Article

Pronoun Use Reflects Standings in Social Hierarchies

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Abstract

Five studies explored the ways relative rank is revealed among individuals in small groups through their natural use of pronouns. In Experiment 1, four-person groups worked on a decision-making task with randomly assigned leadership status. In Studies 2 and 3, two-person groups either worked on a task or chatted informally in a get-to-know-you session. Study 4 was a naturalistic study of incoming and outgoing e-mail of 9 participants who provided information on their correspondents' relative status. The last study examined 40 letters written by soldiers in the regime of Saddam Hussein. Computerized text analyses across the five studies found that people with higher status consistently used fewer first-person singular, and more first-person plural and second-person singular pronouns. Natural language use during group interaction suggests that status is associated with attentional biases, such that higher rank is linked with other-focus whereas lower rank is linked with self-focus.

Keywords

social hierarchy, language, pronouns, power, leadership, status

Social hierarchies, or "rank order of individuals or groups on a valued social dimension" (Magee &Galinsky, 2008, p. 354) exist in all social groups (Brown, 1991; Murdock, 1949). Position or relative rank within a group, has been defined by many overlapping constructs, including status, power, dominance, and prestige (Cheng,

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Tracy, Foulsham, Kingstone, &Henrich, 2013; Cheng, Tracy, &Henrich, 2010; Henrich& Gil-White, 2001). While these constructs are meaningful and important to differentiate, the purpose of this article is not to disentangle them but to examine how these various components of hierarchy ascension are associated with language. Specifically, we are interested in how one feature of language—pronouns—can reflect people's status, or position/rank within a social hierarchy.

For researchers, the easiest and probably most standard method to assess relative position within a group is by way of self-reports. In ongoing real-world settings, however, surveys are not always possible. Indeed, social scientists have long sought to find effective measures of individuals' positions in groups by observing their behaviors. In the nonverbal literature, for example, dozens of studies have explored the ways people stand, gesture, and use space. Across studies, most, but not all, nonverbal cues have been found to be highly variable across contexts (Hall, Coats, &LeBeau, 2005).

Despite intensive investigations to decode rank by way of nonverbal behaviors, very few researchers have examined the words people use when talking to others within their group as a function of their relative position. Until the advent of computers, such a strategy would have been painfully slow. However, recent advances in computerized text analysis along with the growing role of digital communication, or computer-mediated communication, have provided new ways of linking natural language to social roles and relationships.

The current article is an inductive project intended to identify which features of language may be most relevant to individuals' position or rank. It is inductive in the sense of identifying the limits of the effect. (When does it occur? What pronouns are influenced by status?) Rather than attempt to disentangle the overlapping constructs of status, power, expertise, leadership, and dominance, our aim is more modest. We simply seek to identify which dimensions of language are likely to provide valuable clues to identifying people's place in a social hierarchy. The idea that language use can serve as a marker of status is not new. Lakoff (1975) argued that relative to powerful speech, powerless speech uses more tag questions (e.g., ". . ., isn't it?"), intensifiers (e.g., really, so), and hedges (e.g., sort of, maybe). Comparing trial transcripts, O'Barr (1982) found that low-status individuals (witnesses and defendants) used more intensifiers and hedges, along with polite forms (e.g., please, thank you) and hesitation forms (e.g., um, er).

Recent work is also finding that the more common but often-forgettable function words—such as pronouns, prepositions, articles, conjunctions, and auxiliary verbs—can reflect psychological states. Unlike content words, function words do not have consistent references across contexts. Instead, they can clarify the meaning within phrases and sentences and serve as conversational place holders of information shared by the interactants. As markers of language style, function words have been shown to reflect emotional states, personality, and other features of social relationships (Chung & Pennebaker, 2007). Although there are fewer than 500 common function words in English, they typically account for approximately 55% of the words we use in speaking or writing(Rochon, Saffran, Berndt, & Schwartz, 2000).

The most commonly used function word category is the pronoun. In talking, personal pronouns account for approximately 14% of all the words people use (Pennebaker, Chung, Ireland, Gonzales, & Booth, 2007). Perhaps more than any other type of word, pronouns are quintessentially social in that they refer to human beings and, at the same time, are a shared reference between the speaker and listener (Chung & Pennebaker, 2007). Consider, for example, the sentence, "She gave it to him." For this sentence to have meaning, both the speaker and listener must know who the personal pronouns "she" and "him" refer to as well as the referent for the impersonal pronoun "it" based on an earlier part of the conversation. Pronoun use highlights whether attention is on others—second-person singular/plural (he/she, they), on ourselves as distinct entities—first-person singular pronouns (I), or ourselves embedded within a social relationship (Zimmerman, Wolf, Bock, Peham, &Benecke, 2013).

