

Implicit causality biases of Romanian interpersonal verbs: elicitation and initial results

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Implicit causality is the property of interpersonal verbs to relate two human or animate entities in such a way that one of the referents is assumed to have caused the action or attitude described by the verb. This assumption, which has been termed bias and which is seemingly rooted in the argument structure of verbs, affects remention and subsequent pronominalization. This paper surveys theoretical and psycholinguistic approaches to causality in language with a focus on implicit causal relations expressed inter-clausally by verbs. It also presents the preliminary results of an off-line sentence-continuation study in which we tested the cross-linguistic and cross-cultural consistency of the implicit causality bias patterns of interpersonal verbs in Romanian.

Keywords: *implicit causality, next-mention, IC verb bias, Romanian.*

1. Introduction

Implicit causality (henceforth IC) is the intrinsic encoding of verbs that directs the assignment of cause to either of the two animate or human referents related by the interpersonal verb. The term implicit causality was coined by Garvey and Caramazza (1974) and defined as the ability of interpersonal verbs to relate two entities in such a way that one of them is “implicated as the assumed locus of the underlying cause of the action or attitude” (Garvey and Caramazza 1974, 460) described by the verb. This means that in a sequence of at least two sentences, a referent from the initial sentence (either the subject or the object of the verb) is rementioned in subject position in the following stretch of discourse due to their being considered more causal than the referent who is either mentioned in object position or is not mentioned at all.

Lindemann and Homăna (2019, 20) pointed out that, alongside the implicit causality of verbs, there are syntactic, semantic as well as discourse-pragmatic factors that play a major part in the ranking of referents in each instance of discourse. In

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discourse, language users are primarily oriented towards producing coherent chains of sentences therefore, when ascribing the cause of the verb to the subject referent or to the object referent, speakers abide by verb bias patterns which are characteristic to the IC verbs that they use in order to display collaborative language interaction.

One of the aims of this paper is to assess the extent to which causal biases impact on next mention and pronoun resolution in the subsequent discourse. Another important goal is to test the validity and strength of the IC verb bias patterns reported for verbs from other languages on Romanian interpersonal verbs. The research of IC verb bias in Romanian is stepping on to yet uncharted territory as, to our knowledge, the implicit causality biases of verb classes have not been investigated. Undoubtedly, our research will provide more insight into the specificity of the IC bias patterns and it will yield valuable data to research in this field.

The innovative character of this ongoing experimental research consists in the determination of implicit causality bias patterns in the case of contextualized Romanian interpersonal verbs, a direction that has not yet been explored and which would put Romanian on the map of languages with available data on the above mentioned angle of analysis. Although we are benefitting from extensive research on implicit causality performed on other languages, as far as we know, never before have Romanian interpersonal verbs and their IC bias patterns been subjected to such minute scrutiny with the purpose of creating a corpus of verbs and their IC biases for Romanian as well. Even though the identification of the patterns, the determination of the type of anaphoric expressions that are used in the referents' next-mention as well as the syntactic functions that the referents fulfil in sentence continuations are worthy purposes in themselves, the broader scope of this scientific endeavour is to provide valuable data and assistance to researchers who study Romanian interpersonal verbs from a variety of perspectives among which mention can be made of psycholinguistics, therapy for the recovery of patients with speech impairments, pragmatics and semantics.

2. Theoretical perspectives on implicit causality

Goikoetxea (2008, 760) defines implicit causality as a cognitive category which is "encoded by language, even in the meanings of isolated words", especially by interpersonal verbs which are focal to this study. Goikoetxea's contention is that the very semantic content of these verbs guides the attribution of cause to one referent or another.

The implicit causality of interpersonal verbs can be regarded as a constraint that affects sentence comprehension (Stewart, Pickering and Sanford, 2000) and influences the production of ensuing discourse. The "intrinsic causal directionality"

(Goikoetxea 2008, 760) of interpersonal verbs steer the assignment of cause to referents according to the type of referent bias that a certain verb follows. The referent who is ascribed the cause of the event is then rementioned in subject position in the following stretch of discourse either by means of pronouns (personal, demonstrative) or by means of nouns (proper names, definite noun phrases, etc.) according to their prominence in the respective context.

Hence, when analysing the context of occurrence of some interpersonal verbs, the cause of the action described by the verb may be attributed to the grammatical subject or, in other discursive instances, the object might be considered to have been the cause of the action.

