UROS Project Report:

The impact of stereotypical gender information on written language production.

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Abstract:
In other languages gender associations are easily recognized by changes in the text, and changes within the sentence structure identify whether the person in the text is of a particular gender. English must have some sort of compensatory process, as it does not. People must therefore use real world knowledge about roles and the types of people that encompass specific roles and the common types of events or 'stories' that occur day to day (McRae and Matsuki, 2009). Thereby it is necessary that knowledge about events must be used when comprehending and in turn producing language that fits with what is previously read, so as to have an accurate mental representation of the story/scenario being said. This study will be mainly interested in the allocation of an 'agent', and what features the verb identifies that 'agent' to have – specifically whether gender allocations are of particular importance. If this feature is dominant in the structure of the verbs, we should observe a tendency for participants to use either male of female agents, where appropriate, when completing the latter half of a sentence that already contains a verb. A short list of 60 total verbs (20 male, 20 female and 20 neutral (ratings close to 5) verbs) was selected. Once the verbs were selected they were constructed into the beginning part of a partial sentence (e.g. While 'verbing' the 'direct object'…) for participants to complete. Two independent strategies when tackling the completion of these sentences. The first was they would simply put themselves into the 'scenario, event or story' (e.g. While 'verbing' the 'direct object'… I ….). Alternatively some participants took information about the direct object when completing the sentences (While counting the money … the coins rattled). This was not what was predicted and the presence of multiple strategies encourages research should use different methodologies when examining features of thematic roles.

Introduction:
In other languages gender associations are generally disambiguated and easily recognized by changes in the text (i.e. morphological/phonological identifiers). So in brief, changes within the sentence structure that identify whether the agent/person in the text is of a particular gender. In Spanish, for example, a preceding 'la' refers to the referent as female. English, however, has no regular morphological markings for gender (Carreiras et al, 1996) and because of this; English speakers presumably, must have some sort of compensatory process, or at the very least must infer information more regularly. For example, in words such as 'man' gender is part of the lexical entry whereas words like 'doctor' or 'nurse' are assumed to be neutral by definition, are stereotypically biased by world knowledge towards either male or female. This is reflected in reading times, because according to the inferential view, and the lexical reinterpretation model when the discourse content conflicts with ones view of the world, the internal model of the meaning of the sentence must be re-evaluated to create a new model specific to the discourse content/context, this in turn allows specific, to the discourse content at hand, applications later on (Hess et al, 1995). The inferential view assumes that stereotypical gender has to be inferred from world knowledge or discourse

context in order to comprehend language in a workable format (Carreiras et al., 1996; Garnham et al, 2002). In single string sentences (no previous text content) it would be a fair assumption that this idea extends to verbs. In particular those actions that are strongly associated with particular genders (e.g. knitting) would be equally as laborious to process as when a sentence does not conform to this particular stereotype; e.g. ‘ while knitting a jumper he thought about his day’. This is because, people not only have real world knowledge about roles and the type of people that encompass these roles but also have specific knowledge about the common types of events or ‘stories’ that occur day to day (McRae and Matsuki, 2009., Metusalem et al, 2010., Matsuki et al, 2011). Thereby it is necessary that knowledge about events must be used when comprehending and in turn producing language that fits with what is previously read. This idea was explored further by Altmann and Kamide (1999) in auditory sentence comprehension, using the visual-world paradigm. In this study participants heard sentences such as “the boy will eat the cake” while looking at a set of images, which included a boy, a cake, a car, a train and a ball. When eye movements were analyzed later, at the emergence of the verb ‘eat’ participants gaze fixated on the only edible item, in this case the cake, within the visual display. This suggests that inherent features of the word eat are instantly formulated to understand the text. Contrastly when the verb ‘eat’ was substituted for the verb ‘move’ because of the presence of multiple movable objects the fixation was less pronounced due to multiple movable objects in the visual field. Such results show thematic or event based knowledge is activated by the verb and the reader immediately hones in on the features that are relevant to the text to make on-line language comprehension easier (McRae et al, 2005., Metusalem et al, 2010). This study will be mainly interested in the allocation of an ‘agent’, and what features the verb identifies that ‘agent’ to have – specifically whether gender allocations are of particular importance. If this feature is dominant in the structure of the verbs, we should observe a tendency for participants to use either male of female agents, where appropriate, when completing the latter half of a sentence that already contains a verb and an inherent ‘event’ or ‘story’ associated to it.

Process:

Prior to UROS start date:

A total of 200 Verbs were generated through the use of the A machine usable dictionary The MRC psycholinguistic dictionary, which holds not only words but associated psychological and additional data of those words. Record was kept of certain parameters for later counterbalancing and differing points in terms of analysis. These came in the form of Thorndike and Lorge’s written frequency (Thorndike and Lorge, 1944); Brown verbal frequency (Brown, 1984). These 200 Verbs were then given (after randomization) to a group of 30 Undergraduate students from the University of Lincoln (Age: 19 S.D: 1.22 14 - Male 16 - Female) and asked to rate on a ‘Likert type scale of 1 to 10’ on who they thought more likely to carry out each action, a male (1) or a Female (10) or anything in between (5) being neutral. A context for which the verb was to be taken in was next to the verb in question to remove any ambiguity, and it will therefore be required to use the verb in said context in future comprehension tasks. These ratings were then collated into means to have useable data in the form of stereotypes (See Appendix I for this data).

