Local Coherence and Subject Continuity: An Analysis Within the Centering Theory

RESEARCH ARTICLE

Çağrı KAYGISIZ[1], Nermin YAZICI[2]

1 Dr. University of Turkish Aeronautical Association, Rectorate, cgr.kaygisiz@gmail.com, ORCID: 0000-0002-9650-3889.

2 Prof. Dr., Hacettepe University, Faculty of Education, nerminyazici@gmail.com, ORCID: 0000-0003-0145-9772.

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Abstract

Writing, which includes complex processes influenced by many factors, isthe least supported linguistic skills in the social context outside the learning environment compared to other learning areas. For this reason, practices in schools are important in the development of writing skill. As these practices aim to ensure that students gain awareness of the functioning of the language system and produce texts that are compatible with the discourse features shaped in line with communicative purposes, students are taught how to make choices compatible with the text type. Therefore, theories and approaches that describe how to make necessary choices to improve writing skill among the most important components of teaching effective writing skill. In terms of teaching writing, centering theory is essential as it provides descriptions for the discourse-compatible choices and the establishment of coherence relations needed for text production. Therefore, the aim of the study is to discuss why the centering theory should be taken into account in the practices for the development of writing skills based on the literature, and to describe how the traces of local text coherence and subject continuity are used in conjunction with the principles and concepts set forth by the centering theory

Keywords: *writing skill, coherence, local coherence, centering theory*

Yerel Metin Tutarlılığı ve Konu Sürekliliği: Merkezleme Kuramı Çerçevesinde Bir Çözümleme

Öz

Birçok faktörün etkili olduğu ve karmaşık süreçler içeren yazma becerisi, diğer öğrenme alanlarıyla karşılaştırıldığında okul dışı toplumsal bağlamda en az desteklenen dilsel beceri konumundadır. Bu nedenle yazma becerisinin gelişiminde okullarda yapılan uygulamalar önemlidir. Bu uygulamalar yoluyla öğrencilerin, dil sisteminin işleyişine ilişkin farkındalık kazanması ve iletişimsel amaçlar doğrultusunda şekillenen söylem özellikleriyle uyumlu metinler üretmesi hedeflendiğinden; metin türüyle uyumlu seçimlerin nasıl yapılacağı öğretilmeye çalışılmaktadır. Bu bağlamda yazma eylemi için gerekli seçimlerin nasıl yapılacağına dair betimlemeler yapan kuram ve yaklaşımlar yazma öğretiminin önemli bileşenlerinden. Yazma öğretimi açısından ele alındığında merkezleme kuramı, metin üretimi için ihtiyaç duyulan söylem uyumlu seçimler ile tutarlılık ilişkilerinin kurulumuna dönük betimlemeler sağlaması bakımından son derece önemlidir. Bu bağlamda çalışmanın amacı merkezleme kuramının yazma becerisinin gelişimine dönük uygulamalarda neden dikkate alınması gerektiğini alan yazından hareketle tartışmak ve yerel metin tutarlılığı ile konu sürekliliğine ilişkin izlerin nasıl kullanıldığının merkezleme kuramının ortaya koyduğu ilke ve kavramlar doğrultusunda betimlemektir.

Anahtar Kelimeler: *yazma becerisi, tutarlılık, yerel tutarlılık, merkezleme kuramı*

Introduction

The writing skills, which include extremely complex processes influenced by many factors, are the least supported linguistic skills in the social context outside schools compared to other linguistic learning areas. For this reason, activities and practices in schools are important in the development of writing skills. Through these activities, students are taught how to establish networks of relationships between text layers, and how to provide logical interactions between words, syntactic features, and the discourse structure of the text. As revealed by Graham and other (2015), educational practices demonstrating the working systematics of the text increase the possibility of students' acquiring the knowledge, skills, and processes required to produce texts appropriate to the text type.

In the act of writing that includes progressive processes, the first step is planning wherein thoughts are produced within the scope of the planning process, and later decisions are made regarding the organization of these thoughts. The next stage is the writing process, which can be defined as putting these thoughts into words, sentences, and discourse structures shaped in line with the communicative purpose (Trapman et al., 2018). Therefore, it is important to identify the discourse features shaped by the

communicative purpose and determine how the variables belonging to these features are projected on the macro- and micro-structure of the text.

