Referential choice in the narrative discourse of people with aphasia

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Abstract

Narration requires the appropriate use of reference, which can be particularly challenging in stories with many characters of the same gender, especially for people with language disorders. This study investigates referential choice in the narrative discourse of people with aphasia (PwA) and typical speakers (TS) by observing reference in general and depending on the potential ambiguity of the situation (characters of the same or different gender) and referential functions (introduction, maintenance, and reintroduction of characters). We found no group differences in the number of nouns and pronouns produced. However, PwA showed an overall tendency toward a higher pronoun-to-noun ratio in both situations with characters of the same or different gender. Both groups had a lower pronoun-to-noun ratio when introducing characters and a higher pronoun-to-noun ratio when maintaining characters, with TS having an even higher pronoun-to-noun ratio when referring to characters of different genders. Nevertheless, when reintroducing characters of the same gender, PwA had a higher pronoun-to-noun ratio, which led to ambiguous reference. These findings contribute to the limited research on referential choice in PwA, suggesting that PwA are sensitive to the characteristics of discourse but have a limited ability to consider listeners' knowledge.
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1. INTRODUCTION

Reference is an essential part of language comprehension and production, as it relates to the linguistic context and physical objects, people, their thoughts, and perceptual experiences in the extra-linguistic world (Vogels et al., 2019). Reference contributes to the creation of cohesion, which is an important aspect of well-formed discourse. Cohesion occurs when utterances in the discourse are connected, and the flow of information across utterances is regulated using linguistic devices, such as connectives and referential expressions (Halliday and Hasan, 1976; Hickmann, 1995, 2003). One of the principles governing the flow of information concerns the marking of the denoted information depending on shared knowledge. This pragmatic aspect of discourse organization is viewed through three types of information: *new*, *given*, and

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presupposed (Givón, 1989). Narrative discourse presupposes the reappearance of the same characters and requires a shift in perspective across characters in line with these three types of information. Consequently, characters must be *introduced* as new story characters, *reintroduced* as given or recently referred to characters, and *maintained* as presupposed characters whose identities are known. As the number of characters and actions in a story increases, the complexity of marking their information status also increases. Therefore, the narrator must know which linguistic devices are appropriate to indicate the information status of characters and must update this information regularly as the story unfolds so that the listener can differentiate between characters and track changes in the information flow. In some stories, such as those with many characters and/or characters of the same gender, this task becomes even more complex, especially for children and people with language disorders, such as aphasia. Aphasia is an acquired language disorder resulting from brain injury that typically affects the left hemisphere following a cerebrovascular insult (ASHA, 2022; NAA, 2022). This study contributes to the limited research that addresses reference in the narratives of people with aphasia (PwA) by comparing them with typical speakers (TS) and observing reference in situations with different cognitive demands. Referring by adult speakers with language disorders in general and PwA in particular has been less studied in pro-drop languages, and there is a lack of detailed research on Slavic languages, including Croatian – the focus of this study.

1.1. Referential choice

Speakers can use a range of referential expressions, from pronouns (null and overt) and demonstratives to proper names and definite noun phrases, depending on the linguistic and extra-linguistic context. The referential choice depends on the referent's information status. The relationship between the type of information and referential expressions has generally been explained in terms of *accessibility* (Ariel, 1990; Arnold, 2010), *givenness* (Gundel et al., 1993), *topicality* (Givón, 1983), and *salience* (Grosz et al., 1995). Although these concepts have been conceived differently (see more in Gundel, 2010), the theoretical assumptions on which they are based overlap to some extent (Kaiser and Fedele, 2019; Vogels et al., 2019). The referential choice depends on the degree to which a referent's mental representation is activated or retrieved from memory. The higher the activation of a certain mental representation, the higher the probability of referring to it by more specific linguistic devices. New information, which is assumed to be the least accessible, is referred to by indefinite nominal forms. Given information, which is assumed to be uniquely identifiable and more accessible, is referred to by definite nominal forms. Presupposed information, which is assumed to be the most accessible, is referred to by pronouns. Accordingly, in narrative discourse, new characters are introduced by indefinite nominals, as recently mentioned characters are reintroduced by definite nominals, and presupposed characters are maintained by pronouns.

Successful reference requires the speaker to be aware of the distinction between new, given, and presupposed information and use the appropriate referential expression to mark changes in the information status of the characters during narration. Moreover, additional factors affect referential behavior (see Vogels et al., 2019). One such factor is cognitive demand, which increases with the number of characters in a story and their gender (Arnold and Griffin, 2007; Hendriks et al., 2014; Rosa and Arnold, 2011). Stories with multiple characters seem more challenging for speakers, especially if the story contains two or more characters of the same gender, increasing the possibility of ambiguous reference. In such situations, speakers may change their referential strategies to avoid ambiguity. Indeed, several studies have shown that in same-gender character stories, speakers use different referential expressions than in stories with characters of different genders (e.g., Arnold et al., 2000; Hržica and Kuvač Kraljević, 2022; Karmiloff-Smith, 1985). Arnold and Griffin (2007) named this the gender effect and suggested that it reflects speakers' sensitivity to a specific narrative situation. As the number of characters in the story increases, so does the specificity of the referential expressions used by children (Aksu-Koç and Nicolopoulou, 2015; Berman and Katzenberger, 1998; Serratrice, 2008) and adults (Arnold and Griffin, 2007; Rosa and Arnold, 2011). However, ambiguity avoidance seems to play a role in referential choice in same-gender versus different-gender character stories. In stories with many characters, more specific referential expressions such as nouns are preferred, even when pronouns can clearly distinguish between characters of the same gender (Arnold and Griffin, 2007). Simultaneously, at least one study found that children are more likely to use pronouns than nouns in ambiguous situations (Hendriks et al., 2014).

Two theoretical approaches have been proposed to explain referential choice, considering the different cognitive demands in narratives (multi-character vs. single-character stories and same-gender vs. different-gender character stories). According to the discourse-oriented approach, speakers' choice of a referential device is determined by the properties of the discourse or the accessibility of the referent in their own discourse model, and they do not consider the listener's perspective (Ariel, 1990; Arnold and Griffin, 2007; Arnold et al., 2009). Speakers use less specific devices, such as pronouns, to refer to more accessible referents. Conversely, less accessible referents are referred to by more specific devices, such as proper names or definite descriptions. Furthermore, pronouns are assumed to be more difficult to produce than nouns because pronouns must be adequately linked to a specific context, whereas nouns can be used

in all contexts (Arnold et al., 2009). Therefore, in cognitively demanding situations, speakers avoid using pronouns and opt for more specific forms, such as nouns, regardless of whether the referent is more accessible in the listener's mind. Consequently, speakers use more nouns than pronouns when faced with cognitively challenging situations.

Conversely, the listener-based approach argues that speakers estimate whether a listener can identify a referent and choose a referential expression accordingly (Gundel et al., 1993; Gundel et al., 2007; Hendriks et al., 2014). Thus, they adhere to Grice's (1975) maxim of quantity, which states that speakers should be only as informative as the context requires. Consequently, speakers prefer less specific forms, such as pronouns, to nouns but use the pronoun only if the listener can easily infer the intended referent. If this is not the case, speakers will use more specific forms, such as nouns. The listener-based approach is consistent with the *Asymmetric Grammar Hypothesis* (Hendriks et al., 2008; Hendriks et al., 2014; Kuijper et al., 2015), according to which referential choice during production occurs in two steps. First, speakers choose the referential expression preferred by the grammatical constraints in the current discourse. Owing to the constraint that pronouns are more reduced and less informative than nouns, speakers prefer pronouns. Second, the chosen referential expression is changed based on the properties of the discourse and the listener's perspective. If the speaker assumes that the listener cannot recover the intended meaning, the pronoun must be discarded, and another referential expression must be chosen instead. For example, speakers use pronouns to maintain reference to the previously mentioned character. However, when they maintain a reference to a presupposed character or reintroduce a given character in situations with two or more characters, they must complete the second step and use nouns. The second step requires additional cognitive resources because it is more complex and requires more time than the first. If the speaker failed to complete the second step, the referential expression chosen in the first step was preferred. Thus, according to the listener-based approach, speakers are expected to produce more pronouns in cognitively demanding situations, even if the use of pronouns leads to ambiguity.

