




“Make it Happen!”

Verbs as Markers of Agency Increase Message Effectiveness

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Abstract: Verbs may be attributed to higher agency than other grammatical categories. In Study 1, we confirmed this hypothesis with archival datasets comprising verbs ($N = 950$) and adjectives ($N = 2115$). We then investigated whether verbs (vs. adjectives) increase message effectiveness. In three experiments presenting potential NGOs (Studies 2 and 3) or corporate campaigns (Study 4) in verb or adjective form, we demonstrate the hypothesized relationship. Across studies, (overall $N = 721$) grammatical agency consistently increased message effectiveness. Semantic agency varied across contexts by either increasing (Study 2), not affecting (Study 3), or decreasing (Study 4) the effectiveness of the message. Overall, experiments provide insights in to the meta-semantic effects of verbs – demonstrating how grammar may influence communication outcomes.

Keywords: Big Two, agency, verbs, social grammar, language

“Yes, we can,” “Make it happen,” “Make America great again,” “Vote leave” or “Just do it” are slogans that persuaded many to vote or make a purchase. Interestingly, although these successful slogans put forward different messages, they have one thing in common: All employ verbs to inspire individuals to act. Verbs as grammatical vehicles of actions are linked to the agency (Formanowicz et al., 2017), one of the Big Two primary dimensions of social perception related to efficiency and goal achievement (Abele & Wojciszke, 2014), and agency has been linked to increasing message effectiveness (e.g., Eckel et al., 2017; Kessler et al., 2017; Whillans & Dunn, 2018). Could therefore the use of verbs in slogans affect message effectiveness via the agency they convey? Anecdotal evidence however illustrative lacks experimental scrutiny. For that reason, in this work, we systematically investigate this question.

Verbs and Agency

Verbs are words that often describe an action. This function is so deeply embedded in our conception of verbs that it remains attached to the grammatical class beyond and above the conveyed meaning. Accumulated evidence documents an embodied link between verbs and denoting activity, as prototypical verbs are associated with actions

(Vigliocco et al., 2011). This link extends also to responsiveness towards motivating messages. Girls were more likely to engage in scientific research when encouraged with the use of a verb “Let’s do science” rather than an identity (noun-related) slogan “Let’s be scientists!” (Rhodes et al., 2019).

Importantly, the role of verbs as a grammatical category extends beyond marking or evoking activity, as it reaches the social potential of action, namely agency: a basic dimension of human perception signaling dynamism and goal achievement (for an overview, see Abele & Wojciszke, 2014). This meta-semantic effect of verbs as a grammatical category – extending beyond the content of what is said – has been termed *verb-agency* link (Formanowicz et al., 2017) and demonstrated in studies using a pseudo-word paradigm. Pseudo-verbs (e.g., to fro), adjectives (frollative), and nouns (a fro) were created to investigate whether the mere grammatical category can signal the social dimension of the agency. Consistently, pseudo-verbs were evaluated as more agentic than pseudo-adjectives and pseudo-nouns. The meta-semantic effect of verbs was specific to agency and did not extend to ratings of communion – which along agency constitutes the second primary dimension of social perception related to maintaining social relationships (Abele & Wojciszke, 2014). The effect of verbs on the

agency but not communion likely suggests that activity is related to both verbs and agency; however, does not reflect a core content of the communion construct. Perceptions of communal qualities (such as friendly, caring) are seen as relatively stable and not easily susceptible to change (Uchrowski et al., 2013). That is, wordings “to protect” versus “protection” are likely to be seen as similarly communal; however, the first may be seen as more agentic than the latter due to the usage of the verb.

Moreover, research on the *verb-agency* link has also provided evidence that verbs, as the grammatical carriers of agency, are more frequently used to describe (stereotypically) agentic than non-agentic targets (Formanowicz et al., 2017). Similarly, eye-tracking studies show that nouns addressing stereotypically agentic roles (e.g., blacksmith) are expected to serve as agents in a sentence, thus be paired with a verb more so, than stereotypically non-agentic role nouns (e.g., beautician; Esaulova et al., 2015). This suggests that the *verb-agency* link can extend beyond marking agency of individual words and transfer to sentence subjects paired with verbs. For instance, the subject of the sentence “she acts” versus “she is active” is likely to be seen differently with the former seen as more agentic than the latter due to the use of the verb. Altogether, verbs not only evoke agentic associations, but agentic social targets are also paired with increased use of verbs – suggesting a strong *verb-agency* link. This link may serve as a possible pathway explaining the role of verbs not only in evoking actions but also in marking message effectiveness.

Agency and Message Effectiveness

Priming studies attest to a clear link between making salient the concept of agency and agency-related behaviors in terms of striving, efficiency, and performance. A meta-analytical review found a small, yet robust effect ($d = 0.35$) of using goal-related words as primes and subsequent goal-oriented behavior (Weingarten et al., 2016). For example, participants solving an achievement-related word puzzle (including words such as “strive” or “master”) put more effort into a subsequent task than participants solving a neutral word task (including words such as “hat” or “window”) (Bargh et al., 2001). In a different set of studies (Albarracín et al., 2008), participants primed with action words (e.g., “engage” or “action”) had faster reaction times and better recall of a text than participants primed with non-action words (e.g., “still” or “pause”). Accordingly, the primed agency was linked to higher goal-directed behaviors and performance across studies. However, all of these results focus on semantics rather than comparing grammatical categories of similar meaning (such as verbs vs. adjectives or verbs vs. nouns).

Along similar lines, studies examining a more direct link between agency and message effectiveness found that evoking a personal or group level agency in message recipients (e.g., Eckel et al., 2017; Kessler et al., 2017; Whillans et al., 2017; Whillans & Dunn, 2018) was positively related to participants’ behavioral intention or actual behavior. Referencing recipients’ personal agency by highlighting choice (Eckel et al., 2017), individual gains (White & Pelozo, 2009), or a need for an individuals’ effort (Whillans & Dunn, 2018) increased message effectiveness. In some studies; however, the sensitivity to messages evoking personal agency was particularly evident among people for whom the personal agency was assumed to be relevant (those in power and being affluent; Kessler et al 2017; Whillans et al., 2017). These participants reacted with more engagement to messages formulated as “Come forward and take individual action” (Whillans & Dunn, 2018). Those less affluent were more responsive to messages formulated in a way that highlighted communion (Whillans et al., 2017).

Whether participants responded more to messages highlighting agency or communion may depend on the fit between individual values or motivations and the message framing (Cesario et al., 2004; Lee & Aaker, 2004). The individual motivations could be shaped by social class and economic standing (Whillans & Dunn, 2018). Having control over one’s economic situation may correspond to being sensitive towards messages highlighting individuals’ agency, whereas having less control may necessitate turning towards others, which is related to the working class being more collectivist (Markus, 2017), and also likely being affected more by communal appeals. Including a social class variable is thus an important moderator of examining message effectiveness as indicated in previous studies (Whillans et al., 2017, see also Whillans & Dunn, 2018).

