Methods:  
Participants:  
  
In total this study used eye tracking data from 80 participants. These were split into two groups, “older” and “younger” readers. The older group consisted of 40 native English readers aged 60+. Their average age was \*\*\* (SD=\*\*\*years, range \*\*\*-\*\*\*). The younger group consisted of 40 university age (18-59) recruited from Bournemouth university. Their average age was \*\*\* ( SD=\*\*\*years; range \*\*\*-\*\*\*years). Prior to beginning the experiment both groups undertook a brief MoCA test, their average scores were \*\*\*(SD=\*\*\*;range\*\*\*) and \*\*\*(SD=\*\*\*;range\*\*\*) for older and younger readers respectively. If a participant did not score above 26 points, indicative of normal cognitive function without mild cognitive impairment (Nasreddine et al 2005), they were excluded from participating in the study. The older group were awarded with £15 at the end of the experiment while the younger group were rewarded with university credit.   
  
As the study was exploratory it was not possible to perform a meaningful power analysis. The number of participants was based on the experimental design to ensure that each stimulus was read at least 10 times.

Materials and Design:   
The stimuli consisted of 24 scenarios, consisting of two paragraphs each (see fig 1 for an example). The paragraphs were written so that they could be presented in any order for their scenario. In the 24 scenarios a social and a spatial situation was described, each situation consisted of three “objects” who’s relationships to one another were described in terms of “ left of, right of; above, below; infront of, behind” for the spatial situation and in terms of “Ability, Social Standing, Wealth” for the social situation(see fig.1 for examples). The experiment had a 2x4 within-subject design so each of the 24 scenarios had 8 versions of themselves based on paragraph order (2x) and which of the paragraphs were ambiguous or non-ambiguous (x4), meaning each of the 24 scenarios had an ambiguous and non-ambiguous version which were should in the 8 conditions(See fig 1.1 for details).  
The Ambiguous paragraphs were constructed to be almost identical to the non-ambiguous paragraphs with the only exception being that one of the relationships (spatial and social) would be changed to make the situation ambiguous.

For example a non ambiguous social situation would be:  
*“The PhD student is smarter than his Supervisor but the cleaner is smarter than PhD student.”*

Broken down this equates to “A infront of B, C infront of A” which only has one solution “CAB”  
While the same scenario can be made ambiguous by changing “C infront of A” to “C behind A” giving us the written situation:  
*“The PhD Student is smarter than his Supervisor but the cleaner is not smarter than the PhD student.”*  
This is ambiguous because it is not expressly stated which of the two “less smart than the PhD student” objects are smarter in comparison to each other and are placed only on their relation to object “A” in this case the PhD student and as such has two solutions “ACB” and “ABC”.  
  
In order to construct the paragraphs a framework was used so that all possible 3 object relationships were represented the same amount of times (see fig 2 below)

This means that there are 8 ways to construct 6 solutions. Of the 8 ways 4 are Ambiguous and 4 are non-ambiguous which are represented in the stimuli three times per construction, for example:  
The ambiguous *“A left of B, C right of A.”* is represented spatially thrice through:  
*-“A left of B,C right of A.”*   
- *“A below B, C above A.”*   
*-“A infront of B, C behind C.”*   
While “A left of B, C right of A” is represented socially through:  
*-“A is worse than B, C is better than A”  
-“A is less popular than B, C is more popular than A”  
-“A has less money than B, C has more money than A”*

Therefore, in order to balance out any irregularities in the construction of the Social or Spatial (SoSpa) relationship, each construction has three scenarios that describe that relationship in their Social and Spatial paragraphs while also accounting for the different adjective groups (better than, worse than, left of, right of, etc.). The various constructions do not differ within their scenarios other than Ambiguous and Non-Ambiguous. For the purpose of keeping the stimuli as similar as possible within conditions, the constructions for ambiguous (Ambi) and non-ambiguous (Nambi) version of a scenario differ only by one change in the second part of the construct e.g:  
Ambi Social*-“A has less money than B, C has more money than A.”*Nambi Social-*“A has less money than B, C has less money than A.”*

This allows for each construction to be represented in the stimuli an equal number of times (3) while also aiding the Constrction of the 8 Conditions.   
  
Care was taken in the writing of the paragraphs so that they would still make sense in all of the 8 conditions as well as remaining as being as similar as possible in terms of; number of words , Zip frequency and readability.

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