

An analysis of separating event verbs in Romanian and French from a multidimensional perspective

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Abstract. Cross-language research on motor events shows that verbs with different structural types show different lexical granularity. In this paper, 24 separate events are analyzed by using multi-dimensional analysis and cross-language comparison between French and Romanian, which belong to the same Romance language family, to further study the relationship between lexical diversity and language typology. Whether the semantic domain of separate events manifests itself in a similar way explores how lexical diversity is driven by language types.

Keywords: lexical diversity, French, Romanian, multidimensional analysis, separation events.

1. Introduction

Lexical classification does not directly reflect common non-verbal cognition, but to some extent linguistic conventions vary freely according to historical, cultural, cultural, and environmental conditions (Bowerman and Choi 2001; Malt et al.1999, 2003; Wilkins and Hill 1995). According to this view, even for seemingly universal human experience and activity, people often use words to involve formulating language-specific classification principles. (Bowerman and Choi 2001, 2003; de Leo n 2001; Pye et al.1995). French and Romanian are both Romance languages and share similar cultures and histories. By calculating the lexical diversity of the two, the analogy shows the typology differences in the separation events.

2. Literature review

2.1. Events

Studies on events dates back to the Plato era, "events are what happened" (Barbara 2011). Since the 20th century, the study of events has been a hot topic of philosophy and linguistics (Reichenbach 1947; Vendler 1957; Quine 1960; Davidson 1967; Montague 1968; Vikner 1994; Kearns 2003; Maienborn 2008). The second half of the 20th century, Events are divided into four types: state (state), activity (activity), achievement (achievement), and completion (accomplishment) (Vendler, 1957), The concept of event element and event individuality, Distingudistinguishes objects from events, Established the ontological status of the events (Davidson, 1967) The 1994 Vikner (1994) identified four types of events (eventuality): state (state), process (processes), delay (protracted events), and transient (instantaneous events). Zaks and Tversky2001 proposed the concept of events in related studies: "event" (events) refers to "the period of time conceived by the observer and positioned with start and end" (Zacks & Tversky2001:3-21) on this basis, Talmy further the the evidence of the motor events, , Studying the law of mapping semantic categories to formal categories, Talmy (1991) proposed the lexical pattern of macro events from a cross-language perspective, In particular, the way macro events are apped to the syntactic structure by language, Divlanguages into verb frame languages and satellite frame languages, This typological classification has a profound influence in the field of cognitive linguistics —— "verb frame language" (verb framed languages) and "Satellite frame language" (satellite framed languages) (satellite frame language, That is, using his satellite components to express paths, body, state changes, certain behavioral associations and most of the completion), This conclusion successfully distinguishes between the formal categories of language expressions, such as "verbs, satellite morphemes, etc.", And semantic categories such as focus,

background, path, etc. This is a dichotomy language type, () Talmy dichotomy theory received scholars challenge from Slobin, proposed does not belong to the dichotomy of the remaining language type, think language is more inclined to be divided into three types: verb framework, satellite framework language and equilibrium framework language (level both s language characteristics, and v language characteristics. In terms of movement / displacement events, neither French nor Romanian have any word (action + mode) with peripheral elements

2.1.1 Macro events

Talmy (1991) first proposed the concept of a macro event and introduced it into cognitive linguistics. Macro event (Macro-event) is a basic semantic category. This category tends to combine recurring complex events into a unit event and into a single sentence (Talmy 1985,2000:216; Li 2018). Macro events include frame events and secondary events, including five different types of frame events: motion events, state change (change of state) Body Phase (temporal contouring) events, Action Association (action correlating) events, and Implementation (realization) events. It can be seen that the framework event schemmaps five different conceptual domains, including motion or azimuth events in space, body phase events in time (body), state change or persistent events, association events between behaviors, completion or confirmation events in the realization conceptual domain.(Talmy 1991, Talmy2000)) Li Fuyin (2020) further proposed the macro event hypothesis (Macro-event Hypothesis), and according to the theoretical basis of the macro event, both French and Romanian can be identified as the macro event language model.