In the writing process, meta-linguistic knowledge, i.e., the grammatical knowledge structure about how the meaning is formed, needs to be clarified rather than the grammatical structure (Carther & McCarthy, 2006). Meta-linguistic competence in the context of writing comprises two separate processes, namely, knowledge analysis, which is the construction of an open and conscious presentation of linguistic knowledge, and process control, which is the ability to participate in knowledge selectively and apply it accordingly (Bialystok, 1987, 2001).

Text production requires the establishment of networks of relationships between text layers. Therefore, how to monitor the transition between different sources of information and the use of information types should be inculcated while teaching writing skills (Chenowet & Hayes, 2001; Hayes, 2006, 2012; McCutchen, 2006;). The fact that the subject and focus information in the sentence can change shows that the information conveyed in the text is structured by taking the readers' belief, knowledge, and attentional structures into consideration (Vallduvi, 1992). In addition, since the cognitive state changes depending on the discourse context, readers are also informed about how the transferred information will be placed in the knowledge store (Vallduvi, 1992). However, it is necessary to know how to organize the information needed for the construction of the discourse situation, as information structures are not flexible and cannot adapt to the demands imposed by the context and be activated quickly enough. Although information nodes that make up information structures are represented in a network consisting of interrelated concepts and propositions, they are equivalent to propositions used for mental representation of the text and provide the basis for the knowledge base and discourse representation needed for the presentation of information structures in the propositional network (Kintsch, 1991). All information nodes in the information network are repeatedly multiplied by an activation vector and connection matrix representing the initial activation value; activation values are normalized after each multiplication. In this process, negative activation values are set to zero while each of the positive activation values is divided by the sum of all activation values, so that the total activation value in each cycle is fixed as one, and then the inference processes related to the subject of the sentence are executed (Rumelhart & McClelland, 1986). For this reason, simultaneous selections are made in the intellectual, syntactic, textual, and presentational layers in the writing process. These selections are not just mechanical selections regarding surface structure, accuracy, or spelling, but also analytical selections for shaping thoughts, attitudes, and content in accordance with the rhetorical structure.

Writing and reading are symmetrical skill areas where similar cognitive processes are used in different directions for the production of meaning. Reading acts as a source for the selection required for writing through the inputs it provides for the functioning of the language system. Therefore, reading activities are expected to support the development of writing skills.

The main output of reading is to obtain information from the text, which requires the construction of the mental consistency of the informational presentation in the text. Therefore, it is necessary to analyze how each affix, word, and sentence in the text are related both separately and with other affixes, words, and sentences in the text in accordance with the discourse of the text (Goldman & Rakestraw, 2000). Since this analysis includes the stages of forming mental representations of the events in the text (Zwaan & Radvansky, 1998), readers need to create situational models related to the text (Dijk & Kintsch, 1983; Graesser et al.1997; Johnson-Laird, 1983; Zwaan & Radvansky, 1998). In addition, it is necessary to create multi-level representations of the transmitted information by analyzing discourse structures in the act of reading as well. In this context, situation models play an active role in accessing the deep meaning of the text by contributing to the formation of entities and events caused by the discourse as well as discourse models that represent them during interpretation (Carreiras et al., 1997). However, it is important to know that situation models to be created for the text are limited and actively protect local material in a certain space and time (O'Brien et al., 1998) while making predictions about variables that will affect the situation models to be formed toward the comprehension of the text (Speer & Zacks, 1995).

Understanding the text depends on recognizing the cyclical regularity of expressions in the text. In each cycle, new information networks including short-term buffers are created to initiate the integration process necessary for the activation of information networks, and this process continues until the system is stabilized (Kintsch, 1991). In this process, signals in the text, including repetition order, frequency, and clue words, show the relationship between pieces of information and affect the amount of activation given to certain pieces, thereby defining the macro-structure of the text and organizing it as a coherent mental representation (Kintsch, 1998, 2004, 2013). However, because mental models can be updated, the representation of the text can be changed by adding new pieces of information, which may require new activation processes that involve completely different interpretation of situations. In addition, the representation of the text depends on the information about objects and actions referenced in the text (Graham et al., 1995) and changes in time and aspect units (Carreiras et al., 1997). For this reason, readers have to follow both the information about time and aspect and the information about entities referred to in the text, that is, what the text is about.

