Binomial Word Order and Social Status

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Social psychologists are fascinated by the extent to which social identity (Tajfel & Turner, 1986) influences social behavior, and scholars in intergroup communication seek to understand how social identity impacts the behavior of language use in particular (Ehala, Giles, Harwood, & Maes, this volume). This chapter contributes to these effects by reviewing work on the impact of social variables on the ordering of words in *binomial phrases*. In linguistics, a binomial is a coordinated pair of lexical items (Malkiel, 1959). Why would an English speaker predictably describe *Mr and Mrs Smith*'s house as *spic and span* but never describe *Mrs and Mr Smith*'s house as *span and spic*? If not grammar, what explains such preferences for seemingly equally true statements? Linguists have studied binomials for over a century with particular concern for *frozen* order preferences that cannot be explained by grammatical rules. This chapter integrates research in linguistics and psychology, and focuses on the role of social status in affecting the ordering of terms in binomials, and argues for greater attention to binomials as everyday linguistic behaviors by which social status is communicated. We argue that there is already convergent evidence to ground a nuanced social psychology of gender binomials such as *Mr and Mrs*. We build on this this evidence to consider how status affects binomial order more generally here, and we suggest novel directions for future interdisciplinary research on this everyday linguistic phenomenon.

BINOMIAL WORD ORDER

We first position binomials with respect to broader discussions of order in linguistics. In linguistics 'word order' typically refers to constituent ordering systems, which vary across human languages, and not to binomial order. All possible orderings of verb (V), subject (S) and object (O) are represented in the constituent ordering system of human languages. Common forms include VSO (e.g., modern Irish), and SVO (e.g., modern English). Constituent ordering systems have enjoyed theoretical significance in linguistics since Greenberg (1963) argued that they are universally correlated to other ordering principles. For example, Greenberg's Universal No. 37 states that "[i]f the genitive precedes the noun, the object precedes the verb; if the genitive follows the noun, the object follows the verb." Constituent and intra-phrase orders are relatively fixed in most languages, but also allow speakers to shift order for pragmatic reasons, such as to direct the listener's attention. Recent research suggests that constituent ordering systems carry semantic meaning. Comparison of the imagery of speakers of SVO and VOS languages has shown that the temporal relationship between the subject and object cues the ordering of the entities represented in mental imagery (Maass, Suitner, & Nadhmi, 2014), and that causal importance is attached to entities named earlier rather than later in languages with different typological word order systems (Bettinsoli, Maass, Kashima, & Suitner, 2015).

In contrast to such systems, 'grammatically free' choices allow the language user freedom to design their communication to fit the context. *Double adjective premodification* occurs when speakers order two adjectives before a noun, by describing a *long difficult task*, for example. Wulff's (2003) corpus study on ordering factors in prenominal adjectives considered syntactic, metrical, semantic and pragmatic factors and concluded that semantic factors were most influential in the ordering of adjectives (e.g., the adjective that is semantically *closer* to the noun is placed directly next to the noun). We know of no social psychological studies of this phenomenon, but suggest that systematic studies are possible. Does a *Black gay man* appear to be more identified with his sexual identity, and a *gay Black man* more with his ethnic identity? In some contexts, adjective order may communicate information about identity and intergroup relations.

Binomial order is similarly grammatically free. The most common conjunction used in binomials is *and,* and about one third of the uses of *and* in English occur in binomials. Binomials are more common in formal writing and less common in speech. They more commonly link nouns than verbs, adjectives, adverbs or other parts of speech (Mollin, 2014, p. 23–32). Binomials may join bare lexical items (e.g., *men and women*) or more complex phrases (e.g., *all the men and the young women,* or *pretty good and pretty bad*). Corpus linguists have focused on the former kind, largely for pragmatic research reasons. Our focus here is similarly on binomials of the form NOUN *and* NOUN.[1]

Semantic and phonological factors have predominated among explanations of order preferences in binomials. Early linguists noted tendencies for shorter words (Behaghel, 1909) and more positive words (Abraham, 1950) to appear first (for a fuller discussion, see Mollin, 2014). One classic early statement emphasized that binomials are not simply either 'frozen' or completely free to vary, but vary continuously along a 'cline,' or continuum, of reversibility (Malkiel, 1959: 116). In an influential essay, Cooper and Ross (1975) drew together all hitherto proposed rules and posited some new ones based on a list of binomials they had assembled which all seemed to have relatively frozen order. Their discussion culminated in their hierarchy of constraints governing order in binomials, positing that a semantic constraint would override a number of hierarchically ranked phonological ones (concerning syllable number, vowel quality and quantity of the main vowel, or number of initial and final consonants). They termed this super-ordinate constraint the 'Me-first principle': "[f]irst conjuncts refer to those factors which describe the prototypical speaker (whom we will sometimes refer to as "Me" (Cooper & Ross, 1975, p. 67). The Me-first principle subsumes some twenty sub-constraints, including positive before negative, male before female, insider before outsider and others.

