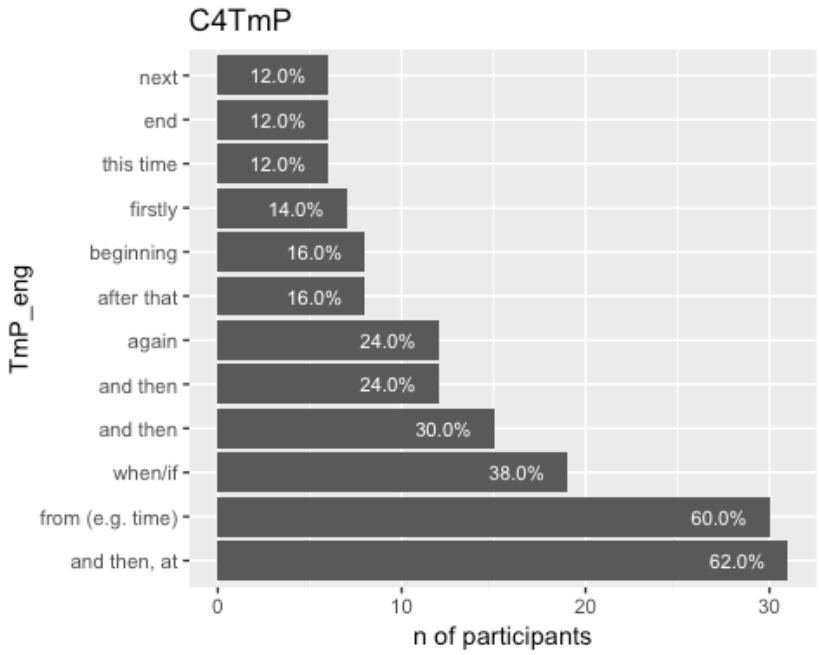


Figure 4.21 C4TmPEng

The sets of TDs utilized by the highest number of participants for each Clip showed that for C1 and C2 participants tended to lexically mark both the start and end of the events described, though for C1 the end was more emphasized and for C2 the start was more frequently lexically

marked. For the TmPs of C4 the beginning was relatively actively marked, while the TmPs with sematic features of the end were not utilized by more than 5 participants. One remarkable feature of C4 TmP set is the active use of *to*, suggesting a hierarchical structure of events within TDs.

4.3.2 Relations Predicate

A total of 1052 tokens of Temporal Relations Predicates (RP) were found in the corpus. RP in this chapter refers to all predicates expressing the character of temporal relations between Figure event and Lm event.

In this subsection of the chapter expressions of RP utilized by the highest number of participants per clip is shown.

Table 4.8 demonstrates the expressions of RP used by more than five participants in the form in which they were extracted from the corpus.

Table 4.8 RP with frequency > 5

ClipID	RP	POS	Romanization	Translation	Freq	Pct
1	なる	v	naru	to become	19	38%
1	なって	v	natte	to become	14	28%
1	なっていく	v	natteiku	to become	10	20%
1	なり	v	nari	to become	8	16%
1	取っていく	v	totteiku	to take	8	16%
2	zero	NA	zero	zero	15	30%

ClipID	RP	POS	Romanization	Translation	Freq	Pct
2	なって	v	natte	to become	15	30%
2	なる	v	naru	to become	10	20%
2	暗く	Adv	kuraku	dark	10	20%
2	なり	v	nari	to become	9	18%
4	zero	NA	zero	zero	21	42%
4	なって	v	natte	to become	19	38%
4	なり	v	nari	to become	14	28%
4	落ちて	v	ochite	to fall down	12	24%
4	なる	v	naru	to become	11	22%
4	咲いて	v	saite	to bloom	6	12%
4	始まって	v	hajimatte	to begin	6	12%
4	始まり	v	hajimari	to begin	6	12%
4	変わり	v	kawari	to change	6	12%

4.3.2.1 Clip 1 Relations Predicates

The most frequently utilized expressions of Relations Predicates for C1 were different forms of the verb *naru* (“to become”). The participants actively used the connective forms of the verb, *natte* (なって, “to become-CONN”; 14, 28%) and *nari* (なり, “to become-CONN”; 8,

16%). Nonpast form *naru* was utilized by 19 (38%) the participants. The verb *toru* in its meaning of "ageing" in the expression *toshi wo toru* ("to grow old") was used by 8 (20%) participants. As it was accompanied by auxiluary verb *iku*, it can be assumed that inchoative aspect with emphasis on the starting point of the change was overall prevailing for TDs of C1.

Aspect marked with *te iku* here demonstrates a polarity of emphasis different to the emphasis shown in TmPs, where a large proportion of temporal nouns utilized by the high number of participants were nouns with semantical meaning of ending. Such a dichotomy suggests that the participants described C1 as a sequence of events that started, progressed, and ended while they were observing them.

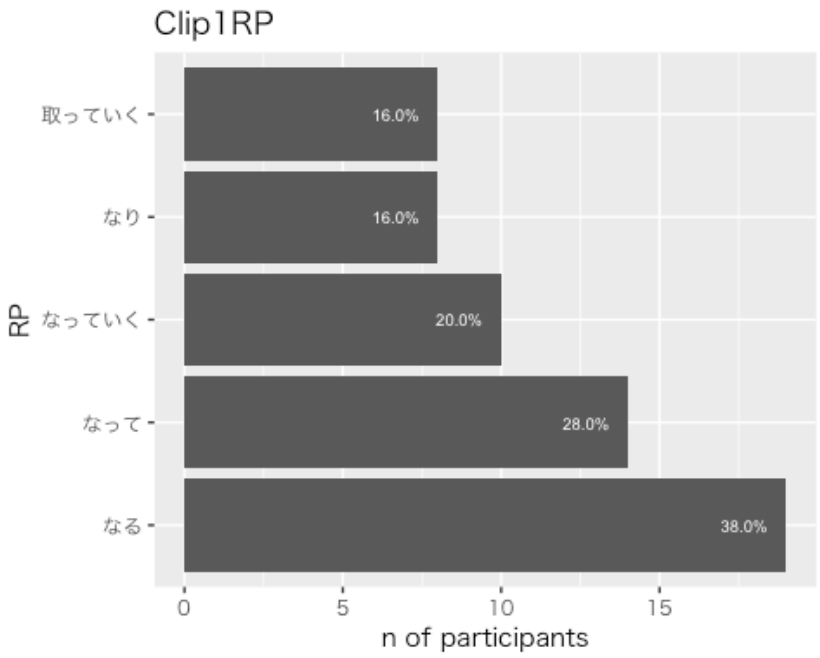


Figure 4.22 C1 Relations Predicates

4.3.2.2 Clip 2 Relations Predicates

In comparison with C1, C2 and C4 (as shown in the next subsection), the proportion of zero Relations Predicates utilized by the participants is relatively high. For C2 15 (30%) of

participants utilized zero RP at least once. Zero RP within this data set is associated with cases where the event is described by a nominal sentence as, for example, for this clip, *yuuyake* (夕焼け, “sunset”) or *asa kara yoru made* (朝から夜まで, “from morning till night”).

In TDs of this clip *naru* (なる, “to become”) in its various forms, e.g., *natte* (なって; 15, 30%), *naru* (なる; 10, 20%), *nari* (なり; 9, 18%), was utilized by the most number of the participants. Among these uses of *naru* were 10 (20%) participants who utilized it together with *kuraku* (暗く, “dark”) in the meaning “to become dark”.

Though the inchoative aspectual form with *te iku*, e.g., *natteiki* (なっていき; 5, 10%) or *natteiku* (なっていく; 5, 10%), was less actively utilized for TDs of this clip, it is still present within the data set.

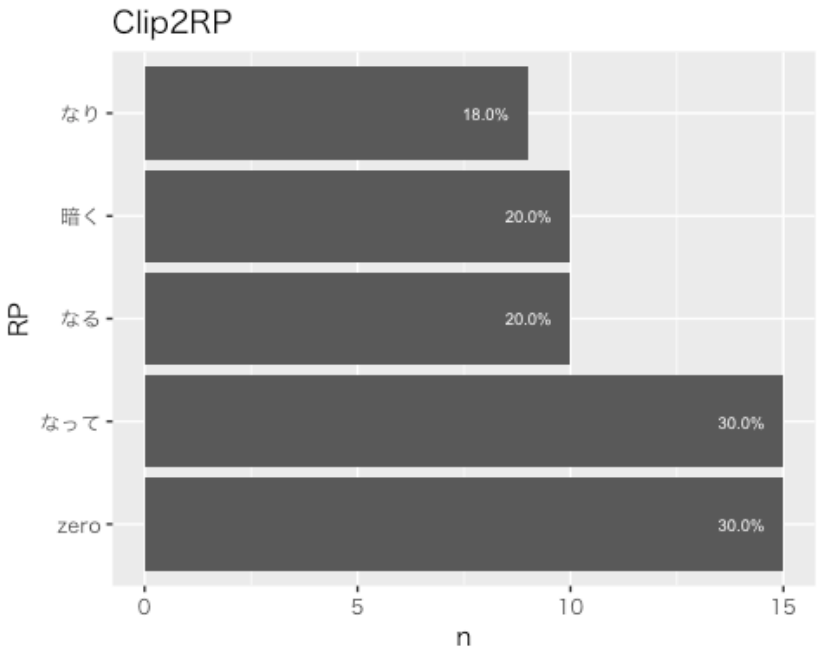


Figure 4.23 C2 Relations Predicate

4.3.2.3 Clip 4 Relations Predicate

As in TDs for clip 2, the proportion of participants using zero Relations Predicate was relatively high for this clip (21, 42%). For this clip even more participants tended to express some of the events with nominal sentences. In the case of C4 the majority of the events expressed in this way were designations of season change, e.g., *mata aki* (また秋, "autumn again"), *saigo wa natsu* (最後は夏, "the last one [is/was] summer") or just *natsu* (夏, "summer").

As for the predicates utilized for the highest number of participants for clip 4, *naru* ("to become") and its forms was the most frequent, similar to the two other clips: *natte* (なって; 19, 38%) *nari* (なり; 14, 28%) *naru* (なる; 11, 22%).

Verbs associated with features of seasonal changes such as leaves falling or flowers blooming *ochiru* ("to fall") and *saku* ("to bloom") were also actively utilized by the participants in their non-final forms *ochite* (落ちて; 12, 24%), *saite* (咲いて; 6, 12%).

An intransitive verbs *hajimaru* ("to begin") and *kawaru* ("to change") in their non-final forms *hajimatte* (始まって; 6, 12%), *hajimari* (始まり; 6, 12%), and *kawari* (変わり; 6, 12%) were utilized by 12% of participants in each of the forms.

The set of Relation Predicates used by the highest number of the participants suggests that there was a distinctive feature for TDs of C4 – fewer participants actualize the inchoative aspect through *te iku* forms, more participants describe the events as starting or changing through intransitive verbs with semantic features of beginning and change.

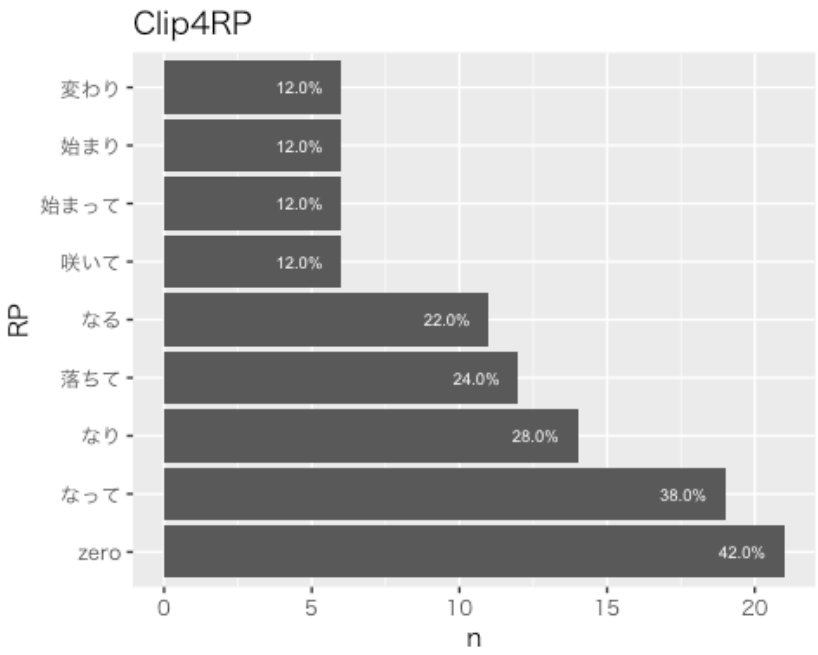


Figure 4.24 C4 Relations Predicates

4.3.3 Relations Predicates (RTs) Tense and Aspect per Clip

Table 4.9 demonstrates the proportion of predicate forms with frequency higher than 10 per clip[13].

Table 4.9 RT Form with frequency > 10

ClipID	POS	Tense	Form	Freq	Pct
1	v	CONN	NA	52	23.9%
1	v	NPAST	IKU	36	16.5%
1	v	NPAST	NA	29	13.3%

[13] abbreviations : POS -part of speech, v - verb, Adv - adverb, CONN - connective, NPAST - non-past, NA- not applicable for zero values, IKU - te iku form, IPFT - imperfective/continuous, KURU - te kuru form, Start - inchoative predicate

ClipID	POS	Tense	Form	Freq	Pct
1	v	CONN	IKU	16	7.3%
1	Adv	CONN	NA	15	6.9%
2	v	CONN	NA	56	25.2%
2	v	NPAST	IKU	27	12.2%
2	v	NPAST	NA	21	9.5%
2	NA	NA	NA	15	6.8%
2	Adv	CONN	NA	13	5.9%
2	v	CONN	IKU	12	5.4%
4	v	CONN	NA	98	27.3%
4	v	NPAST	IPFT	37	10.3%
4	v	NPAST	NA	35	9.7%
4	NA	NA	NA	21	5.8%
4	v	PAST	NA	21	5.8%
4	v	CONN	IPFT	18	5.0%
4	v	PAST	IPFT	16	4.5%
4	v	CONN	KURU	14	3.9%
4	v	CONN	Start	14	3.9%
4	v	NPAST	IKU	13	3.6%

4.3.3.1 Clip 1 Relations Predicate Tense and Aspect

There were some remarkable similarities between C1 and C2 in terms of the sets of combinations of part of speech tense and aspectual forms used as predicates, while C4 demonstrated a different picture.

A total number of 31 different combinations of part of speech, tense and aspect was utilized in TDs of C1. For C1 the prevailing predicate forms can be divided in two groups: final and connective forms of predicates without aspectual auxiliary *te iku*, and final and connective forms of predicates in *te iku* form – the connective *te* form of the verb (52 tokens; 24%), nonpast form of the verb (29 tokens; 13%); and final nonpast form of the verb in *te iku* form (36 tokens; 17%); and the connective form of the verb in *te iku* form (16 tokens; 7%).

Connective *te* forms are the the most frequent means of expression of sequence in TDs and are typical for PPF; and as it was also shown in the most frequently utilized expressions of Relations Predicate for this clip, the most frequently utilized aspectual emphasis was on the beginning of the change or action.

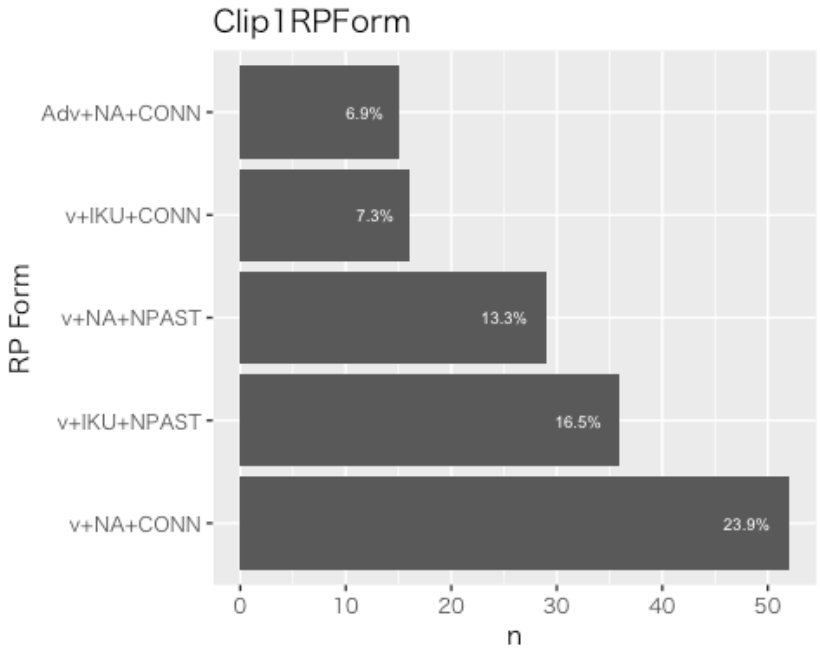


Figure 4.25 C1 Tense and Aspect

4.3.3.2 Clip 2 Relations Predicate Tense and Aspect

The total number of tokens of combinations of part of speech tense and aspect was the same as for C1 - 31. The most frequent set of forms for C2 was also similar to that for C1.

Verbs in connective *te* forms were the most frequently used (56, 25%) and verbs in final nonpast form were also relatively frequent (21, 10%).

The second frequent form was a verb in *te iku* inchoative final form (27, 12%) or in a connective *te iku* (12, 5%) form.

The only major difference between the frequent forms for C1 and C2 was the presence of relatively high numbers of zero RP (15, 7%) in TDs of C2, which demonstrates that events expressed by nominal sentences were more common for TDs of C2.

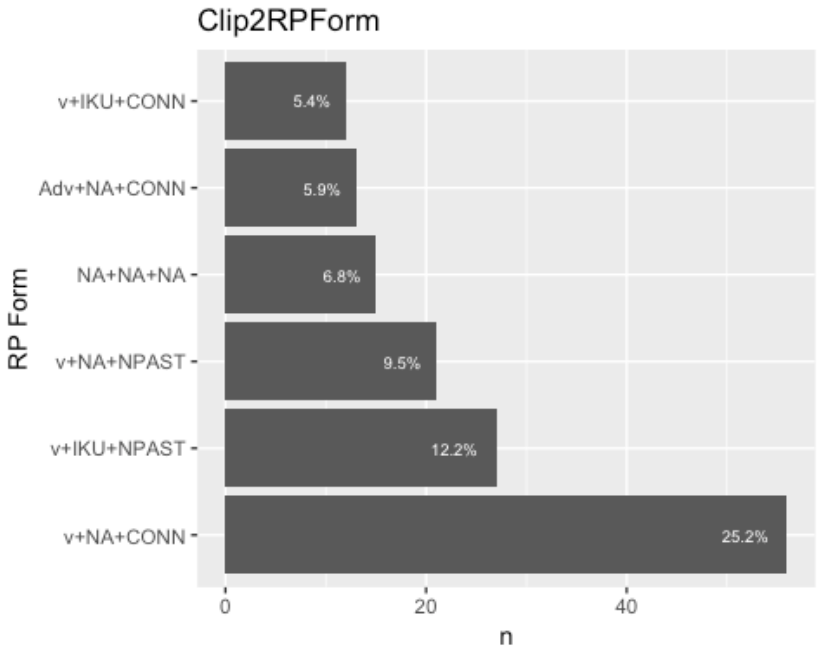


Figure 4.26 C2 Tense and Aspect

4.3.3.3 Clip 4 Relations Predicate Tense and Aspect

The most frequently used forms of predicates for TDs of C4 were different from the forms of C1 and C2; and the variety of forms used for C4 was larger – 47 tokens. Though the connective *te* form of the verb and verb in non-past final (35, 10%) were also among the most frequent for this clip (98, 27%), the variety of other frequently utilized forms is wider than in TDs of C1 and C2.

The second most frequent form for C4 was the final nonpast imperfective *te iru* form of the verb (37, 10%), suggesting more frequent use of the "eventive" predicates and in particular in their "present" tense reading (Jacobsen 2018). Imperfective *te iru* was also represented in the non-final connective *te iru* form (18, 5%) and in the final past form (16, 4.5%)

Zero Relations Predicate, similarly to C2, was actively utilized (21, 6%), which again points to usage of nominal sentences expressing some of the events.

In comparison with the predicate forms of TDs of C1 and C2, the *te iku* (13, 4%) form was relatively less frequent, while some usages of *te kuru* (14, 4%) and other inchoative predicates (14, 4%) appear among the frequent uses only in TDs of this clip.

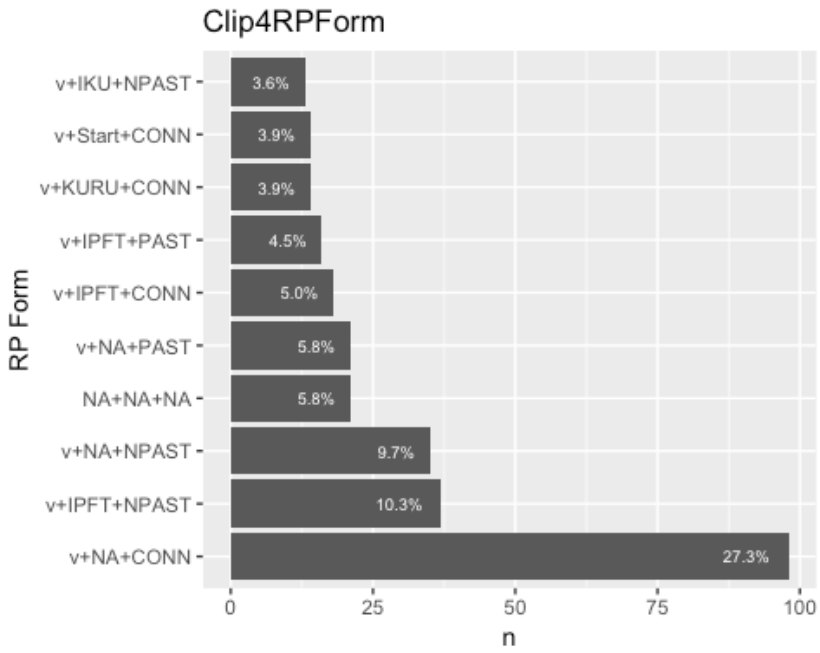


Figure 4.27 C4 Tense and Aspect

4.3.4 Landmark and Figure

Figure in TDs is normally an event, represented by a sentence or a clause describing a process or a stage of some change happening through time. The preceding F (s) serve as Lms for the following F. In other words, the event's (F) location in time is described in relation to the previously mentioned events (Lms). Figures 4.28-30 and table 3.3 in the appendix demonstrate the expressions of the events most frequently utilized by the participants of the experiment.

4.3.4.1 Figure Clip 1

In C1 most of the Fs utilized by a high number of participants could be roughly interpreted as “to age, to become old (er), to grow up”. In particular such Fs were expressed by a predicate with an object such as *obaasan ni naru* (お婆さんになる, “to become a granny (old woman)”; 28, 56%); *toshi wo toru* (年を取る, “to age”; 21, 42%), *otona ni naru* (大人になる, “to become an adult”; 11, 22%), *toshi wo kasaneru* (年を重ねる, “to age, to become older”; 10, 20%), *roojin ni naru* (老人になる, “to become an old person”; 7, 14%).

There was also one sign of ageing in particular, *shiraga ni naru* (白髪になる, “hair turns grey; to become grey-haired”; 6, 12%), which was utilized by a relatively high number of participants. Such a unanimous set of frequently used Fs demonstrates that the participants were focused on the description of the fact and the process of ageing, as was anticipated when choosing the stimuli.

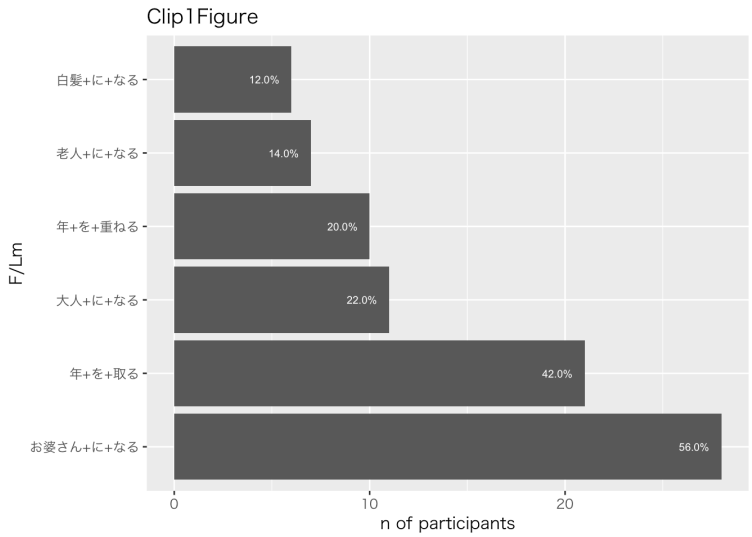


Figure 4.28 C1 Figure/ Landmark

4.3.4.2 Figure Clip 2

The majority of the most frequently utilized expressions of F for C2 had meaning connected with a change from daytime to nighttime. The structure of the most frequently utilized clauses or sentences expressing the events serving as Figures or Landmarks demonstrated more variety than in TDs of C2 – predicate with object, predicate with subject, nominal clause, adjectival predicate. Such Fs were expressed with a predicate and an object as *yoru ni naru* (夜になる, "to become night"; 29, 58%) or *yuugata ni naru* (夕方になる, "to become evening"; 7, 14%), or in some cases as a nominal sentence, such as *yoru* (夜, "night"; 10, 20%). Other stages of daytime flow were also utilized by a high number of participants in the TDs of this clip, e.g., *hiru ni naru* (昼になる, "to become midday; to become daytime"; 9, 18%).

Some of the Fs used by more than 5 participants for this clip were specific changes in the scene shown in the clip associated with changes in time of the day such as *akari ga tsuku* (明かりがつく, "lights turn on"; 7, 14%) or *kuraku naru* (暗くなる, "it turns dark"; 6, 12%).

Only one of the frequently utilized Fs *kumo ga nagareru* (雲が流れる, "clouds pass"; 7, 14%) expressed changes in the scenery while not directly reflecting changes in time of the day.

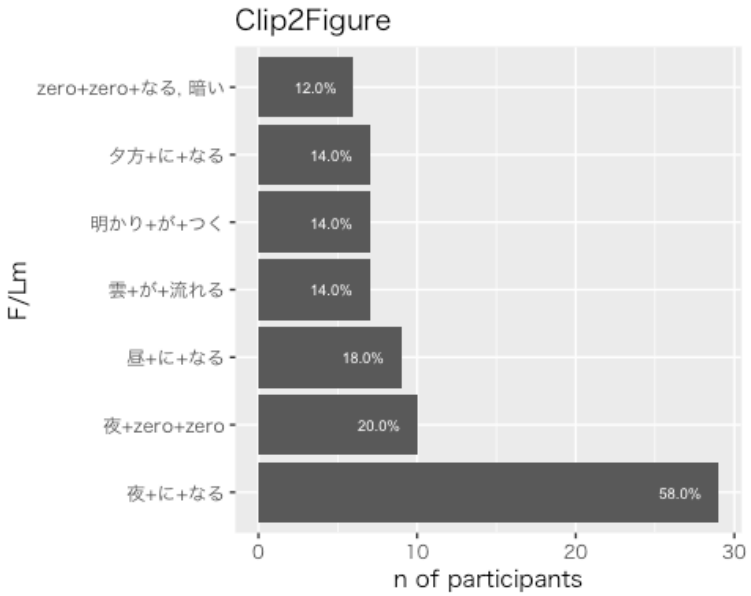


Figure 4.29 C2 Figure/Landmark

4.3.4.3 Figure Clip 4

The majority of the Fs used by more than 5 participants for C4 express a direct reference to seasonal changes - *haru ni naru* (春になる, "to become spring"; 26, 52%), *natsu* (夏, "summer"; 15, 30%), *aki ni naru* (秋になる, "to become autumn"; 14, 28%), *natsu ni naru* (夏になる, "to become summer"; 10, 20%), *haru* (春, "spring"; 10, 20%), *aki* (秋, "autumn"; 8, 16%).

Similar to the TDs of C2, another type of events utilized as F by high number of participants was the expression of changes in the scenery associated with temporal changes such as *hana ga saku* (花が咲く, "flowers bloom"; 23, 46%), *ha ga ochiru* (葉が落ちる, "leaves fall"; 13, 26%), *yuki ga tsumoru* (雪が積もる, "snow piles up"; 11, 22%) or *midori ni naru* (緑になる, "turns green"; 6, 12%). Also as observed in TDs of C2, *kumo ga nagareru* (雲が流れる, "clouds pass"; 6, 12%) was present among the Fs used by more than 5 participants.

The structures of the event clauses or sentences are similar to that observed in TDs of C2 – predicate with object, predicate with subject, nominal clause.

One of the examples of events utilized by a high number of participants – *hajimaru* (始まる, "to start"; 12, 24%), consists of only a predicate, and was used as the first event in the TD with a Lm embedded in the event, i.e., *fuyu kara hajimaru* ("it starts with winter").

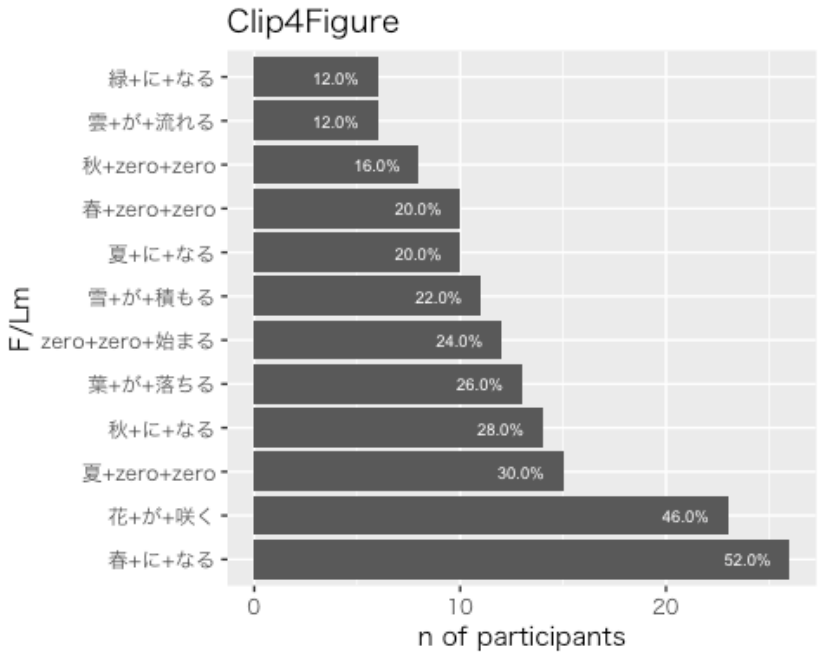


Figure 4.30 C4 Figure/ Landmark

5. Results

This section of the chapter demonstrates the results of qualitative analysis of distinctive features of the strategies including types of temporal description per strategy.

In the first part of the subsection, each of the strategy defining features is discussed and a typology of the strategies is formulated.

In the second part of the section, the conditions and the results of the variance tests applied to the strategies are shown. The hypotheses concerning the strategies were tested with one-way repeated measures ANOVA (Lawrence 2013), and generalized linear mixed-effects model for binomial variables (Bates et al. 2015).

5.1 Strategies

The initial hypothesis concerning the typology of temporal description strategies suggested the presence of three distinctive strategies in Japanese – 1) linear limited strategy or "lifetime", 2) linear non-limited strategy or "traditional time" and 3) nonlinear strategy or "day-to-day time".

Through the analysis of temporal lexicon and aspect of TDs in the corpus obtained through the experiment, five variations of the strategies were detected and marked up in the corpus – 1) linear with end and beginning (LBE), 54 (36%) TDs; 2) linear with unmarked end (LnE), 38 (25%) TDs; 3) linear with unmarked beginning (LnB), 24 (16%) TDs; 4) linear with unmarked end and beginning (LnBE), 20 (13%); and 5) non-linear (NL), 14 (9%) TDs.

In this subsection, each strategy feature – condensation, frequent temporal nouns and conjunction, prevailing predicate form, and types of temporal description – are discussed to define a preliminary typology of TD.

5.1.1 Condensation and marked connectivity

Condensation is defined as the degree of hierarchical organization of event structures (Noyau et al. 2005; Vanek 2012). It can be assessed through two indexes – 1) condensation index – the average number of propositions per utterance in a text; 2) simplified connectivity index – the average number of temporal and non-temporal conjunctions per utterance.

The condensation index for all five strategy variations found in the corpus was in the range of 2 to 2.5. NL had both the highest condensation index (2.5, sd=1.2) and connectivity index (1.2, sd = 1.1) among the strategies represented in this data set, which demonstrates that the utterances in NL TDs tend to have a complex hierarchical relations structure involving explicit connection between the propositions.

