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# Applying Behavioural Profiles to Multimodal Discourse Analysis

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1 Dylan Glynn and Aliya Gimadieva  
2 **Applying Behavioural Profiles to Multimodal**  
3 **Discourse Analysis**

4 A Quantitative Analysis of Self-praise Strategies in French and  
5 Russian Social-media

6 **Abstract:** This study reports the results of a proof-of-principle investigation in-to  
7 the application of the behavioural profile approach to discursive multimodal  
8 data. The aim is to demonstrate that a combination of usage-feature analysis  
9 and multivariate statistics can be employed to identify discourse patterns inte-  
10 grating both verbal and non-verbal communicative strategies. The case study  
11 examines self-praise (boasting) of women (on holidays) on social-media (Insta-  
12 gram) in French and Russian. The assumption is that different causes of pride  
13 and/or different languages will result in different strategies of self-praise. The  
14 study revealed complex yet coherent patterns across the “type of boast”, the  
15 “intensity of the pride” and the “discourse strategy” employed. Moreover, many  
16 of the interactions were found to be significant despite the relatively small sam-  
17 ple size. Having established that this kind of multimodal discursive phenomena  
18 can be adequately operationalized for quantitative treatment, extending the  
19 principle to include other social dimensions, such as age and gender, should be  
20 non-problematic.

21 **Keywords:** critical discourse analysis, boasting, multimodality, multivariate  
22 statistics, usage-feature analysis

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24 their suggestions and criticisms. All remaining errors and oversights remain the  
25 responsibility of the authors.

26 **1 Introduction: Behavioural Profile Approach and**

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## Multimodal Discourse Analysis

28 The behavioural profile approach has proven to be one of the most successful  
29 methods for the study of corpus data from a cognitive-functional perspective.  
30 Although broadly speaking, this kind of approach has been developed inde-  
31 pendently in various scientific traditions, in linguistics its origins can be found  
32 in early Cognitive Linguistics research, promoted especially by Dirk Geeraerts'  
33 research team at the University of Leuven. Seminal studies such as Dirven et al.  
34 (1982); Rudzka-Ostyn (1989); Geeraerts et al. (1994, 1999); Gries (1999, 2003) and  
35 Grondelaers (2000) laid the foundations for the contemporary methodological  
36 paradigm. Currently, the method has been applied to a wide range of lexical,  
37 morpho-syntactic, variationist, and diachronic phenomena as well as more  
38 recently, cultural, discursive and even critical discursive phenomena. Despite  
39 the wide application of the method, to date it has not been extended to the de-  
40 scription of multimodal data and to these ends, this study serves as a methodo-  
41 logical proof-of-principle.

42 That the behavioural profile approach is not widely used in multimodal re-  
43 search is all the more surprising given that Geeraerts et al. (1994), arguably the  
44 early work that did the most to popularize the method, employed multimodal  
45 data. Although the non-linguistic data (images of various articles of clothing in  
46 fashion magazines) were not the object of study *per se*, they were fundamental  
47 to the analysis serving as a *tertium comparationis* for the annotation. Moreover,  
48 Geeraerts et al. (1994) sought to explain semantic structure by including socio-  
49 regional (lectal) variation as inherent part of semantically motivated linguistic  
50 choices. The current study is directly inspired by the spirit of this early research,  
51 not only in its methodology and multimodal data and but also in its semantico-  
52 sociolinguistic object of study – the socio-cultural variation of self-praise in  
53 social-media.