Corpus linguists have since tested diverse explanations of preferences for order in binomials in English. Benor and Levy (2006) considered a small number of binomials that they extracted randomly from corpora. Lohmann (2014) compared a sample of high-frequency fixed binomials and low-frequency flexible ones. Motschenbacher (2013) focused on binomials that reference gender, and Mollin (2014) tested constraints on high-frequency binomials across the whole cline of reversibility. Despite some smaller differences in findings, these studies converge on the conclusion, also suggested by Cooper and Ross (1975) that binomial order is primarily the result of semantic factors.

Benor and Levy (2006: 238) split Cooper and Ross' (1975) me-first super-ordinate category into three distinct semantic constraints: *power* (put the socially dominant first), *iconicity* (maintain temporal or logical sequence found in the world), and *perceptual markedness* (put the perceptually unmarked first). These three semantic factors were found to explain the ordering of different kinds of binomials. Power best explained binomials that refer to humans, including social groups. Iconicity ordered entities that could be ordered sequentially, but did not generally apply to binomials with human referents. Perceptual markedness ordered cognitive dimensions such as *concrete and abstract, front and back, vertical and horizontal,* etc. In sum, the determinants of binomial order vary according to the entities being referenced.

Cognitive psychologists' experiments have led to similar conclusions. Pinker and Birdsong (1979) asked speakers of English and of French to indicate preferences for sentences containing nonsense syllables within French and English sentences. Their results supported a preference for positioning the shorter word first,

but other hypotheses about phonology received less support. Kelly, Bock, and Keil (1986) drew on the finding that more prototypical category members are more accessible than atypical ones (Rosch & Mervis, 1975), and argued that prototypical things should precede atypical things in binomial phrases. This hypothesis was supported both by participants' self-reported preferences and their errors in remembering binomial phrases. McDonald, Bock, and Kelly (1993) examined semantic and phonological features concurrently, also via memory distortions. They found supportive evidence for Cooper and Ross' (1975) "animate first" rule, but no preference to recall binomials by putting shorter words before longer ones. These experiments broadly concur with the corpus linguists' findings. Phonological factors affect order preferences (Pinker & Birdsong, 1979) but are outweighed when language carries semantic meaning (McDonald et al., 1993). Prototypicality emerges as an important semantic dimension in both lines of research, as does the concept of agency via the constructs of *animacy* (McDonald et al., 1993) and *power* (Benor and Levy, 2006).

THE ROLE OF BINOMIALS IN INTERGROUP COMMUNICATION

The convergence on the importance of semantics across linguistics and psychology studies suggests the possibility that binomial order might communicate intergroup relations. In the context of debates about sexist language, Bodine (1975) noted that clear sexist prescriptions have existed in English to order men before women in binomial phrases to mark differences in people's worth. Very few social psychologists have noted the possibility that binomials that name men before women might express relationships between gender groups or between individual members of those groups (for exceptions to this rule, see Brown, 1986; Weatherall, 2002). However, two social psychological studies of binomial order in English concur that binomial order preferences are affected by roles, relationships, social identities and stereotypes in context-specific ways.

McGuire and McGuire (1992) asked participants to rate different binomial order combinations and to generate combinations, and these authors further analyzed frequency of binomial orders in written and spoken corpora. Their participants preferred to order kin terms in binomials with closer kin members first and in age hierarchies that named people in older generations first (e.g., *mothers and daughters*). Both the formulation *friends and family* and the tendency to list spouses before other kin (*my husband and my brother*) led McGuire and McGuire (1992) to infer that 'voluntary' relationships had particular influence on binomials. Second, Hegarty, Watson, Fletcher and McQueen (2011) focused on binomials which named two members of a romantic partnership. Participants named heterosexual couples among their friends and families by naming same-gender partners first,

consistent with people' tendencies to feel closer to members of their own gender (Caldwell & Peplau, 1982). Similarly, greetings within heterosexual couples' Christmas cards first addressed whichever member of the couple was closer to the card's sender. Consistent with McGuire and McGuire's findings, Hegarty et al. (2011) found evidence of a Me-first principle appearing to govern the naming of individuals in couples that are known well.

