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Verbs as linguistic markers of agency: The social side of grammar

Abstract: Basic grammatical categories may carry social meanings irrespective of their semantic content. In a set of four studies, we demonstrate that verbs—a basic linguistic category present and distinguishable in most languages—are related to the perception of agency, a fundamental dimension of social perception. In an archival analysis of actual language use in Polish and German, we found that targets stereotypically associated with high agency (men and young people) are presented in the immediate neighborhood of a verb more often than non-agentic social targets (women and older people). Moreover, in three experiments using a pseudo-word paradigm, verbs (but not adjectives and nouns) were consistently associated with agency (but not with communion). These results provide consistent evidence that verbs, as grammatical vehicles of action, are linguistic markers of agency. In demonstrating meta-semantic effects of language, these studies corroborate the view of language as a social tool and an integral part of social perception.

Keywords: language - meta-semantic effects - verbs - agency - social judgment

"Yes, we can!" is the most famous political slogan of our times, propelling many people into action in favor of then-prospective president Barack Obama. Interestingly, it is the slogan employing a verb (i.e., *can*) that became the benchmark of Obama's campaign in 2008, rather than terms like "Change" or "Forward" that were used in parallel. Similarly, the brand Apple is primarily associated with verb-based slogans such as "Think Different," "Get a Mac," or "Switch," rather than slogans without a verb focus, such as "The Power to Be Your Best." Why? In this article, we argue that verbs, as compared with adjectives and nouns, constitute a linguistic category that conveys information above and beyond the specific semantic content, and that these *meta-semantic effects* influence people's cognitive processes (see Fiedler, 2008, for a similar notion regarding non-referential and para-semantic effects of language). Specifically, we assert that verbs imply dynamic properties that other grammatical categories (nouns and adjectives) lack and that make them the preferred syntactic device to convey activity. By extension, we propose that verbs also convey agency, a basic dimension in human perception that is related to goal achievement and is stereotypically associated with specific target groups such as men or young people (for an

overview of this notion, see Abele & Wojciszke, 2014). Even if the link between grammatical categories and agency has (to our knowledge) not previously been directly examined, the existing literature yields preliminary support for the notion of a verb–agency link.

Verbs: The Dynamic Grammatical Category

Until now, the link between grammatical categories and social meaning was investigated primarily as regards the concreteness–abstractness dimension within the Linguistic Category Model (LCM, Semin & Fiedler, 1988) and its subsequent developments (Carnaghi et al., 2008). According to this theoretical perspective, linguistic categories differ in terms of the abstractness of the information they convey. Regarding verbs, the LCM distinguishes between descriptive action verbs, which are the most concrete and refer to behavior in a specific situation (e.g., "he kicked the dog"); interpretative action verbs, which describe a larger class of behaviors (e.g., "he hurt the dog"); and the third and smallest verb class, namely state verbs (SV), which describe psychological states (e.g., "he hates the dog").[1] Adjectives (e.g., "he is an aggressive person") and nouns (e.g., "he is an

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aggressor") are more abstract than verbs and are mainly used to express general, dispositional judgments (Carnaghi et al., 2008; Gelman & Heyman, 1999; Walton & Banaji, 2004). Whereas nouns and adjectives represent relatively static, enduring qualities, verbs generally reveal dynamism. Moreover, the large majority of verbs (descriptive and interpretative action verbs) convey a sense of agency that is typically attributed to the subject of the sentence (Brown & Fish, 1983; Semin & Marsman, 1994). Thus, already within the LCM framework, verbs are linked to activity and are seen as mostly denoting actions and describing behaviors rather than dispositional traits, for which other grammatical categories become more distinctive.

On a more basic level, the idea that different word classes are linked to different meanings also receives support from neuro-psychological research showing that prototypical words of different word categories (such as verbs vs. nouns) recruit partially distinct neural networks (Caramazza & Hillis, 1991; for a comprehensive overview of brain correlates of grammatical categories, see Vigliocco, Vinson, Druks, Barber, & Cappa, 2011). However, Vigliocco et al. (2011) noted that clear neural differences emerged particularly when studies used prototypical verbs (referring to activities) and prototypical nouns (referring to objects); that is, when a confound between grammatical classes (verbs vs. nouns) and their prototypical meanings (action vs. object) was present. Yet the observation that verbs prototypically coincide with activity is central to our argument here. Intriguingly, verbs also seem to prompt muscle activity more than other word classes. For instance, participants' zygomatic major muscle was activated more strongly when they were exposed to the verb "to smile" than to the adjective "funny" (Foroni & Semin, 2009; for a similar pattern of embodied processing of action verbs, see Willems, Hagoort, & Casasanto, 2010).

Taken together, verbs, a basic grammatical category present in almost all languages (Kroeger, 2005), are linguistic devices used to express actions and agency. The aim of the present set of studies is to verify whether the verb–agency relationship extends to the social realm by testing whether (i) verbs are the preferred word class

when referring to agentic groups, and (ii) whether perceivers correctly infer the agency tied to verbs.

Agency: The Dynamic Dimension in Social Perception

The "big two," agency/competence and communion/warmth, have been identified as the fundamental dimensions that guide social judgment of the self, other individuals, and social groups (Abele, Cuddy, Judd, & Yzerbyt, 2008; Fiske, Cuddy, Glick, & Xu, 2002; Ybarra et al., 2008). By definition, communion reflects "social acceptance and connection," whereas agency allows for the "pursuit of goals, given available opportunities" (Abele, Cuddy et al., 2008, p. 1063). Thus, agency (just like verbs), with its focus on enacting and striving, can be considered the dynamic component of the big two.

The dynamic nature of agency is not only reflected in its content but also in how the construct is structurally represented in the semantic net. Recent research suggests that communion forms a semantically dense concept (Bruckmüller & Abele, 2013; Fiske et al., 2002), with closely clustered items (e.g., warm, sociable, and gentle), whereas agency is perceived as more varied, especially in its negative components (Bruckmüller & Abele, 2013; Kenworthy & Tausch, 2008). Similarly, other research has found that judgments of people's agency are easily changed depending on contextual information (Abele, Rupprecht, & Wojciszke, 2008), whereas situational changes in communion are rare (Uchronski, Abele, & Bruckmüller, 2013). On a larger scale, agentic components of stereotypes change more easily than communal components (Twenge, 1997). The above-mentioned research suggests that agency not only semantically refers to activity, but also represents a more dynamic construct and is more influenced by contextual cues, whereas communion is a more stable and static construct. We further extend the definition of agency here, showing that not only the content, or the semantic structure, but also the syntactic choices contribute to its expression.