Previous studies have provided conflicting results regarding whether speakers consider the listeners' perspectives. Consistent with the discourse-based approach, Arnold and Griffin (2007) found that English-speaking adults used significantly more pronouns in stories with one character than in stories with two characters, even when the referents were of different genders, and the use of pronouns did not create ambiguity. The authors suggest that the low production of pronouns is due to the speaker's focus on attention being divided between two possible referents, which increases the cognitive load and inhibits the use of pronouns (see also Rosa and Arnold, 2011). Hržica and Kuvač Kraljević (2022) showed that Croatian-speaking adults and children produced nouns more often than pronouns in stories with multiple characters of the same and different genders.

Other studies have provided evidence for listener-based approach. For example, Hendriks et al. (2014) analyzed referential choice in picture-based stories with two characters of the same gender produced by Dutch-speaking children, young adults, and older adults. Young adults show high sensitivity to the listener's perspective when choosing an appropriate referential device. The children did not consider the listener's perspective and produced a greater number of ambiguous pronouns for all referents. Older adults were sensitive to the listener's perspective and produced more ambiguous pronouns than young adults but fewer pronouns than children, confirming that the ability to keep track of the referent's accessibility decreased with age. The findings of Contemori and Dussias (2016) also support the listener-based approach, showing that highly proficient learners of English whose L1 is Spanish use more pronouns during narration than English speakers, even when the use of pronouns leads to ambiguity. Finally, Kuijper et al. (2015) found that typically developing Dutch-speaking children, children with autism spectrum disorder, and children with attention deficit hyperactivity disorder considered the listener in their referential choice during narration. Additionally, children with attention deficit hyperactivity disorder produce more pronouns than typically developing children in stories with two referents.

1.2. Referential choice in the discourse of PwA

Reference is linguistically and cognitively complex. Therefore, it is challenging for children (e.g., Aksu-Koç and Nicolopoulou, 2015; Hendriks et al., 2014; Hickman, 2003; Hržica and Kuvač Kraljević, 2022) and various groups of people with cognitive, language and/or communication disorders, such as those with autism spectrum disorder (e.g., Arnold et al., 2009; Hobson et al., 2009), developmental language disorder (e.g., Andreou et al., 2022), specific learning disorders (e.g., Gregg and Hoy, 1990), Alzheimer's disease (e.g., Almor et al., 1999; Bittner et al., 2022), and aphasia (e.g., Arslan et al., 2021; Zhang et al., 2020). Brain injury in aphasia leads to difficulties in language comprehension and production at all levels of language (phonology, morphology, syntax, semantics, and pragmatics) and modality (spoken, written, and signed). It negatively affects productivity, lexical richness, syntactic complexity, and cohesion in discourse production. The macrostructure of discourse, pragmatic skills, and some aspects of evaluative language can be relatively well-preserved, albeit simplified, in people with mild and moderate aphasia (Glosser and Deser, 1991; Lock and Armstrong, 1997; Menn and Obler, 1990; Ulatowska et al., 1981; Ulatowska and Olness, 2003). Thus, PwA are

an appropriate population to study what happens to the structure of discourse when linguistic resources become damaged, i.e. less available (Ulatowska et al., 1990).

Compared to TS, PwA show significant cohesion deficits in discourse production (e.g., Andreetta and Marini, 2014; Azad, 2021; Jaecks et al., 2012; Jozipović et al., 2021; Lock and Armstrong, 1997; Martínez-Ferreiro et al., 2019; Zhang et al., 2020). For example, PwA ambiguously refer to referents in the preceding discourse using different referential expressions such as personal pronouns, demonstratives, and definite articles (e.g., Azad, 2021; Ellis et al., 2005; Jaecks et al., 2012; Jozipović et al., 2021). They also show a strong tendency to omit determiners such as articles or demonstratives (e.g., Azad, 2021; Zhang et al., 2020). Furthermore, PwA make morphosyntactic errors (e.g., incorrect gender of pronoun; Stockbridge et al., 2021) that can disrupt cohesion or tend to use the same referential expression multiple times (e.g., nouns, even if the use of nouns is redundant) instead of other devices from the same or a different category (e.g., Azad, 2021; Leiwo and Klippi, 2000; Zhang et al., 2020).

Studies that have focused on the use of reference in PwA have shown contradictory results. There is sufficient evidence that PwA have difficulties understanding and producing pronouns, and this has been confirmed in typologically different languages (Arslan et al., 2021). However, the nature of the difficulties varies. There seems to be a general trend toward pronoun dropping in many languages, both non-pro-drop and pro-drop (for an overview, see Ishkhanyan et al., 2017). Nevertheless, PwA overuse pronouns in non-pro-drop languages, such as Swedish and Icelandic, and pro-drop languages, such as Spanish and Turkish, i.e. in contexts where the discourse conditions allow pronoun dropping (Reznik et al., 1995; Martinez-Ferreiro et al., 2019; Akyüz and Arslan, 2021). These contradictory results may reflect that the use of referential expressions in PwA differs cross-linguistically.

Moreover, previous studies have shown the erroneous or ambiguous use of referential expressions in different referential functions (introduction, maintenance, and reintroduction) in the narrative discourse of PwA. PwA introduce characters using a range of linguistic devices (e.g., nouns, noun phrases, deictic words) but do not always use them appropriately, given the context (e.g., Gleason et al., 1980; Korpijaakko-Huuhka and Lind, 2012; Zei and Šikić, 1990). When maintaining reference, their discourse contains instances of missing referents (i.e., words with no clear referent), which disrupt discourse coherence (e.g., Andreetta and Marini, 2014). Additionally, while TS sometimes use synonyms when reintroducing characters, PwA often rely on pure repetition (Korpijaakko-Huuhka and Lind, 2012). Nonetheless, there is a lack of evidence on which referential functions are particularly challenging for PwA, which might be less affected, which additional factors contribute to the incorrect and ambiguous use of referential expressions in PwA (e.g., gender or number of characters in the story), and whether there are differences between languages in this regard.

The heterogeneous results of previous studies call for further cross-linguistic research that considers the differences between PwA and TS and the way PwA deal with different referential functions. Previous research on the use of referential expressions has shown that PwA either drop or overuse pronouns in compared to TS. Further research is needed on pro-drop languages that allow the use of pronouns and pronoun dropping. Although several studies have already addressed reference in the discourse of PwA, there is still a lack of systematic and in-depth research on referential functions in the discourse of PwA, in Slavic languages in general and Croatian in particular. Previous studies have largely examined referential expressions as part of overall cohesive ties (e.g., Zhang et al., 2020) rather than independently and have not considered factors such as the ambiguity of the situation (i.e., the number and gender of characters in the story) and referential functions (introduction, maintenance, and reintroduction).

1.3. Cross-linguistic differences in reference systems

While the pragmatic functions of marking the information status of referents in discourse are universal, the linguistic devices used to establish reference are language specific. In terms of reference systems, languages differ in that only some allow the dropping of subject and/or object pronouns – they allow the use of null pronouns (pro-drop vs. non-pro-drop languages). Croatian is a pro-drop language in which subject pronouns are usually dropped, and a reference can be made either in the absence or presence of the pronoun. Languages such as English and French have local cues to mark information status, such as definite/indefinite articles, whereas Croatian does not have a formal article system. Instead, indefiniteness is marked by the determiner *jedan* "one," and definiteness by the demonstrative *ovaj/taj* "this/that" preceding the noun (Kordić, 2002; Marković, 2012), although marking is not obligatory. Other differences in the salience, transparency, and complexity of referential means have been documented between languages (Gagarina and Bohnacker, 2022). Consequently, there may be cross-linguistic differences in the challenges PwA face in producing a reference, and these challenges may be less pronounced across different languages. The use of reference might be easier in pro-drop languages, where there are two ways to refer to the character, because both null and overt pronouns are acceptable options. Additionally, referring might be easier if the pronoun or verb is marked by gender or number so that both nouns and pronouns are suitable referential expressions.