Both studies also found evidence for a male-first rule that applied most when naming people *not* close to the speaker. McGuire and McGuire (1992) found a preference to name males first when naming categories outside the family (e.g., *men and women*) and female-first forms inside the family (e.g., *mother and father*). Hegarty et al. (2011) reasoned that gender stereotypes influenced order when couples are not well known, consistent with social psychological predictions that *unfamiliar* people are most likely to be stereotyped (Fiske & Neuberg, 1990). In three experiments, they asked women and men to call to mind imaginary couples and to write down their names. Participants wrote men's names before women's more often when imagining couples that conformed to gender stereotypes than transgressed them, or couples that married in recent historical time rather than earlier decades. Participants asked to imagine same-sex couples imagined the first-named partner to possess more masculine attributes and the second-named partner more feminine attributes regardless of whether the couple was female or male.[2]

These two studies suggest that gender influences binomial order in context-specific ways that provide a basis for integrating linguistics and the social psychology of gender. Corpus linguists have described male-first preferences as fitting the power rule, allowing that binomials communicate information about intergroup relations (Benor & Levy, 2006; Mollin, 2014). Social psychologists insist that gender is not a simple dominance relationship (Pratto & Pitpitan, 2008), but one sustained by paternalistic beliefs and prescriptive stereotypes about the superior morality and goodness of women (Glick & Fiske, 1996; Jackman, 1994; Pratto & Walker, 2004). Such beliefs sustain interdependence between women and men by prescribing the warmth of wives and mothers in patriarchal families. Stereotypes are a case in point. Men are often stereotyped as 'agentic' kinds of people and women as 'communal' kinds of people to justify and prescribe a division of labor into breadwinner and homemaker roles (Eagly, 1987; Fiske, Cuddy, Glick, & Xu, 2002).

For several reasons, context-specific preferences for binomials fit better this more subtle description of gender ideology than with the simpler notion that men dominate women. Recall that male-first preferences in binomials apply only *outside* the family context (Hegarty et al., 2011; McGuire & McGuire, 1992) where men have greater status. They do not apply among kin, where paternalistic beliefs about women sustain men's status and intimacy between kin. This emphasis on context also explains shifts in patterns of binomial preference over historical

time. At first glance, the strong preference for *ladies and gentlemen* over *gentlemen and ladies* in contemporary English (99%) appears to demonstrate a phonological rule to put the shorter word first. However, recently digitized documents have allowed the discovery of a preference reversal from *gentlemen and ladies* to *ladies and gentlemen* in the late 18th century in British newspapers (Hegarty, 2014, p. 75) and British books (Mollin, 2014, p. 150), possibly due to changing politeness conventions. Second, consider the case of binomials that name parents. Mollin (2013) tracked changes in order of some 200 binomials during the 19th and 20th centuries using Google n-gram data. This analysis showed that *father and mother* was preferred in the 19th century, and *mother and father* in the 20th (Mollin, 2013). In the late 19th century, the norm that middle-class women and men had 'separate spheres' in the private home and in public life became common, whilst economic gender inequality became more entrenched (Vickery, 1993). Third and finally, Mollin (2013) found that preferences for male-first forms of several gendered binomials have weakened since the 1970s, and prior to McGuire and McGuire's (1992) study of them. This trend co-occurred with increasing support for gender equality in English-speaking countries and increasing attention to gender-fair language. Historical shifts in status of women and men are correlated with historical changes in binomial order preferences in English.

A social psychological approach to binomials also emphasizes that one's social identity can include the social groups to which one refers in variable situation-specific ways (Tajfel & Turner, 1986). As two of us have pointed out (Hegarty, 2014; Mollin, 2014), Cooper and Ross' (1975) Me-first framework subsumes the male-first preference, allowing only men to be 'Me.' Theories that conflate men and maleness with the general case, to women's disadvantage, are *androcentric* (Hegarty, Parslow, Ansara, & Quick, 2013), and Cooper and Ross' (1975) assumption that the Me-first rule explains the preference for *men and women* over *women and men* is a non-trivial analytic error; *men and women* is the most common binomial phrase in English (Mollin, 2014). Women and men may show different binomial order preferences in some contexts to the extent that binomial order expresses social identity.