Pronouns are also important in that they signify the speakers' focus of attention. For instance, a person who feels insecure and self-aware is likely to pay more attention to their own thoughts, feelings, and behaviors and use personal pronouns accordingly. Indeed, manipulations of self-focus have been found to increase the rates that people use first-person singular pronouns (I, me, my; e.g., Davis & Brock, 1975; Duval &Wicklund, 1972). Not inconsistent with the self-awareness findings, people who are depressed also tend to use I-words at higher rates than nondepressed individuals (Rude, Gortner, & Pennebaker, 2004; Weintraub, 1989). The parallel view on depression holds that it is an "involuntary defeat strategy," that results in submissive behavior which prevents hierarchical struggles (Sloman, Gilbert, &Hasey, 2003). This suggests that self-focus can function as a submissive strategy, by eliciting appropriate behavior. The use of pronouns can therefore reflect the corresponding psychological states associated with status. Thus, markers of status may be reflected more in the *ways* people speak, compared with *what* they are speaking about.

A promising way to think about how status affects language style is to consider the presumed psychological states of individuals in high- versus low-status positions. Theories of status point to a difference in attentional focus between high- and low-status people. The functionalist model of status suggests that people who attain status are those seen as likely to contribute to group success (Thibaut& Kelley, 1959). Because status is conferred collectively by the group, those that appear "other-oriented"—that is, more cooperative, fair, and collectively focused—attain higher status whereas those who are "self-oriented" and threaten to take status through force are looked down upon (Ridgeway &Diekema, 1989). Similarly, human group members allocate power to those individuals who engage socially in ways that advance the interest of the group—creating rapport, resolving conflicts, forging connections—and that form strong alliances and relationships that are essential to cooperative groups (Boehm, 1999). Despite research suggesting that people in power are less likely to take another person's perspective (Galinsky, Magee, Inesi, &Gruenfeld, 2006) and are more selfish, a growing body of research documents the social costs associated with having and exerting an inflated sense of power relative to actual position within the group (see, review by Keltner, Gruenfeld, Galinsky, & Kraus, 2010). Group members that act in ways that too

systematically benefit themselves over the interests of the group, or who strive too explicitly toward the acquisition of power, suffer reputational costs.

Consistent with this notion, studies have found that people who attain status are more generous, fair, ask for less help while providing more help, and are generally more attuned to status dynamics in exchange relations (Blader & Chen, 2012; Flynn, Reagans, Amanatullah, & Ames, 2006). In addition, Snodgrass, Hecht, and Ploutz-Snyder (1998) suggested that low-status individuals are more attuned with what higher status people think of them, whereas high-status individuals are less self-aware and more socially attuned to what lower status people are thinking. This would suggest, then, that those with low status are likely to be more self-focused whereas high-status individuals are focused on people and situations outside themselves.

The self-orientation versus other-orientation of low- and high-status members should be reflected in language use. Given the social nature of pronouns (Chung & Pennebaker, 2007), there is good reason to believe that their use could reflect self versus other focus. For example, the tendency for high-status individuals to be more collectively oriented and externally focused (Blader& Chen, 2012; Flynn et al., 2006; Gardner &Avolio, 1998, p. 46) might lead high-status individuals to use more "We" and less "I." If low-status people really are concerned with the impression they are making and more focused on what they can do to impress the leader (Boucher, Hancock, & Dunham, 2008; Snodgrass et al., 1998) this might be reflected in "I" use. Use of personal pronouns then can track these potential attentional differences, since they reflect where people are paying attention.

Several studies suggest that pronouns may be a central marker of rank within the social hierarchy. In a study of cockpit crew communication, pilots used more first-person plural pronouns (e.g., we, us, our) than first officers and flight engineers (Sexton &Helmreich, 2000). Use of "we" increased with each flight and was positively related to performance and communication. Similarly, Cassell, Huffaker, Tversky, and Ferriman (2006) found that individuals who used first-person plural we-words were more likely to be elected leader in a global online discussion forum compared with those who were not elected to be leaders.

This is consistent with research suggesting that use of "we" is associated with greater problem solving within a relationship discussion (Simmons, Gordon, &Chambless, 2005). Use of "we" in weekly field practicum journals is also positively related to supervisors' ratings of performance (Abe, 2009). Furthermore, charismatic/influential leaders "make references to the collective, and use inclusive terms, such as 'we,' 'us,' and 'our' in describing goal and achievement" (Gardner &Avolio, 1998, p. 46).