In this direction, the centering theory, which is modeled for shaping the attentional structure by determining inter- and intra-sentence relations in the micro-structure required for writing and reading processes as well as for monitoring the continuity of the subject in the text, is important in terms of enabling the monitoring of transitions between the types of information. Another factor that should be considered regarding the writing and reading processes is related to the coherence structure of the texts. Coherence not only refers to the semantic and logical connections within the text that provide access to the deep structures of the texts (Beaugrande & Dressler, 2013) but also contributes to the recognition and establishment of relationships between the text and the context to which the text belongs (Stillar, 1998). For this reason, the centering theory is important for writing and reading processes, as it characterizes entity coherent discourse elements, focuses on capturing salient text entities, and provides conceptualizations related to local coherence and salience (Poesio et al., 2004).

Since accessing the deep meaning of the text requires establishing relationships between text layers, interactions among words, syntactic features, and discourse structures should be established, and the connections between informational and propositional structures should be recognized and followed. In addition to this, mental activation related to what the text is about should also be activated. However, since the amount of information that can be processed at a given moment is limited due to the limitation of working memory capacity, it is important to be able to follow the connections between the concepts during the formation of the text base and the case model. At this point, the centering theory is noteworthy in terms of defining the variables that will contribute to the creation of the situation model and describing the tools that will allow the tracking of information about what the text is about.
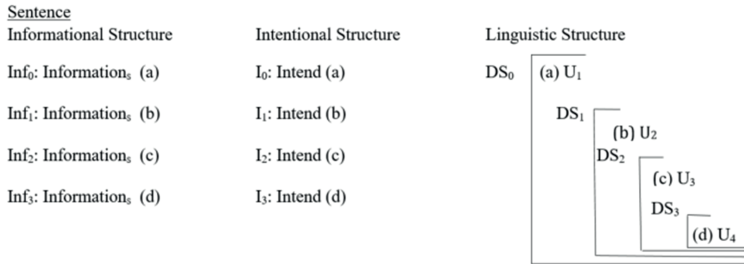
Centering Theory

The centering theory is modeled to examine inter-sentence and intra-sentence reference relationships in the micro-structure. In this theory, it is assumed that texts consist of a multilayered structure and that a single main link is established that allows the flexible distribution of mental resources by contributing to the integration of an already existing sentence with sentences added to the text, and thus, alleviating the cognitive load. In addition, it is stated that it has the characteristic of being salient, which emerges depending on the sentential sequence, thematic role, and semantic features of text entities (Kaygısız et al., 2020). It also aims to characterize entity coherent discourses that are made coherent by introducing and discussing discourse entities and identify which text entities are more salient (Poesio et al., 2004).

The centering theory is intended to follow the center, that is, subject continuity in the text, by shaping and defining changes in the attentional structure. In this context,

Grosz and Sidner (1987) describe three components of discourse structure (DS), namely, linguistic structure, intentional structure, and attentional structure.

Figure 1

Discourse Segment Structure (Adapeted from Mann & Thompson, 1988)

Sentence

Informational Structure	Intentional Structure	Linguistic Structure
Inf_0: $Information_s$ (a)	I_0: Intend (a)	DS_0 (a) U_1
Inf_1: $Information_s$ (b)	I_1: Intend (b)	DS_1 (b) U_2
Inf_2: $Information_s$ (c)	I_2: Intend (c)	DS_2 (c) U_3
Inf_3: $Information_s$ (d)	I_3: Intend (d)	DS_3 (d) U_4

The linguistic structure consists of nested sequential syntaxes. Segment DSn is the utterances (U) produced to meet the communicative purpose; In the intentional structure of the speaker becomes salient. In the discourse segment purpose (DSP), DSn is embedded in another segment DSm, ideally when the purpose of two segments are in the dominance relation. The intentional structure consists of the dominance of communicative intentions and satisfaction precedence relations throughout the discourse. A purpose In satisfaction precedes another Im when In must be satisfied first; the dominance and satisfaction precedence relations impose a structure on the set of the speaker's intentions, the intentional structure of discourse, and this, in turn, determines the linguistic structure (Moser & Moore, 1996). Attentional structure, on the other hand, models the focus of attention of the participants in the discourse at any point in the discourse, and the changes in the attentional structure depend on the intentional structure and characteristics of expressions in the linguistic structure (Grosz et al., 1995). Changes in the attentional structure were defined by Grosz and others (1995) as continuation, retain, smooth shift, and rough shift.

Center Contination: It is a type of transition between consecutive sentences that occurs when the preferred center and the backward-looking center are the same.