Even though implicit causality is considered a constraint, it is however a soft constraint (van der Hoven and Ferstl 2018) because sentence continuations that are not congruent to the verb bias towards the subject referent or towards the object referent, are not ungrammatical but merely less common and sometimes more difficult to interpret.

3. IC verb bias

IC bias can be defined as the proportion of subject or object continuations of sentences that contain interpersonal verbs. The latter generally trigger expectations regarding further explanations of the action expressed by the verbs in subsequent discourse (Solstad and Bott 2017, 619). In the offered explanations, the cause is attributed to one of the referents mentioned in the original sentence, namely to either the subject or object.

Ferstl, Garnham and Manoulidou (2011, 124) point out that we use the term 'bias' when we try to measure implicit causality by asking respondents to either "add explicit causes to statements containing interpersonal verbs or to make judgements about causality" and even though their answers are not fully consistent, there is a preponderance of continuations that favour either the subject noun phrase (henceforth NP1) or the object noun phrase (henceforth NP2).

For example, the verbs 'to question' and 'to frighten' have an NP1 bias whereas 'to praise' and 'to fear' are generally NP2 biased, according to the literature on interpersonal verbs (Garvey and Caramazza 1974; Garvey, Caramazza and Yates 1976; Hartshorne and Snedeker 2013).

In (1) a. it is the subject (NP1) of the original sentence that is rementioned by means of a personal pronoun anaphor. The cause of the action is ascribed to 'Jim', the NP1 of the original sentence and the subject of the subsequent sentence.

- (1) a. Jim questioned Sam. He wanted to know if Sam was guilty.
 b. Jim fears Sam. He has been violent before.

In example (1) b. there is an NP2 bias as the object of the original sentence, 'Sam', is rementioned in subject position in the subsequent sentence and is expressed by a personal pronoun. In this case we are dealing with an object interpretation in the sense that the direct object (NP2) of the initial sentence is ascribed the cause of the action expressed by the verb.

The sentences from example 2 rendered below are taken from our experiment. In sequence 2.a., Bogdan, the object referent (NP2) of the initial sentence is rementioned in subject position in the continuation sentence. Therefore, in this case there is an NP2 bias.

- (2) Caius l-a salvat pe Bogdan. Bogdan i-a mulțumit.
Caius saved Bogdan. Bogdan thanked him.

However, in example 3 below, which is also extracted from our research experiment, 'Victoria', the subject referent (NP1) of the initial sentence is rementioned in subject position in the continuation sentence as well. Hence, in this particular case, we are dealing with an NP1 bias which means that the subject is considered to be the cause of the action expressed by the verb as well as the most prominent of the two referents.

- (3) Victoria a ascultat-o pe Florica. Victoria a făcut o alegere bună.
Victoria listened to Florica. Victoria made the right choice.

Since IC biases are caused exclusively by differences in verb semantics, one would expect all verbs in a given class to display similar IC biases and similar remention patterns in ensuing discourse of their original referents. However, there is only preponderance and the extent to which verb bias patterns across languages are congruent, is yet to be discovered.

Different taxonomies have been devised to classify interpersonal verbs (Au, 1986; Brown and Fish, 1983, Rudolph and Försterling, 1997). This research mainly relies on the latter, namely on Rudolph and Försterling's 'revised action-state taxonomy' which classifies interpersonal verbs into two main categories, namely 'action verbs' and 'state verbs' which are further divided into two subcategories (see Figure 1).

Main categories	Subcategories	Examples of verbs
Action verbs – semantic roles of ‘Agent’ and ‘Patient’	- Agent-Patient interpersonal verbs	<i>help, convince, seduce, call</i>
	- Agent-Evocator interpersonal verbs	<i>criticize, respond, praise, reward</i>
State verbs – semantic roles of ‘Stimulus’ and ‘Experiencer’	- Stimulus-Experiencer interpersonal verbs	<i>surprise, impress, inspire</i>
	- Experiencer-Stimulus interpersonal verbs	<i>admire, love, forgive, envy</i>

Figure 1. The revised action-state taxonomy of interpersonal verbs (Rudolph and Försterling 1997)

The cross-linguistic validity of the verb categories put forth by Rudolph and Försterling (1997) was tested on such diverse languages as German, Spanish, Japanese and Mongolian. Extensive research was carried out in order to explore whether verbs expressing the same actions and pertaining to the same categories proposed by Rudolph and Försterling (1997), display the same patterns with respect to the structure given to the ensuing discourse. The present study represents a first attempt to investigate Romanian verbs with respect to their implicit causality patterns. In the following, we report on preliminary results from a sentence-completion study.

