Understanding cognitive processing in smartphone writing

New technological devices are changing the way we communicate. With the popularization of smartphones some people spend more time writing -texting, emailing, chatting- than speaking. Smartphone writing is very recent in the history of writing, so there is limited research on this subject. Most of the studies evaluate whether smartphone writing is "positive" or "negative" for personality or learning development in children and teenagers. Our project adopts another perspective. Texting, chatting and emailing with smartphones are a very important part of our everyday life, regardless of their positive or negative effect on the users. Therefore, we believe it is useless to judge whether smartphones are good or bad for us: They are part of our reality and they have changed the way we write. We are a multidisciplinary team from two important research laboratories in Grenoble. We collaborate for the understanding of the cognitive processing in new technological devices related to human communication. Sonia Kandel from GIPSA-lab investigates the cognitive aspects of writing processes (http://www.gipsa-lab.fr/~sonia.kandel/publications_en.html) and Quentin Roy from LIG, is an expert in human-computer interaction with virtual keyboards (https://quentinroy.fr/publications).

Writing words in "traditional" writing requires the retrieval of its letter components and producing hand movements with a pen or keyboard to transform abstract letter representations into spatial configurations that unfold progressively on a page (Kandel, in press). When writing on a smartphone, spelling retrieval is no longer a mere recall of orthographic information like in handwriting or typing. This constitutes a scientific challenge for writing research in cognitive science and human-computer interaction. Smartphones propose two or three words as choices before we finish writing the word. When writing the French word PARFUM for example, there are several words that appear as choices -PARDON, PARTIR, PARCOURS- while writing letters P and A. Then, when PARF is written, the smartphone proposes words PARFAIT, PARFUM, and PARFOIS until we select PARFUM. This back and forth mechanism of writing, reading choices and selecting one of them, transforms completely the processing of orthographic information in writing. In addition, the choices provided by the smartphone are regulated by an artificial intelligence system that learns the vocabulary that that is frequently adopted by its user. These choices also modulate the orthographic processing carried out by the user during the process of writing.

During the Master 2 internship, we will carry out an experiment to investigate the impact of selecting word choices during smartphone writing. Although all smartphones propose word choices, there is scarce scientific information on how the human cognitive system processes this information and how it modulates the whole writing process. We will use a new experimental platform so we can collect fine-graind data resulting from the writing process. We will replicate - with smartphones- a writing experiment conducted by our team so we can evaluate the impact of the change of writing device on orthographic processing (Roux et al., 2013; Palmis et al., 2019). This experiment is a apart of a vast project that aims at understanding how smartphones have changed the cognitive processes involved in writing.

Contact : Sonia Kandel (GIPSA-lab, CNRS UMR 5216) and Quentin Roy (LIG, CNRS UMR 5217)
Université Grenoble Alpes
sonia.kandel@univ-grenoble-alpes.fr and quentin.roy@univ-grenoble-alpes.fr