54 Self-praise, commonly referred to as boasting or bragging, can be treated as  
55 a language function and examined as a discursive object of study. In recent  
56 years, the importance of self-praise has arguably increased due to the populari-  
57 ty of various online social media. The stylistic characteristics of these new  
58 communicative media are relatively unique and the role of boasting in this ge-  
59 nre is central. Instagram posting has become one of the most important genres of  
60 social media, both for personal and professional use. Arguably, a grammar of  
61 “Insta” posting has emerged, and given that there is an inherently narcissistic  
62 dimension to the personal Instagram post as a communicative phenomenon, it  
63 represents an excellent opportunity to examine the discursive strategies that  
64 have developed to express the discursive function of self-praise. The cliché

65 highly posed “snapshot” of a semi-clad young woman at an exotic beach desti-  
66 nation, captioned with some profound or humorous comment is, in fact, a  
67 common choice for Instagrammers. The question is can the behavioural profile  
68 approach be employed to accurately describe this kind of inherently multimodal  
69 discourse?

## 70 **2 Method: Usage-feature Analysis and Instagram** 71 **Posts**

### 72 **2.1 Methodology and linguistic behavioural patterns**

73 The behavioural profile approach, and more specifically multifactorial usage-  
74 feature analysis, is a qualitative approach to corpus data that takes the princi-  
75 ples of sampling from corpus linguistics and the quantification of variationist  
76 sociolinguistics and applies them to semantico-functional language questions.  
77 Put simply, the method consists in extracting a relatively large sample of a given  
78 linguistic phenomenon and manually tagging each occurrence for various  
79 socio-functional characteristics of use. This tagging, or annotation, results in a  
80 large multifactorial metadata set – the behavioural profile – which is then ex-  
81 amined using multivariate statistics in order to identify complex patterns in  
82 use/behaviour of the phenomenon under investigation. Importantly, these pat-  
83 terns can be mathematically modelled in order to calculate the descriptive and  
84 predictive accuracy of previous theoretical top-down studies but also bottom-up  
85 data driven analyses (q.v. Glynn 2009; Gries and Divjak 2009; Gries 2010; Glynn  
86 and Fischer 2010; Glynn and Robinson 2014).

### 87 **2.2 Data, tokenisation and data extraction**

88 The data examined here belong, in fact, to a larger set that includes English.  
89 However, the current results are restricted to French and Russian because it was  
90 possible to systematically ascertain the socio-cultural origin of the posts in  
91 these languages, where this was not systematically possible for English. The  
92 kind of socio-cultural and linguistico-pragmatic effects that the study seeks to  
93 identify are exactly the kind of phenomena that will vary depending on the  
94 culture to which the speaker belongs, but also the level of language fluency the  
95 speaker possesses. Since English is the *lingua franca* of the Internet, both of

96 these factors – cultural origin and level of fluency – were impossible control  
 97 with the English data.

98 Each Instagram post is associated with an open list of hashtags that permit  
 99 people to find posts. Russian and French translations of the hashtag “summer  
 100 2020” were used to retrieve data. The posts were then manually examined and  
 101 “tokenized” using the criterion that the image be of a solitary woman with ac-  
 102 companying text and that the post should be by someone indefinable as French  
 103 or Russian who, in all likelihood, is a native speaker of the language. All other  
 104 occurrences were removed from the sample. In total, 90 occurrences of both  
 105 Russian and French were retained (180 occurrences in total). Each post was  
 106 considered as a single occurrence in its entirety. The possibility of using multi-  
 107 ple coders to identify more fine-grained instances of boasting within each post  
 108 was not adopted (q.v. Fuoli 2012, 2015; Glynn 2014d; Berracheche and Glynn  
 109 2016; Berracheche 2020).

110 Although a sample of 90 occurrences per language is small, especially giv-  
 111 en the complexity and subtlety of the effects that we are seeking to identify, we  
 112 believe is reasonable for two reasons. Firstly, if the representativity benchmark  
 113 is that typical of conversation analysis or traditional discourse analysis, then  
 114 180 speaker-unique occurrences, controlled for potentially important random  
 115 variables, is arguably an excellent first step. If the benchmark is quantifiable  
 116 representativity, then having a small sample will only make identifying signifi-  
 117 cance more difficult (potential type II error) and although far from ideal, not  
 118 itself problematic, especially in a proof-of-principle study.