To explore this possibility we examined the effects of speaker gender on binomial order preferences. Motschenbacher (2013) has previously shown that preferences for male-first forms of *men and women* and *fathers and mothers* are stronger both among men than women speakers and among speakers addressing male rather than female listeners. We examined speaker gender differences more broadly using the British National Corpus (BNC), a 100-million word corpus compiled in the 1990s that contains gender information on many authors and speakers. Among all the binomials that occur more than one hundred times, in either order, summed together, thirty-three reference two human groups. Seventeen of these pairings reference two gender groups. Among these seventeen gendered

pairs, there is a strong male-first preference, with the female-first variants typically only occurring in 10% of cases or fewer. Eight of the seventeen common pairs that reference groups that differ by gender are used often enough by both female and male speakers in the written component of the BNC to be analyzed for gender differences (see Table 1). But for the frozen binomial (*Mr and Mrs*), male speakers show a stronger preference for male-first orders throughout. Overall these findings show that male-first preferences are moderated by speaker gender, but least moderated for those binomials that formally mark a pair as a married couple. We return to this point about marriage in the conclusion of this chapter.

Table 1. Count and Percentage of Male-First Binomial Phrases by Writer Gender (in BNC).

	Female Writers		Male Writers	
	Count	Male-First	Count	Male-First
Binomial Phrase				
men and women	478	79.1%	606	96.5%
male and female	102	78.4%	148	93.9%
Mr and Mrs	115	100%	129	100%
husband and wife	92	90.2%	137	99.3%
boys and girls	69	65.7%	150	81.3%
brothers and sisters	74	97.3%	94	97.9%
man and woman	49	93.9%	77	97.4%
brother and sister	66	84.9%	52	94.2%
Total	1045	83.6%	1394	95.3%

This social psychological perspective on binomials can inform research on related linguistic phenomena, such as the preference for masculine generics. Bodine (1975) noted that the generic *he* is a contraction of *he and she* that was prescribed for formal English by an 1850 Act of the British Parliament. In recent decades, experiments have shown that undoing the prescriptions of this act by substituting *he* with male-first binomials such as *he and she* increases the representation of women in the listener's mind (e.g., Hyde, 1984; see Gabriel & Gygax, this volume). Consequently, research on masculine generics often describes male-first binomials as gender-neutral or gender-fair language, overlooking the influence of male dominance on binomial order preferences. For example, consider Item 19 of Parks and Roberton's (2000) measure of Attitudes to Sexist Language: *How willing are you to use the expression "husband and wife" rather than "man and wife"?* We do not doubt either that "husband" and "man" signal different relationships to the "wife," or that the scale is valid. However, such assumption that male-first binomials are non-sexist language are common in the social psychological literature on generics.

A second area that can be informed by such work concerns order preferences in seemingly abstract domains. The spatial agency bias is a tendency to order social groups with the group stereotyped as being more agentic being positioned first, according to the direction of the speaker's written language in the left-right axis (Maass, Suitner, Favaretto, & Cignacchi, 2009). Hegarty, Lemieux, and McQueen (2010) reported a similar preference to order data in graphs with data representing men ahead of data representing women. To investigate this preference, participants were asked to graph the difference between two social groups in one of eight attributes that defined the two ends of four semantic continua; power-weakness, importance-marginality, typicality-unusualness, and masculinity-femininity. The resulting graph presented first the data representing the group that possessed more of the named attribute, likely because of an availability effect (see also Kelly et al., 1986). In addition, powerful groups were graphed first more than other higher status groups, and *weak* groups were graphed second more often than other low status groups. Consistent with the contextual approach to power adopted here, participants preferred to graph the powerful British queen ahead of her less powerful male relatives (consistent with the preference to name *Victoria* before *Albert* in binomials in English, Mollin, 2014). In words and graphs a contextual approach to order is required; men may precede women, but reigning queens precede their lower status male consorts.

FROM GENDER TO STATUS

Studies of gender binomials provide a footing from which to consider how other status relationships might affect order. In the BNC, several phrases refer to generational groups (e.g., *father and son, mother and baby*), with an overwhelming tendency to put the older generation first, as in McGuire and McGuire (1992). Some frequently occurring binomial pairs do suggest a role for status, such as *landlord and tenant* (98% in this order). However, as Mollin (2014) notes, the vast majority of binomial phrases in corpora are *hapax legomena*; they occur only once in the entire corpus, and the BNC does not yield sufficiently frequent cases to consider the question of status comprehensively in most cases. We therefore examined selected binomials juxtaposing high- and low-status professions in the far larger, 155-billion-word American English Google Books n-gram data (accessed via the BYU corpus linguistic platform at <corpus.byu.edu>). These binomials generally exhibit Benor and Levy's (2006) preference to position the higher-status group first, but this preference falls lower on the cline of reversibility than do gender binomials. None of the 26 tested binomials had a higher proportion for the preferred order than 90% (see Table 2). Like married partners, many of these occupational groups, such as *doctors and nurses* or *architects and craftsmen* are interdependent collaborators *and* unequal status partners. Such

findings about status raise the question of whether stereotype activation will cue binomial order in the more abstract domain of *status* as well as in the domain of gender (Hegarty et al., 2011). We report two experiments that examined this question next.