Cross-linguistic differences in the availability of referential expressions may lead to differences in the order of acquisition of reference in children's discourse (Aksu-Koç and Nicolopoulou, 2015; Hickman, 2003; Hržica and Kuvač Kraljević, 2022) or the vulnerability of this aspect of discourse in people with language impairments such as aphasia (Jozipović et al., 2021; Martínez-Ferreiro et al., 2019). Therefore, they must be considered when investigating reference in different languages.

1.4. The present study

This study investigates how the referential choice of PwA and TS change in narrative discourse. We examined the referential system of Croatian, a language that allows pronoun dropping, supported by a rich verbal morphology. As pronouns can be dropped in Croatian, Croatian speakers can use nouns, null pronouns, and overt pronouns when referring to characters in a story. As these features may be reflected in discourse production, this study aimed to investigate the use of referential expressions in the narrative discourse of PwA and TS by observing reference in general and through the introduction, maintenance, and reintroduction of characters. We aimed to determine how speakers of different language statuses deal with referential choice in situations with characters of a) the same or b) different genders. In this study, we adhered to the theoretical assumptions of the listener-oriented approach, which predicts that speakers use more pronouns in cognitively demanding situations. This approach also predicts that people for whom establishing a reference is more challenging (e.g., children, older speakers, speakers with autism spectrum disorder) produce even more pronouns than nouns compared to TS (e.g., Hendriks et al., 2014; Kuijper et al., 2015).

The listener-based approach, consistent with the *Asymmetric Grammar Hypothesis* (Hendriks et al., 2008; Hendriks et al., 2014; Kuijper et al., 2015), explains that referential choice occurs in two steps. First, speakers choose a more reduced and less informative referential device, i.e. pronouns. Second, if the speaker assumes that the listener cannot grasp the intended meaning, the pronoun must be discarded, and another referential expression must be chosen instead. Individuals for whom it was more difficult to make a reference (in this case, PwA) produced more pronouns because they could not perform the second step. This approach also predicts that speakers will use more pronouns in cognitively demanding situations, such as those in which characters of the same gender appear. When speakers maintain a reference to a presupposed character or reintroduce a given character in situations with two or more characters of the same gender, pronouns are not sufficiently informative, and they have to use nouns. If the speaker failed to accomplish this task, the referential expression selected in the first step was the preferred device. Thus, according to the listener-based approach, speakers are expected to produce more pronouns in cognitively demanding situations, even if the use of pronouns leads to ambiguity. Speakers for whom it is more difficult to establish a reference (in this case, PwA) will produce more pronouns in situations involving characters of the same gender.

In line with the listener-oriented approach, we expect PwA to produce more pronouns generally, whether null or overt, than TS, who will produce more nouns. We also expected group differences in the use of referential expressions for different referential functions, which is consistent with the listener-oriented approach. New referents are typically introduced into stories using nouns. The use of pronouns in the introduction of new referents leads to ambiguity, as the listener might not understand the reference. Although the first mention of the character should be relatively straightforward, it can be somewhat challenging for PwA and they may occasionally use pronouns to introduce characters. Speakers generally use pronouns to maintain reference. Nouns should be used occasionally to avoid ambiguity (e.g., if the maintained character is in proximity to another character of the same gender). Maintaining a reference may be more difficult for PwA, especially in situations with characters of the same gender. We might expect PwA to produce more pronouns than TS in reference maintenance and even more so in situations with characters of the same gender. When reintroducing referents, speakers generally use nouns to refer to previously introduced characters that are no longer focused. However, pronouns can also be used when a reintroduced character is in close proximity to other characters of different genders. Nouns must be used when characters are of the same gender. The reintroduction of characters may be more difficult for PwA, especially in situations involving characters of the same gender. We expect PwA to produce more pronouns than TS in situations involving characters of the same gender.

Based on the presented listener-oriented approach and what might be expected in the three referential functions, we asked the following research questions.

1) Do PwA and TS differ in the types of referential expressions used to refer to characters in the story?

2) Do PwA and TS differ in pronoun-to-noun ratio depending on the potential ambiguity of the situation, i.e. when referring to characters of the a) same or b) different genders?

3) Do PwA and TS differ in pronoun-to-noun ratio in the introduction, maintenance, and reintroduction of characters depending on the potential ambiguity of the situation, i.e. while referring to characters of the a) same or b) different genders?

Following the listener-based approach and the results of previous studies on discourse of PwA, we hypothesized the following.

H1. PwA will produce significantly more pronouns than TS, who produce significantly more nouns.

H2. In situations involving characters of the same gender, PwA will have a significantly higher pronoun-to-noun ratio. In situations with characters of different genders, PwA and TS will not differ significantly in pronoun-to-noun ratio.

H3.1. There will be no significant difference between PwA and TS in pronoun-to-noun ratio when introducing characters, regardless of the ambiguity of the situation.

H3.2. PwA and TS will differ significantly when referring to characters of the same gender, with PwA having a significantly higher pronoun-to-noun ratio in these situations.

H4. When reintroducing characters of the same gender, PwA will have a significantly higher pronoun-to-noun ratio than TS.

2. METHOD

2.1. Participants

The sample comprised 34 participants (17 PwA and 17 TS). Narrative samples of PwA were extracted from the *Croatian discourse corpus of speakers with aphasia* (CroDA; Kuvač Kraljević et al., 2017). The corpus is part of an open-access computerized database of discourse samples from PwA (AphasiaBank: MacWhinney et al., 2011). AphasiaBank is available at TalkBank, the largest database of spoken language corpora in a wide range of languages. CroDA comprises discourse samples from 20 monolingual Croatian speakers diagnosed with aphasia by speech and language pathologists at the Polyclinic for the Rehabilitation of Listening and Speech SUVAG Zagreb. All PwA developed aphasia after a single stroke. At the time of initial assessment, 8 of these 17 individuals were classified as having fluent aphasia with an average time since brain damage onset of 1–6 years, while the rest were classified as having non-fluent aphasia with an average time since brain damage onset of 1–9 years. However, in this study, all participants with aphasia were treated as a homogeneous group. This is due to several reasons. First, at the time of their diagnosis, there was no standardized aphasia test adapted and normed for Croatian. Second, for all participants, more than six months had passed since the stroke and the time they were given the diagnosis (hence already being classified as fluent or non-fluent), i.e. the severity of their symptoms could have changed (Culton, 1996; Johanson et al., 2019). Third, the final outcome of language functions may be different from the initial symptoms, which may indicate a change in the initial aphasia classification (Pedersen et al., 2003).

The control corpus of TS is under construction and currently comprises 17 participants. As the number of TS was limited, we selected an equal number of language samples from PwA. The participants were balanced in terms of age (+/-3 years) and gender.

Demographic data of the participants are presented in Table 1. Discourse samples from both groups of participants were collected by four investigators who received specialized training in the Aphasia Bank protocol, including the

Table 1
Demographic characteristics of participants.

Group		Chronological age (years; month)			Gender	
	n	Age range	*M*	*SD*	M	F
PwA	17	48;0–79;0	63;8	10;17	11	6
TS	17	49;0–80;0	63;9	10;67	11	6

interview protocol and troubleshooting script. The study procedures were approved by the Ethics Committee of the Faculty of Education and Rehabilitation Sciences. All participants signed an informed consent form following the Helsinki Ethical Principles for Medical Research, completed a demographic questionnaire delivered orally and in written form, and were assisted by speech and language pathologists and family members when needed. The participants confirmed typical neurological and cognitive status (no signs of dementia), hearing and vision (with and without aids), preserved at a level sufficient for participation in clinical testing, fluency in Croatia, and no signs of clinical depression.