The lowest connectivity (0.5, sd =0.8) index, as expected, was in the TDs annotated as LnBE with condensation of average 2.3 (sd =1.6) propositions per utterance. LnE had a condensation index of 2.4 (sd =1.6) with a higher index of connectivity (0.8, sd =1). LBE and LnB had lowest condensation index at 2.1 each (sd =1.2 for each), while the connectivity index for LBE was the second highest among the strategy variations 0.9 (sd =1), and LnB the second lowest at 0.6 (sd =0.8). Such values for these two variations demonstrate that TDs annotated as LBE and LnB tended to have paratactic structure.

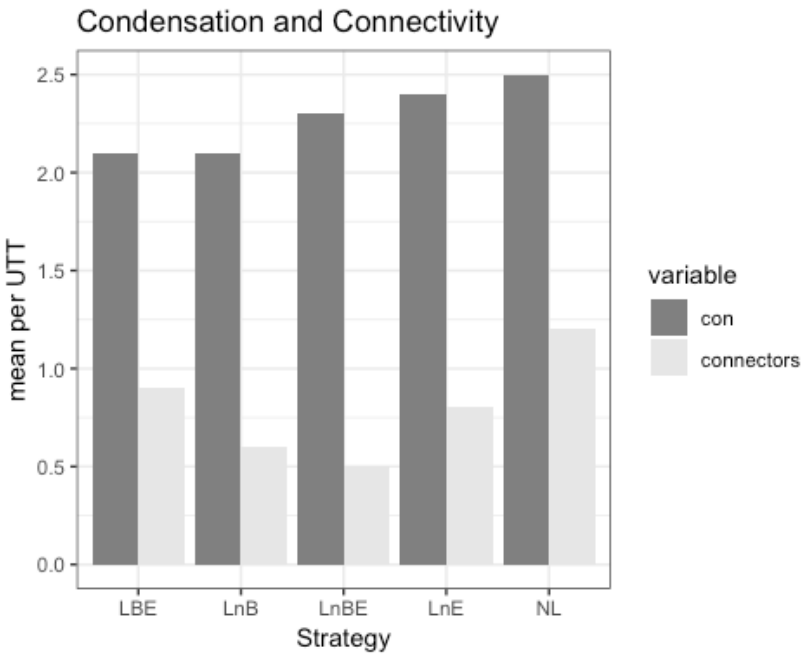


Figure 4.31 Condensation and Connectivity

Overall, condensation and connectivity indexes demonstrated that there are three groups among strategy variations – 1) NL with complex hierarchical organization and explicit connections between propositions; 2) LnBE and LnE with close levels of condensation and different levels of connectivity; 3) LBE and LnB with equal index of condensation with different levels of connectivity.

5.1.2 Granularity

Granularity is the "degree of temporal partitioning of situations" within temporal discourse (Noyau et al. 2005; Vanek 2012), i.e. a high granularity degree demonstrates that TD involves a detailed series of sub-events, low granularity shows that the TD was presented as one macro-event or a macro-event with few sub-events. The level of granularity is quantified by calculating the number of events per Sq or per text. In this work, granularity index was calculated as the average number of events per text.

The TDs with the highest index of granularity among the strategy variations – 9.5 (sd =3.3) – were the TDs following NL strategy variation, suggesting a complex structure of temporal hierarchy between the events.

The two variations with the lowest granularity were the TDs annotated as LBE (5.3, sd = 3.1) and LnB (5.2, sd =2.7), demonstrating that the TDs following these two variations tended to be presented as a macro event with low number of sub-events.

LnBE (5.6, sd = 4.1) and LnE (5.6, sd =3.2) displayed a level of granularity much lower than NL, but it still demonstrates that the number of sub-events per text was slightly higher than in LBE or LnB.

5.1.3 Non-temporal propositions

The average number of non-temporal propositions per TD was also calculated for the texts following each of the five variations of strategies.

LnB (2.3, SD=3.2) and LBE (2.6, sd =2.5) had the lowest average number of non-temporal propositions, while LnBE (4, sd =3.5) had the highest.

The average number of non-temporal propositions per text for LnE and NL was only slightly lower than for LnBE with 3.7 (sd =3) for LnE and 3.8 (sd =2.4) for NL.

5.1.4 Relations Predicate

All five variations of the strategies share the same set of the most frequently utilized combinations of part of speech, tense, aspect: – 1) connective form of the verb; 2) nonpast form of the verb; 3) nonpast or connective form of the verb in *te iku* form.

All variations but LnB have 4) a verb in nonpast or connective imperfective *te iru* form among the most frequently used in TDs. Only in LnBE descriptions were 5) the past forms of

the verb and 6) past imperfective forms frequently used. Descriptions following LBE were the only set of TDs where 7) verbs in *te kuru* form were frequently utilized.

5.1.5 TmPs

LBE, LnE and LnB have corresponding sets of temporal words as the most frequent Relators (Rs). Rs typical for LBE are temporal words with meaning of beginning, meaning of end, and before/after TT shifters. LnB tends to have Rs with semantic features of end and before/after TT shifters. LnE Rs frequently are words with meaning of beginning and before/after TT shifters.

Among all the strategy variations LnBE has the highest proportion (26%) of complex temporal Relators, e.g. *moo* ("already), *mata* ("again; then"), *soshite* ("and; then"), and Relators with semantic feature of parallel actions or inclusion (24%). For NL the most frequent Relators were TT shifters and Relators with semantic features of inclusion and causal relations, e.g. *to* ("when/if").

5.2 Strategies of Temporal Description and Types of Temporal Relations

For types of temporal description, every sequence (Sq) within the corpus was annotated with an attribute stating its type of TD. The overall frequency and proportion of types is shown in table 4.10. Out of the total number of 291 Sq, 148 (51%) were following PPF, 110 (38%) HPF and 33 (11%) APF.

Table 4.10 Type of Relations

Type of Relation	Code	Freq	Pct
Phase	Phase	148	50.9%
Holistic	Hol	110	37.8%
Absolute	Abs	33	11.3%

TD types proportions per strategy are demonstrated in the figures below.

As shown in fig. 4.32, in the majority of the descriptions following the NL strategy APF prevails with 26 (57%) of the Sq. PPF and HPF were used in a considerably lower number of Sq; 12 (26%) for PPF and 8 (17%) of Sq for HPF.

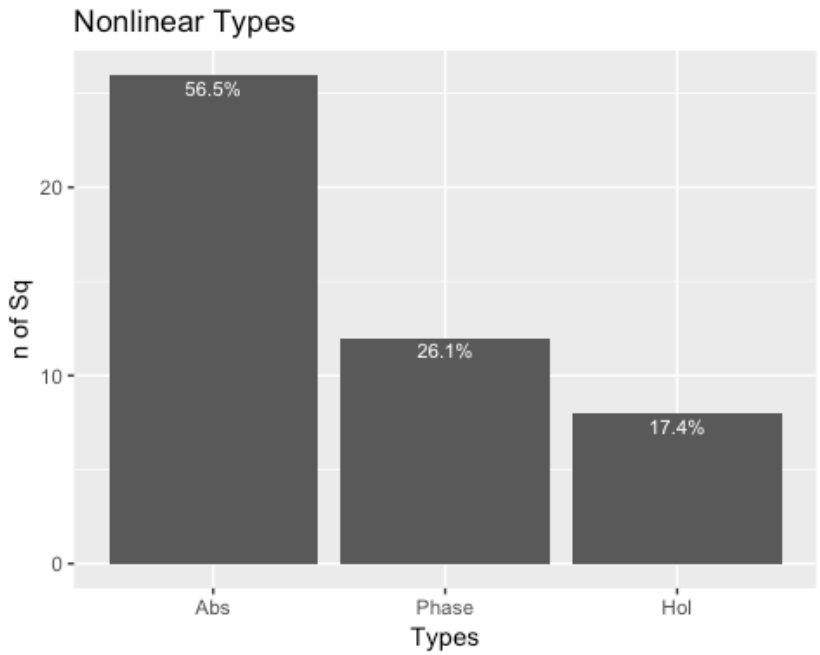


Figure 4.32 NL_Types

In TDs with non-limited linear strategy (LnBE) the main type of temporal description was phasal (21, 62%) as shown in fig. 4.33. HPF was used in 10 (29%) of sequences, and APF was utilized only in 3 Sq of the TDs following LnBE.

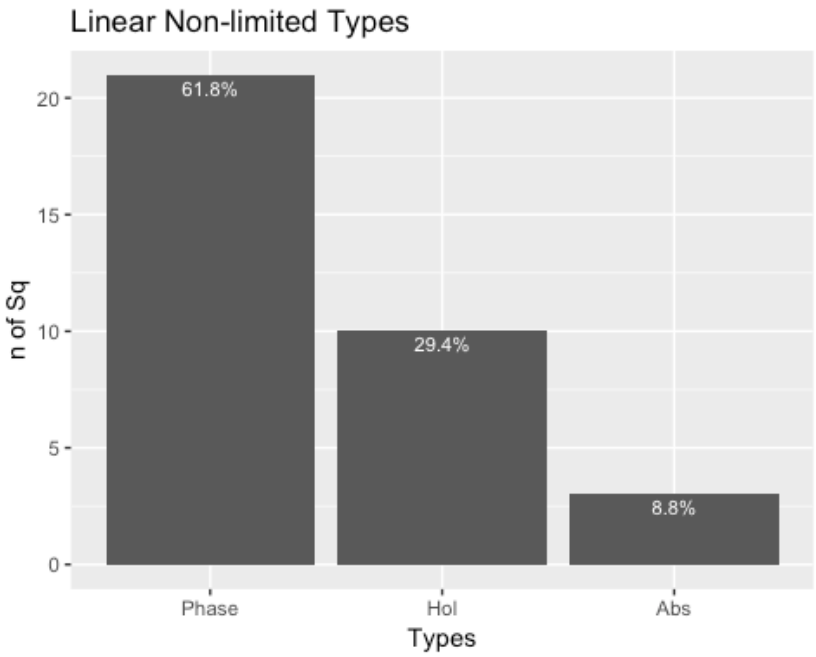


Figure 4.33 LnBE_Types

In TDs following limited linear strategy (LBE) the only two types of description were utilized as shown in fig. 4.34. In the descriptions following LBE in 62 (60%) Sequences (Sqs) participants used phasal perspectivation frame, while holistic was used in 42 (40%) of cases.

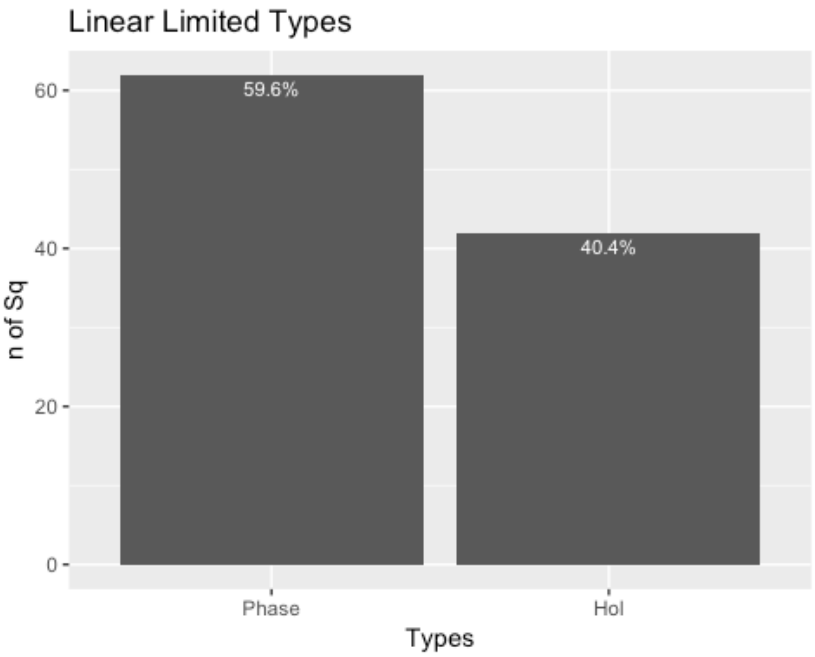


Figure 4.34 LBE_Types

For the LnB strategy the prevailing type of temporal description was holistic with 28 (67%) of Sq following this type of description. Only one Sq followed the absolute type of description, and 13 (31%) followed phasal. Such a proportion demonstrates that though the LnB descriptions were following sequential principle, in the majority of cases with HPF the borders of the events tended to be explicitly marked.

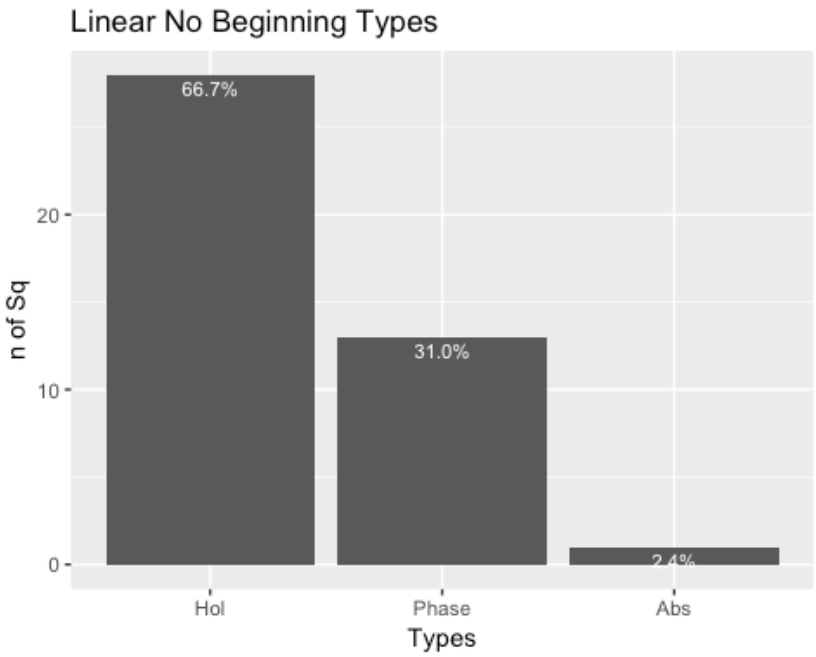


Figure 4.35 LnB_Types

The proportion of types of descriptions in examples of LnE strategy show a trend opposite to the one observed in TDs following LnB – the phasal type of description prevails with 40 (62%) Sq. HPF was a type of description in 22 (34%) sequences, and the absolute type of description was only slightly more frequent than in LnB with 3 (4.6%) of Sq following this type of description.

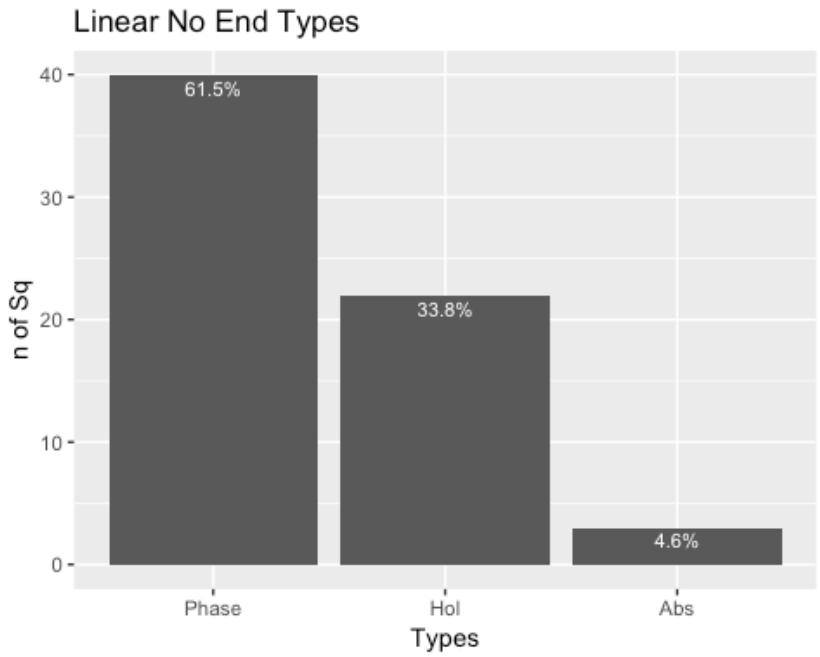


Figure 4.36 LnE_Types

Overall three linear limited strategies reflect different corresponding combinations of types of description - 1. LBE has a proportion of PPF and HPF close to equal, 2. LnB has prevailing HPF, and 3. LnB has prevailing PPF.

5.3 Tests of Variance Results

The original hypotheses of the study were based on the assumption that the features of the clips will correlate with particular strategies of descriptions:

6. The ageing feature in clip 1 will tend to trigger linear with beginning and end (LBE) strategy

7. Daytime and short period of time features will trigger linear time with no beginning and no end (LnBE)

8. The seasonal time feature of clip 4 would trigger the non-linear strategy of temporal description (NL)

There were also two linear types of strategies that were not accounted for in the original hypothesis of this study – linear time with no beginning (LnB) and linear time with no end (LnE). The two strategies were also tested along with LBE, LnBE, and NL.

LnB was tested with the same contrasts as LBE and treated as a variation of limited linear time strategy.

LnE was tested with the same contrasts as LnBE.

For each hypothesis stated above analysis of variance was conducted with one-way repeated measures ANOVA (Lawrence 2013), and generalized linear mixed-effects model for binomial variables (Bates et al. 2015). ANOVA was utilized as the most well-known test for variance in the discipline; linear model was used to ascertain the results, as it is capable of accounting for binary data in repeated measures with more precision.

The contrasts for each test were as follows:

1. LBE and LnB

- Responses to Age and Day vs Season
- Responses to Age vs Day

2. LnBE and LnE

- Responses to Day and Age vs Season
- Responses to Day vs Age

3. NL

- Responses to Day and Season vs Age
- Responses to Season vs responses to Day

5.3.1 Linear Limited (LBE)

The outcome of the ANOVA test demonstrated that appearance of LBE in the descriptions was significantly affected by the major feature of the stimuli with F (2, 98) = 3.4, p <.05, η^2 = .04.

The outcome of the generalized linear mixed-effects model analysis demonstrates that while the first contrast was insignificant z = 1.3, p= .16, the second contrast between the age clip and day clip was statistically significant with at z= -2 and p= .04.

5.3.2 Linear no Beginning (LnB)

Mauchly's test indicated that the assumption of sphericity had been violated; W= .7, p <.05, Greenhouse-Geisser corrected (s=.8) test results are reported. The effect of the major feature of the picture on appearance of LnB strategy containing responses is significant with F (1.6, 78) = 20.2, p < .05, η^2 =.196.

The outcome of the generalized linear mixed-effects model analysis demonstrates that while the first contrast was insignificant z = 1.5, p= .1, the second contrast between the responses to the age clip and day clip was statistically significant with z= 3.3 and p= .0008. Post hoc Tukey's test revealed that the main significant effects are between the responses to the Age clip and Day clip with z=3.3, p=.002, and to the age clip and season clip with z= 3.2, p=.003.

5.3.3 Linear no End (LnE)

Mauchly's test indicated that the assumption of sphericity had been violated W=. 9, p<.05, Greenhouse-Geisser corrected (s=.9) test results are reported. F (1.8, 88)= 3.7, p< .05, η^2=.04.

The outcome of the generalized linear mixed-effects model analysis demonstrates that while the first contrast (day and age clips vs season clip) was insignificant with z=-1.2 p=.2, the second contrast between responses to the day clip and age clip was significant with z= 2 and

p=.04. Post hoc Tukey's test revealed that the main significant effect is between the responses to day clip and age clip with z=2.5 and p=.03

5.3.4 Linear non-limited (LnBE)

The effect of the major feature of the picture on appearance of Linear non-limited strategy (LnBE) responses is insignificant with F (2, 98) = .9, p > .05, η^2 =.01. Such an outcome demonstrates that for this data set the variance of the LnBE containing responses was not significantly different between stimuli with different features.

5.3.5 Non-linear (NL)

Mauchly's test indicated that the assumption of sphericity had been violated W = .5, p<.05, Greenhouse-Geisser corrected (s=.67) test results are reported. The effect of the major feature of the stimuli on the appearance of responses containing NL strategy is significant with F (1.3, 65) = 8.8, p < .05, η^2 =.08

The outcome of the generalized linear mixed-effects model analysis demonstrates that both of the contrasts were significant. The first contrast between day and season with age with z = 1.9, p= .05, the second contrast between the season clip and day clip was statistically significant with z= 2.4 and p= .02. Post hoc Tukey's test revealed that the main significant effects are between the responses to season and two other clips with z = 2.722 and p =.02 for season and age and with z= 2.4 and p= 0.4 for season and day contrast.

6. Conclusions

In this section of the chapter preliminary conclusions of the prevailing category types for temporal stimuli, prevailing perspectivation frames, and typology of the strategies of temporal description are given.

6.1 Category (Cat)

As the qualitative analysis of the corpus demonstrated, the majority of the category types were identical to categories in spatial descriptions, describing the type of the main object of temporal description or the space where temporal change is taking place. Such a result suggests that 1) the object of categorization in this experiment was the stimuli itself, rather than the temporal process being described; 2) temporal processes can be categorized through the agents/object involved or the places of occurring.

4.4 Perspectivation Frame

Phasal perspectivation frame was prevailing within the corpus (51% of Sq), which allows the assumption that the most actively utilized temporal perspectivation frame in Japanese is PPF. Holistic perspectivation frame was also relatively frequent (38% of Sq), which demonstrates that the pairs of prevailing perspectivation frames or frames of reference for time and space in Japanese are the same. Although the absolute perspectivation frame was detected within the dataset, it was the least frequent with 33 Sq (11%).

4.5 Features of the Strategies of Temporal Descriptions

On the basis of the qualitative analysis of the TDs presented in previous section of this chapter, the following definitions of the types of strategies were formulated.

4.5.1 Linear Limited Time (LnB, LBE)

In Linear limited strategy, a sequence of events is described with the main emphasis on the ending point/completion of the temporal change/motion. Beginning can be explicit as in LBE or implicit as in LnB.

The features of Linear limited time strategy are:

1) The speaker describes the temporal change as completed
2) Lexically or aspectually marked start and end points
3) Contains minimal sub-events
4) The description does not normally contain elements of description of non-temporal character, e.g., commentary on the impressions of the speaker.
5) Phasal or holistic perspectivation frame

4.5.2 Non-limited Linear Time (LnBE)

LnBE is such strategy where the description focuses on the contents of the events.

Features of LnBE:

1) No marked start and end points of events
2) Frequent expressions of temporal inclusion
3) Tends to contain non-temporal elements of description, specifying, characterizing the events or giving the personal impression of the speaker.

4.5.3 Endless Linear Time (LnE)

LnE descriptions are focused on the starting point of the temporal process/change and leave the end "open", as if the change is ongoing or the speaker perceives it as an ongoing.

Features of LnE:

1) Phasal perspectivation frame is prevailing

2) Lexically or aspectually marked beginning of the temporal process/change

3) Tends to contain non-temporal elements of description

4.5.4 Non-linear Time (NL)

This strategy was hypothesized as cyclical according to Katoo (2007). Katoo describes this type of time as a natural flow of time, or the cyclical change of seasons. Katoo considers perception of this type of time as being formed by Japanese agricultural conditions and Japanese cultural, especially literary tradition.

However, as Katoo (2007) mentions in his work, temporal concepts are not isolated from each other and tend to coexist on different social, cultural, historical or as in this case linguistic levels. Mita (1998) also mentions that co-existence of cyclical time concept and liner time concepts in at least Japanese literary tradition can be traced back to *Kokinshuu*.

In TDs following this strategy the speaker tends to utilize more abstract, e.g. time, or temporally extended cyclical "positional terms"[14], e.g. seasons, as Lms for the sets of more concrete or shorter events. In other words, this strategy can be considered as following a cycle at the higher level, but at the same time, the sub-events of each part of the cycle are lined up linearly. The strategy is a two-tier cyclical strategy with linear sub-events, and therefore, is termed as Non-linear (NL) Time in this work. The overall configuration of TDs following this strategy of description is considered to be non-linear but at the same time not purely cyclical.

Features of NL:

1) Events at a higher hierarchical level are typically marked lexically or aspectually

2) Contains a number of sub-events

[14] Positional terms - temporal discourse positional terms such as names of the seasons, dates, holidays, days of the week (Flimore 1997)

3) The events at higher level to have cause-result and inclusion relations with sub-events

4) Absolute perspectivation frame is prevailing

5) Tends to contain non-temporal elements of description

4.6 Summary

Considering the outcome of the variance test, I formulated a set of preliminary conclusions on the influence of the feature of the stimuli to the strategies of their temporal description within the data set tested. It can be concluded that within the current data set the first hypothesis was confirmed – the stimuli representing seasonal change tended to trigger non-linear (NL) strategy responses.

The second hypothesis that the stimuli representing day to night time would trigger the appearance of linguistic representation of linear time with no beginning and no end should be rejected for this dataset, as there were no significant effects of the stimuli feature on the appearance of LnBE detected. Such an outcome might suggest that a factor affecting usage of LnBE was not considered in this work or that the size of the dataset was insufficient to trace the effect of the feature. However, the tests revealed that the day to nighttime feature tended to trigger linear time with no end (LnE) more than the feature representing age.

LBE responses, in contradiction to the original hypothesis, were given more to stimulus representing daytime rather than to the stimuli representing ageing. The outcome of the tests showed that the LBE and LnE day vs age contrast demonstrates a statistically significant major effects, suggesting that the stimuli representing the daytime tends to trigger TDs with explicit beginning and end or just with explicit beginning.

However, the outcome of the same contrast for LnB gave the opposite main effect, suggesting that stimuli representing ageing tends to affect the usage of linear time strategy with explicit end.

The post hoc generalized linear mixed-effects test and Tukey's test were conducted for the two variations of linear limited strategy (LBE and LnB). The tests' results showed that the contrast between responses to the first two clips (age and day) and to the season clip was significant at $z= 3.4$ and $p=. 0006$, and the contrast between age and day was significant with $z= 2.2$ and $p=.03$. The main significant effects were detected between age and season at $z=3.8$ and $p<.001$.

It can be concluded that the original third hypothesis that the stimuli representing age tends to trigger limited linear time strategy responses could be partially confirmed for this data set. Age feature tends to trigger limited time with emphasis on its finiteness.

However, these hypotheses should be retested with a different stimuli set, as the outcome received for this data set might also be demonstrating the limitations of the stimuli set utilized for this project, as the individual test of variations of limited linear strategies and post hoc tests reveal that there is difference in appearance of limited linear strategies and their variations for different stimuli.

Chapter V: Discussion and Conclusions

In this chapter I will summarize the results and conclusions presented in the previous chapters of this work. I will discuss the contribution of this study to the discussion on time and space concepts in Japanese, the limitations of this work and perspectives for further research on the topic.

1. Time and Space in Word Association Network

In chapter 2 of this work, on the basis of the conclusions made in previous studies (e.g., De Deyne, Verheyen, and Storms 2016) I argued that quantitative and qualitative analyses of the word association network will reveal not only connections between linguistic representations of time and space as highlighted in the works on Conceptual Metaphor Theory (CMT), but also will demonstrate extra-linguistic connections based on culture-specific or societal associations. As I have concluded on the basis of qualitative and quantitative analyses of association responses (ARs) within the data set, Family/Human Relations, Emotional Evaluation (e.g., Good/Bad or Like/Hate), and Work were the concepts the most closely related to time and space. The discussion here demonstrates these connections on the level of qualifying associations. One of the common perspectives taken in studies of concepts of time and space in culture in a broader perspective is the investigation of the mythopoeic background of the concepts such as their "qualifying associations", i.e. a set of paired qualities typically associated with the concept.

Frankfort et al. (1946) in his essay on myth and reality describes several features of the mythological concept of space: 1) "space" is not abstract, 2) it is an experience based on and consisting of "qualifying associations"; 3) it consists of concrete locations or orientations; 4)

it is qualified emotionally, e.g. as hostile or friendly; 5) it is strongly interconnected with time, e.g. “day and night give to east and west a correlation with life and death”.

Tsivyan (2009) develops a more detailed set of “qualifying associations” present in a mythopoeic or “archetypical” model of the world. In her description of the structure of a mythopoeic “world” Tsivyan (2009) derives a set of interconnected binary qualifiers for such fundamental concepts as time, space and community. Space is qualified by pairs of such qualities as top or up/bottom or down; sky or the heavens/ earth/ underworld; right/left; east/west etc. The main qualifiers of time are day/night; light/darkness; summer/winter; spring/autumn; while the main qualities defining social categories are old/young; friendly/alien; close/far; inside/outside [the group; the community etc.]. Tsivyan (2009) extends the notion of interconnection of the domains, exemplified in Frankfort et al. (1946) by claiming that relationships in each of the pairs qualifying space, time and society can be also 1) qualified by more general oppositions such as good/bad, fortunate/unfortunate, life/death and 2) projection of members of each pair to other domains is a source of metaphor in folklore and mythology. In other words, mythopoeic thought is considered to have a system of temporal and spatial co-ordinates closely intertwined with the set of emotional values and beliefs of the community.

I have presented three resulting sets of qualifying associations based on quantitative network analysis of the data, qualitative analysis of the connections of words with high centralities, and qualitative analysis of the communities obtained through network analysis. The qualifying associations or core attributes for both time and space stimuli utilized in the experiment were:

(1) Light/Dark

(2) Warm/[Cold]

(3) Work/not work

(4) Good/bad

(5) Quiet/[noisy]

(6) Mine/[not mine]

This set of associations extends beyond the physical features of spatiality and temporality, these six qualifying associations highlight significant aspects of spatio-temporality in the lives of the Japanese native speaking participants of the study, and their emotional, social and personal lives. Level of light and temperature in association with time represent dimensions of natural time flow within the day, while the origin of spatial associations is not as clear. Daniels (2015), in her anthropological research on at-home atmosphere in Japan, concludes that temperature and level of light are the two defining features of contemporary Japanese urban dwelling, not only in terms of space but also in terms of the relationships of the inhabitants:

> […] the lived experience of intimate atmospheres is shaped within the dynamic interplay between the involvement in, and detachment from sociality. In Japan, these atmospheric tensions are articulated through two sets of binary opposition: light versus dark, and warm versus cold. The former is embedded in discourses about modernity, which promote new 'bright' forms of domesticity and personhood, while the later is linked with the actual experience of the 'warm' feel of home.
>
> (p. 54)

In other words, 'warmth' and 'lightness' in association with spatiality extend beyond physically comfortable conditions of the space, but also represent a culturally determined image of positive social interaction.

Associations with work and possession for both time and space can also be interpreted as products of the influence of society on the perception of time and space concepts. Tsuji (2006) suggests that in Japanese culture "social temporality", the time that can be differentiated as work/not work or own/[not own], "creates hierarchy in time ownership" and is based on such values as "relationships with others", "group solidarity and commitment to work". Similarly

to the space that can be divided into personal and shared with or owned by other people, time can also have different types of "ownership".

As Hankins and Stevens (2014) emphasize, sound plays one of the most significant roles in shaping spatiality and temporality in contemporary Japan. The urban unavoidable soundscape is contrasted with the quiet suburban or rural ones. As seen through the word association experiment analyzed in this work, this contrast resurfaces in word associations of contemporary Tokyo area inhabitants with such high frequency that it can be considered one of the "qualifying associations" for spatiality and temporality at least for native speakers residing in urban environments.

Overall, the set of qualifying associations for both time and space detected in this work leads to extra-linguistic – societal and cultural notions of temporality and spatiality in Japan. As in other works on the topic, network analysis of the word associations demonstrated the outcome of giving access to "imagery, knowledge, beliefs, attitudes, and affect" (De Deyne, Verheyen, and Storms 2016, 51).

Sets of core attributes or qualifying association for each of the concepts were also detected as the result of the analysis of the data obtained through the free word association experiment. These sets reflected and confirmed that some of the features of temporality and spatiality found in linguistic studies conducted on other materials can be revealed through word association experiments. On the basis of shared semantic features of associations attached to different communities of the word association network, I formulated the following set of qualifying associations for conceptualization of time: 1. Time as perceived by human senses, 2. Unknown time, 3. Organized time, e.g., calendar time, 4. Time as a resource, e.g., free time – bad useless resource, or busy time - good resource, 5. Uncontrollable time, 6. Flow-time, 7. Life time, 8.

Narrative time, 9. Time as social construct. Some of these conceptualizations have been discussed in works on temporal language and temporal cognition. Conceptualization of Time as perceived by human senses detected within the data can be interpreted as a confirmation that the analysis conducted in this work allows us access to time as an "external sensory experience":

> It [temporal processing] enters into many aspects of cognitive function and therefore operates at a level of cognitive processing which may not readily become accessible to focal consciousness. On this view, the elaboration of temporal concepts in terms of external sensory experience serves to foreground otherwise back-grounded processes and experiences.
>
> (Evans 2003, 37)

While in natural language production such time conceptualization remains back-grounded in relation to such experiences as smells, tastes and sounds, word associations highlight an existing link between vocabulary designating sensory experiences and temporality.