Additionally, a more recent study suggests that low-status members on Internet message boards use a higher frequency of "I" and a lesser frequency of "you" than higher status members (Dino, Reysen, &Branscomb, 2008). Use of "I" has also been negatively associated with other perceptions of dominance (Berry, Pennebaker, Mueller, & Hiller, 1997). Finally, in a study examining language use in the context of physician disclosure sessions, physicians used a higher rate of "we" and a lower "I" than patients and companions (Sakai & Carpenter, 2011).

As summarized above, previous research on social status and nonverbal and verbal cues supports the notion that there are certain attentional biases associated with being high versus low in the social hierarchy. However, prior studies have examined language and status in very specific social contexts and with specific operationalizations of social hierarchy—actual status in cockpit crews, and leadership emergence in online discussion forums, and so on. To examine the consistency of this bias across different contexts, we examined pronouns as a function of relative rank or position within the group obtained using a variety of routes by which people achieve hierarchical rank, including leadership, dominance, and actual status position (Cheng et al., 2013). For the purpose of this article and simplicity sake, unless describing a specific operationalization of rank, we will refer to position in the hierarchy as status. Pronouns have been demonstrated to reflect where people are focusing their attention, thus providing a useful tool to examine the effect.

To determine the degree to which pronouns vary with status, five studies were conducted, both experimental (Study 1) and correlational (Studies 2-5), and spoken (Studies 1 and 3) and written (Studies 2, 4, and 5). The first study manipulated leadership in the lab where participants interacted face-to-face during a group task (Burris, Rodgers, Mannix, Hendron, &Oldroyd, 2009). In the second study, language use was examined in the context of self-reported power among participants interacting in an online task. The third study was a face-to-face "get to know you" exercise where no task or formal roles were assigned and rank was determined by self-reported power. The fourth study examined natural language use in sent and received e-mails from nine people of varying status based on self-reported status contingent on actual position—professor, student, friend, and so on. Finally, the fifth study examined language in the context of letters associated with the Iraqi military under the regime of Saddam Hussein using objective military rank as the measure of status. The reliability of linguistic status cues was assessed across all five studies.

Study 1: Task-Oriented Face-to-Face Groups

The goal of the first study was to investigate whether there would be any language differences associated with social hierarchy, as gauged by leadership manipulation, in task-oriented face-to-face groups. Leadership is defined as a "process of social influence through which an individual enlists and mobilizes the aid of others in the attainment of a collective goal" (Chemers, 2001, p. 376). The project was based on the analysis of data from Burris, Rodgers, Mannix, Hendron, and Oldroyd (2009), which was conducted with institutional review board approval. Four-person groups interacted for approximately 30 minutes on a task that required each group to agree on a series of group decisions. A leader was randomly assigned based on the results of a (bogus) leadership questionnaire and given ultimate authority or power. At the conclusion of the group project, the leader was responsible for turning in the results of the group's deliberation and assigning reward levels for the group members. Transcripts of the group interaction were then analyzed for language use of the leader and the followers.

Procedure

Participants consisted of 164 undergraduates who were divided into 41 four-person mixed-sex groups (95 females and 69 males; mean age = 19.58 years; *SD* = 1.64).

Groups were composed of one experimenter-designated leader and three subordinates who were charged with completing a group decision-making task. Teams acted as consulting groups charged with improving the customer service quality of a fictitious company. The task required recommendation of strategies for service quality improvement by ranking items in order of their positive contribution to such a culture. Participants first worked on the task individually and then discussed the rankings as a team. The team decision did not need to be a consensus; the group was told that the leader ultimately had the authority to make the final decision. The team portion lasted about 30 minutes and was videotaped for transcription. The entire study lasted approximately 1 hour.

The transcripts of the group interaction were then analyzed for pronoun use of leaders and followers. The texts were analyzed using Linguistic Inquiry and Word Count (LIWC; Pennebaker, Booth, & Francis, 2007). LIWC is a computerized text analysis program that computes the percentage of various language categories (e.g., function words, positive and negative emotion words) relative to the percentage of total words within a text. For the purpose of this article, we focused exclusively on pronouns.

Results

Initially, a multivariate analysis of variance was conducted comparing word use between leaders and nonleaders. Specifically, we examined 6 pronouns; I, we, you, she/he, they, and impersonal pronouns (e.g., it, anyone, it's). Overall, the leader main effect for pronouns was significant, $F(6, 75) = 6.90$, $p < .01$. Subsequent analyses were conducted on individual word categories using paired *t*-tests comparing leaders and nonleaders across groups (Table 1).

Leaders used a greater number of first-person plural and lesser number of first-person singular as compared with nonleaders. As will be discussed in the meta-analysis of all five studies below, we use this initial study as the first test of pronoun differences and later introduce the overall effect size data.