4. The experimental study

Our research is a normative study on the implicit causality bias of 76 interpersonal verbs in Romanian. The equivalents of these verbs in other languages such as English or Spanish had been identified in the literature on IC, their bias recorded, their anaphoric reference patterns noted, in order to discover whether there is a consistency of IC verb bias patterns across languages for verbs expressing the same actions and pertaining to the same category according to Rudolph and Försterling’s (1997) ‘revised action-state taxonomy’.

4.1. Participants

In this stage of the research, 100 monolingual native speakers of Romanian from the Transilvania University of Brasov participated in the experimental study. The completion of each list required approximately 25 minutes.

4.2. Design and materials

We selected 76 verbs to be tested according to three criteria. First, the verbs belonged to one of the four classes identified by Rudolph and Försterling (1997), namely Agent-Patient, Agent-Evocator, Stimulus-Experiencer and Experiencer-Stimulus. Second, the verbs were tested with respect to their IC biases in other languages (e.g. Goikoetxea et al. 2008; Bott and Solstad 2014). Third, the verbs are easily translated into Romanian, thus avoiding verbs associated with more than one translation in Romanian, as illustrated by example 4 given below.

(4)

to forgive – a ierta	to envy – a invidia
to protect – a proteja	to stop – a opri
to convince – a convinge	to invite – a invita

The design of the sentences administered was PN VERB-ed PN, namely proper name - verb in the past tense - proper name, as illustrated in **Figure 2**. Referents were controlled for gender (38 unambiguously female proper names and another 38 unambiguously male proper names), therefore each sentence contained either two female or two male referents. As there was a competition between the subject and object referent in terms of gender, we expected participants to use more elaborated referential forms (e.g. names, definite descriptions) rather than (overt or covert) pronouns to pick up the referents in the subsequent discourse. Moreover, all sentences were controlled for length and tense (all verbs were in the past tense).

We manipulated verb class by choosing verbs from one of the four main classes of verbs discussed above. A fifth group of verbs, contained verbs that were extensively tested in the literature but which were not straightforwardly categorized as belonging to one of the four main classes of verbs discussed in Rudolph and Försterling (1997). We tested 20 Agent-Patient verbs, 20 Agent-Evocator, 10 Stimulus-Experiencer, 10 Experiencer-Stimulus and 16 non-categorized verbs. Figure 2 presents one sample experimental item for each condition with English translations.

CONDITION 1: AGENT – EVOCATOR
e.g. Abel l-a protejat pe Cazimir <i>Abel protected Cazimir.</i>
CONDITION 2: AGENT – PATIENT
e.g. Damian l-a convinge pe Marian. <i>Damian convinced Marian.</i>

CONDITION 3: EXPERIENCER – STIMULUS
e.g. Sergiu l-a iertat pe Vasile. <i>Sergiu forgave Vasile.</i>
CONDITION 4: STIMULUS – EXPERIENCER
e.g. Doru l-a invitat pe Dan. <i>Doru invited Dan.</i>
NON-CATEGORIZED VERBS
e.g. Hortensia a intimidat-o pe Mirela. <i>Hortensia intimidated Mirela.</i>

Figure 2. Sample experimental items for each condition

The 76 test items and 70 fillers were randomized and distributed into four lists, which were administered to the participants who were instructed to write one sentence continuation for each experimental item. In **Figure 3** there is an excerpt from the list of sentences with Stimulus-Experiencer verbs.

CONDITION 4: STIMULUS-EXPERIENCER
<i>Cătălin l-a dezamăgit pe Dumitru.</i> Cătălin disappointed Dumitru.
<i>Georgiana a inspirat-o pe Nicoleta.</i> Georgiana inspired Nicoleta.
<i>Romeo l-a iritat pe Silviu.</i> Romeo irritated Silviu.
<i>Ștefan l-a plictisit pe Aurel.</i> Ștefan bored Aurel.
<i>Valeria a surprins-o pe Grațiela.</i> Valeria surprised Grațiela.
<i>Dorel l-a amenințat pe Silviu.</i> Dorel threatened Silviu.
<i>Doru l-a invitat pe Dan.</i> Doru invited Dan.