Associations for temporal vocabulary, which were encoded as 4. Resource, 6. Flow and 7. Life time, reflected all the metaphors suggested for time in CMT (Lakoff and Johnson 2003) - time as a valuable resource, moving time and moving ego. The set of associations to temporal stimuli words (SWs) encoded as Narrative time demonstrates that some of the temporal vocabulary serves as a distinctive feature for specific narration genre, e.g. fairy tales.

Not all of the conceptualizations of time are based on associations that can be interpreted purely through language specific features. Temporal associations also reflect biological time and time determined by society and culture. The findings based on the analysis of the free word association experiment presented in this work also support the notions of social time and clock time proposed by Tsuji (2006). Tsuji (2006) presents time in Japanese society as a coexistence of time as a social construct and formalized clock time, shifting depending on "the change of

the social context people are situated in". While both organized time and social construct time are formulated on the basis of the associations representing different forms of control – control over time determined by measure or by societal norms, the notions of unknown time and uncontrollable time represent the other side of the spectrum. These two conceptualizations of time are based on associations with semantic features of the incomprehensibility of time and absence of control over it. They also can be interpreted as a part of the moving time metaphor, where time is associated with a force independent from the human ego and having a will power of its own.

In detecting and formulating this set of diverse conceptualizations, I argue that each of them is a part of complex temporal concept, coexisting, interplaying and shifting depending on linguistic or extralinguistic context. Detailed investigation of the complexity of these relations as revealed through associations is outside of the scope of the current work, but it will be a fruitful topic for future research with a larger word association data set. As Gell summarizes in his Anthropology of Time:

> Time – which is intrinsically unitary and unifying – allows for the co-ordination of diverse processes; biological processes with social ones, psychological or subjective processes with objective, clock timed ones, and so forth.
>
> (Gell 1992, 315)

From the qualitative analysis, I observed the following set of conceptualizations of space domains of the mental lexicon for the Japanese native-speaking participants: 1. Human-centered space, 2. Nature-centered space, 3. Container, 4. Space as experience, 5. Betweenness space, 6. Outside space, 7. Inside space, 8. Own space. Spatial language research gives a detailed account of the majority of the conceptualizations revealed through word association data. An extensive discussion on absolute/nature-centered space and relative/ human-centered space has been developing within works on frames of reference (FoRs; e.g., Levinson 2003;

Kita 2006) and was discussed in details in Chapter 3 of this work. In CMT (Lakoff and Johnson 2003) container metaphor is interpreted as the main metaphor for spatialization and conceptualization of the world.

Betweennes in the contexts of spatiality, temporality and human relationships is regarded one of the significant qualifying associations both in language and culture studies (e.g., Minami 1983; Watsuji 2011; Evans 2003; Galton 2011). "Betweenness" for spatiality in Japanese and Japanese culture is both unifying and separating; pauses in speech, intervals and empty spaces are considered not less meaningful than "occupied" time and space, but in some cases are claimed to be more expressive (Minami 1983). Along with "betweenness", the, distinction between outside and inside is not only acknowledged as affecting language and language behavior (e.g., Tsubotomo, Hayase and Wada 2009), but also is considered to be one of the key concepts for Japanese culture and society as it is stated, for example, in the work of Ozaki and Lewis (2006):

> The distinction between the inside and the outside is particular salient to Japanese people as it relates not only to physical spaces, but also to psychosocial values. That is, the inside is associated with purity, cleanliness, safety, and intimacy (inside the group as well as inside a physical space), and the outside is associated with impurity, dirt, danger, and strangeness.
>
> (Ozaki and Lewis 2006, 93)

In other words, not only are such language features as level of politeness or semantic and pragmatics of personal pronouns such as *jibun* (自分, "self-") (Tsubotomo, Hayase and Wada 2009) affected by the distinction of outside/inside, but also spatiality, temporality, relationships and good/bad judgments are strongly associated with the duality of outside/inside. In works based on other languages and cultures discussion of outsidness/insideness is usually exemplified with mythopoeic material (e.g. Tsivyan 2009); however, as we observed in this

work in case of Japanese this division can be salient for a contemporary culture. Cross-linguistic comparison is outside of the scope of the current work, but the topic of inside/outside as an overlap between space and society concepts needs further investigation in comparison with other contemporary languages and cultures.

Another important preliminary conclusion based on the material of the word association experiment conducted for this study was made on the basis of comparison of properties of language networks of two age groups – GR1 in their 20s and GR2 in their 40s+. The structural differences found between the two networks in this work demonstrate characteristics similar to the ones found in wider age range study conducted with Brazilian Portuguese native speakers (Zortea and Salles 2012; Zortea et al. 2014). For comparison of the networks of different age groups Zortea et al. (2014) divided the participants into three groups – children, young adults and elderly adults, the most statistically significant differences in clustering and density of the corresponding networks were found between children and elderly adults. However, here I agree with their conclusions that further investigation is needed to determine the set of factors contributing to differences in network structure in different age groups.

2. Temporal and Spatial Typology

On the basis of the analyses of data obtained through the spontaneous speech experiments presented in Chapters 3 and 4 I formulated typologies of spatial and temporal description. The analysis of spatial descriptions from the angle of FoRs confirmed the findings of previous researchers (Kita 2006) that intrinsic and relative FoRs are prevailing in the predominantly Kanto variety of Japanese spoken by the participant of this study. As some other works suggest different configurations for other varieties of the language (Inoue 2002; Kataoka 2005; Takekuro 2007; Matsumoto et al. 2010), there is a space for further investigation of FoRs in different varieties of Japanese in the future. The analysis of temporal descriptions to detect the perspectivation frames utilized by participants revealed that the combination of phasal and holistic perspectivation frames used for European languages (e.g., Carroll and Stutterheim 2003; Vanek 2012; Stutterheim and Lambert 2005) does not fully cover the features of temporal description in Japanese. In particular, descriptions of seasonal time and some cases of life time used the time itself as a Landmark and were interpreted as utilizing absolute perspectivation frame (Bender and Beller 2014; Bennardo, Beller, and Bender 2010; Tenbrink 2011).

The outcome of the analysis of categorization in spatial and temporal descriptions led to a preliminary conclusion that category type is independent from the type of the strategy chosen by the participant, but as revealed by the material of spatial descriptions it can be moderately affected by the features of the space depicted in the stimuli. However, taking into consideration the conclusions of Malt et al. (1999), which suggested that percept similarity among artifacts "remains relatively constant despite wide variation in linguistic category boundaries", in other words, suggesting lack of dependency between implicit and explicit categorization, I can

hypothesize that there is the similar lack of dependency between categorization and strategy of description. Recognition of the category of the item, naming of it, and pattern of description of categorized item can be processed as relatively unaffected by each other. While these hypotheses and conclusions are of high interest for future research, they need further investigation, which is outside the scope of the current work. Through the process of detection and analysis of the strategies of spatial description I have detected five strategies – Frame Strategy (FS), Strategy of Outstanding Objects (SOO), Path Strategy (PS), Scanning Strategy (SS) and Perspective Strategy (PRS). In descriptions following FS space is described following its real or projected 'frame', e.g. floor, walls, ceiling for space representing a room. SOO descriptions are linked to the zones of interest, or 'outstanding' objects, for the speaker; e.g. the items are described in terms relative to the biggest or the most distinctive object at the table. PS is characterized by following the trajectory of an imaginary movement through the picture, as if, for example, the speaker is walking through the landscape depicted in the picture. In SS and PRS space is described as the narrator visually scans the picture. In case of SS the picture is scanned from left to right and from top to bottom. PRS as a strategy of spatial description was detected within the data set obtained for this project. PRS or description in which the narrator is scanning the space from front to back or back to front was the strategy of 25% of descriptions in the dataset. Such a manner of scanning was not presented in studies with English speakers (e.g., Taylor and Tversky 1996) or with Russian native speakers (e.g., Kobozeva 2000). Some evidence of its usage was presented in a study on perspective-taking in spatial description in Japanese and English (Mainwaring et al. 2003); however, Mainwaring et al. (2003), due to the different goals of their work, do not provide data on the actual language use in Japanese descriptions.

Another feature of the material detected through the analysis of strategies of spatial description was an extremely low overall percentage of PS: only one description followed path strategy, and in 11 (4%) descriptions PS was present as a secondary strategy. The analysis of temporal descriptions in Chapter 4 allowed me to formulate a preliminarily typology of temporal description strategies for contemporary Japanese. On the basis of the qualitative analysis of the corpus of TDs four distinctive strategies of temporal description were detected. Linear Limited Time description strategy, with its two variations Linear time with no beginning (LnB), and Linear time with beginning and end (LBE), is a description of a sequence of events with the main emphasis on its finiteness. Non-limited Linear Time (LnBE) strategy can be compared to spatial SOO strategy, where the main focus of description is on the contents of the stimuli. Endless Linear Time (LnE) has its main emphasis on the starting point of the temporal process, describing the temporal change as ongoing. Non-linear Time (NL) is characterized by the presence of two sets of temporal planes – the first plane describes a temporal process or change happening on the absolute level, such as flow of time or seasonal change, the second plane describes temporal changes or processes occurring as a part of the first plane, e.g., phases of ageing through the flow of time or changes in nature through the change of seasons. As this typology has been formulated on the basis of this single study, as the next step it will need confirmation and development on the basis of a larger data set.

As a part of this work I also detected, encoded and demonstrated the types of spatial and temporal relations most frequently utilized in each strategy of description. Spatial PRS and SS were characterized by different proportions of FoRs. In SS the prevailing type of spatial description was topological, and the most frequent FoR was intrinsic. In PRS intrinsic FoR was prevailing over other types of description, and relative FoR was the most frequent in

comparison with other strategies presented in this data set. Though in this work PRS and SS were treated as two variants of scanning strategy, considering the differences between types of spatial description prevailing in SS and PRS, I hypothesize that PRS and SS are two different strategies of spatial description in Japanese. However, to confirm such a generalization further investigation with a different experimental design is needed. For temporal types of description the most frequent for each strategy were APF for Nonlinear Time strategy (NL); PPF for Linear Non-limited (LnBE), Linear No End (LnE); and HPF for Linear No Beginning (LnB).

I have also tested the correspondence between stimuli major features and strategies of description. The statistical analysis of variance for spatial strategies of description demonstrated that PS elements and both of the Scanning strategies, SS and PRS, correspond with particular stimuli type. PS elements tend to appear in the descriptions of the pictures where the Road feature is present. Scanning strategies tend to be used in descriptions of pictures with Table feature. For FS and SOO no clear correspondence between the stimuli feature and the participants' strategy choice was detected. At this stage of the study, it is only possible to hypothesize that these two strategies are affected by a factor not included in this analysis. As for the temporal descriptions, the outcome of the variance test demonstrated that the Seasonal feature of the stimuli tends to correspond with the Non-linear strategy of description, and the Age feature corresponds with LnB (Linear no beginning). The Daytime feature has shown correspondence with LBE and LnE. There were no significant effects detected for the stimuli feature correspondence with appearance LnBE. As I have concluded in chapter 4, the results of these tests should be reconfirmed with a different stimuli set, as the individual test of variations of limited linear strategies (LBE and LnB) and post hoc tests of combined LBE and

LnB data reveal that there is difference in appearance of limited linear strategies and their variations for different stimuli.

3. Further Research Perspectives

In this work I have detected the connections of time and space concepts with other concepts of Japanese mental lexicon through network analysis of word association data; the qualitative and quantitative analyses of centralities and communities of the network also allowed me to formulate sets of qualifying associations for time and space concepts. To overcome the limitations seen in this work, such as a limited set of SW and predominance of inhabitants of the same area of Japan among the participants, I propose the development of a larger data set of word associations – contemporary Japanese word association norms. As the first step in the development of the free word association norms I propose an online free word association survey based on the stimuli set utilized for this project and the most frequent open class words (1000 words) according to A Frequency Dictionary of Japanese (Tono, Y. et al., 2013). The stimuli set will be gradually expanded by adding the most frequent responses to the existing stimuli set. Such design will not only allow me to obtain a large free word association data set for further analysis, but also to incorporate the data obtained during my doctoral research.

Another issue that should be addressed in the future is the impact of age difference on word associations; to exclude education level differences from the set of possible factors affecting word associations, research with elderly adults and young adults with the same education level should be conducted.

As the second step of the development of the free word association norms I propose a people-powered study on semantic similarity and semantic relations, aiming to obtain similarity scores and information on relations between stimuli and associations from native speakers. Participants, volunteering to take part in the survey on an on-line crowdsourcing platform, will

be shown a set of word pairs, and will be asked in non-linguistic terms to evaluate how similar the two words are and to detect their relations. The results of such a study will contribute to revealing the nature of connections between the concepts in the Japanese mental lexicon on the basis of the linguistic intuition of a number of Japanese native speakers. In long-term perspective in order to ascertain socio-cultural features of Japanese mental lexicon I envision a cross-linguistic comparative study on word association norms.

As the further step towards understanding of temporal and spatial concepts in contemporary Japanese, I propose a parallel study of networks based on naturally produced language corpora and word associations. When this doctoral project was conducted, there was no available syntactically parsed corpus of contemporary Japanese. Therefore, the analysis of semantic and syntactic dependencies corresponding to word association types of relations revealed as the result of the analysis in this work was not considered possible. For the future research, such parallel network analysis with word association and corpus data involved can be a fruitful source of data on similarities and differences of mental lexicon and natural speech production. Comparative analysis of the two networks will allow enrichment of models of time and space concepts with both sematic and syntactic data. For the corpus based network collocations containing spatial and temporal vocabulary will be extracted from a tree-bank based on corpora of contemporary Japanese (NINJAL: Corpus of Spontaneous Japanese; Balanced Corpus of Contemporary Written Japanese). The collocations will be chosen following a number of predefined syntactic dependency relations (paths) between the stimuli and the target word: object, modification, subject, conjunction, subject of predicative phrase, predicative complement. Previous studies (e.g. Mehler, A., et al, 2016) suggest that this set of relations is relevant for comparison of associative and corpora based data.

In this work as one of the steps towards bridging the gap of knowledge on temporal and spatial discourse in contemporary Japanese I formulated typologies for extended spatial and temporal descriptions; continuation of spontaneous speech experiments on temporal and spatial description strategies will allow deeper investigation of patterns of description of static space and motion through time. One of the means of overcoming the limitations observed in this work – the limitations of two-dimensional stimuli representing three-dimensional reality – is the implementation of virtual reality as the stimuli environment. This can open a new set of opportunities for empirical linguistics research on Japanese time and space, and similar studies are being discussed as the next step for psycholinguistics experimentation practices (Casasanto and Jasmin in press). Another limitation to overcome is absence of material for cross-cultural and cross-linguistic comparison that might prevent clear distinction of culturally or socially specific features of spatial and temporal description. To overcome this limitation, I propose a parallel cross-linguistic investigation of description strategies.

My research examined features of Japanese mental lexicon and typology of temporal and spatial description strategies in Japanese. The results demonstrated in this work reveal that the typology of temporal and spatial description produced on the basis of material from predominantly European languages does not fully reflect the patterns of description frequent in Japanese native speakers. I expect my research to contribute to the global discussion on the language of time and space and to play an important role in forming a deeper understanding of the interaction between cognition and expression, culture and language in contemporary Japan.

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Appendix

1.Appendix Chapter II Mental Lexicon through Free Word Association Experiment

Table 1.1 Fillers

N	Lemma	Romanization	POS	Translation
1	人間	ningen	n	human being, man
2	面白い	omoshiroi	i-adj	interesting, fun, funny
3	火	hi	n	fire
4	十分	juubun	na-adj	enough, sufficient
5	生徒	seito	n	student, pupil
6	小説	shoosetsu	n	novel, fiction, story
7	うわさ	uwasa	n	gossip, rumor
8	クリスマス	kurisumasu	n	Chrismas
9	活発	kappatsu	na-adj	lively, active; brisk
10	調節	choosetsu	n	adjustment

Table 1.2 Gender Composition

Groups	Female	Male	Total
Group 1	29	18	47
Group 2	23	15	38
Total	**52**	**33**	**85**

Table 1.3 Places of Origin

Place of origin	N of participants	Pct
Tokyo	34	40%
Chiba pref.	7	8%
Kanagawa pref.	6	7%
Saitama pref.	5	6%
Tochigi pref.	4	5%
Aichi pref.	3	4%
Fukuoka pref.	3	4%
Yamanashi pref.	3	4%
Hokkaido pref.	3	4%
Nagano pref.	2	2%
Niigata pref.	2	2%
Akita pref.	2	2%
Miyazaki pref.	1	1%
Ehime pref.	1	1%
Hyoogo pref.	1	1%
Hiroshima pref.	1	1%
Ibaraki pref.	1	1%
Saga pref.	1	1%
Fukushima pref.	1	1%
Osaka	1	1%
Kumamoto pref.	1	1%
Fukui pref.	1	1%

Place of origin	N of participants	Pct
Aomori pref.	1	1%

Table 1.4 Education Completed

Education completed	N of participants	Pct
High school	32	38%
University undergraduate degree (Humanities)	22	26%
University graduate degree (Humanities)	11	13%
University graduate degree (Science)	6	7%
Vocational school	5	6%
Junior college	4	5%
University undergraduate degree (Science)	4	5%
Technical college	1	1%

Table 1.5 Education Group 1

Education completed	N of participants	Pct
High school	29	62%
University undergraduate degree (Humanities)	6	13%
University graduate degree (Humanities)	4	9%
University undergraduate degree (Science)	2	4%
University graduate degree (Science)	5	11%
Technical college	1	2%

Table 1.6 Education Group 2

Education completed	N of participants	Pct
High school	3	8%
University undergraduate degree (Humanities)	16	42%
University graduate degree (Humanities)	7	18%
University undergraduate degree (Science)	2	5%
University graduate degree (Science)	1	3%
Junior college	4	11%
Vocational school	5	13%

Questionnaire sample 1.1

性別　男・女

年齢

出身地

最終学歴　高校・短大・高専・専門学校・大学（文系）・大学院（文系）・大学（理系）・　大学院（理系）

課題

次のページの単語のリストを見てください。各単語を見て、思いついた単語をなるべく速く思いついた順番に書いてください。

空間

タイミング

面白い

場

昔

隙

秋

郊外

日付

部屋

クリスマス

昼間

性別　男・女

年齢

出身地

最終学歴　高校・短大・高専・専門学校・大学（文系）・大学院（文系）・大学（理系）・　大学院（理系）

課題

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スペース

過去

距離

時代

人間

活発

外（そと）

夏

我が家

瞬間

後ろ

間 (ま)

性別　男・女

年齢

出身地

最終学歴　高校・短大・高専・専門学校・大学（文系）・大学院（文系）・大学（理系）・　大学院（理系）

課題

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余地

年代

隙間

時期

小説

家

間（あいだ）

リビング

休日

マイホーム

ひま

調節

性別　男・女

年齢

出身地

最終学歴　高校・短大・高専・専門学校・大学（文系）・大学院（文系）・大学（理系）・　大学院（理系）

課題

次のページの単語のリストを見てください。各単語を見て、思いついた単語を

なるべく速く思いついた順番に書いてください。

時間

生徒

広がり

年齢

場所

長年

うち

日（ひ）

うわさ

マンション

朝

居間

性別　男・女

年齢

出身地

最終学歴　高校・短大・高専・専門学校・大学（文系）・大学院（文系）・大学（理系）・　大学院（理系）

課題

次のページの単語のリストを見てください。各単語を見て、思いついた単語を

なるべく速く思いついた順番に書いてください。

火

長さ

未来

都内

季節

アパート

十分

夜

前

休み

奥

時

Table 1.7 Response normalization

Freq	From -> To
3	24ー＞２４時間
2	大好きー＞好き
2	住むところー＞住む
1	待ち合わせ場所 ー＞待ち合わせ
1	自分の ー＞自分
1	お気に入りの場所 ー＞お気に入り
1	おちつく場所 ー＞おちつく
1	おちつく所 ー＞おちつく
1	家族団らん ー＞団らん
1	私のお気に入りー＞お気に入り
1	よい ー＞良い
1	流れるもの ー＞流れる
1	待つことー＞待つ
1	楽しかったー＞楽しい
1	よかったー＞良い
1	する事ない ー＞やることがない
1	良しー＞良い
1	眠るところ ー＞眠る
1	くつろぐところ ー＞くつろぐ
1	暗 ー＞暗い
1	もも ー＞桃太郎
1	おじいちゃん ー＞おじいさん

Freq	From -> To
1	居心地のよい場所 ー＞　居心地がいい
1	あるものとあるもののあいだー＞間（あいだ）
1	帰るところー＞帰る
1	居間と同じー＞居間
1	ゆかしい ー＞奥ゆかしい
1	余白の様なもの ー＞余白
1	間が悪い ー＞悪い
1	間を取る ー＞とる
1	大切なもの ー＞大切
1	自由な時間 ー＞自由時間
1	自由の時間 ー＞自由時間
1	お金 ー＞金
1	明るさー＞明るい
1	全部同じー＞同じ
1	感じるもの ー＞感じる
1	見えないもの ー＞見えない
1	遠くー＞遠い
1	落ち着 ー＞落ち着く
1	ありー＞ある

Table 1.8　Abstract Time and Space

Association	Romanization	Translation	In-Degree
時間	jikan	Time	17

Association	Romanization	Translation	In-Degree
空間	kuukan	Space	12
時	toki	Time	8
間（あいだ）	aida	Gap, break	7
場所	basho	Place	6
隙間	sukima	Gap, opening	6
広がり	hirogari	Spread	5
余裕	yoyuu	Leeway, room, time	5

Table 1.9 AR Jikan (時間, "time")

SW	Romanization	POS	Translation
時	toki	n	time
ひま	hima	na-adj, n	free, not busy
間（ま）	ma	n	time, interval, space
タイミング	taimingu	n	timing
間（あいだ）	aida	n	distance, period
長さ	nagasa	n	length
時期	jiki	n	time, period, season
瞬間	shunkan	adv n	moment, instant second
日付	hizuke	n	date day
余地	yochi	n	room, space
日	hi	n	day, sun
距離	kyori	n	distance

SW	Romanization	POS	Translation
空間	kuukan	n	space
隙間	sukima	n	crevice, opening, gap
長年	naganen	adv	long time, many years
年代	nendai	n	era, generation
未来	mirai	n	future

Table 1.10 AR Kuukan (空間, "space")

SW	Romanization	POS	Translation
スペース	supeesu	n	space, room
広がり	hirogari	n	spread
間（あいだ）	aida	n	distance, period
隙間	sukima	n	crevice, opening, gap
間（ま）	ma	n	time, interval, space
場	ba	n	place, occasion
時間	jikan	n	time
リビング	ribingu	n	living room
隙	suki	n	space, room, gap
後ろ	ushiro	n	behind, back
場所	basho	n	place, spot, position
余地	yochi	n	room, space

Table 1.11 Temporal and Spatial Measure

N	AR	Romanization	Translation	In-Degree
2	狭い	semai	narrow, small	13
6	広い	hiroi	spacious, wide	11
17	長い	nagai	long	7
18	短い	mijikai	short	7

Table 1.12 Home/living space

N	Association	Romanization	Translation	In-Degree
4	家	ie	house, home	12
5	部屋	heya	room	11
34	テレビ	terebi	TV	6
42	中	naka	inside, in	5
47	庭	niwa	garden, yard	5
48	自宅	jitaku	one's home, one's house	5

Table 1.13 Light/Dark

N	AR	Romanization	Translation	In-Degree
12	明るい	akarui	bright, colorful, light	8
19	暗い	kurai	dark	7
46	太陽	taiyoo	sun	5

Table 1.14 Importance

N	Association	Romanization	Translation	In-Degree
13	大切	taisetsu	important, necessary	8
37	大事	daiji	important	6

Table 1.15 AR Taisetsu (大切, "important", "necessary")

SW	Romanization	POS	Translation
タイミング	taimingu	n	timing
奥	oku	n	inner part, back, bottom
間（あいだ）	aida	n	distance, period
時	toki	n	time
時間	jikan	n	time
時期	jiki	n	time, period, season
瞬間	shunkan	adv n	moment, instant second
日	hi	n	day, sun
間（ま）	ma	n	time, interval, space

Table 1.16 AR Daiji (大事, "Important")

SW	Romanization	POS	Translation
間（あいだ）	aida	n	distance, period
時	toki	n.	time
時代	jidai	n	time, era
瞬間	shunkan	adv n	moment, instant second

SW	Romanization	POS	Translation
間（ま）	ma	n	time, interval, space

Table 1.17 Family/Human relations

N	AR	Romanization	Translation	In-Degree
15	家族	kazoku	family	7
30	人	hito	human being, mankind, people	6
36	子供	kodomo	children	6
45	人間関係	ningenkankei	human relations	5
50	生活	seikatsu	living, life	5

Table 1.18 Temperature

N	AR	Romanization	Translation	In-Degree
33	あたたかい	atatakai	warm	6
35	暑い	atsui	hot	6

Table 1.19 Leisure/work

N	AR	Romanization	Translation	In-Degree
8	寛ぎ	kutsurogi	ease, relaxation	9
10	仕事	shigoto	work	8
16	自由	jiyuu	freedom	7
20	落ち着く	ochitsuku	to calm down	7
21	くつろぐ	kutsurogu	to relax	7
29	ゆとり	yutori	leeway, room, reserve	6

N	AR	Romanization	Translation	In-Degree
31	遊び	asobi	play, leisure	6
32	安心	anshin	relief; peace of mind	6
44	余裕	yoyuu	leeway, room, time	5
49	のんびり	nombiri	carefree	5

Table 1.20 Past/Present

N	AR	Romanization	Translation	In-Degree
11	今	ima	now	8
22	古い	furui	old	7
24	歴史	rekishi	history	7
40	過去	kako	past	5
41	昔	mukashi	past, old times	5

Table 1.21 Positive Emotional Evaluation

N	AR	Romanization	Translation	In-Degree
7	好き	suki	like	10
23	楽しい	tanoshii	enjoyable; fun	7

Table 1.22 Other words

N	AR	Romanization	Translation	In-Degree
28	静か	shizuka	quiet; silent	6
38	ない	nai	not, Nonexistent, not being (there)	6
43	自分	jibun	myself, I	5

Table 1.23 Coordination

17 外 (*soto*, “outside”)

SW	Romanization	POS	Translation	WInD
うち	uchi	n	inside	18
郊外	koogai	n	suburb	4
奥	oku	n	inner part, back, bottom	1

18 後 (ato, back)

SW	Romanization	POS	Translation	WInD
前	mae	n	forward, front, before	23

21 うち (uchi, inside)

SW	Romanization	POS	Translation	WInD
外	soto	n	outside	16
うち	uchi	n	inside	3
我が家	wagaya	n	one's house, one's family, one's home	1
奥	oku	n	inner part, back, bottom	1

25 未来 (mirai, future)

SW	Romanization	POS	Translation	WInD
過去	kako	n	past	14
前	mae	n	forward, front, before	4

余地	yochi	n	room, space	1
広がり	hirogari	n	spread	1

27 **前** (mae, in front)

SW	Romanization	POS	Translation	WInD
後ろ	ushiro	n	behind, back	18

29 **後ろ** (ushiro, behind)

SW	Romanization	POS	Translation	WInD
前	mae	n	forward, front, before	15
スペース	supeesu	n	space, room	1
奥	oku	n	inner part, back, bottom	1

9 **過去** (kako, past)

SW	Romanization	POS	Translation	WInD
未来	mirai	n	future	17
昔	mukashi	n	ancient times, in the past, once	7
後ろ	ushiro	n	behind, back	3
時代	jidai	n	time, era	3
前	mae	n	forward, front, before	2
時間	jikan	n.	time	1

Table 1.24 Collocation

42 風 (kaze, wind)

SW	Romanization	POS	Translation	WInD
隙間	sukima	n	crevice, opening, gap	10
隙	suki	n	space, room, gap	2
外	soto	n	outside	1
夜	yoru	n	night, evening	1

Table 1.25 Subordination

13 春 (haru, spring)

SW	Romanization	POS	Translation	WInD
季節	kisetsu	n	season	21
時期	jiki	n	time, period, season	2
夏	natsu	n	summer	2
秋	aki	n	autumn, fall	1

14 カレンダー (carendaa, calendar)

SW	Romanization	POS	Translation	WInD
日付	hizuke	n	date day	20
日	hi	n	day, sun	5

24 歴史 (rekishi, history)

SW	Romanization	POS	Translation	WInD

時代	jidai	n	time, era	10
過去	kako	n	past	4
年代	nendai	n	era, generation	2
長年	naganen	adv	long time, many years	2
年齢	nenrei	n	age, years	1
昔	mukashi	n	ancient times, in the past, once	1
日付	hizuke	n	date day	1

31 **部屋** (heya, room)

SW	Romanization	POS	Translation	WInD
空間	kuukan	n	space	4
奥	oku	n	inner part, back, bottom	3
スペース	supeesu	n	space, room	1
場所	basho	n	place, spot, position	1
場	ba	n	place, occasion	1
うち	uchi	n	inside	1
アパート	apaato	n	apartment	1
我が家	wagaya	n	one's house, one's family, one's home	1
居間	ima	n	living room	1
リビング	ribingu	n	living room	1
間（ま）	ma	n	time, interval, space	1

33 今 (ima, now)

SW	Romanization	POS	Translation	WInD
時代	jidai	n	time, era	4
瞬間	shunkan	adv n	moment, instant second	4
昔	mukashi	n	ancient times, in the past, once	3
場所	basho	n	place, spot, position	1
時間	jikan	n.	time	1
時期	jiki	n	time, period, season	1
休日	kyujitsu	n	holiday, day off	1
ひま	hima	na-adj,n	free, not busy	1

Table 1.26 Synonymy

1 **空間** (kuukan, space)

SW	Romanization	POS	Translation	WInD
スペース	supeesu	n	space, room	17
広がり	hirogari	n	spread	15
間（あいだ）	aida	n	distance, period	7
隙間	sukima	n	crevice, opening, gap	5
場	ba	n	place, occasion	4
間（ま）	ma	n	time, interval, space	4
時間	jikan	n.	time	2
余地	yochi	n	room, space	1
場所	basho	n	place, spot, position	1

隙	suki	n	space, room, gap	1
リビング	ribingu	n	living room	1
後ろ	ushiro	n	behind, back	1

10 **隙間** (sukima, gap opening)

SW	Romanization	POS	Translation	WInD
隙	suki	n	space, room, gap	11
間（あいだ）	aida	n	distance, period	11
間（ま）	ma	n	time, interval, space	4
スペース	supeesu	n	space, room	2
余地	yochi	n	room, space	2
距離	kyori	n	distance	1
隙間	sukima	n	crevice, opening, gap	1

19 **間（あいだ）**(gap, break)

SW	Romanization	POS	Translation	WInD
隙間	sukima	n	crevice, opening, gap	9
隙	suki	n	space, room, gap	4
スペース	supeesu	n	space, room	3
余地	yochi	n	room, space	2
空間	kuukan	n	space	1
距離	kyori	n	distance	1
間（ま）	ma	n	time, interval, space	1
長年	naganen	adv	long time, many years	1

2 **時間** (jikan, time)

SW	Romanization	POS	Translation	WInD
時	toki	n.	time	20
間（ま）	ma	n	time, interval, space	5
ひま	hima	na-adj, n	free, not busy	5
タイミング	taimingu	n	timing	4
長さ	nagasa	n	length	3
間（あいだ）	aida	n	distance, period	3
余地	yochi	n	room, space	2
時期	jiki	n	time, period, season	2
日付	hizuke	n	date day	2
瞬間	shunkan	adv n	moment, instant second	2
空間	kuukan	n	space	1
距離	kyori	n	distance	1
隙間	sukima	n	crevice, opening, gap	1
年代	nendai	n	era, generation	1
未来	mirai	n	future	1
長年	naganen	adv	long time, many years	1
日	hi	n	day, sun	1

22 **時** (toki, time)

SW	Romanization	POS	Translation	WInD
時間	jikan	n.	time	10

タイミング	taimingu	n	timing	3
間（ま）	ma	n	time, interval, space	2
時期	jiki	n	time, period, season	2
場所	basho	n	place, spot, position	1
長年	naganen	adv	long time, many years	1
日	hi	n	day, sun	1
瞬間	shunkan	adv n	moment, instant second	1

26 **場所** (basho, place)

SW	Romanization	POS	Translation	WInD
場	ba	n	place, occasion	12
空間	kuukan	n	space	3
スペース	supeesu	n	space, room	1
居間	ima	n	living room	1
時間	jikan	n	time	1
時	toki	n	time	1

28 **一瞬** (isshun, moment, instant)

SW	Romanization	POS	Translation	WInD
瞬間	shunkan	adv n	moment, instant second	15
時	toki	n.	time	2
隙	suki	n	space, room, gap	1

30 田舎 (inaka, rural area, countryside)

SW	Romanization	POS	Translation	WInD
郊外	koogai	n	suburb	12
都内	tonai	n	in the city	4
アパート	apaato	n	apartment	1

35 春夏秋冬 (shunkashyuutoo, four seasons)