Study 2: Task-Oriented Computer-Mediated Online Dyads

Study 2 extended the study of pronouns and social hierarchy by using a very different, online and textual, context and by using self-reported power. Power is defined as the relative degree of asymmetric control or influence an individual has within a situation (i.e., Blader & Chen, 2012; Emerson, 1962; French & Raven, 1959; Galinsky, Gruenfeld, & Magee, 2003; see, Cheng et al., 2013, for review). Interactions took place online to avoid potential nonverbal confounds that can influence face-to-face interactions (e.g., facial expressions, body movements), thus language was textual. In the study, participants worked in pairs to solve a series of complex problems. Although in separate

Table 1. Paired *t*-Test Comparison of Language Use by Leadership Status for Study 1.

	Examples	Leader	Nonleaders	SD	p value
Word count		1076.90	645.00	604.96	.00
All pronouns		19.80	20.70	2.40	.01
Personal pronouns	I, we, she	10.10	10.60	1.79	.06
First-person singular	I, me	4.30	5.60	1.85	.00
First-person plural	We, us	2.10	1.60	0.98	.00
Second-person	You, your	2.70	2.50	1.13	.20
Third-person singular	She, he, her	0.07	0.09	0.18	.50
Third-person plural	They, them	0.83	0.85	0.64	.84
Impersonal pronoun	It, that	9.70	10.10	1.42	.06

Note. Except for word count, all mean values reflect mean percentage of all words used by participants. So, for example, across all leaders' transcripts, 19.8% of their words were pronouns. p Values are based on paired *t*-test comparisons between leader and nonleader, with 40 degrees of freedom, two-tailed tests.

rooms, participants interacted via an online chat room in order to come up with their groups' answers to each of the problems. The goal, then, was to determine the degree to which the discrepancy in self-reported status between the pairs of participants was correlated with pronoun use.

Procedure

Overall, 112 introductory psychology students (56 females and 56 males; mean age = 18.8 years; $SD = 1.1$) participated in same-sex groups for course credit.

Participants were recruited in unacquainted groups of four to six. They were assigned to pairs and instructed to work together using instant messenger on general aptitude questions. Participants had up to 20 minutes to complete the task. They then completed the Interaction Rating Questionnaire (Niederhoffer& Pennebaker, 2002). Two of the 38 Interaction Rating Questionnaire items assessed perceived power: "To what degree did you control the conversation," and "to what degree did you have power in the conversation?" where 1 = *not at all* and 7 = *a great deal*. Because the correlation between the two items was high ($r = .74$), the items were summed to yield an overall power dimension.

Texts from each participant were converted into separate text files. There was agreement regarding who was higher in power—the higher one member of the pair scored on power, the lower the other's status self-rating, $r(54) = -.38, p<.05$.

For each pair, relative power was computed by subtracting the self-rating of power of the higher rated member of the pair from the member with the lower rated power. Similarly, relative pronoun use was determined by subtracting the higher power member's percentage of pronoun use for each category from the lower power member's percentage of pronouns. Finally, simple correlations were computed between the power difference score and each of the pronoun difference scores.

Table 2. Correlation Coefficients of Language Use and Social Hierarchy Across Studies 2, 3, 4, and 5.

	Study 2: Instant messenger— power (N = 56 pairs)	Study 3: Get to know you— power (N = 50 pairs)	Study 4: E-mail— status (N = 9)	Study 5: Iraq letters— status (N = 40)
Word count	.40**	.33*	.09	−.59**
All pronouns	−.39**	−.07	−.28**	.07
Personal pronouns	−.32*	.00	−.32**	.19
First-person singular	−.55**	−.30*	−.43**	−.27#
First-person plural	.34**	.15	−.01	.07
Second-person	.05	.15	.04	−.51**
Third-person singular	.05	.12	.00	−.13
Third-person plural	−.21	.27#	−.10	−.04
Impersonal pronouns	−.25#	−.09	.01	−.16

Note. Correlations are between power/status scores and language difference scores (sent minus received) computed within each pair. Positive correlations indicate that the participant used more of the particular word group (compared with their correspondent) when the participant was rated as higher in social hierarchy.
#.06 <p≤ .1. *p≤ .05 level. **p≤ .01.

Results

A forced entry multilinear regression was conducted to examine whether difference in pronoun use predicted difference in perceived power. Similarly to Study 1, six pronouns were used as the independent variables (I, we, you, she/he, they, impersonal) and perceived power difference was used as the dependent variable. As described above, rather than using actual pronoun use and overall power, we used difference in pronoun use and difference in perceived power. Overall, the six predictors produced an adjusted R^2 of .31, $F(6, 49) = 5.04$, $p< .01$, for the prediction of power. Subsequent analyses were conducted on pronoun categories using the difference scores correlations explained above.