Although all of the aforementioned lines of work suggest a link between the grammatical category of verbs and the social dimension of agency, this link has not yet been examined directly. In fact, the semantic connotations of agency (vs. communion) have mostly been examined in reference to adjectives (Abele & Wojciszke, 2007, 2014; Bruckmüller & Abele, 2013). We assert here that agency is better reflected in verbs than in adjectives and nouns and that agency concerns *doing actions* more than *being active*. Our core argument is that agency is reflected in verbs rather than in adjectives and nouns.

The Present Research

In this article, we address a novel aspect of linguistic categories by linking verbs to the basic dimension of agency. The general idea is that verbs are distinctly

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[1]In a more refined version of the LCM (e.g., Semin & Fiedler, 1991; Wigboldus & Douglas, 2007), another category is mentioned, namely, state action verbs (SAV). This is an ambiguous category in the LCM framework. For instance, in the Linguistic Category Model coding manual (Coenen, Hedebouw, & Semin, 2006—page 7), it is written that "Because SAVs are very similar to IAVs they are often treated as IAVs. Moreover, these types of verbs don't differ significantly in abstraction level" (Semin & Fiedler, 1991). With the example "Person X thinks about this topic," it is also evident that state action verbs convey a sense of agency and dynamism (a specific topic for a temporary time). This distinction highlights that action verbs dominate the grammatical category of verbs and substantiates our claim that a prototypical verb refers to an action. We will return to a discussion of state verbs, the smallest and arguably atypical verb category, in the general discussion.

associated with agency and that this link is visible both in language production and in inferences drawn from language.

Not only is the specific verb–agency link a novel concept, but its meta-semantic nature is as well. We propose that grammatical categories per se are able to convey social meaning. This broad claim calls for tailored research approaches. Until now, only real words have been used in studies examining the role of linguistic categories in social psychology. However, in such cases, the meanings conveyed by the words' semantics are inevitably involved in the processing of the grammatical categories. This is to some degree true even when words share the same stem, but differ in grammatical category (e.g., to act, active, actor/activist; to play, playful, player). Even in this case, meaning may change from one grammatical category to another, creating a natural confound between the meaning conveyed by the grammatical form and by the semantic of the word. Moreover, there are large frequency differences with which these words are used (as reflected in linguistic *corpora*, an issue we will return to in the general discussion). To avoid potential confounds because of semantics and to approximate the idea of meta-semantic effects, we employed two complementary methods for this investigation: (i) a *corpora* analysis that investigates word classes beyond their meaning in real language use and (ii) a pseudo-words paradigm that excludes the involvement of any semantic content.

Accordingly, we tested the verb–agency link in two sets of studies. First, we wanted to demonstrate the relationship between verbs and agency in actual language use. We therefore decided to turn to existing *corpora* and test for co-occurrences of verbs with agentic and non-agentic social targets (Study 1). The idea of a verb–agency link for social groups beyond the verbs' meaning was tested in a series of archival *corpora* analyses conducted in Polish and German. Because prior research has demonstrated that men are perceived as more agentic than women (e.g., Diekman & Eagly, 2000; Eagly & Karau, 2002) and young people as more agentic than old people (e.g., Cuddy, Fiske, & Glick, 2008), we focused on these two pairs of targets. We hypothesized that social targets associated with agency (i.e., men and the young) would be more likely linked with verbs than non-agentic targets (i.e., women and the elderly).

Second, we focused on the interpretation of language employing a pseudo-word paradigm. We predicted that verbs (but not adjectives and nouns) are interpreted as signaling agency; that is, people ascribe more agency to verbs than adjectives and nouns even when the semantic content is held constant. This hypothesis was tested in three experiments conducted in Polish using a pseudo-word paradigm. Pseudo-words with the same word stem and a suffix unequivocally assigning the word to the grammatical category of verbs (e.g., to lann), adjectives (e.g., lannitive), or nouns (e.g., lanniness) allowed us to investigate whether grammatical categories intrinsically convey social meaning.

In all experiments (Studies 2 to 4), participants evaluated the degree to which such pseudo-verbs, -adjectives, and -nouns transmit a sense of agency. In addition to the focal agency dimension, we also assessed inferences about communion, the second big two dimension, to demonstrate discriminant validity. Based on the proposed meta-semantic verb–activity link, we hypothesized that, in contrast to adjectives and nouns, verbs would be associated with agency, but not communion. In Studies 3 and 4, we further assessed potential correlates of pseudo-words already investigated in prior research on the big two and/or on language abstraction, namely valence (Suitner & Maass, 2008) and abstractness (Semin & Fiedler, 1988). Given that we used pseudo-words free of semantic content, we did not make predictions about inferences regarding valence or abstraction. Our main aim was to show that the verb–agency link will explain unique variance even when controlling for perceived abstractness and valence. Thus, while the first (*corpora*) study focuses on language production, the latter (experimental) studies investigate the interpretation of words belonging to different word classes and shall establish the distinctness of the verb–agency link.

Study 1

Are verbs actually used to express agency in spontaneous language production? To answer this question, we investigated the verb–agency link in actual language use with reference to stereotyped groups. We hypothesized that targets stereotypically characterized by high agency (men and young people) are more likely associated with verbs than groups characterized by low agency (women and old people).

Method

The agency–target association should be strongest when the target (and not the object) is mentioned as the agent in the sentence (Fausey & Boroditsky, 2010; Fausey, Long, Inamori, & Boroditsky, 2010). In exemplary studies (Fausey & Boroditsky, 2010; Fausey et al., 2010), when the logical agents occurred in the role of the subject and were thus paired with the verb (i.e., "he broke the vase"), they were ascribed more responsibility and higher financial fines than when the same event was presented without the crucial agent-verb pairing ("the vase broke"). Following this logic, we investigated instances in which the target of interest (stereotypically agentic vs. not) was more often linked with a verb.

Moreover, the target–verb order should enhance the agency–target association in subject–verb–object languages such as Polish, and also possibly in languages without a dominant word order such as German (Bettinsoli, Maass, Kashima, & Suitner, 2015). Therefore, we compared instances of verbs directly following agentic versus non-agentic targets. These sentence structures should be most common and most effective in (differentially) conveying agency, which allowed us

to test our hypothesis while keeping the grammatical structure constant. In the *corpora* analyses, we assessed: (i) the overall occurrence of the target words (to assess base rates) and (ii) the frequency of the target words representing high versus low agency immediately followed by a verb (e.g., a search command for "men [*verb*]" instances). To set restrictive criteria for the verbs, we excluded word forms of the most common auxiliary and linking words "to have" and "to be" (cf. LCM coding manual, Coenen et al., 2006) from the analyses (though the results remain robust when including them).[2] The study composition is summarized in Table 1.