Table 2. Ordering of Binomial Phrases Referencing Professional Groups (Google Books American English n-gram Data).

	phrases this order	phrases reverse order	% this order
doctors and nurses	56839	15077	79.0%
employers and employees	56695	10806	84.0%
architects and builders	7271	1893	79.3%
engineers and mechanics	2572	1095	70.1%
tradesmen and mechanics	1572	1348	53.8%
doctors and midwives	1520	685	68.9%
pilots and mechanics	1954	232	89.4%
doctors and therapists	1142	282	80.2%
architects and craftsmen	777	164	82.6%
doctors and administrators	673	240	73.7%
architects and masons	597	296	66.9%
doctors and technicians	672	146	82.2%
clerks and mechanics	439	321	57.8%
doctors and attendants	627	131	82.7%
teachers and janitors	605	82	88.0%
architects and workmen	383	46	89.3%
doctors and orderlies	335	90	78.8%
doctors and counselors	245	104	70.2%
architects and carpenters	217	115	65.4%
doctors and interns	194	44	81.5%
doctors and policemen	140	77	64.5%
doctors and paramedics	128	63	67.0%
doctors and undertakers	218	<40	*
doctors and assistants	195	<40	*
architects and mechanics	102	<40	*
Total	135597	33337	80.3%

* The Google Books n-gram data report all items that occur less than 40 times in the corpus as 0. As a consequence, percentages are not calculated for the last three cases.

Experiment 1: Status-Related Stereotypes and Word Order in Binomials

Hegarty et al. (2011) demonstrated that *stereotype activation* can directly affect binomial order preferences. Here we activated status-related stereotypes to examine their effects on participants' ordering of the names of social groups. Higher-status groups are typically attributed higher levels of *agentic* traits than lower status groups, whilst groups stereotyped as warm are typically perceived to be in collaborative relationships with the in-group (Fiske et al., 2002). Accordingly, we hypothesized that cuing participants to call to mind groups that differed in agentic traits would cue a word order preference, but that cuing warm traits would not.

Sixty seven on-line participants (39 women, 26 men, 2 unreported, mean age = 32.78 years) were briefed that "the study is about the ways that social groups are seen as different in our society. We will show you different traits or characteristics, on the left side of the page, and ask you to type in two groups that might differ on that trait." Each participant was sequentially presented with three traits; *competence, warmth,* and *strength.* Two boxes to the right of the trait were labeled "Group 1" and "Group 2." The participant typed in the names of two groups, and then the next trait was shown. After the last trait, the computer re-presented the first group listed for *competent,* followed by the first group listed for *warmth,* followed by the first group listed for *strength,* and each trait was rated on a 10-point scale for the extent to which it possessed the relevant trait. These ratings were then repeated for the second group listed for each trait. Finally, Group 1 and Group 2 from each trait were re-presented and participants indicated which of the two groups had higher status.

Because our hypotheses concerned social cognition, we excluded cases in which participants had listed something other than human social groups (18–31% of cases by trait). We tested for participant gender differences in both experiments, but none were found and so data from women and men are analyzed together here. Only eleven participants (i.e., 16.4%) generated the names of gender groups, such that the experiment assessed order preferences beyond thinking about gender. More participants attributed higher status to Group 1 than to Group 2 when prompted to think about competence (N=38, 17 respectively) and strength (N=39, 15), but not when prompted to think about warmth (N=22, 24 respectively).[3] Activating agentic traits, but not a warmth-related trait, prompted the preference to name higher-status groups first.

Two possible mechanisms could explain such a finding. First, participants may have called to mind groups that possess strength or competence ahead of those who lacked it, consistent with Kelly et al.'s (1986) prototypicality hypothesis. Alternatively, the instructions may have activated direct associations between social cognition and word order. The difference between these two interpretations has psycholinguistic importance. Some models of grammatical encoding presume that positioning words in binomials occurs late on and is influenced by lexical

accessibility and not by semantic factors (Levelt, 1989; see Lohmann & Takada, 2014 for discussion). Such models of encoding are only consistent with the first prototypicality interpretation, but the second direct association interpretation is supported by the data. Participants did not rate Group 1 as having greater competence or strength than Group 2, but unexpectedly rated Group 1 as less warm than Group 2 (Ms = 2.07, 3.54).[4] The findings can be explained by a semantic association between status and order rather than an effect of lexical accessibility, suggesting that semantics affect language production to a greater extent than some psycholinguistic models allow.