The study of events in linguistics can be divided into two directions: on the one hand, it focuses on the verb as the core and examines the event structure and its expression in language; on the other hand, it focuses on the differences in language expression, so as to promote the study of language typing. The dichotomy theory proposed by Talmy belongs to the latter category. This theory is based on Talmy's theory of macro events and the concept of event fusion (Li Fuyin, 2020). Research of events has not been limited to linguistics, There is already a trend of interdisciplinary spread, Such as events are explained in philosophy: events exist in time and space, Rerecurrent and reproducible (Montague, 1968); Events in the interpretation of neurology: events are dynamic, hierarchical, integrated, and regulatory (Langacker 1987:100); The common sense of an event is explained as: "The event is regarded as a concrete thing, To take up a certain position, For a certain period of time, Like unrepeatable entities; events are abstract, eternal, universal, Like a reproducible entity that can occur several times in different locations " (R oberto, Achille 2008:4); And within one discipline alone, There is a trend of development from multiple perspectives (Du Jun, Li Fu, 2015), In a single subject of cognitive linguistics, The perspectives of studying events include: semantics (event type), syntax (event diagram), metaphor (metaphor of event structure) and other core perspectives.

2.1.2 Sub-events

Sub-events have three structural relationships: sequence, repetition and simultaneously. These three structural relationships have been studied in linguistics (Mourelatos 1978; Bach 1986), such as "he broke the cup" ("beating" and "broken" successively). Givon (2001:44,2009) proposed four dimensions of semantic cognition of event fusion theory: simultaneity of events, direct contact, the similarity between the participants and causality. Among them, the conceptual integration of causal events and the integration of small sentences are the focus of scholars (Wolff 1999,2003; Talmy 2000b; Givon 2001). Croft (1991) believes that an event can be conceptualized as an atomic event (atomic event) as long as any of the causal type is physical, volitional, affective, and induced. Causality is divided into direct causality and indirect causality, and the former is more likely to be conceptualized as a single event (Wolff 2003) than the latter. Direct causality is divided into initial causality (onset causation) and persistent causality (extended causation). For example, window closed motion events add a causal chain caused by the perpetrator, thus representing a causal chain event framework.

3. Event classification

Unlike the existing literature on events, the classification area of events took nearly 20 years to attract academic attention (Bowerman, 2005; Bowerman & Choir, 2003; Majid et al., 2007, 2008; Saji et al., 2011; Shaefer, 1980; etc.). Among them, motor events become the focus of research, and the separation event, namely "separation in the integrity of objects or matter", is the secondary subordinate subevent of the subevent of the motor event (Hale & Keyser, 1987)

4. Research methods and procedures

4.1. Study Methods

Multidimensional scaling (Multidimensional scaling, abbreviated as MDS, or), also known as similarity structure analysis (Similarity structure analysis), is a technique used to analyze similarities or distances between data. Its goal is to map the data points to a low-dimensional space (usually in two or three dimensions), while trying to preserve the original distance or similarity relationship between them. This technique is often used to visualize high-dimensional data in order to easier understand and interpret the relationships between the data.

The basic idea of MDS is that if the distance between two data points is small in the original space, their projected distance in the low-dimensional space should also be small, and vice versa. MDS attempts to find a representation of a low-dimensional space such that the difference in Euclidean distance or other similarity measures between data points is minimized. MDS is commonly used in data exploration and visualization, and by mapping high-dimensional data to two-or three-dimensional space, one can more easily observe the patterns, trends and cluster structure of the data, thus providing a more intuitive understanding. One of the methods of multiple variable analysis is a common method of statistical empirical analysis in sociology, quantitative psychology and marketing.

4.2. Content source and collection

4.2.1 Participants

In this paper, 10 native French speakers and 10 native Romanian speakers are invited to describe the video content of the 24 video clips and record the language clips used to describe the process. 24 videos for different types of motor separation events. In order to ensure the accuracy of the data in this experiment and reduce the influencing factors unrelated to this article (cognitive differences due to age and sociodemographic hierarchy), the subjects in this study were all undergraduate and graduate students with an average age of 20-23

4.2.2 Video introduction

The average clip length of 24 material video is 10 seconds, showing the change of different objects stimulated by different external forces, C1-C 17 video from 61 video clips taken by Max Plank, C 18-C 24 borrowed Jing Du video shooting content, and the second remake, further exclude the research data caused by the subject social hierarchy, age, remake ensures the accuracy of video recording. According to the different types of separation motor events, 24 videos were classified, and 24 material fragments were divided into 7 different separation types.

