*Supplementary Material*

# Questionnaire on Electronic Reading Experience

Q1. Which of the following devices do you own? Select all that apply.

* Dedicated e-reader with an e-ink screen (such as Kindle Paperwhite, Kobo or Nook)
* Desktop computer
* Laptop
* Smartphone
* Tablet computer (such as iPad)
* Other device with internet access such as a smartwatch or an iPod

Q2-22. Rate how frequently you engage in the following reading activities:

1 - Never, 2 - A few times a year, 3 - A few times a month, 4 - A few times a week, 5 - Every day

* How often do you read academic journals or conference articles electronically?
* How often do you read nonfiction books electronically?
* How often do you read fiction books electronically?
* How often do you read graphic novels electronically?
* How often do you read magazine, newspaper or other articles electronically?
* How often do you read short stories or fanfiction electronically?
* How often do you read textbooks electronically?
* How often do you use a dedicated e-reader with an e-ink screen (such as Kindle Paperwhite, Kobo or Nook) for reading recreationally?
* How often do you use a desktop computer for reading recreationally?
* How often do you use a laptop for reading recreationally?
* How often do you use a smartphone for reading recreationally?
* How often do you use a tablet computer (such as an iPad) for reading recreationally?
* How often do you use a small device with internet access such as a smartwatch or an iPod for reading recreationally?
* How often do you use physical print books (hardcover or paperback) for reading recreationally?
* How often do you use a dedicated e-reader with an e-ink screen (such as Kindle Paperwhite, Kobo or Nook) for reading as part of work or study?
* How often do you use a desktop computer for reading as part of work or study?
* How often do you use a laptop for reading as part of work or study?
* How often do you use a smartphone for reading as part of work or study?
* How often do you use a tablet computer (such as an iPad) for reading as part of work or study?
* How often do you use a small device with internet access such as a smartwatch or an iPod for reading as part of work or study?
* How often do you use physical print books (hardcover or paperback) for reading as part of work or study?

# Table 1

# *Information about the Short Stories Included in the Study.*

| Author | Title | Publication year | Publication type | Genre | Average Word frequency (SD) | Number of unique words | Text length (words) | Number of participants |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Arthur Conan Doyle | The Adventures of Sherlock Holmes: The Boscombe Valley Mystery | 1891 | Public Domain | Mystery | 3.92 (16.81) | 1877 | 9639 | 11 |
| Ryk E. Spoor | Preparations and Alliances | 2017 | Creative Commons | Science fiction | 3.83 (15.74) | 2429 | 11956 | 10 |
| - | - | 2012 | - | Fantasy | 3.83 (14.29) | 1608 | 7590 | 3 |
| Edna Ferber | Gigolo: Not a Day over Twenty-One | 1922 | Public Domain | Literary fiction | 3.47 (14.96) | 2335 | 9790 | 6 |
| H.P. Lovecraft | The Thing on the Doorstep | 1937 | Public Domain | Horror | 3.56 (15.91) | 2408 | 11012 | 4 |
| Mark Twain | The Million Pound Bank Note | 1893 | Public Domain | Humour | 3.73 (14.3) | 1656 | 8398 | 8 |
| Mary E. Wilkins Freeman | The Yates Pride | 1912 | Public Domain | Romance | 4.07 (14.22) | 1458 | 7253 | 5 |
| Maxim Gorky | Through Russia: The Icebreaker | 1910 | Public Domain | Cultural fiction | 3.43 (16.89) | 2376 | 10353 | 8 |
| Richard Connell | The Most Dangerous Game | 1924 | Public Domain | Action | 3.32 (14.87) | 1884 | 8006 | 5 |

*Note.* Information about one of the stories is redacted because it was mistaken to have a Creative Commons licence.