SW	Romanization	POS	Translation	WInD
季節	kisetsu	n	season	14
時期	jiki	n	time, period, season	2

36 宇宙 (uchuu, universe, cosmos, space)

SW	Romanization	POS	Translation	WInD
スペース	supeesu	n	space, room	7
空間	kuukan	n	space	5
広がり	hirogari	n	spread	2
未来	mirai	n	future	1

41 距離 (kyori, distance)

SW	Romanization	POS	Translation	WInD
長さ	nagasa	n	length	7
間（あいだ）	aida	n	distance, period	7

49 リビング (ribingu, living room)

SW	Romanization	POS	Translation	WInD
居間	ima	n	living room	11
部屋	heya	n	room	2

50 余裕 (yoyuu, leeway, room, time)

SW	Romanization	POS	Translation	WInD
余地	yochi	n	room, space	9
広がり	hirogari	n	spread	1
間（あいだ）	aida	n	distance, period	1
間（ま）	ma	n	time, interval, space	1
時間	jikan	n.	time	1

Table 1.27 Attribute

11 暑い (atsui, hot)

SW	Romanization	POS	Translation	WInD
夏	natsu	n	summer	24
場所	basho	n	place, spot, position	1
外	soto	n	outside	1
都内	tonai	n	in the city	1
部屋	heya	n	room	1

Table 1.27 Attribute

季節	kisetsu	n	season	1

12 **長い** (nagai, long)

SW	Romanization	POS	Translation	WInD
距離	kyori	n	distance	9
長さ	nagasa	n	length	7
長年	naganen	adv	long time, many years	3
日	hi	n	day, sun	3
時間	jikan	n	time	2
間（あいだ）	aida	n	distance, period	1
時代	jidai	n	time, era	1

15 **暗い** (kurai, dark)

SW	Romanization	POS	Translation	WInD
夜	yoru	n	night, evening	16
後ろ	ushiro	n	behind, back	2
過去	kako	n	past	2
隙間	sukima	n	crevice, opening, gap	1
外	soto	n	outside	1
奥	oku	n	inner part, back, bottom	1
昔	mukashi	n	ancient times, in the past, once	1

Table 1.27 Attribute

32 遠い (tooi, far, distant)

SW	Romanization	POS	Translation	WInD
距離	kyori	n	distance	12
郊外	koogai	n	suburb	2
過去	kako	n	past	1
未来	mirai	n	future	1

37 自由 (jiyuu, freedom)

SW	Romanization	POS	Translation	WInD
ひま	hima	na-adj,n	free, not busy	4
休日	kyujitsu	n	holiday, day off	3
空間	kuukan	n	space	2
外	soto	n	outside	2
休み	yasumi	n	holiday, rest	2
マイホーム	mai hoomu	n	one's home	1
昼間	hiruma	n	daytime	1

38 短い (mijikai, short)

SW	Romanization	POS	Translation	WInD
長さ	nagasa	n	length	8
距離	kyori	n	distance	2
広がり	hirogari	n	spread	1

Table 1.27 Attribute

時間	jikan	n	time	1
昼間	hiruma	n	daytime	1
休み	yasumi	n	holiday, rest	1
瞬間	shunkan	adv n	moment, instant second	1

4 **太陽** (taiyoo, sun)

SW	Romanization	POS	Translation	WInD
昼間	hiruma	n	daytime	16
日	hi	n	day, sun	11
朝	asa	n	morning	10
夏	natsu	n	summer	7
外	soto	n	outside	2

40 **大切** (taisetsu, important, necessary)

SW	Romanization	POS	Translation	WInD
時間	jikan	n.	time	5
時	toki	n.	time	2
瞬間	shunkan	adv n	moment, instant second	2
奥	oku	n	inner part, back, bottom	1
間（あいだ）	aida	n	distance, period	1
間（ま）	ma	n	time, interval, space	1
時期	jiki	n	time, period, season	1

Table 1.27 Attribute

日	hi	n	day, sun	1
タイミング	taimingu	n	timing	1

43 **好き** (suki, liking, foundness)

SW	Romanization	POS	Translation	WInD
家	ie	n	house, home	3
休み	yasumi	n	holiday, rest	2
ひま	hima	na-adj, n	free, not busy	2
外	soto	n	outside	1
都内	tonai	n	in the city	1
我が家	wagaya	n	one's house, one's family, one's home	1
奥	oku	n	inner part, back, bottom	1
長年	naganen	adv	long time, many years	1
休日	kyuujitsu	n	holiday, day off	1
瞬間	shunkan	adv n	moment, instant second	1

44 **高い** (takai, high, tall, expensive)

SW	Romanization	POS	Translation	WInD
マンション	manshon	n	apartment, condominium flat	8
マイホーム	mai hoomu	n	one's home	3
アパート	apaato	n	apartment	2
都内	tonai	n	in the city	1

Table 1.27 Attribute

45	安心 (anshin, relief, peace of mind)			
SW	**Romanization**	**POS**	**Translation**	**WInD**
我が家	wagaya	n	one's house, one's family, one's home	7
家	ie	n	house, home	3
マイホーム	mai hoomu	n	one's home	2
部屋	heya	n	room	1
休日	kyuujitsu	n	holiday, day off	1
48	紅葉 (kooyoo, autumn colors)			
SW	**Romanization**	**POS**	**Translation**	**WInD**
秋	aki	n	autumn, fall	14
6	狭い (semai, narrow)			
SW	**Romanization**	**POS**	**Translation**	**WInD**
アパート	apaato	n	apartment	10
隙間	sukima	n	crevice, opening, gap	7
部屋	heya	n	room	3
奥	oku	n	inner part, back, bottom	3
空間	kuukan	n	space	2
スペース	supeesu	n	space, room	2

Table 1.27 Attribute

場所	basho	n	place, spot, position	2
隙	suki	n	space, room, gap	2
余地	yochi	n	room, space	1
うち	uchi	n	inside	1
マンション	manshon	n	apartment, condominium flat	1
我が家	wagaya	n	one's house, one's family, one's home	1
後ろ	ushiro	n	behind, back	1

7 広い (hiroi, spacious, wide)

SW	Romanization	POS	Translation	WInD
スペース	supeesu	n	space, room	9
空間	kuukan	n	space	7
リビング	ribingu	n	living room	4
広がり	hirogari	n	spread	3
部屋	heya	n	room	3
居間	ima	n	living room	2
間（あいだ）	aida	n	distance, period	2
距離	kyori	n	distance	1
場所	basho	n	place, spot, position	1
郊外	koogai	n	suburb	1
前	mae	n	forward, front, before	1

Table 1.27 Attribute

8 明るい (akarui, light)

SW	Romanization	POS	Translation	WInD
昼間	hiruma	n	daytime	18
未来	mirai	n	future	8
夏	natsu	n	summer	2
日	hi	n	day, sun	2
広がり	hirogari	n	spread	1
外	soto	n	outside	1
リビング	ribingu	n	living room	1
朝	asa	n	morning	1

Table 1.28 Other

16 落ち着く (ochitsuku, to calm down)

SW	Romanization	POS	Translation	WInD
家	ie	n	house, home	8
我が家	wagaya	n	one's house, one's family, one's home	6
部屋	heya	n	room	3
リビング	ribingu	n	living room	3
居間	ima	n	living room	2
隙	suki	n	space, room, gap	1

Table 1.28 Other

うち	uchi	n	inside	1

20 テレビ ***(terebi, television)***

SW	Romanization	POS	Translation	WInD
リビング	ribingu	n	living room	9
居間	ima	n	living room	7
ひま	hima	na-adj,n	free, not busy	3
家	ie	n	house, home	1
部屋	heya	n	room	1
休日	kyuujitsu	n	holiday, day off	1

23 寛ぎ (kutsurogi, ease, relaxation)

SW	Romanization	POS	Translation	WInD
居間	ima	n	living room	6
我が家	wagaya	n	one's house, one's family, one's home	5
リビング	ribingu	n	living room	3
部屋	heya	n	room	2
家	ie	n	house, home	1
マイホーム	mai hoomu	n	one's home	1
昼間	hiruma	n	daytime	1
休日	kyuujitsu	n	holiday, day off	1

Table 1.28 Other

休み	yasumi	n	holiday, rest	1

3 **家** (ie, home, house)

SW	Romanization	POS	Translation	WInD
うち	uchi	n	inside	27
マイホーム	mai hoomu	n	one's home	8
場	ba	n	place, occasion	3
マンション	manshon	n	apartment, condominium flat	3
我が家	wagaya	n	one's house, one's family, one's home	3
場所	basho	n	place, spot, position	2
アパート	apaato	n	apartment	2
リビング	ribingu	n	living room	2
空間	kuukan	n	space	1
スペース	supeesu	n	space, room	1
郊外	koogai	n	suburb	1
部屋	heya	n	room	1

34 **時計** (tokei, clock)

SW	Romanization	POS	Translation	WInD
時間	jikan	n.	time	8
時	toki	n.	time	7

Table 1.28 Other

部屋	heya	n	room	1

39 仕事 (shigoto, work)

SW	Romanization	POS	Translation	WInD
長年	naganen	adv	long time, many years	5
昼間	hiruma	n	daytime	4
広がり	hirogari	n	spread	1
場	ba	n	place, occasion	1
部屋	heya	n	room	1
日付	hizuke	n	date day	1
休日	kyuujitsu	n	holiday, day off	1
休み	yasumi	n	holiday, rest	1

46 夢 (yume, dream)

SW	Romanization	POS	Translation	WInD
マイホーム	mai hoomu	n	one's home	9
未来	mirai	n	future	5

47 子供 (kodomo, children)

SW	Romanization	POS	Translation	WInD
昔	mukashi	n	ancient times, in the past, once	5
過去	kako	n	past	3

Table 1.28 Other

部屋	heya	n	room	2
未来	mirai	n	future	2
年齢	nenrei	n	age, years	1
休み	yasumi	n	holiday, rest	1

5 **家族** (kazoku, family)

SW	Romanization	POS	Translation	WInD
我が家	wagaya	n	one's house, one's family, one's home	10
家	ie	n	house, home	9
居間	ima	n	living room	8
マイホーム	mai hoomu	n	one's home	6
リビング	ribingu	n	living room	5
うち	uchi	n	inside	2
空間	kuukan	n	space	1

Table 1.29 IN FRONT/BEHIND

N	ID	Lemma	Romanization	POS	Translation
1	23	前	mae	n	before; in front
2	24	後ろ	ushiro	n	back; behind
3	25	奥	oku	n	interior; inner part; inside
4	33	未来	mirai	n	future

N	ID	Lemma	Romanization	POS	Translation
5	186	視界	shikai	n	field of vision; visibility
6	211	髪	kami	n	hair (on the head)
7	242	席	seki	n	seat
8	315	怖い	kowai	i-adj	scary; frightening; eerie; dreadful
9	585	前進	zenshin	n, suru v	advance; drive; progress
10	586	進む	susumu	v	to advance; to go forward
11	587	後	ato	n	back; behind; rear
12	588	アクセル	akuseru	n	accelerator
13	589	隊列	tairetsu	n	file or ranks of troops
14	590	見える	mieru	v	to be seen; to be in sight
15	591	正面	shoomen	no-adj , n	front; frontage; facade; main
16	592	目	me	n	eye; eyeball
17	593	３日前	mikkamae	coll	3 days ago
18	594	見えない	mienai	v, neg	not seen
19	595	後悔	kookai	n, suru v, no-adj	regret; repentance; remorse
20	596	前方	zenpoo	no-adj , n	forward; frontward
21	597	走る	hashiru	v	to run
22	598	体操	taisoo	n, suru v, no-adj	gymnastics; physical exercises;
23	599	直前	chokuzen	Advial n	just before

N	ID	Lemma	Romanization	POS	Translation
24	600	屈む	kagamu	v	to stoop; to lean over; to bend down; to crouch
25	601	鏡	kagami	n	mirror; looking-glass
26	602	背中	senaka	n	back (of body)
27	603	背後	haigo	no-adj , n	back; rear
28	604	振り返る	furikaeru	v	to turn head; to look over one's shoulder; to turn around; to look back
29	605	バック	bakku	n	back
30	606	オルフェウス	orufeusu	Proper n	Orpheus
31	607	お化け	obake	n	goblin; monster; demon
32	608	振り向く	furimuku	v	to turn one's face; to turn around; to look over one's shoulder
33	609	ゆうれい	yuurei	n	ghost
34	611	見てしまう	miteshimau	v	look unintentionally
35	612	振りむき	furimuki	n	look over one's shoulder
36	613	しっぽ	shippo	n	tail (animal)
37	614	見ない	minai	v	do not look
38	615	姿	sugata	n	figure; form; shape
39	616	ネガティブ	negachibu	na-adj, n	negative
40	617	恐怖	kyoofu	n, suru v	fear; dread; dismay; terror; horror; scare; panic
41	629	森	mori	n	forest

N	ID	Lemma	Romanization	POS	Translation
42	1289	進行	shinkoo	n, suru v	moving forward (e.g. vehicle); onward movement
43	1290	ポジティブ	pojichibu	na-adj, n	positive
44	1291	前ならえ	maenarae	n	fall in; stand at arm's length
45	1292	表	omote; hyoo	n	surface, front (of the building, etc.);
46	1293	腹	hara	n	abdomen; belly; stomach
47	1294	スキ	suki	n	skiing
48	1410	行列	gyooretsu	n	line; queue

Table 1.30 NATURAL PROCESSES TIME

N	ID	Lemma	Romanization	POS	Translation
1	40	秋	aki	n	autumn; fall
2	43	夜	yoru	n	evening; night
3	44	朝	asa	n	morning
4	86	空	sora/kara	n	sky/emptiness
5	290	暗い	kurai	i-adj	dark; gloomy
6	471	茶色	chairo	n, no-adj	light brown; tawny
7	510	明かり	akari	n	light; illumination;
8	583	朝日	asahi	n	morning sun
9	708	早い	hayai	i-adj	fast; early (in the day, etc.)
10	924	忙しい	isogashii	i-adj	busy
11	979	落ち葉	ochiba	n	fallen leaves

N	ID	Lemma	Romanization	POS	Translation
12	980	カキ	kaki	n	kaki; Japanese persimmon (Diospyros kaki)
13	981	栗	kuri	n	Japanese chestnut (Castanea crenata)
14	982	すごしやすい	sugoshiyasui	i-adj, comp.	easy to spend/pleasant
15	983	梨	nashi	n	nashi (Pyrus pyrifolia, esp. var. culta); Japanese pear
16	984	さんま	sanma	n	Pacific saury (Cololabis saira); mackerel pike
17	985	紅葉	kooyoo	n	autumn colours; fall colors; leaves changing color (colour)
18	987	黄金色	koganeiro	n, no-adj	golden; gold-colored;
19	988	もち	mochi	n	sticky rice cake; mochi
20	989	きのこ	kinoko	n	mushroom
21	990	すずしい	suzushii	i-adj	cool; refreshing
22	991	さつまいも	satsumaimo	n	sweet potato (Ipomoea batatas)
23	992	もみじ	momiji	n	(Japanese) maple (Acer japonicum)
24	993	赤	aka	n	red; crimson; scarlet
25	994	秋好中宮	akinokonomu chuuguu	proper n	name of a character of Genji Monogatari
26	995	寒くなる	samukunaru	v, comp	gets cold
27	996	夕焼け	yuuyake	n	sunset
28	997	枯葉	kareha	n	dead leaf; dry leaves
29	998	すすき	susuki	n	Japanese pampas grass (Miscanthus sinensis)

N	ID	Lemma	Romanization	POS	Translation
30	999	食欲の秋	shokuyoku no aki	n, comp	autumn appetite
31	1000	コスモス	kosumosu	n, proper n	Cosmos (plant)
32	1001	稲刈り	inekari	n	rice harvesting
33	1002	りんご	ringo	n	apple (fruit)
34	1003	巨人が優勝	kyojin ga yuushoo	phrase, proper n, suru v	Tokyo Giants(baseball team) wins
35	1004	実り	minori	n	ripening (of a crop)
36	1005	わびしさ	wabishisa	n	loneliness
37	1006	寂しい	sabishii	i-adj	lonely
38	1007	月	tsuki	n	moon
39	1008	稲穂	inaho	n	ear (head) of rice
40	1009	夕暮れ	yuugure	n	evening; dusk; twilight
41	1020	日の出	hinode	n	sunrise
42	1028	昼	hiru	n	noon; midday
43	1045	一日の終わり	ichi nichi no owari	n, comp	end of the day
44	1053	星	hoshi	n	star
45	1054	夜景	yakei	n	night view; night skyline; nightscape
46	1055	栄える	sakaeru	v	to prosper; to flourish
47	1056	夜中	yonaka	n	midnight; dead of night
48	1057	深夜	shinya	n	late at night
49	1058	12	jyuuni	numeral	twelve
50	1059	星空	hoshizora	n	starry sky

N	ID	Lemma	Romanization	POS	Translation
51	1060	早く寝たい	hayaku netai	phrase	want to sleep early(earlier)
52	1061	夜更し	yofukashi	n, suru v	staying up late; keeping late hours;
53	1062	9 時	kuji	n	9 o'clock
54	1063	コンビニ	kombini	n	convenience store
55	1066	暗闇	kurayami	n	darkness; the dark
56	1067	晩酌	banshaku	n, suru v	drink at home with the evening meal; dinner-time drink
57	1068	終わり	owari	n	the end
58	1069	電気	denki	n	electricity
59	1071	闇	yami	n, no-adj	darkness; the dark; dark
60	1072	6 時頃から 9 時頃	rokuji goro kara kuji goro	phrase	from 6 to 9
61	1074	鳥	tori	n	bird
62	1075	朝食	chooshoku	n	breakfast
63	1076	一日のはじまり	ichinichi no hajimari	phrase	beginning of the day
64	1077	ねむい	nemui	i-adj	sleepy; drowsy; somnolent
65	1078	一周	isshuu	n, suru v	once around; a revolution; a lap; a turn; a round; one full year
66	1079	起きる	okiru	v	to get up; to rise;
67	1080	6 時から	rokujikara	n phrase	from 6
68	1081	始まり	hajimari	n	origin; beginning
69	1082	にわとり	niwatori	n	domestic chicken

N	ID	Lemma	Romanization	POS	Translation
70	1083	きつい	kitsui	i-adj	intense; severe; hard
71	1084	まぶしい	mabushii	i-adj	dazzling; radiant
72	1085	睡眠	suimin	n, no-adj	sleep
73	1086	さわやか	sawayaka	na-adj, n	fresh; refreshing; invigorating
74	1087	起床	kishoo	n, suru v, no-adj	rising; getting out of bed
75	1088	グリーグ	guriigu	n, proper n	Edvard Hagerup Grieg(composer)
76	1089	飯	meshi	n	cooked rice
77	1090	スタート	sutaato	n, suru v	start
78	1091	お陽さま	ohisama	n, honorific	sun
79	1092	一日の始め	ichi nichi no hajime	n phrase	start of the day
80	1093	食事	shokuji	n	meal
81	1094	晩	ban	n	evening
82	1363	なす	nasu	n	aubergine
83	1364	食	shoku	n	meal; (one's) diet; food
84	1369	フクロウ	fukuroo	n	owl
85	1370	毎晩	maiban	n	every night
86	1372	６：５５（NHK、Ｅテレ）	rokuji goojyuugoo	proper n	show title
87	1373	早朝	soochoo	n	early morning
88	1374	すっきり	sukkiri	n/proper n	feeling refreshed; feeling fine; feeling clear-headed/ tv show title

N	ID	Lemma	Romanization	POS	Translation
89	1375	目覚まし	mezamashi	n	alarm clock

Table 1.31 DEPTH/UNKNOWN

N	ID	Lemma	Romanization	POS	Translation
1	16	アパート	apaato	n	apartment building; apartment block;
2	20	部屋	heya	n	room
3	25	奥	oku	n	interior; inner part; inside
4	32	過去	kako	n	past
5	33	未来	mirai	n	future
6	34	昔	mukashi	n	olden days; past
7	85	狭い	semai	i-adj	narrow; confined; small
8	235	先	saki	n, no-adj	ahead; the other side/the future; hereafter
9	454	不安	fuan	na-adj, n	anxiety; uneasiness; insecurity; suspense
10	464	学生	gakusei	n	student
11	546	ベッド	beddo	n	bed
12	553	子供	kodomo	n	child; children
13	560	座敷	zashiki	n	tatami room; tatami mat room;
14	594	見えない	mienai	v neg	can not see
15	618	手前	temae	n	before; this side
16	619	届かない	todokanai	v neg	can not reach
17	620	洞窟	dookutsu	n, no-adj	cavern; cave;
18	621	奥の門	oku no mon	n coll	back gate

N	ID	Lemma	Romanization	POS	Translation
19	622	深部	shinbu	n	depths; deep part
20	623	大奥	oooku	n	inner palace (in Edo Castle); palace's ladies chambers
21	624	暗い部屋	kurai heya	i-adj n coll	dark room
22	625	最奥部	saiokube	n coll	the most inner room
23	626	トンネル	tonneru	n	tunnel
24	627	瞳	hitomi	n	eye
25	628	細道	hosomichi	n	narrow path; narrow lane
26	630	奥様	okusama	n	wife; your wife; his wife;
27	631	奥ゆかしい	okuyukashii	i-adj	refined; graceful; modest; cultivated; elegant; restrained
28	632	奥歯	okuba	n	molars; back teeth
29	633	深い	fukai	i-adj	deep
30	634	つきあたり	tsukiatari	n	end (e.g. of street, hallway, etc.)
31	635	奥深い人	okufukai	i-adj n coll	profound; deep person
32	637	奥方	okugata	n	lady; nobleman's wife
33	638	引き出し	hikidashi	n	drawer
34	639	隅	sumi	n	corner; nook; recess
35	640	深層	shinsoo	n, no-adj	depths; deep level
36	641	しまい場所	shimai basho	coll	storage
37	642	未知	michi	no-adj, na-adj, n	not yet known; unknown; strange
38	643	路地	roji	n	alley; alleyway; lane

N	ID	Lemma	Romanization	POS	Translation
39	644	バックヤード	bakkuyaado	n	backyard
40	645	入る	hairu	v	to enter; to go into
41	646	奥の院	oku no in	n	inner sanctuary; inner shrine;
42	726	現在	genzai	n	now; current; present
43	804	思い出	omoide	n	memories; recollections;
44	807	懐かしい	natsukashii	i-adj	dear; desired; missed
45	824	将来	shoorai	n	future (usually near); prospects
46	829	希望	kiboo	n, suru v	hope; wish; aspiration
47	843	昔話	mukashibanashi	n	old tale; folk tale; legend
48	1295	かくれて見えない	kakuretemienai	v coll	hidden, so can not see
49	1296	分かりにくい	wakarinikui	v coll	difficult to understand
50	1297	秘密	himitsu	n, na-adj, no-adj	secret; secrecy

Table 1.32 CALENDAR TIME/ SHEDULE

N	ID	Lemma	Romanization	POS	Translation
1	41	日	nichi/hi	n	day; days
2	42	日付	hizuke	n, no-adj	date; dating
3	43	夜	yoru	n	evening; night
4	44	朝	asa	n	morning
5	45	昼間	hiruma	n	daytime; during the day; time from sunrise until sunset; diurnal period

N	ID	Lemma	Romanization	POS	Translation
6	213	目安	meyasu	n	criterion; standard;
7	237	約束	yakusoku	n, suru v	promise; agreement; arrangement;
8	290	暗い	kurai	i-adj	dark; gloomy
9	335	太陽	taiyoo	n	sun
10	576	明るい	akarui	i-adj	bright; colourful
11	657	中間	chuukan	n	middle; midway; interim
12	827	変わる	kawaru	v	to change; to be transformed; to be altered; to vary
13	986	読書	dokusho	n	reading
14	1007	月	tsuki/gatsu/getsu	n	moon/month
15	1010	カレンダー	karendaa	n	calendar
16	1011	火	ka	n	Tuesday
17	1012	曜日	yoobi	n	day of the week
18	1013	その日	sonohi	n	that day; the very same day
19	1014	今日	kyoo	n	today; this day
20	1019	日陰	hikage	n	shade; shadow
21	1021	毎日	mainichi	n	every day
22	1022	誕生日	tanjyoobi	n	birthday
23	1023	イベント	ibento	n	event
24	1024	日時	nichiji	n	date and time
25	1025	好日	koojitsu	n	good day
26	1026	明	saya/mei	n	brightly/brightness; clarity
27	1027	陽	hi	n	sun; sunshine; sunlight

N	ID	Lemma	Romanization	POS	Translation
28	1028	昼	hiru	n	noon; midday; daytime
29	1030	当たり	atari	n	hit
30	1031	11 月 11 日	juuichigatsu juuichinihi	n	November, 11
31	1032	1 月 1 日	ichigatsu tsuitachi		January, 1
32	1033	予定	yotei	n	plans; arrangement; schedule;
33	1034	12 月 25 日	juunigatsu nijuugoonichi	n	December, 25
34	1035	日付変更線	hizukehenkoosen	n	International Date Line
35	1036	4 月 8 日	shigatsu yooka	n	April, 8
36	1037	デート	deeto	n, no-adj, suru v	date; go on a date
37	1038	大晦日	oomisoka	n	New Year's Eve
38	1039	6 月 22 日	rokugatsu nijuuni nichi	n	July, 22
39	1040	暦	koyomi	n	calendar
40	1041	4 月 9 日	shigatsu kokonoka	n	April, 9
41	1042	数字	suuji	n	numeral; figure; digit;
42	1043	年月日	nengappi	n	date(of birth)
43	1044	飛行機	hikooki	n	airplane; aircraft
44	1045	一日の終わり	ichinichi no owari	coll	end of the day
45	1046	手紙	tegami	n	letter
46	1047	変更線	henkoosen	n	International Date Line

N	ID	Lemma	Romanization	POS	Translation
47	1048	1月5日	ichigatsu itsuka	n	January, 5
48	1049	手帳	techoo	n	notebook; memo pad; (pocket) diary
49	1050	確固するもの	kakkosuru mono	phrase	firm/fixed thing
50	1051	文書	bunsho	n	document; writing; letter; paperwork; note; records; archives
51	1052	記録	kiroku	n	record; minutes; document
52	1053	星	hoshi	n	star
53	1365	のぼる	noboru	v	to ascend (as a natural process, e.g. the sun); to rise
54	1366	記念日	kinenbi	n	holiday; anniversary; memorial day
55	1367	報告書	hookokusho	n	(written) report
56	1368	どんどん過ぎる	dondon sugiru	phrase	passes rapidly
57	1371	日光	nikkoo	n	sunlight

Table 1.33 CITY/COUNTRYSIDE

N	ID	Lemma	Romanization	POS	Translation
1	13	都内	tonai	n	metropolitan area
2	14	郊外	koogai	n	suburb
3	67	静か	shizuka	na-adj	quiet; silent
4	161	アメリカ	amerika	n, proper n	America
5	195	山	yama	n	mountain; hill

N	ID	Lemma	Romanization	POS	Translation
6	256	東京	tookyoo	n, proper n	Tokyo
7	286	ビル	biru	n	multi-floor building
8	299	ビジネスチャンス	bijinesuchansu	coll	business chance
9	328	ゆったり	yuttari	Adv, suru v	comfortable; easy; calm; relaxed
10	336	自然	shizen	n	nature
11	345	人ごみ	hitogomi	n	crowd of people
12	371	東京都	tookyooto	n	Tokyo metropolitan area
13	372	なんでもある	nandemo aru	phrase	has everything
14	373	都会	tokai	n	city
15	374	都心	toshin	n	city centre (center) (esp. capital city)
16	375	電車	densha	n	train; electric train
17	376	進んでいる	susundeiru	v	advanced
18	377	噴水	funsui	n	water fountain
19	378	さかえてる	sakaeteru	v	prosperous
20	379	新宿	shinzuku	proper n	Shinzuku area
21	380	便利	benri	na-adj	convenient; handy; useful
22	381	田舎	inaka	n	rural area; countryside

N	ID	Lemma	Romanization	POS	Translation
23	382	東京都の内側	tookyooto no uchigawa	coll	inside Tokyo Metropolis
24	383	某所	boosho	n	certain place
25	384	混雑	konzatsu	n, suru v	congestion; crush; crowding; jam
26	385	活気	kakki	n	energy; liveliness
27	386	整備	seibi	n, suru v	putting in place; establishment; development; preparation; provision; outfitting
28	387	渋谷	shibuya	proper n	Shibuya area
29	388	２３区	nizyuusanku	proper n	23 districts (of Tokyo)
30	389	物件	bukken	n	property (real estate)
31	391	山の手線	yamanotesen	proper n	Yamanote line (of JR in Tokyo)
32	392	沢山の人	takusan no hito	phrase	lots of people
33	393	雑踏	zattoo	n, suru v	congestion; traffic jam; throng; hustle and bustle
34	395	にぎやか	nigiyaka	na-adj	bustling; busy; lively
35	396	行く	iku	v	to go
36	397	都市	toshi	n, no-adj	town; city; municipal; urban
37	398	区	ku	n	ward; district; section
38	399	すごい	sugoi	i-adj	amazing (e.g. of strength); great (e.g. of skills); wonderful; terrific

N	ID	Lemma	Romanization	POS	Translation
39	400	外国	gaikoku	n, no-adj	foreign country
40	401	フィールドワーク	fiirudo waaku	n	fieldwork
41	402	スーパー	suupaa	n	supermarket
42	403	埼玉	saitama	proper n	Saitama
43	404	多摩市	tamashi	proper n	Tamashi
44	405	あのころはフリードリヒがいた	anokoro ha furidoorihi ga ita	phrase	film/book title
45	406	レンガ	renga	n	brick
46	407	田んぼ	tanbo	n	paddy field; farm
47	408	バディー	badii	n	buddy
48	409	ショッピングセンター	shoppingusentaa	n	shopping centre; shopping center; mall
49	410	雑木林	zookibayashi	n	grove of mixed trees; copse
50	411	緑	midori	n	green
51	412	多摩	tama	proper n	Tama

N	ID	Lemma	Romanization	POS	Translation
52	413	田園	denen	n	country; rural districts; cultivated land; fields
53	414	住宅地	jyutakuchi	n	housing district; residential district
54	415	ドライブ	doraibu	n	drive; trip by car; driving
55	416	箕面市	minaoshi	proper n	Minao
56	417	団地	danchi	n	multi-unit apartments; apartment complex
57	419	白い家	shiroi ie	coll	a white house
58	420	住居	jyuukyo	n	dwelling; house; residence; address
59	428	住む	sumu	v	to live (of humans); to reside; to inhabit
60	1175	移動	idoo	n, suru v	movement; transfer; migration; removal; travel
61	1260	交通量多	kootsuuryoota	coll	big traffic; traffic volume
62	1261	郵便	yuubin	n	mail service; postal service; mail; post
63	1262	シルバーパス	shirubaabasu	proper n	Silver bus
64	1263	ジャスコ	jasuko	proper n	JUSCO https://en.wikipedia.org/wiki/JUSCO
65	1417	ビル街	birugai	n	downtown high-rise area; street of office buildings

Table 1.34 ABSTRACT SPACE

N	ID	Lemma	Romanization	POS	Translation
1	1	空間	kuukan	n	space; room; airspace

N	ID	Lemma	Romanization	POS	Translation
2	2	スペース	supeesu	n	space (room, area, outer space)
3	3	余地	yochi	n	place; room; margin; scope
4	4	距離	kyori	n	distance; range
5	5	広がり	hirogari	n	spread; span; expanse; extent
6	6	長さ	nagasa	n	length
7	7	場所	basho	n	place; location; spot; position
8	8	場	ba	n	place; spot; space
9	9	隙間	sukima	n	crevice; crack; gap; opening; clearance
10	10	隙	suki	n	gap; space
11	26	間（あいだ）	aida	n	space (between); gap; interval; distance
12	27	間（ま）	ma	n	space; room; time; pause
13	51	二次元	nijigen	n	two dimensions
14	53	密閉	mippei	n, suru v	airtight
15	54	世界観	sekaikan	n	world view; outlook on the world
16	55	いどころ	idokoro	n	whereabouts; address
17	57	空気	kuuki	n	air; atmosphere
18	58	ボックス	bokkusu	n	box
19	59	無	mu	n	nothing; naught; nought; nil; zero
20	60	見方	mikata	n	viewpoint; point of view

N	ID	Lemma	Romanization	POS	Translation
21	61	自分	jibun	Pronoun, no-adj	myself; yourself; oneself; himself; herself
22	62	図形	zukei	n	figure; shape; graphic
23	63	デザイン	dezain	n, suru v	design
24	64	立方体	rippootai	n	cube
25	65	酸素	sanso	n	oxygen (O)
26	66	何もない	nani mo nai	phrase	there is nothing
27	68	必要	hitsuyoo	na-adj	necessary; needed; essential; indispensable
28	69	時空	jikuu	n	space-time
29	70	広い	hiroi	i-adj	spacious; vast; wide
30	71	ベクトル	bekutoru	n	vector
31	72	宇宙	uchuu	n	universe; cosmos; space
32	73	一人の時間	hitori no jikan	coll	one's time on their own
33	74	大好きな部屋	daisukina heya	coll	room I like a lot
34	75	白	shiro	n	white/blank space
35	76	壁	kabe	n	wall; partition
36	77	芸術	geijyutsu	n	(fine) art; the arts
37	78	ホテルのロビー	hoteru no robii	coll	hotel lobby
38	80	ホール	hooru	n	hall