As can be seen in the first column of Table 2, almost half of the correlation coefficients between the differences in power and differences in pronouns were statistically significant.

The largest effect was for first-person singular. The individual higher in rated power used fewer first-person singular pronouns as compared with the individual lower in rated power. In addition, power difference was positively related to difference in use of second-person plural. Study 2 replicated the major findings of Study 1 using a very different design.

Study 3: Informal Face-to-Face Dyadic Conversations

The third study explored how language patterns emerge when two people simply talked about everyday topics face-to-face, using self-reported power as an indicator of position within the social hierarchy. Power was defined and evaluated in the same manner as Study 2. Pairs of individuals were escorted into a small room to have a 10-minute get-to-know-you conversation. Their conversation was videotaped and later transcribed. Participants rated themselves on relative power after the interaction. Power discrepancy was correlated with pronoun use.

Procedure

Introductory psychology students (50 females and 50 males; mean age = 19.5 years, *SD* = 1.5) participated for course credit. Two pairs were excluded because of a computer error. Participants were recruited to the lab in unacquainted same-sex pairs. Each pair engaged in a videotaped 10-minute "get to know you" interaction. They then completed the same postquestionnaire (IRQ) as in Study 2. Analyses were identical to those used in Study 2. Consistent with Study 2, there was high agreement within each pair regarding who had higher power $r(48) = -.46, p < .01$.

Results

A multiple linear regression, using forced entry, was employed to examine whether difference in pronoun use predicted difference in perceived power. Six pronouns were used as the independent variables (I, we, you, she/he, they, impersonal) and difference in perceived dominance was used as the dependent variable. Overall, the six pronouns produced an adjusted R^2 of .04, $F(6, 42) = 1.34, p = ns$, for the prediction of dominance. However, because previous studies presented in this article suggest that certain pronouns are linked with being high versus low in power, subsequent analyses were conducted on individual word categories using the difference scores correlations.

As can be seen in the second column in Table 2, the pronoun differences between high and low power participants were relatively modest compared with the first two studies. Nevertheless, the pattern of effects remained consistent in that those rated as higher in power used fewer first-person singular pronouns and used marginally greater amount of third-person plural than those lower in power.

The third study is interesting primarily because the power effects associated with language—especially first-person singular pronouns—emerged even though the context was not explicitly task-oriented.

Study 4: Natural Written Language Use in E-Mail

The fourth study sought to replicate the language and social hierarchy effects by analyzing people's incoming and outgoing e-mail using self-reported status based on actual position. Status is defined as the relative degree to which an individual is respected or

admired by others (i.e., Anderson &Kilduff, 2009a, 2009b; Blau, 1964; Fiske, 2010; Ridgeway & Walker, 1995; see Cheng et al., 2013, for a review). Nine volunteers provided anonymized e-mail correspondence for 11 to 20 other individuals. The volunteers then provided ratings of relative status for each correspondent, thus allowing examination of actual status differences (i.e., professor vs. graduate student).

Procedure

Participants consisted of five male and four female volunteers with varying degrees of education (e.g., faculty, graduate student). Participants selected at least 10 people for whom they had received and sent a minimum of 10 e-mails. Overall, 127 correspondents were identified (or 14.1 correspondents per volunteer ranging from 11 to 20). The mean word count was similar for sent and received e-mails (mean word count for all received = 6,903, *SD* = 10,659; mean sent = 6,959, *SD* = 17,137). After selecting their correspondents, participants rated their own status relative to each correspondent where 1 = *Other has much lower status* and 7 = *Other has much higher status*.

Usage of pronouns relative to each correspondent was assessed by computing difference scores for each pronoun variable (subtracting the sent e-mail variables from received e-mail variables). For example, if a given participant had 10 correspondents in all, 10 rows of difference scores representing each correspondent were available. The relative pronoun use was then correlated with the relative status of each correspondent for each of the 9 participants. These correlations were then averaged for each of the 9 participants. Mean within-subject correlation coefficients, then, served as the dependent variables.

For each language correlation, a single-sample *t* test was calculated to determine if the mean correlation was significantly different from zero.

Results

A forced entry multiple linear regression was conducted comparing pronouns between people who perceived themselves as high status versus low status. Since there were 9 participants with varying number of targets with different relative status, we partialed out the variance attributable to each participant from status difference and used the resulting unstandardized residual score as the dependent variable for our analysis. Similar to the previous two studies, we used six pronoun difference scores as our independent variable (I, we, you, she/he, they, impersonal). Overall, the six pronouns produced an adjusted R^2 of .18, $F(6, 111) = 5.46$, $p< .01$, for the prediction of the residualized status difference score.