### 119 **2.3 Usage-feature annotation of text and image**

120 The manual annotation of the data is obviously the most difficult, laborious,  
 121 and crucial step. In order to develop a set of usage-features for annotation, our  
 122 starting point was the existing research on self-praise and the social emotions  
 123 such as pride. Lewandowska-Tomaszczyk (1989); Miller et al. (1992); Wu (2011);  
 124 Speer (2012) and Dayter (2016) arguably represent the authorities on the dis-  
 125 courses of self-praise. With respect to social emotions and pride, research such  
 126 as Fontaine et al. (2013); Glynn (2014a); Krawczak (2014a, 2014b, 2018); Soares  
 127 da Silva (2020) and Kumamoto and Glynn (to appear) are representative. Much  
 128 of this latter research employs the behavioural profile approach and so the pri-  
 129 mary challenge was extending the analytical apparatus to multimodal data that  
 130 include images.

### 131 2.3.1 Mitigating strategies and caption annotation

132 The accompanying text, the caption, is an integral part of the self-praise speech  
 133 event on Instagram. It is immediately visible to the audience and is typically  
 134 kept short and readable at a glance. In other words, it is integrated into the  
 135 ‘reading’ of the image as a truly multimodal communicative event. The lan-  
 136 guage analysis *per se* involves identifying a set of discursive strategies em-  
 137 ployed by the speaker to encode the self-praise. In the literature, there exists a  
 138 consensus that self-praise is appraised negatively by speakers (Leech 1983;  
 139 Brown and Levinson 1987; Dayter 2016) and that much of the discourse associ-  
 140 ated with this function involves strategies for disguising the self-praise intent of  
 141 the utterance.

142 Therefore, the language analysis *per se* involves identifying a set of discurs-  
 143 ive strategies employed by the speaker to encode the self-praise. Following  
 144 Dayter’s (2016) terminology, we will refer to these strategies as mitigating strat-  
 145 egies. The actual analysis and tagging is informed by a combination of the  
 146 above-mentioned literature on self-praise and a bottom up approach based on  
 147 careful reading of the examples in the data set. Due to practical constraints,  
 148 explanations of the analysis of each variable will not be given. Nevertheless,  
 149 examples will be presented that represent the usage-feature identified. The  
 150 weighted Kappa for each variable, where secondary coding was employed, is  
 151 given in brackets at the end of the description.

#### 152 Humour

153 Several different types of humour were identified and annotated. However, due  
 154 to the sample size, this level of granularity was not possible to include in the  
 155 results. The most common humour-based mitigating strategies included false-  
 156 irony, where a speaker “pretends to be joking” and the use of simple humour  
 157 references to downplay the narcissistic content of the utterance. Example (1)  
 158 demonstrates what is understood as false irony and example (2) that of down-  
 159 play humour ( $K = 0.89$ ).

- (1) *Qui a dit que les sirènes n'existaient pas ?*  
 ‘Who says mermaids don't exist?’  
 [Caption accompanying an image of the bikini-clad speaker emerging  
 from the waves at a beautiful beach]
- (2) *Et toujours le point levé* 🦊👊  
 ‘And always/still the clenched fist’ 🦊👊

[Caption accompanying an image of the bikini-clad speaker with her arm raised to the sky kneeling on the bow of a yacht on what appears to be a beautiful turquoise coloured lake]

### 160 **Hyperbole**

161 This strategy was particularly interesting and ideally deserves further investiga-  
 162 tion. It could be argued that underlying the use of hyperbole is some kind of  
 163 false-irony but this is far from certain. In practice, in our sample, the distinction  
 164 between humour and hyperbole was clear: hyperbole being employed to ex-  
 165 press excitement. As a mitigating strategy, it is assumed that the aim was to  
 166 disguise the self-praise in excitement or happiness at the situation (rather than  
 167 the speaker in that situation). Recall that the data were restricted to posts about  
 168 summer and so showing one's Insta followers an “amazing” holiday destination  
 169 is a somewhat obvious mitigating strategy. Example (3) is typical of the use of  
 170 hyperbole ( $K= 0.85$ ).