N	ID	Lemma	Romanization	POS	Translation
39	81	東京ドーム	tookyoo doomu	proper n	Tokyo Dome
40	82	広さ	hirosa	n	extent
41	83	香り	kaori	n	aroma; fragrance; scent; smell
42	84	居場所	ibasho	n	whereabouts; place; location
43	89	車庫	shako	n	garage; carport; depot (trains, buses, etc.)
44	90	戸棚	todana	n	cupboard; locker; closet; wardrobe; cabinet
45	91	造園	zooen	n	landscape gardening
46	92	重要性	jyuuyoosei	n	importance; gravity
47	93	奥行き	okuyuki	n	depth; length
48	94	駐車場	chuushajoo	n	parking lot; parking place
49	95	利用	riyoo	n, suru v	use; utilization; utilisation; application
50	96	パソコン	pasokon	n	personal computer
51	97	空白	kuuhaku	n	blank space; vacuum; space; null (NUL)
52	98	広間	hiroma	n	hall; saloon; spacious room;
53	99	必要なもの	hitsuyoona mono	coll	necessary thing
54	100	ネットの検索	netto no kensaku	coll	internet search
55	102	半角スペース	hankaku supeesu	coll	single-byte character space
56	103	たんす	tansu	n	chest of drawers; bureau; cabinet; tansu; dresser

N	ID	Lemma	Romanization	POS	Translation
57	104	空き	aki	n	space; room; emptiness; gap
58	105	チャンネル５	channeru faibu	proper n	Space Channel 5 (music video game)
59	106	空ける	akeru/utsujeru	v	to empty; to remove; to make space; to make room
60	107	スペースキー	supeesukii	n	space key
61	108	空き地	akichi	n	vacant land
62	109	余裕	yoyuu	n	surplus; margin; leeway; room; time; allowance; flexibility; scope; rope
63	110	文句	monku	n	complaint; grumbling; objection
64	111	可能性	kanoosei	n	potentiality; likelihood; possibility;
65	113	事故	jiko	n	accident; incident; trouble
66	114	余った地	amatta chi	coll	left/remaining land
67	115	改善	kaizen	n, suru v, no-adj	betterment; improvement
68	116	地震	jishin	n	earthquake
69	117	余り	amari	na-adj, Adv, no-adj , n	remainder; rest; balance; remains; scraps; residue; remnant
70	118	余白	yohaku	n	blank space; margin
71	119	のびしろ	nobishiro	n	room for growth; potential; promise
72	120	紙	kami	n	paper

N	ID	Lemma	Romanization	POS	Translation
73	123	残り時間	nokori jikan	coll	time left
74	124	野菜	yasai	n	vegetable
75	125	考える	kangaeru	v	to think about; to take into consideration
76	126	柔軟性	jyuunansei	n	flexibility; pliability; softness; elasticity
77	127	うたがい	utagai	n	doubt; question; uncertainty; skepticism; scepticism; suspicion; distrust
78	128	残す	nokosu	v	to leave (behind, over); to bequeath; to save; to reserve
79	129	遊域	na	na	na
80	130	ミリメートル	mirimeetoru	n	millimeter; millimetre
81	131	人	hito	n	man; person
82	132	感覚	kankaku	n	sense; sensation; feeling; intuition
83	133	道	michi	n	road; street; way; path; course; route; lane
84	134	長い	nagai	i-adj	long (distance)
85	135	遠い	tooi	i-adj	far; distant
86	136	4 km	yon kiromeetoru	coll	4 km
87	137	一定	ittei	n, no-adj, suru v, na-adj	fixed; settled; constant; definite; uniform; regularized; regularised; defined; standardized; standardised; certain; prescribed
88	138	km	kiromeetoru	n	kilometer

N	ID	Lemma	Romanization	POS	Translation
89	139	ジャンプ	jyampu	n	jump
90	140	置く	oku	v	to put; to place
91	141	陸上	rikujoo	n	land; ground; shore/track-and-field events
92	142	交通	kootsuu	n, suru v	traffic; transportation; communication; exchange (of ideas, etc.); intercourse
93	143	短距離	tankyori	n	short distance; short range; short-haul
94	144	心	kokoro	n	mind; heart; spirit
95	145	マラソン	marason	n	marathon; long-distance race
96	146	短い	mijikai	i-adj	short
97	147	徒競走	tokyoosoo	n	foot race
98	148	間合	maai	n	interval; distance; break; pause/suitable time; appropriate opportunity
99	149	メートル	meetoru	n	metre; meter
100	151	計り	hakari	n	measurements; weighing
101	152	必要性	hitsuyoosei	n	necessity
102	153	近い	chikai	i-adj	near; close; short (distance)
103	154	勤務	kimmu	n, suru v	service; duty; work
104	155	離れている	hanareteiru	v, IPFT	to be separated; to be apart; to be distant

N	ID	Lemma	Romanization	POS	Translation
105	156	コミュニケーション	komyunikeeshon	n	communication
106	157	スポーツ	supootsu	n, no-adj	sport; sports
107	158	行動	koodoo	n, suru v, no-adj	action; conduct; behaviour; behavior; mobilization; mobilisation
108	159	通勤	tsuukin	n, suru v	commuting to work
109	160	車間	shakan	n	(distance) between two trains or vehicles
110	163	他人	tanin	n	another person; other people; others
111	164	間隔	kankaku	n	space; interval
112	165	しんしょく	shinshoku	n, suru v	encroachment/erosion; corrosion
113	166	輪	wa	n	ring; circle; loop
114	167	友達	tomodachi	n	friend; companion
115	168	フィールド	fiirudo	n	field
116	169	つながり	tsunagari	n	connection; link; relationship
117	171	草原	soogen	n	grass-covered plain; grasslands; meadows
118	172	友人関係	yuujin kankei	n	friendship, friends' relationships
119	173	波紋	hamon	n	ripple; ring on the water
120	174	人間関係	nigenkankei	n, no-adj	human relations

N	ID	Lemma	Romanization	POS	Translation
121	176	人脈	jinmyaku	n	personal connections
122	177	ちらばる	chirabaru	v	to be scattered about
123	178	交友関係	kooyuukankei	n	one's relationships; people one knows
124	179	波	nami	n	wave
125	180	情報	jyoohoo	n	information; news; intelligence; advices
126	181	砂ばく	sabaku	n	desert
127	182	横	yoko	n	horizontal (as opposed to vertical); lying down
128	183	モング	mongu	proper n	Mongu (anime character)
129	185	幅	haba	n	width; breadth/ gap; difference (e.g. in price); range (e.g. of voice)
130	187	心の広がり	kokoro no hirogari	expr	spread of heart?
131	189	野原	nohara	n	field
132	191	音	oto	n	sound; noise; report
133	192	発想	hassoo	n, suru v	idea; conception; way of thinking
134	193	人の輪の広がり	hito no wa no hirogari	expr	spread of one's connections/ extent of one's circle
135	194	無限	mugen	n	infinity; infinitude; eternity
136	196	短さ	mijikasa	n	brevity; shortness
137	197	数学	suugaku	n	mathematics; arithmetic
138	198	大きさ	ookisa	n	size; dimensions; volume

N	ID	Lemma	Romanization	POS	Translation
139	199	授業	jugyoo	n, suru v	lesson; class work; teaching; instruction
140	200	1 m	ichi meetoru	n	one meter
141	201	メジャー	mejaa	na-adj, n	measure; tape measure
142	202	めんどうくさい	mendokusai	i-adj	bothersome; tiresome; bother to do
143	203	ひも	himo	n	string; cord
144	204	ものさし	monosashi	n	ruler; measure
145	205	センチメートル	senchimeetoru	n	centimeter
146	206	定規	joogi	n	(measuring) ruler
147	207	単位	tani	n	unit; denomination
148	208	継続	keizoku	n, suru v, no-adj	continuation
149	209	計る	hakaru	v	to measure; to weigh; to survey; to time (sound, gauge, estimate)
150	210	巻尺	makijyaku	n	tape measure
151	212	道のり	michinori	n	distance; journey; itinerary
152	214	届く	todoku	v	to reach; to arrive; to get through; to get at
153	215	尺度	shakudo	n	linear measure; scale
154	216	集合	shuugoo	n, suru v, no-adj	gathering; assembly; meeting

N	ID	Lemma	Romanization	POS	Translation
155	217	集まる	atsumaru	v	to gather; to collect; to assemble
156	218	居所	idokoro	n	whereabouts; address
157	219	そこ	soko	n	there (place relatively near listener)
158	220	エリア	eria	n	area
159	222	待ち合わせ	machiawase	n	appointment
160	223	所	tokoro	n	place; spot; scene; site
161	224	どこ	doko	Pronoun, no-adj	where; what place
162	226	現在地	genzaichi	n	present location; current location; "you are here" (on map)
163	227	ここ	koko	n, no-adj	here (place physically close to the speaker, place pointed by the speaker while explaining); this place
164	228	寮	ryoo	n	hostel; dormitory
165	229	様々	samazama	na-adj, n	varied; various
166	231	つかれる	tsukareru	v	to get tired; to tire
167	232	公園	kooen	n	(public) park
168	233	ベッド	beddo	n	bed
169	236	グラウンド	guraundo	n	sports ground; sports oval
170	238	広場	hiroba	n	plaza; (public) square

N	ID	Lemma	Romanization	POS	Translation
171	239	立ち位置	tachiichi	n	position (where one is standing); place where one stands
172	240	特定	tokutei	no-adj ,n, na-adj	specific; particular; designated; special
173	241	駅	eki	n	station
174	244	位置	ichi	n, suru v	place; situation; position; location
175	245	定位置	teichi	n	home position; origin; usual place (for something)
176	246	表す	arawasu	v	to represent; to signify; to stand for
177	247	座席	zaseki	n, no-adj	seat
178	248	自分の居場所	jibun no ibasho	expr	one's whereabouts; one's location
179	249	出会い	deai	n	meeting; rendezvous; encounter
180	250	会場	kaijoo	n	assembly hall; meeting place; venue; grounds
181	251	狭い所	semai tokoro	expr	narrow/small place
182	252	丸の内	marunouchi	proper n	Marunouchi line
183	253	目的地	mokutekichi	n	place of destination
184	257	確固たる位置	kakko taru ichi	expr	firm/unshakeable position
185	258	居	kyo/i	n, suffix, prefix	residence/being (somewhere); sitting
186	259	住所	jyuusho	n	address (e.g. of house); residence; domicile

N	ID	Lemma	Romanization	POS	Translation
187	260	お気に入り	oki ni iri	expr, no-adj	favorite; favourite;
188	262	目印	mejirushi	n	mark; sign; landmark; benchmark
189	263	壊す	kowasu	v	to break; to destroy; to demolish
190	264	運動場	undoojoo	n	sports ground; playing field; playground
191	265	土	tsuchi	n	earth; soil; dirt; clay; mud
192	266	それぞれ	sorezore	Adv n, no-adj	each; respectively
193	267	サーカス	saakasu	n	circus
194	268	雰囲気	funiki	n	mood; ambience; ambiance; aura; feel
195	269	教室	kyooshitsu	n	classroom
196	271	重力	jyuuryoku	n	gravity; gravitation; gravitational pull
197	272	砂場	sunaba	n	sand pit; sandbox
198	273	サッカー場	sakkaaba	n	soccer field
199	274	場面	bamen	n, no-adj	scene; setting (e.g. of novel)
200	275	磁石	jishaku	n, no-adj	magnet
201	276	ゴルフ場	gorufusjoo	n	golf links; golf course; club
202	277	風呂場	furoba	n	bathroom

N	ID	Lemma	Romanization	POS	Translation
203	279	エネルギー	enerugii	n	energy
204	280	ルミネ	rumine	proper n	Lumine(department store)
205	281	コンサート会場	konsaato kaijoo	n	concert hall
206	282	会社	kaisha	n	company; corporation
207	283	共有	kyooyuu	n, suru v, no-adj	share; joint ownership; co-ownership
208	284	持たない	motanai	v, neg	not to hold, not to take, not to carry
209	285	風	kaze	n	wind; breeze; draught; draft
210	287	入るのすき	hairu no suki	expr	like to enter
211	288	ホコリ	hokori	n	dust
212	289	ふすま	fusuma	n	fusuma; Japanese sliding screen
213	291	入りたい	hairitai	v, desire	want to enter, want to go into
214	293	棚	tana	n	shelf; shelves; ledge; rack
215	294	くさ	kusa	n	grass; weed; herb; thatch
216	295	ゴミ	gomi	n	rubbish; trash; garbage; refuse
217	296	障子	shooji	n	shoji (paper sliding door)
218	297	有効利用	yuukoo riyoo	expr	effective usage
219	298	本棚	hondana	n	bookshelves; bookshelf; bookcase
220	300	産業	sangyoo	n, no-adj	industry

N	ID	Lemma	Romanization	POS	Translation
221	301	ドア	doa	n	door (Western-style)
222	302	ニッチ	nicchi	n, na-adj	niche
223	303	家具の隙間	kagu no sukima	expr	gaps/cracks in furniture
224	304	新築	shinchiku	n, suru v, no-adj	new building; new construction
225	305	どうじ	dooji	n, no-adj	simultaneous; concurrent; same time; synchronous; together
226	306	隙間風	sukimakaze	n	draft; draught; cold air entering through the crack of a door or window
227	307	あける	akeru	v	to empty; to remove; to make space; to make room
228	308	ガンマン	ganman	n	gunman
229	309	弱い	yowai	i-adj	weak; frail; delicate; tender; unskilled; weak (wine)
230	310	トイレ	toire	n	toilet; restroom; bathroom; lavatory
231	311	不意	fui	na-adj, n, no-adj	sudden; abrupt; unexpected; unforeseen
232	312	ワキ	waki	n	armpit; under one's arm; side; flank/beside; close to; near; by
233	313	窓	mado	n	window
234	316	ねずみ	nezumi	n	mouse; rat
235	317	休める	yasumeru	v	to rest; to suspend; to give relief
236	319	意表	ihyoo	n	surprise; something unexpected

N	ID	Lemma	Romanization	POS	Translation
237	320	一瞬の間	isshun no ma	coll	fleeting second, briefest second
238	321	空隙	kuugeki	n, no-adj	vacant space; aperture; gap; opening
239	323	冷たい風	tsumetai kaze	expr	cold wind
240	324	効用	kooyoo	n	use; utility; effect; benefit
241	325	のぞく	nozoku	v	to peek (though a keyhole, gap, etc.)
242	326	隙間発想	sukima hassoo	expr	niche idea
243	327	ニッチマーケット	nicchimaaketo	n	niche market
244	329	見せる	miseru	v	to show; to display
245	533	箱	hako	n	box; case; chest; package; pack
246	566	会話	kaiwa	n, suru v	conversation
247	572	床の間	tokonoma	n	tokonoma (alcove where art or flowers are displayed)
248	647	サンド	sando	n	sand/sandwich
249	648	列	retsu	n	queue; line; row; column; sequence; string; train
250	649	かんげき	kangeki	n, suru v	deep emotion; impression; inspiration
251	650	人と人の間	hito to hito no aida	expr	between people/between one person and other person
252	651	まんなか	mannaka	n	middle; centre; center; mid-way

N	ID	Lemma	Romanization	POS	Translation
253	652	この前	konomae	n, no-adj	some time ago; recently; lately
254	654	隔たり	hedatari	n	distance; interval; gap; difference; estrangement
255	655	何もない部分	nanimo nai bubun	expr	empty part/ part which has nothing
256	656	あく	aku	v	to open (e.g. doors)/to be empty
257	658	つなぐ	tsunagu	v	to connect; to link together
258	659	間柄	aidagara	n	relation(ship)
259	660	関係	kankei	n, suru v, no-adj	relation; relationship; connection
260	661	対人	taijin	no-adj	personal; inter-personal
261	663	音楽	ongaku	n	music; musical movement
262	664	連結	renketsu	n, suru v, na-adj, no-adj	concatenation; coupling; connection; linking; consolidation (e.g. of company accounts)
263	666	休憩	kyuukei	n, suru v	rest; break; recess; intermission
264	668	家と家の間	ie to ie no aida	expr	between (two) houses
265	669	の間	no aida	n, expr	span (temporal or spatial); stretch; period (while)
266	670	みぞ	mizo	n	gap (between people, countries, etc.); gulf
267	671	何かと何か	nanika to nanika	expr	something and something
268	672	言葉	kotoba	n	language; dialect/word(s)

N	ID	Lemma	Romanization	POS	Translation
269	673	黒い球	kuroi tama	expr	black sphere(GANTZ anime and manga)
270	676	和	wa	n	sum/harmony; peace/Japan; Japanese-style
271	677	沈黙	chinmoku	n, suru v, no-adj	silence; being silent; quiet; hush
272	679	ない部分	nai bubun	expr	part, where something is abcent
273	680	くわた	kuwata	proper n, person name	Kuwata(Kuwata Masumi, baseball player?)
274	681	合いの手	ainote	n	interlude/interjection; interruption
275	682	生花		n	flower arrangement
276	684	ポーズ	poozu	n	pose
277	685	合間	aima	n, no-adj	interval; break; pause; spare moment
278	686	あいだの時間	aidano jikan	expr	time between something, time during something
279	687	思い	omoi	n	thought
280	688	人の会話	hito no kaiwa	expr	conversation between people
281	689	茶道	sado	n	tea ceremony; Way of Tea
282	690	潤い	uruoi	n	moisture; damp; wetness/financial leeway
283	691	セリフ	serifu	n	speech; words; one's lines; remarks
284	693	話術	wajutsu	n, no-adj	art of conversation

N	ID	Lemma	Romanization	POS	Translation
285	694	絶妙	zetsumyoo	na-adj, n, no-adj	exquisite; superb; perfect; miraculous
286	1213	白いキャンバス	shiroi kyanbasu	expr	white canvas
287	1214	無限大	mugendai	na-adj, n	infinity
288	1215	美術館	bijyutsukan	n	art gallery; art museum
289	1216	定義	teigi	n, suru v	definition
290	1217	異次元	ijigen	n	different dimension
291	1218	キーボード	kiiboodo	n	keyboard
292	1219	物置き	monooki	n	storage room; storeroom; lumber room
293	1220	収納	shuunoo	n, suru v	storage; putting or stowing away
294	1221	余る	amaru	v	to remain; to be left over; to be in excess; to be too many
295	1222	空き部屋	akibeya	n	available room (hotel); vacancy; room to let
296	1223	配慮	hairyo	n, suru v	consideration; concern; forethought
297	1224	優しさ	yasashisa	n	kindness
298	1225	余市	yoichi	proper n, place name	Yoichi (Hokkaido)
299	1226	見込み	mikomi	n	expectation; anticipation; forecast; estimate
300	1227	離れる	hanareru	v	to be separated; to be apart; to be distant
301	1228	運動会	undookai	n	athletic meet; sports day

N	ID	Lemma	Romanization	POS	Translation
302	1229	道路	dooro	n	road; highway
303	1230	アメーバ	ameeba	n, no-adj	amoeba
304	1231	ネットワーク	nettowaaku	n	network
305	1232	平原	heigen	n	plain; moor; prairie
306	1233	原っぱ	harappa	n	open field; empty lot; plain
307	1234	スカート	sukaato	n	skirt
308	1235	円形	enkei	n	round shape; circle
309	1236	親子	oyako	n, no-adj	parent and child
310	1237	身長	shinchoo	n	height (of body); stature
311	1238	目盛り	memori	n	scale; gradations
312	1239	飲み会	nomikai	n	drinking party; get-together
313	1240	面積	menseki	n	square measure; size (e.g. of land); area; surface
314	1241	テニスコート	tenisukooto	n	tennis court
315	1242	わきまえて	wakimaete	v, expr	to know (right from wrong); to discern/ as part of expr ba wo wakimaete "behave yourself"
316	1243	牧場	bokujoo	n	farm (livestock); ranch
317	1244	スピーチ	supiichi	n	speech
318	1245	発表	happyoo	n, suru v	announcement; publication; presenting

N	ID	Lemma	Romanization	POS	Translation
319	1246	スタジアム	sutajiumu	n	stadium
320	1247	埋める	umeru	v	to bury (e.g. in the ground)/to plug (a gap); to stop (a gap); to bridge (a difference, a gap); to fill (a seat, a vacant position); to fill out
321	1248	かくれや	kakureya	n	hiding place; refuge
322	1249	少し	sukoshi	Adv, n	small quantity; little; few; something
323	1250	隙だらけ	suki darake	expr	all in gaps/cracks
324	1251	つく	tsuku	v	to arrive at; to reach/to be attached; to be connected with; to adhere; to stick; to cling
325	1252	甘い	amai	i-adj	sweet-tasting; sweet; sugary; sugared/naive; overly optimistic; soft on; generous; indulgent; easy-going; lenient
326	1253	チャンバラ	chanbara	n	sword fight; sword play/Samurai cinema
327	1298	物や人をつなぐ空間	mono ya hito wo tsunagu kuukan	expr	space connecting people and things
328	1299	等間隔	tookankaku	na-adj	at regular intervals; evenly spaced
329	1300	抜けている	nuketeiru	v, continious	to come out; to fall out; to be omitted; to be missing; to escape; to come loose
330	1301	空気を読む	kuuki wo yomu	expr	to read the situation; to sense the mood

N	ID	Lemma	Romanization	POS	Translation
331	1302	能	noo	n	talent; gift; function/noh (theatre)
332	1303	呼吸	kokyuu	n, suru v	breathing; respiration
333	1304	コント	konto	n	tale; short story
334	1305	２つのもの	futatsu no mono	coll	two things
335	1306	使い方	tsukaikata	n	way to use something; treatment; management (of help)
336	1408	扉	tobira	n	door; gate; opening
337	1411	車	kuruma	n	car; automobile; vehicle
338	1414	橋	hashi	n	bridge
339	1415	人々	hitobito	n	each person; people; men and women; everybody
340	1421	ある	aru	v	to be; to have
341	1423	ゆだん	yudan	n, suru v	negligence; carelessness; inattention; unpreparedness

Table 1.35 LEISURE/FREE TIME

N	ID	Lemma	Romanization	POS	Translation
1	46	休日	kyuujitsu	n	holiday; day off
2	47	休み	yasumi	n	rest; recess; respite
3	48	ひま	hima	na-adj, n	spare time; free time; leisure
4	79	自由	jiyuu	na-adj, n	freedom; liberty;

N	ID	Lemma	Romanization	POS	Translation
5	121	ゆとり	yutori	n	elbowroom; leeway; room; reserve; margin; allowance; latitude; time
6	162	帰省	kisei	n, suru v	homecoming; returning home
7	261	遊び	asobi	n	playing
8	328	ゆったり	yuttari	Adv, suru v	comfortable; easy; calm; relaxed
9	339	好き	suki	na-adj,n	liking; fondness; love
10	352	外出	gaishutsu	n, suru v	outing; trip; going out
11	418	のんびり	nombiri	Adv, suru v	carefree; at leisure
12	506	楽しい	tanoshii	i-adj	enjoyable; fun
13	653	休暇	kyuuka	n	holiday; day off; furlough; absence (from work)
14	678	休み時間	yasumi jikan	coll	recess; break time; break between classes; free period; recess time; recreation hour; time for recess
15	692	とる	toru	v	to take; to pick up; to harvest; to earn; to win; to choose

N	ID	Lemma	Romanization	POS	Translation
16	826	楽しみ	tanoshimi	na-adj, n	enjoyment; pleasure; diversion; amusement; hobby
17	892	勉強	benkyoo	n, suru v	study
18	958	旅行	ryokoo	n, suru v, no-adj	travel; trip
19	965	夏休み	natsuyasumi	n	summer vacation; summer holiday
20	1017	日曜日	nichiyoobi	n	Sunday
21	1065	休息	kyuusoku	n, suru v, no-adj	rest; relief; relaxation
22	1070	寝る	neru	v	to sleep (lying down)
23	1102	昼寝	hirune	n, suru v	nap (afternoon); siesta
24	1103	穏やか	odayaka	na-adj, n	calm; gentle; quiet
25	1105	オフ	ofu	n	day off
26	1106	だらだら	daradara	Adv, suru v	leisurely; idly; slowly; slovenly
27	1107	バイト	baito	n, suru v	work (esp. part time or casual)
28	1108	二日	futsuka	n	two days
29	1109	自分の時間	jibun no jikan	coll	one's own time
30	1110	木影	mokukage	n	tree shadow
31	1111	紅茶	koocha	n	black tea
32	1112	幸せ	shiawase	na-adj, n	happiness; good fortune; luck; blessing

N	ID	Lemma	Romanization	POS	Translation
33	1113	ローマの休日	rooma no kyuujitsu	coll	Roman Holiday(movie title)
34	1114	遊ぶ	asobu	v	to play; to enjoy oneself; to have a good time
35	1115	解放感	kaihookan	n	sense of liberation; feeling of freedom
36	1116	娯楽	goraku	n, suru v, no-adj	pleasure; amusement
37	1117	映画	eiga	n	movie; film
38	1118	遠出	toode	n, suru v	going afar
39	1119	ショッピング	shoppingu	n, suru v	shopping
40	1120	善福寺川	zenpukujigawa	proper n	Zenpukuji river
41	1121	休養	kyuuyoo	n, suru v, no-adj	rest; break; recreation
42	1122	嬉しい	ureshii	i-adj	happy; glad; pleasant
43	1123	背伸び	senobi	n, suru v	standing on tiptoe and stretching one's back to make oneself taller; stretching oneself
44	1124	ゆっくり	yukkuri	Adv, suru v	slowly; at ease; restful
45	1125	買物	kaimono	n	shopping; purchased goods
46	1126	休む	yasumu	v	to be absent; to take a day off

N	ID	Lemma	Romanization	POS	Translation
47	1127	ゴールデンウイーク	goorudenwiiku	n	. Golden Week (early-May holiday season in Japan)
48	1128	土日	donichi	n	weekend; Saturday and Sunday
49	1129	気が抜ける	ki ga nuku	phrase, expr	to feel exhausted (after having been stressed); to feel spent; to feel relieved (from stress)
50	1130	土曜日	doyoobi	n	Saturday
51	1131	祝日	shukujitsu	n	national holiday; public holiday
52	1132	余暇	yoka	n	leisure; leisure time; spare time
53	1133	何もない日	nanimo nai hi	coll	day when you have nothing(to do, to work at etc.)
54	1134	だらけ	darake	n-suffux	implying (negatively) that something is full of (e.g. mistakes)
55	1135	ストレス解消	sutoresu kaishoo	n	stress reduction
56	1136	寝坊	neboo	n, suru v	sleeping in late; oversleeping

N	ID	Lemma	Romanization	POS	Translation
57	1137	気分転換	kibuntenkan	n	change of pace; change of mood; (mental) break (e.g. going for a walk); refreshment
58	1138	発想の可能性	hassoo no kanoosei	coll	possibility fpr ideas?
59	1139	コーヒーブレイク	koohiibureeku	n	coffee break
60	1140	レジャー	rejyaa	n	leisure
61	1141	運動	undoo	n, suru v	exercise; physical training; work-out
62	1142	飲酒	inshu	n	drinking alcohol (sake)
63	1143	欠席	kesseki	n, suru v,	absence; non-attendance
64	1144	空き時間	akijikan	n	free time
65	1145	フリー	furii	na-adj	free (of restraint, controls, etc.)
66	1146	楽	raku	na-adj, n	comfort; ease
67	1147	ひまつぶし	himatsubushi	n, suru v	waste of time; killing time
68	1148	最高	saikoo	na-adj, n	highest; supreme; the most
69	1149	やることがない	yaru koto ga nai	phrase	there is nothing to do
70	1150	つまらない	tsumaranai	i-adj	dull; uninteresting; boring; tedious
71	1151	ゲーム	geemu	n	game

N	ID	Lemma	Romanization	POS	Translation
72	1152	退屈	taikutsu	na-adj, n, suru v	tedium; boredom
73	1153	ひまな時	himana toki	coll	leisure time; idle moment
74	1154	あくび	akubi	n	yawn; yawning
75	1155	考える時間	kangaeru jikan	coll	time for thinking
76	1156	カフェ	kafe	n	cafe; coffeehouse
77	1157	孤独	kodoku	na-adj, n, no-adj	isolation; loneliness; solitude
78	1158	何もしない	nanimo shinai	pharse	do not do anything
79	1159	悪	aku	n	evil; wickedness
80	1160	焦り	aseri	n	impatience
81	1161	もて余す	moteamasu	v	to be too much for one; to find unmanageable; to be beyond one's control; to not know what to do with
82	1196	テニス	tenisu	n	tennis
83	1377	ごろ寝	gorone	n, suru v	dozing; napping (e.g. on the floor in one's clothes, in the train)
84	1378	自己啓発	jikokeihatsu	n, suru v, no-adj	self-development; self-enlightenment
85	1379	週末	shuumatsu	n	weekend
86	1380	待望	taiboo	n, suru v	expectant waiting
87	1381	リフレッシュ	rifuresshu	n, suru v	refresh

N	ID	Lemma	Romanization	POS	Translation
88	1382	つぶす	tsubusu	v	to kill (time)
89	1383	もったいない	mottainai	i-adj	wasteful
90	1384	ひよこ	hiyoko	n	young bird; chick
91	1385	自由時間	jiyuujikan	n	free time
92	1405	ゆるり	yururi	Adv	unhurriedly; leisurely; slowly; relaxedly; taking one's time
93	1422	ない	nai	i-adj	nonexistent; not being (there)

Table 1.36 SEASONAL TIME

N	ID	Lemma	Romanization	POS	Translation
1	37	時期	jiki	n	time; season; period; phase; stage
2	38	季節	kisetsu	n, no-adj	season
3	39	夏	natsu	n	summer
4	40	秋	aki	n	autumn; fall
5	49	瞬間	shunkan	n	moment; second; instant
6	50	タイミング	taimingu	n	timing
7	86	空	sora/kara	n	sky; the air/emptiness; vacuum; blank
8	112	判断	handan	n, suru v	judgement; decision;
9	190	ブーム	buumu	n	boom
10	221	点	ten	n	spot; point

N	ID	Lemma	Romanization	POS	Translation
11	234	今	ima	n	now; the present time; just now; soon; immediately; (one) more
12	243	誕生	tanzyoo	n, suru v	birth; creation; formation
13	278	試合	shiai	n, suru v	match; game; bout; contest
14	314	一瞬	ishhun	n	moment; instant
15	471	茶色	chairo	n, no-adj	light brown; tawny
16	543	暑い	atsui	i-adj	hot (weather, etc.); warm
17	579	光	hikari	n	light
18	667	大事	daiji	na-adj,n	important; valuable; serious matter
19	674	悪い	warui	i-adj	bad; poor; inferior
20	675	人それぞれ	hitosorezore	expr	to each his own; people differ; different people (have different likes)
21	683	良い	yoi	i-adj	good; excellent; fine; nice; pleasant; agreeable
22	730	その時	sonotoki	expr	at that time; at that moment; then; on that occasion
23	855	海	umi	n	sea; ocean; waters
24	912	祭り	matsuri	n	festival; feast
25	914	めぐる	meguru	v	to go around; to return
26	918	春	haru	n	spring; springtime

N	ID	Lemma	Romanization	POS	Translation
27	919	辞める	yameru	v	to resign; to retire; to quit; to leave (one's job, etc.)
28	920	買い替え	kaikae	n	buying a replacement; replacing by buying something new
29	921	気候	kikoo	n	climate
30	922	宿題	shukudai	n	homework
31	923	春学期	haru gakki	expr	spring term; spring semester
32	925	ある時	aru toki	expr	once (e.g. "once, when I was studying .."); on one occasion; at one point
33	926	賞味期限	shoomikigen	n	best before date (food); sell-by date
34	927	旬	shun	n	season (e.g. fruit, fish)
35	928	四季	shiki	n	four seasons
36	929	もうすぐ	moo sugu	expr	very soon
37	930	来る	kuru	v	to come (spatially or temporally); to approach; to arrive
38	931	ある時間の区分	aru jikan no kubun	expr	some temporal division/some period of time
39	932	期間	kikan	n	period; term; interval
40	933	違う	chigau	v	to differ (from); to vary
41	934	一定期間	itteikikan	n	fixed interval; fixed period