# Table 2

# *Summaries Used for Each Short Story in the Text Selection Procedure.*

|  |  |  |
| --- | --- | --- |
| Title | Author | Summary |
| The Adventures of Sherlock Holmes: The Boscombe Valley Mystery | Arthur Conan Doyle | Mr McCarthy had an appointment of importance to keep at three. From that appointment he never came back alive. A very serious case has been established against the son of the murdered man. But I shall approach this case from the point of view that what this young man says is true, and he is innocent, and we shall see whither that hypothesis will lead us. |
| Preparations and Alliances | Ryk E. Spoor | 'There is a significant chance that one of our adversaries may target you, Saul. We see great changes coming, perhaps great wars, and whoever leads us must be one who can face any Challenge head-on.' Mentor said. Saul Maginot stood at the entryway for the shuttle. Mentor was considered a rogue AI and would be destroyed upon detection. If Saul were connected with the release or aid of a rogue AI, the destruction of his career would be the least of his problems. |
| - | - | - |
| Gigolo: Not a Day over Twenty-One | Edna Ferber | At thirty-seven Harrietta Fuller had been fifteen years on the stage. She had little money, a small stanch following, an exquisite technique, and her fur coat was beginning to look gnawed around the edges. Harrietta knew she wasn't a success. But Ken thought she was the most beauteous, witty, intelligent woman in the world, although he had never told her so, and Harrietta found herself wishing he would. |
| The Thing on the Doorstep | H.P. Lovecraft | At times Derby would halt abruptly in his revelations, and I wondered whether his wife could possibly have divined his speech at a distance and cut him off through some unknown sort of telepathic mesmerism. The figure beside me seemed less like a lifelong friend than like some monstrous intrusion from outer space. He would let fall remarks about things 'going too far'. |
| The Million Pound Bank Note | Mark Twain | What might be the fate of a perfectly honest and intelligent stranger who should be turned adrift in London without a friend, and with no money but a million-pound-bank-note. Brother B said he would bet twenty thousand pounds that the man would live thirty days, anyway, on that million, and keep out of jail, too. Brother A took him up. They agreed that I filled the bill all around; so they elected me unanimously. |
| The Yates Pride | Mary E. Wilkins Freeman | Harry Lawton had come back. Eudora did not know him at first, but as they drew nearer each other, she knew. He had not made a failure of his life, even though it had not included Eudora and a fulfilled dream. |
| Through Russia: The Icebreaker | Maxim Gorky | Everywhere the ice was sparkling as though in derision of ourselves. 'Let every man take a plank, and hold it in front of him. Then, should anyone fall in (which God forbid!), the plank-ends will catch upon the ice to either side of him, and hold him up. None but a fool gets drowned.' |
| The Most Dangerous Game | Richard Connell | This place has an evil name among seafaring men. Even cannibals wouldn't live in such a God-forsaken place. Rainsford heard a sound. It came out of the darkness, a high screaming sound, the sound of an animal in an extremity of anguish and terror. |

*Note.* Information about one of the stories is redacted because it was mistaken to have a Creative Commons licence. Summaries were constructed by annotators who extracted sentences from the short stories to make sure that the summaries were representative of the writing style of the stories.

# Table 3

# *Summary of the Reader Characteristics and Event Properties Models*

|  |  |  |
| --- | --- | --- |
|  | Reader characteristics model | Event properties model |
| Purpose | Confirmatory hypothesis testing | Exploratory data analysis |
| Model selection process | 1. Pre-specified maximal interactive model, 2. Backward selection if necessary | 1. Additive intercepts-only model, 2. Additive model with random slopes, 3. Backward selection if necessary, 4. Interactive model, 5. Backward selection if necessary |
| Fixed effects | 1. Theoretical interest:  a. Situational motivation  b. Contextual motivation  c. Task-relevant electronic experience (TR-EEXP)  d. Situational competence  2. Control variables:  a. Contextual competence  b. Device size  c. Days until end of the study  d. Demographics: gender and whether English is native language or not | 1. Task context variables:  a. Previous events, event k-1 and event k-2  b. Reading session number, timing in reading session  c. Location in text  2. Control variables:  a. Device size  b. Days until end of the study |
| Random effects | Explicitly nested to allow for different slopes:  (1 | Participant indicator) + (1 + Situational motivation + Contextual motivation + TR-EEXP | Story indicator) | Nested, intercepts-only before random slope selection:  (1 | Story indicator / Participant indicator) |
| Random slope selection | Pre-specified: Random slopes in story indicator random effect for variables of theoretical interest. | 'Best-path' algorithm described by Barr (2013): Addition of each slope is tested against the intercepts-only model. The slope with the lowest p-value is added in the model and testing is resumed by comparing addition of other slope variables against the model with previously accepted slope. |
| Backward selection method | Backward selection is used if the model does not converge or if it is singular. One variable is removed at a time, until the model converges or is no longer singular. Selection order: (1) Random slopes - remove slope that accounts for the least variance in the model, (2) Fixed effects - remove the fixed effect that contributes the least to the model, according to p-values. Significant effects are not removed. | |