(3) **Невероятной красоты озеро**

‘Lake of incredible beauty’

[Caption accompanying an image of a woman in a fashion photography pose staring meaningfully off into the distance. She is on a pier extending into a lake that, although pleasant enough, does not appear to be of ‘incredible’ beauty. It is noteworthy that the lake is all but incidental in the image]

### 171 **Understatement**

172 The use of litotes and various other explicit downplay devices was an important  
 173 and relatively straightforward strategy. Put simply, the speaker seeks to down-  
 174 play the narcissistic content of the boast by understating the photograph. Exotic  
 175 beaches, beautiful vistas, and amazing skies are described in a matter of fact  
 176 manner, sometimes to humorous effect, but not necessarily so. Example (4)  
 177 shows how speakers used understatement to downplay the narcissistic impact  
 178 of their posts ( $K= 86$ ).

(4) **Я и весло** 🧡🚣

‘Me and a paddle’ 🧡🚣

[Caption accompanying a from-the-water shot of a stunning young woman, perched dramatically on a surf-ski with a paddle gazing off into the distance before an azure blue sky]

179 **Philosophy**

180 We have termed this strategy ‘Philosophy’ for want of a better label. This partic-  
 181 ular strategy is widespread in the posts and may find its origin in the comic strip  
 182 captions. Typically, the caption is restricted to bite-sized reflection on ‘life’  
 183 and/or a quote from literature or philosophy. Identifying the use of this strategy  
 184 was largely unproblematic and therefore no secondary annotating was used.  
 185 Example (5) is typical of the use of this strategy.

- (5) “*Il faut toute la vie pour apprendre à vivre !*”  
 “It takes the whole of life to learn how to live!”  
 [Caption accompanying an image of a bikini-clad woman posing natu-  
 rally in front of what appears to be a beautiful stream for swimming  
 with lush green vegetation in the background]

186 **2.3.2 Self-praise type and image annotation**

187 Instagram is primarily an image-sharing platform where text is incidental.  
 188 Therefore, the basis of the boast is visual and the annotation of the images was  
 189 intended to identify ‘types’ of boasts. It follows that the type of boast was opera-  
 190 tionalized in this study through the feature analysis of the semiotic choices in  
 191 the photograph taken and chosen to put online. The choice of features for the  
 192 visual encoding of self-praise was entirely bottom-up and the set of tags that  
 193 were employed was the result of a process of trial and error. The annotation was  
 194 performed by a single coder since the various usage-features were all explicit  
 195 and non-problematic to identify Nevertheless, in future research, it would be  
 196 ideal to include secondary coders for all qualitative annotation. Three variables  
 197 are included in the results presented in the study:

198 **State of dress**

199 The choice to present yourself publicly semi-dressed is a socio-culturally salient  
 200 semiotic choice. Although degrees of nakedness were included in the original  
 201 analysis, given the small sample size, this degree of granularity was discarded  
 202 for the current purposes. The resulting distinction was labelled as “Clothed”  
 203 and “Semi-Clothed”.



204 **Subject pose**

205 This variable includes both the style of the pose of the subject and the promi-  
 206 nence of the subject. The style of the pose was tagged as either “Glamour” and  
 207 “Informal” depending on whether the subject appeared to pose naturally or less  
 208 naturally, apparently in imitation of fashion photography. The second dimen-  
 209 sion distinguished portraits from contextual photographs and was labelled as  
 210 “Portrait” and “Context” accordingly.