Table 3. Mean Attribution of Status-Related Traits in Experiment 2 (with Standard Deviations).

Dimension		Higher Status Trait		Lower Status Trait	
		First Group	Second Group	First Group	Second Group
Importance	M	5.14	4.28	4.92	3.76
	SD	(2.00)	(2.31)	(2.19)	(2.09)
Typicality	M	4.57	3.73	5.19	4.78
	SD	(2.18)	(1.97)	(1.96)	(1.93)
Masculinity	M	5.00	4.33	4.28	4.64
	SD	(2.03)	(1.87)	(1.99)	(1.55)
Power	M	6.05	3.26	3.73	4.33
	SD	(1.41)	(2.04)	(2.21)	(1.87)

Experiment 2: Status-Related Semantics and Order Preferences
Experiment 2 extended Hegarty et al.'s (2010) study of graph order to explore which attributes that are semantically close to social status might cue word order. One hundred and forty-three women, 165 men and five participants who did not indicate a gender were recruited online (mean age = 33). Instructions were the same as in Experiment 1. Participants were randomly assigned to eight conditions defined by the two poles of four semantic dimensions; powerful-weak, important-irrelevant, typical-unusual; masculine-feminine. In other words, participants were asked to call to mind two groups that differed in how powerful, important, typical, masculine, weak, irrelevant, unusual, or feminine they were. The nouns representing the two groups that the participants listed were re-presented on two subsequent screens in the participant's order and rated for the possession of the trait relevant to their experimental condition from 1 (*Not at All*) to 7 (*Very Much*).

The results are shown in Figure 1. Across the experiment as a whole, statistical analysis showed that the participants gave higher ratings on the higher status traits to Group 1 than Group 2, but rated Groups 1 and 2 equally on the lower status

traits.[5] However, this effect was due to the effects of order in the power-weakness conditions. For the dimension of importance, Group 1 was consistently rated more important than Group 2. For the dimension of typicality, groups were rated as more *typical* than *unusual* overall. There were no effects of order on masculinity-femininity. However, for the dimension of *power*, the participants attributed vastly more power to Group 1 than Group 2, but equal *weakness* to these groups.[6] This interaction replicated the pattern in Hegarty et al.'s (2010) study of graphing, showing an association between order and power consistent with findings from corpus linguistic findings reviewed earlier.[7] With this initial extension of the social psychology of binomials from gender stereotyping to status stereotyping demonstrated, we now draw together conclusions and make suggestions for future research.
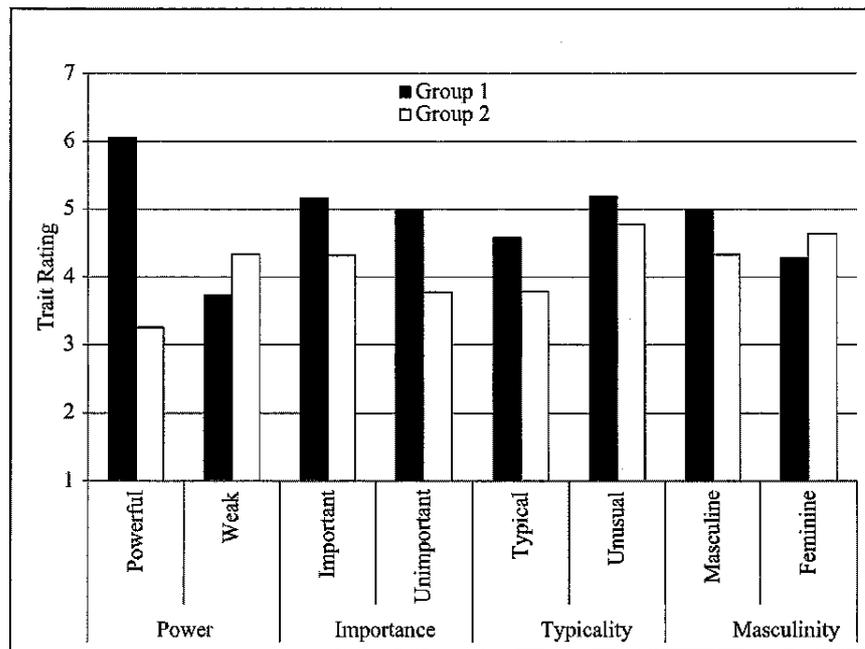

Fig 1. Ratings of First and Second Named Social Groups on Attributes (Experiment 2).