We recorded the number of occurrences of target–verb collocations in reference to the total number of target word occurrences for all search targets. For Polish, we used the Polish National Corpus (Pęzik, 2012; http://www.nkjp.uni.lodz.pl). This *corpus* comprises a representative sample of language use, consisting of input from books (29%), the press (50%), other written data (4%), the internet (7%), and spoken language (10%). For German, we used the archive Tagged-C of the German Reference Corpus DeReKo (Kupietz, Belica, Keibel, & Witt, 2010), which comprises over 6.47 million texts of 26 German *corpora* with approximately 96% of the texts stemming from newspaper and press texts and another 3% stemming from the internet (for a list of all *corpora*, cf. http://www.ids-mannheim.de/cosmas2/projekt/referenz/korpora.html).[3]

Results

The results shown in the upper section of Table 2 indicate that in Polish, the co-occurrence of the target group "men" followed by verbs is 1.38 times more likely than the co-occurrence of "women" and verbs (odds ratio = 1.45, 95% CI = [1.41; 1.49]; ϕ = 0.06). In German, this pattern is replicated, with "men" in collocation with verbs being 1.14 times more likely than "women" in collocation with verbs (odds ratio = 1.17, 95% CI = [1.16; 1.18]; ϕ = 0.03).

For age, in Polish, the co-occurrence of the target group "young people" and verbs is 2.89 times more likely than that of "old people" and verbs (odds ratio = 3.27, 95% CI = [2.73; 3.92]; ϕ = 0.09). In German, this pattern is replicated, with "young people" in

collocation with verbs being 1.19 times more likely than "old people" in collocation with verbs (odds ratio = 1.22, 95% CI = [1.19; 1.25]; ϕ = 0.03).

Discussion

The *corpora* analyses attest to a verb–agency link in real language use: stereotypically agentic targets (i.e., men and young people) were more likely followed by verbs than non-agentic targets (i.e., women and old people). This study provides consistent evidence for a natural link between target agency and verbs in language production across a variety of domains and irrespective of the verbs' meanings. Whether the producers of these innumerable instances of language chose their expressions strategically to depict agentic targets as agents and as being active, or whether they did so unintentionally, remains elusive at this point (see also Rubini, Menegatti, & Moscatelli, 2014, for a detailed discussion on a motivational approach to language use). For communicative functions, however, audiences must be able to detect the agency hidden in verbs (vs. adjectives and nouns). Are recipients able to interpret verbs in line with the (presumed) communicative intentions of the communicator? To investigate this question, we conducted three experimental studies.

Experimental Pseudo-Words Paradigm

Studies 2 to 4 were designed to test whether verbs are ascribed more agency than other linguistic categories. In order to examine how grammatical categories per se are related to social meaning, we aimed to "switch off" the semantic content. To do so, we relied on pseudo-words tailored to the Polish language. We relied on Polish for these experiments because in this language it is possible to indicate the grammatical category based on the word's suffix. Manipulating the grammatical category would have been more complex in English and German, for instance, because of the necessity of adding the indefinite marker "to" in English for a verb (such as in "to marn") or dealing with capital letters and more ambiguous endings in German.

We hypothesized that pseudo-verbs would convey more agency than pseudo-adjectives and pseudo-nouns. This effect of grammatical categories should be specific for the dimension of agency, and it should not hold for communion judgments.

General Method[4]

In all three experiments, participants evaluated a list of pseudo-words that comprised the same number of pseudo-verbs, -adjectives, and -nouns (five in Study 2 and three in Studies 3 and 4, respectively). Pseudo-word sets were selected based on careful pretesting that

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[2]The results remain robust, however, when including these auxiliary words in the analyses (*Gender Polish*: odds ratio = 1.34, 95% CI = [1.30; 1.37]; *Gender German*: odds ratio = 1.34, 95% CI = [1.32; 1.35]; *Age Polish*: odds ratio = 2.24, 95% CI = [1.97; 2.56]; *Age German*: odds ratio = 1.25, 95% CI = [1.22; 1.28]).

[3]For German, we ran a supplemental analysis with a smaller archive (Tagged-M), which allowed for more detailed search criteria to maximize the likelihood that the verb referred to the intended target words. The verb characteristics were specified as follows: active voice, third or first person singular or plural (matching the target). Even with these restricted criteria, the targets characterized by high agency were more frequently followed by verbs than the targets characterized by low agency (Gender: odds ratio = 1.21, 95% CI = [1.12; 1.31]; Age: odds ratio 1.41, 95% CI = [1.03; 1.92]).

[4]The experiments adhere to the APA ethical guidelines and were approved by an institutional ethics board at the University of Humanities and Social Sciences (number of the approval 24/IV/11-12).

Table 1. Summary of target stimuli used in Study 1—*corpora* search with English translations

Target group	Language	Agentic search targets	Non agentic search targets
Gender		Men, Man	Women, Woman
	Polish	"Mężczyźni," "Mężczyzna"	"Kobiety," "Kobieta"
	German	"Männer," "Mann"	"Frauen," "Frau"
Age		Young People	Old people
	Polish	"Młodzi ludzie," "Młodzież"	"Starzy ludzie," "Emeryci"
	German	"Junge Menschen," "Junge Leute," "Jugendliche"	"Alte Menschen," "Alte Leute," "Senioren"

Table 2. Summary of *corpora* search results (Study 1)

			Total	With verbs	Proportion	Odds
Gender						
	Polish	Men	67 460	10 684	0.158	0.188
		Women	94 594	10 882	0.115	0.130
		$\chi^2(1) = 641.01, p < .001$				
	German	Men	518 321	85 305	0.165	0.197
		Women	675 018	97 326	0.144	0.168
		$\chi^2(1) = 941.01, p < .001$				
Age						
	Polish	Young people	20 592	3495	0.170	0.204
		Old people	2228	131	0.059	0.062
		$\chi^2(1) = 185.11, p < .001$				
	German	Young people	176 400	26 770	0.152	0.179
		Old people	86 519	11 081	0.128	0.147
		$\chi^2(1) = 264.15, p < .001$				

Note. Total = frequency of target words (A); with verbs = frequency of target words immediately followed by a verb (B); proportion = B / A; odds = B / (A − B).

assured pronounceability and meaninglessness across the three linguistic categories. To create the pseudo-word stems, a formula in Excel randomly generated phonemes to construe two-syllable word stems consisting of two C–V–C syllables, whereby C means consonant and V means vowel. This syllable configuration is among the most frequent in Polish (Śledziński, 2010). The 360 created word stems were screened to fulfill the following criteria: (i) possible pronunciation and orthography; (ii) meaninglessness; and (iii) comprising biphonemes and triphonemes in the Polish language (Śledziński, 2010). In the next step, suffixes were added indicating either the infinitive of the verb (-ić, -ować, and -yczyć), the nominative of the adjective (-ne, -kie, etc.), or the suffix for nouns conveying a sense of abstractness (-two being typical for words like manhood—Studies 2 and 3) or suffixes of common nouns (Study 4). These variants were again screened to assure ease of pronunciation, orthographic compatibility, and absence of meaning.