211 **2.3.3 Pride intensity and hashtag annotation**

212 In order to avoid circularity and maintain the independence of our variables,  
 213 the estimation of the intensity of the experience of the emotion of pride was  
 214 operationalized through the hashtags employed by the speaker. Unlike the text  
 215 caption, hashtags are not typically read by the viewer, their role being to lead  
 216 potential viewers to the post. Therefore, where the speaker will seek to mitigate  
 217 the self-praise in the caption, the choice of hashtags may “reveal” the true na-  
 218 ture of the pride. For this reason, the intensity of the pride was analyzed using  
 219 the choice of hashtags independently from the post itself. For example,  
 220 hashtags such as “#sexy” and “#самыекрасивыедевушки” ‘the most beautiful  
 221 girls’ were annotated as a high intensity of pride. Other hashtags with less obvi-  
 222 ous narcissistic readings, yet still drawing attention to the poster’s appearance,  
 223 like “#curlyhair”, “#длинныеволосы” ‘longhair’, “#cheveuxlongs” ‘longhair’  
 224 were ranked as relatively intense, while more ideational hashtags, such as  
 225 “#travelgirl” an “#surfgirl”, were ranked as low intensity. An inherent problem  
 226 with this operationalization was that almost all postings are to some extent  
 227 inherently boastful, displaying a certain degree of overt pride.

228 The degree or intensity of the emotion pride was assessed on a 9-point Lik-  
 229 ert scale with the intention of reducing that granularity to either a 5-point or 3-  
 230 point ordinal scale, determined by a Kappa repeatability score. The weighted  
 231 Kappa estimate at an ordinal granularity of 5 was  $K=0.47$  and at a granularity of  
 232 3 was  $K=0.70$ . It is believed that the relatively weak scores for reliability are a  
 233 result of inadequate training of the second coder. The results of this analysis  
 234 are, nonetheless, employed since errors in the annotation are most likely to  
 235 produce less clear results and thus should not artificially increase the evalua-  
 236 tion of the method or the accuracy of the description. Nevertheless, this particu-  
 237 lar shortcoming needs to be underlined. Pride 1 is the label used for the lowest  
 238 level of intensity and Pride-3 for the highest.

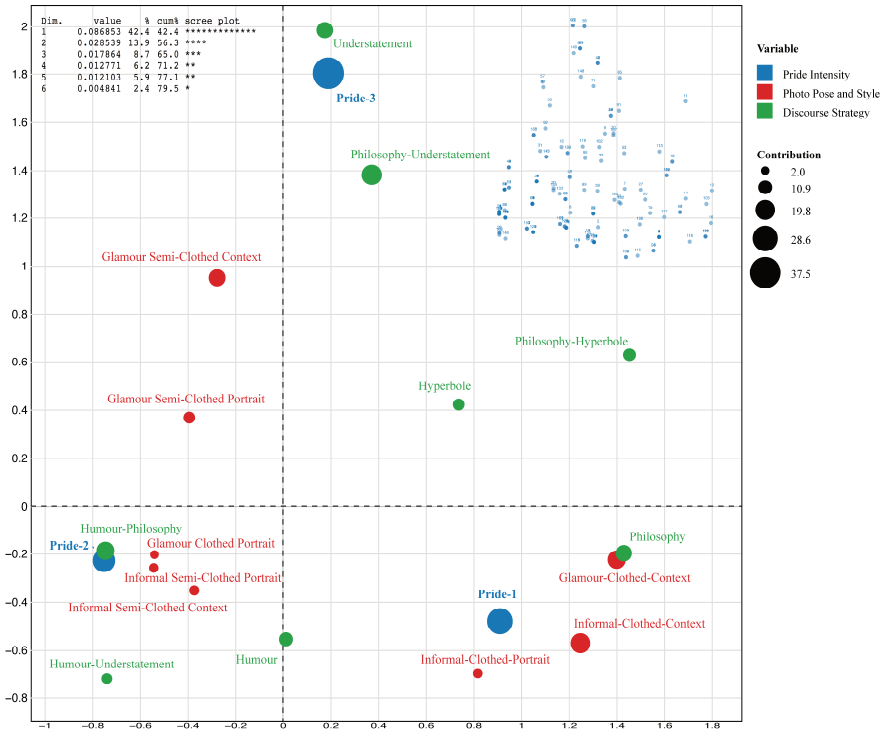
## 3 Results: Behavioural Patterns of Mitigating Strategies, Pride Intensity, Self-praise Type