One thing that is, however, common for everybody engaging in social actions is that people want to be effective, they want to make a difference. Depending on their social standing they may choose whether this difference can be achieved by their own actions or whether it requires a collective effort as discussed above. For prosocial campaigns, communal or pro bono intentions can be taken for granted and what may matter is whether the organization is able to deliver its promises. The agency of the organization putting the action forward is, therefore, of utmost importance. None of the studies presented above assessed the agency of the organization promoting the campaign. It is not known, therefore, whether agency ascribed to the message sender will also affect message effectiveness and likely recipients’ actions. We propose here that agentic messages should increase message effectiveness by implying that the message sender is agentic and can act upon his or her goals. If message effectiveness is driven by the

perception of the message sender as agentic, then this should occur largely independent from the participant's own social standing.

Yet, all of the studies in the agency-message effectiveness domain were conducted in reference to prosocial entities, thus leaving open the question of whether the same principle applies to the effectiveness of messages put forward by business organizations. One could speculate that efficiency and striving are taken for granted for business companies. Accordingly, it may matter more in the evaluation of message effectiveness whether the company is also oriented toward others. For example, entrepreneur campaigns were more successful on the crowdfunding platform when they included more prosocial words (Pietraszkiewicz et al., 2017). In order to make their messages effective, business companies may therefore want to appear not even more agentic but rather communal.

Overview of the Present Research

Together, the literature suggests that verbs prompt agency and that agency improves message effectiveness. Three issues were, however, neglected. The first focal issue regards the effectiveness of verbs in communication outcomes. Applying syllogistic reasoning one may expect that given the two before-mentioned premises (verbs prompt agency and agency improves message effectiveness), verbs should logically enhance the effectiveness of the messages. In the first archival study, we test whether verbs (vs. adjectives) are in general seen as more agentic. In this way, we replicate prior findings on the *verb-agency* link in a broader context and extend previous findings on pseudo-words (see Formanowicz et al., 2017) to inferences from real words. Furthermore, in three experiments, we test whether the use of verbs affects message effectiveness. Based on prior research on the *verb - agency* link (Formanowicz et al., 2017), and on agency and message effectiveness (e.g., Eckel et al., 2017; Whillans & Dunn, 2018), we predict that slogans using verbs will be perceived as more agentic and more effective than slogans relying on adjectives as the focal words.

The relative lack of knowledge regarding the role of grammar in affecting message effectiveness contributes to the second neglected issue that is the interplay of grammar and message content. We focus on the two types of agency that can be conveyed through language. The first is the semantic agency, referring to *what* we say, for instance by using words representing the core concept of the agency such as accomplishment or goal (Pietraszkiewicz et al., 2019). The second is the grammatic agency, referring to *how* we talk about things, for example, by using verbs (Formanowicz et al., 2017). These two types of agency in language were intertwined in the prior studies, and so it

is not known, whether their references in language affect message effectiveness to a similar extent. Indeed, past research focusing on recipients has found different effectiveness with foci on personal agency versus communion (e.g., acting as part of a community vs. highlighting personal agency; see Eckel et al., 2017; Kessler et al., 2017; Whillans & Dunn, 2018; Whillans et al., 2017). In the present experiments, we rather focused on the semantics in the message of the slogan (referring to acting/goal achievement - *agency* vs. helping/collaboration - *communion*). This allowed us to disentangle the importance of grammatical cues and semantic cues of agency linked to the message sender/agent for message effectiveness.

Importantly, however, the relationship between semantics and grammar may be additionally contingent on the contextual cues in the NGO (Studies 2 and 3) and in the corporate context (Study 4). There may be a default assumption for NGOs to be communal and for corporate entities to be agentic. It is possible that communication of those entities is most efficient when framed along dimension other than the default one. For prosocial campaigns, where communion can be taken for granted semantic agency might be particularly relevant. For business actions, where goal-orientation can be assumed, it may be that communion is a key predictor of message effectiveness. It is not known, how the grammatical agency can add to that picture. Assuming its subtle and implicit role, it may work independently of semantics, increasing any message effectiveness due to its relationship with activity and taking actions. However, it may also increase message effectiveness where the agency is of utmost importance or disrupt the effectiveness of the messages (for a lack of fit) where communion plays the most important role. Beyond the obvious implications for communication practices, the answer to this question has theoretical relevance, as it would address the role of grammar in relation to content, providing further insights into the interplay between semantic and meta-semantic properties of verbs.

Finally, the third neglected issue refers to how the perception of the message sender contributes to message effectiveness. So far studies examining agentic content in persuasive messages focused on messages evoking a sense of personal agency among message recipients. However, messages can also convey information about the message sender. To the extent to which they are seen as agentic or capable of implementing their proposed actions, the messages they put forward may also be seen as more persuasive. We address this question both in NGO and corporate contexts. Given the focus on the message sender and message effectiveness, we do not hypothesize moderation by participants' economic standing - which was apparent when message effectiveness was examined with references to message recipients.

Study 1 was an archival analysis of existing word ratings for a sample of verbs and adjectives, allowing to address first the basic question of whether real verbs are in general evaluated as more agentic than adjectives. Studies 2 and 3 were experiments with a similar design in which we varied grammatical cues (verb vs. adjective) and semantical cues with agentic versus communal messages (e.g., “We act” vs. “We help”) to investigate comprehensively whether using verb-slogans and semantic agency translate into higher perceived effectiveness in NGO context. Study 4 applied a similar conceptual design in a corporate context. We report how we determined our sample size, all data exclusions, all manipulations, and all measures in the experiments. The data used in this research and supporting information are available on our Online Science Framework (OSF) project site at <https://osf.io/bgrsy/>.

Study 1: Verbs and Adjectives in Word Ratings

First, we aim to replicate that verbs in comparison to adjectives have higher agency (Formanowicz et al., 2017), with the use of real (rather than pseudo) words. For this purpose, we employed existing databases of words ratings. Specifically, we used ratings of valence, arousal, and dominance (Warriner et al., 2013), as well as of concreteness of words (Brysbaert et al., 2014) from large norming datasets to not only provide further evidence of the *verb-agency* link but also bolster its stability when typical correlates of grammatical class and semantics are controlled for (see also Formanowicz et al., 2017).

Method

Two datasets were merged to provide information about the meaning associated with verbs and adjectives. An evaluation of 13,915 English words (Warriner et al., 2013) provided information on valence (measured on a 9-point scale unhappy to happy), arousal (calm to excited), and dominance (controlled to in control). The latter scale provides a good approximation of agency, as the agency is related to having control over one’s own actions (Abele & Wojciszke, 2014; Bandura, 1989). We also added a measure of how abstract versus concrete the word is (5-point scale), taken from Brysbaert et al.’s (2014) archive of 40,000 English words. The resulting matched dataset was further limited only to those words that can be unambiguously classified as either verb (e.g., involve or consolidate) or adjective (e.g., addictive or additional). This strategy allowed us to obtain 950 unique verbs and 2,115 unique adjectives.