Table 1. opening separations (C1-C6)

Separation Event	C 1_door	C 2_case	C 3_boiler	C 4_pen	C 5_envelope	C6_curtai n
Setting	Open doo r	Open a big case	Open boiler /take cover off boiler	Take top open	Open envelope	Open curtain
The type of separation	Opening (separation)	O pening	O pening	O pening	O pening	O pening
French verbs	ouvrir	ovrir	Ovrire(8)prendre(2)	Ovrire(7),enlever(2)tient(1)	ovrir	tirer(8)ovrire(2)
Romanian verbs	A împinge(1), a deschide	A Deschide	a deschide, se lua jos(3), ridică(2)	a deschide(1),da jos(2), a scoate(7)	a deschide	a Deschide ,trage(4), da draperie de(2)

Table 2. cutting separations (C7–C9)

Separation Event	C7_apple 1	C 8_daikon	C9_apple2
Setting	Make single incision in apple with tool	Slice white daikon lengthwise with tool into two pieces	S plit apple into two with single knife blow
The type of separation	Cutting	Cutting	Cutting
French verbs	Découper(3)diviser(5)séparer(2)	découper	Couper (9),taper(1)
Romanian verb	a împărțiți (8) a tăia(2)	A tăia	A felia(1),tăia (9)

Table 3. breaking separations (C10–12):

Separation Event	C10_egg	C 11_orange	C 12_banana
Setting	Break shell of an egg	Peel an orange almost completely by hand	Peel a banana completely by hand
The type of separation	Breaking	Breaking	Breaking
French verbs	casser	Peler(2),épluche(6)déchirer(2)	Peler(2),épluche(7)déchirer(1)
Luo language verbs	a sparge	a rupe(1),descoji curăță (2)	A Curăță(5),dă Coaja jos,(1)desface(4)

Table 4. tearing separations (C13):

Separation Event	C 13_material		
Setting	Tear material about half -way through with two hands		
The type of separation	Tearing		
French verbs	Déchirer (9) séparer(1)		
Romanian verbs	a rupe (9), a despături(1)		

Table 5. parting separations (C14–19)

Separation Event	C 14_chair	C15_scissors	C16_leg s
Setting	Push chair back from table	Open scissors	Step one leg aside
The type of separation	Parting	Parting	Parting
French verbs	pousser(2)tirer(6), reculer(1), bouger(1)	ouvrir	ouvrir(2), séparer(1), écarte(7)
Romanian verbs	a separa (1)a împinge(7), a da mai în spate (2)	adeschide(8), a desface(2)	a întinde(1), a despărta, a îndeparteaza(2), a mișca(1)

Table 6. spreading separations (C20–24):

Separation Event	C 20_sunshade	C21_magazine	C22_hand	C 23_scarf	C24_carpet
Setting	Open a sunshade	Open a magazine	Open hand	Spread a scarf	Spread a carpet
The type of separation	Breaking	Breaking	Breaking	Breaking	Breaking
French verbs	ouvrir	ouvrir	ouvrir(4), tendre(6),	Étendre(5), Déplier(4), balancer(1)	Étendre(3), déballer(2), Dérouler(5)
Luo language verbs	A deschide, a desfășura(1)	a d eschide	a deschide,a întinde (1) desface(3)	A desface, a desfășura(3)	a desface(1), a întinde(6) a pune(3)

4.3. Study process

The above corpus was sorted out, MDS was used to analyze and calculate the effective data, check the dimension reduction effect, judge the accuracy of the data, elbow analysis was used to find the best cluster, and cluster typological analysis.