The final list of 36 pseudo-word sets was pretested among a group of 26 native Polish speakers. Participants were randomly assigned to three groups that differed in the order of presented stimuli (starting with either verb, adjective, or noun with word stems in the same fixed random order). Participants were presented with each of the 36 word stems only once, in the form of either a verb, adjective, or noun (i.e., each participant viewed 12 verbs, adjectives, and nouns in total). Participants indicated whether they perceived the presented words as nonsensical (on a scale from 1 = *does not at all remind of*

an existing word to 6 = *reminds very much of an existing word*). Based on these results, 15 pseudo-word sets were selected so that (i) they were rated similarly in their nonsensicality across the three linguistic categories (*p*s > .05) and (ii) they were significantly different from the midpoint of the scale (3.5, *p*s < .05) in the direction of nonsensicality. The stimuli used in Studies 2 and 3 are presented in the upper part, and those for Study 4, with partially changed suffixes, are depicted in the lower part of Table 3.

All studies had a within-subject design with participants evaluating all types of grammatical categories. To control for the within-participant variance in the judgments of grammatical categories, we analyzed the data using a multilevel framework, with words nested within participants. Analyses were conducted with Mplus 7 (Muthén & Muthén, 1998–2012), and the Maximum Likelihood Robust estimator was used in all analyses.

Study 2

Method

Participants. Sixty students of mathematics from Warsaw University participated (31 women, 29 men, $M_{Age} = 22.23$ years, $SD_{Age} = 6.24$ years).

Procedure. For the paper–pencil task, we used the 15 pseudo-word sets obtained from the pretest. Pseudo-words were presented in a fixed random order,

Table 3. List of stimuli used in all the experiments (GC indicates grammatical category of v—verbs, a—adjectives, n—nouns)

	List 1	GC	List 2	GC	List 3	GC
Stimuli lists for Studies 2 and 3 (in bold)	**nefkiczyć**	v	**nefkickie**	a	**nefkistwo**	n
	szopfute	a	**szopfustwo**	n	**szopfić**	v
	bultestwo	n	bultewić	v	bultewne	a
	łeszdić	v	łeszdune	a	łeszdustwo	n
	bekłowne	a	bekłóstwo	n	bekłować	v
	kechnystwo	n	kechnować	v	kechnyckie	a
	dyżmuwać	v	**dyżmuwskie**	a	**dyżmustwo**	n
	chynfowskie	a	**chynfostwo**	n	**chynfować**	v
	tyzjastwo	n	**tyzjować**	v	**tyzjawskie**	a
	fumzić	v	**fumzięte**	a	**fumziestwo**	n
	nytczackie	a	**nytczastwo**	n	**nytczować**	v
	rećwustwo	n	rećwić	v	rećwute	a
	juźbować	v	**juźbuckie**	a	**juźbustwo**	n
	bunrowne	a	bunrostwo	n	bunrić	v
	fumlystwo	n	**fumlić**	v	**fumlyte**	a
	List 1	GC	List 2	GC	List 3	GC
Stimuli lists for Study 4	nefkiczyć	v	nefkidło	n (neut)	nefkickie	a (neut)
	tyzja	n (fem)	tyzjawskie	a (neut)	tyzjować	v
	dyżmuwskie	a (neut)	dyżmuwać	v	dyżmudło	n (neut)
	fumzić	v	fumzyt	n (masc)	fumzięty	a (masc)
	szopfudło	n (neut)	szopfuty	a (masc)	szopfić	v
	fumlycki	a (masc)	fumlić	v	fumlyt	n (masc)
	juźbować	v	juźba	n (fem)	juźbocka	a (fem)
	chynfyt	n (masc)	chynfowska	a (fem)	chynfować	v
	nytczacka	a (fem)	nytczować	v	nytcza	n (fem)

and participants evaluated lists consisting of 15 stimuli (five verbs, five adjectives, and five nouns). Three lists were created, each starting with the same word stem but a different suffix (i.e., a different grammatical category). The instructions read as follows: "This 5 minute study investigates how meaning is construed in language based on artificial grammar. Please evaluate the following 15 artificial words. As the words are nonexistent, please rely on your intuition. Please try not to think for too long, rather rely on your first impression." Before participants rated the words, they were asked to classify them according to their grammatical category (adjectives, nouns, verbs, other). Overall, 91.56% of the classifications were correct (for verbs: 99.33%, for adjectives: 88.57%, and for nouns 89.23%), similar to the number of correct classifications of real words in the LCM (84.72%, cf. Semin & Fiedler, 1988).[5] Finally, participants were instructed to perform a forced choice, selecting which of the two content domains, agency or communion, each word matched (with descriptions adapted from Abele & Wojciszke, 2007; Abele, Uchronski, Suitner, & Wojciszke, 2008):

A—Agency was introduced as an "orientation toward actions and being efficient. It is about striving to achieve goals." As examples, real words denoting agency were provided, including two nouns (activity and success), two adjectives (ambitious and diligent), and two verbs (strive and achieve).[6]

C—Communion was introduced as an "orientation toward others and focusing on relations with other people." As examples, real words denoting communion were provided, including two nouns (friendship and politeness), two adjectives (warm and tolerant), and two verbs (help and support).

The order of the agency and communion descriptions was counterbalanced. The pseudo-words were presented in a booklet, with each word presented separately on a piece of paper. Besides each word, there were the two letters A and C, signifying agency and communion, respectively. The order of the letters matched the order of the instructions.

Results and Discussion

To determine if the grammatical category predicted whether participants perceived the word as agentic (value 1) or communal (value 0), analyses were run with the grammatical category as a within-participants

[5]Crucially, verbs—the focal category for the present research - were recognized correctly > 90% (Studies 2 and 4), significantly more often than adjectives (Studies 2 and 4) and nouns (Study 2). Misclassifications predominantly pertained to adjectives and nouns: both, in Studies 2 and 4, most incorrectly recognized adjectives were assigned to the noun category (86.5% and 85%, respectively). Similarly, most incorrectly recognized nouns were assigned to the adjective category (69% and 78%, respectively). This pattern does not jeopardize the general claim of this paper that adjectives and nouns are less agentic than verbs and reflects the fact that in rare cases adjectives have the same suffix as nouns, even in Polish. As the results of all findings remain robust and changes in the coefficients are negligible when analyzing only correctly recognized words—we assume that participants indeed were guided by the grammatical categories used in the manipulation.