CONCLUSIONS

This chapter has integrated linguists' and psychologists' findings about binomial order. Semantic factors predominate over other factors in determining binomial order. Gender binomials are very common in English, and the ways that people order terms within them — such as categories, kinship relationships, and names

are affected by personal relationships, gender stereotyping, and historically specific norms for word order. In recent decades, male-first preferences have been unfreezing as beliefs about the equality of women and men become more normative. However, binomials that identify women and men as married couples remain comparatively frozen, as does the tendency to name 'masculine' partners first in romantic relationships.

These persistent gender binomials may be the best examples of how status-related beliefs determine the ordering of groups' and individuals' names in binomials. When thinking about human groups, only status-related traits cue the word order (Experiment 1), and there is a direct association between power and word order (Experiment 2). Power and status are sometimes conceptualized as very similar constructs, such that power is a property that allows a group or individual to influence outcomes for others (Fiske, 1993). One intriguing conclusion that could be drawn from this research is that strong, competent, powerful groups and masculine romantic partners are positioned first because they are seen to *cause* outcomes for lower power groups more than the reverse. Whilst this conclusion is consistent with emerging research on typological word order systems (e.g., Bettinsoli et al., 2015), our contextual approach would argue against the attribution of these findings to a universal preference to put agentic things first in English sentences, and for several reasons. First, our findings and discussion are confined to English, but speakers of other languages, such as Georgian, position women before men, whilst living in societies marked by male dominance (Motschenbacher, 2013). Second, the spatial agency bias follows from stereotypes about groups' agency. Benor and Levy's (2006) iconicity rule is very close to such an explanation, but that rule was found to apply more to non-social than to social entities. Third, in Experiment 1, the psychological properties that could be used to exert agency strength and competence were attributed equally to first and second named groups. Fourth, politeness has inverted the relationship between status and order in some cases in English such as *Ladies and Gentlemen*. Finally, McGuire and McGuire (1992) observed *non-transitive* preferences for *mother and father, father and daughter* and *daughter and mother* that require us to consider situation-specific determinants of binomial order preferences.

This contextual perspective urges us to consider historical reasons for continuity and for change in binomial order preferences. We may all support gender equality now more than in the past, but we may also be informed by ancient norms to 'honor thy father and mother.' Marriage appears to be a tradition that has 'fixed' the order of gendered binomials which are otherwise unfreezing in our times. Consistent with the social psychological view of gender as a relationship of both status and intimacy, the marital contract has long been a contradictory relationship in which men represent their wives politically, and women and men enter voluntarily as equals (Pateman, 1988). Perhaps this is why people so fixedly

refer to the *bride and groom* on the wedding day, but the *husband and wife* ever aft and remain likely to name the husband before the wife to the extent that we app gender stereotypes to the couple.

Power and complementarity may lead binomials naming individuals in interdependent status-marked relationships, such as couples, to fall along a cline of meaning between binomials that definitely reference one lexeme (*spic and span*) to two (*fish and yogurt*). Inviting Dan and Gareth to dinner means something different if Dan and Gareth are known to be a romantic couple or known to be two of my colleagues. My partner might make different assumptions about the event, and particularly about the interdependence of the two men's acceptance of the invitation, their arrival and departure time, and the reciprocation of the dinner invitation, for example. Mention of *doctors and nurses* could reference the hospital staff in general via two highly prototypical groups, or some difference between these two specific groups. Experimental social psychologists and corpus linguists will likely need to collaborate with discourse and conversation analysts to do justice to these issues.

Relatedly, future research on intergroup communication might consider the *performativity* of binomial order, what does a change in binomial order *do*? Consider marriage again, because the phrase "I now pronounce you man and wife" stands as *the* paradigmatic performative speech act calling into being the relationship that it names (Austin, 1962). Often the closing of the marriage vows including this male-first binomial is followed by the first time a married woman is called a *bride* and in a manner constructing the couple as intimates and the husband as more agentic; *you may now kiss the bride.* Butler (1993) has convincingly argued that the success (or 'felicity') of the marital performative follows from the speech community's recognition of the ritual as having been performed in normative ways, and that this recognition re-grounds the heterosexual identity of the couple being married. Perhaps the fixed preference for *bride and groom, men and women, Mr and Mrs, man and wife,* and *husband and wife* in English binomials all re-iterate and re-ground the felicity of the performative marital speech act "I now pronounce you..." establishing the newlyweds as an intimate, unequal, complementary pair. Accordingly, in some contexts, *reversing* conventional order may constitute a way of communicating information about identity in situational ways. (As Mollin (2014) notes, speakers of English typically refer to *newspapers and magazines* but the text of magazines themselves usually refers to *magazines and newspapers*) In our own time, *Mrs and Mrs* and *Mr and Mr* can increasingly get wed with legal recognition in English-speaking countries. The recognition that same-sex marriages can be performed with felicity may be a historical shift that weakens preferences for such male-first binomials among married couples in future decades. On the other hand, gender stereotypes already affect the binomial ordering of partners in same-sex couples (Hegarty et al., 2011). Time will tell if