4.3.1 Check the dimension reduction effect with the pressure value

The pressure value (stress value) is usually used to evaluate the effect of the dimension reduction algorithm in maintaining the distance relationship between the data. Generally speaking, the smaller the pressure value, it means that the reduced data points better maintain the relative distance

relationship between the original data points in the low dimensional space (Kruskal, J.B., & Wish, M.(1978); Torgerson, W.S.(1952); Gower, J.C.(1966); Cox, T.F., & Cox, M.A.(2000)) Testing the dimension reduction effect is usually carried out in the following ways: First, compare the pressure value of different parameter Settings or different dimension reduction algorithms: when using different parameter configurations or different dimension reduction algorithms, the corresponding pressure value can be calculated and compared. Lower pressure values generally indicate a better dimension reduction effect. Then, visualize the dimension reduction results: the dimension reduced data points are projected into two-dimensional or three-dimensional space, and the relationship between the data points is displayed using scatter plots or other visualization methods. Observe whether the data points after dimension reduction can maintain the structure and distance relationship between the original data points.

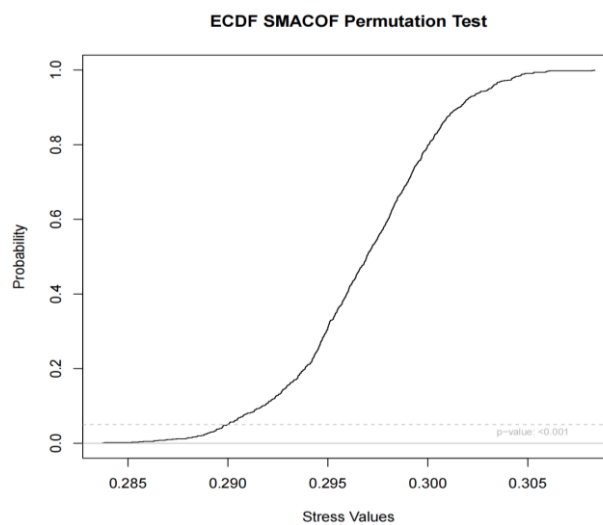


Figure 1 effect on Romanian pressure value

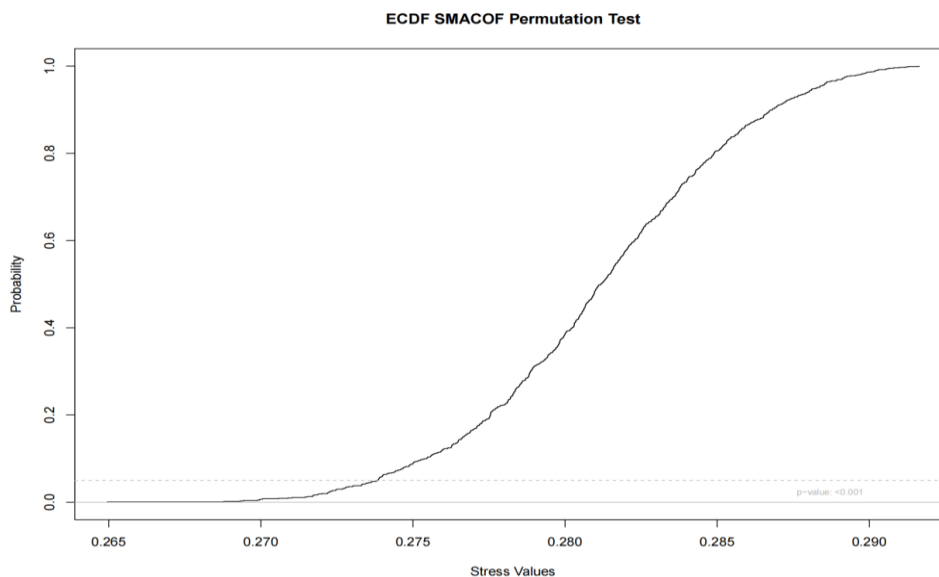


Figure 2. Effect of the French pressure value

4.3.2 Suggestions for cluster classification (elbow method)

Cluster classification suggestion method, also known as the elbow method. In order to group the samples in the data set into clusters with similar characteristics, the elbow method is used to help determine the optimal number of clusters: drawing a graph with the number of clusters selected (numbers of cluster) as the abscissa, and the corresponding cluster quality index (such as average distance) as the ordinate (within-cluster sum of squares). In Figure 3 below, the position where the

curve drops suddenly and flattened out is at 3. This is "elbow", where the best number of clusters for a French separation event is 3 clusters. In Figure 4 below, the position where the curve drops suddenly and flattened out is at 3. This is "elbow", where the best number of verbs used for Romanian separation events is 3 clusters. It was observed that the same number of clusters were used in both languages.