Example[*]:

1. I got my notes.

Cb = [?] (Not known according to the previous utterance)

Cp = [I] (According to the previous utterance)

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* All examples were sellected from the data base.

2. I started walking toward the classroom.

Cb = [ø I] (according to the previous sentence)

Cp = [ø I] (according to the next sentence)

* Formulation of Contination Transition Cb(U)i =Cb(Ui-1) and Cb(Ui) is the most ranked Cf (Cf) of Ui

Center Retain: It is the transition type that occurs when the backward-looking centers are the same, but the preferred center of the next sentence is a different text entity.

Example:

1. Then, I came to the school.

Cb = [?] (No previous utterance)

Cp = [I]

2. My friends were waiting for me in the classroom.

Cb = [ø I]

Cp = My friends

Formulation of Retain Transition: Cb(Ui)=Cb(Ui-1) but Cp(Ui)≠Cb(Ui)

Center Smooth Shifting: It is a type of transition that occurs when backward-looking centers are different and preferred centers are the same.

Example:

1. First, we went to the movie.

Cb = [?] (Not known according to the previous utterance)

Cp = [We]

2. The movie was very good.

Cb = [ø We]

Cp = Movie

Formulation of Center Smooth Shifting Transition: Cp(Ui)≠Cb(Ui) but Cb(Ui)=Cb(Ui-1)

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* All formulas were taken from Poessio et. al., 2004.

Center Rough Shifting: It is a type of transition that occurs when preferred centers and forward-looking centers are different.

Example:

1. My roommate had gone to the concert.

Cb = [?] (Not known according to the previous utterance)

Cp = [my friend]

2. My brother was there too.

Cb = [ø Brother]

Cp = Brother

Formulation of Center Shifting Transition: Cb(Ui-1) ≠ Cb(Ui)

The center of an expression is used to refer to the entities that serve to link it to other expressions in discourse segments (Grosz et al., 1995). According to the centering theory, there cannot be more than one subject in a sentence, and thus, there is a single text entity called the backward-looking center (Cb), or the center on which the producer and the recipient focus (Turan, 2002). Accordingly, the backward-looking of the sentence is only possible if the preferred center of the sentence preceding it becomes the forward-looking center, and each sentence contains noun phrases that are likely to be precursors for later pronouns. These noun phrases are called the forward-looking center (Cf) and are ranked according to the degree of salience in the focus of attention. In the next sentence, the noun phrase with the highest probability of being co-referential from pronouns is in the preferred center (Cp) position, and it is the subject of the preferred central sentence, which is the most salient text entity in the focus of attention (Turan, 2002).

Coherence Local Coherence and Pronouns

Textual discourse is formed by bringing together complex structures interwoven with logical coherence networks; in other words, a series of sequential statements must show coherence to form a discourse structure. For this reason, it is important to determine how expressions in the discourse establish a coherent relationship with other discourse units related to them through linguistic tools.

Coherence is the mental reflection of logical forms that contribute to the recognition and establishment of relationships between the text and the context to which the text belongs (Stillar, 1998), and these reflections on the coherence structure are based on complex mental representations (Asher & Lascarides, 2003).