Results

To test whether the grammatical category is related to agency ascriptions of words, we applied regression analysis. In the first step, we entered measures of valence ($B = 0.57$; $SE = 0.01$), arousal ($B = -0.04$; $SE = 0.01$), and concreteness ($B = -0.05$; $SE = 0.02$) – full results of this analysis are presented in the top section of Table 1. In the second step, the grammatical category was added to the set of predictors (with verbs coded as 1 and adjectives coded as 0). As presented in the lower section of Table 1, above and beyond the effects of covariates, verbs are evaluated as more agentic than adjectives ($B = 0.31$; $SE = 0.03$).

Study 2: Verbs Versus Adjectives: Slogans Affecting Perceived NGO Campaign Success

The aim of the second study was to experimentally establish the hypothesized effects of grammatical and semantical agency on perceived message effectiveness via the ascribed agency. Communion ascriptions were assessed as well to establish the specificity of effects via the agency. Perceived effectiveness is a common dependent variable in research, and its relevance for actual effectiveness has been shown (see Dillard et al., 2007), therefore it served as the dependent variable in the experiments.

Method

Participants

All participants were recruited through Prolific (<https://www.prolific.co>) at a rate of £7.80 per hour. They were adult US citizens and their native language was English. From the pool of completed questionnaires, we have excluded 14 participants based on the attention-check question: “To continue click No” (Wiener et al., 2014) and a seriousness check (Aust et al., 2013, addressing how serious participants were in filling the study. Finally, 59 participants were excluded based on another attention-check question examining the verbatim recollection of the presented short slogan. Please note that for Studies 2 and 3, we employed a very conservative measure of attention with the verbatim recall of the presented slogan due to the acknowledged need to check data quality in such paid online platforms. Therefore, for the experimental condition “We help”, for instance, participants with responses such as “We care” or “We are helping” were excluded based on the criterion to let only exact wording pass. The final sample consisted of 255 participants (112 women, 142 men, and 1 person not indicating their gender, $M_{age} = 33.67$, $SD_{age} = 11.44$;

Table 1. Regression model for word ratings and the effect of grammatical category for Study 1

	R^2 or ΔR^2	B	$SE B$
Step 1	.60***		
Intercept		2.68***	0.09
Concreteness		-0.05**	0.02
Valence		0.57***	0.01
Arousal		-0.04**	0.01
	$F(3, 3,061) = 1526.61; p < .001$		
Step 2	.02***		
Intercept		2.64***	0.09
Concreteness		-0.08***	0.02
Valence		0.56***	0.01
Arousal		-0.03*	0.01
Adjectives vs. Verbs		0.31***	0.03
	$\Delta F(1, 3,060) = 145.69; p < .001$		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

basic information about participants in Studies 2–4 are presented in Table 2). We relied on G*Power 3.1 software (Mayr et al., 2007) to calculate the sample size, using a power of 80% benchmark for a medium effect size of $f = 0.25$ (Cumming, 2014).

Procedure and Materials

Participants were informed that the study concerned the effectiveness of NGO campaigns and more specifically perceptions of succinct slogans that would form the basis for more specific campaigns in the future. Specifically, the instruction read as follows:

“As previously mentioned, we are also investigating perceptions of brief slogans in this preliminary study. We draw from a collection of several short slogans that will form the basis for more specific campaigns in the future. However, for this study, we are only interested in the perception of the basic slogans.”

Participants were randomly assigned to view a slogan employing either agentic or communal content (referring to acting or helping) based on frequently used adjectives in agency and communion scales (specifically referring to *acting* or *helping*, Abele & Wojciszke, 2007), with the message expressed with the use of a verb or an adjective. Thus, the study consisted of four experimental conditions: two slogans employing verbs (“We act,” $N = 63$ or “We help,” $N = 67$) and two slogans employing adjectives (“We are active,” $N = 66$ or “We are helpful,” $N = 59$). For a graphical demonstration of the manipulation and materials used in Studies 2 and 3, see Figure 1. The G.C.Y.W. sign appeared in the upper left corner of each succinct slogan. It was fictitious and did not refer to any existing NGO.

Measures

Participants were first asked how indicative the slogan was for the NGO’s agency and communion. Agency was measured with three items (e.g., “This NGO strives to achieve its goals even if obstacles have to be conquered”). Communion was also measured with three items (e.g., “This NGO cares about being integrated in the community”). To assess the perceived effectiveness of the message we used two items (“Based on this slogan, how successful would you estimate this campaign to be?” and “Based on this slogan, do you believe this campaign is an outright failure?” – reverse coded). All the questions were assessed with a scale ranging from 1 (= *not at all*) to 9 (= *very much*), the obtained results were averaged, and combined to form indicators of agency, communion, and message effectiveness respectively. The reliability coefficients, means, standard deviations, and correlation coefficients of the measures used in Study 2 are presented in Table 3.

At the end of the study, participants were asked attention-check questions and also to provide demographic information concerning their gender, age, ethnicity, as well as social status, and political views. Social status was measured using three variables: self-reported income, subjective status, and education.

Table 2. Participant demographic characteristics across studies

Study	2	3	4
N	255	194	272
% Female	43.9	43.3	58.8
% Caucasian	77.3	74.7	80.1
% College graduates	61.9	64.9	62.9
Mdn age (range)	31 (18–77)	33 (21–70)	34 (18–69)
Mdn income (range)	\$40 K to \$50 K (< \$10 K to > 150 K)	\$30 K to \$39,999 K (< \$10 K to > 150 K)	\$40 K to \$50 K (< \$10 K to > 150 K)
Mdn subjective status (range)	5 (1–10)	5 (1–10)	5 (1–10)
Mdn political views (range)	3 (1–7)	3 (1–7)	3 (1–7)

Note. For income, the scale ranges from \$10,000 and below to \$150,000 and above, with \$10,000 intervals in between. For subjective status, the scale ranges from 1 (= *bottom of the social ladder*) to 10 (= *top of the social ladder*). For political views, the scale ranges from 1 (= *very liberal*) to 7 (= *very conservative*).





	Agency	Communion
Verbs		
Adjectives		

Figure 1. Visual material presented to the participants in Studies 2 and 3.

Table 3. Reliability coefficients, means, standard deviations and correlation coefficients for the variables used in Study 2

	α	M	SD	2	3
1. Agency	.90	5.60	2.02	.50***	.66***
2. Communion	.87	6.00	1.86		.52***
3. Effectiveness	.85	5.67	2.10		

Note. *** $p < .001$.

Results

The Electronic Supplemental Material (ESM 1) contains all information regarding tests of interaction effects between grammatical agency, semantic agency, social status variables, and political views. The findings were nonsignificant and as more peripheral to the current research, they will be briefly summarized and discussed in the General Discussion.

