

Cognitive approaches to linguistic creativity

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Abstract

Humans are an incredibly creative species – our minds have evolved to a degree that has enabled us to think original thoughts and come up with novel solutions to a great number of problems. One domain of human cognition that has recently received considerable attention in cognitive linguistics is linguistic creativity. Over the past couple of years, several publications have contributed new and interesting cognitive linguistic findings on the topic. This paper gives an overview of creativity research from the fields of linguistics and psychology and shows how these findings are relevant for cognitive approaches to linguistic creativity. A particular focus will be on Glăveanu's (2013) 5A framework of creativity, which offers the most comprehensive model of creativity and takes into account the various aspects that interact in any creative act (actors, audience, artefacts, actions and affordances). Next, the cognitive framework in which most linguistic creativity research is currently being carried out in, Construction Grammar (Goldberg 2019; Hilpert 2019; Hoffmann 2022b) will be discussed. After summarizing the results from constructionist research on verbal creativity, a constructionist model of Glăveanu's framework will be presented – the '5C model' of constructional creativity (constructors, co-constructors, constructs, constructional blending and the constructional network). This model will detail the role of constructional networks (Diessel 2019) in creative acts and it will be argued that Conceptual Blending (Turner 2018, 2020) is the domain-general cognitive process that creates creative (as well as non-creative) constructs.

Keywords: creativity, construction grammar, cognitive linguistics, blending, 5C model of constructional creativity, cognition, constructional networks

1. Introduction

Humans are an incredibly creative species – our minds have evolved to a degree that has enabled us to think original thoughts and come up with novel solutions to a great number of problems. One domain of human cognition that has recently received considerable attention in cognitive linguistics is linguistic creativity. Over the past couple of years, several publications have contributed new and interesting cognitive linguistic findings on the topic (e.g., Bergs 2018, 2019; Bergs and Kompa 2020; Hartmann and Ungerer 2023; Herbst 2018; Hoffmann 2018, 2019, 2020a; Trousdale 2018; Turner 2018; Uhrig 2018, 2020).

This entry will give an overview of creativity research from the fields of linguistics and psychology and then show how these findings are relevant for cognitive approaches to linguistic creativity (including definitions of creativity as well as the role of personality traits that explain inter-individual differences with respect to the potential for creativity). A particular focus will be on Glăveanu's (2013) 5A framework of creativity, which offers the most comprehensive model of creativity and takes into account the various aspects that interact in any creative act (actors, audience, artefacts, actions and affordances). Next, the cognitive framework in which most linguistic creativity research is currently being carried out in, Construction Grammar (Goldberg 2006, 2019; Hilpert 2019; Hoffmann 2022b) will be discussed. After summarizing the results from constructionist research on verbal creativity, a constructionist model of Glăveanu's (2013) framework will be presented – the '5C model' of constructional creativity (constructors, co-constructors, constructs, constructional blending

and the constructional network). This model will detail the role of constructional networks (Diessel 2019) in creative acts and it will be argued that Conceptual Blending (Hampe and Schönefeld 2003; Hoffmann 2019; 2022a; Turner 2018, 2020) is the domain-general cognitive process that creates creative (as well as non-creative) constructs.

2. Creativity in linguistics: Fixed-creativity versus Extending-creativity

Languages are complex symbolic systems that allow speakers to produce novel utterances that they have never heard before. In fact, linguistic creativity is considered one of the design features (Hockett 1960) of human language, or as Chomsky (1965) put it, “an essential property of language”:

Within traditional linguistic theory, furthermore, it was clearly understood that one of the qualities that all languages have in common is their “creative” aspect. Thus an essential property of language is that it provides the means for expressing indefinitely many thoughts and for reacting appropriately in an indefinite range of new situations. (Chomsky 1965: 6)

As Sampson (2016) pointed out, however, most of the phenomena that linguists consider “creative” are merely instances of productivity, or in his terminology “F(ixed)-creativity”: “activities which characteristically produce examples drawn from a fixed and known (even if infinitely large) range”. In these cases, a speaker merely “makes original use of the established possibilities of the language” (Leech 1969: 24) to create a novel linguistic element. Take the morpheme *-ocracy*, which denotes ‘forms of government or groups who exercise social or political power’ (OED online¹). As a quick search of the Corpus of Contemporary American English (COCA)² reveals, the corpus contains 155 different types with an overall token frequency of 51,669. The word *democracy* is by far the most frequent type (with 46,084 tokens), but the pattern also licenses novel instances such as *expertocracy* or *idiotocracy*, which appear only once in the corpus.