[6]Note that in Polish, words are usually clearly categorized into grammatical categories (e.g., "the help" and "to help" would be different words, "pomoc" and "pomagać," in Polish).

Table 4. Means and standard deviations for the dependent variables in Studies 2 to 4 by grammatical category condition

		Verbs		Adjectives		Nouns	
		M	SD	M	SD	M	SD
Study 2	Agency/communion	0.61	0.22	0.48	0.23	0.50	0.24
Study 3	Agency	1.44	1.84	0.21	1.62	0.18	1.76
	Communion	0.13	1.50	−0.10	1.55	−0.57	1.72
	Abstractness	0.45	2.22	0.60	2.15	0.44	2.06
	Valence	0.09	1.57	0.05	1.62	−1.14	1.85
Study 4	Agency	0.24	2.07	0.10	1.57	−0.17	1.56
	Communion	−0.37	1.88	0.14	1.60	−0.37	1.52
	Abstractness	0.26	2.10	0.34	2.10	−0.16	2.32
	Valence	−0.82	1.94	0.08	1.65	−0.50	1.79

Note. In Study 2, Agency–Communion was assessed with a forced choice item with communion coded as 0 and agency coded as 1. Higher values indicate a stronger tendency toward agency choices.

predictor. Random intercepts were estimated, and two orthogonal contrasts were created. In the first, verbs (coded as 2) were compared with the two other categories (both coded as −1). In the second, adjectives (1) were compared with nouns (−1). The means for all three experiments are presented in Table 4. A saturated model was estimated in which the two contrasts were used to predict the agency–communion ratings at the within-participants level. At the between level, only the random intercept was estimated. The results of this model are shown in Table 5. As predicted, the log odds of choosing agency over communion were higher for verbs versus the other categories ($B = 0.16$; $SE = 0.06$; $p < .01$; odds ratio = 1.17). There was no difference between adjectives and nouns in the ascription of agency versus communion ($B = −0.05$; $SE = 0.09$; $p = .59$; odds ratio = 0.95).[7] When running the analysis with correct word classifications only, the pattern of results was confirmed, and the results remain robust.

This pattern first lends support to our claim that verbs uniquely carry agency information, which is decoded by perceivers. However, this study has a number of limitations. First, participants had to make forced-choice decisions regarding agency–communion. This dependent variable does not take into consideration that agency and communion are in fact two dimensions and that a word could be perceived as agentic and communal at the same time. This issue was addressed in the subsequent studies. Furthermore, prior to making judgments of agency and communion, participants had to classify words according to their grammatical category (adjectives, nouns, verbs, and others), and this task could have primed them to look for an overlap between the grammatical classification and the consecutive rating task. As this might have biased the results, the classification task was presented after the evaluation of the words in the following studies.

Table 5. Summary of two-level logistic regression analysis predicting forced choice outcomes in Study 2

Predictor	B	SE	Odds ratio
Within level			
Contrast 1	0.16**	0.06	1.17
Contrast 2	−0.05	0.09	0.95
Between level			
Threshold	−0.11*	0.05	
Residual variance	0.00	0.00	

Note. Contrast 1 contrasts verbs (coded as 2) with adjectives and nouns (both coded as −1). Contrast 2 contrasts adjectives (1) with nouns (−1). The forced choice dependent variable was coded with communion = 0 and agency = 1.
**$p < .01$.
*$p < .05$.

Study 3

In Study 3, we assessed agency and communion as separate dimensions to substantiate the present findings.

Method

Participants. One-hundred and four students participated in the study, including 13 men, 58 women, and 33 people who did not provide information on their gender ($M_{Age} = 21.03$ years, $SD_{Age} = 0.83$ years).

Procedure. Given that participants had to rate the words on several dimensions, we reduced the pseudo-word sets to nine word stems. Pseudo-words were selected from the pretest with the same criteria as in Study 2 and set in a fixed random order. Participants evaluated paper–pencil lists consisting of nine stimuli (three verbs, three adjectives, and three nouns). Three lists were created, each starting with the same word stem but with a different suffix, and the instructions matched those provided in Study 2. This time, agency and communion were assessed using two Likert scales rather than a forced-choice format ($−5 = opposite\ of\ agency/communion$ to $5 = perfect\ example\ of\ agency/communion$, cf. Abele & Wojciszke, 2007). As in

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[7]An alternative analysis was run in which verbs were contrasted separately against adjectives and nouns (with two dummy variables coding verbs as the reference category). The results were in accord with the hypothesis. Both adjectives ($B = −0.53$; $SE = 0.20$; $p = .007$) and nouns ($B = −0.43$; $SE = 0.19$; $p = .03$) were seen as less agentic than verbs.

Study 2, examples of agency and communion were provided. Moreover, participants evaluated the valence and the concreteness/abstractness of words on two scales ($-5 = $ *negative/concrete* to $5 = $ *positive/abstract*). The instructions regarding the latter dimension read as follows: "Concrete words denote things that exist in reality and it is easy to picture them; abstract words rather reflect thoughts and ideas and do not have physical representations." Examples of concrete words were "shoe," "green," and "to kick," and examples of abstract words were "friendship," "spiritual," and "to contemplate" (cf. Brysbaert, Warriner, & Kuperman, 2014, for a similar operationalization). Participants received the words in a booklet. Each word was presented at the top of a page followed by the evaluation of the four dimensions in the following order: agency and communion (counterbalanced), abstractness, and valence. Finally, for each pseudo-word, participants reported the extent to which it reminded them of the corresponding real grammatical category (e.g., verbs for pseudo-verbs) on a scale of -5, *not at all* to 5, *very much*. All three grammatical categories were recognized correctly (verbs: $M = 2.90$, $SD = 2.43$; adjectives: $M = 1.72$, $SD = 2.50$; and nouns: $M = 2.03$, $SD = 2.47$), as indicated by a significant difference from 0, representing the midpoint of the scale (all $ps < .001$).

Results and Discussion

Two orthogonal contrasts were created. In the first, verbs (coded as 2) were compared with the other two categories (both coded as -1). In the second, adjectives (1) were compared with nouns (-1). The conceptual model that was tested is presented in Figure 1.