As can be seen in Table 2, status was negatively correlated with personal pronouns. This effect was mainly driven by first-person singular pronouns. Unlike the previous studies, particularly the explicitly task-oriented studies, this study reflected fewer linguistic differences overall. However, it is important to note that this study completely ignored the context and purpose of each e-mail—some could have been work-related, whereas others could have been more personal. Additionally, e-mail is an interesting

medium of communication because it is asynchronous, meaning turn taking is not continuous in time.

Study 5: Natural Written Language Use in Iraqi Military Letters

Study 5 examined natural language use in letters in the context of objective military rank, so actual status. Thus, similar to Study 5, status is defined as the degree of respect and admiration an individual receives relative to others (Anderson & Kilduff, 2009a, 2009b; Blau, 1964; Fiske, 2010; Ridgeway & Walker, 1995; see Cheng et al., 2013, for review). Following the fall of the Iraqi regime in 2003, the U.S. government acquired large caches of documents including letters written among soldiers in the Iraqi military. As part of a massive document archive project, the Department of Defense commissioned the translation of military letters and other documents from Arabic into English. This publically available data set, part of the Iraqi Perspectives Project, includes extended discussions about the translation procedures (Woods, 2007).

For the current study, we downloaded the first 40 within-military letters of which half were written by higher ranked officers to lower ranks and the remainder written by lower ranks to people of higher ranks. The goal was to evaluate if comparable pronoun differences existed in social hierarchies translated from a very different culture, language base, and social context. Social hierarchy was defined as actual position within the military.

Procedure

Data consisted of 40 letters written by different individuals associated with the regime of Saddam Hussein. Twenty letters were between low-status senders and high-status recipients (e.g., member to director and director to secretary of the President). Another 20 letter samples were between high-status senders and low-status recipients (e.g., Major General to office secretary, and Major General to Brigadier General).

Results

Initially, a multivariate analysis of variance was conducted comparing pronoun use between people who were high status versus low status within the regime. Overall, the status main effect was significant, $F(6, 33) = 3.45$, $p < .01$.

Analyses were conducted on individual word categories using paired t tests comparing the high-to-low and the low-to-high status conditions. As can be seen in Table 2, lower status senders used marginally more first-person singular pronouns as compared with higher status senders. Higher status senders used significantly more second-person singular (you) relative to lower status senders.

Despite a slightly different pattern of results in this study, the findings point to the same general idea as the other studies; high status is linked with attention toward others and low status is linked to self-attention. The fact that these findings held despite

Table 3. Meta-Analysis Combing Effect Sizes (Cohen's *d*) of Language Effects From All Five Studies.

	Study 1: Group (N = 41 groups)	Study 2: Instant messenger (N = 56 pairs)	Study 3: Get to know you (N = 50 pairs)	Study 4: E-mail (N = 9)	Study 5: Iraq letters (N = 40)	Overall effect size	*p* value
Word count	1.08	.86	.69	.16	−1.40	.58	.00
All pronouns	−.53	−.84	−.14	−.53	.16	−.42	.00
Personal pronoun	−.40	−.67	.00	−.61	1.50	−.20	.07
First-person singular	−1.02	−1.30	−.62	−.86	−.21	−.85	.00
First-person plural	.77	.71	.30	−.02	.16	.49	.00
Second-person	.27	.10	.30	.07	1.13	.29	.01
Third-person singular	−.17	.10	.24	.00	−.25	.03	.76
Third-person plural	−.04	−.42	.55	−.18	−.25	−.01	.95
Impersonal pronouns	−.41	−.51	−.18	.02	−.31	−.34	.00

Note. This is a table of effect sizes (Cohen's *d*). The overall effect size is a combination of the five studies. A positive number denotes that high-status individuals use that particular category more than low-status individuals.

the entirely different contexts demonstrates the robustness of the effect. Not only do these results reflect that more rigid contexts, including those with a more formalized hierarchy, result in similar attentional biases, but they also suggest that this effect may hold across cultures.

Meta-Analysis of the Five Studies

Despite the varied methodologies and analytical strategies, the results were generally consistent. Using different routes of social hierarchy, including manipulated leadership, self-reported power, self-reported status, and objective military rank, in addition to different modes of language—written versus spoken speech—we explored the link with pronouns. To make direct comparisons across studies, effect sizes were computed from paired *t*-values from the first study and from correlations from the last four studies and were combined in a meta-analysis (Table 3). To simplify the discussion, position in social hierarchy will be referred to as status.