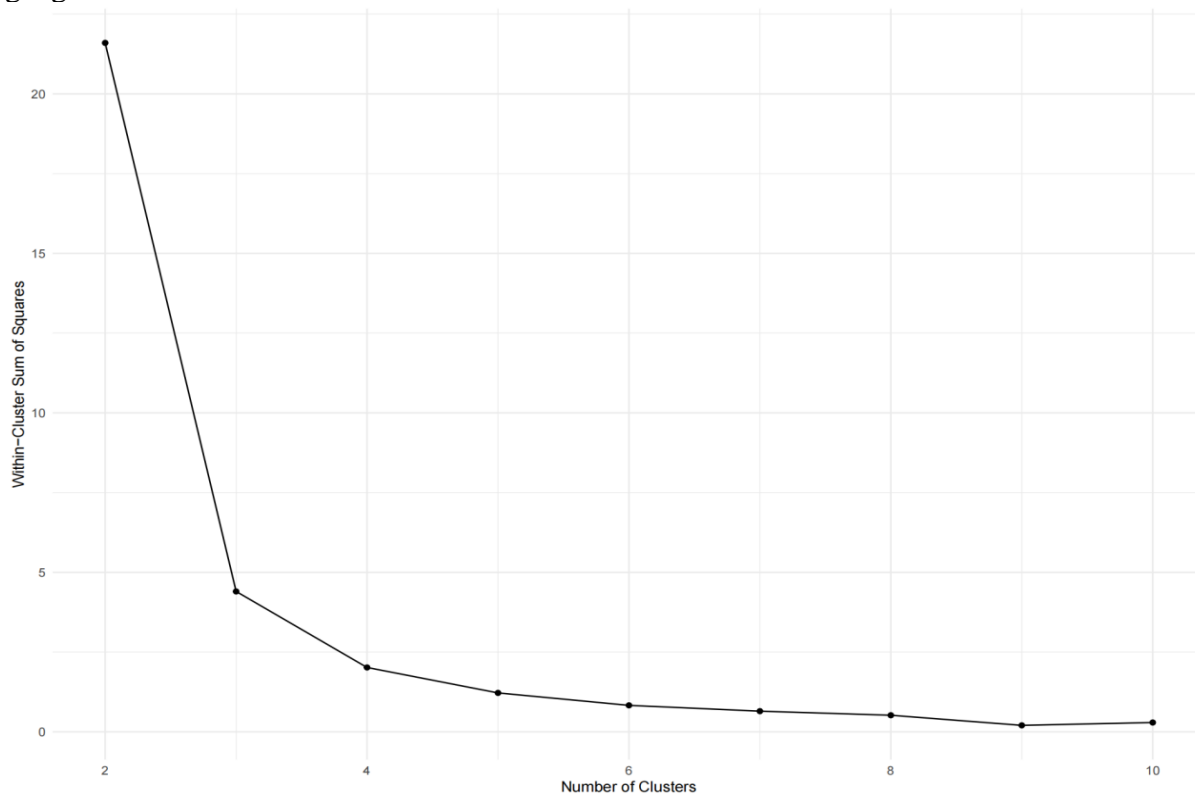


Figure 3. Number of French clusters

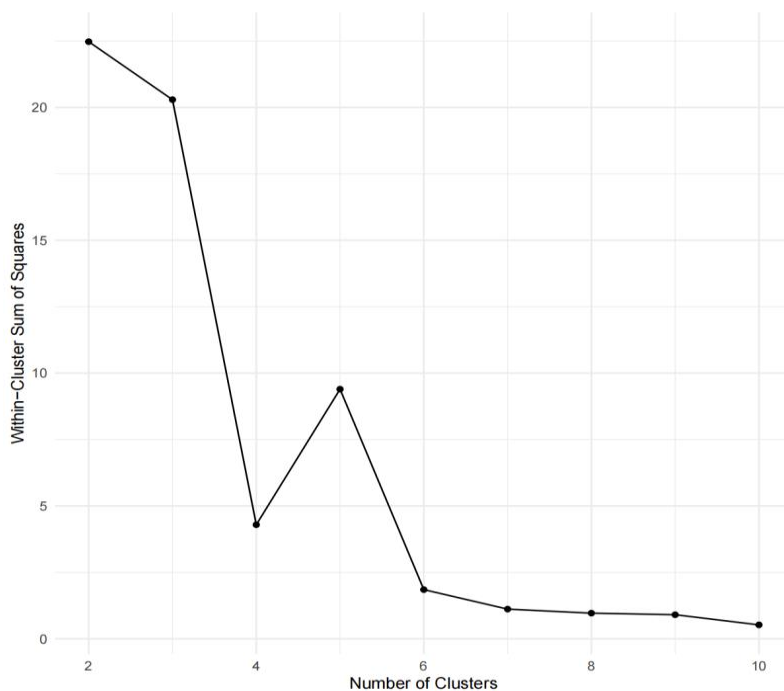


Figure 4 number of Romanian clusters

5. Study results and discussion

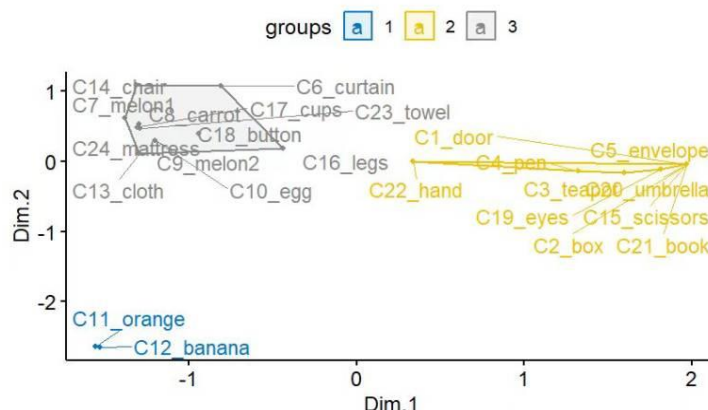


Figure 5 A rendering of French — mds

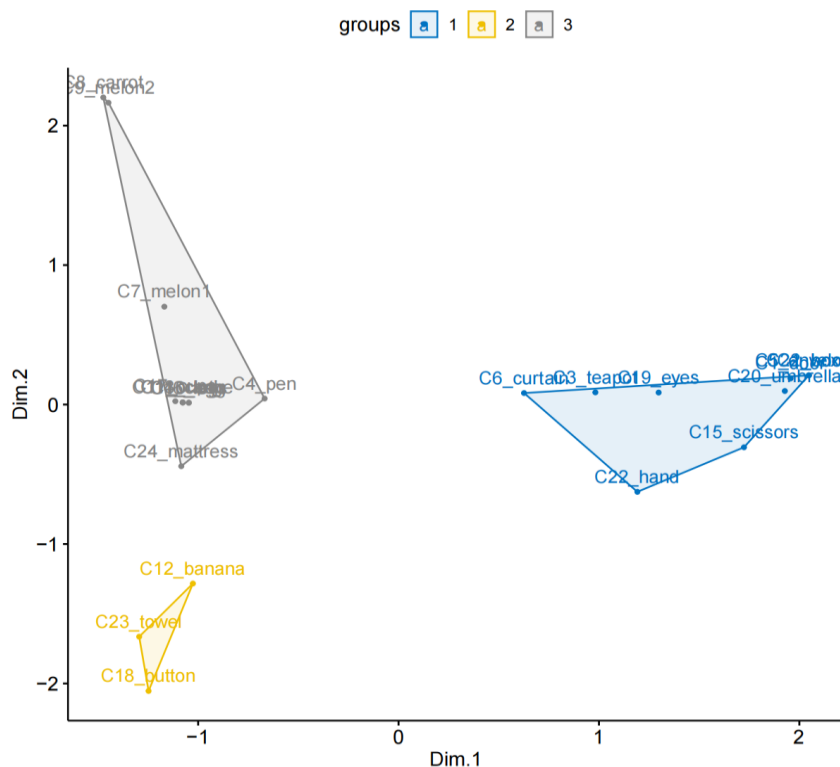


Figure 6. A rendering of Romanian — mds

These separated event sub types were compared against the clusters in the name similarity multidimensional scaling (MDS) solution for each language, demonstrating that for the sub events in motor events (separated events), 24 event segments were grouped into three clusters in both languages.

French divides the 5 opening events (C1-C5) and 3 unfolding events (C20, C21, C22) and 2 separation events (C15, C19) into one group, Named the event by using the same word "open ouvrir", The other two expansion fragments (C23C24) are all named after "etendre", The other open fragment (C6) marks them with a "tirer", In this group, although the cause and effect of the force, But the objects are not completely separated, That is, although the appearance is changed, But this state change can be restored. C11 and C12 (two breaking events) form an isolated group of verbs used as peler and eplucher. Cutting event segment (C7-C9) significant co-occurrence, not only into the same cluster, and use the verb "decouper" to express, and C18 significantly less, verbs "deballer", "deboutonner" and the two verbs are not used as the remaining 24 groups, the root bouton noun, boutonner verb, bouton meaning, deboutonner verb solution bouton, only in specific C18-button scenario.