2.2. Material

Data were collected using the *AphasiaBank protocol* (MacWhinney et al., 2011), which was adapted and translated into Croatian (Kuvač Kraljević et al., 2017). The collected samples were audio-recorded, transcribed, and coded using the Codes for Human Analysis for Transcripts (CHAT) system in the Computerized Language Analysis of Transcripts (CLAN) program (MacWhinney, 2000). CHAT and CLAN are part of the Child Language Data Exchange System (MacWhinney, 2000). The protocol comprised four oral discourse-elicitation tasks: personal narratives, picture descriptions, storytelling, and procedural discourse. Neither the time taken to complete the tasks nor the length of the language sample was limited. The aim of using a structured protocol is to ensure consistency in the experimental conditions, maximize comparability between participants, and enable cross-linguistic research. Different discourse tasks provide information about the participants' ability to produce and understand language in different everyday situations. In this study, we focused on storytelling prompted by the picture book *Cinderella* (Grimes, 2005). Data on the length of the language samples of *Cinderella* are shown in Table 2.

Cinderella is frequently used in research on PwA (e.g., Byng, 1988; Byng et al., 1994; Bird and Franklin, 1996; Faroqy-Shah and Thomson, 2007; Saffran et al., 1989; Stark and Viola, 2007; Zhang et al., 2020) and is considered universal in Western cultures (MacWhinney et al., 2010). Moreover, narratives elicited by a sequence of pictures have been shown to have higher productivity than those elicited by a single-picture story, a two-picture story, or personal narratives (Marini et al., 2005; Olness, 2006; Wright and Capilouto, 2012). The referential expressions used to introduce, maintain, and reintroduce characters are influenced by the information status of the characters (new, given, and presupposed) and the language structure and story type (see Aksu-Koç and Nicolopoulou, 2015). The design of the *Cinderella* story allows for a detailed analysis of different aspects of the use of reference in discourse. Based on the story design, we can make predictions about participants' referential choice at different points in the narratives, i.e. the introduction, maintenance, and reintroduction of characters. Furthermore, the story contains situations with characters of the same gender and situations with characters of a different gender. Therefore, it is suitable for investigating the influence of situation ambiguity on the use of referential expressions and testing the predictions of discourse-based and listener-oriented approaches to referential choice in the discourse of PwA. Situations with characters of the same gender include the following: (a) the situation with Cinderella, the stepmother, and half-sisters after the death of Cinderella's father at the beginning of the story; (b) the situation with Cinderella and the fairy godmother. The situations with characters of different genders include (a) the situation with Cinderella, the Prince, and other characters on the ball and (b) the situation of searching for Cinderella/trying on the shoe at the end of the story.

2.3. Procedure

Each transcript was hand-coded by one researcher. All linguistic devices referring to the main characters (Cinderella, the prince, and the fairy godmother) in the subject position (see Hržica and Kuvač Kraljević, 2022) were extracted. They were all marked as nouns (proper or common) or pronouns (personal pronoun, null subject in the case of dropping pronoun, and demonstrative pronoun). Examples of referring, which contained grammatical errors (e.g., incorrect pronoun gender) or articulation errors due to motor disorders, were also included in the analysis. Incorrect reference to characters (e.g., husband or doctor instead of prince and grandmother or Snow White instead of fairy godmother) were also

Table 2
Data on the number of words and C-units in language samples of *Cinderella* story taken from AphasiaBank.

	Group	n	M	SD	Min	Max
N_{words}	**PwA**	17	258	197	122	535
	TS	17	221	232	31	911
$N_{C-units}$	**PwA**	17	54	41.5	23	147
	TS	17	40	24.5	7	143

considered if it was clear which character a participant was referring to. The logic behind this decision lies in the fact that the participants could use a referential expression to connect the utterances produced. Neglecting reference in such cases would negate the production of referential expressions in the first place and call into question the validity of the results. To assist the participants, examiners sometimes provided prompts, which occasionally resulted in PwA repeating the referential expression after the examiner. These reference examples were excluded from analysis.

All referential expressions were marked as belonging to one of three referential functions: introduction, maintenance, or reintroduction (see Appendices A, B, and C). Subsequently, the referential expressions were divided into two categories: 1) situations with characters of the same gender; 2) situations with characters of different genders. Such categorization results from the assumption that the potential ambiguity of reference in these situations is different. Situations involving characters of different genders are potentially more ambiguous, whereas those involving characters of different genders are either less or never ambiguous. Therefore, in the situation involving Cinderella, stepmother, and half-sisters and in the situation involving Cinderella and the fairy godmother (category 1), we would except more ambiguous reference, while we would expect no ambiguous reference in the situations of the ball and the search for Cinderella/trying on the shoe (category 2). Nevertheless, in situations that predict the appearance of characters of the same gender (e.g., the godmother and Cinderella), characters of different genders may also appear (e.g., the king organizing the ball is mentioned). Thus, the primary criterion for determining a situation is the preceding context. Nonetheless, as it is not always possible to determine the preceding context in the introduction to a story, we focused on the following context in such cases. Finally, all transcripts and coding were checked for accuracy by a second researcher to determine inter-rater reliability. The results showed an extremely high inter-rater reliability of 98 %.

2.4. Data analysis

As dependent variables, we calculated the total number of pronouns (personal pronouns, null subjects in the case of pronoun dropping, and demonstrative pronouns) and that of nouns for each participant, as well as the pronoun-to-noun ratio for each participant in each referential function (introduction, maintenance, and reintroduction) and each situation (situations with characters of the same gender and situations with characters of different genders). The pronoun-to-noun ratio in each referential function (introduction, maintenance, and reintroduction) was calculated as the ratio of pronouns to the total number of nouns and pronouns in that function. The pronoun-to-noun ratio in a particular situation (same-gender or different-gender) was calculated as the ratio of pronouns to the total number of nouns and pronouns across all referential functions. The pronoun-to-noun ratio in one of the situations (same or different genders) and one of the referential functions (introduction, maintenance, or reintroduction) was calculated as the ratio of pronouns to the total number of nouns and pronouns in that situation and referential function.

To answer the first research question, we conducted a *t*-test on the number of pronouns (personal pronouns, null subjects in the case of pronoun dropping, and demonstrative pronouns) and nouns used by PwA and TS to refer to characters in the story. We conducted a mixed-design analysis of variance (ANOVA) (2×2) to answer the second and third research questions. We tested the main effects and interaction of two variables, each having two levels: 1) group (PwA vs. the control group of TS) as a between-subjects factor; 2) ambiguity of situation (characters of the same gender vs. characters of different genders) as a within-subjects factor. Five dependent variables were included in the statistical analysis: 1) pronoun-to-noun ratio in situations with characters of the same gender; 2) pronoun-to-noun ratio in situations with characters of different genders; 3) pronoun-to-noun ratio in the introduction of characters; 4) pronoun-to-noun ratio in the maintenance of characters; 5) pronoun-to-noun ratio in the reintroduction of characters. Therefore, we examined the pronoun-to-noun ratio depending on the ambiguity of the situation (characters of the same gender vs. characters of different genders) and the pronoun-to-noun ratio for three referential functions (introduction, maintenance, and reintroduction) depending on the ambiguity of the situation (characters of the same gender vs. characters of different genders). We ran an ANOVA on the arcsine-transformed pronoun-to-noun ratios calculated for the participants. Statistical analyses were performed using IBM SPSS Statistics software version 25.0 (IBM Corp., 2017).

3. RESULTS

3.1. Use of referential expressions

Table 3 presents the descriptive statistics of the use of referential expressions in narrative discourse, i.e. the number of pronouns and nouns produced by PwA and TS. As shown in the table, TS produced more nouns than PwA, whereas PwA produced more pronouns than TS. However, the results of the *t*-test showed no significant differences in the use of nouns ($t(32) = -1.72$, $p = .097$) or pronouns ($t(32) = 0.49$, $p = .630$) between the groups.

Table 3
Mean values (with standard deviations in parentheses) of the number of nouns and pronouns.