Figure 2

Local Coherence Interpretation of "The teacher prohibited the students from sitting sideways fearing that they might cheat"
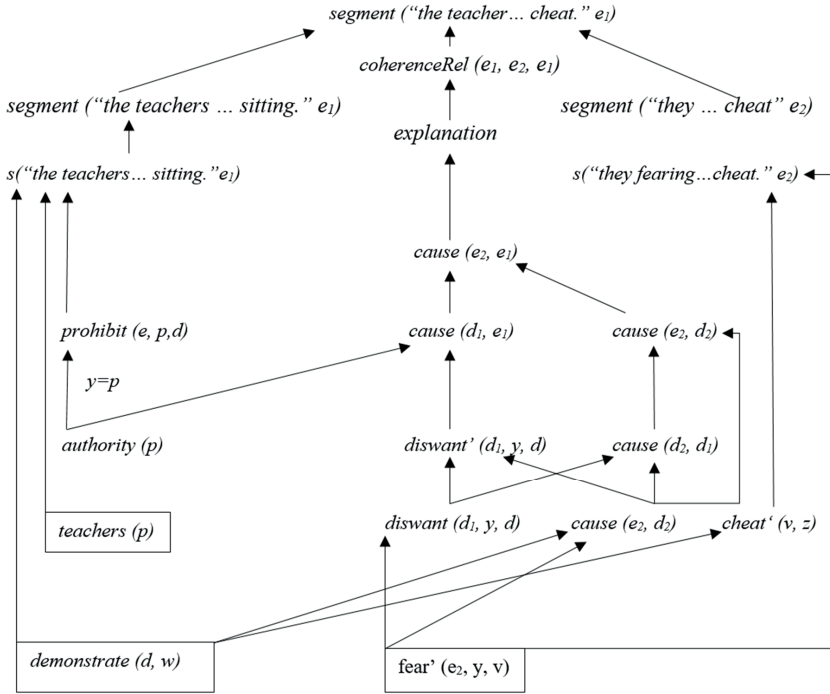
The coherence relation takes place between successive discourse segments and creates larger segments that are hierarchically created as new networks of relationships are established. Hobbs (1993) states that the logical configurations of coherence networks reflected in the surface structure can be made visible through axioms. In this context, when the expression $(\forall x, e)$ s $(w,W) \supset$ segment (w,e) is taken as the discourse segment of any sentence, and the axiom[*] $(\forall w1, w2, e1, e2, e)$ segment $(w1, e1)$ ∧ segment $(w2, e2)$ ∧ coherenceRel $(e1, e2, e) \supset$ segment $(w1, w2, e)$ w1 shows that w1 is the segment of w2 in that it makes visible the causal coherence relationship between w1 and w2 with a subject or claim e1. In this case, the aspect $(\forall e, e2)$ explanation $(e1, e2) \supset$ CoherenceRel $(e1, e2, e1)$ for $(\exists e)$ segment (w,e) can be regarded as a coherence structure in the interpretation of any text (w) CoherenceRel e for the causal relationship $(\forall e1, e2)$ cause $(e2, e1) \supset$ explanation $(e2, e1)$ is the subject or claim of the sentence.

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* The axiom were taken from Hobbs 1993.

The visibility of coherent discourse relationships depends on the availability of information regarding all text entities in segments in the cache memory (Fletcher et al., 1990). For this reason, the processes for the construction of the mental representations of events described and the recall of the mental representations related to the events described earlier are performed. These operations are provided by feedbacks that will be used as a reference point for what information to transfer from the main memory to the cache memory. Otherwise, the limitation in the working memory mechanism will result in no presence of the references to the same text entities in the cache memory and the relationship between the concepts will not be established.

Stance regarding the coherent discourse structure is conceptualized in three dimensions: orientation (sender, text, recipient), attitude (epistemic, deontic, affective), and generality (references to text entities related to the people, places, and time mentioned in the text) (Berman, 2004). The salience of a text entity is directly reflected in the grammatical functions and linguistic form of that entity; for this reason, text entities with a high salience value are located in more salient syntactic positions, such as subject or object. The linguistic realizations of utterances such as nominalization is closely related to the concept of salience and is the main source for defining the salience hierarchy, as text entities are ranked according to the roles they occupy in discourse and the reference relationships they establish with pronouns (Barzilay & Lapata, 2008; Givòn, 1987). In this context, pronouns are a natural source in determining coherence relationships as they provide clues for the establishment of postreferential relations required for signification processes (Gordon et al., 1993).

Entity-based theories characterize the distributions of text entities between discourse expressions and achieve coherence by distinguishing between salient entities and others (Barzilay & Lapata, 2008); in this context, the centering theory is related to the local discourse coherence and provides predictions about which text entities in the discourse will be more salient (Poesio et al., 2004).

The basic assumption of the centering theory is that updates for the local attentional structure or local focus are made in the processing of discourse, that is, there is a forward-looking center (CF) corresponding to the local focus. The local focus also includes information on the importance or ranking of CFs; the local focus is updated after each expression, and CFs are replaced with new ones with each update. Another assumption is that repeating text entities are more coherent than other text entities (Poesio et al., 2004). Accordingly, it is stated that center continuation is more coherent than center retain, and center retain is more coherent than rough shift (Gordon et al., 1993).

Each discourse segment displays coherence with other segments, both locally and globally. Two components of the attentional structure correspond to these two levels of coherence; while local level models change in the attentional structure within the discourse segment, the global level models the characteristics of the attentional structure between segments (Grosz et al., 1986). Thus, local coherence is essential for global coherence and is the primary source for initiating and maintaining inference processes (McKoon & Ratcliff, 1992).