While these words might have been considered somewhat creative when they were first produced, it should be noted that productivity does not automatically equate with creativity. Take one of the most frequent schemas of the English language, the regular past tense morpheme (for a constructionist analysis, see Hoffmann 2022b: 61–65). COCA contains about 29,610 different types of this pattern, which tally up to 10,838,017 tokens.³ If you have a (fairly) novel verb such as *screen-share* (whose earliest use according to the OED is in the 1990s⁴), then you can easily produce its past tense form using the regular past tense morpheme construction as in (1):

- (1) We jumped on a web conference where I **screen shared** to show her exactly what I was talking about [...] (<https://www.henryrobertsmarketing.co.uk/about-3/>)

While the first use of *screen share* as a verb qualifies as potentially creative (see below for which factors influence this assessment), it is clear that no one would consider its subsequent

¹ *Oxford English Dictionary*, s.v. “-ocracy (comb. form),” July 2023, <https://doi.org/10.1093/OED/9476409679> [last accessed 29 December 2023].

² Search for “*ocracy” at <https://www.english-corpora.org/coca/> [last accessed 29 December 2023].

³ As a proxy for regular past tense verbs, the corpus was queried for “*ed_v?d” at <https://www.english-corpora.org/coca/> [last accessed 29 December 2023].

⁴ *Oxford English Dictionary*, s.v. “screen-share (v.),” November 2023, <https://doi.org/10.1093/OED/3821748489> [last accessed 29 December 2023].

past tense use in (1) very creative. Productivity enables the creation of new linguistic elements, but these do not automatically qualify as creative.

In contrast to F-creativity, “E(nlarging/extending)-creativity” (Sampson 2016) captures situations in which a speaker “actually goes beyond [... existing] possibilities, that is, if he creates new communicative possibilities which are not already in the language” (Leech 1969: 24). The clearest case of E-creativity is probably language change such as, e.g., the grammaticalization of the *Going to Future* construction (e.g. *It is going to rain.*), which emerged during the Early Modern English period and extended the paradigm of tense constructions (see Bybee 2006; Traugott 2015 for details). The relationship of F-creativity and E-creativity has recently been discussed in several publications (see Bergs 2018, 2019; Bergs and Kompa 2020; Schneck 2018, Trousdale 2018; Uhrig 2018). As it turns out, even in the most extreme cases of E-creativity (such as, e.g., *Eins within a space and wearywide space it wast ere wohned a Mookse.* from Joyce’s *Finnegans Wake*; cit. in: Leech 1969: 24), there is always an “interplay between linguistic creativity and routine”⁵ and creativity is thus “the result of the tension between established possibilities and deviations from them” (Hoffmann 2018: 263; see also Leech 1969: 56–57).

Originality, the fact that a linguistic expression is novel, clearly plays a role for both F- and E-creativity. However, as seen in the discussion of productivity above, novelty alone is not a sufficient condition for creativity. What other conditions have to be met for an expression to be considered ‘creative’?

3. Creativity in psychology: Creative Actors, Audience, Affordances, Actions and Artefacts

In psychological research, the most widely accepted definition holds that originality/novelty crucially interacts with appropriateness in determining whether something is considered creative (Simonton 2012; Kaufman 2016: 5): On the one hand, some ideas like using a smartphone as a fly swat might be completely novel/original but considered inappropriate. On the other hand, using a fly swat to kill flies will seem perfectly acceptable but not very original (Hoffmann 2022a: 260). It is only when something is original and appropriate that is seen as creative (and consequently appreciated by the listener/reader; see Giora 2003; Veale 2012).