### 3.1 Multidimensional patterns of self-praise

In this section, we will examine patterns that emerge from the associations of the type of mitigating strategy employed relative to the type of self-praise and the intensity of the pride experienced. Instead of summaries of the distribution of the usage-features across these three dimensions in terms of frequencies, we employ multiple correspondence analysis, a technique that calculates the relative frequency of possible combinations of the features and displays those associations in a two-dimensional space. Glynn (2014b) offers a detailed description of the application of this technique to language data and Glynn (2008, 2009, 2014c, 2015, 2016) represent examples of its use applied to the results of manually annotated data. For our current purposes, it is enough to understand that visually presented spatial proximity represents degree of association, where “closer” indicates more highly associated and “further” indicates less association. Note also that the size of the data point represents the contribution to the overall behaviour of the data so that larger data points represent more important contribution to the observed structure. Lastly, distance from the two axes ( $x$  and  $y$ ) is indicative of the degree of distinctiveness in the overall pattern that emerges.

In Figure 1, we find the results of the multiple correspondence analysis where the three dimensions of the study, the hashtag-based intensity of pride, the image-based type of self-praise and the caption-based mitigation strategy, are all combined and represented in a two-dimensional space. Three clusters emerge, each associated with one of the degrees of the intensity of pride. These clusters are, of course, not discrete but tendencies that characterize the discursive strategies of speakers.

In the bottom-right of the plot, the type of self-praise event is characterized by the speaker being fully clothed, regardless of whether she chooses a glamour style pose or a more natural pose and regardless of whether the image is a portrait or a more contextualized shot. These self-praise types are associated with the weakest intensity of pride and are highly associated with the mitigating strategy of “Philosophy” where the caption has little or nothing to do with the image and contains a quote or a philosophical observation.

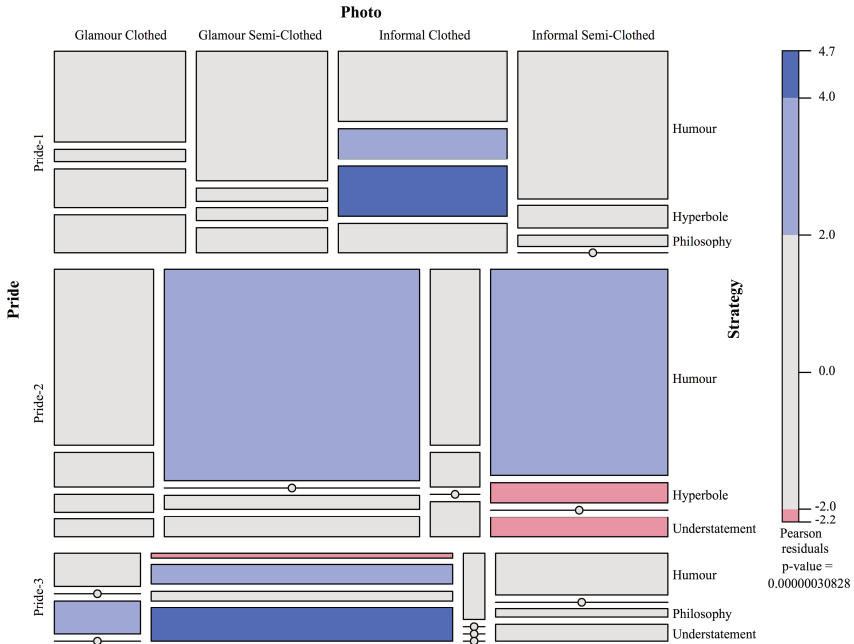


273

274 **Fig. 1:** Patterns of association between self-praise type, pride intensity and mitigating strategy

