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**Data Analytics Summit II** 

# **Chasing after a Century of Punctuation**

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#### Abstract

Punctuation in writing is a recent and Western invention. This study sought to determine whether using punctuation has been changing alongside changes in formal written communication in the last 11 decades. Through an analysis of 66 Introduction to Psychology textbooks published between the years 1895 and 2000, we determined that using question marks, colons, and semi-colons have increased over time, but that using exclamation points and commas have not. A post-hoc analysis of word frequencies in early and late textbook questions suggests that at least some differences may be related authors' greater effort in recent decades to engage the reader.

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### 1. Introduction

Since the late 1960s, Noam Chomsky, probably the world's most famous linguist, has maintained there is an innate component to human language (Chomsky,1959). This may be true. All cultures have language. Well over 6,800 distinct human languages are

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Rank \$	Language \$	Native speakers in millions 2007 (2010)	Fraction of world population (2007)
1	Mandarin	935 (955)	14.1%
2	Spanish	390 (405)	5.85%
3	English	365 (360)	5.52%
4	Hindi	295 <sup>[3]</sup> (310) <sup>[4]</sup>	4.46%
5	Arabic	280 (295)	4.23%
6	Portuguese	205 (215)	3.08%
7	Bengali	200 (205)	3.05%
8	Russian	160 (155)	2.42%
9	Japanese	125 (125)	1.92%
10	Punjabi	95 (100)	1.44%
11	German	92 (89)	1.39%
12	Javanese	82	1.25%
13	Wu	80	1.20%
14	Malay/Indonesian	77	1.16%
15	Telugu	76	1.15%
16	Vietnamese	76	1.14%
17	Korean	76	1.14%
18	French	80	1.12%
19	Marathi	73	1.10%
20	Tamil	70	1.06%

spoken in the world today by over 7 billion people Trevilla(2009). But only about half of these distinct languages have a formal writing system. Thus, while speaking may be innate, writing does not seem to be. Historically, languages are spoken long before they are written. It is also true, however, that almost all languages without writing systems have very few mother-tongue speakers. Over 6,000 languages are spoken by groups of less than a million mother- tongue speakers each, with some languages having fewer than 1,000 speakers.; there is a high correlation between the probability of a language having a writing system and the number of people who speak it. For example, this table shows the percentage of people who speak the top 20 languages in the world. These 20 languages account for well over 50% of all native speakers, and all of these languages have sophisticated writing systems. Many of the writing systems for these languages sprang from the shared beginnings, e.g., Japanese Kanji uses Chinese writing in part of their writing system, and even Hiragana and Katakana are slightly altered simplified Chinese characters used to form a phonetic script. But while all spokens languages contain a shared subset of components that are often cited in arguing for the presence innate force in human language. Our primary, independently evolved, writings systems are, however, so vastly different that we cannot make a similar argument for an innate drive to write language. The chasm between phonetic and pictographic aone is diffcult to cross in making such claims. Moreover, we are left to explain the languages without writing systems.

Table 1. This table shows the top languages in the world, representing languages with the greatest number of speakers.

Even less of a constant than writing systems associated with spoken language is the use of punctuation in writing. Readers and writers managed without it for thousands of years. If we will overlook a few early attempts, punctuation has only been in use since the early 1600s and that it is more or less an invention of the western world. The Greek text on the lower portion of the 2300-year-old Rosetta Stone, for example, indicates that the Greeks were not even inserting spaces between their words, much less using punctuation.



SINCETHE1960SNOAMCHOMSKYPROBABLYT HEWORLD'SMOSTFAMOUSLINGUISTHASMAI NTAINEDTHATTHEREISANINNATECOMPONEN TTOHUMANLANGUAGETHISMAYBESOALLCUL TURESHAVELANGUAGETHEREAREWELLOVER 6800DISTINCTHUMANLANGUAGESSPOKENIN THEWORLDTODAYBYOVER7BILLIONPEOPLEBU TONLYABOUTHALFOFTHESEDISTINCTLANGUA GESHAVEAFORMALWRITINGSYSTEMTHUSWH ILESPEAKINGMAYBEINNATEWRITINGDOESNO TSEEMTOBEHISTORICALLYLANGUAGESARESPOKENI ONGBEFORETHEYAREWRITTEN

Figure 1. Greek section of the Rosetta Sone compared to the first paperagraph of this paper without spaces.

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