Agency

To examine whether the experimental manipulations affected the perceptions of agency, we conducted a 2 (grammatical form: verbs vs. adjectives) \times 2 (semantic content: agentic vs. communal) analysis of variance (ANOVA) on the measure of perceived agency. The analysis revealed the expected main effect of the grammatical form, $F(1, 251) = 15.07, p < .001, \eta_p^2 = .06, 95\% \text{ CI } [.01, .12]$, indicating that NGOs using verbs in slogans ($M = 6.01; SD = 1.94$) were seen as more agentic than NGOs using adjectives in slogans ($M = 5.17; SD = 2.03$). Moreover, there was also the expected significant effect of the semantic content, $F(1, 251) = 39.05, p < .001, \eta_p^2 = .14, 95\% \text{ CI } [.06, .21]$, indicating that NGOs using agentic words in slogans ($M = 6.30; SD = 1.94$) were indeed seen as more agentic than NGOs using communal words in slogans ($M = 4.89; SD = 1.86$). The interaction was not significant, $F(1, 251) = 0.41, p = .53$. The results for the agency indicate that both grammatical and semantic content independently contributed to the ascriptions of the agency. Considering the effect sizes, semantic content not surprisingly affects the attributions of agency more strongly. Yet, the role of

grammar is still present, above and beyond the meaning of the message, in line with the meta-semantic role of verbs predicted by the *verb-agency* link. The means and standard deviations for all the dependent variables across all conditions are presented in Table 4.

Communion

To examine whether the experimental manipulations affected the perceptions of communion, we conducted a 2 (grammatical form: verbs vs. adjectives) \times 2 (semantic content: agentic vs. communal) ANOVA. The analysis revealed a marginal main effect of the grammatical form, $F(1, 251) = 3.81, p = .052, \eta_p^2 = .02, 95\% \text{ CI } [.00, .06]$, suggesting that NGOs using verbs in slogans ($M = 6.23; SD = 1.73$) were seen as more communal than NGOs using adjectives in slogans ($M = 5.75; SD = 1.96$). In line with predictions, the effect of semantic content was more substantial for the evaluation of communion, $F(1, 251) = 18.94, p < .001, \eta_p^2 = .07, 95\% \text{ CI } [.02, .14]$, indicating that NGOs using communal words in slogans ($M = 6.50; SD = 1.61$) were indeed seen as more communal than NGOs using agentic words in slogans ($M = 5.51; SD = 1.96$). The interaction was not significant, $F(1, 251) = 0.17, p = .68$.

Effectiveness

Turning to our primary dependent variable, the same design ANOVA revealed the expected main effect of the grammatical form, $F(1, 251) = 11.45, p = .001, \eta_p^2 = .04, 95\% \text{ CI } [.01, .10]$, indicating that NGOs using verbs in slogans ($M = 6.06; SD = 2.06$) were seen as more effective than NGOs using adjectives in slogans ($M = 5.26; SD = 2.07$). Moreover, there was also the expected significant effect of the semantic content, $F(1, 251) = 20.27, p < .001, \eta_p^2 = .08, 95\% \text{ CI } [.02, .14]$, indicating that NGOs using agentic words in slogans ($M = 6.21; SD = 2.04$) were indeed seen as more effective than NGOs using communal words in slogans ($M = 5.12; SD = 2.02$). The interaction was not significant, $F(1, 251) = 0.90, p = .34$. The results of Study 2 indicate that both grammatical and semantic agencies contribute to message effectiveness.

Indirect Effect

To test for the hypothesized indirect effect of grammatical form on perceived message effectiveness via agency ascriptions, we conducted a mediation analysis using Hayes' (2013a, 2013b) macro and 1,000 bootstrap procedure. We included communion as a second parallel mediator to examine, whether the effect of grammar is limited to the agency only. As semantic content did not interact with grammatical form in neither of the variables, it was included as a covariate in the model (see Figure 2). The model explained 52% of the variation in effectiveness

Table 4. Descriptive statistics for effectiveness, agency, and communion indicators in Study 2

Variable	Semantic agency				Semantic communion			
	Verb		Adjective		Verb		Adjective	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Agency	6.84	1.56	5.79	2.13	5.24	1.95	4.49	1.67
Communion	5.78	1.88	5.25	2.02	6.66	1.47	6.32	1.75
Effectiveness	6.76	1.86	5.68	2.07	5.40	2.02	4.80	1.98

scores, $R^2 = .52$; $p < .001$. As expected, the indirect effect via agency was significant (point estimate = 0.32; Boot CIs [0.13, 0.57]), the indirect effect via communion, however, was not (point estimate = 0.20; Boot CIs [-0.01, 0.42]).

Study 3: Verbs Versus Adjectives: Slogans Affecting Perceived NGO Campaign Success – Pre-Registered Replication of Study 2

Study 2 provided the first evidence that both grammatical and semantic language cues related to agency affect message effectiveness due to agency ascribed to the message sender. However, one experiment is not enough to make a valid claim about a relationship between variables (Asendorpf et al., 2013), therefore we repeated Study 2 with a replication preregistered at https://osf.io/w8um3/?view_only=a521281371a5417ab7f654599818d926.¹

Method

Participants

All participants were recruited through Amazon Mechanical Turk (Buhrmester et al., 2011) at a rate of \$8.00 per hour. Similarly to Study 2, all participants were adult US citizens and their native language was English. From the pool of completed questionnaires, 11 participants were excluded based on the same attention-check and seriousness questions as in Study 2. Finally, 63 participants were excluded based on deviations in the verbatim recollection of the presented short slogan. The final sample consisted of 194 participants (84 women and 110 men, $M_{\text{age}} = 35.19$, $SD_{\text{age}} = 10.75$). As in Study 2, in Study 3 we relied on G*Power 3.1 software (Mayr et al., 2007) to calculate the sample size, using a power of 80% benchmark for a medium effect size of $f = 0.25$ (Cumming, 2014).

Procedure and Materials

The cover story and manipulations used in the study were exactly the same as in Study 2 with four experimental conditions: two slogans employing verbs (“We act,” $N = 53$ or “We help,” $N = 49$) and two slogans employing adjectives (“We are active,” $N = 42$ or “We are helpful,” $N = 50$).

Measures

All measures used in Study 3 were identical to those used in Study 2 with one exception: To assess effectiveness, we used one additional item in comparison to Study 2: “Based on this slogan, how persuasive do you perceive this campaign could be?” – with the scale ranging from 1 (= *not at all*) to 9 (= *very much*). Similarly to Study 2, at the end of the questionnaire, participants provided demographic information concerning their gender, age, ethnicity, as well as social status, and political views. The reliability coefficients, means, standard deviations, and correlation coefficients of the effectiveness indicator and agency and communion scales are presented in Table 5.