UROS Project:

During the UROS project itself the most extreme of these verbs were selected (Ratings, 1/2/3 together with ratings 8/9/10) to make a short list of 60 total verbs (20 male, 20 female and 20 neutral (ratings close to 5) verbs). These were tested to ensure that they were equally as extreme in their ratings. Once the verbs were selected they were constructed into the beginning part of a partial sentence (e.g. While 'verbing' the 'direct object'…). This list was then distributed to participants mostly by email and were required to complete the sentences present (See Appendix II for example of Instructions presented on the email).
Participants were recruited primarily from the University of Lincoln and consisted of a total of 36 (male: 19 female: 17 mean age: 22.5 S.D: 8).

Findings:

The study found that participants employed two independent strategies when tackling the completion of these sentences. The first was they would simply put themselves into the 'scenario, event or story' (e.g. While 'verbing' the 'direct object'… I ….). Alternatively some participants took information about the direct object when completing the sentences (While counting the money … the coins rattled).

Summary:

Therefore the opposite to the expected/hypothesised structure of (While 'verbing' the direct object… he/she …) occurred, suggesting that though previous work suggests agent gender to be an inherent feature of the thematic roles generated by verbs, it is not influential in the production of coherent sentences and information about objects or one's own abilities seem dominant.

Conclusions:

This does not suggest that there is a lack of gender information in the features of a verb, only that when it comes to the construction/completion of sentences the gender information in the verb does not influence to a significant degree the direction or strategy people will use when producing language. This illustrates perhaps the inadequacy of sentence completion tasks in illuminating singular features of a thematic role designated by a verb. Nevertheless it must be noted that the fact that two distinctively different strategies were used demonstrates the variability of information one takes from a verb in order to create an adequate completion of a sentence. According to the findings of this study it would be encouraged that a different methodology be used than that of sentence completion, due to the broad spectrum of strategies that could potentially be taken when completing a sentence. Alternative methodologies include eye-tracking, reading time or ERP tests.

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Appendix I:

Verb	Rating	Brown	Thornlike
Asking	5	57	17971
Babysitting	8.3		
Baking	8.5		659
Bathing	5.6	10	350
Betting	2.9	5	300
Booking	5	108	684
Carrying	3.9	11	1500
Chating	5.6		1500
Cleaning	7.4	2	781
Constructing	2.9		81
Counting	5.3	9	604
Crocheting	8.2	0	43
Crying	7.8		736
Cycling	4.6	2	42
Designing	8.4	2	508
Dieting	8.7	1	258
Digging	3.1		129
Drawing	4.6	10	428
Drinking	5.2	10	658
Fixing	2.9	1	309
Folding	7.3	2	342
Frying	3.6	1	182
Gossiping	8.3	2	152
Hammering	3.5	2	106
Heading	3	45	5000
Hiding	5.4	10	379
Hunting	2.7	1	353
Knitting	8.7		117
Lifting	2.6	7	717
Manicuring	8.2		43
Meeting	5		874
Mending	8.3	1	74
Needing	7.7	59	2538
Photographing	5	3	342
Plastering	2.8		102
Playing	2.4	64	2400
Pointing	5		1337
Printing	5	15	429
Punching	2.5		78
Reading	7.6	238	1536
Repairing	3.1		114
Resting	4.1	42	1077
Sawing	3.1	43	2000
Sewing	8.2	2	151
Shooting	2.7	5	315
Shopping	8	11	639
Skipping	7.8		80
Snoring	2.9		41
Speaking	5.9	35	944
Spitting	2	7	51
Studying	5.6	16	942

Talking	7.4	37	1471
Texting	5.4		
Touching	5.6		
Typing	5	34	788
Vacuuming	7.5		
Vandalizing	3		
Writing	5.3		956

Appendix II:

Thank you for agreeing to take part in this study. Attached is a booklet of 60 unfinished sentences. Your task is simply to complete each sentence grammatically. Please complete each sentence in order until you have finished. Please end the sentence with a full stop. Please only write one sentence for each fragment, and do not try to link together two or more of the sentence fragments. Treat each one as being entirely separate from all of the rest. Although you are free to complete each sentence as you please, please do not try to be humorous or bizarre: this is not a test of your creativity. We are simply interested in aspects of the situation that the sentence fragment brings to mind. Full details of the theories being tested will be revealed to you after you have completed the booklet.

[Also any help by forwarding this onto other people would be hugely appreciated]

Your answers will be seen only by Jonny Reed, a second year Undergraduate Psychology Student at the University of Lincoln's School of Psychology and his supervisor, Dr Garry Wilson who is a senior lecturer at the same institution. You have the right to withdraw your data from the study at any point up until September 1st 2011. Just e-mail your name and that you wish to withdraw your data to Jonny Reed 09140355@students.lincoln.ac.uk Likewise if you have any further questions about the study the please e-mail Jonny.