In both of the above languages, both French and Romanian distinguish opening separations and cutting separations, and this different type of separation forms two clear clusters. Five of the opening separations (C16) fragments are divided into clusters, and the verb usage frequency is relatively high in this cluster: ouvrir in French and a deschide in Romanian. In addition, all cutting separations (C79) events are always grouped in the same cluster, French with decouper, diviser, and Romanian with atăia. To mark the event. That is, in this dual languages, opening separations and cutting separations are similar, clearly named after the same label. Breaking events (C12) is named after a unique label in both languages, using multiple verbs simultaneously, with the verb "pearl", "eplucher" and "dechirer" in French, and in Romanian with the verb " a Curăță " "a d a Coaja jos " "a desface " Represents, and C12 is always located in the least number of events in a cluster, with a unique label named fixed in both languages; C14 and C16 in the two languages for the marked verbs are less significant, no fixed label, using a variety of different ways to describe the occurrence of events, in French "ouvrir "" separer "" ecarte r "and" Pousser "" Tirer "" reculer "" bouger "are marked with" a Intinde "" a desparti "" indeparteza "" a misca " in Luo. C13, as the only event fragment belonging to tearing separations, is identical with C6-C10 in French and Romanian. Although it belongs to the failed event type C7-9cutting separations C10breaking separations, it is divided into a cluster, where the object is affected by force, and this change is not recoverable.

Of the seven event types (opening separations, cutting separations, breaking separations, tearing separations, parting separations, spreading separations), opening separations uses the least number of verbs. From the level of similar multidimensional comparison, French and Romanian have high similarity, when expressing an event type in Romanian with more verb category to elaborate, also need to be used in French is more diversified verbs, when a stimulus fragments in general only a unified verb, French speakers use less verbs.

6. Epilogue

This paper focuses on the French and Romanian verb types, extending the semantic domain from movement events to separate events, to test the relationship between the diversity of vocabulary types, although the two language verb classification is not one-to-one, identical, but Romanian and French also as a "split" language, has a wide vocabulary resources, it has similar vocabulary granularity, these several separation events, is habitual and universal in two cultures. Secondly, this paper only focus on 24 separation events, they are composed of seven sub types, to further explore the vocabulary diversity, language interaction between type and event type, in the future research: 1. Can explore more large data set, and other common separation events, such as puncture, carving etc. You can join more different languages, especially the historical and cultural differences of language, further exploration research, can further reveal the mystery of language types.

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