Results

Agency

To examine whether the experimental manipulations affected the perceptions of agency, we conducted a 2 (grammatical form: verbs vs. adjectives) \times 2 (semantic content: agentic vs. communal) ANOVA on the measure of perceived agency. The analysis revealed the expected main effect of the grammatical form, $F(1, 190) = 4.98$, $p = .03$, $\eta_p^2 = .03$, 95% CI [.00, .08], indicating that NGOs using verbs in slogans ($M = 6.48$; $SD = 1.52$) were seen as more agentic than NGOs using adjectives in slogans ($M = 5.87$; $SD = 1.93$). Moreover, there was also the expected significant effect of the semantic content, $F(1, 190) = 13.12$, $p < .001$, $\eta_p^2 = .07$, 95% CI [.01, .14], indicating that NGOs using agentic words in slogans ($M = 6.65$; $SD = 1.46$) were indeed seen as more agentic than NGOs using communal words in slogans ($M = 5.75$; $SD = 1.89$). The interaction was not significant, $F(1, 190) = 0.60$, $p = .44$. The results for the agency

¹ We preregistered one additional question (i.e., “Based on this slogan, how convincing do you perceive this campaign could be?”) to measure campaign effectiveness, however, due to an error in the process of programming Study 2, this question was not included in the final version of the experiment.

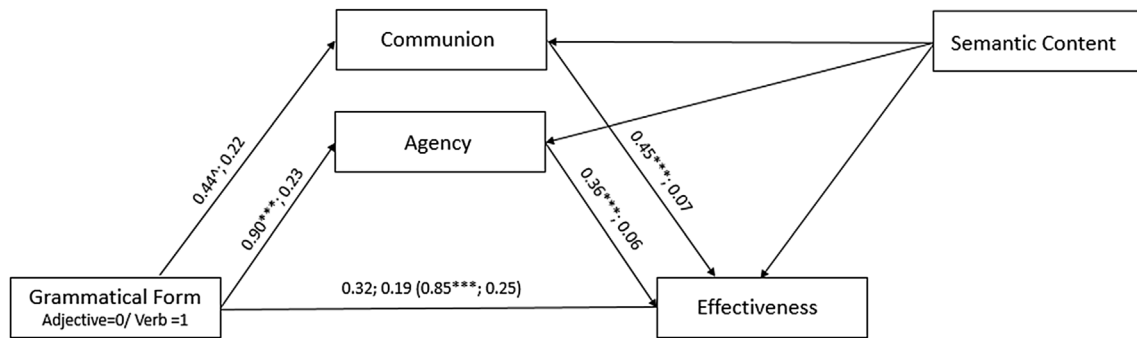


Figure 2. Indirect model tested in Study 2. Coefficients are unstandardized regression weights followed by standard errors. $^{\wedge}p < .06$; $^{**}p < .01$; $^{***}p < .001$.

Table 5. Reliability coefficients, means, standard deviations, and correlation coefficients for the variables in Study 3

	α	M	SD	2	3
1. Agency	.84	6.19	1.75	.41***	.63***
2. Communion	.88	6.43	1.75		.54***
3. Effectiveness	.84	5.88	1.92		

Note. $^{***}p < .001$.

indicate that both grammatical and semantic content independently contributed to the ascriptions of the agency. The means and standard deviations for all the dependent variables across all conditions are presented in Table 6.

Communion

To examine whether the experimental manipulations affected the perceptions of communion, we conducted a 2 (grammatical form: verbs vs. adjectives) \times 2 (semantic content: agentic vs. communal) ANOVA on the measure of perceived communion. The analysis revealed the expected significant effect of the semantic content, $F(1, 190) = 27.77$, $p < .001$, $\eta_p^2 = .13$, 95% CI [.05, .22], indicating that NGOs using communal words in slogans ($M = 7.04$; $SD = 1.69$) were indeed seen as more communal than NGOs using agentic words in slogans ($M = 5.80$; $SD = 1.59$). The main effect of grammatical form, $F(1, 190) = 1.29$, $p = .26$ and the interaction, $F(1, 190) = .27$, $p = .60$ were not significant.

Effectiveness

Turning to our primary dependent variable, the same design ANOVA revealed the expected main effect of the grammatical form, $F(1, 190) = 4.44$, $p = .036$, $\eta_p^2 = .02$, 95% CI [.00, .08], indicating that NGOs using verbs in slogans ($M = 6.16$; $SD = 1.76$) were seen as more effective than NGOs using adjectives in slogans ($M = 5.57$; $SD = 2.04$). However, the main effect of semantic content, $F(1, 190) = 0.36$, $p = .55$ and the interaction, $F(1, 190) = 0.07$, $p = .79$ were not significant.

Indirect Effect

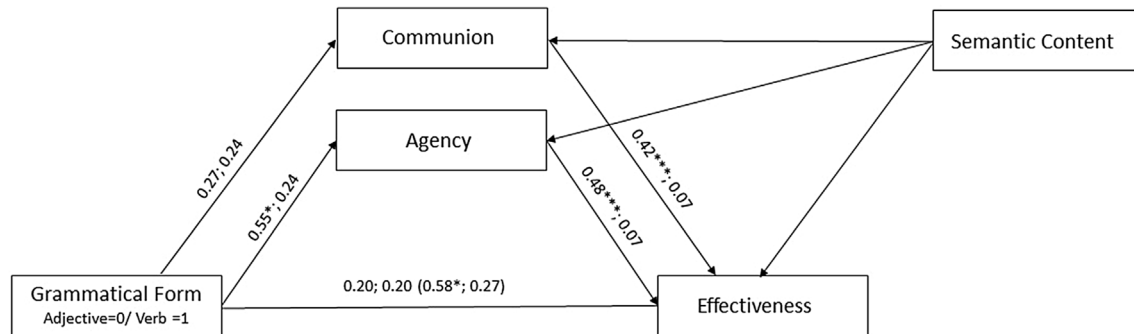
To test for the hypothesized indirect effect of grammatical form on perceived message effectiveness via agency ascriptions, we conducted a mediation analysis using Hayes' (2013a, 2013b) macro and 1,000 bootstrap procedure. We included communion as a second parallel mediator to examine, whether the effect of grammar is limited to the agency only. As semantic content did not interact with grammatical form in neither of the variables, it was included as a covariate in the model – see Figure 3. The model explained 49% of the variation in effectiveness scores, $R^2 = .49$; $p < .001$. As expected, the indirect effect via agency was significant (point estimate = 0.26; Boot CIs [0.03, 0.52]), the indirect effect via communion, however, was not (point estimate = 0.11; Boot CIs [−0.08, 0.33]).

Study 4: Verbs Versus Adjectives: Slogans Affecting Perceived Company Campaign Success – Further Replication

In the NGO context, we obtained a clear effect of grammatical agency, increasing message effectiveness. However, two secondary findings varied across Studies 2 and 3. First, the grammatical category (somewhat surprisingly) affected perceived communion in Study 2 but not in Study 3. This effect may be just a chance finding or it can represent a general tendency for communion and agency ratings to cooccur given their joint relationship to valence (Suitner & Maass, 2008). Second, in Study 2 but not 3, we obtained also a similar effect of the semantic agency on effectiveness. The results of the two studies indicate that semantic agency is less reliably related to message effectiveness in the NGO context than the grammatical agency. In Study 4,

Table 6. Descriptive statistics for agency, communion, and effectiveness indicators in Study 3

Variable	Semantic agency				Semantic communion			
	Verb		Adjective		Verb		Adjective	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Agency	6.80	1.37	6.45	1.55	6.12	1.60	5.39	2.10
Communion	5.87	1.61	5.72	1.57	7.24	1.44	6.85	1.90
Effectiveness	6.27	1.68	5.62	2.03	6.03	1.86	5.53	2.06

**Figure 3.** Indirect model tested in Study 3. Coefficients are unstandardized regression weights (with standard errors in parenthesis). * $p < .05$; *** $p < .001$.

we aimed to replicate Studies 2 and 3 in a corporate context.