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| **Table 4a**  *Additional information on the Mixed Models.* | | | | | |
| --- | --- | --- | --- | --- | --- |
| Model Version | Reading Behaviour | Model Type | Number of Observations | Number of Fixed Effect Parameters | Number of Random Effect Parameters |
| Reader Characteristics |  |  |  |  |  |
|  | Task-switching (TS) | Linear Mixed Model | 253 | 11 | 2 |
|  | Reading speed (RS1) | Linear Mixed Model | 1936 | 14 | 2 |
|  | Linearity (LIN1) | Generalised Linear Mixed Model | 3939 | 14 | 1 |
| Event Properties |  |  |  |  |  |
|  | Reading speed (RS2) | Linear Mixed Model | 1816 | 12 | 6 |
|  | Linearity (LIN2) | Generalised Linear Mixed Model | 3819 | 19 | 6 |

| **Table 4b**  *Additional Information on Mixed Model Selection.* | |
| --- | --- |
| Model Indicator | Information on model selection |
|  |  |
| TS | The maximal interactive model was singular, and so it was simplified by backward selection of random slopes. All slopes were removed from the model before it reached convergence and was no longer singular. |
| RS1 | The maximal interactive model was singular, and so it was simplified by backward selection of random slopes. All slopes were removed from the model before it reached convergence and was no longer singular. |
| LIN1 | The maximal interactive model was singular. Backward selection of the random slopes and fixed effects did not resolve the issue. Inspection showed that the singularity was due to the random intercept of story indicator which accounted for zero variance in the model. Attempts to fit story indicator as a fixed effect resulted in multicollinearity in the model, and thus story indicator was removed from the model structure. |
|  |  |
| RS2 | The following random slopes were added to the additive model: location in text, and days until reading deadline. However, this model did not converge, and so random slopes were selected backward stepwise. The additive model to converge only included a random slope of days until reading deadline. Two-way interactions were then added to the model, and the full interactive model reached convergence. |
| LIN2 | The additive model was singular due to the random intercept of story indicator which accounted for zero variance in the model. Story indicator was successfully fit as a fixed effect in the additive model, and the following random slopes were added to the adjusted model: time in a reading session, window width, location in text, reading session number, and event k-1. The additive model was singular after slope selection, and random slopes were selected backward stepwise. The additive model reached convergence after removal of the random slopes of location in text, window width, and reading session number. Interactions were then added to the model. An interaction effect between event k-1 and event k-2 was found to have a moderately high VIF score, indicating of multicollinearity. The interaction was therefore removed from the model. The interactive model structure reached convergence. |
| *Note*. See Table 4a for the model indicators. | |

| **Table 4c**  *Additional Information on Mixed Model Structures.* | |
| --- | --- |
| Model Indicator | Model Structure |
|  |  |
| TS | log(Continuous engagement duration in minutes + 1) = Window Width + Days until reading deadline + Native speaker + Autonomy condition + Situational competence + Contextual motivation + Contextual competence + Electronic device types + Electronic text types + Electronic device types x Electronic text types + (1 | Story indicator) + (1 | Participant indicator) |
| RS1 | Deep reading variance from baseline = Window width + Days until reading deadline + Native speaker + Autonomy Condition + Situational competence + Contextual motivation + Contextual competence + Electronic device types + Electronic text types + Electronic device types x Electronic text types + Condition x Situational competence + Contextual interest x Situational competence + Electronic device types x Electronic text types x Situational competence + (1 | Story indicator) + (1 | Participant indicator) |
| LIN1 | Whether an event initiates nonlinearity or not = Window width + Days until reading deadline + Native speaker + Autonomy Condition + Situational competence + Contextual motivation + Contextual competence + Electronic device types + Electronic text types + Electronic device types x Electronic text types + Condition x Situational competence + Contextual motivation x Situational competence + Electronic device types x Electronic text types x Situational competence + (1 | Participant indicator) |
|  |  |
| RS2 | Deep reading variance from baseline = Window width + Days until reading deadline + Event(k-1) + Event(k-2) + Reading session number + Time in reading session + Location in text + Event(k-1) x Event(k-2) + Reading session number x Time in reading session + Reading session number x Location in text + Time in reading session x Location in text + (1 + Days until reading deadline | Story indicator / Participant indicator) |
| LIN2 | Whether an event initiates nonlinearity or not = Story indicator + Window width + Days until reading deadline + Event(k-1) + Event(k-2) + Reading session number + Time in reading session + Location in text + Reading session number x Time in reading session + Reading session number x Location in text + Time in reading session x Location in text + (1 + Time in reading session + Event(k-1) | Participant indicator) |
| *Note*. See Table 4a for the model indicators. | |