**Table 10** continued

| Challenge | Survey, years covered | Short description | Task |
|---|---|---|---|
| Aggregations, comparison and negation operators | [17], 2004–07, [54], 2004–11, [52], 2005–12, [46], 2011–15 | Aggregation operators are those calculating a min, max, sum, an average or a count over a number of individuals fulfilling a certain property. Comparison operators compare numbers to a given order. The challenge is to realize a quantifier through logical operators | Question Analysis, Query Construction |
| Syntactic and Scope ambiguities | [17], 2004–07 | Syntactic ambiguity regarding the constituent that prepositional phrases or relative clauses can attach to (to the last or to a non-precedent constituent in a sentence), or when multiple scope quantifiers are present in a query (*most, all, each, etc.*) | Query construction |
| Distributed QA Entity reconciliation | [54], 2004–11, [36], 2004–11, [71], QALD-4, [46], 2011–15 | Combining facts across sources requires matching at schema level as well as entity level (find semantically equivalent dataset entities given a query entity) to join partial results or translations | Distributed Knowledge |
| Non-compositionality | [17], 2004–07 | Parts of a question that do not correspond to any logical form and need to be ignored (e.g. *largest cities in the world* if *world* is not explicitly model) | Query construction |
| Semantic tractability | [36], 2004–11 | To answer queries not supported by explicit dataset statements (e.g. inferring an entity *x* is an *actress* because of the statement *x starred y movie*) | Mapping, Disambiguation, Query construction |
| Out of scope | [17], 2004–07, [54], 2004–11 | A system should inform about the fact that the question is out of scope of the KB (vs. out of the capabilities of the system) | Across all |
| Portability | [17], 2004–07, [54], 2004–11 | The level of effort require to port the system to other sources (e.g. handcrafted lexicon, training) | Across all |
| Scalability | [54], 2004–2011 | Required both in terms of KB size and their number while keeping real time performance | Across all |
| Hybrid QA, Semantic and textual gap | [54], 2004–11, [71] QALD-4 | Combining both structured and unstructured information into one answer | – |