Group	*n*	Total number of nouns	Total number of pronouns	Total number of personal pronouns	Total number of subject pronouns dropping	Total number of demonstrative pronouns
PwA	17	5.30 (2.42)	22.53 (16.81)	7.47 (7.72)	14.35 (9.35)	1.31 (0.32)
TS	17	7.35 (4.29)	19.71 (17.07)	4.76 (5.37)	14.82 (11.92)	0.33 (0.81)

Table 4
Mean values (with standard deviations in parentheses) of the pronoun-to-noun ratio depending on the ambiguity of situation.

Group	*n*	Situation	
		1	2
PwA	17	0.70 (0.26)	0.71 (0.28)
TS	17	0.63 (0.32)	0.64 (0.22)

Note: Ambiguity of Situation 1 (characters of the same gender) and 2 (characters of different genders).

3.2. Pronoun-to-noun ratio depending on the ambiguity of situation

Table 4 shows descriptive statistics based on the pronoun-to-noun ratio depending on the ambiguity of situation. The mixed-design ANOVA (2 groups x 2 situations) was conducted to test the main effects of group and ambiguity of situation and the interaction of two factors. We found no main effects of group ($F_{(1,32)} = 1.223$, $p = .227$) and situation ($F_{(1,32)} = 0.363$, $p = .551$) on the pronoun-to-noun ratio, and the interaction of these two factors was also not significant ($F_{(1,32)} = 0.001$, $p = .975$).

3.3. Pronoun-to-noun ratio for three referential functions depending on the ambiguity of situation

Table 5 shows descriptive statistics based on the pronoun-to-noun ratio for three referential functions and depending on the ambiguity of situation. The mixed-design ANOVA (2 groups x 2 situations) was conducted to test the main effects of group and ambiguity of situation and the interaction of two factors. First, we examined the pronoun-to-noun ratio for the referential function introduction. There were no main effects of group ($F_{(1,32)} = 2.545$, $p = .120$) and situation ($F_{(1,32)} = 1.895$, $p = .178$) on the pronoun-to-noun ratio in the introduction, and the interaction between group and situation was not significant ($F_{(1,32)} = 1.895$, $p = .178$). Next, we examined the pronoun-to-noun ratio for the referential function maintenance. There was no main effect of group ($F_{(1,32)} = 0.107$, $p = .746$), and the interaction of group and situation ($F_{(1,32)} = 0.495$, $p = .495$) was not significant; however, there was a main effect of situation ($F_{(1,32)} = 5.993$, $p < .05$). TS had a significantly higher pronoun-to-noun ratio in situations with characters of different genders ($F_{(1,32)} = 4.924$, $p < .05$). Finally, we tested the pronoun-to-noun ratio for the referential function reintroduction. We found no main effect of situation ($F_{(1,32)} = 0.340$, $p = .564$), but there was a main effect of group ($F_{(1,32)} = 4.383$, $p < .05$) and the interaction of group and situation was significant ($F_{(1,32)} = 4.157$, $p < .05$). PwA had a significantly higher pronoun-to-noun ratio in the reintroduction of characters. Moreover, the difference between the two groups was significant in situations with characters of the same gender.

Table 5
Mean values (with standard deviations in parentheses) of the pronoun-to-noun ratio for three referential functions and depending on the ambiguity of situation.

Group	*n*	Introduction		Maintenance		Reintroduction	
		1	2	1	2	1	2
PwA	17	0.15 (0.34)	0.06 (0.24)	0.76 (0.33)	0.83 (0.33)	0.73 (0.31)	0.63 (0.32)
TS	17	0	0	0.74 (0.42)	0.90 (0.25)	0.51 (0.32)	0.50 (0.32)

Note: Ambiguity of Situation 1 (characters of the same gender) and 2 (characters of different genders).

4. DISCUSSION

This study aimed to investigate the use of reference in the narrative discourse of PwA and TS by observing referential choice through three referential functions (introduction, maintenance, and reintroduction of characters), depending on the potential ambiguity of situations (characters of the same gender vs. characters of different genders).

First, we investigated whether PwA and TS differed in their general use of referential expressions when referring to the main characters in the story. We hypothesized that PwA would use significantly more pronouns than TS, who would produce significantly more nouns. Although PwA produced more pronouns than TS, and TS produced more nouns, there were no significant differences between the two groups in the number of nouns and pronouns produced. These findings contradict those reported by Akyüz and Arslan (2021), Jaecks et al. (2012) and Martínez-Ferreiro et al. (2019), who found that PwA overuse pronouns, even in pro-drop languages. Differences in the results of our study compared to previous studies could be due to methodological aspects, including the characteristics of the sample and the elicitation method used to collect language samples. For example, Martínez-Ferreiro et al., 2019 had a sample of subjects whose mean chronological age is significantly higher than in our study (*M* = 64 years). Language abilities decline with age (Peelle, 2019), including pronoun processing and production (Hendriks et al., 2014; Kahn and Till, 1991; Reifegerste and Felser, 2017), and age is an important factor in the degree of aphasia symptoms and recovery (RELEASE Collaborators, 2021). Furthermore, previous studies have used different elicitation methods and discourse types. For example, Martínez-Ferreiro et al. (2019) and Jaecks et al. (2012) analyzed spontaneous speech production, i.e. samples from semi-structured interviews about familiar topics (e.g., illness, personal interests, vacations). Akyüz and Arslan (2021) used personal narratives and picture descriptions. The speaker makes referential choice based on various factors, including the structure and the type of discourse (Kibrik, 2011; Wright, 2011). Spontaneous speech, especially descriptions of personal experiences, differs from narrative discourse. This could also affect the use of referential expressions, as in a more complex discourse such as a narrative, participants must make more cognitive efforts to keep track of the reference. Different elicitation methods place different linguistic and cognitive demands on PwA (see Fergadiotis and Wright, 2011; Stark, 2019; Ulatowska et al., 1990). Therefore, it would not be surprising if there were differences in the characteristics of referring depending on whether or how demanding the task was given to PwA. The results of this study also contradict studies that report the frequent dropping of pronouns in PwA (for an overview, see Ishkhanyan et al., 2017). We found that both PwA and TS produced more null pronouns than overt pronouns and that the two groups did not differ in this respect. As Croatian is a pro-drop language, both groups of speakers might benefit from the possibility of forming grammatical sentences without having to specify grammatical elements. Thus, in Croatian-speaking PwA, there is no such issue. The differences between PwA and TS in previous studies reporting the overproduction of the pronoun dropping go beyond the control norms. Additionally, the total number of pronouns and nouns alone may not be sufficient to interpret reference in the narrative discourse of PwA, but it is necessary to look more closely at the context of the use of nouns and pronouns.

Our second goal was to investigate whether PwA and TS differ in pronoun-to-noun ratio depending on the potential ambiguity of the situation, i.e. when they refer to characters of the same or different genders. Following the listener-based approach, we hypothesized that PwA would have a higher pronoun-to-noun ratio in situations with characters of the same gender, whereas we expected no significant difference between the groups in situations with characters of different genders. Our results showed that PwA tended to have a higher pronoun-to-noun ratio than TS, regardless of the ambiguity of the situation; however, there was no significant difference between the groups. These results contrast with previous studies suggesting that PwA use significantly more pronouns than TS (e.g., Jaecks et al., 2012; Martínez-Ferreiro et al., 2019). The lack of significant differences between the two groups could again be explained by the characteristics of the elicitation method, i.e. the procedure used in this study. Before participants in this study began storytelling, they were given the picture book *Cinderella* to familiarize themselves with the material. Previous studies have shown that the visual context influences referential choice because it reduces the saliency of a referent. As pronouns are generally used to refer to highly salient referents, the presence of a visual context can lead to reduced pronoun use, regardless of the context (same vs. different genders of characters). Fukumura et al. (2010) observed this pattern of referential choice in contexts with referents of the same and different genders. Nevertheless, there could also be an effect of shared knowledge independent of the presence of visual stimuli. Both groups of participants might have produced fewer nouns in a situation with characters of the same gender because they knew that the examiner was familiar with the story's content. When participants are less concerned about the communicative consequences of their

referential choice, they may pay less attention to competing referents. Related to these two arguments, Zhang et al. (2020) used the same elicitation task as in this study, i.e. the story *Cinderella*. The authors observed inappropriate use of pronouns in the discourse of PwA and poor grammatical cohesion in general but did not conduct a separate analysis of pronoun use, which prevents us from comparing our findings with this study.