N	ID	Lemma	Romanization	POS	Translation
42	935	期限	kigen	n	term; period; time frame
43	936	good タイミング	good taimingu	expr	good timing
44	937	期が熟す	ki ga jyukusu	expr	to be ready for action; to be the right time (to act)
45	938	オンオフシーズン	onofushiizun	expr	on off season
46	939	春夏秋冬	shunkashyuutoo	n	spring, summer, autumn (fall) and winter; the four seasons
47	940	到来	toorai	n, suru v	arrival; coming (e.g. something awaited); advent
48	941	来た	kita	v, past	came (spatially or temporally); approached; arrived
49	943	決め事	kimegoto	n	arrangement ; decision
50	944	桜	sakura	n	cherry tree; cherry blossom
51	945	何かをやるのにふさわしい時期	nanika wo yaru no ni fusawashii jiki	phrase	time appropriate to do something
52	946	逃さない	nogasanai	v, neg	not miss; not lose; not give away
53	947	頃合い	koroai	n	suitable time; good time

N	ID	Lemma	Romanization	POS	Translation
54	948	バブル	baburu	n	bubble; bubble economy
55	949	収穫時期	shuukaku jiki	expr	harvest time
56	950	思春期	shishyunki	n	puberty
57	951	待つ	matsu	v	to wait
58	952	ホタル	hotaru	n	firefly (Luciola cruciata); lightning bug; glowworm
59	953	冬	fuyu	n	winter
60	954	４つ	yottsu	Numeric	four
61	955	おいしい	oishii	i-adj	delicious; tasty; sweet
62	956	変り目	kawarime	n	turning point; change; transition; new program; new programme
63	957	移ろい	utsuroi	n	change; changing; vicissitudes
64	959	行事	gyooji	n	event; function
65	960	うつりかわり	utsurikawari	n	change (e.g. season)
66	961	繰り返し	kurikaeshi	n, suru v, no-adj , na-adj	repetition; repeat; reiteration; iteration; refrain; cycle
67	962	７月から９月頃	shichigatsu kara kugatsu goro	expr	approximately from July till September
68	963	水	mizu	n	water (esp. cool, fresh water, e.g. drinking water)

N	ID	Lemma	Romanization	POS	Translation
69	964	入道雲	nyuudoogumo	n	cumulonimbus; gigantic columns of clouds (in summer); thunderhead
70	966	ひまわり	himawari	n	sunflower (Helianthus annuus)
71	967	風鈴	fuurin	n	wind chime; wind bell
72	968	スイカ	suika	n	watermelon (Citrullus lanatus)
73	969	気持ちよい	kimochiyoi	expr, i-adj	good feeling; feeling good
74	970	短髪	tanpatsu	n	short hair
75	971	暑さ	atsusa	n	heat (of the weather); hotness
76	972	汗	ase	n	sweat; perspiration
77	973	青空	aozora	n	blue sky
78	974	きゅうり	kyuuri	n	cucumber (Cucumis sativus)
79	975	セミの声	semi no koe	expr	sound of cicadas
80	976	暑	sho	n	heat
81	977	海水浴	kaisuiyoku	n	swimming in the ocean; sea bathing; seawater bath; going for a dip in the ocean
82	978	勝負	shoobu	n, suru v	victory or defeat; match; contest; game; bout
83	979	落ち葉	ochiba	n, suru v	fallen leaves; leaf litter

N	ID	Lemma	Romanization	POS	Translation
84	980	カキ	kaki	n	kaki; Japanese persimmon (Diospyros kaki)
85	981	栗	kuri	n	Japanese chestnut (Castanea crenata)
86	982	すごしやすい	sugoshiyasui	expr	easy to spend, comfortable
87	983	梨	nashi	n	nashi (Pyrus pyrifolia, esp. var. culta); Japanese pear
88	984	さんま	sanma	n	Pacific saury (Cololabis saira); mackerel pike
89	985	紅葉	kooyoo	n, suru v	autumn colours; fall colors; leaves changing color (colour)
90	987	黄金色	koganeiro	n, no-adj	golden; gold-colored; gold-coloured; honey-colour
91	988	もち	mochi	n	sticky rice cake; mochi
92	989	きのこ	kinoko	n	mushroom
93	990	すずしい	suzushii	i-adj	cool; refreshing
94	991	さつまいも	satsumaimo	n	sweet potato (Ipomoea batatas)
95	992	もみじ	momiji	n	(Japanese) maple (Acer japonicum)
96	993	赤	aka	n	red; crimson; scarlet
97	994	秋好中宮	akinokonomu chuuguu	proper n	name of a character of Genji Monogatari

N	ID	Lemma	Romanization	POS	Translation
98	995	寒くなる	samukunaru	v, comp	gets cold
99	996	夕焼け	yuuyake	n	sunset
100	997	枯葉	kareha	n	dead leaf; dry leaves
101	998	すすき	susuki	n	Japanese pampas grass (Miscanthus sinensis)
102	999	食欲の秋	shokuyoku no aki	n, comp	autumn appetite
103	1000	コスモス	kosumosu	n, proper n	Cosmos(plant)
104	1001	稲刈り	inekari	n	rice harvesting
105	1002	りんご	ringo	n	apple (fruit)
106	1003	巨人が優勝	kyojin ga yuushoo	phrase proper n, suru v	Tokyo Giants(baseball team) wins
107	1004	実り	minori	n	ripening (of a crop)
108	1005	わびしさ	wabishisa	n	lonelyness
109	1008	稲穂	inaho	n	ear (head) of rice
110	1009	夕暮れ	yuugure	n	evening; dusk; twilight
111	1029	日差し	hizashi	n	sunlight; rays of the sun
112	1162	はねる	haneru	v	to jump; to leap; to prance; to spring up; to bound; to hop/to break up; to close; to come to an end
113	1163	写真	shashin	n	photograph; photo; picture; snapshot; snap

N	ID	Lemma	Romanization	POS	Translation
114	1164	恋	koi	n	(romantic) love
115	1165	すぐ	sugu	na-adj, Adv, n	immediately; at once; directly
116	1166	シャッター	shattaa	n	camera shutter
117	1167	気がつかない	ki ga tsukanai	expr, v, neg	to not notice; tonot become aware
118	1168	スピード	supiido	n	speed
119	1169	びっくり	bikkuri	suru v, Adv	to be surprised; to be amazed; to be frightened; to be astonished; to get startled; to jump
120	1170	速い	hayai		fast; quick; hasty; brisk
121	1171	秒速	byoosoku	n	per second
122	1172	ストップウォッチ	sutoppuwocchi	n	stopwatch
123	1173	消える	kieru	v	to go out; to vanish; to disappear
124	1174	風速	fuusoku	n	wind speed
125	1176	頭の回転	atama no kaiten	expr,n	thoughts; thinking
126	1177	瞬発	shunpatsu	n	instantaneous
127	1178	ショック	shokku	na-adj, n	shock
128	1179	まばたき	mabataki	n, suru v	blink (of eyes); wink
129	1180	秒	byoo	n	second (60th min)

N	ID	Lemma	Romanization	POS	Translation
130	1181	アッという間	a ttoiu ma	expr, n	a blink of time; the time it takes to say "Ah!"
131	1182	良い瞬間	yoi shunkan	expr, n	good moment
132	1184	ひととき	hitotoki	n	moment; a (short) time; a while
133	1185	ひらめき	hirameki	n	flair; flash
134	1186	持続	jizoku	n, suru v	continuation; persisting; lasting; sustaining; enduring
135	1187	合わない	awanai	v, neg	to not fit; to not match; to not suit
136	1188	合わせる	awaseru	v	to match (rhythm, speed, etc.)
137	1189	その場の雰囲気	sono ba no funiki	expr, n	the atmosphere of the moment/place
138	1190	外す	hazusu	v	to leave; to step out; to slip away
139	1191	ブラックビスケット	burakkubisuketto	proper n	BLACK BISCUITS
140	1192	重要	jyuuyoo	na-adj, n	important; momentous; essential; principal; major
141	1193	つまづく	tsumazuku	v	to stumble; to trip
142	1194	結婚	kekkon	n, no-adj , suru v	marriage

N	ID	Lemma	Romanization	POS	Translation
143	1195	丁度いい	choodo ii	expr	just right (time, size, length, etc.)
144	1196	テニス	tenisu	n	tennis
145	1197	突然のこと	totsuzen no koto	expr	unexpected event
146	1198	合う	au	v	to fit; to match; to suit; to agree with; to be correct
147	1199	なんばら	nambara	proper n	Kiyotaka Nanbara(?), japanese comedian
148	1200	チャンス	chansu	n	chance; opportunity
149	1201	分岐点	bunkiten	n	junction; crossroads; division point; parting of ways
150	1202	坂本丸	sakamoto kyuu	proper n	Kyu Sakamoto, singer
151	1203	女神	megami	n	goddess; female deity
152	1204	状況	jyookyoo	n, no-adj	state of affairs (around you); situation; circumstances
153	1205	幸運	kooun	na-adj, n	good luck; fortune
154	1206	告白	kokuhaku	n, suru v, no-adj	confession; acknowledgement; acknowledgment
155	1207	運	un	n	fortune; luck
156	1208	好機	kooki	n	good opportunity; chance
157	1209	バッドタイミング	baddo taimingu	n	bad timing

N	ID	Lemma	Romanization	POS	Translation
158	1210	つごう	tsugoo	Adv, n	circumstances; condition; convenience
159	1211	失う	ushinau	v	to lose; to part with
160	1212	潮時	shodoki	n	tidal hour; right time; favourable opportunity (favorable)
161	1277	歌	uta	n	song
162	1352	適齢期	tekireiki	n	suitable age (esp. for marriage); marriageable age
163	1353	何事も	nanigotomo	n	anything; whatever
164	1354	ずれる	zureru	v	to slide; to slip off; to get dislocated; to be out of alignment; to get dislodged; to deviate; to shift (position); to be out of sync.; to be slightly off; to be off-point
165	1355	繁忙期	hanbooki	n	busy period; busy season
166	1356	葉っぱ	happa	n	leaf
167	1357	日本	nihon	proper n	Japan
168	1358	季節はずれ	kisetsuhazure	n, na-adj, no-adj	unseasonable; out of season
169	1359	猛暑	moosho	n, no-adj	heat wave; fierce heat
170	1360	プール	puuru	n	(swimming) pool

N	ID	Lemma	Romanization	POS	Translation
171	1361	浴衣	yukata	n	yukata (light cotton kimono worn in the summer or used as a bathrobe)
172	1362	セミ	semi	n	cicada; locust
173	1363	なす	nasu	n	eggplant (Solanum melongena); aubergine
174	1364	食	shoku	n	meal; (one's) diet; food; foodstuff; foodstuffs
175	1386	技	waza	n	technique; art; skill
176	1387	1秒	ichi byoo	n	one second
177	1388	とうめい	toomei	na-adj, no-adj , n	transparency; cleanness
178	1389	儚い	hakanai	i-adj	fleeting; transient; short-lived; momentary; ephemeral; fickle; vain
179	1390	見計う	miharau	v	to choose when to do something; to estimate (the time for something)
180	1391	ライフイベント	raifu ibento	expr	life event
181	1392	戦略	senryaku	n, no-adj	strategy; tactics
182	1393	自転車	jitensha	n	bicycle
183	1394	シュート	shooto	n, suru v	shoot

N	ID	Lemma	Romanization	POS	Translation
184	1402	直感	chokkan	n, suru v, no-adj	intuition; instinct; insight; hunch; immediacy
185	1403	区別	kubetsu	n, suru v	distinction; differentiation; classification
186	1404	解放	kaihoo	n, suru v	release; unleashing; liberation; emancipation; setting free
187	1406	ワクワク	wakuwaku	Adv, n, suru v	tremble; get nervous; excitedly; thrilled
188	1407	笑顔	egao	n, suru v	smiling face; smile
189	1412	最盛期	saiseiki	n	golden age; best time for
190	1413	衣替え	koromogae	n, suru v	seasonal change of clothing; changing (one's) dress for the season
191	1420	フラッシュ	furasshu	n	flash

Table 1.37 ROOM/LIFE SPACE

N	ID	Lemma	Romanization	POS	Translation
1	20	部屋	heya	n	room; chamber
2	21	居間	ima	n	living room
3	22	リビング	ribingu	n	living room
4	52	家族	kazoku	n	family
5	101	イス	isu	n	chair; stool

N	ID	Lemma	Romanization	POS	Translation
6	360	くつろぐ	kutsurogu	v	to relax; to feel at home
7	426	寛ぎ	kutsurogi	n, no-adj	ease; relaxation; comfort; unwinding
8	441	だんらん	danran	n, suru v	sitting together in a circle; happy circle; harmony
9	495	こたつ	kotatsu	n	kotatsu; table over an electric heater (orig. a charcoal brazier in a floor well) with a hanging quilt that retains heat
10	500	ソファー	sofaa	n	sofa; couch
11	531	かわいい	kawaii	i-adj	cute; adorable; charming; lovely; pretty
12	532	テレビ	terebi	n	television; TV
13	534	一人	hitori	n	one person/alone; unmarried; solitary
14	535	自分の空間	jibun no kuukan	coll	one's own space
15	536	個性	kosei	n	individuality; personality; idiosyncrasy
16	538	カーテン	kaaten	n	curtain; curtains
17	539	自分のスペース	jibun no supeesu	coll	one's own space
18	540	床	yuka	n	floor

N	ID	Lemma	Romanization	POS	Translation
19	541	汚い	kitanai	i-adj	dirty; filthy; foul; unclean
20	542	プライベート	puraibeeto	na-adj/n	private/privacy
21	544	四角	shikaku	na-adj, n, no-adj	square
22	547	会議室	kaigishitsu	n	conference room
23	548	寝室	shinshitsu	n	bedroom
24	549	掃除	sooji	n, suru v	cleaning; sweeping; dusting; scrubbing
25	550	１ルームマンション	wanruumumanshon	n	studio apartment
26	551	いごこち	igokochi	n	comfort
27	552	机	tsukue	n	机
28	554	整理	seiri	n, suru v	sorting; arrangement; organization; putting in order; adjustment; regulation
29	555	テーブル	teeburu	n, no-adj	table
30	556	ホテル	hoteru	n	hotel
31	557	貸す	kasu	v	to lend; to loan
32	558	畳	tatami	n	tatami mat; Japanese straw floor coverings
33	559	家具	kagu	n	furniture
34	561	集まり	atsumari	n	gathering; meeting; assembly;

N	ID	Lemma	Romanization	POS	Translation
					collection; attendance
35	562	茶	cha	n	tea
36	563	座る	suwaru	v	to sit; to squat
37	564	仏像	butsuzoo	n	statue of Buddha; image of Buddha; Buddhist statue; Buddhist image
38	565	コーヒー	koohii	n	coffee
39	567	茶の間	chanoma	n	living room (Japanese-style)
40	568	食卓	shokutaku	n, no-adj	dining table
41	569	昔の家	mukashino ie	coll	old (style) house
42	570	台所	daidokoro	n, no-adj	kitchen
43	573	触れ合い	fureai	n	contact; connectedness; rapport;
44	574	板の間	itanoma	n	(room with a) wooden floor
45	575	フローリング	furooringu	n	wooden flooring
46	577	うるさい	urusai	i-adj	noisy; loud
47	578	インテリア	interia	n	interior (of building, room, vehicle, etc.)
48	580	キッチン	kicchin	n	kitchen
49	581	改築	kaichiku	n, suru v	structural alteration of

N	ID	Lemma	Romanization	POS	Translation
					building; reconstruction
50	582	ルーム	ruumu	n	room
51	584	飾りつけ	kazaritsuke	n	decoration; arrangement
52	1064	眠る	nemuru	v	to sleep (not necessarily lying down)
53	1279	城	shiro	n	castle
54	1280	整理整頓	seiriseiton	n, suru v	keeping things tidy and in order
55	1281	へや着	heyagi	n	dressing gown; housedress; house coat
56	1282	リビングボード	ribingu boodo	n	living room cupboard; cabinet?
57	1283	共同	kyoodoo	n, suru v, no-adj	doing together (as equals); sharing; common (land, etc.)
58	1284	お茶	ocha	n	tea (usu. green)
59	1285	リビングルーム	ribinguruumu	n	living room
60	1286	ダイニング	dainingu	n	dining
61	1287	クッション	kusshon	n	cushion
62	1288	カーペット	kaapetto	n	carpet
63	1397	集い	tsudoi	n	meeting; get-together (e.g. among friends)

Table 1.38 ABSTRACT TIME

N	ID	Lemma	Romanization	POS	Translation
1	28	時間	jikan	n	Time
2	29	時	toki	n	Time
3	30	年代	nendai	n	Age; era; period
4	31	年齢	nenrei	n	Age; years
5	32	過去	kako	n	Past
6	33	未来	mirai	n	Future
7	34	昔	mukashi	no-adj , Adv n	Olden days; former
8	35	長年	naganen	Adv n	Long time
9	36	時代	jidai	n	Period; epoch; era; age
10	41	日	hi/nichi	n	Day/sun
11	42	日付	hizuke	n	Date, calendar date
12	45	昼間	hiruma	n	Daytime; during the day
13	122	努力	doryoku	n	Great effort; exertion
14	134	長い	nagai	i-adj	Long
15	150	夫婦	fuufu	n	Married couple; spouses
16	170	仲間	nakama	n	Company; fellow
17	184	仕事	shigoto	n	Work
18	230	学校	gakkoo	n	School
19	237	約束	yakusoku	n	Promise; agreement; appointment; engagement; date
20	255	会う	au	v	to meet; to encounter;

N	ID	Lemma	Romanization	POS	Translation
21	335	太陽	taiyoo	n	Sun; solar
22	445	古い	furui	i-adj	Old (not person); aged; ancient
23	499	あたたかい	atatakai	i-adj	Warm; mild; genial
24	506	楽しい	tanoshii	i-adj	Enjoyable; fun
25	537	時計	tokei	n	Watch; clock; timepiece
26	553	子供	kodomo	n	Child; children
27	571	昭和	shuowa	Proper n	Showa era (1926.12.25-1989.1.7)
28	576	明るい	akarui	i-adj	Bright; colourful
29	636	大切	taisetsu	na-adj,n	Important; necessary; indispensable
30	662	人間	ningen	n	Human being; person; man; mankind; humankind
31	665	男女	danzyo	n	Men and women
32	695	流れ	nagare	n	Stream; current; flow
33	696	流れる	nagareru	v	to stream; to flow (liquid, time, etc.); to run (ink)
34	697	守る	mamoru	v	to protect; to guard; to defend
35	698	２４時間	nizyuuyojikan	n	Twenty-four hours
36	699	かぎられている	kagirareteiru	v, IPFT	restricted
37	700	午後	gogo	Adv n	Afternoon; p.m.

N	ID	Lemma	Romanization	POS	Translation
38	701	戻る	modoru	v	to turn back (e.g. half-way)
39	702	タイムマシン	taimumashin	n	time machine
40	703	過ぎる	sugiru	v	to pass (i.e. of time); to elapse
41	704	せまる	semaru	v	to approach; to draw near; to be imminent
42	705	すみやか	sumiyaka	na-adj	Speedy; prompt; smooth
43	706	人生	jinsei	n	(human) life
44	707	刻む	kizamu	v	to tick away (time); to beat out (e.g. rhythm); to record the passing moments
45	709	厳守	genshu	n	Strict observance; adherence; scrupulous compliance
46	710	コントロール	konturooru	n, suru v	control
47	711	時刻	jikoku	Adv n	Instant; time; moment
48	712	過ぎ去ってしまう	sugisatteshimau	v teshimau	to pass; to pass away
49	713	有効	yuukoo	na-adj, n	Availability; effectiveness
50	714	貴重	kichoo	na-adj, n	Precious; valuable
51	715	すべてのエネルギー	subeteno enerugii	coll	Energy of everything

N	ID	Lemma	Romanization	POS	Translation
52	716	やりくり	yarikuri	n, suru v	making do; getting by (somehow); managing
53	717	経過	keika	n, suru v	passage; expiration; progress; transition
54	718	その瞬間	sono shunkan	coll	that moment
55	719	止まらない	tomaranai	v, neg	not stopping
56	720	戻らない	modoranai	v, neg	not returning
57	721	とまってほしい	tomattehoshii	v, desire	want to stop
58	722	平等	byoodoo	na-adj, no-adj , n	equality; impartiality; evenness
59	723	分	fun; bun	n	part; minute
60	724	もっと長く	motto nagaku	coll	longer
61	725	迅速	jinsoku	na-adj, n	quick; fast; rapid; swift; prompt; streamlined; expedited; expeditious
62	726	現在	genzai	n	now; current; present
63	727	金	kin; kane	n	gold; money
64	728	永遠	eien	na-adj, no-adj, n	eternity; perpetuity; immortality; permanence
65	729	流れていくもの	nagareteikumono	coll	thing that flows away

N	ID	Lemma	Romanization	POS	Translation
66	731	物理の源	butsurino minamoto	coll	source of laws of nature
67	732	刻み	kizami	n	notch; nick
68	733	とし	toshi	n	year; age; years
69	734	若者	wakamono	n, no-adj	young man; young woman; young people; youth; youngsters
70	735	2015	nisenjyuugoo	numeral	2015
71	736	年	nen/toshi	n	year; age
72	737	１０代	jyuudai	n	he teens (10-19); teenage
73	738	７０年代	nanajyuunendai	n	the seventies
74	739	別	betsu	na-adj, no-adj, n	distinction; difference; different; another; particular; separate; extra; exception
75	740	西暦	seireki	n	Western (Gregorian) calendar
76	741	モノクロ	monokuro	n, no-adj	monochrome
77	742	学年	gakunen	n	academic year; school year
78	743	現代	gendai	n, no-adj	nowadays; modern era; modern times; present-day
79	744	若い	wakai	i-adj	young; youthful
80	745	1980	senkyuuhyakuhachijuu	numeral	1980
81	746	ジェネレーシ	jenereeshongyappu	n	generation gap

N	ID	Lemma	Romanization	POS	Translation
		ョンギャップ			
82	747	１９９０年代	senkyuuhyakukyuujiuu nendai	n	the ninties
83	748	歳	sai	suffix	years-old
84	749	１８世紀	jyuuhasseiki	n	18th century
85	750	世代	sedai	n	generation; the world; the age
86	751	ある一定の年齢区分	aru ittei no nenreikubun	coll	some fixed age (division)
87	752	６０年代	rokujyuunendai	n	the sixties
88	753	ギャップ	gyappu	n	gap
89	754	同級生	dookyuusei	n	classmate; classmates
90	755	考え	kangae	n	thinking; thought; view; opinion; concept
91	756	流行	ryuukoo	n, suru v, no-adj	fashion; fad; vogue; craze
92	757	明治	meiji	n	Meiji era (1868.9.8-1912.7.30)
93	758	測定	sokutei	n, suru v	measurement
94	759	団塊	dankai	n	baby boom generation (of 1947-1949)
95	760	同世代	doosedai	n	same generation; one's generation

N	ID	Lemma	Romanization	POS	Translation
96	761	時の流れ	tokinonagare	coll, n	flow of time; flux of time; lapse of time; passage of time; stream of time
97	762	交流	kooryuu	n, suru v	(cultural) exchange; interchange; interaction; (inter-) mingling; (social, etc.) networking; intercourse
98	763	歴史	rekishi	n, no-adj	history
99	764	差別	sabetsu	n, no-adj	discrimination; distinction; differentiation
100	765	ベビーブーム	bebiibuumu	n	baby boom
101	766	歴然性	rekizensei	n	clearness
102	767	世代交替	sedai kootai	coll	change of generations
103	768	年月	toshitsuki	n	months and years
104	769	齢	yowai	n	(one's) age
105	770	19	jyuukyuu	numeral	19
106	771	２０歳	hatachi	n	20 years old
107	772	規則	kisoku	n	rules; regulations; conventions
108	773	才	sai	suffix	years-old
109	774	酒	sake	n	alcohol; sake
110	775	若さ	wakasa	n	youth
111	776	年をとる	toshi wo toru	phrase	to grow old; to age

N	ID	Lemma	Romanization	POS	Translation
112	777	２０歳は特別	hatachi ha tokubetsu	phrase	20 years old is special (time)
113	778	18	jyuuhachi	numeral	18
114	779	重ねる	kasaneru	v	to pile up; to put something on top of another; to stack up
115	780	２３歳	jyuusan sai	n	23 years old
116	781	数える	kazoeru	v	to count; to enumerate
117	782	少年	shoonen	n	boy; juvenile; young boy; youth; lad
118	783	増える	fueru	v	to increase; to multiply
119	784	積み重ね	tsumikasane	n	pile; accumulation
120	785	ナンバー	nambaa	n	number
121	786	年を重ねる	toshi wo kasaneru	phrase	to age; to grow old
122	787	喜び	yorokobi	n	joy; delight; rapture; pleasure; gratification; rejoicing; congratulations; felicitations
123	788	63	rokujyuusan	numeral	63
124	789	条件	jooken	n	condition; term; requirement
125	790	経験	keiken	n, suru v	experience
126	791	高齢	koorei	n, no-adj	advanced (old) age
127	792	大人	otona	n, no-adj	adult

N	ID	Lemma	Romanization	POS	Translation
128	793	老い	oi	n	old age; old person; the old; the aged
129	794	生きた証	ikita akashi	coll	evidence of lived (years)
130	795	年数	nensuu	n	number of years
131	796	若くない	wakaku nai	i-adj, neg	not young
132	797	老人	roojin	n, no-adj	the aged; old person
133	798	加齢	karei	n, suru v	aging; ageing; adding to one's years
134	799	シワ	shiwa	n	wrinkle; crease
135	800	歳月	saigetsu	n	time; years
136	801	生年月日	seinengappi	n	birth date; date of birth; DOB
137	802	老若	roonyaku	n, na-adj	young and old; all ages
138	803	以前	izen	n	ago; since; before; previous
139	804	思い出	omoide	n	memories; recollections; reminiscence
140	805	時をかける少女	toki wo kakeru shoojo	expr, proper n	The Girl Who Leapt Through Time (film title)
141	806	戻れない	modorenai	v, neg	can not come back
142	807	懐かしい	natsukashii	Adj	dear; desired; missed

N	ID	Lemma	Romanization	POS	Translation
143	808	タイムスリップ	taimusurippu	n, suru v	time warp; time travel
144	809	黒歴史	kurorekishi	n	dark history; dark past
145	810	小さいとき	chiisaitoki	coll	as a child; when one was a child
146	811	辛い	tsurai	i-adj	painful; bitter; heart-breaking; difficult (emotionally)
147	812	ドラえもん	doraemon	proper n	Doraemon (manga series)
148	813	さよなら	sayonara	n	good-bye
149	814	故郷	furusato	n	home town; birthplace; native place; one's old home
150	815	日記	nikki	n	diary; journal
151	816	走馬灯	soomatoo	n	revolving lantern
152	817	大阪	oosaka	proper n	Osaka
153	818	これまでの事	kore made no koto	phrase	(times/things) before now
154	819	蹉跌	satetsu	n	failure; stumbling; setback
155	820	今より先	ima yori saki	phrase	after now
156	821	目標	mokuhyoo	n	mark; objective; target
157	822	不視	fushi	na	不可視　fukashi? invisibility
158	823	蛇色	hebiiro	n	snake color

N	ID	Lemma	Romanization	POS	Translation
159	824	将来	shoorai	n	future (usually near); prospects
160	825	科学技術	kagakugijyutsu	n, no-adj	science and technology
161	828	わからない	wakaranai	v, neg	do not understand/ do not know
162	829	希望	kiboo	n, suru v	hope; wish; aspiration
163	830	運命	ummei	n	fate; destiny; lot
164	831	どこでもドア	doko demo doa	coll	doors everywhere
165	832	やってくる	yattekuru	v, coll	to come
166	833	機械	kikai	n	machine; mechanism
167	834	素晴らしい	subarashii	i-adj	wonderful; splendid; magnificent
168	835	私には少ない	watashi niha sukunai	phrase	short/not long for me
169	836	平和	heiwa	na-adj, n	peace; harmony
170	837	想像	soozoo	n, suru v, no-adj	imagination; guess
171	838	子供達	kodomo tachi	n, pl	children, kids
172	839	心配	shimpai	na-adj, n, suru v	worry; concern; anxiety
173	840	死	shi	n	death; decease
174	841	幼い頃	osanai koro	expr	as a child; when one was a child
175	842	駄菓子	dagashi	n	cheap sweets
176	843	昔話	mukashibanashi	n	old tale; folk tale; legend

N	ID	Lemma	Romanization	POS	Translation
177	844	侍	samurai	n	warrior (esp. of military retainers of daimyos in the Edo period); samurai
178	845	ノスタルジー	nosutarujii	n	nostalgia
179	846	桃太郎	momotaroo	proper n	Momotaro (hero from Japanese folklore)
180	847	あるところに	aru tokoro ni	expr	somwhere
181	848	江戸時代	edo jidai	proper n	Edo period (1603-1868 CE)
182	849	物語	monogatari	n, suru v, no-adj	tale; story; legend
183	850	おじいさん	ojiisan	n	grandfather; male senior-citizen; old man
184	851	過ぎたこと	sugita koto	expr	things that passed
185	852	小学生	shoogakusei	n	elementary school student; primary school student; grade school student
186	853	おとぎ話	otogibanashi	n	fairy-tale; nursery-tale
187	854	ふるさとの風景	furusato no fuukei	expr	home town landscape
188	856	青春	seishun	n, no-adj	youth; springtime of life; adolescent
189	857	懐かしさ	natsukashisa	n	nostalgia

N	ID	Lemma	Romanization	POS	Translation
190	858	小さい頃	chiisaikoro	expr	as a child; when one was a child
191	859	野山	noyama	n	hills and fields; hill and dale
192	860	青春時代	seishunjidai	n	one's youth; one's youthful days (years); the flower of one's youth; the springtime of one's life
193	861	幼年時代	yoonenjidai	n	childhood
194	862	戦争	sensoo	n, suru v	war
195	863	話	hanashi	n	talk; speech; chat; story; conversation
196	864	長い時	nagai toki	expr	long time
197	865	ずっと	zutto	Adv	continuously in some state (for a long time, distance); throughout; all along; the whole time; all the way
198	866	長期	chooki	n, no-adj	long-term
199	867	物	mono	n	thing; object; article; stuff; substance
200	868	知識豊富	chishikihoofu	n, na-adj	knowledgeable
201	869	勘	kan	n	perception; intuition; the sixth sense
202	870	長生き	nagaiki	n, suru v	longevity; long life
203	871	生	sei	n	life; living
204	872	長い時間	nagai jikan	expr	long time

N	ID	Lemma	Romanization	POS	Translation
205	873	白ヒゲ	shirohige	n, no-adj	grey moustache; white beard
206	874	極める	kiwameru	v	to carry to extremes; to go to the end of something
207	875	達人	tatsujin	n	master; expert
208	876	しにせ	shinise	n	old shop; shop of long standing
209	877	ラーメン屋	raamenya	n	ramen restaurant; noodle restaurant
210	878	頑張る	gambaru	v	to persevere; to persist; to keep at it; to hang on; to hold out; to do one's best
211	879	職人	shokunin	n, no-adj	worker; mechanic; artisan; craftsman
212	880	お年寄り	otoshiyori	n	old people; the aged
213	881	長い時間の期間	nagai jikan no jiki	expr	long period of time
214	882	老年	roonen	n, no-adj	old age
215	883	付き合い	tsukiai	n	association; socializing; socialising; fellowship
216	884	親友	shinyuu	n	close friend; bosom (old, intimate) friend; buddy; crony; chum
217	885	１０年位	jyuunenkurai	expr	about ten years
218	886	奉公	hookoo	n, suru v	service; apprenticeship; public duty

N	ID	Lemma	Romanization	POS	Translation
219	887	実力	jitsuryoku	n	(real) ability; true strength; merit; efficiency; competency
220	888	勤め	tsutome	n	service; duty; business; responsibility; task
221	889	つとめる	tsutomeru	v	to work (for); to be employed (at); to serve (in)
222	890	年上	toshiue	n, no-adj	older; senior
223	891	の知人	no chijin	expr	friend; acquaintance
224	893	追憶	tsuioku	n, suru v, no-adj	recollection; reminiscence
225	894	友	tomo	n	friend; companion; comrade; pal
226	895	いた	ita	v, past	was/were
227	896	仲	naka	n	relation; relationship
228	897	断続	danzoku	n, suru v	intermittent
229	898	慣れ親しむ	nareshitashimu	v	to become familiar with; to get used to
230	899	江戸	edo	proper n	Edo, Edo period
231	900	室町	muromachi	proper n	Muromachi period (1333-1573 CE)
232	901	平成	heisei	proper n	Heisei era (1989.1.8-)
233	902	ちょんまげ	chommage	n	topknot (hair style)
234	903	色々	iroiro	n, na-adj, no-adj, Adv	various