Methodology

One of the quantitative reseach methods, case and correlation research methods were used in the study. In this context, the survey method, which is used to determine certain characteristics of a group (Büyüköztürk et. al., 2018), was employed to determine types of transition used by students in the study group for subject continuity, whereas correlation research was to determine whether there is a correlation between transition types and gender.

The case study model, one of the qualitative research methods, was used in the study. The case study allows comprehensive investigations to be carried out on the case-event in which the researcher is not involved and to describe the current situation. The case study model which is a research method that studies a current phenomenon within its real-life framework, is used in cases where the boundaries between the phenomenon and the content are not fully defined and where more than one evidence and data source is available (Yıldırım & Şimşek, 2013). In the study, a holistic multi-state pattern was used from the case study models. In this patterning method, there are more than one situation that can be perceived as holistic on its own, and each situation is handled holistically within itself and then compared with each other (Yıldırım & Şimşek, 2013).

Correlational research method, one of the quantitative research methods, was used to determine whether there is a gender-related change in the use of transition type. This method is a research in which the relationship between two or more variables is examined in any way without interfering with these variables (Büyüköztürk et al., 2018). For the purpose of the study, exploratory correlation research method was used from correlation research methods. This method is used to try to understand an important event by analyzing the relationships between variables (Büyüköztürk et al., 2018).

Ethics Clearance: This study was carried out with the approval of Hacettepe University Ethics Board date 21.09.2021 and number E-35853172-200-0000-1768562.

Purpose of the Study and Research Questions

In this study, it is aimed to describe how Turkish teacher candidates carry out arrangements related to determining the subject of the text with the consistency of the local text, which is important in the processes of text production and understanding. Therefore, qualitative and quantitative research methods were used together in accordance with the purpose of the study and research questions. In this context, qualitative research methods were used in line with the first, second and fourth research questions, and quantitative research methods were used in line with the third research question.

As started before, in this study, it is aimed to describe how Turkish teacher candidates carry out arrangements related to determining the subject of the text with the consistency of the local text, which is important in the processes of text production and understanding. At this point, the research questions to answered are:

1. Which subject transition type is predominantly used in texts?

2. For what functions are transition types used in texts?

3. Is there a gender-related change in the use of transition types?

4. Is there any change in the number of use of transition types depending on age and education level?

Study Group

In line with the purpose of the study, the study group was formed using the purposeful sampling method. Purposeful sampling method allows in-depth research by selecting information-rich situations depending on the purpose of the study and is used when it is desired to study one or more special cases that meet certain criteria or have certain characteristics (Büyüköztürk et al., 2018). The research was carried out with easily accessible case sampling, one of the purposeful sampling methods. This research method allows the selection of samples that are close and easy to access in terms of providing speed and practicality to the research (Yıldırım & Şimşek, 2013). A total of 205 students, 120 of whom were girls and 85 of whom were boys, who were studying at the Department of Turkish Education in the Faculty of Education of Hacettepe University and voluntarily participated in the study, were asked to produce texts in the genre of memoirs. No guidance was given to the students regarding the subject and content of the texts, and they were free regarding the content.

The content analysis method was used to analyze the data related to case study. Content analysis allows us to work in non-direct ways on determining human beha-

vior and nature (Büyüköztürk et al., 2018). Content analysis is used to identify and quantify concepts that take place in the text and can be applied to any form of communication, while focusing on textual content (Cavanagh, 1997). The most important element in content analysis is the accuracy of the data obtained. Therefore, the coefficient of compatibility between the researchers was calculated to ensure the reliability of the obtained data.

Transition types, which are the markers of local coherence bonds on the text surface, in the produced texts were determined by three field experts and the agreement among researchers was calculated as 0.96. This ratio shows that the inter-researcher agreement was high (Miles & Huberman, 1994), and the evaluation was based on reliable results. SPSS Statistics, version 20.0, package program was used to calculate the frequency values and correlation coefficient of the numerical data.

Findings

The frequency and percentage values of the transition types were given in Table 1, in this context, it was determined that 2.072 transitions were used to clarify the local Coherence networks and refer to the subject of the sentence in the 205 texts produeced. Considering the distributed of the transition types in question, the most used transition type (f=328) was centered continuation. Center continuation was followed by center shifting (f=318), center retain (f=221), and center smooth shifting (f=266).