275 Turning to the bottom left, the cluster appears to be most highly associated with  
 276 self-praise events where the speaker chooses to portray an image of herself  
 277 semi-clothed and yet typically posed informally, regardless of whether the image  
 278 is a traditional portrait or a contextual portrait. Interestingly, clothed glam-  
 279 our portraits also belong to this cluster. These self-praise events are associated  
 280 with a medium intensity of pride and the mitigating strategy of “Humour”, ei-  
 281 ther on its own or in combination with “Philosophy” or “Understatement”. Last-  
 282 ly, and most distinctly, at the very top of the plot, the highest degree of pride  
 283 intensity is associated with the mitigating strategy of “Understatement”. Lying  
 284 between this combination and the second level of pride and the use of “Hu-  
 285 mour” are the two glamour-posed semi-clothed self-praise types. That they lie  
 286 between two clusters indicates that they are equally associated with both. Simi-  
 287 larly, to the right, the mitigating strategies of a combination of “Philosophy”  
 288 and “Understatement” are found between this highly intense pride cluster and  
 289 the lowest intensity of pride in the bottom right. It appears that there is a cline

290 from “Understatement” to “Philosophy” with a combined “Understatement-  
 291 Philosophy” strategy between the two. Also lying between the two clusters, and  
 292 therefore equally shared by them, are the strategies of “Hyperbole” and com-  
 293 bined “Hyperbole-Philosophy”. Again, the systematicity of the associations,  
 294 relative to the clusters, is quite striking and suggests that interpretable underly-  
 295 ing patterns that represent discursive structures have been identified.



296  
 297 **Fig. 2:** Significant multiway associations and anti-associations in the behavioural patterns

298 Despite the striking and seemingly coherent nature of these results, multiple  
 299 correspondence analysis is an exploratory technique and great care must be  
 300 taken not to extrapolate from its results. Firstly, the analysis presented in Figure  
 301 1 represents the distribution of the data to an accuracy of only 56%. What is  
 302 more, this score refers to only the representation of the data in the sample and  
 303 offers no information on how generalizable the patterns observed are. In order  
 304 to have some idea as to the reliability of the results, especially with such a small  
 305 sample, we run a loglinear analysis on the data. This tests for significance  
 306 across the multiway associations represented in the correspondence analysis.

307 However, due to the small sample, the granularity of what can be examined in  
308 the loglinear analysis must be greatly reduced. Figure 2 presents the results of  
309 this second analysis.

310 Figure 2 presents a mosaic plot that shows all the potential combinatory  
311 cells across the three dimensions, and using the Chi2 test, calculates the signifi-  
312 cance of association and disassociation. The colours are based on Person resid-  
313 uals where blue cells represent significant association (more frequent than ex-  
314 pected viz. the null-hypothesis) and red cells represent anti-association (less  
315 frequent than expected). A detailed description is not possible due to practical  
316 limitations, but the results make it clear that several key observations in Figure  
317 1 are indeed significant.

## 318 4 Conclusion

319 The application of the behavioural profile approach to multimodal discourse  
320 analysis appears to be successful. Not only were interpretable patterns that  
321 characterize discursive strategies identified, but also the preference of one  
322 strategy over another for a given context of use was revealed. Moreover, some of  
323 the associations that make up those behavioural patterns were shown to be  
324 significant, demonstrating that even complex small samples, typical of these  
325 kinds of data and research questions are amenable to confirmatory analysis.  
326 Importantly, not only was it possible to integrate the multidimensional aspect of  
327 the study into the feature analysis and the resulting behavioural profile, but the  
328 method appears to be perfectly suited to this very aspect of language complexi-  
329 ty. Lastly, although far from perfect, the heuristics used in the operationaliza-  
330 tion of the intensity and the type of self-praise speech event, produced coherent  
331 interpretable and significant results. As proof-of-principle, it seems that the  
332 usefulness of applying multifactorial feature analysis and the behavioural ap-  
333 proach to discourse structure across different yet integrated modes of language  
334 has been demonstrated and deserves wider application to multimodal research.

335

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PROOFS