First, we evaluated a saturated model. Second, we defined additional constraints to test the hypothesis of a unique verb–agency link. The constraints were as follows: (i) we set the path from Contrast 2 (comparing adjectives and nouns) to the evaluation of agency to zero, as we have not hypothesized any difference between these two categories; and (ii) we set the coefficients for both contrasts to zero in reference to communion judgments, as we have not hypothesized any relevance of the grammatical categories to the communion dimension.[8]

The results of the saturated and the constrained models, which are congruent with the hypothesized relationships are shown in Table 6. Verbs led to higher

agency perceptions than nouns and adjectives, and grammatical categories were unrelated to the communion judgments. When the judgments of the extent to which artificial words reminded participants of the real grammatical categories were included in the main analysis, the overall pattern of results was preserved, and the effect of the similarity to real grammatical categories on the judgments of agency and communion was negligible. Together these analyses replicate the results of Study 2. In extending these studies, we have found that the perceived abstractness of words was negatively related to the judgment of agency, meaning that the more abstractly the word was perceived, the less it was perceived as agentic.

However, it is noteworthy that the nouns used as stimuli in this study were biased toward abstractness because of their suffixes (reserved for abstract words). To correct for this fact and to test the robustness of our findings, in Study 4 we used suffixes common to broader classes of nouns (e.g. common nouns with a feminine vs. masculine vs. neutral grammatical gender).

Study 4

This study was a replication of Study 3 conducted to substantiate the findings from the previous experiments. New stimuli were used for the grammatical comparison group of nouns, and we varied the grammatical gender of the adjectives.
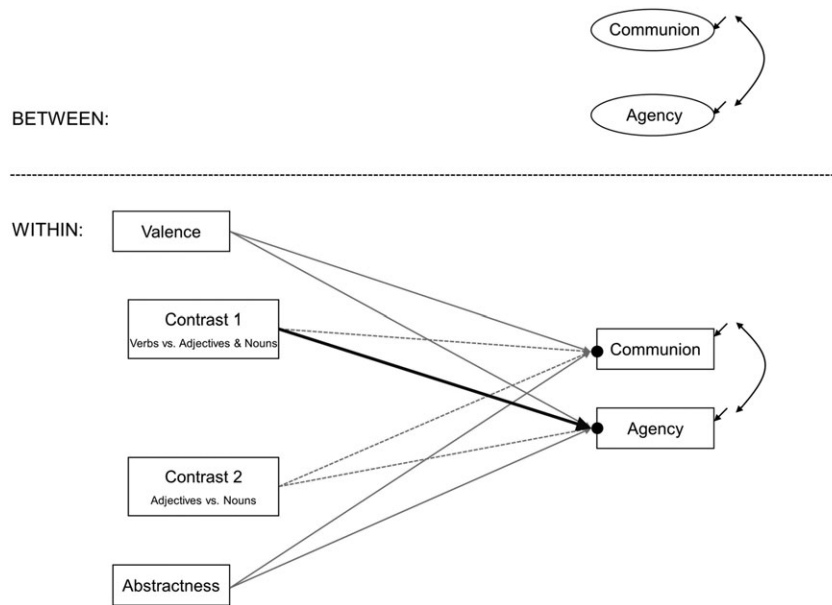
Method

Participants. One-hundred and twenty-three students participated, including 58 men, 65 women ($M_{Age} = 20.41$ years, $SD_{Age} = 2.44$ years).

Procedure. There were two major differences between Studies 3 and 4 regarding the experimental procedure. The first was the previously described change in the stimuli (suffixes for common nouns instead of abstract nouns). The second was that participants classified words in terms of their grammatical class, as in Study 2 (decision between grammatical categories instead of continuous ratings), but at the end of the experiment 83.92% of the words were classified correctly (for verbs: 93.40%, for adjectives: 74.75%, and for nouns: 89.82%), as in Study 3.

Results and Discussion

Two orthogonal contrasts were created. In the first, verbs (coded as 2) were compared with the two other categories (both coded as -1). In the second, adjectives (1) were compared with nouns (-1). The conceptual model that was tested, which is the same as in Study 3, is presented in Figure 1. First, we evaluated the saturated model. Second, we defined additional constraints in the model to test the hypothesis of a unique verb–agency link. The constraints were as follows: (i) we set the path from Contrast 2 (comparing adjectives and

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[8]An alternative analysis was run with two dummy codes using verbs as the reference category. The first dummy variable compared adjectives and the second compared nouns to the verb category. The results were in accord with the hypothesis. Both adjectives ($B = -1.19$; $SE = 0.21$; $p < .001$) and nouns ($B = -1.05$; $SE = 0.24$; $p < .001$) were seen as less agentic than verbs. Compatible with the main analysis, neither adjectives nor nouns differed from verbs in terms of communion (both $ps > .25$). When non-significant paths were set to zero and an equality constraint was placed on the paths leading from the dummy variables to agency, the model had a very good fit ($\chi^2(4) = 2.70$; $p = .61$; RMSEA = .00; CFI = 1). The results corroborate the hypothesized basic model and indicate that the verb–agency link holds equally for comparisons with adjectives and nouns.

Fig. 1: Conceptual model tested in Studies 3 and 4. Contrast 1 contrasts verbs (coded as 2) with adjectives and nouns (both coded as −1). Contrast 2 contrasts adjectives (1) with nouns (−1)

Table 6. Estimates and fit indices for saturated and constrained model in Studies 3 and 4

	Study 3—saturated		Study 3—constrained		Study 4—saturated		Study 4—constrained	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Within level—agency								
Contrast 1	0.37***	0.07	0.37***	0.07	0.15*	0.06	0.16**	0.06
Contrast 2	−0.07	0.11	*0.00*	*0.00*	0.06	0.08	*0.00*	*0.00*
Valence	0.17**	0.05	0.16**	0.05	0.26***	0.04	0.27***	0.04
Abstractness	−0.13***	0.03	−0.13***	0.03	0.00	0.03	0.003	0.03
Within level—communion								
Contrast 1	0.07	0.06	*0.00*	*0.00*	−0.02	0.53	*0.00*	*0.00*
Contrast 2	0.02	0.08	*0.00*	*0.00*	0.13	0.07	*0.00*	*0.00*
Valence	0.36***	0.04	0.36***	0.04	0.40***	0.03	0.41***	0.03
Abstractness	0.03	0.03	0.02	0.03	0.05*	0.02	0.05*	0.02
Agency with communion	0.57*	0.25	0.57*	0.25	0.72**	0.22	0.73**	0.22
Residual variances								
Agency	4.97***	0.44	4.97***	0.44	5.90***	0.42	5.91***	0.42
Communion	4.37***	0.36	4.39***	0.36	4.64***	0.35	4.66	0.36
Between level								
Agency	0.60***	0.12	0.60***	0.12	0.06	0.10	0.06	0.10
Communion	−0.19*	0.10	−0.19*	0.10	−0.22*	0.09	−0.22*	0.09
Agency with communion	0.42*	0.19	0.42*	0.19	0.23	0.12	0.22	0.12
Residual variance								
Agency	0.89**	0.30	0.89**	0.30	0.49*	0.20	0.49*	0.20
Communion	0.49**	0.16	0.49**	0.16	0.39**	0.13	0.38**	0.13
Model fit								
$\chi^2(df)$			2.16 (3)				3.06 (3)	
χ^2 *p*-value			0.54				0.38	
RMSEA			0.0				0.0	
CFI			1.0				1.0	
TLI			1.0				1.0	
SRMR$_W$			0.01				0.01	
SRMR$_B$			0.002				0.002	