Table 1

Frequency and Percentage Distribution of Transition Type

Gender			Types of Transition							
			Continuation		Retain		Rough Turn		Smooth Turn	
	f	%	F	%	f	%	f	%	F	%
Female	120	58.54	328	54.67	221	59.89	318	52.82	266	53.09
Male	85	41.46	272	45.33	148	40.11	284	47.18	235	46.91
Total	205	100	600	100	369	100	602	100	501	100

When transitional types were considered in terms of their function in texts, it was seen that they were used for various communicative purpose. In this context, center continuation was used at the highest frequency in the inter-sentence plane, indicating that text producers tended to protect the subject of the sentence. In terms of function, center continuation was used to describe a new situation in texts, refer to new text entiries and remind the sentence subject by refocusing the consciousness of the recipient after the text entities were added to the text. The use of center retain was largely based on the text type. Since thematic roles and syntactic hierarchy affect the continuity of

the subject in memoirs, ownership relation and group-member references increase the use of center retain in such texts. It was found that participands used center retain in the same way they produced texts. Center smooth shifting was used to refer to text entities related to the subject of sentence and to describe their properties.

In Table 2, changes by gender in the manner of ensuring local coherence and the frequency of reference to text entities are depicted. Accordingly, female participants used center continuation most frequently (f = 328), followed by center shifting (f = 318), center smooth shifting (f = 266), and center retain (f = 221), whereas male participants used center shifting most frequently (f. 284), followed by center continuation (f = 272), center smooth shifting (f = 235), and center retain (f = 148). In this context, correlation analysis was conducted to determine if there was a correlation between the use of transition types and gender. It was concluded that there was no significant correlation between transition types and gender since the correlation values calculated in the analysis were $p > 0.5$.

Table 2

Transition Types and Gender Relationship

	Continuation		Retain		Rough Turn		Smooth Turn	
	Female	Male	Female	Male	Female	Male	Female	Male
Pearson Corelation	,034	,037	,043	,049	.037	,045	,012	,025
Sig.	,601	,500	,632	,580	,572	,480	,140	.340
N	100	100	100	100	100	100	100	100

In addition, it was determined that female participants used more transitions than male srudents. The numbers of sentences and words in texts produced were examined to question the source of the difference in transition frequencies. It was concluded that female participants produced longer texts compared to male participants, and as a result, used more transtions.

Table 3

Distribution of Numbers of Sentence and Words by Gender

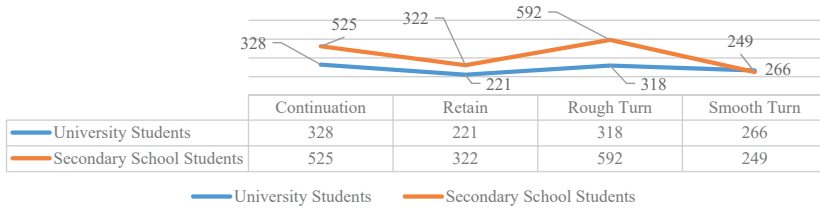| Female		Male	
Numbers of Sentences	Numbers of Words	Numbers of Sentences	Numbers of Words
1870	6325	1418	4198

The results obtained to determine whether there was a change in the use of transition types depending on age and educational status were compared with the results obtained by Kaygısız et al., (2020). As it was seen that secondary school students, too,

used center shifting most frequently (f = 592), followed by center continuation (f = 525), center retain (f = 322), and center smooth shifting (f = 240), the difference in the use of transition types was detected only for center continuation and center shifting. This result shows that there was no significant change in the use of transition types depending on age and educational status.

Figure 1

Distribution of Transition Types for Secondary School* and University Students

	Continuation	Retain	Rough Turn	Smooth Turn
University Students	328	221	318	266
Secondary School Students	525	322	592	249

University Students — Secondary School Students

When the frequency of use of transition types was examined at the grade level, a general distribution was observed, that is, the order of frequency was center continuation, center shifting, center retain, and center smooth shifting at all grade levels.