N	ID	Lemma	Romanization	POS	Translation
235	904	ひとくぎり	hitokugiri	n	end; break
236	905	時代劇	jidaigeki	n	historical play; period drama
237	906	中島みゆきの歌	nakajima miyuki no uta	expr	song of Nakajima Miyuki
238	907	生きざま	ikizama	n	attitude to life; form of existence; way of life
239	908	対応能力	taioo nooryoku	expr	ability to cope(with smth)
240	909	中島みゆき	nakajima miyuki	proper n	Nakajima Miyuki(singer)
241	910	ヒット曲	hitto kyoku	expr	hit song
242	911	戦国	sengoku	n	Warring States period (of Japanese history, approx. 1467-1568 CE)
243	913	追い着けない	oitsukenai	v, neg	can not chatch up with
244	915	まねる	maneru	v	to mimic; to imitate
245	916	特色	tokushoku	n	characteristic; feature; idiosyncrasy; personal colour
246	917	画期	kakki	n	transition from one epoch to another; change of era
247	942	スケジュール	sukejyuuru	n, suru v	schedule

N	ID	Lemma	Romanization	POS	Translation
248	1010	カレンダー	karendaa	n	calendar
249	1012	曜日	yoobi	n	day of the week
250	1014	今日	kyoo	n	today; this day
251	1015	7	shichi/nana	numeric	seven
252	1016	日にち	hinichi	n	the number of days; date
253	1018	一日	uchinichi/tsuitachi	n	one day/first day of the month
254	1022	誕生日	tanjyoobi	n	birthday
255	1033	予定	yotei	n	plans; arrangement; schedule; program; programme; expectation; estimate
256	1042	数字	suuji	n	numeral; figure; digit; numeric character
257	1073	ご飯	gohan	n	cooked rice
258	1095	昼ご飯	hirugohan	n	lunch; midday meal
259	1096	おやつ	oyatsu	n	between-meal snack
260	1097	１２時	jyuuniji	n	12 o'clock
261	1098	日中	nicchuu	n	daytime; during the day
262	1099	活動	katsudoo	n, suru v	action; activity
263	1100	昼ドラ	hirudora	n	soap opera
264	1101	ランチ	ranchi	n, suru v	lunch
265	1102	昼寝	hirune	n, suru v	nap (afternoon); siesta
266	1104	夜間	yakan	n	at night; nighttime

N	ID	Lemma	Romanization	POS	Translation
267	1183	輝き	kagayaki	n	brightness; brilliance; brilliancy; radiance; glitter
268	1307	腕時計	udedokei	n	wristwatch
269	1308	周期	shuuki	n	cycle; period
270	1309	過ぎ行く	sugiyuku	v	to pass; to go past
271	1310	解決	kaiketsu	n, suru v	settlement; solution; resolution
272	1311	格差	kakusa	n	qualitative difference; disparity
273	1312	ジェネレーション	jenereeshon	n	generation
274	1313	幼	ito	n	young child
275	1314	ソビェト期	sobiettoki	n	Soviet times
276	1315	１９６９年	senkyuuhyakurokujyuukyuunen		year 1969
277	1316	宝物	takaramono	n	treasure; treasured item; prized possession
278	1317	詐称	sashoo	n, suru v	misrepresentation; false statement
279	1318	１年にひとつ	ichinen ni hitotsu	expr	once a year
280	1319	制限	seigen	n, suru v	restriction; restraint; limitation; limit
281	1320	アンチエイジング	anchieijingu	n	anti-aging

N	ID	Lemma	Romanization	POS	Translation
282	1321	老化	rooka	n, suru v, no-adj	ageing; aging; senile deterioration
283	1322	バースデーケーキ	baasudeekeeki	n	birthday cake
284	1323	蓄積	chikuseki	n, suru v, no-adj	accumulation; accumulate; store
285	1324	１つずつ	hitotsuzutsu	expr	one by one
286	1325	忘れられない思い出	wasurerarenai omoide	expr	unforgettable memories
287	1326	セピア	sepia	n	sepia
288	1327	流す	nagasu	v	to drain; to pour; to spill; to shed (blood, tears); to wash away
289	1328	喜怒哀楽	kidoairaku	n	human emotions (joy, anger, pathos, and humor)
290	1329	フラッシュバック	furasshubakku	n	flashback
291	1330	アルバム	arubamu	n	album
292	1331	灰色	haiiro	n, no-adj	grey; gray; ashen
293	1332	過ぎた時間	sugita jikan	expr	passed time
294	1333	永劫	eigoo	n	eternity; perpetuity
295	1334	バックトウザ	bakku too za fyuuchaa	proper n	Back to the Future(movie title)

N	ID	Lemma	Romanization	POS	Translation
		フューチャー			
296	1335	環境	kankyoo	n, no-adj	environment; circumstance
297	1336	日本の昔話	nihon no mukashibanashi	expr	japanese fairy-tales
298	1337	小学校	shoogakkoo	n	primary school; elementary school; grade school
299	1338	子供時代	kodomojidai	n	childhood
300	1339	少年時代	shoonenjidai	n	childhood
301	1340	長い間	nagai aida	expr	long period
302	1341	付き合う	tsukiau	v	to associate with; to keep company with; to go out with; to go steady with; to get on with
303	1342	愛用	aiyoo	n, no-adj, suru v	favorite; habitual use
304	1343	糧	kate	n	food; provisions
305	1344	習い事	naraigoto	n	accomplishment; lesson; practice
306	1345	長寿	choojyu	n, no-adj	longevity
307	1346	既知	kichi	no-adj, na-adj, n	already known; well-known
308	1347	くされ縁	kusareen	n	(undesirable but) inseparable relationship

N	ID	Lemma	Romanization	POS	Translation
309	1348	化石	kaseki	n, suru v	fossil; petrifaction; fossilization; fossilisation
310	1349	大正時代	taishoojidai	proper n	Taisho period (1912-1926 CE)
311	1350	一定の年数	ittei no nensuu	expr	a fixed number of years
312	1351	縄文	joomon	proper n	joumon period
313	1376	日指し	hizashi	n	sunlight; rays of the sun
314	1398	感じる	kanjiru	v	to feel; to sense; to experience
315	1399	変化	henka	n, suru v	change; variation; alteration; mutation; transition; transformation; transfiguration; metamorphosis
316	1400	忘れる	wasureru	v	to forget; to leave carelessly; to be forgetful of; to forget about; to forget (an article)
317	1401	自信	jishin	n, suru v	self-confidence; confidence (in oneself)
318	1419	習慣	shuukan	n, no-adj	habit

Table 1.39 OVERLAPPING COMMUNITIES

ID A	Mod A Title	ID B	Mod B Title	N of overlapping words
M0	In front/behind	M2	Depth/unknown	3

M0	In front/behind	M10	Abstract Time	1
M1	Natural Processes time	M3	Schedule	7
M1	Natural Processes time	M8	Seasonal time	33
M2	Depth/unknown	M7	Outside/Inside	2
M2	Depth/unknown	M9	Room (life space)	1
M2	Depth/unknown	M10	Abstract Time	10
M3	Schedule	M10	Abstract Time	12
M4	City/Countryside	M6	Leisure/ Free time	1
M4	City/Countryside	M7	Outside/Inside	2
M5	Abstract Space	M10	Abstract Time	1
M6	Leisure/ Free time	M8	Seasonal time	1
M6	Leisure/ Free time	M10	Abstract Time	2
M7	Outside/Inside	M9	Room(life space)	1
M7	Outside/Inside	M10	Abstract Time	1

2.Appendix Chapter III Spatial Description Strategies through Spontaneous Speech Experiment

Information Form Sample 2.1

RESEARCH CENTRE FOR JAPANESE LANGUAGE AND LINGUISTICS
日本語研究センター
FACULTY OF ORIENTAL STUDIES
Oriental Institute, Pusey Lane, Oxford OX1 2LE



調査情報

1. 調査名

『自然発話調査』

倫理委員会…

2. 調査背景と目的

一橋大学言語社会研究科（2014 年卒）のテレギナ・マリアと申します。

現在オックスフォード大学東洋学部日本語研究センターで日本語世界像に関する博士論文を書いております。言語世界像とは、広義においては、ある言語の母語話者が無意識に言語を通して実現するあらゆる世界受容を生み出すメカニズムを意味します。

この調査は博士論文の一部となり、日本語母語話者による空間の記述方法の抽出とともにそれらの空間視覚のパターンとのつながりを抽出することを目的とします。

ご不明な点、疑問点などございましたら、以下の連絡先までご連絡下さい。

オックスフォード大学　東洋学部　日本語研究センター

E mail：maria.telegina@orinst.ox.ac.uk　テレギナ・マリア

3. 調査参加条件

この調査にご協力をお願いされた理由は以下のすべての調査参加条件を満たすからです。

① 健康な日本語母語話者

② ２０代及び５０−６０代

4. 協力者の権利

この調査に協力するか否かは自由意志で決定してください。不明な点があれば、決定する前にご遠慮なくお聞きください。

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一度同意した後でいつでも理由を説明せずに同意を取り消すことができ、それによる不利益はありません。

また、学生協力者の場合、不参加によって受講に不利益が生じることはありません。

5. 調査方法

ご協力いただける方に、調査の直前、調査について約１０分間ご説明します。説明の後、録音設備のある教室に眼球運動解析装置がついているパソコンの画面の前にお座りになり、あごをあご台においていただくようにお願いします。準備を済ましたら、調査が始まるようにパソコンのボタンを押していただきます。最初のスライドには年齢・出身地・最終学歴に関する質問が書かれております。その次のスライドに「画面に出る写真を見てください。その写真を見たことのない人がその写真にあるものとそのものの位置を想像できるように描写してください」という調査の課題が書かれております。次の６枚のスライドには６つの写真があり、その２つは風景で、もう２つはインテリアで、そしてもう二つは静物の写真です。普段写真の一枚の描写はおよそ 2 分かかりますが、本調査は時間制限がなし、各ご協力いただける方は第一枚目の描写を出来次第、次の写真が現れるようにパソコンのボタンを押していただく形になっております。最後のスライドには調査修了のお知らせがでます。

第 1 回　…　　場所　…　　日時
第 2 回　…　　場所　…　　日時

調査場所：
国立国語研究所　190-8561　東京都立川市緑町 10-2 Tel. 042-540-4300（代）

およそ調査時間：
３０分

6. 調査の危険性

本調査は危険が一切伴いません。

7. 個人情報の取扱

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オックスフォード大学の測定に従って研究成果のデータは最短３年間厳重に保管します。個人情報を含む研究成果のデータにはアックセスできるのが調査を行う研究者テレギナ・マリアのみです。

調査中協力者リストはコピーや転送をせずに一台のパスコンで１つのファイルとして保存します。

調査終了後は協力者リストを消します。協力者リストと調査成果が連結されていませんので、協力者リストを消すことによって匿名化させます。

調査の結果は匿名であり、ご回答いただいた内容は「○○のように答えた方の人数は○○」というように、個人情報を利用することはございませんので、ご安心ください。

8. 調査結果の公表

調査結果は学会報告、博士論文、または報告書のデータとして使用させて頂きます。 そして、調査結果を扱った論文はピア・レビュー誌に公表される可能性もあります。

オックスフォード大学は社会と経済への貢献のために研究を普及させることに努めており、そのために研究資料のオンライン文書館を作っています。そのオンライン文書館にはオックスフォード大学の学位審査に合格した大学院生の論文のデジタル・コピーが掲載されています。オンライン文書館は研究者に論文テキストへの自由なアクセスをしやすることによってその論文における研究のインパクトを高め、使用範囲を広めます。

この調査への協力に同意する方には、調査結果が論文の一部となる可能性があるということをご理解ください。学位審査に合格した場合、この調査結果を含む論文は論文製本とそのオンラインデジタル・コピーが大学文書館に保存されます。この調査結果を含む論文のデジタル・コピーはクローズドアクセス(論文のタイトル、研究者名、論文概要)の形でオンライン文書館に記載されます。

9. 調査の審査と承認

本調査は、オックスフォード大学の倫理委員会（University of Oxford Central University Research Ethics Committee）の審査の結果、承認を得て実施しております。

10. 疑問点、ご苦情がある際

本調査について疑問点がある際テレギナ・マリア（[+44 (0)1865-280383] maria.telegina@orinst.ox.ac.uk）にご連絡ください。営業 10 日以内に疑問を受け取ったことをお知

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らせし、それに対する回答をお伝えします。回答に対して不満がある場合や正式な苦情を申し立てる場合、オックスフォード大学の倫理委員会にご連絡ください。

Chair, **Social Sciences & Humanities Inter-Divisional Research Ethics Committee**; Email: ethics@socsci.ox.ac.uk; Address: Research Services, University of Oxford, Wellington Square, Oxford OX1 2JD

Participant Information Sheet

1. Study title

Spontaneous Speech Experiment
CUREC ethics reference…

2. Background and aims of the study

My name is Maria Telegina, graduated from Hitotsubashi University Graduate School of Language and Society 2014. Presently I am writing my doctoral thesis on Japanese Language World View at the Oriental Faculty of Oxford University. Language World View is broadly defined as a mechanism, which allows a native speaker to unconsciously receive a culturally specific world view through the language.

This survey will become a part of my doctoral thesis; its purpose is to find out how Japanese native speakers describe different types of space and whether the types of description are connected with space perception patterns.

If you have any questions or concerns, please contact me:

Research Centre for Japanese Language and Linguistics, Oriental Institute, Pusey Lane, Oxford, OX1 2LE United Kingdom
E mail：maria.telegina@orinst.ox.ac.uk　Maria Telegina

3. Why have I been invited to take part?

You have been invited because you meet all requirements to participate in this survey:
1. Healthy Japanese native speaker
2. Age 20s or 50s-60s

4. Do I have to take part?

Please make the decision about participation in this survey of your own free will. Please feel free to ask any questions before making the decision.

Also, if you agreed, you may withdraw yourself and your data from the study without explaining the reason without penalty at any time.

In case of student-participants, non-participation or withdrawal will not affect your academic records.

5. What will happen in the study?

Each participant will be given a 10-minute explanation of the survey. After the explanation the participant will be asked to seat in front of the computer with a screen in the room with audio recording and eye tracking equipment, then they will be asked to place their chin on the chinrest of the eye tracking equipment. When they are seated comfortably and are ready to start, they will be asked to push a button to start the experiment. First, they will see the screen with the questions asking to tell their age, place of origin and education level. The next slide will contain the directions for the experiment: “Please describe the pictures on the next slides so that a person who has not seen the

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pictures may understand the location of the objects in the pictures". The next 6 slides will contain 6 pictures: 2 different landscape pictures, 2 different interior pictures and 2 different still life pictures. It usually takes no more than 2 minutes to describe one picture, though each participant will be free to switch to the next picture by pushing the button as soon as they finished the description of the previous picture. The last slide will notify the participant that the survey is over.

Dates and time of survey
N1 …/02/2016
OR
N2 …/02/2016

Place of survey
National Institute for Japanese Language and Linguistics
10-2 Midori-cho, Tachikawa City, Tokyo, 190-8561 Tel. +81-42-540-4300

Approximate time 30 minutes

6. Are there any potential risks in taking part?

There are no potential risks in taking part in this survey.

7. What happens to the research data provided?

The research data provided will be held securely for a minimum of 3 years after publication in accordance with policy of University of Oxford. The only person who will have a full access to the research data is the researcher conducting this experiment, Maria Telegina.

The results of the experiment are anonymous. A list of participants will be retained temporarily in order to organize and anonymize the material, as soon as the material is anonymized the list will be deleted.

During the period in which the survey is conducted, the list of participants will be stored in one file electronically on a laptop but will not be transferred or copied.

8. Will the research be published?

I would like to use the results of this survey for presentations, reports and my doctoral thesis. Also, there is a possibility that they will be published in peer reviewed journals.

The University of Oxford is committed to the dissemination of its research for the benefit of society and the economy and, in support of this commitment, has established an online archive of research materials. This archive includes digital copies of student theses successfully submitted as part of a University of Oxford postgraduate degree programme. Holding the archive online gives easy access for researchers to the full text of freely available theses, thereby increasing the likely impact and use of that research.

If you agree to participate in this project, the research will be written up as a thesis. On successful submission of the thesis, it will be deposited both in print and online in the University archives, to facilitate its use in future research. The thesis will be published with closed access with item record (name of the researcher, thesis title, subject area), abstract, full text search for single words or short passages of text available online.

9. Who has reviewed this project?

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This project has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee.

10. Who do I contact if I have a concern about the study or I wish to complain?

If you have a concern about any aspect of this project, please speak to the relevant researcher (Maria Telegina [+44 (0)1865-280383] maria.telegina@orinst.ox.ac.uk) who will do her best to answer your query. The researcher should acknowledge your concern within 10 working days and give you an indication of how she intends to deal with it. If you remain unhappy or wish to make a formal complaint, please contact the chair of the Research Ethics Committee at the University of Oxford (using the contact details below) who will seek to resolve the matter in a reasonably expeditious manner:
Chair, **Social Sciences & Humanities Inter-Divisional Research Ethics Committee;** Email: ethics@socsci.ox.ac.uk; Address: Research Services, University of Oxford, Wellington Square, Oxford OX1 2JD)

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Consent Form Sample 2.2

RESEARCH CENTRE FOR JAPANESE LANGUAGE AND LINGUISTICS
日本語研究センター
FACULTY OF ORIENTAL STUDIES
Oriental Institute, Pusey Lane, Oxford OX1 2LE

UNIVERSITY OF OXFORD

Consent Form

STUDY TITLE Spontaneous Speech Experiment

RESEARCHER DETAILS: Maria Telegina, DPhil candidate, Research Centre for Japanese Language and Linguistics, Oriental Institute, Pusey Lane, Oxford, OX1 2LE United Kingdom
E mail：maria.telegina@orinst.ox.ac.uk.

PURPOSE OF STUDY: purpose of the study is to find out how Japanese native speakers describe different types of space and whether the types of description are connected with space perception patterns

	participant initials each box
1. I have read the information sheet, have asked questions and received satisfactory answers	☐
2. I understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee	☐
3. I understand that my participation is voluntary and that I am free to withdraw myself or my data at any time, without giving any reason, and without any adverse consequences or any academic penalty.	☐
4. I understand who will have access to personal data provided	☐
5. I understand how personal data will be stored and what will happen to the data at the end of the project	☐
6. I understand how research will be written up and published	☐
7. I understand how to raise concerns or make a complaint.	☐
8. I consent to being audio recorded.	☐
9. I consent to having my eyes movements tracked .	☐
10. I understand that audio recordings / eye-tracking data will be used in research outputs eg project website, academic conferences, journal publications, research archives	☐
11. I agree to take part in the study.	☐

Name of Participant: _____

Signature: _____ Date: _____

Name of researcher: _____

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Oriental Institute, Pusey Lane, Oxford OX1 2LE



Signature: _____ Date: _____

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協力者の名前 _____

サイン・印 _____ 年月日 _____

研究責任者の名前 _____

サイン _____ 年月日 _____

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同意書

調査名　『自然発話調査』

研究責任者 テレギナ・マリア　博士後期課程大学院生　オックスフォード大学　東洋学部　日本語研究センター
E mail：maria.telegina@orinst.ox.ac.uk

調査目的　日本語母語話者による空間の記述方法の抽出とともにそれらの空間視覚のパターンとのつながりを抽出することを目的とする

各ボックスにイニシャルをサインしてください

1. 私は、調査情報を読み、調査に関する質問をし、満足な回答を得ました ☐
2. 本調査はオックスフォード大学中央倫理委員会の審査の結果、承認を得たことを理解します ☐
3. この調査に協力するか否かは自由意志で度同意した後でいつでも理由を説明せずに同意を取り消すことができ、それによる不利益がないことを理解します ☐
4. 個人情報に誰がアックセスできるのを理解します ☐
5. 個人情報がどういうふうに保管されること、研究の終了後、個人情報がどういふうに保管され、採用されることを理解します ☐
6. この研究の成果が公表されることを理解します ☐
7. 疑問を呈する方法と苦情を申し立てる方法を理解します ☐
8. 私の声の録音に同意します ☐
9. 眼球運動の記録に同意します ☐
10. 声の録音と眼球運動の記録が研究成果の一部として学会や雑誌などで公表されることを理解します ☐
11. 調査への参加に同意します ☐

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ID Form Sample 2.3

調査シート

日本語母語話者の空間間把握に関する自然発話調査

協力者 ID 番号 15

氏名

性別　男性 ・ 女性

生年 （西暦） _____年

出身地（5 歳～20 歳ごろの居住地（都道府県）、複数回答可）

最終学歴 （いずれかに〇）

高校 ・ 短大 ・ 高専 ・ 専門学校 ・ 大学（文系）・大学院（文系） ・ 大学（理系） ・ 大学院（理系）

Table 2.1 Participants Information

ParID_N	S	Age	Region	Pref	Education	ISCED Level of Educ
1	M	71	Kanto Area	Kanagawa	University (Humanities)	5.5
2	F	30	Kanto Area	Ibaraki	University (Humanities)	5.5
3	F	30	Kanto Area	Chiba	Graduate school (Humanities)	6.0
4	M	52	Kanto Area	Tokyo	University (Humanities)	5.5
5	M	51	Kanto Area	Chiba	Graduate school (Humanities)	6.0
6	F	39	Kanto Area	Tokyo	Vocational school	5.0
7	M	58	Kanto Area	Kanagawa	Vocational school	5.0
8	F	55	Kyushu	Kumamoto	University (Humanities)	5.5
9	F	34	Chuubu Region	Shizuoka	Graduate school (Humanities)	6.0
10	F	51	Kanto Area	Chiba	University (Humanities)	5.5
11	F	22	Kanto Area	Tokyo	High school	3.0
12	F	41	Chuubu Region	Aichi	Graduate school (Humanities)	6.0
13	F	39	Kansai Area	Hyougo	Graduate school (Humanities)	6.0
14	F	66	Hokkaido	Hokkaido	Graduate school (Humanities)	6.0
15	M	62	Kanto Area	Tochigi	Graduate school (Science)	6.0
16	F	63	Kanto Area	Tokyo	University (Humanities)	5.5
17	F	53	Kanto Area	Tokyo	Vocational school	5.0
18	F	58	Kanto Area	Kanagawa	University (Humanities)	5.5
19	M	62	Kanto Area	Tokyo	High school	3.0
20	F	52	Kanto Area	Kanagawa	University (Humanities)	5.5

ParID_N	S	Age	Region	Pref	Education	ISCED Level of Educ
21	F	48	Chuugoku region	Hiroshima	University (Humanities)	5.5
22	F	28	Kanto Area	Tokyo	University (Humanities)	5.5
23	F	29	Kanto Area	Tokyo	Graduate school (Humanities)	6.0
24	F	39	Kanto Area	Tokyo	University (Humanities)	5.5
25	F	60	Kanto Area	Ibaraki	Junior college	5.0
26	F	60	Chuubu Region	Nagano	University (Science)	5.5
27	F	53	Kanto Area	Tokyo	University (Humanities)	5.5
28	F	40	Kanto Area	Tokyo	University (Humanities)	5.5
29	M	60	Kanto Area	Kanagawa	Graduate school (Humanities)	6.0
30	F	61	Kanto Area	Tokyo	University (Humanities)	5.5
31	F	49	Kanto Area	Tokyo	University (Humanities)	5.5
32	F	67	Kanto Area	Tokyo	University (Humanities)	5.5
33	M	68	Kanto Area	Tokyo	University (Humanities)	5.5
34	F	44	Chuubu Region	Nagano	University (Humanities)	5.5
35	F	52	Hokkaido	Hokkaido	Graduate school (Humanities)	6.0
36	M	57	Chuugoku region	Shimane	University (Humanities)	5.5
37	F	56	Kanto Area	Tokyo	University (Science)	5.5
38	M	68	Kanto Area	Tokyo	University (Humanities)	5.5
39	M	60	Kanto Area	Tokyo	University (Humanities)	5.5
40	F	37	Kanto Area	Chiba	University (Humanities)	5.5

ParID_N	S	Age	Region	Pref	Education	ISCED Level of Educ
41	F	40	Kansai Area	Hyougo	Vocational school	5.0
42	F	47	Kanto Area	Tokyo	Graduate school (Humanities)	6.0
43	F	62	Kansai Area	Osaka	Graduate school (Humanities)	6.0
44	M	22	Toohoku Region	Aomori	University (Humanities)	5.5
45	F	47	Kanto Area	Tokyo	University (Humanities)	5.5
46	F	55	Kanto Area	Tokyo	University (Humanities)	5.5
47	F	51	Kansai Area	Shiga	Graduate school (Humanities)	6.0
48	F	34	Chuubu Region	Nagano	Graduate school (Humanities)	6.0
49	F	30	Kanto Area	Gunma	Graduate school (Humanities)	6.0
50	F	42	Toohoku Region	Aomori	Graduate school (Humanities)	6.0
51	M	35	Kanto Area	Tokyo	Graduate school (Humanities)	6.0

Table 2.2 Figure with frequency > 5

PicID	F	POS[15]	Romanization	Translation	Freq	Pct
1	ソファ	n	sofa	sofa	44	91.7%
1	ピアノ	n	piano	piano	42	87.5%
1	絵	n	e	picture	41	85.4%
1	キッチン	n	kitchin	kitchen	31	64.6%
1	窓	n	mado	window	29	60.4%

[15] Here and below: Pos - “part of speech”

PicID	F	POS[15]	Romanization	Translation	Freq	Pct
1	テーブル	n	teeburu	table	26	54.2%
1	エアコン	n	eakon	air-conditioner	22	45.8%
1	椅子	n	isu	chair	22	45.8%
1	シンク	n	shinku	sink	20	41.7%
1	ダイニングテーブル	n	dainingguteeburu	dining table	17	35.4%
1	シャンデリア	n	shanderia	chandelier	16	33.3%
1	クッション	n	kusshon	cushion	14	29.2%
1	壁	n	kabe	wall	10	20.8%
1	ライト	n	raito	light	8	16.7%
1	換気扇	n	kankisen	ventilation fan	8	16.7%
1	写真	n	shashin	photo	8	16.7%
1	おしぼり	n	oshibori	hot, moistened hand towel	7	14.6%
1	照明	n	shoomei	illumination	7	14.6%
1	フライパン	n	furaipan	fry pan	6	12.5%
2	座布団	n	zabuton	zabuton	42	87.5%
2	箪笥	n	tansu	dresser	34	70.8%
2	襖	n	fusuma	fusuma	29	60.4%
2	お椀	n	owan	bowl	21	43.8%
2	欄間	n	ranma	(in Japanese architecture) transom	20	41.7%
2	ちゃぶ台	n	chabudai	low dining table	19	39.6%
2	縁側	n	engawa	veranda	17	35.4%
2	庭	n	niwa	garden	16	33.3%

PicID	F	POS[15]	Romanization	Translation	Freq	Pct
2	テーブル	n	teeburu	table	15	31.2%
2	障子	n	shouji	shoji (paper sliding door)	15	31.2%
2	廊下	n	rouka	corridor	13	27.1%
2	お茶碗	n	ochawan	rice bowl	12	25.0%
2	部屋	n	heya	room	12	25.0%
2	湯のみ	n	yunomi	teacup	9	18.8%
2	和室	n	washitsu	Japanese style room	8	16.7%
2	机	n	tsukue	table	7	14.6%
2	食器	n	shokki	tableware	7	14.6%
2	箱	n	hako	box	7	14.6%
2	薬缶	n	yakan	kettle	7	14.6%
2	和箪笥	n	watansu	Japanese style dresser	7	14.6%
3	ビル	n	biru	multi-floor building	47	97.9%
3	車	n	kuruma	car	36	75.0%
3	トラック	n	torakku	truck	13	27.1%
3	横断歩道	n	oudanhodou	pedestrian crossing	13	27.1%
3	信号	n	shingou	traffic light	12	25.0%
3	人	n	hito	man	12	25.0%
3	道路	n	douro	road	10	20.8%
3	中央分離帯	n	chuuoubunritai	central traffic strip	6	12.5%
3	歩道	n	hodou	footpath	6	12.5%
4	鳥居	n	torii	torii	44	91.7%
4	山	n	yama	mountain	32	66.7%
4	田んぼ	n	tanbo	paddy field	31	64.6%
4	雲	n	kumo	cloud	26	54.2%
4	道	n	michi	road	20	41.7%

PicID	F	POS[15]	Romanization	Translation	Freq	Pct
4	家	n	ie	house, home	18	37.5%
4	森	n	mori	forest	15	31.2%
4	ビニールハウス	n	biniiruhausu	plastic greenhouse	14	29.2%
4	青空	n	aozora	blue sky	13	27.1%
4	空	n	sora	sky	10	20.8%
4	神社	n	jinja	Shinto shrine	10	20.8%
4	水田	n	suiden	(water-filled) paddy field	9	18.8%
4	一本道	n	ipponmichi	direct unforked road	8	16.7%
4	花	n	hana	flowers	7	14.6%
4	水	n	mizu	water	7	14.6%
4	電線	n	densen	electric line	7	14.6%
4	稲	n	ine	rice plant	6	12.5%
4	電信柱	n	denshinbashira	telephone pole	6	12.5%
5	眼鏡	n	megane	eyeglasses	48	100.0%
5	本	n	hon	book	46	95.8%
5	コーヒー豆	n	koohiimame	coffee beans	34	70.8%
5	コーヒー	n	koohii	coffee	30	62.5%
5	ビスケット	n	bisuketto	cookie	20	41.7%
5	クッキー	n	kukkii	cookie	13	27.1%
5	コーヒーカップ	n	koohiikappu	coffee cup	11	22.9%
5	瓶	n	bin	jar	11	22.9%
5	お皿	n	osara	plate	10	20.8%
5	カップ	n	kappu	cup	9	18.8%

PicID	F	POS[15]	Romanization	Translation	Freq	Pct
5	コーヒーの粉	n	koohiinokona	coffee powder	7	14.6%
5	コーヒーポット	n	koohiipotto	coffee pot	7	14.6%
5	クラッカー	n	kurakkaa	cracker	6	12.5%
6	急須	n	kyuusu	teapot	36	75.0%
6	和菓子	n	wagashi	Japanese sweets	34	70.8%
6	お茶	n	ocha	tea	25	52.1%
6	枝	n	eda	branch	25	52.1%
6	楊枝	n	youji	skewer for eating moist wagashi	15	31.2%
6	湯のみ	n	yunomi	teacup	14	29.2%
6	お菓子	n	okashi	sweets	9	18.8%
6	お皿	n	osara	plate	9	18.8%
6	実	n	mi	fruit	8	16.7%
6	茶碗	n	chawan	rice bowl	8	16.7%
6	お茶碗	n	ochawan	rice bowl	7	14.6%
6	かいし	n	kaeshi	fine paper	7	14.6%
6	木	n	ki	tree	7	14.6%
6	お茶菓子	n	ochagashi	cake served with tea	6	12.5%

Table 2.3 Landmark with frequency > 5

PicID	Lm	POS	Romanization	Translation	Freq	Pct
1	zero	zero	zero	zero	47	97.9%
1	その	Pre-noun adjectival	sono	that	31	64.6%
1	ソファ	n	sofa	sofa	29	60.4%
1	ピアノ	n	piano	piano	26	54.2%

PicID	Lm	POS	Romanization	Translation	Freq	Pct
1	壁	n	kabe	wall	25	52.1%
1	天井	n	tenjou	ceiling	24	50.0%
1	部屋	n	heya	room	19	39.6%
1	窓	n	mado	window	17	35.4%
1	キッチン	n	kitchin	kitchen	13	27.1%
1	テーブル	n	teeburu	table	8	16.7%
1	シンク	n	shinku	sink	7	14.6%
1	そこ	Pronoun	soko	there	6	12.5%
1	写真	n	shashin	photo	6	12.5%
2	zero	zero	zero	zero	45	93.8%
2	その	Pre-noun adjectival	sono	that	30	62.5%
2	部屋	n	heya	room	21	43.8%
2	テーブル	n	teeburu	table	19	39.6%
2	襖	n	fusuma	fusuma	19	39.6%
2	ちゃぶ台	n	chabudai	low dining table	12	25.0%
2	壁	n	kabe	wall	12	25.0%
2	机	n	tsukue	table	9	18.8%
2	廊下	n	rouka	corridor	9	18.8%
2	和室	n	washitsu	japanese style room	9	18.8%
2	そこ	Pronoun	soko	there	8	16.7%
2	縁側	n	engawa	verandah	6	12.5%
2	畳の部屋	np	tataminoheya	room with tatami	6	12.5%
3	zero	zero	zero	zero	43	89.6%
3	道路	n	douro	road	22	45.8%
3	交差点	n	kousaten	crossing	15	31.2%
3	こちら	Pronoun	kochira	here	12	25.0%
3	画面	n	gamen	screen	6	12.5%
3	道	n	michi	road	6	12.5%
4	zero	zero	zero	zero	46	95.8%