To examine the role of semantic and grammatical agency for message effectiveness in this realm, we employed (new) agentic and communal messages that promote company images with either verbs or adjectives. We consider this study exploratory because various predictions can be formed. First, it could be assumed that the agency (both semantic and grammatical) affects message effectiveness. This could be further refined to only grammatical agency affecting message effectiveness as even in Study 3, targeting an NGO, the semantic agency was not a valid predictor. Secondly, as outlined in the introduction, it could also be assumed that there is little wiggle room for evaluations of agency for business entities because they are predominantly – and by default – associated with achievement and striving. Thus, what may matter more in the evaluation of businesses is whether they care for others (Pietraszkiewicz et al., 2017). Here, add-on agency information, both grammatical and semantic, would be irrelevant for both evaluations of the sender and message effectiveness in general. However, message effectiveness, in that case, would be predominantly dependent on communion.

Method

The design of Study 4 was similar to the one applied in Studies 2 and 3 with the following differences. First, we

created a business rather than an NGO context. Participants were instructed as follows:

“have a look at one randomly selected draft of the campaign outline created for an anonymous entrepreneur. This draft will be later developed into a full campaign, but for now, we would like to know whether the general direction of this campaign is favorable for the company.

Please check out these materials carefully and then indicate your first impression of it.”

Second, in Studies 2 and 3 we used only one short sentence per condition to manipulate grammatical agency and semantic content. In Study 4, we used four phrases per condition. For a graphical demonstration of the manipulation and materials used in Study 4, see Figure 4. Third, given that some of the newly developed materials contained phrases that overlapped with the content of items previously used to measure agency and communion, we included new items for the purpose of measurement of these dimensions. Finally, given the high exclusion rate based on the previously used verbatim recollection of the presented slogans, we now presented participants with a recognition task. They were presented with four sentences (of which two had appeared in the actual manipulation). They were asked for each independently to indicate whether they have seen this sentence in the campaign material. This allowed us to compute an incremental

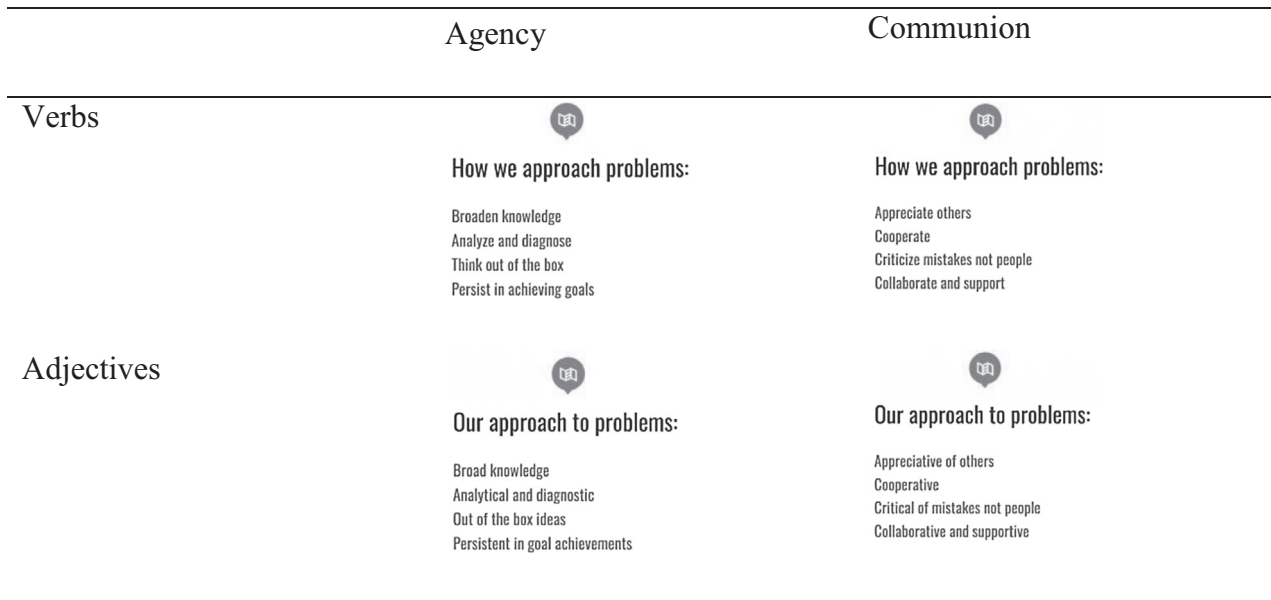


Figure 4. Visual material presented to the participants in Study 4.

measure across the four recognition items and qualify to the study those participants who responded above chance level (75% of correct answers or more).

Participants

All participants were recruited through Prolific at a rate of £9.38 per hour. They were adult US citizens and their native language was English. From the pool of completed questionnaires, two participants were excluded based on the same attention-check and seriousness questions as in Studies 2 and 3. Seven participants were excluded based on the recognition task (less than 75% correct answers).² The final sample consisted of 272 participants (160 women, 109 men, and three people indicating another gender as a response; $M_{\text{age}} = 36.84$, $SD_{\text{age}} = 11.49$). As in Studies 2 and 3, we relied on G*Power 3.1 software (Mayr et al., 2007) to calculate the sample size, using a power of 80% benchmark for a medium effect size of $f = 0.25$ (Cumming, 2014).

Procedure and Materials

The cover story stated that we are interested in pretesting a draft of company materials to examine which factors are important when evaluating the image of the company. Participants were informed that they would look at the draft of the campaign outline created for an anonymous entrepreneur and that we would like to know whether the gen-

eral direction of this campaign is favorable for the company. We employed four experimental conditions: two drafts had verbs as central words (for agentic content: e.g., “How we approach problems: Analyze and diagnose,” $N = 70$; for communal content: e.g., “How we approach problems: Collaborate and support,” $N = 68$) and two drafts had predominantly adjectives (for agentic content: e.g., “Our approach to problems: Analytical and diagnostic,” $N = 67$; for communal content: e.g., “Our approach to problems: Collaborative and supportive,” $N = 67$).