Third, we investigated whether PwA differ from TS in their use of referential expressions to introduce, maintain, and reintroduce characters into narrative discourse. As the introduction of characters is the least demanding and requires the use of more specific referential expressions such as nouns (see Hendriks et al., 2014; Hržica and Kuvač Kraljević, 2022), we expected that there would be no significant group differences in the pronoun-to-noun ratio for this referential function. The results showed that PwA and TS did not differ in pronoun-to-noun ratio when introducing a new character, regardless of the ambiguity of the situation, i.e. both groups of participants used significantly more nouns to introduce the characters. This result suggests that PwA are sensitive to discourse properties. As new characters must be referred to in more specific forms, more nouns are used in these situations. Our findings are consistent with those of Korpijaakko-Huuhka and Lind (2012), who observed a difference between PwA and TS in the use of referential expressions to introduce characters. However, the authors warned that the results of their study should be interpreted with caution because the noun used to introduce the main character may be more accessible to participants because of its lexical frequency. The same could be true for the present study, as *Cinderella* is a well-known story that has the main character's name in its title (the examiner even pronounced the character's name when explaining the task to the participants), while the names of the other main characters (i.e., the fairy godmother and prince) are also common and familiar words.

When referring to a presupposed character, pronouns are expected devices, but their use may be limited by the number of characters and the ambiguity of the situation, resulting in the choice of more specific referential expressions, such as nouns, in situations with characters of the same gender (see Arnold and Griffin, 2007; Rosa and Arnold, 2011). We predicted that PwA would have a higher pronoun-to-noun ratio in situations with characters of the same gender as those in TS. The results showed that both PwA and TS had higher pronoun-to-noun ratios in situations involving characters of different genders; nonetheless, this result was significant only in the group of TS. Further, we found no significant differences between the groups in situations involving characters of the same gender. These results could be explained by the greater sensitivity of TS to the potential ambiguity of the situation and their ability to adjust their referential choice according to the situation (see Arnold et al., 2000; Hržica and Kuvač Kraljević, 2022; Karmiloff-Smith, 1985). Although PwA did not overwhelmingly use pronouns in such situations, their ability to maintain reference was limited compared to TS.

When two or more characters of the same gender are introduced in the story and mentioned in the following discourse, they should be reintroduced as given characters with more specific referential expressions such as nouns. As situations involving multiple characters of the same gender are more cognitively demanding (see Arnold and Griffin, 2007), the appropriate use of referential expressions in reintroducing characters may pose an additional challenge for PwA, who are expected to have a higher pronoun-to-noun ratio in such situations. This study showed that PwA had a significantly higher pronoun-to-noun ratio in the reintroduction of characters than TS but only in situations involving characters of the same gender. In situations with characters of different gender, there was no significant difference between the groups. Similar results were reported by Korpijaakko-Huuhka and Lind (2012), in which PWA showed a preference for pronouns when reintroducing characters, even when the use of pronouns led to ambiguity. According to the listener-based approach, the greater use of pronouns in cognitively demanding situations is due to the speaker's difficulty considering the listener's perspective (see Hendriks et al., 2014; Contemori and Dussias, 2016). Our results suggest that PwA have a limited ability to consider the listener's perspective and are more likely to adopt the default strategy of using pronouns in situations involving characters of the same gender. The observed pattern of referential behavior may be due to deficits in lexical retrieval in accordance with previous studies showing word-finding difficulties in PwA (see Glosser and Deser, 1991; Mayer and Murray, 2003; Pashek and Tompkins, 2002).

This study provides new insights into the use of reference by PwA. However, certain methodological limitations should be considered when interpreting these results. PwA and TS were matched for age and gender but not for other characteristics (e.g., socioeconomic status and level of education) that could have influenced the results. Moreover, although there was a strong case for treating the participants in this study as a homogenous group, individual differ-

ences, such as the type and severity of aphasia, may have influenced the results. Furthermore, the small sample size may limit the generalizability of the results. Nevertheless, it is difficult to find numerous respondents with aphasia because their deficits in language production make it difficult to collect discourse samples, whereas deficits in language comprehension make it difficult to obtain informed consent and comply with research ethics (see Hersh et al., 2021). Therefore, the sample size in this study was similar to that in other studies of PwA, including more recent studies (e.g., Zhang et al., 2020), but researchers should aim to include larger sample sizes. Next, the analysis of referential choice in this study was conducted on samples of narrative discourse production, and the material was not pre-controlled to expose participants intentionally to situations with characters of the same as well as different genders. The use of the corpus method limits the researcher's control over the material and procedure, which might influence the results compared with previous studies on this topic, which were mostly experimental. Additionally, these findings may not be generalizable to other types of discourse. Different types of discourse may be cognitively and linguistically demanding to different degrees (see Ulatowska et al., 1990) and lead to different referential choice. Finally, this study was conducted on language samples of Croatian speakers, and generalization to other languages is limited by language typology (e.g., Croatian is a pro-drop language). Future studies should include a larger number of participants to control for the type and severity of aphasia, focus on designing specific research materials to control for the ambiguity of situations, and include cross-linguistic comparisons. Some authors have also pointed out that quantitative analysis alone is not sufficient to capture the complexity of language pathology in the discourse on PwA and should be complemented by qualitative analysis (Perkins et al., 1999; Sorin-Peters, 2004). Quantitative analysis may not reveal significant differences between the two groups; therefore, integrating the results of both analyses is essential (Azad, 2021; Zhang et al., 2020). A mixed-method approach can provide deeper insights into the discourse cohesion of PwA.

5. CONCLUSION

This study contributes to the rather limited knowledge of reference in the discourse of PwA by showing which referential functions and situations exhibit the greatest differences from TS. We observed how PwA and TS refer to the introduction, maintenance, and reintroduction of characters in the story in contexts with characters of the same and different genders. Two important findings are noteworthy. First, PwA did not differ from TS in less cognitively demanding contexts, i.e.. in situations involving characters of different genders. Second, PwA differed from TS in how they manage cognitively demanding contexts with characters of the same gender. In maintaining characters, unlike TS, PwA did not distinguish between the two contexts and had a similar pronoun-to-noun ratio. When reintroducing characters in the context of characters of the same gender, PwA had a higher pronoun-to-noun ratio than TS, resulting in reference ambiguity.

The results of this study have theoretical and clinical implications. In general, they support listener-based approach. In cognitively demanding situations, it is difficult for the speaker to consider the listener's perspective (see Contemori and Dussias, 2016; Hendriks et al., 2014), which is why PwA overuse pronouns as default forms that are shorter and easier to produce. Unlike other populations, such as children, who are not yet cognitively able to adjust their referential choice to their listener (see Epley et al., 2004), we can assume that PwA can assess the listener's perspective. Nonetheless, due to language difficulties, the clarity of their narratives ultimately depends on the listener's interpretation—the listener's ability to determine whom pronouns are inappropriately used.

In this study, we present a fine-grained analysis of a specific discourse-production ability that considers different referential functions and contexts (i.e., the number and gender of characters in the narrative discourse). These findings have significant clinical implications. Previous studies have shown that PwA may have difficulty choosing appropriate referential expressions. However, this study shows which referential functions and contexts are less affected and which are more affected, guiding the assessment, diagnosis, and treatment of PwA.

CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

Sara Košutar: Conceptualization, Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Formal analysis, Data curation. **Marija Jozipović:** Writing – review & editing, Writing – original draft,

Methodology, Investigation, Data curation. **Gordana Hržica:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Funding acquisition, Data curation, Conceptualization.