PicID	Lm	POS	Romanization	Translation	Freq	Pct
4	鳥居	n	torii	torii	31	64.6%
4	その	Pre-noun adjectival	sono	that	30	62.5%
4	道	n	michi	road	17	35.4%
4	山	n	yama	mountain	13	27.1%
4	田んぼ	n	tanbo	paddy field	11	22.9%
4	画面	n	gamen	screen	9	18.8%
4	写真	n	shashin	photo	9	18.8%
4	森	n	mori	forest	8	16.7%
4	そこ	Pronoun	soko	there	7	14.6%
4	空	n	sora	sky	6	12.5%
5	その	Pre-noun adjectival	sono	that	45	93.8%
5	zero	zero	zero	zero	44	91.7%
5	瓶	n	bin	jar	26	54.2%
5	お皿	n	osara	plate	12	25.0%
5	コーヒーカップ	n	koohiikappu	coffee cup	12	25.0%
5	本	n	hon	book	11	22.9%
5	テーブル	n	teeburu	table	10	20.8%
5	コーヒー	n	koohii	coffee	6	12.5%
5	コーヒー豆	n	koohiimame	coffee beans	6	12.5%
5	画面	n	gamen	screen	6	12.5%
5	写真	n	shashin	photo	6	12.5%
6	zero	zero	zero	zero	45	93.8%
6	その	Pre-noun adjectival	sono	that	29	60.4%
6	お皿	n	osara	plate	18	37.5%
6	急須	n	kyuusu	teapot	14	29.2%
6	茶托	n	chataku	teacup saucer	12	25.0%
6	テーブル	n	teeburu	table	11	22.9%
6	湯のみ	n	yunomi	teacup	9	18.8%

PicID	Lm	POS	Romanization	Translation	Freq	Pct
6	和菓子	n	wagashi	japanese sweets	7	14.6%
6	かいし	n	kaishi	fine paper	6	12.5%
6	枝	n	eda	branch	6	12.5%
6	写真	n	shashin	photo	6	12.5%

Table 2.4 Relator with frequency > 5

PicID	R	POS	Romanization	Translation	Freq	Pct
1	に	par	ni	at (place, time)	38	79.2%
1	上に	n	ueni	above	36	75.0%
1	zero	zero	zero	zero	31	64.6%
1	手前に	n	temaeni	in the front	20	41.7%
1	奥に	n	okuni	at the back	19	39.6%
1	から	par	kara	from	17	35.4%
1	左側	n	hidarigawa	left side	13	27.1%
1	左側に	expr	hidarigawani	on the left side	12	25.0%
1	右奥に	expr	migiokuni	in the back right	10	20.8%
1	右側に	expr	migigawani	on the right side	10	20.8%
1	下に	n	shitani	below	9	18.8%
1	右側	n	migigawa	right side	8	16.7%
1	横に	Adv	yokoni	aside	7	14.6%
1	上	n	ue	above	7	14.6%
1	前に	n	maeni	in front (of)	7	14.6%
1	一番手前に	expr	ichibantemaeni	at the frontmost	6	12.5%
1	隣に	n	tonarini	next to	6	12.5%
2	上に	n	ueni	above	40	83.3%
2	zero	zero	zero	zero	36	75.0%

PicID	R	POS	Romanization	Translation	Freq	Pct
2	に	par	ni	at (place, time)	29	60.4%
2	奥に	n	okuni	at the back	24	50.0%
2	真ん中に	n	mannakani	in the middle	19	39.6%
2	左側に	expr	hidarigawani	on the left side	14	29.2%
2	中央に	n	chuuooni	centre	12	25.0%
2	右側に	expr	migigawani	on the right side	11	22.9%
2	から	par	kara	from	9	18.8%
2	奥	n	oku	inner part	8	16.7%
2	向こう側に	expr	mukoogawani	on the opposite side	8	16.7%
2	手前に	n	temaeni	in the front	8	16.7%
2	正面に	n	shoomenni	front	7	14.6%
2	ところに	par	tokoroni	at place	6	12.5%
2	右側	n	migigawa	right side	6	12.5%
2	真ん中	n	mannaka	middle	6	12.5%
3	zero	zero	zero	zero	27	56.2%
3	に	par	ni	at (place, time)	27	56.2%
3	両側に	n	ryoogawani	at the both sides	13	27.1%
3	から	par	kara	from	8	16.7%
3	は	par	wa	topic marker particle	8	16.7%
3	真ん中に	n	mannakani	in the middle	7	14.6%
3	に向かって	expr	nimukatte	heading towards smth	6	12.5%
3	手前に	n	temaeni	in the front	6	12.5%
4	zero	zero	zero	zero	30	62.5%
4	奥に	n	okuni	at the back	25	52.1%

PicID	R	POS	Romanization	Translation	Freq	Pct
4	手前に	n	temaeni	in the front	17	35.4%
4	に	par	ni	at (place, time)	15	31.2%
4	真ん中に	n	mannakani	in the middle	13	27.1%
4	から	par	kara	from	12	25.0%
4	上に	n	ueni	above	11	22.9%
4	奥のほうに	expr	okunohooni	at the back area	8	16.7%
4	中に	n	nakani	inside	8	16.7%
4	向こうに	n	mukooni	on the opposite side	7	14.6%
4	は	par	wa	topic marker particle	6	12.5%
4	右側に	expr	migigawani	on the right side	6	12.5%
4	左のほうに	expr	hidarinohooni	on the left	6	12.5%
5	上に	n	ueni	above	45	93.8%
5	に	par	ni	at (place, time)	33	68.8%
5	zero	zero	zero	zero	22	45.8%
5	奥に	n	okuni	at the back	22	45.8%
5	手前に	n	temaeni	in the front	22	45.8%
5	中に	n	nakani	inside	17	35.4%
5	右側に	expr	migigawani	on the right side	13	27.1%
5	左側に	expr	hidarigawani	on the left side	10	20.8%
5	隣に	n	tonarini	next to	7	14.6%
5	横に	Adv	yokoni	aside	6	12.5%
5	後ろに	n	ushironi	behind	6	12.5%
6	上に	n	ueni	above	36	75.0%
6	手前に	n	temaeni	in the front	30	62.5%

PicID	R	POS	Romanization	Translation	Freq	Pct
6	奥に	n	okuni	at the back	26	54.2%
6	に	par	ni	at (place, time)	23	47.9%
6	zero	zero	zero	zero	22	45.8%
6	中に	n	nakani	inside	13	27.1%
6	左側に	expr	hidarigawani	on the left side	11	22.9%
6	一番手前に	expr	ichibantemaeni	at the frontmost	8	16.7%
6	右側に	expr	migigawani	on the right side	8	16.7%
6	手前	n	temae	before	6	12.5%

Table 2.5 Relations Predicate with frequency > 5

PicID	RP	POS	Romanization	Translation	Freq	Pct
1	あります	v	arimasu	to be	41	85.4%
1	あって	v	atte	to be	26	54.2%
1	zero	zero	zero	zero	22	45.8%
1	置いてあります	v	oitearimasu	to put	22	45.8%
1	かかっています	v	kakatteimasu	to hang	20	41.7%
1	あり	v	ari	to be	11	22.9%
1	見えます	v	miemasu	to be seen	11	22.9%
1	飾ってあります	v	kazattearimasu	to decorate	11	22.9%
1	になっていて	v	ninatteite	becomes	10	20.8%

PicID	RP	POS	Romanization	Translation	Freq	Pct
1	ある	v	aru	to be	8	16.7%
1	です	cop	desu	be	8	16.7%
1	下がっています	v	sagatteimasu	to hang	8	16.7%
1	になっています	v	ninatteimasu	becomes	7	14.6%
1	並んでいます	v	narandeimasu	to line up	7	14.6%
1	ぶら下がっています	v	burasagatteimasu	to hang from	6	12.5%
2	あります	v	arimasu	to be	34	70.8%
2	置いてあります	v	oitearimasu	to put	33	68.8%
2	あって	v	atte	to be	25	52.1%
2	zero	zero	zero	zero	23	47.9%
2	見えます	v	miemasu	to be seen	20	41.7%
2	ある	v	aru	to be	16	33.3%
2	あり	v	ari	to be	13	27.1%
2	になっています	v	ninatteimasu	becomes	9	18.8%
2	ようです	expr	youdesu	I) wonder (if)	8	16.7%
2	置いてあって	v	oiteatte	to put	8	16.7%
2	置いてあり	v	oiteari	to put	8	16.7%

PicID	RP	POS	Romanization	Translation	Freq	Pct
2	置かれています	v	okareteimasu	to put	7	14.6%
2	です	cop	desu	be	6	12.5%
2	のっています	v	notteimasu	to be placed on	6	12.5%
2	見える	v	mieru	to be seen	6	12.5%
3	あります	v	arimasu	to be	20	41.7%
3	並んでいます	v	narandeimasu	to line up	13	27.1%
3	あって	v	atte	to be	12	25.0%
3	見えます	v	miemasu	to be seen	11	22.9%
3	走っています	v	hashitteimasu	to run	11	22.9%
3	立ち並んでいます	v	tachinarandeimasu	to stand in a row (e.g. shops on a street)	11	22.9%
3	立っています	v	tatteimasu	to stand	9	18.8%
3	走っている	v	hashitteiru	to run	7	14.6%
3	zero	zero	zero	zero	6	12.5%
4	あります	v	arimasu	to be	25	52.1%
4	見えます	v	miemasu	to be seen	24	50.0%
4	広がっています	v	hirogatteimasu	to spread (out)	19	39.6%
4	zero	zero	zero	zero	17	35.4%
4	ある	v	aru	to be	16	33.3%
4	です	cop	desu	be	15	31.2%

PicID	RP	POS	Romanization	Translation	Freq	Pct
4	立っています	v	tatteimasu	to stand	12	25.0%
4	広がっていて	v	hirogatteite	to spread (out)	11	22.9%
4	あって	v	atte	to be	9	18.8%
4	になっています	v	ninatteimasu	becomes	9	18.8%
4	あり	v	ari	to be	8	16.7%
4	で	cop	de	be	6	12.5%
4	見えています	v	mieteimasu	to be seen	6	12.5%
4	見える	v	mieru	to be seen	6	12.5%
4	続いています	v	tsuzuiteimasu	to continue	6	12.5%
4	立っている	v	tatteiru	to stand	6	12.5%
5	置いてあります	v	oitearimasu	to put	35	72.9%
5	zero	zero	zero	zero	26	54.2%
5	あります	v	arimasu	to be	20	41.7%
5	入っています	v	haitteimasu	to enter	15	31.2%
5	あって	v	atte	to be	12	25.0%
5	置いてあって	v	oiteatte	to put	12	25.0%
5	置かれています	v	okareteimasu	to put	11	22.9%
5	入った	v	haitta	to enter	9	18.8%
5	のっています	v	notteimasu	to be placed on	8	16.7%

PicID	RP	POS	Romanization	Translation	Freq	Pct
5	入っていて	v	haitteite	to enter	7	14.6%
5	あり	v	ari	to be	6	12.5%
5	置いてある	v	oitearu	to put	6	12.5%
6	置いてあります	v	oitearimasu	to put	30	62.5%
6	zero	zero	zero	zero	23	47.9%
6	あります	v	arimasu	to be	16	33.3%
6	のっています	v	notteimasu	to be placed on	14	29.2%
6	です	cop	desu	be	12	25.0%
6	置いてあって	v	oiteatte	to put	10	20.8%
6	入っています	v	haitteimasu	to enter	10	20.8%
6	のっていて	v	notteite	to be placed on	9	18.8%
6	置かれています	v	okareteimasu	to put	9	18.8%
6	あって	v	atte	to be	8	16.7%
6	のった	v	notta	to be placed on	6	12.5%

3.Appendix Chapter IV Temporal Description Strategies through Spontaneous Speech Experiment

Information Form Sample 3.1

RESEARCH CENTRE FOR JAPANESE LANGUAGE AND LINGUISTICS
日本語研究センター
FACULTY OF ORIENTAL STUDIES
Oriental Institute, Pusey Lane, Oxford OX1 2LE

UNIVERSITY OF OXFORD

調査協力者の方への説明文書

1. 調査名

『自然発話調査』

倫理審査承認番号 R43735/RE003

2. 調査背景と目的

一橋大学言語社会研究科 2014 年度卒業生のテレギナ・マリアと申します。

現在オックスフォード大学東洋学部日本語研究センターで日本語世界像に関する博士論文を書いております。言語世界像とは、広義においては、ある言語の母語話者が無意識に言語を通して実現するあらゆる世界受容を生み出すメカニズムを意味します。

この調査は博士論文の一部となり、日本語母語話者による時空間の記述方法を抽出することを目的とします。

ご不明な点、疑問点などございましたら、以下の連絡先までご連絡下さい。

オックスフォード大学　東洋学部　日本語研究センター

E mail：maria.telegina@orinst.ox.ac.uk　　テレギナ・マリア

3. 調査参加条件

この調査にご協力をお願いするのは以下の調査参加条件を満たす方々となります。

① 健康な日本語母語話者

Tel: Direct Line: +44 (0)1865-280383 General Enquiries: +44 (0)1865-278200
Fax: +44 (0)1865-278190 E-Mail: maria.telegina@orinst.ox.ac.uk Web: www.orinst.ox.ac.uk/research/jap-ling

② １８歳以上

4.　調査協力者の権利

この調査に協力するか否かはあなたの自由意志で決定してください。不明な点があれば、調査に参加される前にご遠慮なくお聞きください。

一度同意した後でも、いつでも理由を説明せずに、同意を取り消すことができ、それによる不利益はありません。

また、学生協力者の場合、不参加によって受講に不利益が生じることはありません。

5. 調査方法

ご協力いただける方に、調査の直前、調査について約１０分間ご説明します。説明の後、録音設備のある教室にパソコンの画面の前にお座りになられるようにお願いします。準備を済ましたら、調査が始まるようにパソコンのボタンを押していただきます。最初のスライドには「画面に出るビデオを見てください。このビデオを３回繰り返します。見ている間にできるだけ、ビドオの内容の詳細を覚えてください。ビデオが止まったら、ボタンを押していただき、画面が白くなった時、そのビデオを見たことのない人がそのビデオの内容を想像できるように説明してください」という調査の課題が書かれております。　ビデオが全部で４つあり、普段一つのビデオの説明はおよそ 1. ５分かかります。ただし、本調査は時間制限がなし、各ご協力いただける方は第一番目のビデオの説明を出来次第、次のビデオが現れるようにパソコンのボタンを押していただく形になっております。最後の画面には調査修了のお知らせがでます。

調査場所：

国立国語研究所　190-8561　東京都立川市緑町 10-2　４階　４１６室

Tel. 042-540-4300（代）

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Fax: +44 (0)1865-278190 E-Mail: maria.telegina@orinst.ox.ac.uk Web: www.orinst.ox.ac.uk/research/jap-ling

およそ調査時間：

３０分

6. 調査の危険性

本調査は危険が一切伴いません。

7. 個人情報の取扱

オックスフォード大学の測定に従って研究成果のテータは最短３年間厳重に保管します。個人情報を含む研究成果のデータにはアックセスできるのが調査を行う研究者テレギナ・マリアのみです。

調査中協力者リストはコピーや転送をせずに一台のパスコンで１つのファイルとして保存します。

調査終了後は協力者リストを消します。協力者リストと調査成果が連結されていませんので、協力者リストを消すことによって匿名化させます。

調査の結果は匿名であり、ご回答いただいた内容は「〇〇のように答えた方の人数は〇〇」というように、個人情報を利用することはございませんので、ご安心ください。

8. 調査結果の公表

調査結果は学会報告、博士論文、または報告書のデータとして使用させて頂きます

また、調査結果を扱った論文はピア・レビュー誌に公表される可能性もあります。

オックスフォード大学は社会と経済への貢献のために研究を普及させることに努めており、そのために研究資料のオンライン文書館を作っています。そのオンライン文書館にはオックスフォード大学の学位審査に合格した大学院生の論文が電子化され掲載

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されています。オンライン文書館は研究者に論文テキストへの自由なアクセスをしやすくすることによってその論文における研究のイパクトを高め、使用範囲を広めます。

この調査への協力に同意する方には、調査結果が論文の一部となる可能性があるということをご理解ください。学位審査に合格した場合、この調査結果を含む論文は論文製本とその電子ファイルが大学文書館に保存されます。この調査結果を含む論文の電子ファイルはクローズドアクセス(論文のタイトル、研究者名、論文概要)の形でオンライン文書館に記載されます。

9. 調査の審査と承認

本調査は、オックスフォード大学の倫理委員会（University of Oxford Central University Research Ethics Committee）の審査の結果、承認を得て実施しております。

10. 疑問点、ご苦情がある際

本調査について疑問点がある際テレギナ・マリア（[+44 (0)1865-280383] maria.telegina@orinst.ox.ac.uk）にご連絡ください。営業 10 日以内に疑問を受け取ったことをお知らせし、それに対する回答をお伝えします。回答に対して不満がある場合や正式な苦情を申し立てる場合、オックスフォード大学の倫理委員会にご連絡ください。

Chair, **Social Sciences & Humanities Inter-Divisional Research Ethics Committee**; Email: ethics@socsci.ox.ac.uk; Address: Research Services, University of Oxford, Wellington Square, Oxford OX1 2JD

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UNIVERSITY OF OXFORD

Participant Information Sheet

1. Study title

Spontaneous Speech Experiment
CUREC ethics reference **R43735/RE003**

2. Background and aims of the study

My name is Maria Telegina, graduated from Hitotsubashi University Graduate School of Language and Society 2014. Presently I am writing my doctoral thesis on Japanese Language World View at the Oriental Faculty of Oxford University. Language World View is broadly defined as a mechanism, which allows a native speaker to unconsciously receive a culturally specific world view through the language.

This survey will become a part of my doctoral thesis; its purpose is to find out how Japanese native speakers describe different types of spatio-temporal relations.

If you have any questions or concerns, please contact me:

Research Centre for Japanese Language and Linguistics, Oriental Institute, Pusey Lane, Oxford, OX1 2LE United Kingdom
E mail：maria.telegina@orinst.ox.ac.uk Maria Telegina

3. Why have I been invited to take part?

You have been invited because you meet all requirements to participate in this survey:
1. Healthy Japanese native speaker
2. Over 18 years old

4. Do I have to take part?

Please make the decision about participation in this survey of your own free will. Please feel free to ask any questions before making the decision.

Also, if you agreed, you may withdraw yourself and your data from the study without explaining the reason without penalty at any time.

In case of student-participants, non-participation or withdrawal will not affect your academic records.

5. What will happen in the study?

Each participant will be given a 10-minute explanation of the survey, and then if they are willing to take part in the survey, they will be given a consent form to fill in. Each participant will be given time to read the form, and ask questions about its contents. Please note that you may withdraw yourself and your data from the study without explaining the reason without penalty at any time.

After signing the consent form, each participant will be given an ID form, containing a set of questions on their age/sex/education/place of origin. Upon finishing the ID form, the participant will be asked to seat in front of the computer with a screen in the room with audio recording equipment. When they are seated comfortably and are ready to start, they will be asked to push a button to start the experiment. First, they will see the screen containing the directions for the experiment: “Now you will be shown a short video clip 3 times. While watching it, try to memorize as many details about it contents as possible. When the screen turns black, please describe the contents of the clip on so that a person who has not seen the clip may understand its contents”. Each participant will be shown 4 short video clips. It usually takes no more than 1,5 minutes to describe one clip, though each participant will be free to switch to the next clip by pushing the button as soon as they finished the description of the previous one. The last screen will notify the participant that the survey is over.

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Fax: +44 (0)1865-278190 E-Mail: maria.telegina@orinst.ox.ac.uk Web: www.orinst.ox.ac.uk/research/jap-ling

Place of survey:
Room 416, 4th floor, National Institute for Japanese Language and Linguistics
10-2 Midori-cho, Tachikawa City, Tokyo, 190-8561 Tel. +81-42-540-4300

Time survey takes:
Approximate time 30 minutes

6. Are there any potential risks in taking part?

There are no potential risks in taking part in this survey.

7. What happens to the research data provided?

The research data provided will be held securely for a minimum of 3 years after publication in accordance with policy of University of Oxford. The only person who will have a full access to the research data is the researcher conducting this experiment, Maria Telegina.

The results of the experiment are anonymous. A list of participants will be retained temporarily in order to organize and anonymize the material; as soon as the material is anonymized the list will be deleted.

During the period in which the survey is conducted, the list of participants will be stored in one file electronically on a laptop but will not be transferred or copied.

8. Will the research be published?

I would like to use the results of this survey for presentations, reports and my doctoral thesis. Also, there is a possibility that they will be published in peer reviewed journals.

The University of Oxford is committed to the dissemination of its research for the benefit of society and the economy and, in support of this commitment, has established an online archive of research materials. This archive includes digital copies of student theses successfully submitted as part of a University of Oxford postgraduate degree programme. Holding the archive online gives easy access for researchers to the full text of freely available theses, thereby increasing the likely impact and use of that research.

If you agree to participate in this project, the research will be written up as a thesis. On successful submission of the thesis, it will be deposited both in print and online in the University archives, to facilitate its use in future research. The thesis will be published with closed access with item record (name of the researcher, thesis title, subject area), abstract, full text search for single words or short passages of text available online.

9. Who has reviewed this project?

This project has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee.

10. Who do I contact if I have a concern about the study or I wish to complain?

If you have a concern about any aspect of this project, please speak to the relevant researcher (Maria Telegina [+44 (0)1865-280383] maria.telegina@orinst.ox.ac.uk) who will do her best to answer your query. The researcher should acknowledge your concern within 10 working days and give you an indication of how she intends to deal with it. If you remain unhappy or wish to make a formal complaint, please contact the chair of the Research Ethics

Tel: Direct Line: +44 (0)1865-280383 General Enquiries: +44 (0)1865-278200
Fax: +44 (0)1865-278190 E-Mail: maria.telegina@orinst.ox.ac.uk Web: www.orinst.ox.ac.uk/research/jap-ling

Committee at the University of Oxford (using the contact details below) who will seek to resolve the matter in a reasonably expeditious manner:
Chair, **Social Sciences & Humanities Inter-Divisional Research Ethics Committee;** Email: ethics@socsci.ox.ac.uk; Address: Research Services, University of Oxford, Wellington Square, Oxford OX1 2JD)

Tel: Direct Line: +44 (0)1865-280383 General Enquiries: +44 (0)1865-278200
Fax: +44 (0)1865-278190 E-Mail: maria.telegina@orinst.ox.ac.uk Web: www.orinst.ox.ac.uk/research/jap-ling

Consent Form Sample 3.2

RESEARCH CENTRE FOR JAPANESE LANGUAGE AND LINGUISTICS
日本語研究センター
FACULTY OF ORIENTAL STUDIES
Oriental Institute, Pusey Lane, Oxford OX1 2LE

UNIVERSITY OF OXFORD

Signature: _____ Date: _____

同意書

調査名　『自然言語調査』

研究責任者 テレギナ・マリア　博士後期課程大学院生　オックスフォード大学　東洋学部　日本語研究センター

E mail：maria.telegina@orinst.ox.ac.uk

調査目的　日本語母語話者による時空間の描写方法の抽出を抽出することを目的とする

各ボックスにイニシャルをサインしてください

1. 私は、調査の説明文書を読み、調査に関する質問をし、満足な回答を得ました ☐
2. 本調査はオックスフォード大学中央倫理委員会の審査の結果、承認を得たことを理解します ☐
3. この調査に協力するか否かは自由意志で度同意した後でいつでも理由を説明せずに同意を取り消すことができ、それによる不利益がないことを理解します ☐
4. 個人情報にアクセスできる人は誰と理解します ☐
5. 個人情報がどういうふうに保管されること、研究の終了後、個人情報がどのように保管され、採用されることを理解します ☐
6. この研究の成果が公表されることを理解します ☐
7. 疑問を呈する方法と苦情を申し立てる方法を理解します ☐
8. 私の声の録音に同意します ☐
9. 声の録音が研究成果の一部として学会や雑誌などで公表されることを理解します ☐
10. 調査への参加に同意します ☐

協力者の名前 _____

サイン・印 _____ 年月日 _____

S Tel: Direct Line: +44 (0)1865-280383 General Enquiries: +44 (0)1865-278200
Fax: +44 (0)1865-278190 E-Mail: maria.telegina@orinst.ox.ac.uk Web: www.orinst.ox.ac.uk/research/jap-ling

RESEARCH CENTRE FOR JAPANESE LANGUAGE AND LINGUISTICS
日本語研究センター
FACULTY OF ORIENTAL STUDIES
Oriental Institute, Pusey Lane, Oxford OX1 2LE

UNIVERSITY OF OXFORD

Consent Form

STUDY TITLE Spontaneous Speech Experiment

RESEARCHER DETAILS: Maria Telegina, DPhil candidate, Research Centre for Japanese Language and Linguistics, Oriental Institute, Pusey Lane, Oxford, OX1 2LE United Kingdom
E mail：maria.telegina@orinst.ox.ac.uk.

PURPOSE OF STUDY: purpose of the study is to find out how Japanese native speakers describe different types of spatio-temporal relations.

	participant initials each box
1. I have read the information sheet, have asked questions and received satisfactory answers	☐
2. I understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee	☐
3. I understand that my participation is voluntary and that I am free to withdraw myself or my data at any time, without giving any reason, and without any adverse consequences or any academic penalty.	☐
4. I understand who will have access to personal data provided	☐
5. I understand how personal data will be stored and what will happen to the data at the end of the project	☐
6. I understand how research will be written up and published	☐
7. I understand how to raise concerns or make a complaint.	☐
8. I consent to being audio recorded.	☐
9. I understand that audio recordings will be used in research outputs eg project website, academic conferences, journal publications, research archives	☐
10. I agree to take part in the study.	☐

Name of Participant: _____

Signature: _____ Date: _____

Name of researcher: _____

S Tel: Direct Line: +44 (0)1865-280383 General Enquiries: +44 (0)1865-278200
Fax: +44 (0)1865-278190 E-Mail: maria.telegina@orinst.ox.ac.uk Web: www.orinst.ox.ac.uk/research/jap-ling

Personal Data Form Sample 3.3

調査シート　[Sample] Survey ID sheet

日本語母語話者の時間把握に関する自然言語調査

Spontaneous speech experiment on temporal description strategies

協力者 ID 番号 55（Participant ID 55）

氏名(name)　_____

性別(sex)　　男性　・　女性

生年(year of birth)（西暦）　_____年

出身地(place of origin(where you lived from 5 y.o to 20 y.o, multiple answers possible)（5 歳～20 歳ごろの居住地（都道府県)、複数回答可）_____

最終学歴(completed education, circle appropriate)　（いずれかに〇）

高校　・　短大　・　高専　・　専門学校　・　大学（文系）・大学院（文系）　・　大学（理系）　・　大学院（理系）

Table 3.1 Participants Information

ParID_N	S	Age	Education	Region	Pref
1	F	42	University (Science)	Kanto Area	Tokyo
2	F	42	University (Humanities)	Kyushu, Kanto Area	Nagasaki pref, Tokyo
5	F	31	University (Humanities)	Kanto Area	Tokyo
7	F	54	Junior college	Kanto Area	Tokyo
8	M	23	High school	Hokkaido	Hokkaido
9	F	48	University (Humanities)	Kanto Area	Tokyo
10	F	37	University (Humanities)	Kansai Area	Osaka
11	F	62	Junior college	Kanto Area	Tokyo
12	M	70	University (Science)	Kanto Area	Tokyo
13	F	44	University (Humanities)	Chuugoku region, Kanto Area	Shimane pref, Tokyo
14	F	56	University (Humanities)	Kanto Area	Ibaraki pref
15	M	62	Graduate school (Science)	Chuubu Region	Ishikawa pref
16	F	48	University (Science)	Shikoku	Kagawa pref
17	M	39	University (Humanities)	Kanto Area	Tokyo
19	F	39	High school	Kanto Area	Tokyo
20	F	60	University (Humanities)	Kanto Area	Tokyo
21	F	40	Graduate school (Humanities)	Kanto Area	Tokyo
22	F	57	Junior college	Kanto Area	Tochigi pref
23	F	45	University (Humanities)	Kanto Area, Kanto Area	Saitama pref, Tochigi pref
25	M	52	University (Humanities)	Kanto Area	Tokyo
26	F	54	University (Humanities)	Kanto Area	Tokyo
27	M	67	University (Humanities)	Kanto Area	Tokyo

ParID_N	S	Age	Education	Region	Pref
29	F	20	High school	Kanto Area	Kanagawa pref
30	F	54	University (Science)	Kanto Area	Tokyo
31	F	52	Graduate school (Humanities)	Kanto Area, USA	Tokyo, USA
32	F	45	University (Science)	Kanto Area	Tokyo
33	F	34	University (Humanities)	Kansai Area	Osaka
34	F	58	Vocational school	Kanto Area	Tokyo
35	F	58	Junior college	Kanto Area	Tokyo
36	F	27	Junior college	Kansai Area	Osaka
37	F	23	High school	Chuubu Region, Kanto Area	Nagano pref, Tokyo
38	F	37	Junior college	Kanto Area	Saitama pref
39	F	37	High school	Kanto Area	Tokyo
40	F	69	Vocational school	Chuubu Region	Yamanashi pref
41	F	41	University (Humanities)	Kanto Area	Tokyo
43	F	49	High school	Kanto Area	Saitama pref
44	M	68	University (Humanities)	Kanto Area	Tokyo
46	F	42	University (Humanities)	Kanto Area	Tokyo
47	F	51	University (Humanities)	Chuubu Region	Aichi pref
48	F	40	University (Humanities)	Kanto Area	Tokyo
49	M	69	University (Humanities)	Kanto Area	Tokyo
51	F	56	University (Humanities)	Chuubu Region, Kanto Area	Niigata pref, Tokyo
53	F	68	University (Humanities)	Kanto Area, Kanto Area	Kanagawa pref, Tokyo
54	F	47	University (Humanities)	Kansai Area	Hyougo pref
55	M	59	Vocational school	Kanto Area	Tochigi pref
56	F	50	University (Humanities)	Kanto Area	Saitama pref

ParID_N	S	Age	Education	Region	Pref
57	F	58	University (Humanities)	Hokkaido , Kansai Area, Chuubu Region	Hokkaido, Kyoto, Niigata pref
58	F	62	University (Humanities)	Kanto Area	Tokyo
59	M	45	Graduate school (Humanities)	Kanto Area	Kanagawa pref
60	F	48	Graduate school (Humanities)	Kansai Area	Shiga pref

Table 3.2 TmP with Frequency > 5

Clip ID	TmP	POS	Romanization	Translation	TmP Type	Freq	Pct
1	から	par	kara	from (e.g. time)	Start	18	36%
1	まで	par	made	until (a time)	End	17	34%
1	最後	n	saigo	end	End	9	18%
1	で	par; conj	de	and then, at	Shift	8	16%
1	最後は	n	saigo wa	at the end	End	8	16%
1	そして	conj	soshite	and then	Other	6	12%
2	から	par	kara	from (e.g. time)	Start	44	88%
2	まで	par	made	until (a time)	End	15	30%
2	で	par; conj	de	and then, at	Shift	11	22%
2	そして	conj	soshite	and then	Other	7	14%
2	それから	expr	sore kara	and then	Shift	7	14%
2	と	conj	to	when/if	When-shift	6	12%
2	最初は	n; par	saisho wa	firstly	Start	6	12%
4	で	par; conj	de	and then, at	Shift	31	62%
4	から	par	kara	from (e.g. time)	Start	30	60%

Clip ID	TmP	POS	Romanization	Translation	TmP Type	Freq	Pct
4	と	conj	to	when/if	When-shift	19	38%
4	そして	conj	soshite	and then	Other	15	30%
4	それから	expr	sore kara	and then	Shift	12	24%
4	また	Adv	mata	again	Other	12	24%
4	その後	expr; n	sono ato	after that	Shift	8	16%
4	最初	n	saisho	beginning	Start	8	16%
4	最初は	n; par	saisho wa	firstly	Start	7	14%
4	今度は	n; par	kondo wa	this time	Shift	6	12%
4	最後	n	saigo	end	End	6	12%
4	次に	conj	tsugi ni	next	Shift	6	12%

Table 3.3 Figure with frequency > 5

Clip ID	Subject/ Object	Par	Predicate	Freq	Pct
1	お婆さん	に	なる	28	56.0%
1	年	を	取る	21	42.0%
1	大人	に	なる	11	22.0%
1	年	を	重ねる	10	20.0%
1	老人	に	なる	7	14.0%
1	白髪	に	なる	6	12.0%
2	夜	に	なる	29	58.0%
2	夜	zero	zero	10	20.0%
2	昼	に	なる	9	18.0%
2	雲	が	流れる	7	14.0%
2	明かり	が	つく	7	14.0%
2	夕方	に	なる	7	14.0%
2	zero	zero	なる, 暗い	6	12.0%
4	春	に	なる	26	52.0%
4	花	が	咲く	23	46.0%
4	夏	zero	zero	15	30.0%

Clip ID	Subject/ Object	Par	Predicate	Freq	Pct
4	秋	に	なる	14	28.0%
4	葉	が	落ちる	13	26.0%
4	zero	zero	始まる	12	24.0%
4	雪	が	積もる	11	22.0%
4	夏	に	なる	10	20.0%
4	春	zero	zero	10	20.0%
4	秋	zero	zero	8	16.0%
4	雲	が	流れる	6	12.0%
4	緑	に	なる	6	12.0%