Measures

To assess effectiveness, we used the same measures as in Study 3. Measures of agency and communion were adapted to correct for the fact that the experimental material contained some of the phrases used in the agency and communion items employed in our previous studies (goal achievement or cooperation). Therefore, the agency was measured with two items (“This company is performance-oriented” and “This company strives for efficiency”), so as communion (“This company is community-oriented” and “This company cares for employees”) – with the scales again ranging from 1 (= *not at all*) to 9 (= *very much*). Similarly to Studies 2 and 3, at the end of the questionnaire, participants provided demographic information concerning their gender, age, ethnicity, as well as social status, and political views. The reliability coefficients, means, standard

² In the verb condition, one item in the recognition task contained an error. Instead of “appreciate others,” we presented participants with “appreciate of others.” This did not constitute a problem for the semantic agency condition, where it should be classified as an error anyway. For semantic communion, this item was largely classified as having appeared in the material set, which we credited as correct. However, when we treated the recognition of this item as a mistake, the pattern of results and the significance of the findings remained unaltered, even though a sample of participants was slightly different (270 instead of 272).

Table 7. Reliability coefficients, means, standard deviations and correlation coefficients for the variables in Study 4

	α	<i>M</i>	<i>SD</i>	2	3
1. Agency	.76	6.49	1.84	.12*	.47***
2. Communion	.90	5.77	2.19		.47***
3. Effectiveness	.90	6.10	1.80		

Note. * $p < .05$; *** $p < .001$.

deviations, and correlation coefficients of the effectiveness indicator and agency and communion scales are presented in Table 7.

Results

Agency

To examine whether the experimental manipulations affected the perceptions of agency, we conducted a 2 (grammatical form: verbs vs. adjectives) \times 2 (semantic content: agentic vs. communal) ANOVA on the measure of perceived agency. The main effect of the grammatical form was not significant, $F(1, 268) = 0.96$, $p = .33$, $\eta_p^2 = .004$, 95% CI [.00, .03]. However, the effect of the semantic content was significant, $F(1, 268) = 6.70$, $p = .01$, $\eta_p^2 = .02$, 95% CI [.001, .07], indicating that companies using agentic words in materials ($M = 6.77$; $SD = 1.72$) were indeed seen as more agentic than companies using communal words in materials ($M = 6.20$; $SD = 1.91$). The interaction was not significant, $F(1, 268) = 0.02$, $p = .90$. The results for the agency in Study 4 indicate that only semantic content contributed to the ascriptions of the agency. The means and standard deviations for all the dependent variables across all conditions are presented in Table 8.

Communion

To examine whether the experimental manipulations affected the perceptions of communion, we conducted a 2 (grammatical form: verbs vs. adjectives) \times 2 (semantic content: agentic vs. communal) ANOVA on the measure of perceived communion. The analysis revealed the expected significant effect of the semantic content, $F(1, 268) = 175.42$, $p < .001$, $\eta_p^2 = .40$, 95% CI [.31, .47], indicating that companies using communal words in materials ($M = 7.16$; $SD = 1.50$) were indeed seen as more communal than companies using agentic words ($M = 4.41$; $SD = 1.89$). The main effect of grammatical form, $F(1, 268) = 1.65$, $p = .20$ and the interaction, $F(1, 268) = 0.02$, $p = .89$ were not significant.

Effectiveness

Turning to our primary dependent variable, the same design ANOVA revealed the expected main effect of the grammatical form, $F(1, 268) = 4.50$, $p = .04$, $\eta_p^2 = .02$,

95% CI [.00, .06], indicating that companies using verbs in materials ($M = 6.32$; $SD = 1.74$) were seen as more effective than companies using adjectives ($M = 5.87$; $SD = 1.84$). Moreover, there was also a significant effect of the semantic content, $F(1, 268) = 7.80$, $p = .006$, $\eta_p^2 = .03$, 95% CI [.002, .08], contrary to the previous studies indicating that companies using agentic words in materials ($M = 5.80$; $SD = 1.77$) were seen as less effective than companies using communal words ($M = 6.40$; $SD = 1.78$). The interaction was not significant, $F(1, 268) = 0.06$, $p = .81$.

Indirect Effect

To test for the possible indirect effect of grammatical form on perceived message effectiveness via agency ascriptions (which had emerged only descriptively in average ratings), we conducted a mediation analysis using Hayes' (2013a, 2013b) macro and 1,000 bootstrap procedure. We included communion as a second parallel mediator. Semantic content was again included as a covariate in the model. The model explained 40% of the variation in effectiveness scores, $R^2 = .40$; $p < .001$ indicating that both ratings of agency ($B = .40$; $SE = .05$; $p < .001$) and communion ($B = .37$; $SE = .05$; $p < .001$) predicted message effectiveness; however as grammatical form was not significantly related to neither of them, the indirect effect via agency (point estimate = 0.09; Boot CIs [0.08, 0.27]) nor the indirect effect via communion were significant (point estimate = 0.10; Boot CIs [-0.05, 0.26]).

General Discussion

The present research sets out to investigate the contributions of grammatical cues of the agency to message effectiveness. In order to do so, in a first archival study we further establish the general link between verbs (in comparison to adjectives) and agency based on large norming data with real words (rather than pseudo-words used in previous research), even when other semantic dimensions are controlled for. Building upon this work, three experiments went forth to test its application for communication. Specifically, in three experiments, we examined both grammatical and semantic cues in reference to message effectiveness. Across the three experimental studies, we demonstrate that verb (compared to adjective) messages are seen as more effective. Also in none of the presented experiments, grammatical cues interacted with semantic manipulations, suggesting the independent role of grammar in affecting message effectiveness. This knowledge is important because whereas semantic properties of communication have been an accessible research target and have attracted a lot of attention, grammatical components of messages

Table 8. Descriptive statistics for agency, communion, and effectiveness indicators in Study 4

Variable	Semantic agency				Semantic communion			
	Verb		Adjective		Verb		Adjective	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Agency	6.89	1.61	6.65	1.83	6.29	1.95	6.10	1.89
Communion	4.53	1.72	4.29	2.06	7.30	1.49	7.01	1.51
Effectiveness	6.00	1.72	5.60	1.82	6.65	1.71	6.14	1.83

only start to enter the scientific mainstream (Formanowicz et al., 2017; Idan et al., 2018; Rhodes et al., 2019). While the content of the message is easy to see and react to, grammar is a subtle linguistic cue and the role of verbs may largely go unnoticed and escape awareness. This assumption awaits scientific scrutiny in future research, yet is potentially consequential because blatant agency (as in semantic content) was linked to higher reactance in persuasive attempts (Roubroeks et al., 2011). Importantly, the subtlety of grammar may trigger less reactance and therefore contribute to the effectiveness of persuasive messages. By the same token, our results appear to parallelly contrast effects of priming given awareness of the influence (e.g., Strack et al., 1993), in the sense that subtle grammatical cues can affect communication through their unobtrusiveness.