The most robust finding was the link between use of first-person singular pronoun and status. Lower status individuals used overwhelmingly more "I" across all five studies (*d* = .85) as compared with higher status individuals. In addition, higher status individuals used first-person plural (we) at greater rates (*d* = .49) relative to low-status

individuals. The fourth study, which relied on the natural use of e-mails, was the only study that did not find differences in the use of "we" between high and low status. Although less robust, use of second-person pronouns (e.g., you, your) yielded small effect sizes across the five studies, with those higher in the social hierarchy using them at a greater frequency ($d = .29$). All the studies exhibited this trend, though weakly.

Indeed, vague, tentative language as measured by the use of tentative words (e.g., maybe, perhaps) is also greater among those lower in the social hierarchy—as can be seen in the appendix. Indeed, we have included the appendix to give researchers a broader sense of all LIWC dimensions and their links to social hierarchy.

Discussion

The purpose of this project was to examine how natural use of pronouns can reflect position in social hierarchy. Using different methods (i.e., contexts, spoken vs. written language, and routes of status ascension) and different analytic strategies, several pronouns were consistently related to status. Overall, across the diverse studies, there was a large effect size for use of "I," a medium effect size for use of "we," and a small effect size for use of "you."

The most intriguing and consistent effect was the use of first-person singular pronouns. Previous studies have found that use of I-words covaries with attention to the self (e.g., Davis & Brock, 1975; Duval &Wicklund, 1972). By extension, the current research points to the robust links between self-attention and lower status. Consistent with this observation is that subordinates are most accurate at judging how leaders feel about them, whereas leaders are most accurate in judging how the subordinate is feeling (Boucher et al., 2008; Snodgrass et al., 1998).

Use of first-person plural was another reliable finding. Corroborating previous studies, "we" was used more frequently by high-status individuals as compared with low-status individuals (Cassell et al., 2006; Sexton & Helmreich, 2000). Higher use of "we" reflects the fact that high-status individuals are more collectively oriented or other-oriented. The reliable association with "you" also suggests that the focus is on the other person. This highlights the idea that higher status individuals focus their attention outward, toward the person they are speaking with.

These findings support the idea that status or relative rank is associated with attentional biases in groups. Those in a higher position in the hierarchy are more other-focused, whereas those lower in the social hierarchy are more self-focused as gauged by the use of personal pronouns. This is consistent with the notion that people in differing hierarchical positions focus their attention differently depending on what role they are in (Hall et al., 2005). Our findings also corroborate previous research suggesting that those who attain status are seen as more likely to contribute to group success and are more focused on others—more cooperative, fair, generous, collectively focused, create rapport, resolve conflicts, forge connections, and provide more help (Blader& Chen, 2012; Boehm, 1999; Flynn et al., 2006; Ridgeway &Diekema, 1989; Thibaut& Kelley, 1959).

One limitation of the present research is that it relied on undergraduate participants in Studies 1, 2, and 3. Although Study 4 used a different population, consisting of graduate students, professors, and friends of participants, the sample was not broadly representative. Additionally, this project did not directly address the question of causality. Whereas Study 1 manipulated leadership, which in turn brought about change in pronouns use, none of the studies addressed if the perception of language influenced perceptions of rank. In addition, it is not clear if manipulated language can ultimately influence changes in status. Another issue involves our use of texts that have been translated from Arabic to English. The results are as accurate as the accuracy of the translation. Finally, the idea that there are attentional biases associated with position in social hierarchy, is just one of many possibilities. Since our research did not explore the syntactic context associated with pronoun use, our findings only highlight a fraction of the entire picture. There may be more to see that can only be uncovered if we unearth each specific context within which the pronouns lie.

The current research speaks to relative rank more broadly and does not differentiate the highly interrelated components associated with social hierarchy (i.e., power, status, leadership). Despite this drawback, this research suggests that these language effects hold across various aspects of hierarchy that are complex and difficult to tease apart. For instance, people in power have control over resources or have influence over another person's outcome. Research suggests that people in power are less likely to take another person's perspective (Galinsky et al., 2006) and are more selfish. People who are of high status, on the other hand, are more generous, fair, ask for less help while providing more help, and are generally more attuned to status dynamics in exchange relations (Blader& Chen, 2012; Flynn et al., 2006). People who attain power and status are individuals who are more other-oriented (Ridgeway & Diekema, 1989) and engage socially in ways that advance the interest of the group (Boehm, 1999). The *experience* ofpower, however, can lead people to behave in self-interested ways, but groups develop informal means by which they regulate the reputations and actions of those high in power (see review by Keltner et al., 2010). Basically, group members who act in ways that systematically benefit themselves over the interests of the group, or who strive too explicitly toward the acquisition of power, or even display and exert an inflated sense of power suffer reputational costs.

