

Expertise in cryptic crossword performance: An exploratory survey

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This paper investigates the link between practice and level of expertise in cryptic crossword solvers. A survey was conducted of 241 expert solvers, which established that, even among crossword experts, the range and frequency of cryptics solved and the time spent upon this varied greatly. The link between practice and level of expertise was therefore not straightforward, but seemed to be connected to the primary focus of the solver—whether they aimed to “speed-solve” or solve “advanced cryptics” of exceptional difficulty. A brief review of motivational drivers for solvers of cryptics is also included.

Keywords: crossword; problem solving; expertise; motivation; practice

Puzzles of all standards and for all ages are routinely available in newspapers and magazines, and crazes for particular types of brainteasers—such as Sudoku—regularly sweep the world. One particularly long-lived puzzle type is the crossword, which exists in two basic forms: cryptic and non-cryptic. In the non-cryptic form, a clue word or phrase prompts the solver to discover a synonym word which will fit into the grid and intersect with cross-checking letters. This type of crossword is found throughout the world and is the main (virtually the only) type of crossword to be found in the USA.

The focus of this study, however, is the “cryptic” crossword, which may be found in broadsheet newspapers and quality magazines throughout the UK and Commonwealth. In these puzzles, the surface reading of the clue is phrased to be deliberately misleading. The solver learns to ignore this reading, and to identify and crack a grammatical set of coded instructions which, if executed precisely, will lead to the correct (and only) answer.

Although cryptic crosswords are not audience-oriented, many solvers strive for self-improvement and recognition within the crossword commu-

nity, by tackling successively harder crosswords, attempting “personal best” times, entering public speed-solving challenges, or maintaining annual statistics of correctly completed crosswords. There is thus ample opportunity to develop and demonstrate one’s expertise in cryptic crossword solving.

In contrast to the many expert-novice studies of performers in domains such as chess (e.g. Gobet and Campitelli 2007) and music (e.g. Waters and Underwood 1998), very little research exists into either the processes and aptitudes required to complete cryptics or the development of cryptic crossword solving expertise. A few small-scale studies at Nottingham University explored the relationship between lexical abilities and cryptic crossword solving skill and touched upon the role of practice and expertise development in passing (Underwood *et al.* 1988, Underwood *et al.* 1994, Deihim-Aazami 1999); otherwise research has been primarily directed toward the mechanics of individual clue elements such as synonym retrieval or anagram solving (e.g. Novick 2004), and has generally been based upon US-style “non-cryptic” crosswords (e.g. Hambrick *et al.* 1999).

This exploratory survey of regular cryptic crossword solvers with a high level of expertise aimed to investigate the cognitive skills, motivation, and development of expertise in this domain. The survey was wide ranging, and only those results relevant to performance expertise are reported here.

METHOD

Participants

Crossword “experts” were sought to participate, defined as those able to achieve one of the following:

- Solve one standard “block-style” (i.e. latticed-grid) cryptic crossword, at the more difficult end of the spectrum, in 30 minutes or less. Cryptic crosswords of varying difficulty are found in many daily newspapers (see Biddlecombe 2000, link to *Puzzle Sources*); of these the most famous is probably the (London) *Times* crossword. Competitors in the annual *Times* Speed-solving Championship are set the challenge of solving four *Times* crosswords in 1 hour (i.e. 15 mins each).
- Tackle “advanced cryptics.” These challenging barred-grid prize puzzles appear in a number of weekend newspapers and magazines (Biddlecombe 2000); of these, the *Listener Crossword* (in the *Times* on Saturdays) is the most notoriously difficult, employing a high degree of concealment in the clue mechanics, obscure vocabulary, grids of startling originality, and a thematic challenge, involving a number of tricky lateral thinking steps

on the basis of very little guidance. Speed is not important: competition entrants are allowed at least a week to submit solutions. Only a handful of *Listener* solvers submit all 52 puzzles in a year correctly; those who solve 42+ appear on a roll of honor.

Participants for the survey were sought by means of advertisements circulated (1) on *The Crossword Centre* website (www.crossword.org.uk, a UK-based cryptic crossword forum, membership approx. 950) in May 2007 and May 2008; (2) on the *Guardian* newspaper crossword message board in June 2007; (3) at the *Times* speed-solving competition in Cheltenham, England, in October 2007; and (4) with the annual *Listener Crossword* statistics, distributed (on request) in March 2007 by the official statistician.

The advertisements were deliberately released in both competitive (Cheltenham/*Listener* statistics) and non-competitive (website/message boards) settings. Care was also taken to advertize the survey both on and off the web.

Materials

A questionnaire was developed, piloted, and released seeking responses to 90 wide-ranging questions relating to the cognitive skills, motivation, and development of expertise involved in the completion of cryptics.

Procedure

Respondents were invited to complete the survey online using SurveyMonkey®. A paper copy of the questionnaire was also available.