This assumption is further substantiated when observing the effects of semantic content manipulations applied in our studies. In the NGO context, semantic agency contributed positively to message effectiveness (Study 2) or was irrelevant for message effectiveness (Study 3). In the corporate context, semantic agency translated into less message effectiveness. By contrast, it was the communion of the message that was particularly important for the message effectiveness. This pattern of results can also be interpreted as congruent with the compensation effect in impression management (Holoien & Fiske, 2013): When wanting to appear positive on one dimension (e.g., warmth), participants downplayed the other dimension (e.g., competence). Given the outlined rationale that it may be crucial for companies to appear communal, companies may be penalized for enhancing agency in communication. Overall, these results indicate that the effects of what is being said are largely affected by the context of the communication. Contrary to that, subtle grammatical cues seem to operate with less of such restrictions.

Future Directions

As indicated anecdotally in the introduction, slogans employing verbs apparently did affect many people in their voting or purchasing decisions. The verb slogans used in real life could either evoke a sense of agency in recipients as in previous studies (Whillans et al., 2017; Whillans & Dunn, 2018) or inform about a message sender as being efficient and likely worth the promise they were making,

as in the Studies 2 and 3 here. Importantly, in our studies, both agency and communion were associated with effectiveness, but the indirect effect of verbs on message effectiveness occurred only for the agency and only for the NGO context. This suggests that in some contexts, verbs can indirectly affect persuasiveness by stressing the agency component of the persuasion target. That this happened in NGO rather than incorporate context, may imply that verbs signal the agency of the message sender predominantly for non-typically agentic targets (where agency associations are less chronically accessible). This hypothesis requires further testing; however, in a similar vein, it was predominantly girls that responded positively to the fverb–noun manipulation (Rhodes et al., 2019; for the opposite pattern of results of verbs versus nouns see Bryan et al., 2011, 2014; for a null result see Gerber et al., 2016; and for the discussion on verbs and agent nouns see Formanowicz et al., 2017). Given that in Study 4, we did not observe the indirect effect, it is likely that (under certain conditions) verbs independently affect message content without affecting attributions to sender, and that for agentic targets (such as companies) evaluations of the agency are to a lesser extent affected by subtle grammatical cues.

Contextual effects of agency on message effectiveness obtained for NGO targets as obtained in our Studies 2 and 3 may further inform studies on prosocial communication. Despite traditional associations linking communion with prosocial behaviors, the agency also affects prosocial tendencies (Gagné, 2003; Weinstein & Ryan, 2010), thus benefitting not only an individual but also a community. The nuanced relationship between the Big Two and prosociality in personality is best explained considering the social motives perspective (Gebauer et al., 2014). In this perspective, the agency is linked to standing out and establishing one's uniqueness. Communion on the other hand contributes to fitting in, establishing one's connectedness with others. In line with this model, communal traits were most predictive of prosocial behaviors in sociocultural contexts that favor prosocial tendencies as expressed by volunteering interests. On the contrary, the agency predicted prosocial behaviors in the sociocultural context, where such behaviors were uncommon (Gebauer et al., 2014). The only study on message effectiveness that resonates with the nuanced perspective of agency and communion also showed that whether it is agency or communion that affects

message effectiveness depends on the context (White & Peloza, 2009). When participants were held publicly accountable for their behavior, communal appeals were more successful than agentic appeals for donations. However, when participants' decision whether to make a donation was to remain private, they responded more to agentic than to communal appeals. Accordingly, all studies investigating the role of agency in message effectiveness were conducted in a private context, when an individual makes a decision of whether to make a donation or not (White & Peloza, 2009). This raises the question of whether the agency affects message effectiveness only under certain conditions. The main avenue for future research is thus to investigate the boundary conditions for the *agency - message effectiveness* effect. Our studies add that the contextual effects of agency and communion need to include a grammatical aspect.

Limitations of the Current Research

Importantly, in our studies, we did not find susceptibility to persuasion by either semantically agentic or communal slogans to be dependent on participant's social standing as had been found previously (Whillans et al., 2017). This can be interpreted in different ways. First of all, the relationship between social class and receptiveness to message content is not entirely replicable (Whillans & Dunn, 2018). Second, previous manipulations of communion (Whillans et al., 2017) can be in fact seen as manipulations of collective agency. For instance, Whillans and Dunn (2018) created a communal message through the following phrase: "Join your community and support a common goal." Although this message is clearly referencing communal content by evoking community and a sense of commonness, it is also addressing the core of the agency that is goal orientation (Abele & Wojciszke, 2014). Given that efficacy is in the core of collective action and likely also of prosocial engagement (van Zomeren, 2013), participants in previous studies (Whillans et al., 2017) were possibly affected by agency appeals (either personal or collective) depending on their social standing. In our studies, the manipulation of communion was orthogonal to the manipulation of agency - and we found no difference in the responsiveness to the content of the message between participants differing in social class. This may indicate that in previous studies it was collective agency rather than communion that increased working-class engagement in social action.

However, the lack of interactive effects of political views and social class with semantic content and grammatical agency need to be interpreted with caution as our interactions are likely underpowered (Kraus & Callaghan, 2016). Furthermore, prior studies on message effectiveness in relation to social class (Whillans et al., 2017) did not employ

Mturk nor Prolific samples - and their critical thresholds of income whereby agency affected message effectiveness exceeded \$90,000 USD. Both relatively low power to detect interactions and the lower household income typically obtained in Mturk samples may preclude obtaining the income by agency interactions observed in past research.

An important limitation of the current research is that variables measuring agency and communion were always assessed in the current studies prior to message effectiveness. In this way manipulations of agency and communion as well as of grammatical form, could affect directly following ratings of the big two dimensions, which, once activated, could affect the results on message effectiveness. Future studies should carefully disentangle the order effects.

Conclusion

Can grammar be social and effective? Yes, it can. The present results underscore the *verb-agency* link and extend it to increased message effectiveness. Moreover, the present studies provide new insights into the role of agentic cues (grammatical and semantic) for message effectiveness more generally. They open several new research avenues to be taken regarding the presumed subtlety of grammatical cues compared to semantic cues, message-person fit, message-content fit, and reactance. Importantly, the present studies attest to a *verb-message effectiveness* link that may work irrespective of semantics for communication. Message recipients extract information that goes beyond the content of what is said, by subtly exploiting grammatical information - let's make it happen.

Electronic Supplementary Material

The electronic supplementary material is available with the online version of the article at <https://doi.org/10.1027/1864-9335/a000435>

ESM 1. The supplemental materials contain: Interaction effects for Study 2; Interaction effects for Study 3; and Interaction effects for Study 4.

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Magdalena Formanowicz, Janin Roessel, Caterina Suitner, and Anne Maass developed the general idea. All authors designed the studies. Agnieszka Pietraszkiewicz carried out studies and collected the data. Agnieszka Pietraszkiewicz, Magdalena Formanowicz, and Marta Witkowska carried out and described analyses. Magdalena Formanowicz wrote the first draft of the manuscript and all authors provided critical revisions and approved the final version of the manuscript.

Open Data

The data used in this research and supporting information are available on our Online Science Framework (OSF) project site at <https://osf.io/bgrsy/>.

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