Traditionally, creative acts have been approached from various angles by asking (Rhodes 1961; Kaufmann 2016: 16): Who is creative (person)? How are we creative (process)? What is creative (product)? Where are we creative (press/place)? Yet, while many psychological studies investigated these issues independently, sociocultural approaches brought attention to the fact that “creativity doesn’t happen ‘within the head’ of isolated individuals but rather in the interaction between people, places, objects, and institutions” (Lubart et al. 2021: 129). Glăveanu (2013) incorporated insights from distributed cognition (Hutchins 1995a, 1995b, 2000) as well as situated cognition (Newen et al. 2018) into the so-called 5A framework of creativity that adopts a sociocultural perspective of creativity. The 5A model identifies five elements that interact during any creative act (Lubart et al. 2021: 130):

- actor: the individual that creates something novel and appropriate,
- audience: the people with whom the actors interact or for whom they innovate,
- artifact: the products/output of the creative act,
- action: the processes that lead to the creative product, and

⁵ Source: <https://dgfs2023.uni-koeln.de/en/> [last accessed 29 December 2023].

- affordances: the material objects and environment that are part of the creative process.

What characterizes creative actors? In several linguistic studies, it has been suggested that extravagance – the desire to “talk in such a way that you are noticed” (Haspelmath 1999: 1055) might drive individuals to innovate (cf., e.g., de Smet 2018; Hartmann and Ungerer 2023). But is someone who desperately wants to innovate also the kind of person that can be creative? Just because you want to be a great painter it does not mean you are not going to be the next Picasso. Just because you want to be a world-famous pop singer it does not mean you are going to be next Taylor Swift. And just because you want to be a professional footballer it does not mean you are going to be the next Messi. In addition to a desire to innovate, you also have to have the talent for it – the right cognitive disposition.

Focussing on the effect of domain-general cognitive processes shared by all speakers, cognitive linguistics often ignores inter-individual differences (notable exceptions being, e.g., Dąbrowska 2012; Street and Dąbrowska 2014). However, not all speakers/writers of a language are obviously equally creative – there are considerable inter-individual differences. First of all, high intelligence, the “general cognitive ability compris[ing] reasoning, mental speed, as well as the ability to conceptualize and to gain, structure, retain, and use knowledge” (Kandler *et al.* 2016: 231), has been shown to support creativity. Moreover, as a considerable body of psychological research has shown, the personality trait most consistently correlated with creativity is ‘openness’ (Kaufman 2016; Kandler *et al.* 2016). Individuals high in openness are characterized by a “tolerance of ambiguity and willingness to grow, as well as cognitive flexibility, fantasy, open-mindedness, and having broad interests in several issues (e.g., science, arts, and aesthetics)” (Kandler *et al.* 2016: 232) – all of which seem to be important prerequisites for creative thinking and acting. Less consistently, a higher level of extraversion, i.e. a “general tendency to seek stimulation, orient attention to external stimuli, and enjoy social attention and interaction” (Kandler *et al.* 2016: 232), is also positively correlated with an individual’s creativity. Due to a moderate correlation between openness and extraversion, the two traits are sometimes integrated into a higher order trait labelled ‘plasticity’ (Kandler *et al.* 2016: 232). Interestingly, this higher order trait turns out to be negatively associated with latent inhibition, meaning that individuals high in plasticity (openness and extraversion) have a higher number of unfiltered stimuli that enter their awareness and thus a higher likelihood of activating “seemingly unrelated cues to the solution of a problem” (Kandler *et al.* 2016: 232). This allows individuals high in plasticity to come up with more and unrelated solutions to a problem than individuals who are lower in openness and extraversion – a cognitive ability known as divergent thinking (Glăveanu and Kaufman 2021: 10). These findings can easily be translated in predictions for cognitive linguistic studies: Since cognitive linguistics takes linguistic knowledge to be stored in mental networks (see, e.g. Diessel 2019: 9), we can expect individuals who are high in plasticity to be able to activate a greater number of linguistic elements that are more unrelated and consequently stored in more distant parts of the mental grammar network (for an experimental method for testing this see, e.g., Olson *et al.* 2021). Some evidence for this hypothesis also comes from the study of synaesthetes, individuals who have “a particularly strong tendency to form cross-sensory associations (Simner 2007)” (Turner and Littlemore 2023: 1), i.e. who associate certain sounds with colours or textures with smells (Turner and Littlemore 2023: 1). Brain studies have shown that synaesthetes exhibit a higher level of neural connectivity between brain areas that are inhibited in non-synaesthetes (Turner and Littlemore 2023: 3–4), and Turner and Littlemore were able to show that, as a

consequence, synaesthetes were able to produce more creative metaphors “when describing or evaluating personal and significant emotional experiences” (2023: 75).