RESULTS

In total, 256 people responded. Due to missing data, 241 questionnaires were analysed (209 M, 32 F; mean age=53 years, range=23-83). The mean starting age for solving cryptics was 17 years; solvers typically spent 10 years on “block-style” cryptic crosswords before going on to more advanced ones and were highly experienced (mean years solving=36, range=2-66). There were 221 *Listener Crossword* solvers, although the majority of respondents had first seen the survey advertized on the *Crossword Centre* website (n=161).

Respondents tended to solve cryptics regularly (mean time spent=8 hours per week, range=1-30) and from various newspapers (mean different cryptics regularly attempted=4.5; range=0-28). There were, however, significant differences within these ranges at the individual level.

Table 1. Percentage of participants, by expert sub-category, showing volume of cross-words solved.

Expert sub-category	Focused	Moderate	Broad	Extensive	Voracious
Crossword Pro	34	57	6	3	0
Speed/Listener Super Expert	28	39	17	6	11
Speed Super Expert	38	31	25	6	0
Listener Super Expert	70	25	5	0	0
Ordinary Expert Participant	61	32	5	2	0

Table 2. Percentage of participants, by expert sub-category, showing hours spent solving per week.

Expert sub-category	0-5	6-10	11-15	16-20	21-25	25+
Crossword Pro	33	52	6	6	3	0
Speed/Listener Super Expert	22	56	11	11	0	0
Speed Super Expert	38	44	19	0	0	0
Listener Super Expert	27	50	15	7	2	0
Ordinary Expert Participant	49	31	14	5	0	1

Table 3. Mean number of years spent solving cryptics, by expert sub-category.

	Pro	Speed/List	Speed	List	Ord	Average
Years solving	38	36	40	36	35	36

In order to investigate these differences, respondents were divided into five expert subcategories, on the basis of responses given in the survey:

- Those who edited or composed cryptics professionally (n=35);
- Those who could speed-solve a cryptic in <15 mins *and* who had completed 42+ *Listener* crosswords correctly in one year (n=18);
- Those who could speed-solve a cryptic in <15 mins (n=16);
- Those who had completed 42+ *Listeners* correctly in one year (n=60);
- Other expert participants who had not achieved any of the above (n=112).

These groups were first analyzed by the volume of crosswords they tackled (number of different crosswords solved by each participant, weighted by the frequency with which they tackled them; see Table 1 for results). The

groups were then analyzed by the hours spent tackling cryptic crosswords each week (Table 2). The average number of years spent solving cryptic crosswords was also calculated for each sub-category (Table 3).

Respondents were also asked to consider and rate, on a 1-5 scale, a series of 26 statements compiled specifically for the survey exploring a range of potential motivational drivers (both extrinsic and intrinsic) behind their solving behavior. Respondents' replies indicated high levels of intrinsic motivation. Primary intrinsic drives were related to (1) the "buzz" of succeeding in an intellectual challenge (68% rated this "very/highly motivating") and (2) preserving mental "sharpness" (61% "very/highly motivating"). Expert crossword solving was seen as a solitary hobby: 88% of respondents claimed that participation in team solving was not motivating for them. Generally, extrinsic motivational drivers such as prizes or public acclaim were also seen as less important; however, 33% had participated in public speed-solving contests, and 73% of those who tackled the *Listener* crossword (n=221) routinely submitted it for the official personal annual statistics, with 54% aiming to appear on the *Listener* roll of honor.

DISCUSSION

Becoming an expert in any domain requires practice, hard work, and strong motivation, both intrinsic and extrinsic. However, this study highlighted that even among crossword experts the range and frequency of cryptics solved varied greatly. "Super-Experts" in speed solving (alone or in combination with high *Listener* expertise) seemed to attempt routinely a much broader range of crosswords than others. It is possible that the high volume of clues covered enables more of the problem solving process to become automatic for these speed experts, leading to an increasingly instantaneous recognition of the clue architecture. By contrast, those who were solely *Listener* "Super-Experts" solved in a conspicuously more focused range. Despite this, the time spent on crosswords per week was relatively constant across the "Super-Expert" categories, with 77-82% of participants spending 0-10 hours on crossword solving, predominantly in the 6-10 hours category: the rapidity of the "Speed" experts may have contributed to their ability to cover a wider range of material in relatively quicker time; whereas the *Listener* "Super-Experts" may have deliberately focused on harder and more time-consuming puzzles.

Those falling into the "Ordinary Expert" category, however, generally lagged behind the "Super-Expert" categories both in the range of crosswords tackled and in the time spent, with 49% of respondents spending 5 or fewer

hours per week on solving activities. This suggests that practice may be one key factor in achieving “Super-Expert” status.

Expert solvers were highly intrinsically motivated, and pursued cryptic crossword solving primarily as a source of intellectual stimulation and pleasure. Solving is a solitary pastime, however, and many experts seemed to use various extrinsic goals, such as the maintenance of annual statistics, as a source of extra extrinsic incentive to supplement their own internal drive.

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