equal marriage changes binomial order or is assimilated within it. But for now we would predict that future work in intergroup communication will reveal that semantics - not grammar, phonology, or word frequency - will drive the outcome.

NOTES

1. However, there is also some evidence that the ordering constraints are the same regardless of the complexity of the elements (Lohmann, 2014).

2. Experiments in which participants rate preferences for name orders without prompts to imagine the people named have shown some effects of phonology and word frequency on order preferences (Wright, Hay, & Bent, 2005). However, the name order effects in Hegarty et al. (2011) cannot be explained by such factors (see Hegarty, 2( ). In sum, social psychologists' experiments on name order preference parallel cognitive psychologists' experiments on word order preferences and corpus linguistic studies; phonological features matter, but are routinely trumped by semantic factors.

3. Chi-squared tests revealed these proportions to be significantly different in the competence and strength conditions, $\chi^2(1, N=55) = 8.02$, $p=.005$, $\chi^2(1, N=54) = 10.67$, $p=.001$ respectively, but not in the warmth condition, $\chi^2(1, N=46) = 0.09$, $p=.77$.

4. For competence, $Ms=3.04, 2.89$) for Groups 1 and 2, $t(54) = 0.38$, For strength, $Ms=2.07, 3.54$), $t(53) = 1.30$. The difference between groups on warmth was significant, $(t(45) = -3.37, p=.002$.

5. These ratings were analyzed with a 4x2x2 mixed-model ANOVA. *Trait dimension* (power, importance, typicality, masculinity) and *status* (higher status trait vs. lower status trait) were both treated as between-subjects factors and *order* (Group 1 vs. Group 2) was treated as a within-subjects factor. We observed both a main effect of group order, $F(1, 292) = 16.86, p<.001, \eta^2=.06$. and a 2-way interaction of order with status, $F(1, 292) = 10.92, p=.001$. Overall, participants attributed more of the high status traits to Group 1 than to Group 2 ($M=5.22, 3.88$ respectively), $F(1, 292) = 34.03, p<.001$, but equivalent amounts of the lower status traits to Groups 1 and 2 ($M=4.51, 4.38$ respectively), $F(1, 309) = 0.32, p=.57$.

6. In the overall ANOVA, a 3-way interaction between trait dimension, status and order was observed, $F(3, 292) = 4.77, p=.003, \eta^2=.02$. We conducted four further 2x2 ANOVAs, one for each semantic dimension, with status treated as a between-subjects variable and order as a within-subjects variable. For *importance* there was a main effect of order, $F(1, 71) = 5.73, p=.02$, $\eta^2=.08$, but no effect of status, $F(1, 71)=1.83, p=.18, \eta^2=.03$, or interaction, $F(1, 71) = 0.13, p=.73$, $\eta^2<.01$. For *typicality*, there was a main effect of status, $F(1, 72) = 10.37, p<.01, \eta^2=.13$, but not of order, $F(1, 72) = 2.56, p=.12, \eta^2=.03$, or of the interaction, $F(1, 72) = 0.31, p=.58, \eta^2<.01$. For masculinity-femininity, there was no effect of status, $F(1, 76) = 1.00, p=.32, \eta^2=.01$, order, $F(1, 76) = 0.17, p=.68, \eta^2<.01$, or interaction, $F(1, 76) = 1.93, p=.17, \eta^2=.03$. Finally, for *power*, there was a main effect of status, $F(1, 81) = 8.75, p<.01, \eta^2=.10$, and of order, $F(1, 81) = 9.27, p<.01, \eta^2=.10$, and a significant interaction effect $F(1, 81) = 22.21, p<.001, \eta^2=.22$.

7. We further examined the length of the words to consider whether groups with shorter names would be listed first more often using a 4x2x2x2 repeated measures ANOVA: *Trait Dimension* (power, importance, typicality, masculinity) x *status* (male, female) x *Participant Gender* (women, men) x *Group Listed* (first vs second). *Group Order* was the repeated measures factor. No main effects nor interactions were present, all $Fs<1.84$, all $ps>.18$.

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