Data availability

Data will be made available on request.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

APPENDIX A. CODING OF REFERENTIAL EXPRESSIONS USED TO INTRODUCE THE MAIN CHARACTERS (INTRODUCTION)*

DEFINITION: Character appearing for the first time (in bold in the target sentence).
SITUATION: If there is a referring expression in the preceding sentence, it can be either the same or a different gender as the character in the target sentence; if there is no preceding sentence, the following sentence was observed to determine the type of situation
FORM and TYPE: Character can be referred to by noun (common or proper) or pronoun (overt or null).

INTRODUCTION	SITUATION	FORM	TYPE
Example A	Same gender	Noun	Common
Preceding sentence			
Međutim *one* *su* *se* *spremale.*			
however they-NOM.PL.F be-PRS.3.PL REFL prepare-PTCP.FEM.PL			
'However, they were getting ready.'			

Target sentence				
A	**dobra**	**vila**	je	došla.
and	good-NOM.SG.F	fairy-NOM.SG.F	be-PRS.3.SG	come-PTCP.FEM.SG
'And the fairy godmother came.'				

Example B		Same gender	Noun	Proper

Preceding sentence				
Not applicable/Target sentence is the first sentence of the story.				
Target sentence				
Pa	**Pepeljuga**	je	bila	siroče.
well	Cinderella-NOM.SG.F	be-PRS.3.SG	be-PTCP.FEM.SG	orphan-NOM.SG.N
'Well, Cinderella was an orphan.'				
Following sentence				
Njezina	mama	je	umrla.	
her-NOM.SG.F	mom-NOM.SG.F	be-PRS.3.SG	die-PTCP.FEM.SG	
'Her mom died.'				

Example C		Same gender	Pronoun	Overt

Preceding sentence		
Not applicable/Target sentence is the first sentence of the story.		
Target sentence		
Ona	je	izišla.
she-NOM.SG.F	be-PRS.3SG	exit-PTCP.FEM.SG
'She went out.'		
Following sentence		
Pepeljuga	je	bila	sretna.
Cinderella-NOM.SG.F	be-PRS.3.SG	be-PTCP.FEM.SG	happy-NOM.SG.F
'Cinderella was happy.'			

Example D		Same gender	Pronoun	Null

Preceding sentence					
Not applicable/Target sentence is the first sentence of the story.					
Target sentence					
Morala	sama	jadna	i	radila	i	šljakala.
must-PTCP.FEM.SG	alone-NOM.SG.F	poor-NOM.SG.F	and	work-PTCP.FEM.SG	and	slag-PTCP.FEM.SG
'Poor her had to work and slag all alone.'						
Following sentence						
Njezina	majka	je	umrla.			
her-NOM.SG.F	mother-NOM.SG.F	be-PRS.3.SG	die-PTCP.FEM.SG			
'Her mother died.'						

Example E		Different gender	Noun	Common

Preceding sentence				
Bili	jedan	tata	i	mama.
be-PTCP.MASC.PL	one-NOM.SG.M	dad-NOM.SG.M	and	mum-NOM.SG.F
'There were once mum and dad.'				
Target sentence				
I	imali	su	prekrasnu	**djevojčicu**.
and	have-PTCP.MASC.PL	be-PRS.3.PL	beautiful-ACC.SG.F	girl-ACC.SG.F
'And they had a beautiful girl.'				

Example F		Different gender	Noun	Proper

Preceding sentence				
Not applicable/Target sentence is the first sentence of the story.				
Target sentence				
Pepeljuga	je	djevojka	koja	je
Cinderella-NOM.SG.F	be-PRS.3.SG	girl-NOM.SG.F	who-NOM.SG.F	be-PRS.3.SG
ostala	bez	roditelja.		
stay-PTCP.FEM.SG	without	parent-GEN.PL.M		
'Cinderella is a girl who has lost her parents.'				
Njezina	majka	je	umrla	i	njezin
her-NOM.SG.F	mother-NOM.SG.F	be-PRS.3.SG	die-PTCP.FEM.SG	and	her-NOM.SG.F
otac	također.				

father-NOM.SG.F	also
'Her mother died and her father too.'	

Example G	Different gender	Pronoun	Overt
Not applicable/No examples found in data analysis.			
Example H	Different gender	Pronoun	Null
Not applicable/No examples found in data analysis.			

*It should be noted that some of the examples given in this table are presented in a slightly altered (modified) form (e.g., digressions that are unrelated to the story have been removed) in order to better illustrate the analysis carried out.

APPENDIX B. CODING OF REFERENTIAL EXPRESSIONS USED TO MAINTAIN THE MAIN CHARACTERS (MAINTENANCE)*

DEFINITION: Character being mentioned subsequently (in bold in the target sentence).
SITUATION: If there is a referring expression in the preceding sentence, it can be either the same or different gender as in the target sentence.
FORM and TYPE: Character can be referred to by noun (common or proper) or pronoun (overt or null).

MAINTENANCE	SITUATION	FORM	TYPE
Example A	Same gender	Noun	Common
Preceding sentence			
Pepeljugi je *došla* ***dobra*** ***vila***.			
Cinderella-DAT.SG.F be-PRS.3.SG come-PTCP.FEM.SG good-NOM.SG.F fairy-NOM.SG.F			
'Fairy godmother came to Cinderella.'			
Target sentence			
I ***dobra*** ***vila*** *ponudila* *joj* *je*			
and good-NOM.SG.F fairy-NOM.SG.F offer-PTCP.FEM.SG she-DAT.SG.F be-PRS.3.SG			
pomoć.			
help-ACC.SG.F			
'And fairy godmother offered to help her.'			
Example B	Same gender	Noun	Proper
Preceding sentence			
Spavala je *u* *neprimjerenoj* *obući.*			
sleep-PTCP.FEM.SG be-PRS.3.SG in inappropriate-LOC.SG.F footwear-LOC.SG.F			
'She slept in inappropriate footwear.'			
Target sentence			
I *onda* *je* ***Pepeljuga*** *išla* *...*			
and then be-PRS.3.SG Cinderella-NOM.SF.F go-PTCP.FEM.SG			
'And then Cinderella went…'			
Example C	Same gender	Pronoun	Overt
Preceding sentence			
Pepeljugi je *došla* *dobra* *vila.*			
Cinderella-DAT.SG.F be-PRS.3.SG come-PTCP.FEM.SG good-NOM.SG.F fairy-NOM.SG.F			
'Fairy godmother came to Cinderella.'			
Target sentence			
I ***ona*** *joj* *je* *dala* *haljinu.*			
and she-NOM.SG.F her-DAT.SG.F be-PRS.3.SG give-PTCP.FEM.SG dress-ACC.SG.F			
cipele *i* *to.*			
shoes-ACC.PL.F and that-ACC.PL.N			
'And she gave her the dress, shoes and all that.'			
Example D	Same gender	Pronoun	Null
Preceding sentence			
I *onda* *je* *došla* *vila.*			
and then be-PRS.3.SG come-PTCP.FEM.SG fairy-NOM.SG.F			
A *Pepeljuga* *je* *jadna* *plakala.*			
and Cinderella-NOM.SG.F be-PRS.3.SG poor-NOM.SG.F cry-PTCP.FEM.SG			
'And the poor Cinderella was crying.'			
Target sentence			
I *rekla* *da* *bi* *išla* *i* ***ona***.			
and say-PTCP.FEM.SG that be-AOR.3.SG go-PTCP.FEM.SG and she-NOM.SG.F			