Taken together, the findings shed light on the psychological states associated with status. They demonstrate that pronouns can be used as a remote sensor of group dynamics. Using a small amount of information, this technique enables a quick assessment of rank, regardless of formal hierarchical positions, such as job position or title. Because pronouns are not consciously altered (Chung & Pennebaker, 2007), they allow for the detection of status in a subtle way without using biasing self-reports or other potentially intrusive or reactive measures. Additionally, since language is essential to practically every interaction, especially online, text analysis provides a natural, easily accessible tool for analyzing interactions with status differentials.

Appendix

Effect Sizes (Cohen's ds) for All LIWC Variables Across All Five Studies.

	Study 1: Group (N = 41 groups)	Study 2: Instant messenger (N = 56 pairs)	Study 3: Get to know you (N = 50 pairs)	Study 4: E-mail (N = 9)	Study 5: Iraq letters (N = 40)	Overall effect size	p value
Word count	1.08	.86	.69	.16	−1.40	.58	.00
Large words (>6 letters)	−.49	.49	−.10	.31	−.72	−.05	.65
Function words	.14	.69	.20	−.67	−1.04	.17	.12
All pronouns	−.53	−.84	−.14	−.53	.16	−.42	.00
Personal pronouns	−.40	−.67	.00	−.61	1.50	−.20	.07
First-person singular	−1.02	−1.30	−.62	−.86	−.21	−.85	.00
First-person plural	.77	.71	.30	−.02	.16	.49	.00
Second person	.27	.10	.30	.07	1.13	.29	.01
Third-person singular	−.17	.10	.24	.00	−.25	.03	.76
Third-person plural	−.04	−.42	.55	−.18	−.25	−.01	.95
Impersonal pronouns	−.41	−.51	−.18	.02	−.31	−.34	.00
Articles	−.30	.60	.00	−.35	−.11	.09	.42
Common verbs	.37	−.16	−.18	−.43	.09	−.03	.70
Auxiliary verbs	.55	−.32	−.26	−.43	−.49	−.12	.25
Past	−.39	.24	−.20	−.33	−.05	−.17	.66
Present	.63	−.24	.04	−.49	.05	−.02	.65
Future	−.10	−.12	−.47	.02	−.26	−.17	.02
Common adverb	.47	−.32	.24	−.53	.05	−.04	.65
Preposition	.15	−.10	−.18	−.30	−.14	−.11	.19
Conjunction	.40	−.16	.36	−.12	.19	.12	.07
Negation	.10	−1.10	−.20	−.24	−.45	−.36	.00
Quantifier	.01	.00	.32	−.32	.19	.10	.04
Number	−.04	.42	.00	−.27	.07	.03	.49
Swear	−.16	−.58	−.40	.05	−.30	−.27	.01
Social processes	.54	.20	.83	−.02	.39	.39	.00
Affect	.64	−.53	−.02	−.27	−.04	−.05	.70
Positive emotion	.63	−.42	.12	−.26	.03	.02	.76
Negative emotion	.32	−.36	−.28	−.16	−.14	−.12	.19
Cognitive mechanism	−.16	−.32	.44	−.49	−.014	−.13	.90
Insight	−.34	−.02	.20	−.24	−.13	−.10	.24
Causal	−.19	.47	.51	−.11	−.86	.15	.12
Discrepancy	−.14	.18	−.22	−.33	.19	−.03	.77
Tentative	−.29	−.47	.02	−.26	−.04	−.22	.04
Certain	−.10	−.20	.36	−.05	.27	.04	.70
Inhibition	.02	.55	.26	.22	−.68	.19	.08
Inclusion	.51	.02	.32	−.26	.32	.23	.03
Exclusion	−.41	−.67	−.06	−.35	.14	−.32	.00
Perceptual processes	−.10	−.30	.02	.07	.27	−.08	.46
Biological processes	.39	−.45	−.22	−.43	−.24	−.16	.14
Relativity	.10	.20	.00	−.45	−.63	.00	.99
Motion	.00	.08	.04	.10	−.57	−.02	.86
Space	−.04	.00	−.06	−.18	−.03	−.04	.73
Time	.14	.30	−.02	−.41	.49	.15	.15
Work	−.15	.40	−.02	.91	−.36	.08	.43
Achieve	−.10	.18	−.16	−.10	−.06	−.02	.83

Note. LIWC = Linguistic Inquiry and Word Count. This is a table of effect sizes (Cohen's *d*). The overall effect size is a combination of the four studies and is weighted by sample size. A positive number denotes that high-status individuals use that particularly category more than low-status individuals.

Declaration of Conflicting Interests

The authors declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article:Pennebaker is co-owner of the LIWC software. All his profits from its sale are donated to the University of Texas.

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