Flexibility in the mental network – going beyond one’s entrenched mental routines – is therefore the crucial characteristic that enables individuals to innovate. Extravagance, the desire to use “‘imaginative and vivid’ language ‘in order to be noticed’” (Haspelmath 1999: 1057; quote from Hartmann and Ungerer 2023: 6) is not enough to be creative. However, speakers that want to be extravagant will probably note novel words and structures and will use these in order to stand out and be noticed. As such, from a language change perspective, they might not be innovators, but act as early adopters (Rogers 2017; Labov 2001).⁶

Now that we have seen what type of individuals/actors are creative let us turn next to the role of the other factors of the 5A model and ask how we can interpret the role of audience, action, artefacts and affordances from a cognitive linguistic point of view. For this, we turn to the leading cognitive theory of grammar – Construction Grammar.

4. CxG: routine creativity

Construction Grammar approaches (Goldberg 2006, 2019; Hilpert 2019; Hoffmann and Trousdale 2013; Hoffmann 2022b) maintain that the central unit of language are constructions – arbitrary and conventional pairings of FORM and MEANING. Constructions range from words (e.g. FORM: /'æpl/ ⇔ MEANING: 'THING(apple)') over morpheme schemas (2) to fully schematic constructions (such as (3); for details on the notation of constructions; see Hoffmann 2022b: 38–41):

- (2) *Un-V* construction: FORM: / $\wedge n_1-X_2/3 \Leftrightarrow$ MEANING: 'REVERSE₁(EVENT₂)'₃

e.g., licenses *undo*, *uncover*, *untie*

- (3) Transitive construction:

FORM: [SBJ₁ [V₂ OBJ₃]_{VP}]₄ ⇔ MEANING: TRANSFER-FORCE(EVENT₂(AGENT₁), PATIENT₃)'₄

e.g., licenses *She kicked the football.*, *He baked a cake.*, *They ate a pizza.*

Constructions are stored in the long-term memory of speakers in a complex network that is characterized by various types of relations (Diessel 2019: 22): e.g., associations between lexemes ('lexical relations' such as synonymy or antonymy), associations between constructions ('constructional relations' such as between the Transitive Construction and the Caused Motion construction as exemplified by *She kicked the ball to him.*) and associations between particular items (e.g. KICK) and the slots of the constructions (such as the V slot of (3); these are known as 'filler-slot relations').

With respect to the 5A model, the entrenched constructional network constitutes part of the affordances that a speaker can draw on during language production. Any concrete utterance that a speaker then produces is created in the working memory and this product is called a 'construct' (Cowan 2008; Diamond 2013; Hoffmann 2017, 2022a). Only in rare cases, does a

⁶ Steiner et al. (2023) argue that innovators in their study on a Swiss German plural marker were marked by high levels of extraversion, but not openness. A closer look at the phenomenon they studied, however, reveals that innovation here refers to the productive use of an already established schema. Consequently, extraversion might better be seen as an indicator of early adoption of this schema.

construct instantiate a single construction (e.g., when you produce a pre-fab greeting such as *Good morning!* or a saying such as *An apple a day keeps the doctor away*). Instead, in the working memory a construct will be ‘constructed’ by drawing on a number of constructions from the long-term memory. Hoffmann (2018), e.g., discusses the construct *Firefighters cut the man free*. As he shows, the construct draws on several constructions, including the Resultative construction (FORM: [SBJ₁ [V₂ OBJ₃ OBL₄]VP]₅ ⇔ MEANING: ‘CAUSE(EVENT₂(AGENT₁), BECOME(PATIENT₃, RESULT-GOAL₄))’₅), e.g., *They elected him president.*; *She wiped the table clean.*; Hoffmann 2022b: 178–180) as well as a multitude of other constructions (*inter alia*, the *Firefighter*-lexical construction, the Plural-N-construction, the Verb-Specific *cut*-construction, etc., see Hoffmann 2018 for details).