Note: Contrast 1 contrasts verbs (coded as 2) with adjectives and nouns (both coded as −1). Contrast 2 contrasts adjectives (1) with nouns (−1). Fixed paths in the constrained model in italics. RMSEA = root mean square error of approximation, CFI = comparative fit index, TLI = Tucker–Lewis index (~NNFI), SRMR = standardized root mean square residual (W = within, B = between).
***$p < .001$.
**$p < .01$.
*$p < .05$.

nouns) to the evaluation of agency to zero, as we have not hypothesized any difference between the two categories; and (ii) we set the coefficients for both contrasts to zero in reference to communion judgments, as we have not hypothesized any relevance of the grammatical categories to the communion dimension. The results of the saturated and the constrained models are shown in Table 6. Again, the obtained results are congruent with the hypothesized relationships. Verbs led to higher agency ascriptions than nouns and adjectives. Moreover, grammatical categories were unrelated to the communion judgments.[9] The correlation between abstractness and agency found in Study 3 was not evident, because the suffixes of nouns were no longer confounded with abstractness. All results remained robust when only including correct classifications in the analysis.[10]

General Discussion

To our knowledge, this is the first set of studies to show that social judgments are related to meta-semantic characteristics of language. Specifically, the present studies provide the primary empirical evidence that verbs—but not adjectives or nouns—are associated with agency. This verb–agency link is corroborated with evidence from (i) natural language use and (ii) the interpretation of language in controlled experiments. In actual language use, as investigated with large-scale *corpora* analyses, stereotypically agentic social targets were more likely paired with verbs than non-agentic social targets (Study 1). Importantly, this pattern emerged for two languages belonging to different language families, Polish (Slavic) and German (Germanic). Moreover, agency was specifically conveyed by verbs in the experiments with pseudo-words (Studies 2 through 4), and this effect was stable even when controlling for valence and perceived abstraction. The absence of systematic grammatical category effects on communion, generally considered the second fundamental dimension of social judgment, further attests to the specificity of the verb–agency link. Taken together, this evidence suggests a strong link between agency and the grammatical category of verbs, both in language production and in the construction of meaning from language.

From a methodological viewpoint, we would like to highlight that the findings from the *corpora* analyses (maximizing ecological validity) and the pseudo-word studies (maximizing experimental control) converge. In particular, the pseudo-word paradigm employed in the three experimental studies has the great advantage that word class and meaning are not confounded, a problem that limits the validity of many studies on neural correlates of word classes (see Vigliocco et al., 2011, for an overview), as well as most LCM studies.

The verb–agency link fills another blank in the language-cognition puzzle and may inform future basic research on the meta-semantic properties of grammatical categories. Specifically, the relationship of the concreteness of verbs (as implied by the LCM) to agency should be investigated to consolidate the present approach with the LCM more concisely. Importantly, the rationale and results of our studies are complementary to the LCM account. Our own approach, distinguishing verbs from other grammatical categories, overlaps only partially with the more fine-grained LCM model. Within the LCM framework, SV seem to be a possible exception to the verb–agency link proposed here. Such verbs mostly refer to subjects' emotional (and potentially enduring) states rather than to actions and agency (Brown & Fish, 1983; Semin, 2000). Hence, they differ from other verb types mainly on semantic grounds, which goes beyond the scope of the present research with its focus on meta-semantic effects. Compared with more common verb types, SV constitute only a small proportion of verbs, and, possibly for this reason, Vigliocco et al. (2011) claim that prototypical verbs refer to actions. Based on learning theories, it is reasonable to assume that such prototypical, well-learned associations drive meta-semantic effects. We used this notion in the pseudo-word studies and assumed that, when encountering pseudo-verbs, participants would refer to the central representatives of this grammatical category. This notion is supported empirically in our studies in which participants exposed to pseudo-words attributed more agency to verbs than to the other grammatical categories. Thus, they most likely relied on prototypical associations while ignoring atypical instances such as SV. However, the interplay between grammatical categories, agency, and concreteness versus abstractness should be investigated systematically in the future.

Furthermore, there is potential in investigating the generalizability of the verb–agency link in other realms. The likelihood that verbs evoke agentic associations may be mainly relevant in the social domain regarding the perception of individuals and groups, because it is precisely the context of social judgment in which agency has proven to be an important coordinate in previous research. Within social judgment, people described by verbs (or describing themselves in this way) might be perceived as more agentic than those addressed with adjectives or nouns. These implications should be tested in future studies.

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[9]An alternative analysis was run in which two dummy codes were created. The first dummy category compared adjectives and the second compared nouns with the verb category. The results were in accord with the hypothesis. Both adjectives ($B = -0.40$; $SE = 0.20$; $p = .04$) and nouns ($B = -0.52$; $SE = 0.20$; $p = .008$) were seen as less agentic than verbs. Compatible with the main analysis, neither adjectives nor nouns differed from verbs in terms of communion (both $ps > .32$). When non-significant paths were set to zero and an equality constraint was placed on the paths leading from the dummy variables to agency, the model had a very good fit ($\chi^2(4) = 2.41$; $p = 0.66$; RMSEA = .00; CFI = 1). The results corroborate the hypothesized basic model and indicate that the verb-agency link holds equally for comparisons with adjectives and nouns.

[10]All materials and data sets for Studies 2–4 are available at http://boris.unibe.ch/83554/

Outside the social judgment domain, agency may be less relevant. For instance, when inferring the importance of an attitude to one's identity, grammatical categories may play a role primarily on the basis of their temporal qualities and related motivations and goals (cf. Rubini et al., 2014). In fact, in a set of studies on behavioral effects, people were found to be more affected by nouns than by verbs when their memberships in socially desirable categories were at stake (Bryan, Adams, & Monin, 2012; Bryan, Walton, Rogers, & Dweck, 2011). Also, registered voters were shown to be more likely to vote when questions on voting were in noun form ("How important is it to you to be a voter in the upcoming election?") rather than verb form ("How important is it to you to vote in the upcoming election?") (Bryan et al., 2011, p. 12653). Similarly, those reminded not to be cheaters were less likely to cheat than those who were asked not to cheat (Bryan et al., 2012). Nonetheless, it may still be true that the description "Person X voted" is perceived as more agentic than the description "Person X was a voter" (i.e., a matter of social judgment).