Table 4

Distribution of Transition Types for University Students

		Types of Transition
		\multicolumn{2}{c}{Continuation}		\multicolumn{2}{c}{Retain}		\multicolumn{2}{c}{Rough Turn}		\multicolumn{2}{c}{Smooth Turn}	
		f	%	f	%	f	%	f	%	f	%
Class 1	Female	46	63,89	86	54.09	52	62.65	75	52.45	79	54.48
	Male	26	36,11	73	45.91	21	37.35	68	47.55	66	45.52
	Total	72	100	159	100	83	100	143	100	145	100
Class 2	Female	21	55,26	75	52.45	39	59.09	69	54.76	54	52.94
	Male	17	44,74	68	47.55	27	40.91	57	45.24	48	47.06
	Total	38	100	143	100	66	100	126	100	102	100
Class 3	Female	28	54,90	91	52.60	63	60	81	50.94	71	53.38
	Male	23	45,10	82	47.60	42	40	78	49.06	62	46.62
	Total	51	100	173	100	105	100	159	100	133	100
Class 4	Female	25	56,82	76	60.80	67	58.26	93	53.45	62	51.24
	Male	19	43,18	49	39.20	48	41.74	81	46.55	59	48.76
	Total	44	100	125	100	115	100	174	100	133	100

* Data on primary school were taken from Kaygısız et. al., 2020

Discussion, Conclusions, and Suggestions

In the present study, transitional types exhibited by memoirs texts obtained from 205 Turkish language preservice teachers were analyzed and classified. In addition, choices for transitional types used in text production were evaluated in terms of the sensitivity (or interaction) exhibited with some variables.

In the analysis, it was observed that transition types were used for various communicative purposes as reported by other studies (Kaygısız et al., 2020; Turan, 2002). The use of transitional types with similar functions in text production offers the conclusion that transition types exhibit certain behaviors specific to the text type. In this context, the recognition of surface structure aspects specific to the text type is extremely important in terms of both text reception (reading) and text production (writing) teaching skills. The conceptualization of the centering theory on text surface aspects through concrete and traceable linguistic units contributes significantly to the education of reading and writing, and the results to this were reported in the literature (Miltsakaki & Kukich, 2000). In this context, the integration of tools provided by the centering theory with activities and practices related to the teaching of reading and writing education in curricula will positively contribute to the development of language skills.

When the results of the present study were compared with other studies (Kaygısız et al., 2020) in terms of educational level and age variables, it was determined that there was no significant difference between secondary school students and university students in terms of text length and number of transition types. Whether this finding was related to the students' inadequacy in the development of their writing skills in the education process or to the early acquisition of optimal aspects of the texts is an issue that needs to be investigated. Memoirs are narrative texts and as stated in the literature, children become aware of narrative structures when they start using language. In this context, systematic information on monitoring of text types and rhetoric structuring based on types as well as process of coding and analyzing algorithmic operations related to the logical designs required the implementation of effective writing processes, related to the working systematic of the language system. In this direction, tools provided by the centering theory will contribute positively to the development of language skills, as this theory provides information on local coherence networks associated with logical links. As the centering theory provides data for the algorithms related to the working mechanics and logic of the language system, it will not only

focus on the development of writing and reading skills but also contribute to the development of listening and speaking skills.

The use of language skills is basically an act of coding and decoding generated codes, and its main goal is communication. In the communication process, individuals aim to produce meaningful content with opportunities provided by the language system. Production of meaningful content and analysis of the produced content basically consist of construction and integration stages. During the construction stage, recipients automatically perceive and interpret the generated content, propositions, conceptual content, and networks of association and simple inference. In the integration stage, the content conveyed is questioned in terms of compliance with the discourse structure shaped in line with the communicative purpose; a kind of pruning process is performed automatically by eliminating the elements that do not match the discourse structure. In other words, while the information network regarding the conveyed proposition content is activated, activation of the network of suggesting coherence with content instead of expressions that are not related to the sentence content and updating with the new proposition contents added to the sentence continue. At the end of the process, the content to be transferred is made meaningful by going through several mental processes. This process necessitates the simultaneous use of short- and long-term memory for both the producer and the recipient. However, as the amount of information that can be processed in a certain time period is limited depending on the working memory capacity, the information about the working systematic of linguistic tools that will help reduce the cognitive load on the working memory is extremely important in the process of encoding and decoding the transferred content. At this point, the tools provided by the centering theory are very important as these tools help describe the traces that allow both monitoring of the local coherence networks regarding the transferred content and access to the subject of the transferred content.

Discourse comprehension comprises performing a series of calculations that are accepted as the proof of comprehension (Kintsch, 1991). Therefore, at the end of the comprehension, individuals are expected to answer questions about what the text is about, and at the same time, perform a series of actions, such as summarizing the text, remembering it, and verifying statements about the text. At this point, it is obvious that tools provided by the centering theory will be useful for the effective use of language as they define the syntactic features and the discourse state to which the text is related and conceptualize the coherence networks.

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