Figure 3. Fragment from the list of sentences with stimulus-experiencer verbs

4.3. Procedure and data analysis

The elicited data set of 1900 continuations were manually coded by four annotators who worked independently and analyzed the response sentences according to the following three parameters: (i) next mention; (ii) type of referring

expression and (iii) syntactic function of referents. The four annotators agreed upon 95% of the coded sentences; in cases of disagreement (which were mostly concerned with determining the topic), differences were resolved through discussion. **Figure 4** presents a sample continuation to a sentence with the verb “to avoid” from the Agent-Patient condition and illustrates the coding methods used.

On the first line of the table in Figure 4. we indicated the subcategory of interpersonal verbs to which the verb in the sentence pertains, on the second line there is the original sentence with the Agent-Patient verb ‘a evita’ (to avoid) and a continuation that respondents provided for the test item. Then we analyzed and coded each sentence continuation according to (i) next-mention in subject position, (ii) type of anaphoric expression used for the initial subject referent (NP1); (iii) syntactic function of the initial subject referent (NP1); (iv) type of anaphoric expression used for the initial object referent (NP2); (v) syntactic function of the initial object referent (NP2).

Agent-Patient				
Experimental item: Ioan I-a evitat pe Sandu. (Ioan avoided Sandu.)				
Continuation		Sandu s-a supărat. (Sandu got upset)		
Coding methods used				
Next-mention in subject position (NP1; NP2, both; other)	NP1 - type of anaphoric expression	NP1 – syntactic function	NP2 - type of anaphoric expression	NP2 syntactic function
NP2	0	0	name	S

Figure 4. Sample continuation and coding methods

The information in the “Next mention in subject position” column indicates which of the two referents – i.e. the initial subject referent (NP1), or the initial object referent (NP2) – is picked up in the participants’ continuations in subject position. In the example continuation given in **Figure 4**, it is the referent that was the object of the verb in the initial sentence (the NP2) that is mentioned in subject position in the continuation.

Next, for ‘type of anaphoric expression’ we coded the type of anaphoric expression used to pick up the referents associated with the initial subject and object referent respectively. The types of anaphoric expressions coded in the elicited continuations were: zero, personal pronouns, demonstrative pronouns, proper names and definite noun phrases. The second referent, ‘Sandu’, is mentioned again by means of a proper name, thus the value ‘name’ for ‘NP2-type

of anaphoric expression'. As the first referent, 'loan', is not mentioned in this continuation sentence, it is conventionally marked 0.

In the 'NP1 syntactic function' column we indicate the syntactic function that the subject referent (NP1) from the initial sentence fulfilled in the continuation sentence. Hence, given the fact that 'loan', the subject referent (NP1) of the initial sentence was not picked up in the continuation, we marked its syntactic function value with 0. Similarly, the 'NP2 syntactic function' column indicates the syntactic function that the object referent (NP2) of the original sentence has in the continuation sentence. Thus, in the example provided in Figure 4, 'Sandu' is mentioned in subject position therefore S (which stands for 'Subject') is noted in the 'NP2 syntactic function' column.

5. Results

Empirically, we noticed that the anaphoric resolution of the Romanian IC verbs under scrutiny did not always display bias congruency but was fairly consistent with the NP1 or NP2 IC verb bias in other languages, in agreement with the literature. The types of anaphoric expressions used in the elicited continuations were: null subjects, personal pronouns, demonstrative pronouns, proper names and definite noun phrases.

Statistical analyses are currently being performed on the codings and more specific results will be reported in forthcoming articles. The envisaged results, should implicit causality prove to be a consistent effect across languages, including Romanian, we expect a great number of continuations of initial sentences containing Agent-Patient and Stimulus-Experiencer verbs to have an NP1 bias.

The object of the initial sentence will be rementioned in subject position in the continuations of sentences containing Agent-Evocator or Experiencer-Stimulus verbs, thus giving rise to an NP2 bias.

6. Conclusions

In this article we presented the preliminary results of the normative off-line sentence-continuation study in which we systematically test the implicit causality biases of 76 interpersonal verbs in Romanian. The aim of the research is to identify the patterns of anaphoric resolution triggered by the interpersonal verbs.

The study of implicit causality bias can have a great impact on psycholinguistics as IC has a key role in discourse comprehension patterns, on teaching anaphoric resolution to speakers with poor comprehension abilities generated by trauma within speech therapy sessions, on social psychology for the study of aggression in discourse and in the study of gender bias in referent remention patterns.

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