What is the action that combines constructions into constructs? Within cognitively oriented Construction Grammar approaches more and more researchers argue that the domain-general process of conceptual blending can best account for constructional combination (see Fauconnier and Turner 2002; Hampe and Schönefeld 2003; Herbst and Hoffmann 2018, 2024; Hoffmann 2019, 2021; Steen and Turner 2013; Turner and Fauconnier 1999). Conceptual Blending is a domain-general process that has been used to explain human behavior across all domains of higher-order human cognition (<http://blending.stanford.edu>) — including mathematical invention, scientific discovery, reasoning, inference, categorization, art, music, dance, social cognition, advanced tool innovation, religion. It allows for the selective combination of two or more input spaces to create a conceptual structure that often has new, emergent meaning. One of the advantages of drawing on conceptual blending for construction combination is that it also offers a straightforward account of how gesture and verbal information can become integrated into a single multimodal construct in the working memory (e.g., Hoffmann 2021; Steen and Turner 2013; Turner 2018).

Let us look at an authentic example to see how actors (‘constructors’) and audience (‘co-constructors’) use constructional blending to produce a creative construct:

(4) Graeme Norton: so uh living in Switzerland and you have been awarded one of the highest honors that country can bestow

Shania Twain: it is true

Graeme Norton: it is true because a train is named after you

Shania Twain: I have a **Shania Train**

[Shania Twain Reveals She Has A Train Named After Her | The Graham Norton Show | <https://www.youtube.com/watch?v=ghDBihottds> | min 0:10 – 0:25]

As discussed in (4), a Swiss train company named one of its trains *Shania Train* in honour of *Shania Twain*. Figure 1 uses Herbst and Hoffmann’s (2018, 2024) CASA analysis to disentangle the various constructions that are blended into the construct *Shania Train*. When looking at such figures, it is important to remember that CASA analyses are only partial representations of the formal slots of constructions (and that the meaning pole of all constructions also play a crucial role in their combination):

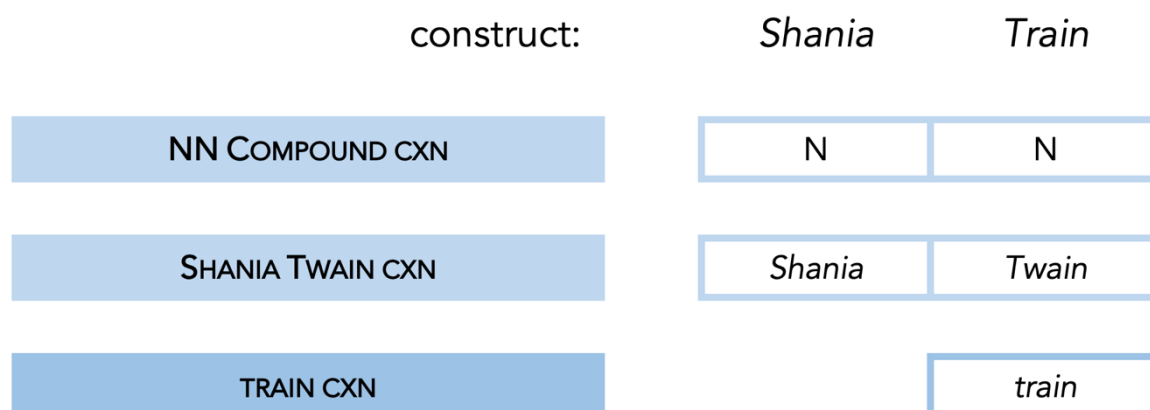


Figure 1. CASA analysis of (4) *Shania Train*

As Figure 1 shows, the schematic construction that licenses NN compounds (see Hoffmann 2022b: 88–90 for details) is blended with the proper name construction *Shania Twain* and the lexeme construction *train*. One motivation for this construct is, obviously, the formal similarity of *Twain* and *train* (which rhyme), which represents a horizontal lexeme relation in the network that the creator of this construct exploited. Just a couple of seconds after the scene in (4), we can witness how creators and co-creators collaboratively activate their constructional networks to get to another funny construct:

- (5) Salma Hayek: now my husband's gonna be see when are you gonna get a train
named after you
- [laughter]
- Shania Twain: why didn't I get a Shania Plane?
- Graeme Norton: Oooh! ... nice ... Well, you can have a Salma Kayak
- [laughter]
- [Shania Twain Reveals She Has A Train Named After Her | The Graham Norton Show |
<https://www.youtube.com/watch?v=ghDBihottds> | min 0:40–0:55]

In (5), Shania Twain exploits her constructional network by finding another means of transport that rhymes with her name (*plane*) and blends this with *Shania Train* to create *Shania Plane*. This prompts the host, Graham Norton, to search his mental construction network for means of transport that rhyme with Salma Hayek's last name – and he succeeds and produces the construct *Salma Kayak*. Norton is a media professional who, in all likelihood, should score high on the trait of openness (questions on the NEO-PI-R that are positively associated with this trait include “Believe in the importance of art,” “Carry the conversation to a higher level.” or “Get excited by new ideas.”⁷, all of which seem to apply to Norton). In addition to this, however, the construct *Salma Kayak* is only particularly creative because of the preceding cotext and context in which the co-constructors together activated the blended constructs *Shania Train* and *Shania Plane*. As this illustrates, even when one individual produces a creative

⁷ Source: <https://ipip.ori.org/newNEODomainsKey.htm> [last accessed 30 December 2023].

construct, it is necessary to take into account the affordances that they had their disposal at that point in time – and that includes the constructional network that is activated by what the creator as well as the co-creators have said in the preceding co- and context.

The tweet in (7), which is a reply to (6), exhibits the same process:

- (6) Ron DeSantis is not the brightest bulb in the chandelier.-- Stephen King.
7:10 AM | 10 August 2021
<https://twitter.com/Randy8006/status/1424961428419661852>

- (7) Actually he's the dimmest bulb in the basement
10:41 PM | 10 August 2021
<https://twitter.com/davidwb/status/1425195731850342401>

The sentence in (7) alone (*Ron DeSantis's the dimmest bulb in the basement*) would not be as effective – it clearly builds on structures activated by (6). (6) draws on the X BE NOT *the* Y-est Z in the Q-cxn (FORM: SBJ₁ [BE NOT [the ADJ_{SUPERLATIVE_2} N₃] [in the N₄]]₅ ⇔ MEANING: 'Theme₁ = 'not-very-intelligent'₅), which licenses structures such as *She's not the sharpest tool in the shed, Lily*. (COCA, Trial Fire, 2016) or *Poor Billy Frisk was not the quickest bunny in the warren*. (COCA, Southwest Review, 2009; for further details of the construction; cf. Bergs 2018; Hoffmann 2022a). The reply in (7) picks up on the meaning of (6) (Ron DeSantis is claimed not to be very intelligent) and through divergent thinking moves along the constructional network from *not brightest* to its *dimmest* (which is a synonym for both meanings of not bright, i.e. 'not luminous' as well as 'not clever'). In addition to this, the creator of (7) also moves from *chandelier* (at the top of a room) to *basement* (the lowest room of a building), exploiting the association of someone being of low intelligence.

As you can see, this cooperative 'Lennon-McCartney' (M. Hilpert, p.c.) nature of interaction underlies many instances of human verbal creativity. See Hoffmann (2020, 2022a) for a discussion of several similar examples illustrating this. Next, however, I want to bring together all of the above insights into a single constructionist model of verbal creativity.

5. The 5C model of constructional creativity

Figure 2 shows what a constructionist model looks like that takes into account the 5A framework and illustrates how its five components (actors, audience, acts, artefacts and affordances) can be interpreted from a Construction Grammar perspective:

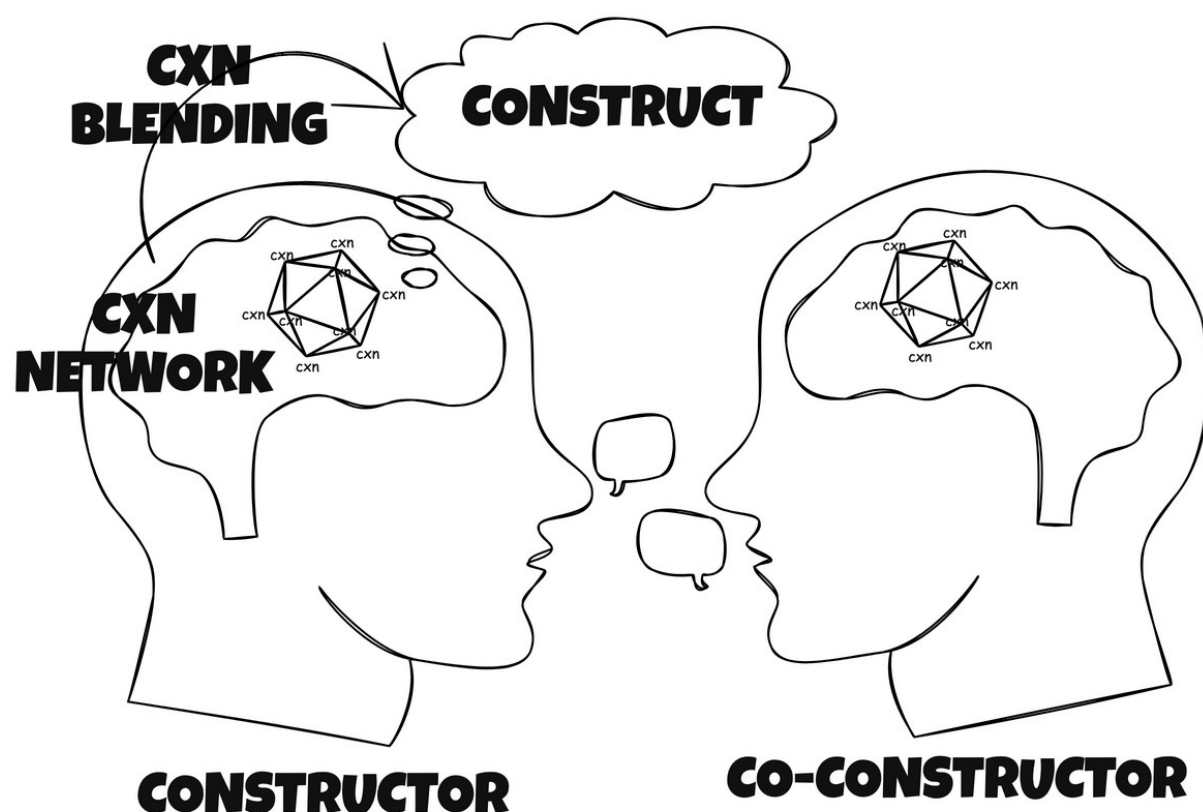


Figure 2. The 5C model of constructional creativity (source: <https://osf.io/495xg>)

For language, the creative artefact corresponds to the **construct** that is created in the working memory of a speaker and then consequently uttered. This construct is the result of an action that can best be captured by the process of **constructional blending** (which is simply an instance of the domain-general process of conceptual blending). The affordances available to the creative innovators are their **constructional networks**, which comprise all of the constructions and their relations that have previously been entrenched in the long-term memory. Individuals, the **constructors**, will differ considerably as to their ability to follow novel, divergent paths in their mental construction network, i.e. their verbal creativity (depending, inter alia, on their degree of openness, extraversion and intelligence). Finally, however, when analysing instances of creative language, it is not sufficient to focus only on the creator. As we have seen, the audience – the **co-constructors** – play a crucial role in the parts of the constructional network that are activated in a particular co- and context.

6. Outlook

The present contribution gave an overview of creativity research from the fields of linguistics and psychology and illustrated how their findings are relevant for cognitive approaches to linguistic creativity. Particularly, it advocated the 5A framework of creativity that adopts a sociocultural perspective of creativity and takes into account the complex interplay of actors, audience, actions and affordances that lead to creative, that is novel and appropriate, artefacts. Finally, a cognitive linguistic version of the 5A model was presented – the 5C model of constructional creativity that emphasizes that constructors innovate in cooperation with co-constructors in dynamic, interactional settings. The affordances for linguistic creativity are

provided by the constructional network and constructional blending was identified as the cognitive process that produces creative as well as non-creative constructs.

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