However, the comparison of nouns and verbs with the same word stem may be problematic in this case, given that the noun is an agent noun formed from the verb and denotes a person doing this action (e.g., the word "eater" is derived from the verb "to eat"). In the case of "agent nouns," one could hypothesize that the agency transfers from the verb to the noun (cf. Vigliocco et al., 2011). Moreover, such nouns appear to be used much less frequently than the respective verbs. In Table 7, we present the *corpora* frequencies of a sample of agent nouns and accompanying verbs that were used in previous studies (Bryan et al., 2011; Bryan et al., 2012) that attest to this possibility (upper section of Table 7). As a contrast, we also present a random sample of verbs and nouns from the comprehensive list of English lemmas (Brysbaert et al., 2014) in which a word can be used either as a verb ("to comb") or a noun ("a comb") (lower section of Table 7). In the former set, nouns consistently evidenced lower frequencies than the associated verbs, which was not true for the random sample in the second set. This highlights the uniqueness of "agent nouns." Encountering them may make people think that they are used for a reason, for instance, to highlight the stability of the involved activity (which would likely trigger more attributions of agency). Naturally, people try to make sense of their world and pay close attention to inconsistencies. Moreover, frequency is known to affect the fluency of information processing and its consequences (e.g., Oppenheimer & Frank, 2008). Therefore, we consider the frequency issue a possible confound in making inferences about the grammatical categories of real words that may also help reconcile the present findings with previous work.

In the background of these considerations, we had opted for artificial words for which the concerns about differences of frequencies of usage or semantics are not relevant (Studies 2 through 4) as opposed to the *all verbs* approach in the *corpora* analyses (Study 1). While we recognize that semantics and salience will guide the social perceiver, we would like to add that meta-semantic effects, such as the verb–agency link, may contribute to the sense-making process in a very subtle way, with the specific venues still to be investigated—a journey we are looking forward to taking.

Conclusion

Verbs express action. This functional property is the most important feature of the many definitions of this class of words. For example, according to the *Collins English Dictionary (2003)*, a verb is "any of a large class of words in a language that serve to indicate the occurrence or performance of an action […]." According to *Random House Kernerman Webster's College Dictionary (2010)*, a verb is defined as "a member of a class of words that function as the main elements of predicates, typically express action […]." With this study, we have shown that this property goes beyond grammar, intruding into cognition and, by extension, social cognition. The well-established relationship between language use and cognition (Semin, 1998) suggests that the linguistic properties shape and constrain cognitive processing of the information conveyed by the linguistic devices we use, and this has important implications in the social realm (Holtgraves & Kashima, 2008). For example, previous studies showed that choosing the first-person pronoun moves our attention to the self (Chung & Pennebaker, 2007), or that dropping the pronoun moves the attention away from the target performing the action (Kashima & Kashima, 1998). Interestingly, in many cases the relationship between language and cognition is saturated and explained by the semantic properties of the linguistic devices under scrutiny. In the previous example, the first-person pronoun (I, me) semantically expresses the concept of self, and this conceptual priming by the word's semantics/meaning is critical for the effect. The LCM (and its extensions) offers a different perspective that categorizes language according to structural properties (at least in the main difference between adjectives and verbs) as well.

Table 7. Frequency summary of selected agent nouns and infinitives in three English corpora

Word	BYU-BNC	COCA	GLOWBE
eater / to eat	109 / 2762	714 / 15 987	2953 / 70 790
smoker / to smoke	184 / 265	1292 / 1535	4804 / 4924
runner / to run	666 / 4533	3563 / 23 933	15 699 / 94 914
voter / to vote	279 / 1105	5059 / 9476	29 599 / 57 190
cheater / to cheat	7 / 93	306 / 752	1567 / 4370
a program / to program	354 / 56	8127 / 597	17 950 / 2373
a trace / to trace	213 / 513	1453 / 1268	2435 / 4651
a rush / to rush	337 / 303	1907 / 1451	4729 / 5590
a taste / to taste	431 / 285	2493 / 5884	9321 / 6707
a whip / to whip	83 / 63	334 / 484	918 / 1961

Note: BYU-BNC = British National Corpus. COCA = Carpus of Contemporrary American English. GLOWBE = Corpus of Web-Based Global English.

However, the concrete implementation of such studies has never fully disentangled the semantic and structural aspects. For example, being an athlete versus being athletic (Carnaghi et al., 2008, Study 1) is grammatically different (noun vs. adjective), but it is also semantically different. Therefore, previous studies typically confirm that specific language devices (e.g., nouns) are used to express specific types of information (e.g., enduring characteristics), but it was unclear whether this use reflects the meaning of the word or the very nature of the language device per se, such that choosing a specific linguistic device conveys the corresponding information even in a context in which previous knowledge cannot contribute to meaning construction. The pseudo-word paradigm was designed to test the pure contribution of the grammar class, without any further influence embedded in previous knowledge related to the semantics of the words or to familiarity because of the frequency of use. Although the present studies had the main goal of showing that the grammatical class of verbs is cognitively associated with agency, they also inform us about a general meta-semantic effect of grammar. We eventually know about the meaning of word classes that is independent from the specific semantic content of the single words. Moreover, we use this knowledge both in natural production (Study 1) and during information processing when no other information is present (Studies 2 through 4). Therefore, meaning is not solely conveyed by semantics; syntax has a critical role as well. Importantly, the meta-semantic feature of grammar extends to the social level. We appear to subtly discriminate social targets, and we enforce the social stereotype when describing them through the consistent use of grammatical classes by associating stereotypically agentic social groups with the grammatical class that better expresses agency, namely verbs.

In sum, the present studies offer consistent evidence that basic grammatical categories influence social perceptions and that people use these grammatical categories as a tool for their expressions. The power of language stems from its pervasiveness and subtlety, which make it difficult to control, both in usage and perception. Investigating the verb–agency link within the language and social judgment domains may have important implications for communication in social, legal, and political domains. Returning to our opening example, our results suggest that President Obama was right in adopting the slogan "Yes we can," rather than opting for an adjectival or nominal equivalent. By the same logic, one may suspect and observe that the recently founded Spanish party *Podemos* (Span. "we can") will be more successful than the equivalent Italian movement called *Possibile* (Ital. "possible"). Our results suggest that Obama's verb slogan and the party label *Podemos* convey the agency required to introduce the proposed change.

Conflict of Interest

The authors declare that there are no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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