'And said she would like to go too.'			
Example E	Different gender	Noun	Common
Preceding sentence			
Upoznala	*se*	*s*	*princom.*
meet-PTCP.FEM.SG	REFL	with	prince-INS.SG.M
'She met the prince.'			
Target sentence			
Princ	se	zaljubio.	
prince-NOM.SG.M	REFL	fall in love-PTCP.MASC.SG	
'Prince fell in love.'			
Example F	Different gender	Noun	Proper
Preceding sentence			
Donijeli	*njoj*	*da*	*može* ... *ići* ... *na* ... *bal*
bring-PTCP.FEM.SG	she-DAT.SG.F	that	can-PRS.3.SG ... go-INF ... to ... ball-ACC.SG.M
	cipelice	*i* ... *torbu*	*i* ... *naušnice* ... *i* ... *nakita*
	shoe-ACC.PL.F	and ... bag-ACC.SG.F	and ... earring-ACC.PL.F ... and ... jewellery-GEN.SG.M
	raznog.		
	various-GEN.SG.M		
'They brought her shoes and bag and earrings and various jewellery so she could go to the ball. '			
Target sentence			
I	*tako* ... *se*	***Pepeljuga***	*obradovala.*
and	so ... REFL	Cinderella-NOM.SG.F	rejoice-PTCP.FEM.SG
'And so Cinderella rejoiced.'			
Example G	Different gender	Pronoun	Overt
Preceding sentence			
I	*tako* ... *se*	*Pepeljuga*	*obradovala.*
and	so ... REFL	Cinderella-NOM.SG.F	rejoice-PTCP.FEM.SG
'And so Cinderella rejoiced.'			
Target sentence			
Ali	*je*	*rekla* ... *da*	***ona*** ... *ne* ... *može*
but	be-PRS.3.SG	say-PTCP.FEM.SG ... that	she-NOM.SG.F ... no ... can-PRS.3.SG
	ići ... *dok*	*ne* ... *napravi*	*sve* ... *poslove.*
	go-INF ... until	no ... do-PRS.3.SG	all ... chores-ACC.PL.M
'But she said she can't leave until she's done with all the chores.'			
Example H	Different gender	Pronoun	Null
Preceding sentence			
I ... *ona*	*je* ... *tako*	*s* ... *njim*	*plesala.*
and ... she-NOM.SG.F	be-PRS.3.SG ... so	with ... he-INS.SG.M	dance-PTCP.FEM.SG
'And she danced with him.'			
Target sentence			
Plesala*.*			
dance-PTCP.FEM.SG			
'She danced.'			

*It should be noted that some of the examples given in this table are presented in a slightly altered (modified) form (e.g., digressions that are unrelated to the story have been removed) in order to better illustrate the analysis carried out.

APPENDIX C. CODING OF REFERENTIAL EXPRESSIONS USED TO REINTRODUCE MAIN CHARACTERS (REINTRODUCTION)*

DEFINITION: Character being mentioned again after another character (in bold in the target sentence).
SITUATION: If there is a referring expression in the preceding sentence, it can be either the same or different gender as in the target sentence.
FORM and TYPE: Character can be referred to by noun (common or proper) or pronoun (overt or null).

REINTRODUCTION	SITUATION	FORM	TYPE
Example A	Same gender	Noun	Common
Preceding sentence			
One	*pjevaju,*	*ne,* ... *ne,*	*čekaj.*
they-NOM.PL.F	sing-PRS.3.PL	no ... no	wait-IMP.2.SG
'They are singing, no, no, wait.'			
Target sentence			

Tu	*je*	*došla*		*ova*	***vila***.
Here	be-PRS.3.SG	come-PTCP.FEM.SG		this	fairy-NOM.SG.F
'The fairy godmother came here.'					

Example B		Same gender		Noun	Proper
Preceding sentence					
Pozvao	*je*	*djevojke*	*iz*	*kraljevstva*	*na* *bal.*
invite-PTCP.MASC.SG	be-PRS.3.SG	girl-ACC.PL.F	from	kingdom-GEN.SG.N	to ball-ACC.SG.M
'He invited the girls from the kingdom to the ball.'					
Target sentence					
Pepeljuga	*se*	*nadala*		*da* *će*	*ju*
Cinderella-NOM.SG.F	REFL	hope-PTCP.FEM.SG		that want-PRS.3.SG	she-ACC.SG.F
	maćeha	*povest* *sa*	*sobom.*		
	stepmother-NOM.SG.F	bring-INF with	herself-INS.SF.F		
'Cinderella hoped that her stepmother would take her.'					

Example C		Same gender		Pronoun	Overt
Preceding sentence					
Njene	*polusestre*	*su*	*se*	*spremale,*	*izlazile.*
her-NOM.PL.F	stepsisters-NOM.PL.F	be-PRS.3.PL	REFL	dressup-PTCP.FEM.SG	go out-PTCP.FEM.SG
'And her half-sisters were dressing up, going out.'					
Target sentence					
Ona	*je*	*jadna*	*morala*		*radit.*
she-NOM.SG.F	be-PRS.3.SG	poor-NOM.SG.M	must-PTCP.FEM.SG		work-INF
'And poor her she had to work.'					

Example D		Same gender		Pronoun	Null
Preceding sentence					
Ona	*je*	*tada*	*otišla*	*kod* *svoje*	*vile.*
she-NOM.SG.F	be-PRS.3.SG	then	go-PTCP.FEM.SG	to her-GEN.PL.F	fairy-GEN.SG.F
'She then went to her fairy.'					
Target sentence					
I	*jako* *je*	***plakala***.			
and	heavily be-PRS.3.SG.	cry-PTCP.FEM.SG			
'And she cried heavily.'					

Example E		Different gender		Noun	Common
Preceding sentence					
Tu	*je*	*bilo*	*puno*	*djevojaka*	*i* *mladića.*
here	be-PRS.3.SG	be-PTCP.NEUT.SG	lot	girl-GEN.PL.F	and boy-GEN.PL.M
'There was a lot of young girls and boys here.'					
Target sentence					
A	***kraljević***	*je*	*samo*	*stajao.*	
and	prince-NOM.SG.M	be-PRS.3.SG	just	stand-PTCP.MASC.SG	
'And the prince was just standing.'					

Example F		Different gender		Noun	Proper
Preceding sentence					
Išao	*je*	*kod*	*svih*	*djevojaka*	*u* *kraljevstvu.*
go-PTCP.MASC.SG	be-PRS.3.SG	to	all	girl-GEN.PL.F	in kingdom-LOC.SG.N
'He went to all the girls in the kingdom.'					
Target sentence					
Došao	*do* *kuće*	*u*	*kojoj*	*je*	*stanovala*
came-PTCP.MASC.SG	to house-GEN.SG.F	in	which-LOC.SG.F	be-PRS.3.SG	live-PTCP.FEM.SG
	Pepeljuga.				
	Cinderella-NOM.SG.F				
'He came to the house where Cinderella lived.'					

Example G		Different gender		Pronoun	Overt
Preceding sentence					
Shvatio	*je*	*da*	*obitelj*	*osim* *dvije*	*kćeri*
realize-PTCP.MASC.SG	be-PRS.3.SG	that	family-NOM.SG.F	besides two-GEN.PL.F	daughter-
GEN.PL.F					
	ima	*još* *jednu*	*kćer.*		

have-PRS.3.SG	another	one-ACC.SG.F		daughter-ACC.SG.F	
'He realized that that family had another daughter besides those two.'					
Target sentence					
Inzistirao	*je*	*da*	***ona***	*proba*	*cipelicu.*
insisted-PTCP.MASC.SG	be-PRS.3.SG	that	she-NOM.SG.F	try-PRS.3.SG	shoe-ACC.SG.F
'He insisted that she also tries the shoe.'					
Example H		Different gender		Pronoun	Null
Preceding sentence					
Ne	*sjećam*		*se*	*da l'*	*joj*	*je*
no	remember-PRS.1.SG		refl	if	her-DAT.SG.F	be-PRS.3.SG
	tata	*ost'o*		*živ.*		
	father-NOM.SG.M	stay-PTCP.MASC.SG		alive-NOM.SG.M		
'I don't remember if her dad was still alive. '					
Target sentence					
Pa	*je*	*sama*	***ostala***	*sa*	*maćehom.*
so	be-PRS.3.SG	alone-NOM.SG.F	stay-PTCP.FEM.SG	with	stepmother-INS.SG.F
'So she was left alone with her stepmother.'					

*It should be noted that some of the examples given in this table are presented in a slightly altered (modified) form (e.g., digressions that are unrelated to the story have been removed) in order to better illustrate the analysis carried out.

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